

# **NATIONAL HEALTH REPORT**

## **HEALTH STATUS OF THE ALBANIAN POPULATION**

**INSTITUTE OF PUBLIC HEALTH**

**Tirana, 2014**

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## Health Status of the Albanian Population

Genc Burazeri, Arjan Bregu, Gentiana Qirjako, Enver Roshi,  
Kreshnik Petrela, Mariana Bukli, Peter Achterberg



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"Botimet Barleti"

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## EXECUTIVE SUMMARY

The aim of this health report is to provide a broad overview of the current health status of the population of Albania. More specifically, this report seeks to describe mortality and morbidity patterns that the Albanian population has experienced in the past twenty years. In addition, the report aims at highlighting the major risk factors and other determinants of disease and death in the Albanian population. Furthermore, the report succinctly describes the health care resources, workforce distribution, health care utilization and the costs involved in the Albanian health sector.

A desk review of the main (official) sources of information about health status and health care system in Albania was undertaken to provide the basis for the current health report. International sources of information consisted mainly of the Global Burden of Disease (GBD) Study 2010 coordinated by the Institute for Health Metrics and Evaluation (IHME) in Seattle, USA (<http://www.healthdata.org/>), and reports and data from the World Health Organization (WHO) and other United Nations (UN) agencies.

Domestic sources of information included the official reports published primarily by the Albanian Institute of Statistics (INSTAT: <http://www.instat.gov.al/al/home.aspx>) and the Albanian Ministry of Health (<http://shendetesia.gov.al/>).

It is important to note, there are serious inconsistencies between different data sources including INSTAT, the operational data from the Albanian Ministry of Health, the UN agencies and the GBD 2010 estimates. The discrepancies between the national (official) information and the international estimates point to the critical need for a better quality of health data registration in Albania, especially for mortality indicators and causes of death in order to adequately inform policy making.

Notwithstanding these methodological limitations, a few salient findings emerged from this desk review and are briefly summarized below:

*Longevity, mortality and burden of disease among adults:*

- Life expectancy in Albania has increased steadily in the past twenty years in both sexes (in males: from 67 years in 1990 to 73 years in 2012; in females: from 71 years in 1990 to 75 years in 2012; WHO, 2014).
- Various changes, among which demographic changes (11% of the population was aged 65 years and over in 2011) have naturally led to a clear epidemiological transition in Albania over the past two decades with a significant shift from infectious diseases to non-communicable diseases (NCDs).
- In 2012, infectious diseases accounted for 11% of the total burden of disease in Albania, exhibiting a significant declining trend in the past twenty years. Yet, given the current rate of improvement, the actual European average level of 5% of the total burden could be reached within 10-12 years.
- In 2010, NCDs in Albania accounted for about 88% of all deaths (55% cardiovascular diseases and 19% cancer; GBD, 2010). Albania has thus joined the majority of European countries that face the NCD epidemic as its most important public health challenge.
- Remarkably, the (age-standardized) total burden of disease in Albanian males and females in 2010 was the highest in the South Eastern European (SEE) region (GBD, 2010).
- Specifically, the mortality rate from ischemic heart disease in Albania is the highest in the SEE region (GBD, 2010). Furthermore, Albania is the only country in the region which has experienced an increase in the mortality rate from ischemic heart disease and cerebrovascular diseases in the past two decades (GBD, 2010) – indicating an early evolutionary stage of the coronary epidemic, which was observed many decades ago in the Western countries.
- As a matter of fact, ischemic heart disease, cerebrovascular disease and lower respiratory infections were the highest ranking causes regarding the number of years of life lost due to premature death in Albania in 2010 (GBD, 2010).
- There is evidence of a gradual increase in the mortality rates from neoplasms in Albania in both sexes. Yet, in 2010, death rates from neoplasms in Albania were the lowest in the SEE region (GBD, 2010). This may all have been related to a previously relatively low smoking prevalence which is now demanding and increasing death-toll in Albania.

- Mortality rate from diabetes in Albania in 2010 was one of the lowest in the SEE region (GBD, 2010).
- Conversely, death rate from chronic obstructive pulmonary disease (COPD) in Albania constitutes one of the highest levels in the region (GBD, 2010).

*Mother and child health and nutrition:*

- In 2013, infant mortality rate in Albania was estimated at 13 per 1,000 live births (United Nations Children's Fund [UNICEF], 2014), which constitutes one of the highest rates in the region and is astonishingly above the official national report of 7.8 per 1,000 live births (INSTAT, 2014).
- Under-five year mortality in Albania has gradually decreased in the past decade (8.4 per 1,000 live births in 2013; Albanian Ministry of Health, 2014). Nonetheless, similar to infant mortality, there is probably a substantial underestimation of child mortality, if the figures are based on the official reports from the national institutions in Albania due to the under-registration of deaths.
- Also, there is evidence of a steady decrease in the maternal mortality ratio in Albania in the past two decades. Overall, the change between 1990 and 2013 relates to a decrease of 33% (WHO, 2014).
- Communicable diseases, maternal, neonatal and nutritional disorders accounted for about 22% of the overall mortality rate in Albania in 1990, but only for 6% in 2010.
- Albania is still facing the double burden of malnutrition, with stunting being on the decline but still a public health problem and child overweight in raising trend. Burden of overweight has moved from children living in urban areas, belonging to mothers with secondary or higher education and living in better-off families in 2005, to children living in poor families and rural areas in 2009, providing clear evidence of the nutritional transition underway in Albania (Albanian Demographic and Health Survey [ADHS], 2010).

*Risk factors:*

- In Albania, the three risk factors that accounted for the largest disease burden in 2010 were dietary risks (first), high blood pressure (second) and tobacco smoking (third) (GBD, 2010). The prevalence of smoking may increase if measures are not taken and this could seriously threaten a further increase in life expectancy and a possible decrease of the NCD burden.

- Astonishingly, there has been a significant increase in the burden of disease attributable to each lifestyle/behavioral characteristic in Albania in the past twenty years. In 2010, lifestyle factors accounted for more than 70% of the total burden of disease in Albania.
- In 2010, dietary risks accounted for 38% of the total mortality rate in Albania, constituting, by far and large, the most important risk factor for ill-health in this transitional society.
- In 2010, smoking accounted for 22% of all deaths in Albania. In the past two decades of the particularly rapid political and socioeconomic transition, mortality rate attributable to smoking has almost doubled for NCDs in general and for heart disease, cerebrovascular disease, total cancers, lung cancer and COPD, in particular.
- The overall mortality rate and the total burden of disease attributable to alcohol use has increased 2.5 times in Albania in the past two decades. In particular, mortality rates from cardiovascular diseases and liver cirrhosis due to alcohol consumption have doubled, whereas the death rate from cerebrovascular disease has almost tripled during 1990-2010.
- In Albania, in the past two decades, the overall mortality rate due to overweight and obesity has increased more than twice. In particular, the death rate from ischemic heart disease has increased 2.5 times, whereas the death rate from diabetes has tripled.
- Mortality rate from ischemic heart disease attributable to hypertension has increased twice in Albania in the past twenty years, whereas death rate from cerebrovascular disease due to hypertension has increased by more than 70%.
- In the past twenty years, in Albania, there has been an almost twofold increase in the mortality rate from ischemic heart disease and a threefold increase in the mortality rate from diabetes due to high fasting glucose level, unhealthy diet, obesity and physical inactivity.
- In 2010, the ischemic heart disease mortality attributable to hypercholesterolemia has almost doubled in Albania, which is the only country in the SEE region experiencing a gradual increase in the burden of disease attributable to higher levels of total cholesterol.



- A cluster of preventable risk factors (smoking, alcohol abuse, overweight, unhealthy diet, and lack of physical activity) are at the moment in Albania contributing in a very important way to the observed increase in the total burden of NCDs such as cancer, heart disease, lung and liver diseases, and diabetes. Preventing Albanian youth from starting to smoke and refraining from alcohol abuse and unhealthy diets and promoting their physical activity are major challenges for the near future in Albania.

*Health system:*

- The overall number of physicians in Albania is scarce, with a significantly lower doctor density in remote areas.
- The number of hospitals and hospital beds has decreased in Albania in the past years, but the bed occupancy rate is still low.
- In the past year, there has been a significant progress in health technology in Albania including provision of adequate computed tomography, radiotherapy and mammography units.

*Coverage for essential health care services:*

- Virtually all births in Albania are attended by skilled health personnel.
- The overall childhood immunization coverage is very high (99%).
- The prevalence of unmet need for family planning in Albania was, on average, 13% during 2006-2012. For the same time period, the prevalence of contraceptive use was 69%.
- The larger majority of women (97%) had at least one antenatal care visit during 2006-2013, whereas 67% of them had at least four such visits.

*Health expenditure:*

- In 2011, the total expenditure on health in Albania as a share of GDP was 6%. About 10% of the total government expenditure in Albania was spent on health. Social security expenditure constituted 74% of government expenditure on health in Albania in 2011.
- Per capita expenditure on health in Albania has increased significantly in the past decade. Yet, the Albanian health sector remains underfinanced.

*Health inequities:*

- In 2008-09, under-five mortality rate was considerably higher in rural areas than in urban areas of Albania (28 vs. 13, per 1,000 live births) and especially in the lower-income group than in the higher-income category (34 vs. 13, per 1,000 live births) (ADHS, 2010).
- In 2008-09, under-five mortality rate and stunting were significantly more concentrated among the poor. Conversely, proper antenatal care, skilled birth attendance and contraceptive use were all significantly more concentrated among the better-off population subgroup (World Bank, 2012).
- Furthermore, based on the analysis of stunting across wealth quintiles in 2000, 2005 and 2010, there is evidence that alongside the reduction of stunting prevalence in absolute numbers, the equity gap has increased in Albania.

In summary, the burden of chronic diseases such as cancer, cardiovascular diseases, diabetes and COPD are a central point of concern in Albania with a potential further increase in the next decades, if serious countermeasures will not take place. Apart from lining up an efficient, accessible and affordable healthcare system, chances exist in preventing young people from smoking, alcohol abuse, taking too little physical exercise and employing unhealthy diets, which all contribute to the future burden of chronic diseases in Albania. Interventions to reverse the NCD trends should start in early childhood with improved infant and young child feeding practices and, even earlier, with the provision of care for all pregnant women in the early stages of pregnancy.

The health information system of Albania needs serious revival and renewal to allow for an adequate management and assessment of the Albanian health system. This includes the implementation and monitoring of preventive interventions and of essential steps in healthcare renewal or reform.

Better statistics, regular health surveys and improved healthcare administrative data will allow for better research into the quality of the Albanian health system which in turn can support better evidence-based health policy making and priority setting.

Indeed, at least for Albania, there is too little adequate information regarding the patterns of lifestyle characteristics and other individual risk factors and their division within the country and the general population. Therefore, there is a pressing need for regular health interview surveys in Albania and occasional in-depth studies in the form of health examination surveys. These studies should be conducted in close

collaboration with universities and other scientific and research institutions to further strengthen the epidemiological capacities of the Albanian research community.

A strong public health system is needed to protect against health risks and promote and facilitate healthy behavior in the Albanian population. A strong healthcare system, staffed with sufficient and appropriately trained personnel, must provide adequate and equal access to quality care. Finally, special emphasis is needed to combat inequities in health outcomes and in access to care and prevention that exist within the country.

Focusing on chronic diseases will combat the major burden of disease and secure a better health in the future. This does not mean, however, that other existing health issues should be neglected. Fighting infectious diseases, among which AIDS and tuberculosis, reducing drug abuse, eradicating serious poverty, inappropriate housing conditions and unacceptable risks at the workplace, as well as improving the conditions and care during pregnancy and childbirth should remain on the public health agenda of Albania as well.

In conclusion, this report may serve as a baseline document for both the current assessment of health status of the Albanian population and cross-national comparison with neighboring countries and beyond, as well as for monitoring future trends in morbidity and mortality rates within the Albanian population. These can provide valuable clues and input to decision-makers and policymakers for their priority setting.

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## ACRONYMS

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<b>ADHS:</b>	Albanian Demographic and Health Survey
<b>BMI:</b>	Body Mass Index
<b>CHD:</b>	Coronary Heart Disease
<b>CI:</b>	Confidence Interval
<b>CMR:</b>	Crude Mortality Rate
<b>COPD:</b>	Chronic Obstructive Pulmonary Disease
<b>CVD:</b>	Cardiovascular Diseases
<b>DALY:</b>	Disability-Adjusted Life Years
<b>GBD:</b>	Global Burden of Disease
<b>HBP:</b>	High Blood Pressure
<b>HDI:</b>	Human Development Index
<b>HFA:</b>	Health For All
<b>HLE:</b>	Healthy Life Expectancy
<b>IHD:</b>	Ischemic Heart Disease
<b>IHME:</b>	Institute for Health Metrics and Evaluation
<b>INSTAT:</b>	Institute of Statistics
<b>IPH:</b>	Institute of Public Health
<b>LE:</b>	Life Expectancy
<b>LFS:</b>	Labor Force Survey
<b>LRI:</b>	Lower Respiratory Infections
<b>LSMS:</b>	Living Standard Measurement Survey
<b>MICS:</b>	Multiple Indicator Cluster Survey
<b>NCD:</b>	Non-Communicable Diseases
<b>RHS:</b>	Reproductive Health Survey
<b>SEE:</b>	South Eastern Europe
<b>SMR:</b>	Standardized Mortality Rate
<b>UN:</b>	United Nations
<b>UNFPA:</b>	United Nations Population Fund
<b>UNICEF:</b>	United Nations Children's Fund
<b>WB:</b>	World Bank
<b>WHO:</b>	World Health Organization

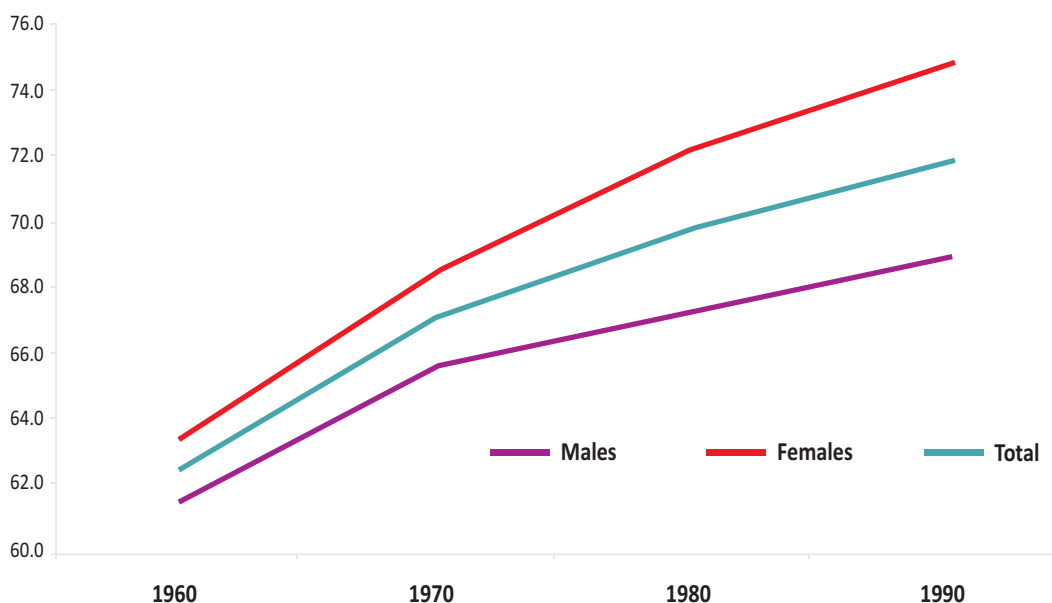
# 1. BACKGROUND

## 1.1. “Historical” notes

Albania is a small country located in Europe in the Western Balkans with a total surface of about 29 thousand km<sup>2</sup> and a population of about three million inhabitants, most of whom are ethnic Albanians.

Until 1990, Albania was considered a unique country in the Western Balkans because it was governed under one of the most rigid Stalinist regimes in Central and Eastern Europe. In its 45-year hermetic isolation during the communist era, Albania was one of the poorest countries in Europe (Nuri B et al., 2002). Notwithstanding the lack of reliable reports and well-documented sources of information, life expectancy is said to have increased from 62.6 years in 1960 to about 70.0 years in 1980s (Figure 1).

Figure 1. Life expectancy in Albania during 1960-1990  
(source: <http://www.worldlifeexpectancy.com/country-health-profile/albania>)



This inconsistency during the communist rule – that is a relatively high life expectancy in the poorest country in Europe – has been referred to as the “*Albanian paradox*” (Gjonca A et al., 1997). Regrettably, there are no official data about the prevalence of smoking in Albanian adults during the communist era. It may be conceivable that

cigarettes were not affordable – at least to some extent – for all Albanian adults in the context of absolute poverty. Furthermore, the relatively satisfactory life expectancy in Albania has been linked to the existence of a traditional Mediterranean dietary pattern which has beneficial health effects especially with regard to cardiovascular morbidity and mortality. The Albanian diet has been conventionally high in fruit and vegetables. In the past two decades though many components of the traditional Mediterranean diet in Albania are gradually being replaced – at least to some extent – by processed foods which are rich in salt, sugar and saturated fats (Burazeri G et al., 2011). This may increase cardiovascular health risks.

After the breakdown of the communist regime in early 1990s, the Albanian economy collapsed. Subsequently, a market-oriented economic system appeared which was associated with many social, cultural and economic reforms, similar to the transition process evident in the other former communist countries in Central and Eastern Europe (Nuri B et al., 2002). Unfortunately, the Albanian pace of development has been periodically destabilized in the past two decades. First, the so-called “1997 turmoil” appeared which was due to the collapse of savings schemes referred to as “pyramids”, where almost two-thirds of the Albanian population participated and became victims of fraudulent schemes. It is estimated that the overall loss exceeded one billion \$US and the Albanian total Gross Domestic Product (GDP) at that time was not more than 2.5 billion \$US (Nuri B et al., 2002). The political and socio-economic consequences of the “pyramid” collapse were enormous. Subsequently, the Albanian transition was largely affected by the devastating war in Kosovo in 1999.

Furthermore, the rapid process of transition in Albania over the past two decades has been associated with an intensive process of migration, both internal (from rural areas to urban areas of the country) and external (mostly to the neighboring countries such as Greece and Italy). Migration may cause increased ageing, thereby enhancing the general and already existing ageing effect on healthcare utilization (i.e., the relative care needs of the Albanian population). As a matter of fact, notwithstanding the international financial crisis, the relatively poor economic situation and the lack of rapid economic expansion due to limited domestic resources continue to encourage Albanian adults to emigrate. Nonetheless, remittances from emigrants have decreased and, therefore, the Albanian economy has to gradually seek other sources of financial recovery.

## **1.2. Demographic and socioeconomic characteristics of the Albanian population**

According to the last census conducted by the national Institute of Statistics (INSTAT), the overall population of Albania on 1 October 2011 was 2,8 million inhabitants (INSTAT, 2012). According to INSTAT, during the past decade, the annual number of births has decreased considerably (from about 53 thousand in 2001 to about 34 thousand in 2014). On the other hand, the annual number of deaths has remained stable at around 20 thousand (INSTAT, 2014). Overall, there is evidence of a positive natural population

increase in Albania which, nevertheless, exhibits a decreasing trend in the past decade, most probably due to the decline in fertility rate (INSTAT, 2014). The mean age of the Albanian population in 2011 was 35.3 years, with an increase of almost six years compared with the previous census conducted in 2001 (INSTAT, 2001). This demographic transition is reflected in an increase of the older population subgroup. Hence, in 2011, the proportion of individuals aged 65 years and over increased to 11%. Conversely, the share of individuals under 15 years old decreased to 21% (INSTAT, 2012).

The last census asking about religious affiliation in Albania was conducted in 2011 and reported that 56.7% of the population consider themselves as Muslims, 10.0% as Roman Catholic and 6.8% as Orthodox Christian (INSTAT, 2012). These findings should be interpreted with caution though given the high non-response to the question on self-perceived religious affiliation.

The real GDP per capita (i.e., GDP adjusted for purchase power) in Albania was about \$9,400 US in 2012, which is comparable only to Bosnia and Herzegovina, but lower than the other neighboring countries including Macedonia, Serbia and especially Montenegro which has the highest GDP in the Western Balkans region (World Health Organization [WHO], Health for All [HFA] database, 2014). Yet, the Albanian human development index (HDI) – a composite scale consisting of a long and healthy life, access to knowledge and a decent standard of living – was 0.75 in 2012, which is higher than Bosnia and Herzegovina and Macedonia, but lower than Serbia and Montenegro (WHO, HFA database, 2014).

Since the early 1990s, the transition process in Albania was accompanied by a sharp rise in unemployment, regardless of the official figures which are known to underestimate the actual rate of unemployment (Nuri B et al., 2002). According to a recent Labor Force Survey (LFS), the unemployment rate in the Albanian population aged 15 years and above was 15.9% in 2013 (17.8% in men and 13.5% in women) (INSTAT, 2014). The official unemployment rate in the neighboring countries ranges from a minimum of about 20% (in Montenegro) to a maximum of 31% (in Macedonia). Unemployment creates income differences, which are known to potentially cause health differences.

According to a recent Living Standard Measurement Survey (LSMS) conducted in Albania in 2012, literacy rate in the population aged 15 years and above was 98.4% in men and 96.1% in women, which resembles the literacy rate observed in the other countries of the Western Balkans (ranging from 97% to 98% according to WHO, HFA database, 2014). In general, higher literacy is associated with better health.

### **1.3. Aim of the current health report**

In Albania, the particularly rapid transition towards a democratic regime and a free economy is associated with significant socioeconomic and cultural changes which may have an impact on health. Yet, to date, there are no comprehensive reports informing about the health status of the Albanian population in the past two decades.

In this context, the aim of this health report is to provide a broad overview of the current health status of the population of Albania. More specifically, this report seeks



to describe mortality and morbidity patterns which the Albanian population has experienced in the past few years. In addition, the report will highlight the major risk factors and other determinants of disease and death in the Albanian population. Also, the report will briefly describe health care resources, workforce distribution, health care utilization and the costs involved in the Albanian health sector.

However, by no means, this report is meant to be exhaustive and, therefore, other sources of information and recent publications pertinent to Albania should be sought by interested professionals and policymakers to get a broader and more detailed picture.

This report aims to serve as a baseline document for both the current assessment of health status of the Albanian population and cross-national comparison with the neighboring countries and beyond, and for monitoring future trends in morbidity and mortality rates within the Albanian population which can provide valuable clues and input to decision-makers and policymakers for their priority setting.

## 2. METHODOLOGY

A desk review of the main (official) sources of information about health status and health care system in Albania was undertaken to provide the basis for the current health report. International sources of information consisted mainly of the Global Burden of Disease (GBD) 2010 Study coordinated by the Institute for Health Metrics and Evaluation (IHME) in Seattle, USA (<http://www.healthdata.org/>) and reports and data from WHO and other United Nation (UN) agencies. Domestic sources of information included the official reports published by INSTAT (all available at: <http://www.instat.gov.al/al/home.aspx>), the Albanian Ministry of Health (<http://shendetesia.gov.al/>) and the Albanian Institute of Public Health (IPH) (<http://www.ishp.gov.al/>).

### 2.1. Sources of information

Table 1 summarizes the main sources of information which were used for the compilation of the current health report for Albania.

**Table 1. Main sources used for the current report on the health status of the Albanian population**

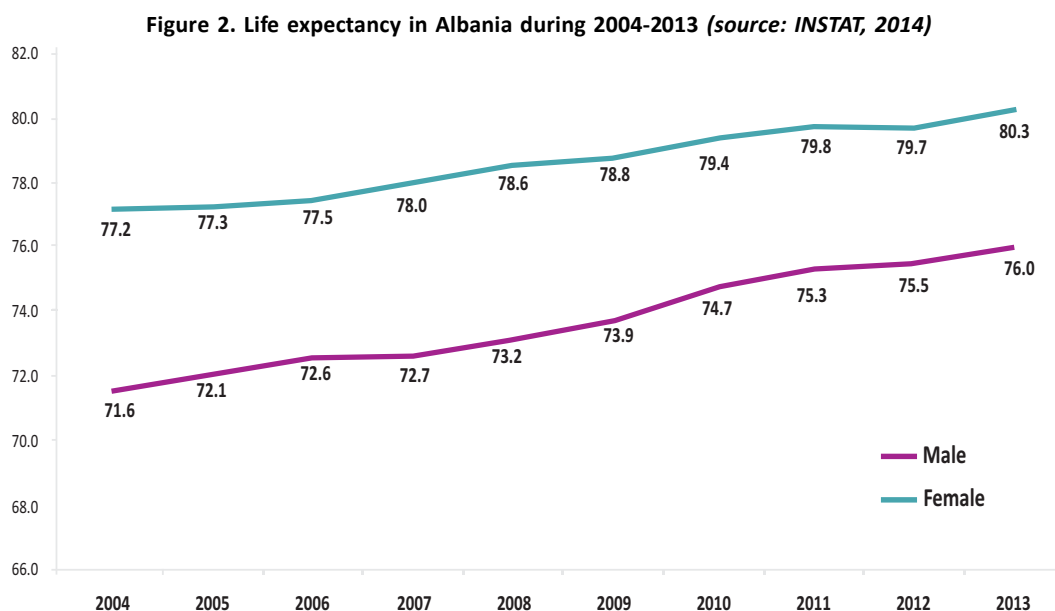
SOURCE	REFERENCE
<i>Global Burden of Disease</i>	Institute for Health Metrics and Evaluation (IHME). GBD Database. Seattle, WA: IHME, University of Washington, 2014. Available from: <a href="http://www.healthdata.org/search-gbd-data?s=albania">http://www.healthdata.org/search-gbd-data?s=albania</a> (Accessed: November 23, 2014)
<i>World Health Statistics</i>	WHO (2014). Available from: <a href="http://www.who.int/gho/countries/alb/en/">http://www.who.int/gho/countries/alb/en/</a> (Accessed: November 23, 2014)
<i>Global Health Observatory Data Repository</i>	WHO (2014). Available from: <a href="http://apps.who.int/gho/data/node.country.country-ALB?lang=en">http://apps.who.int/gho/data/node.country.country-ALB?lang=en</a> (Accessed: November 23, 2014)
<i>Health for all Database</i>	WHO (2014). European Health for All database (HFA-DB). Available from: <a href="http://www.euro.who.int/en/data-and-evidence/databases/european-health-for-all-database-hfa-db">http://www.euro.who.int/en/data-and-evidence/databases/european-health-for-all-database-hfa-db</a> (Accessed: November 23, 2014)
<i>World Life Expectancy</i>	Available from: <a href="http://www.worldlifeexpectancy.com/country-health-profile/albania">http://www.worldlifeexpectancy.com/country-health-profile/albania</a> (Accessed: November 23, 2014)
<i>Healthy life expectancy for 187 countries, 1990-2010</i>	Salomon JA, et al. Healthy life expectancy for 187 countries, 1990-2010: a systematic analysis for the Global Burden Disease Study 2010. <i>Lancet</i> 2012;380:2144-62
<i>Albanian Institute of Statistics (INSTAT)</i>	URL: <a href="http://www.instat.gov.al/al/home.aspx">http://www.instat.gov.al/al/home.aspx</a>
<i>Census, 2011</i>	INSTAT (2012). Population and housing census, 2011. Available from: <a href="http://www.instat.gov.al/media/178070/rezultatet_kryesore_t_censusit_t_popullsis_dhe_banesave_2011_n_shqip_ri.pdf">http://www.instat.gov.al/media/178070/rezultatet_kryesore_t_censusit_t_popullsis_dhe_banesave_2011_n_shqip_ri.pdf</a> (Accessed: November 23, 2014)
<i>Women and men in Albania, 2014</i>	INSTAT (2014). Women and men in Albania, 2014. Available from: <a href="http://www.instat.gov.al/media/257796/femra_e_meshkuj_2014.pdf">http://www.instat.gov.al/media/257796/femra_e_meshkuj_2014.pdf</a> (Accessed: November 23, 2014)
<i>Albanian Demographic and Health Survey, 2008-09</i>	Institute of Statistics, Institute of Public Health (Albania) and ICF Macro (2010). Albania Demographic and Health Survey 2008-09. Tirana, Albania: Institute of Statistics, Institute of Public Health and ICF Macro.
<i>Albanian Reproductive Health Survey, 2002</i>	Institute of Public Health (2005). Albania Reproductive Health Survey, 2002. Available from: <a href="http://ghdx.healthdata.org/record/albania-reproductive-health-survey-2002">http://ghdx.healthdata.org/record/albania-reproductive-health-survey-2002</a> (Accessed: November 23, 2014)

Other (very useful) sources of information were also reviewed which are not listed in Table 1 (for a comprehensive list of all sources of information included in the current report, readers should refer to the “Bibliography” chapter at the end of this report).

## 3. MORTALITY INDICATORS

### 3.1. Life expectancy

According to the Albanian national Institute of Statistics (INSTAT, 2014), life expectancy at birth in Albania in 2013 was 76.0 years in males and 80.3 years in females (Figure 2). In the past decade, there was evidence of a steady increase in both sexes. However, in the past ten years, life expectancy increased 4.4 years in males, but only 3.1 years in females.



However, there is a huge discrepancy between the official data provided by INSTAT and the WHO estimates available from the World Health Statistics, 2014. According to WHO estimates, life expectancy in Albania in 2012 was 73.0 years in males and 75.0 years in females (Table 2), whereas according to INSTAT these figures were 75.5 years and 79.7 years, respectively (Figure 2). As already addressed in several publications, WHO states that official national reports tend to overestimate life expectancy in Albania due to the under-registration of death cases in this country (WHO, HFA database, 2014).

Compared with the neighboring countries, the estimated life expectancy in Albania in 2012 was the lowest in the region among females (75 years vs. 83 years in Greece, which exhibited the highest female life expectancy in the region) (Table 2). Regarding male

life expectancy, in 2012, the lowest value was observed in Serbia (72 years) followed by Albania, Macedonia and Montenegro (73 years). Regardless of these regional discrepancies, a remarkable difference compared with the other neighboring countries is the particularly small female-to-male gap in life expectancy in Albania, which in 2012 was only two years, whereas in the other neighboring countries it varied from five years (for most of the countries) to seven years (in Croatia) (Table 2). Again, this suggests that smoking was not very frequent in Albanian males a few decades ago. Some evidence from the WHO (HFA database) suggests that lung cancer mortality for Albania in 1980s was much lower than in many other European countries. The male-to-female difference in life expectancy in Eastern European countries is strongly influenced by risk differences mainly smoking, alcohol abuse and road traffic accidents (WHO, HFA database, 2014).

**Table 2. Life expectancy at birth for selected years in Albania and the neighboring countries (source: WHO, World Health Statistics, 2014)**

Life Expectancy (at birth)	Year: 1990			Year: 2000			Year: 2012		
	Male	Female	Both	Male	Female	Both	Male	Female	Both
<b>Albania</b>	<b>67</b>	<b>71</b>	<b>69</b>	<b>68</b>	<b>73</b>	<b>70</b>	<b>73</b>	<b>75</b>	<b>74</b>
Bosnia and Herzegovina	70	75	73	72	78	75	75	80	77
Croatia	69	76	73	71	78	74	74	81	78
Greece	75	80	77	76	81	78	78	83	81
Macedonia	70	75	72	71	76	73	73	78	76
Montenegro	73	79	76	72	77	75	73	78	76
Serbia	69	75	72	69	75	72	72	77	75
Slovenia	70	78	74	72	80	76	77	83	80

However, there are also discrepancies in life expectancy estimates for Albania between different data sources. Table 3 presents the GBD 2010 estimates for the overall life expectancy and healthy life expectancy at birth in Albania and other countries in the region.

Notably, in 1990, the estimated overall life expectancy in males was 70.4 years (Salomon JA et al., 2014) with a 95% confidence interval (CI) of 69.9-70.8 years (Table 3) which excludes the WHO estimate of 67.0 years (Table 2). Similarly, GBD 2010 estimate for female life expectancy in Albania in 1990 was 76.0 years (95%CI=75.5-76.5 years; Table 3), excluding the WHO estimate of 71.0 years (Table 2).

According to GBD 2010 estimates, in 2010, life expectancy in Albania was 72.0 years in males and 78.1 years in females, with a sex-gap of about six years, which is more similar to the female-to-male differences in the neighboring countries (Table 3).

The GBD 2010 estimate for the Albanian females somehow resembles the official report from INSTAT (79.4 years), but less so for the male population (74.7 years) (INSTAT, 2014). Interestingly, with the exception of Greece, the GBD 2010 estimates for life expectancy in 1990 place the Albanian men on top of the region after Montenegro, a finding which is not evident for women (Table 3, upper panel). Traditionally, it has been reported that the Albanian diet has resembled the Mediterranean prototype which – among other

things – has been linked to beneficial health effects (Gjonca et al., 1997). Nonetheless, the situation could be much more complex and explaining ageing populations is a difficult endeavor. This may include e.g. a cohort effect where only resilient individuals have survived, or a cohort of people that have not met famine, or war.

On the other hand, in 2010, the estimated life expectancy in Albanian males was the lowest in the region (72.0 years), whereas among females the estimated figure was close to Montenegro and Bosnia and Herzegovina (Table 3, lower panel).

As for the female-to-male differences in life expectancy, Greece aside, the estimated gap has narrowed from 1990-2010 for almost all the countries in the region, except for Albania where the estimated sex-gap has increased by 0.5 years (Figure 3).

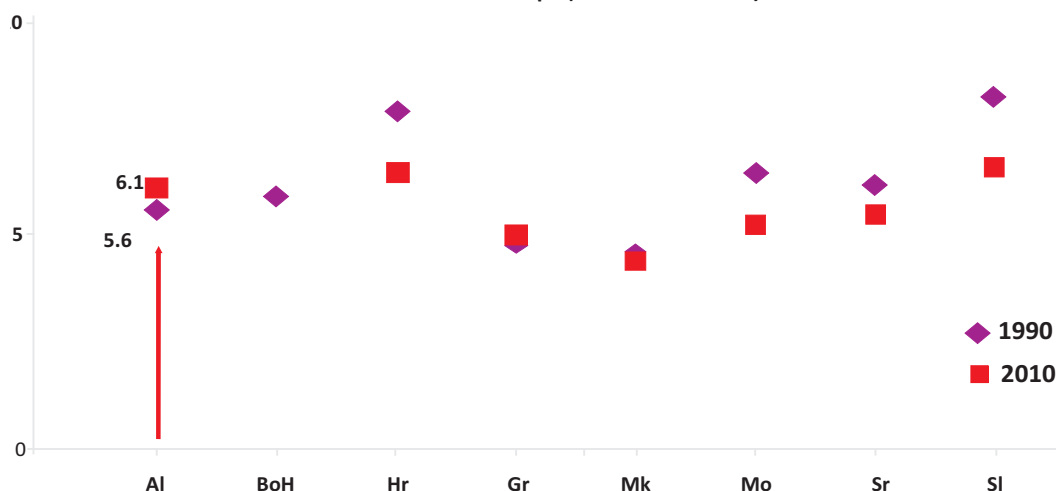
**Table 3. GBD 2010 estimates for the overall life expectancy (LE) and healthy life expectancy (HLE) at birth in Albania and the neighboring countries (source: Salomon JA et al., 2014)**

Country	Upper panel: Year 1990			
	Males		Females	
	LE	HLE	LE	HLE
<b>Albania</b>	<b>70.4 (69.9–70.8)</b>	<b>61.1 (59.1–63.0)</b>	<b>76.0 (75.5–76.5)</b>	<b>65.0 (62.6–67.1)</b>
Bosnia and Herzegovina	68.9 (68.7–69.1)	59.8 (57.8–61.5)	74.8 (74.6–75.0)	63.7 (61.3–65.8)
Croatia	67.9 (67.7–68.1)	59.1 (57.4–60.6)	75.9 (75.6–76.1)	64.6 (62.3–66.6)
Greece	74.5 (74.3–74.6)	65.0 (62.9–66.8)	79.4 (79.2–79.5)	68.0 (65.7–70.2)
Macedonia	68.7 (68.3–69.0)	59.8 (57.9–61.6)	73.3 (72.9–73.7)	62.8 (60.3–64.9)
Montenegro	71.1 (69.4–72.8)	61.8 (59.4–64.3)	77.6 (76.2–79.0)	65.3 (62.3–67.9)
Serbia	70.6 (69.0–72.2)	61.1 (58.5–63.4)	76.7 (75.3–78.1)	65.0 (62.3–67.4)
Slovenia	68.9 (68.7–69.2)	60.3 (58.5–61.8)	77.1 (76.8–77.3)	66.1 (63.7–68.1)

Country	Lower panel: Year 2010			
	Males		Females	
	LE	HLE	LE	HLE
<b>Albania</b>	<b>72.0 (69.2–74.9)</b>	<b>62.5 (59.7–65.3)</b>	<b>78.1 (75.9–80.2)</b>	<b>67.0 (64.4–69.7)</b>
Bosnia and Herzegovina	74.1 (73.9–74.4)	64.4 (62.3–66.2)	78.8 (78.5–79.0)	68.1 (65.8–70.2)
Croatia	73.4 (73.2–73.6)	63.6 (61.5–65.4)	79.9 (79.7–80.1)	68.3 (65.9–70.3)
Greece	77.1 (76.8–77.4)	67.0 (64.7–68.8)	82.1 (81.9–82.4)	70.4 (68.0–72.5)
Macedonia	72.8 (72.5–73.0)	63.2 (61.0–65.2)	77.2 (77.0–77.5)	66.4 (64.0–68.4)
Montenegro	73.0 (72.2–73.6)	63.3 (61.1–65.3)	78.2 (77.5–78.9)	66.1 (63.4–68.4)
Serbia	74.0 (73.7–74.2)	64.0 (61.9–66.0)	79.5 (79.2–79.8)	68.0 (65.5–70.2)
Slovenia	75.9 (75.6–76.2)	65.7 (63.6–67.6)	82.5 (82.2–82.9)	70.7 (68.3–72.9)

Figure 3. Female-to-male life expectancy differences in 1990 and 2010 in countries of South Eastern Europe (Source: GBD 2010)



In brief, life expectancy data point to the need for a better quality health data registration in Albania, especially for mortality and causes of death. E.g., a five-year difference in life expectancy equals a twofold higher mortality risk at every age.

### 3.2. Overall mortality rate

According to INSTAT, the number of registered deaths in Albania has remained stable over the past few years, with an average of about 20 thousand deaths per year (INSTAT, 2014). This is somehow lower than the GBD 2010 report for Albania, which estimated an overall number of deaths of 22,659 in 2010 (13,003 deaths in males and 9,656 in females). According to GBD 2010 study, the overall crude mortality rate (CMR) in Albania in 2010 was around 708 per 100,000 population (812 in males and 604 in females) (Table 4). In 1990, the sex-pooled CMR in Albania was lower (about 503 deaths per 100,000) (GBD, 2010). Furthermore, in line with the increasing aging of the Albanian population, there is evidence of a linear trend in the increase of CMR too (Table 4).

Table 4. Crude death rate (per 100,000; all ages) in Albania in selected years (source: GBD, 2010)

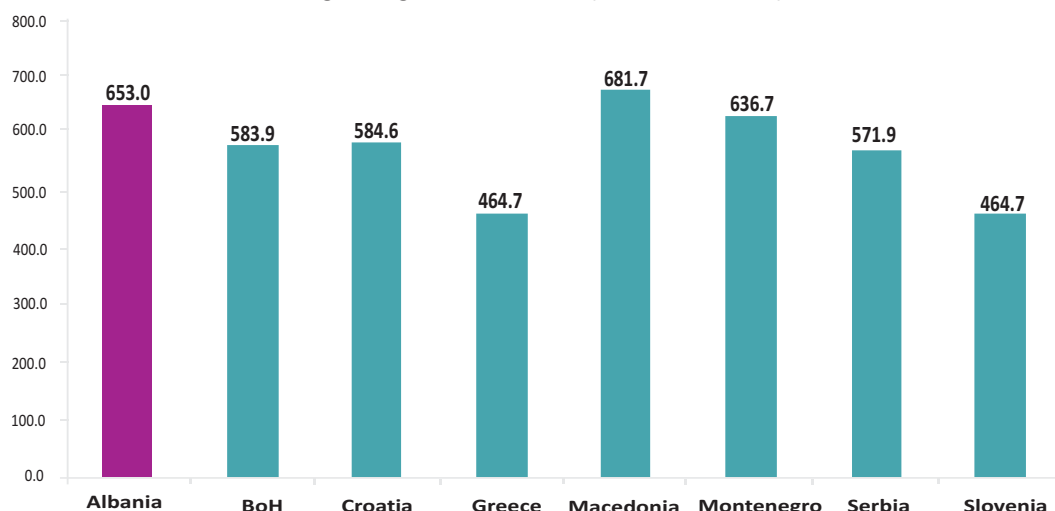
Sex	Year: 2010		Year: 2005	
	Average rate	95%CI	Average rate	95%CI
Males	812.0	731.8-906.9	766.2	735.7-801.1
Females	604.0	525.8-676.9	582.1	541.3-610.0
Both sexes	708.1	656.5-766.8	674.0	649.1-697.1

Sex	Year: 2000		Year: 1990	
	Average rate	95%CI	Average rate	95%CI
Males	726.6	706.3-746.3	550.2	529.8-567.1
Females	527.8	503.2-543.7	453.1	436.6-471.6
Both sexes	627.0	611.0-641.1	502.9	488.6-516.6

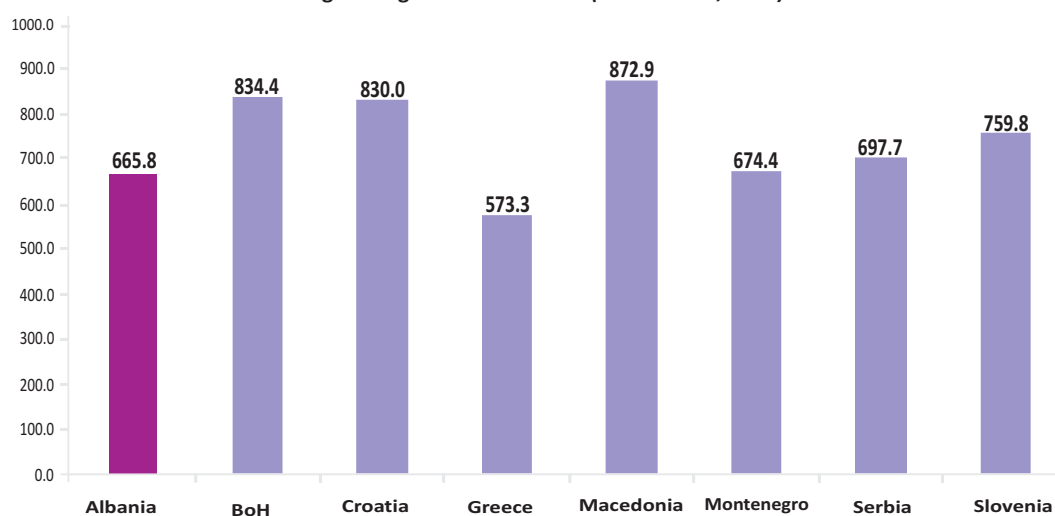
According to GBD 2010 Study, the sex-pooled age-standardized mortality rate (SMR) in Albania in 2010 was 653 per 100,000 population, which is remarkably higher than Greece and Slovenia (465 in each), but comparable to Montenegro and Macedonia (637 and 682, respectively) (Figure 4).

**Figure 4. Age-standardized overall death rate (per 100,000) in Albania and in the neighboring countries in 2010 (source: GBD, 2010)**



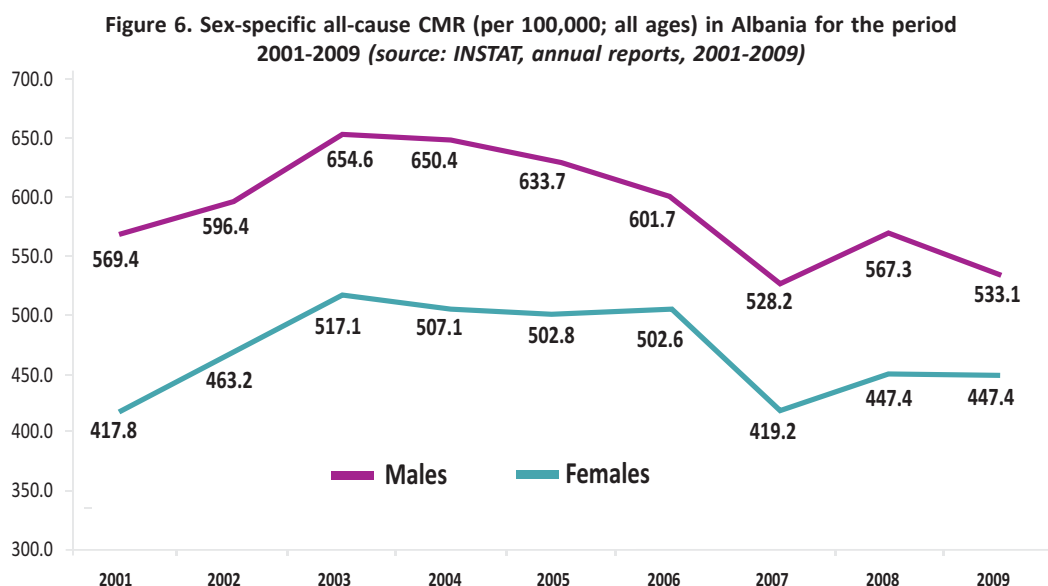
In 1990, interestingly, the overall age-standardized mortality rate in Albania was the lowest in the region, except Greece (Figure 5). As mentioned earlier, one of the possible explanations for this “paradox” (that is the low mortality rate in the impoverished Albania during communist rule) may relate to the employment of a Mediterranean diet which is assumed to have been particularly protective against cardiovascular deaths (Gjonca et al., 1997).

**Figure 5. Age-standardized overall death rate (per 100,000) in Albania and in the neighboring countries in 1990 (source: GBD, 2010)**





On the other hand, according to the official reports from INSTAT, the overall mortality rate in Albania in 2009 was about 533 and 447 (per 100,000 population) in males and females, respectively (Figure 6). These figures are somehow comparable with the GBD estimates for the year 2010. Conversely, the GBD estimates for the year 2000 (about 727 and 528 per 100,000 population in males and females, respectively – Table 4) differ considerably from the INSTAT report for the year 2001 (about 569 and 418 per 100,000 for males and females, respectively) (Figure 6).



In summary, the overall mortality estimates for Albania point to serious inconsistencies between different data sources (national official statistics vs. international estimates). Furthermore, surprisingly, national data as published by INSTAT fluctuate enormously. Among other things, this may be due to the lack of quality assurance mechanisms for data recording and processing.

### 3.3. Cause-specific mortality rates

In 2008, non-communicable diseases (NCDs) in Albania accounted for about 89% of all deaths (59% cardiovascular diseases [CVD] and 18% cancer (NCD country profiles, WHO, 2011). Based on data from GBD study, in 2010, the sex-pooled proportional mortality for NCDs in Albania was about 88% (86% in males and 90% in females). CVD accounted for about 55% of all deaths (51% in males and 61% in females) (GBD, 2010).

#### Ischemic heart disease

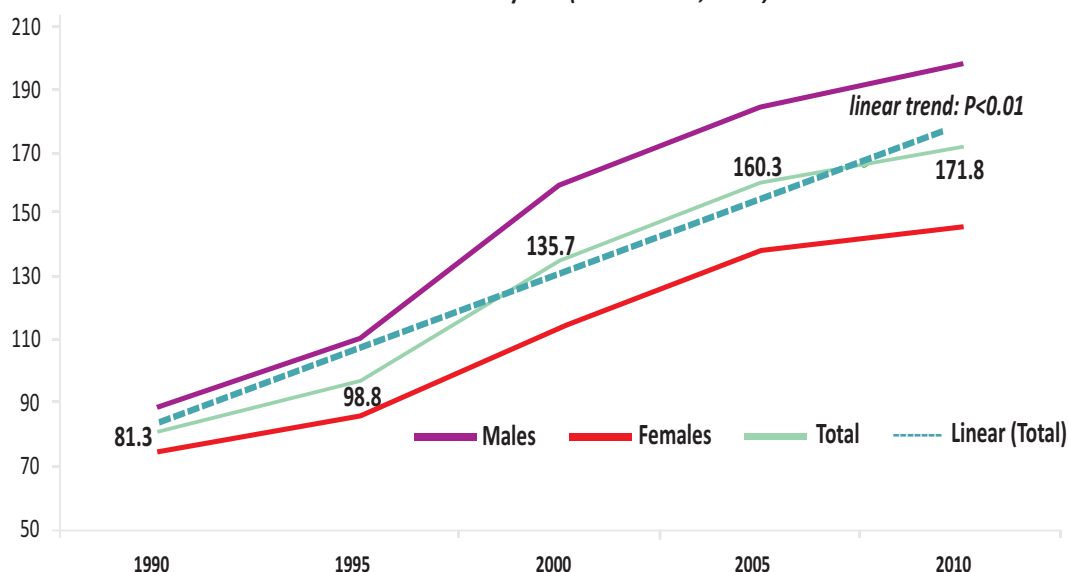
According to GBD 2010 study, there is evidence of a steady increase in the mortality rate from ischemic heart disease (IHD) in both sexes. Hence, in 2010, there was a twofold increase in the death rate from IHD in both males and females compared with the year 1990 (Table 5).

**Table 5. CMR (per 100,000; all ages) from ischemic heart disease in Albania in selected years (source: GBD, 2010)**

Sex	Year: 2010		Year: 2000		Year: 1990	
	Average rate	95%CI	Average rate	95%CI	Average rate	95%CI
<b>Males</b>	198.6	158.3-219.4	159.1	141.5-167.6	89.7	83.0-104.2
<b>Females</b>	144.9	112.8-162.2	112.5	97.7-118.9	72.4	67.0-86.3
<b>Both sexes</b>	171.8	146.8-185.4	135.7	124.4-141.0	81.3	76.3-91.5

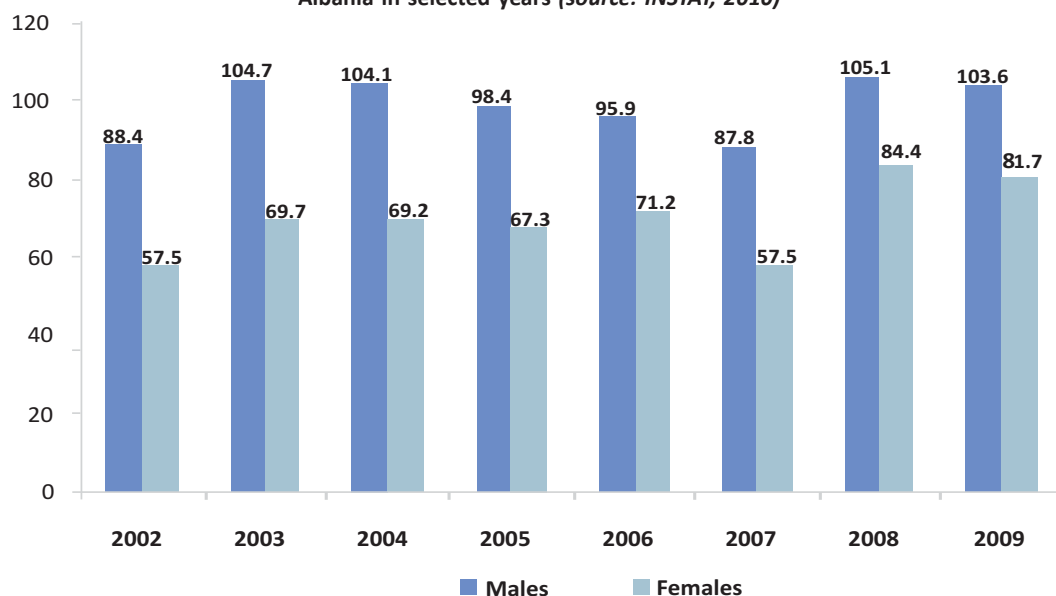
As a matter of fact, a detailed analysis including 5-year bands from 1990-2010 (GBD, 2010) reveals a sharp increase in the IHD death rate in both sexes, with evidence of a statistically significant linear trend (sex-pooled:  $P < 0.001$ ) (Figure 7).

**Figure 7. Sex-specific CMR (per 100,000; all ages) from ischemic heart disease in Albania in selected years (source: GBD, 2010)**



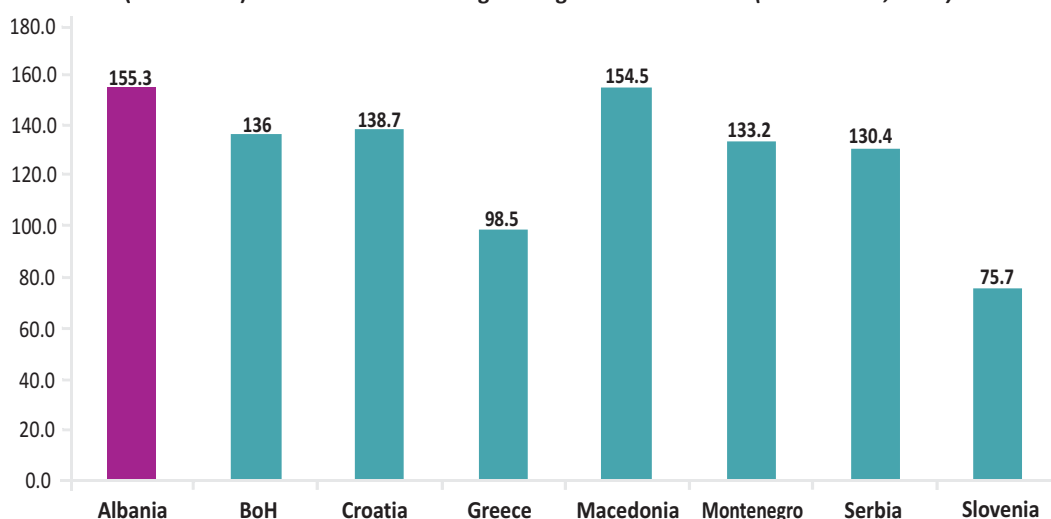
On the other hand, there is a huge discrepancy between the official reports from INSTAT and the estimates from GBD 2010 Study. Hence, according to INSTAT, the mortality rate from IHD in 2009 in Albanian males and females was about 104 and 82 (per 100,000 population), respectively (Figure 8). Especially in males, the figure reported by INSTAT was almost half of the GBD 2010 estimate (Table 5). Therefore, the official national reports from Albania should be considered with extreme caution.

Figure 8. Sex-specific CMR (per 100,000; all ages) from ischemic heart disease in Albania in selected years (source: INSTAT, 2010)



The sex-pooled age-standardized mortality rate from IHD in Albania in 2010 was 155.3 per 100,000 population – constituting the highest value in the South Eastern European (SEE) region (Figure 9). Slovenia, in particular, exhibited the lowest death rate from IHD (75.7 per 100,000 population) – a figure which is even lower than in Greece, a country which is conventionally assumed to be “cardio-protective” due to the employment of a Mediterranean diet.

Figure 9. Age-standardized mortality rate (per 100,000) from ischemic heart disease (both sexes) in Albania and the neighboring countries in 2010 (source: GBD, 2010)

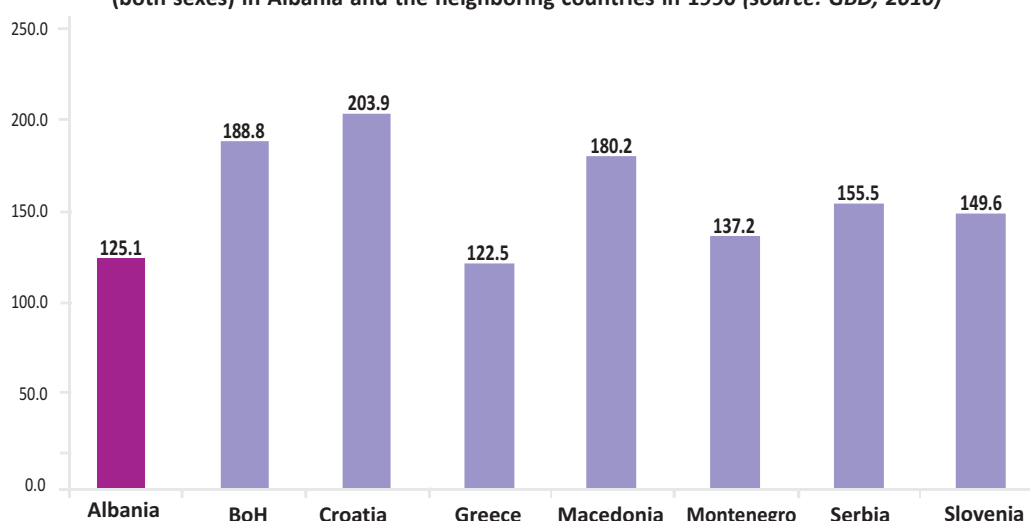


On the contrary, the IHD death rate in Albania in 1990 was the lowest in SEE region (about 125 per 100,000 population), comparable to Greece (Figure 10).

Actually, Albania is the only country in the SEE region which has experienced an increase in the mortality rate from IHD in the past two decades. This is an indication of an early stage of evolution of the coronary epidemic in transitional Albania, which was experienced many decades ago in the Western countries.

On the other hand, the progress of Slovenia is remarkable, with a twofold decrease of IHD mortality rate in the past two decades (from about 150 per 100,000 population in 1990 to about 76 per 100,000 population in 2010).

**Figure 10. Age-standardized mortality rate (per 100,000) from ischemic heart disease (both sexes) in Albania and the neighboring countries in 1990 (source: GBD, 2010)**



## Neoplasms

Based on WHO reports, in Albania, cancer accounted for 18% of all deaths in 2008 (NCD country profiles, WHO, 2011).

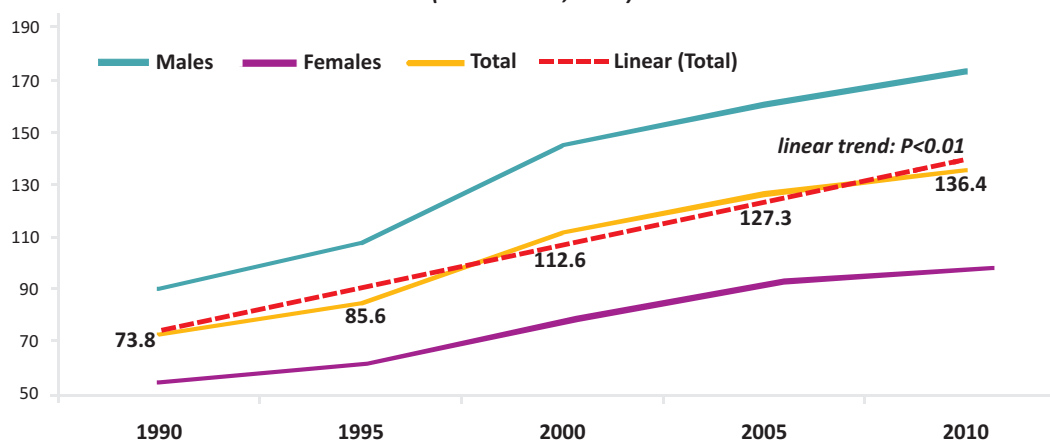
According to GBD 2010 study, there is evidence of a gradual increase in the mortality rate from neoplasms in Albania in both sexes. Thus, in 2010, the death rate from neoplasms in Albania almost doubled in both males and females compared with the year 1990 (Table 6).

**Table 6. CMR (per 100,000; all ages) from neoplasms in Albania in selected years (source: GBD, 2010)**

Sex	Year: 2010		Year: 2000		Year: 1990	
	Average rate	95%CI	Average rate	95%CI	Average rate	95%CI
<b>Males</b>	174.0	141.2-218.1	146.2	129.3-169.1	91.4	82.1-109.3
<b>Females</b>	98.8	83.1-117.4	79.3	70.3-89.1	55.2	50.1-64.2
<b>Both sexes</b>	136.4	118.3-161.5	112.6	103.2-124.5	73.8	68.2-84.1

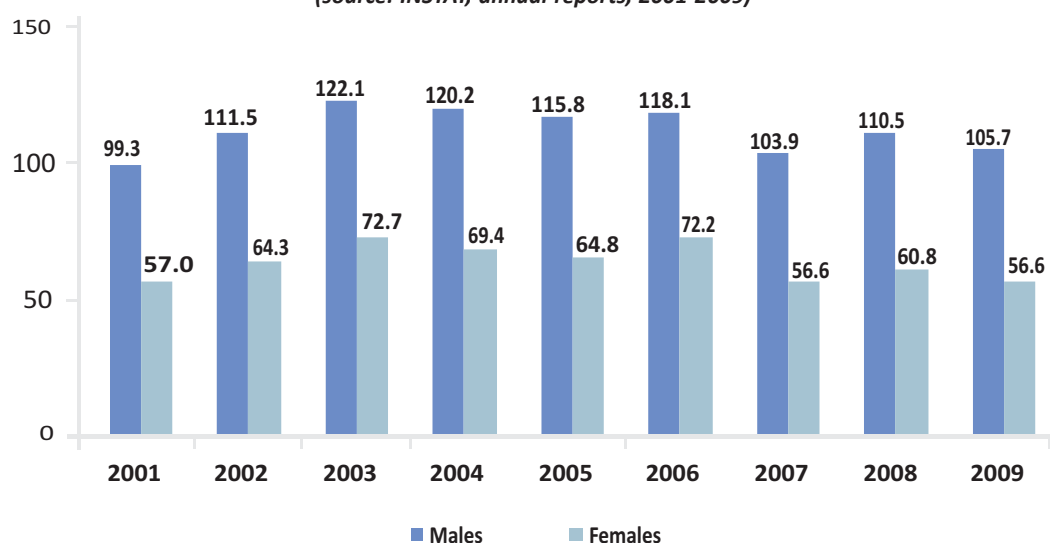
A more refined analysis including 5-year time intervals from 1990-2010 (GBD, 2010) shows a significant increasing trend in the death rate from neoplasms in both sexes, especially in the period from 1995 to 2000 (nevertheless, a sex-pooled test revealed a highly significant linear trend:  $P < 0.001$ ) (Figure 11).

Figure 11. Sex-specific CMR (per 100,000; all ages) from neoplasms in Albania in selected years (source: GBD, 2010)



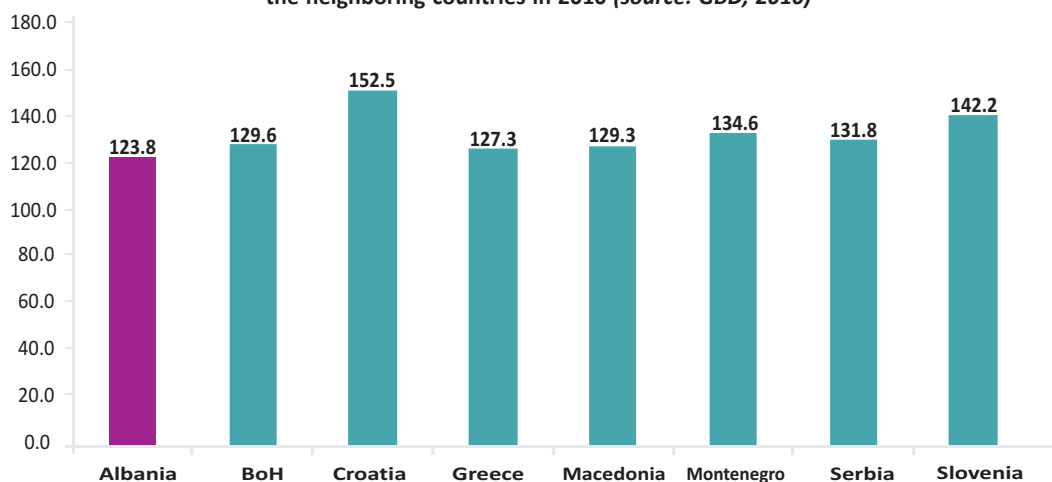
Similar to the issue of the IHD death rate, there is a big difference between the official reports from INSTAT and the estimates from GBD 2010. Thus, according to INSTAT, the mortality rate from neoplasms in 2009 in Albanian males and females was about 106 and 57 (per 100,000 population), respectively (Figure 12). The corresponding GBD 2010 estimates were around 174 and 99, respectively (Table 6). Again, the official national reports from INSTAT tend to largely underestimate death rate in the Albanian population (in this case, the overall death from neoplasms).

Figure 12. Sex-specific CMR (per 100,000; all ages) from neoplasms in Albania in selected years (source: INSTAT, annual reports, 2001-2009)



The overall age-standardized mortality rate from neoplasms in Albania in 2010 was 123.8 per 100,000 population (GBD, 2010) – placing Albania at the lowest mortality level from tumors in the SEE region (Figure 13). This is logical given the low lung cancer mortality rate in Albania, which correlates with all-cancer mortality rate (WHO, HFA database, 2014).

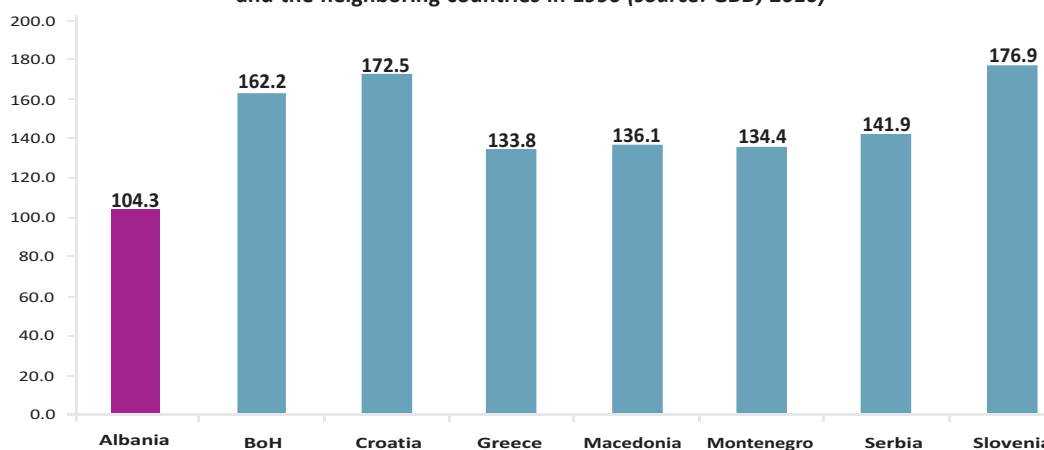
**Figure 13. Age-standardized mortality rate (per 100,000) from neoplasms (both sexes) in Albania and the neighboring countries in 2010 (source: GBD, 2010)**



In 1990, compared with the other countries in the region, Albania experienced a particularly low mortality rate from neoplasms, with about 104 deaths per 100,000 population (Figure 14).

Compared with the other countries in the region where there is evidence of a decline in the age-standardized mortality rates from neoplasms in the past two decades, Albania exhibits a reversing trend, with an increase in the death rate of about 20% in 2010 compared with 1990. Albania can keep cancer at steady relatively low levels, if smoking prevalence does not increase further, or better would decrease by increasing the price (taxes). Instead, the money generated could be effectively used for perinatal care.

**Figure 14. Age-standardized mortality rate (per 100,000) from neoplasms (both sexes) in Albania and the neighboring countries in 1990 (source: GBD, 2010)**



## Diabetes

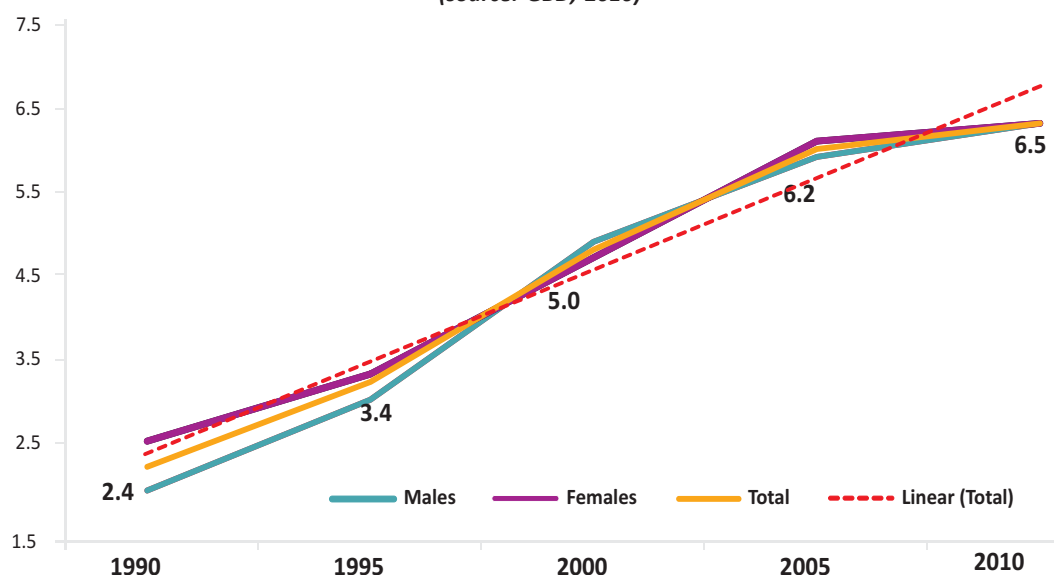
According to GBD 2010 Study, there is evidence of a gradual increase in the mortality rate from diabetes in Albania in both sexes. Thus, in 2010, there was a threefold increase in the death rate from diabetes in Albania in both males and females compared with the year 1990 (Table 7).

**Table 7. CMR (per 100,000; all ages) from diabetes in Albania in selected years (source: GBD, 2010)**

Sex	Year: 2010		Year: 2000		Year: 1990	
	Average rate	95%CI	Average rate	95%CI	Average rate	95%CI
Males	6.5	4.2-8.1	5.1	3.3-5.7	2.1	1.8-3.2
Females	6.5	4.2-7.9	4.9	3.5-5.5	2.7	2.4-3.5
Both sexes	6.5	4.9-7.5	5.0	3.9-5.4	2.4	2.2-3.1

Likewise the other aforementioned chronic diseases (namely IHD and neoplasms), a detailed analysis including 5-year time intervals from 1990-2010 (GBD, 2010) demonstrates a gradual increase in the death rate from diabetes in both sexes, especially in the period from 1995 to 2000, and less so for the period from 2005 to 2010 (Figure 15).

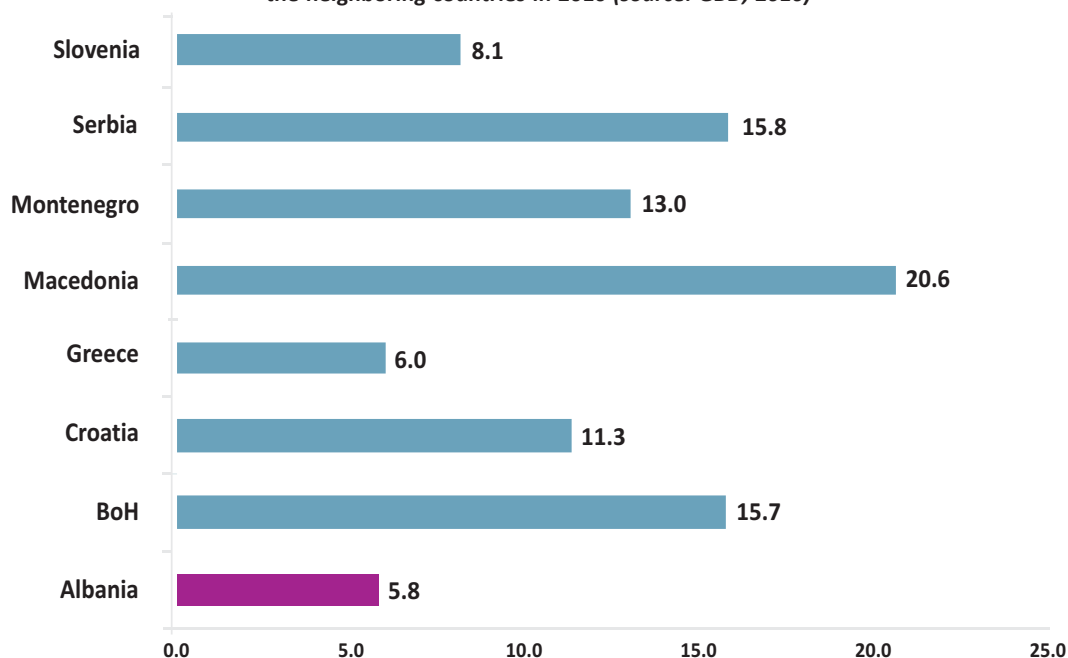
**Figure 15. Sex-specific CMR (per 100,000; all ages) from diabetes in Albania in selected years (source: GBD, 2010)**



The overall age-standardized mortality rate from diabetes in Albania in 2010 was 5.8 per 100,000 population (GBD, 2010) – positioning Albania together with Greece at the lowest mortality level from diabetes in the SEE region (Figure 16).

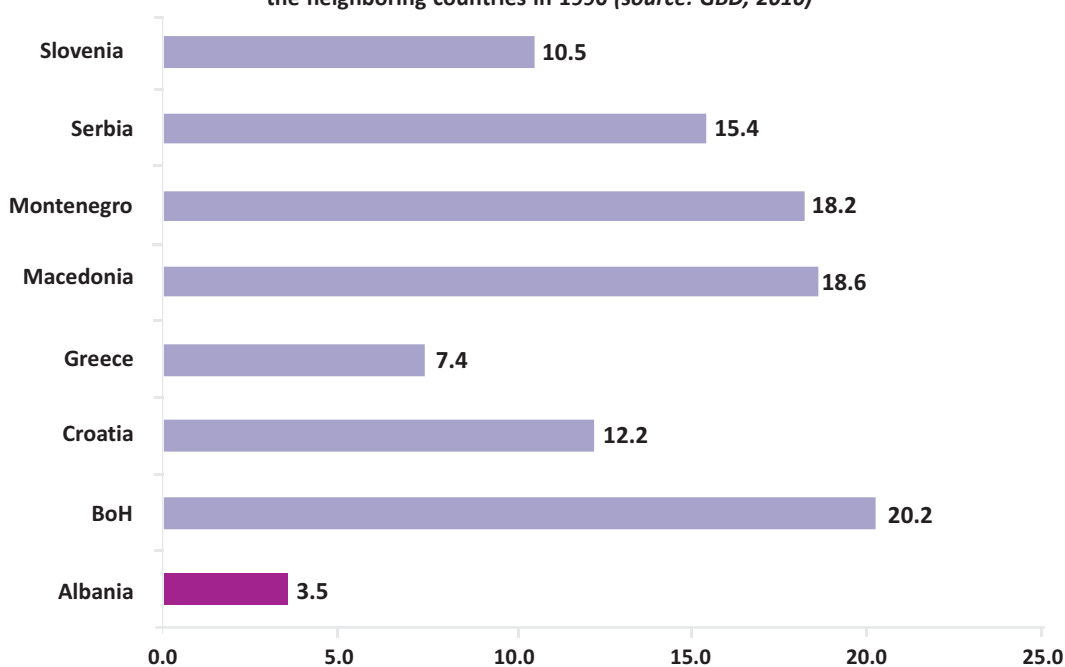
Of particular note, the mortality rate from diabetes in the bordering Macedonia in 2010 was exceptionally high compared with all the other countries in the region (20.6 deaths per 100,000 population) due to, among other things, probably the high rates of obesity in this population.

Figure 16. Age-standardized mortality rate (per 100,000) from diabetes (both sexes) in Albania and the neighboring countries in 2010 (source: GBD, 2010)



The overall age-standardized mortality rate from diabetes in Albania in 1990 was only 3.5 per 100,000 population (GBD, 2010) – reflecting an exceptionally low rate, which was putatively related to a healthy dietary pattern and physical exercise during the communist regime (Figure 17).

Figure 17. Age-standardized mortality rate (per 100,000) from diabetes (both sexes) in Albania and the neighboring countries in 1990 (source: GBD, 2010)





### Chronic obstructive pulmonary disease

According to GBD 2010 study, there is evidence of a gradual increase in the mortality rate from chronic obstructive pulmonary disease (COPD) in Albanian males (from 13.6 per 100,000 population in 1990 to 22.3 per 100,000 population in 2010) and less so in females (12.0 and 15.2 per 100,000 population, respectively) (Table 8). COPD is positively related to lung cancer mortality rates and to smoking prevalence.

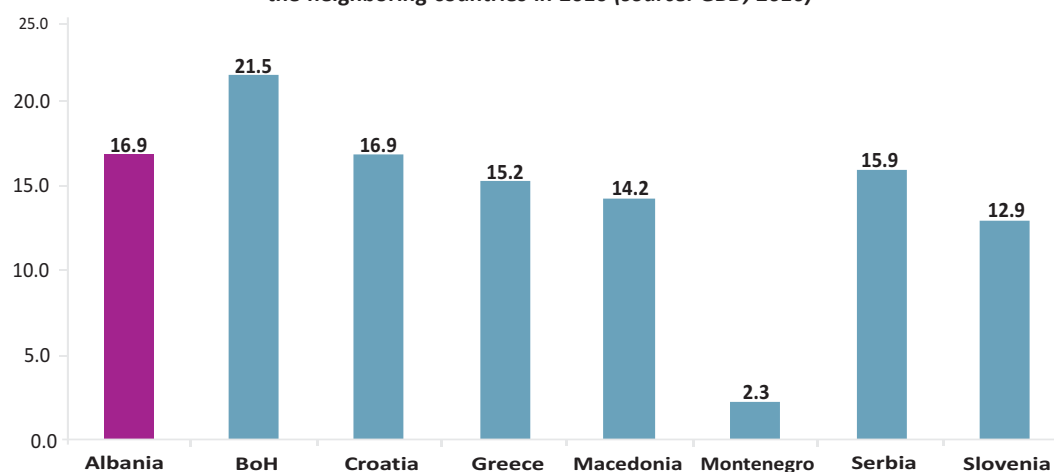
In 1990, the sex-specific death rates were not so different. Conversely, the excess mortality rate in males for the 20-year period (1990-2010) was 8.7 deaths per 100,000 population, whereas in females it was only 3.2 deaths per 100,000 population. The main explanation for this excess risk in Albanian males relates to the high prevalence of smoking, whereas in females the smoking prevalence is one of the lowest in the European region.

**Table 8. CMR (per 100,000; all ages) from COPD in Albania in selected years (source: GBD, 2010)**

Sex	Year: 2010		Year: 2000		Year: 1990	
	Average rate	95%CI	Average rate	95%CI	Average rate	95%CI
<b>Males</b>	22.3	17.9-29.6	18.4	15.5-22.5	13.6	10.5-15.8
<b>Females</b>	15.2	12.5-18.4	13.6	12.4-14.8	12.0	11.0-13.1
<b>Both sexes</b>	18.8	16.1-22.7	16.0	14.4-18.1	12.8	11.2-14.1

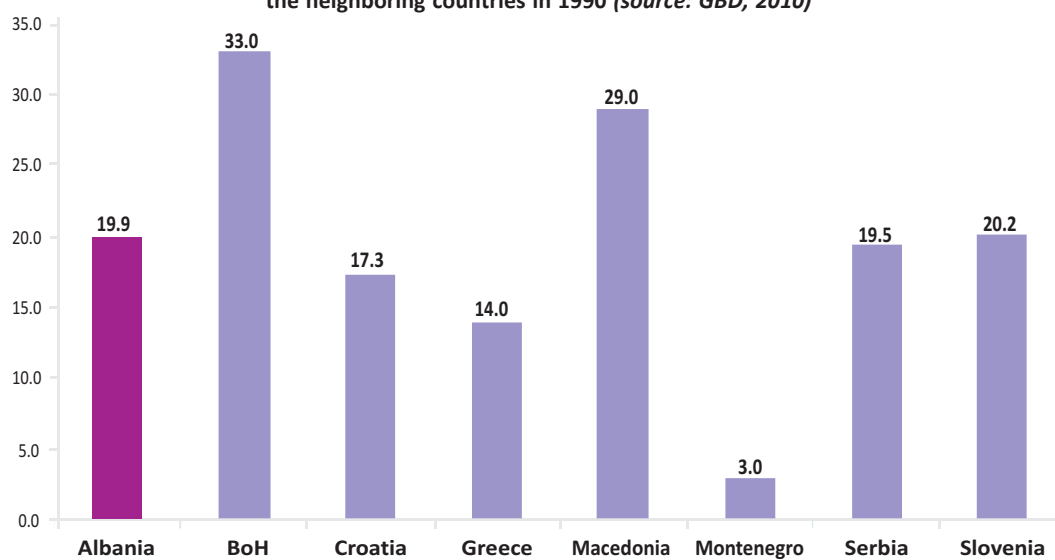
The age-standardized death rate from COPD in Albania in 2010 was 16.9 per 100,000 population (Figure 18), constituting one of the highest levels in the region. It should be pointed out the exceptionally low mortality rate from COPD in the bordering Montenegro, most likely due to differential recording of this chronic condition in the death certificates. Indeed, such a low death rate is quite unlikely given the high prevalence of smoking in both sexes in Montenegro (WHO, HFA database, 2014). Another cause of COPD could be open fire (cooking on woodstoves), which is not currently frequent neither in Montenegro, nor in Albania (but it used to be commonplace in Albania until 1990).

**Figure 18. Age-standardized mortality rate (per 100,000) from COPD (both sexes) in Albania and the neighboring countries in 2010 (source: GBD, 2010)**



In 1990, the age-standardized death rate from COPD in Albania was 19.9 per 100,000 population (Figure 19), placing Albania somewhere in the middle of the levels experienced in the SEE region. Similar to 2010, mortality rate from COPD in Montenegro in 1990 was particularly low (3 deaths per 100,000 population), which deserves further investigation basically with regard to the recording system of death certificates in this country.

**Figure 19. Age-standardized mortality rate (per 100,000) from COPD (both sexes) in Albania and the neighboring countries in 1990 (source: GBD, 2010)**



### Cerebrovascular disease

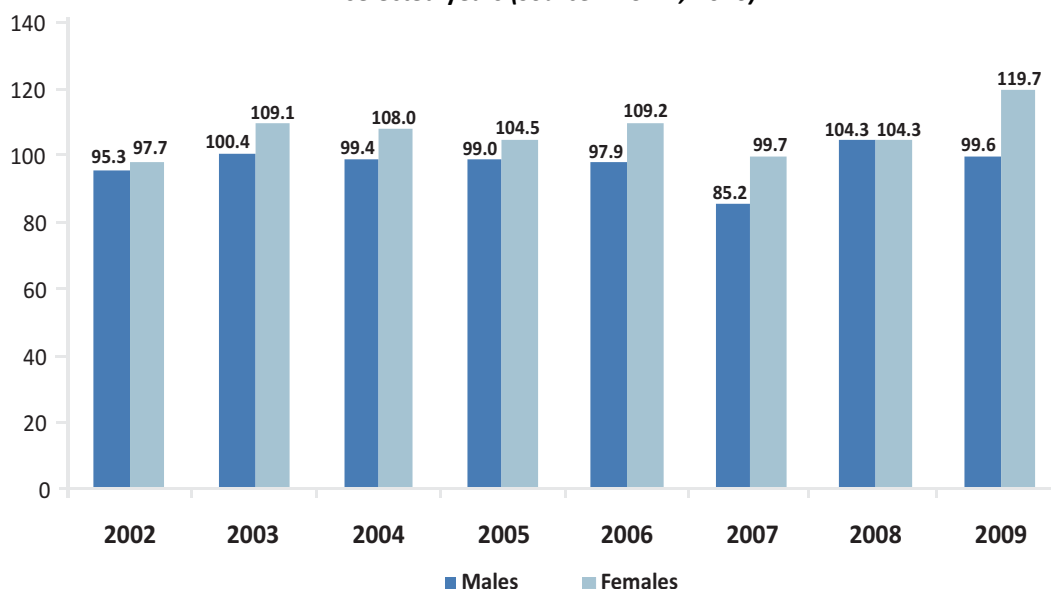
Based on the GBD 2010 estimates, there is seemingly an almost twofold increase in the mortality rate from cerebrovascular disease in Albania among males (from about 85 per 100,000 population in 1990 to 157 per 100,000 population in 2010) and about 70% increase in females (100 and 169 per 100,000 population, respectively) (Table 9).

**Table 9. CMR (per 100,000; all ages) from cerebrovascular disease in Albania in selected years (source: GBD, 2010)**

Sex	Year: 2010		Year: 2000		Year: 1990	
	Average rate	95%CI	Average rate	95%CI	Average rate	95%CI
<b>Males</b>	156.5	119.1-178.5	134.5	118.2-143.5	85.3	77.8-96.0
<b>Females</b>	169.0	134.7-193.9	143.5	121.0-152.9	100.0	92.7-114.6
<b>Both sexes</b>	162.7	134.2-180.5	139.0	125.1-145.8	92.4	87.3-101.8

On the other hand, the official reports from INSTAT about the death rate from cerebrovascular disease are substantially lower than the GBD estimates for both sexes. Hence, INSTAT reports that mortality rate from cerebrovascular disease in 2009 was about 100 and 120 (per 100,000 population) in males and females, respectively (Figure 20) – values which are 57% lower in males and 41% lower in females compared with the GBD estimates for the year 2010.

**Figure 20. Sex-specific CMR (per 100,000; all ages) from cerebrovascular disease in Albania in selected years (source: INSTAT, 2010)**



Regarding the age-standardized mortality rate from cerebrovascular disease (Figure 21), in Albania, in the year 2010 it was about 147 deaths per 100,000 population –which constitutes the second highest rate in the region after Macedonia (which, in turn, displays a particularly high mortality rate from this chronic condition, with about 203 deaths per 100,000 population).

**Figure 21. Age-standardized mortality rate (per 100,000) from cerebrovascular disease (both sexes) in Albania and the neighboring countries in 2010 (source: GBD, 2010)**

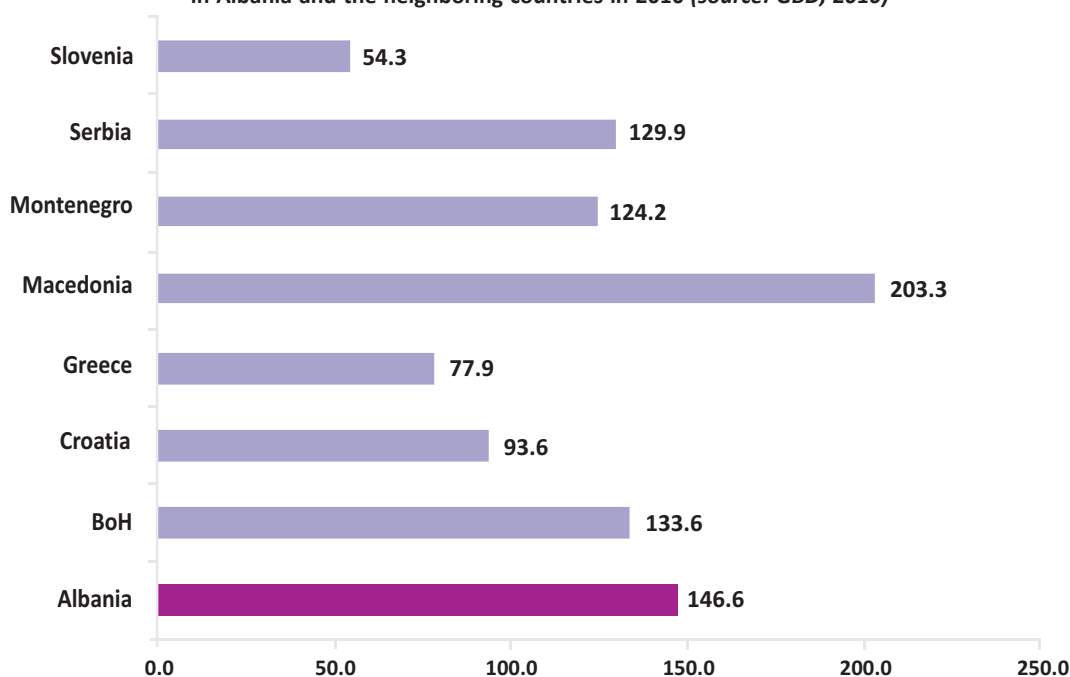
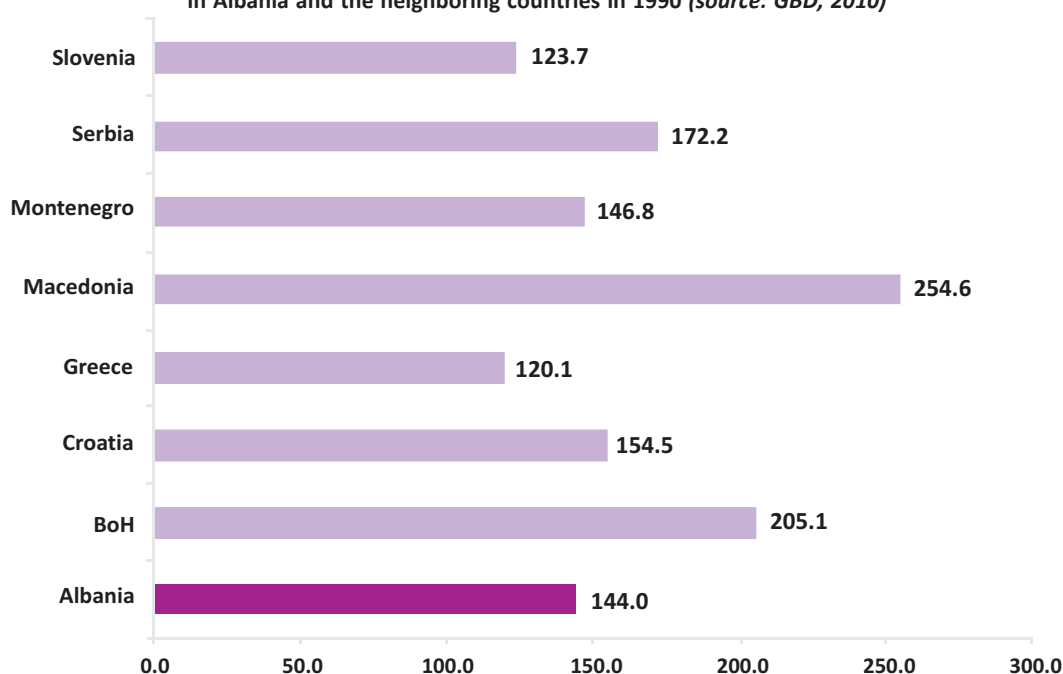


Figure 22 presents the age-standardized death rates from cerebrovascular disease in 1990 for countries of the SEE region (GBD, 2010). Albania exhibits no change in the past two decades. In contrast, Slovenia has achieved a remarkable decrease in the mortality rate from cerebrovascular accidents (from about 124 to 54 per 100,000 population in 1990 and 2010, respectively).

As a matter of fact, all countries except Albania have experienced various degrees of decline in the mortality rates from cerebrovascular disease due to effective treatment, as well as effective primary prevention measures introduced in several (routine) national health programs.

**Figure 22. Age-standardized mortality rate (per 100,000) from cerebrovascular disease (both sexes) in Albania and the neighboring countries in 1990 (source: GBD, 2010)**



### Digestive diseases

Based on the GBD 2010 estimates, there has been an overall increase in the mortality rate from digestive diseases in Albania in the past two decades, albeit far less than the increase in the other NCDs such as CVD, cancer, diabetes, or COPD. In Albanian males, death rate from digestive diseases increased from about 11 to 15 deaths (per 100,000 population) in 1990 and 2010, respectively, whereas in females this increase was from about 8 to 11 deaths (per 100,000), respectively (Table 10).

In females, there was a slight increase over time, whereas among males there was evidence of a higher increase from 1990 to 2000. Afterwards, there was evidence of a plateau in the mortality rate from digestive diseases in Albanian men.

**Table 10. CMR (per 100,000; all ages) from digestive diseases (except cirrhosis) in Albania in selected years (source: GBD, 2010)**

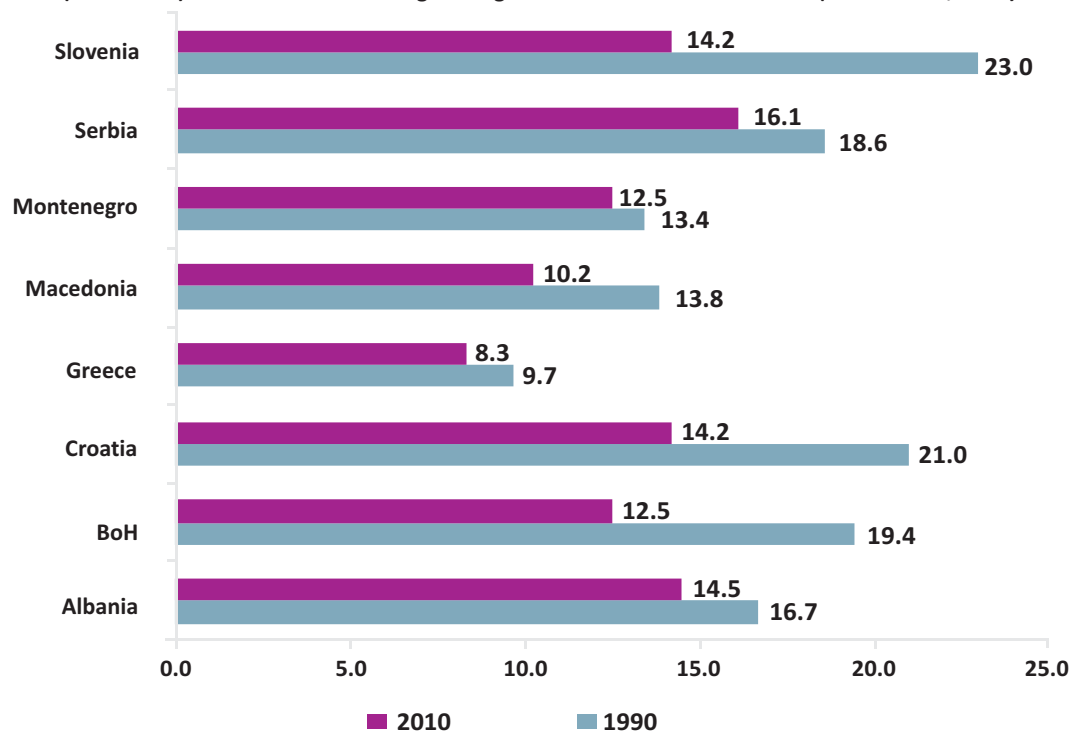
Sex	Year: 2010		Year: 2000		Year: 1990	
	Average rate	95%CI	Average rate	95%CI	Average rate	95%CI
<b>Males</b>	15.0	12.1-18.3	15.3	12.2-17.6	11.3	9.0-13.2
<b>Females</b>	10.6	9.2-12.3	9.7	8.9-10.5	8.3	7.3-9.3
<b>Both sexes</b>	12.8	11.2-14.7	12.5	10.9-13.7	9.8	8.5-10.9

The overall age-standardized death rates of digestive diseases (except cirrhosis) for Albania and the other countries in the SEE region for the years 1990 and 2010 are presented in Figure 23.

During the overall period of 20 years, mortality rate from digestive diseases has slightly decreased in Albania, similar to the modest decline in Serbia, Montenegro, or Macedonia. Greece displays a particularly low mortality rate from digestive diseases in line with the Mediterranean dietary prototype evident in this country.

On the other hand, Croatia and especially Slovenia have experienced a considerable decrease in the death rates from these conditions in the past couple of decades.

**Figure 23. Age-standardized mortality rate (per 100,000) from digestive diseases excluding cirrhosis (both sexes) in Albania and the neighboring countries in 1990 and in 2010 (source: GBD, 2010)**



## Injuries

In Albania, the mortality rate from injuries in 2010 was about 72 per 100,000 population in males and 23 per 100,000 population in females (Table 11). In both sexes, there was evidence of an increase from 1990 to 2000, which corresponds to the first decade of harsh transition in Albania following the collapse of the communist regime in 1990. After 2000, there was evidence of a small decline in the death rate from injuries in both sexes.

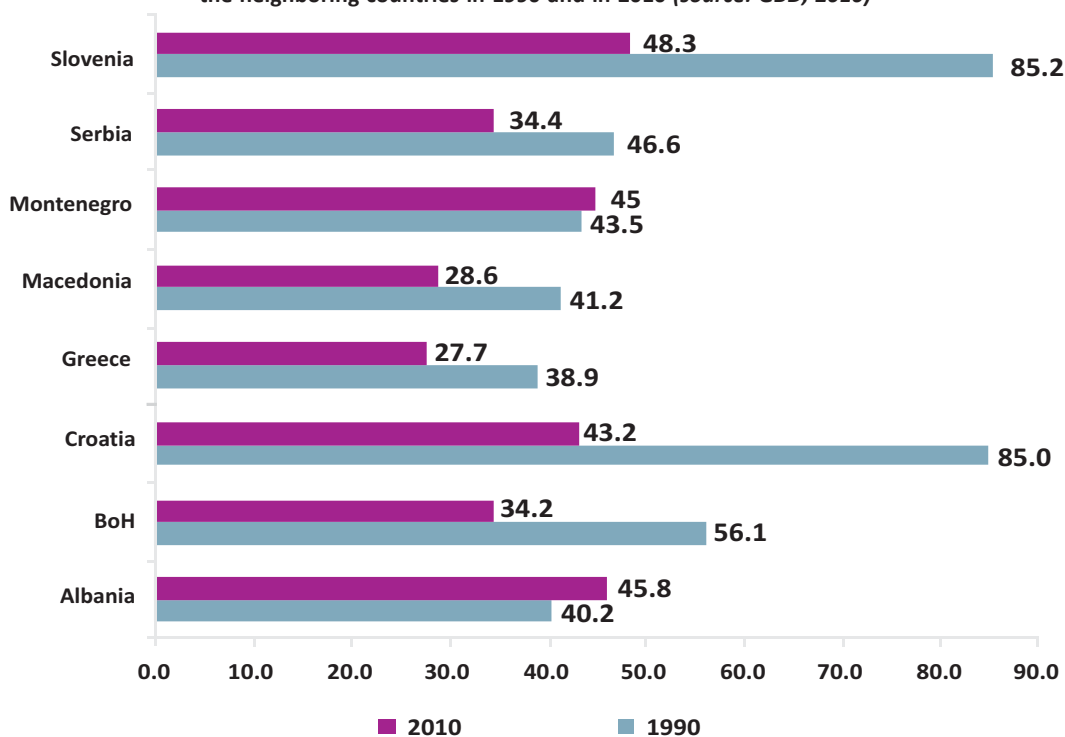
**Table 11. CMR (per 100,000; all ages) from injuries in Albania in selected years (source: GBD, 2010)**

Sex	Year: 2010		Year: 2000		Year: 1990	
	Average rate	95%CI	Average rate	95%CI	Average rate	95%CI
Males	71.6	56.1-84.3	75.2	58.3-82.0	57.9	52.7-65.6
Females	22.9	17.4-26.6	23.0	18.5-25.4	19.0	17.1-21.9
Both sexes	47.3	38.0-54.0	49.1	39.6-53.0	38.9	36.1-43.5

The sex-pooled age-standardized death rate from injuries in Albania in 2010 (about 46 deaths per 100,000 population) was comparable to Slovenia, Croatia and Montenegro (Figure 24). On the other hand, Serbia, Bosnia and Herzegovina and especially Macedonia exhibited a lower death rate from injuries.

Of note, in 1990, the overall mortality rate from injuries in Slovenia and Croatia was particularly high (85 deaths per 100,000) probably due to the turmoil and civil unrests following the breakdown of Yugoslavia in late 1980s.

**Figure 24. Age-standardized mortality rate (per 100,000) from injuries (both sexes) in Albania and the neighboring countries in 1990 and in 2010 (source: GBD, 2010)**



### Mental and behavioral disorders

In Albania, the mortality rate from mental and behavioral disorders in 2010 was 5.3 per 100,000 population in males and 2.3 per 100,000 population in females (Table 12). In both sexes, death rates from these conditions increased gradually from 1990 to 2010, especially among males.

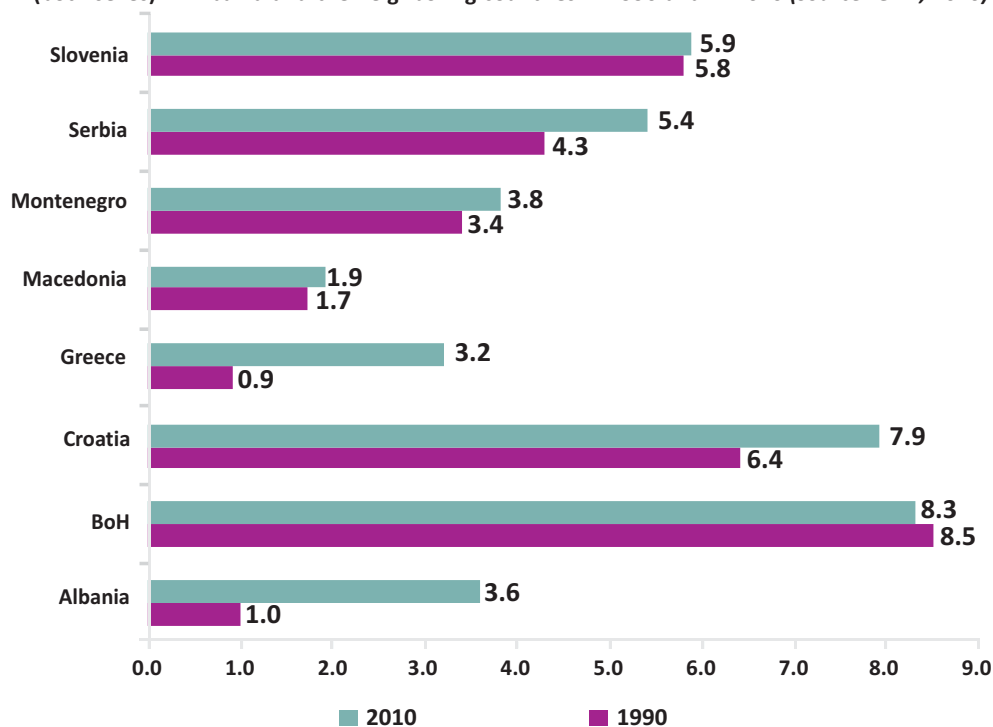
**Table 12. CMR (per 100,000; all ages) from mental and behavioral disorders in Albania in selected years (source: GBD, 2010)**

Sex	Year: 2010		Year: 2000		Year: 1990	
	Average rate	95%CI	Average rate	95%CI	Average rate	95%CI
Males	5.3	2.7-7.7	2.9	1.6-3.6	1.0	0.6-2.2
Females	2.3	1.4-3.4	1.4	0.9-2.0	0.7	0.5-1.3
Both sexes	3.8	2.3-5.2	2.2	1.4-2.6	0.8	0.6-1.7

The sex-pooled age-standardized death rate from mental and behavioral disorders in Albania in 2010 (3.6 deaths per 100,000 population) was comparable to Montenegro and Greece, but lower than Serbia, Slovenia, and particularly Croatia and Bosnia Herzegovina (Figure 25).

Actually, in Bosnia and Herzegovina and in Slovenia, the death rate from mental and behavioral disorders has remained practically unchanged in the past two decades (in Slovenia: 5.9 and 5.8 in 1990 and 2010, respectively, whereas in Bosnia and Herzegovina: 8.3 and 8.5, respectively).

**Figure 25. Age-standardized mortality rate (per 100,000) from mental and behavioral disorders (both sexes) in Albania and the neighboring countries in 1990 and in 2010 (source: GBD, 2010)**



### Infectious diseases

Table 13 presents mortality rates from selected infectious diseases in Albania during 1990-2010 (based on data from GBD, 2010).

Essentially, death rates from the lower respiratory infections (LRI) have significantly decreased in Albania in line with the epidemiological transition experienced in the past two decades (sex-pooled mortality rate were about 75 and 28 deaths per 100,000 population in 1990 and 2010, respectively). Similarly, mortality rates from diarrheal diseases have decreased in Albania, especially during the first decade of political and socioeconomic transition (from 4.3 to 0.7 deaths per 100,000 population in 1990 to 2000, respectively).

Albania continues to exhibit a low-prevalence pattern of HIV/AIDS notwithstanding the slight increase in the death rate from this infection (from 1.2 to 1.6 deaths per 100,000 population in 1990 and 2010, respectively). Tuberculosis death rate has been very low in the past two decades (with a sex-pooled rate of 0.8 deaths per 100,000 population in 2010). Similarly, mortality rate from hepatitis is estimated to be very low (overall: 0.2 deaths per 100,000 population in 2010) (Table 13).

**Table 13. CMR (per 100,000; all ages) from certain infectious diseases in Albania in selected years (source: GBD, 2010)**

Lower respiratory infections (LRI)						
Sex	Year: 2010		Year: 2000		Year: 1990	
	Average rate	95%CI	Average rate	95%CI	Average rate	95%CI
Males	30.5	21.5-45.0	41.1	34.5-52.9	78.2	59.2-92.1
Females	25.3	17.9-39.7	35.1	30.2-44.1	72.4	56.4-82.0
Both sexes	27.9	21.1-39.7	38.1	33.3-46.9	75.4	61.0-84.2
Diarrheal diseases						
Sex	Year: 2010		Year: 2000		Year: 1990	
	Average rate	95%CI	Average rate	95%CI	Average rate	95%CI
Males	0.4	0.3-0.5	0.8	0.6-1.3	4.4	2.1-6.6
Females	0.3	0.2-0.5	0.7	0.5-0.9	4.2	2.6-5.9
Both sexes	0.3	0.3-0.5	0.7	0.6-1.0	4.3	2.9-5.8
HIV/AIDS						
Sex	Year: 2010		Year: 2000		Year: 1990	
	Average rate	95%CI	Average rate	95%CI	Average rate	95%CI
Males	2.3	1.8-2.8	2.4	2.0-3.1	1.6	1.3-2.2
Females	1.0	0.8-1.2	0.9	0.7-1.2	0.7	0.6-0.9
Both sexes	1.6	1.3-2.0	1.7	1.3-2.1	1.2	1.0-1.5
Tuberculosis						
Sex	Year: 2010		Year: 2000		Year: 1990	
	Average rate	95%CI	Average rate	95%CI	Average rate	95%CI
Males	1.0	0.6-1.6	1.4	1.1-1.9	1.5	0.9-2.0
Females	0.6	0.4-0.9	0.8	0.7-1.1	1.1	0.8-1.3
Both sexes	0.8	0.6-1.2	1.1	0.9-1.4	1.3	1.0-1.6
Hepatitis						
Sex	Year: 2010		Year: 2000		Year: 1990	
	Average rate	95%CI	Average rate	95%CI	Average rate	95%CI
Males	0.2	0.2-0.3	0.3	0.3-0.4	1.5	1.2-1.9
Females	0.2	0.1-0.2	0.2	0.2-0.3	1.2	1.0-1.6
Both sexes	0.2	0.2-0.3	0.3	0.2-0.3	1.4	1.1-1.6



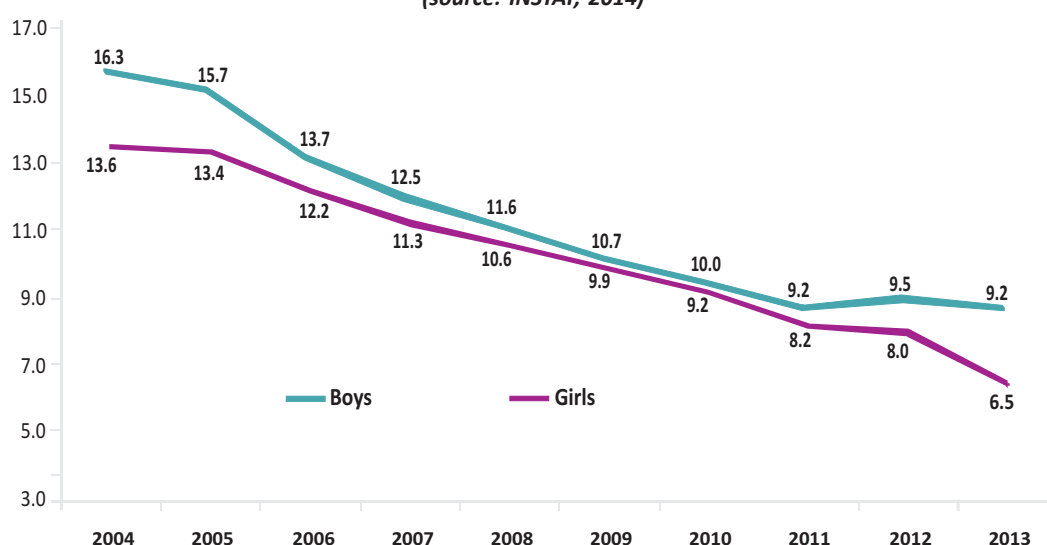
### 3.4. Child mortality and maternal deaths

#### Infant mortality

According to INSTAT, infant mortality (deaths per 1,000 live births) in Albania has sharply decreased in the past decade in both sexes.

Thus, in males it declined from 16.3 (in 2004) to 9.2 (in 2013). On the other hand, in females, infant death decreased from 13.6 (in 2004) to 6.5 (in 2013). In both sexes, there is evidence for a statistically significant linear trend ( $P < 0.01$ ).

**Figure 26. Sex-specific infant mortality (deaths per 1,000 live births) in Albania during 2004-2013**  
(source: INSTAT, 2014)



However, according to the operational data available from the Albanian Ministry of Health (Table 14), infant mortality estimates (deaths per 1,000 live births) are slightly different for the past couple of years (i.e. the years 2012 and 2013) compared with the official reports from INSTAT.

It should be pointed out that INSTAT performs the analysis based on the information provided by death certificates, whereas the Ministry of Health in Albania collects operational data directly from each of the 36 districts of Albania.

**Table 14. Overall infant mortality (deaths per 1,000 live births) in Albania during 2001-2013**  
(source: Albanian Ministry of Health, 2014)

2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
17.5	17.3	15.5	15.0	14.7	13.0	12.0	11.1	10.3	9.7	8.7	7.8	7.2

The situation is even more complex when referring to the official data provided by the UN agencies. Hence, according to the UN Inter-agency Group for Child Mortality Estimation (IGME report, 2014), the overall infant mortality in Albania in 2013 was estimated at 13 deaths per 1,000 live births (Table 15), which is remarkably higher than

the official reports from either INSTAT (around 7.8 per 1,000 live births), or the Albanian Ministry of Health (7.2 per 1,000 live births).

**Table 15. Infant and neonatal mortality rates (deaths per 1,000 live births) in Albania in selected years (source: IGME reports, 2010-2014)**

1990		2010		2011		2012		2013	
Infant	Neonatal	Infant	Neonatal	Infant	Neonatal	Infant	Neonatal	Infant	Neonatal
35	17	16	9	13	7	15	8	13	7

Although the neonatal mortality rate has decreased along with infant mortality rate, its weight within the infant mortality rate has increased over the years from 48% in 1990 to 54% in 2013.

As a matter of fact, the estimates prepared by WHO, UNICEF and the World Bank (WB) on infant mortality for Albania in the past two years are almost double of the figures reported by the Albanian institutions. A possible explanation for this apparent data discrepancy between UNICEF and other UN agencies and the Albanian institutions may be related to the underestimation of infant mortality by the Albanian institutions due to the under-registration of deaths (a possibility that affects both INSTAT and the operational data provided by the Albanian Ministry of Health) and/or miscoding of the death certificates (this may affect INSTAT's estimates).

Within the general declining trend of the under-five child mortality in Albania, it is observed that child mortality has declined to a greater degree than infant mortality. This rate of change is mainly due to improvements in children's environments brought about by health interventions, or general improvements in living standards.

According to a recent analysis published in the Lancet (Wang H et al., 2014), key factors that have contributed in the decrease of child deaths during 1990-2013 include fertility rates, maternal education, HIV/AIDS, income, and secular trends.

In Central Europe and Albania, secular trends that include new drugs, vaccines, diagnostic procedures and public health campaigns, count for the biggest shift in child mortality rates. The second most important influencing factor is fertility, followed by mother education and income (Wang H et al., 2014).

Specifically for Albania, secular trends have accounted for a decrease of 13,000 child deaths from 1990 to 2010 compared with 134,000 child deaths in the overall Central European countries. Similarly, there has been a reduction of 13,000 child deaths due to fertility compared to 71,000 in the whole Central Europe. Maternal education, in turn, accounted for a decrease of 4,000 child deaths in Albania as opposed to 35,000 child deaths in the whole Central Europe (Wang H et al., 2014).

A fairly recent report based on the GBD 2013 Study estimated the overall infant mortality rate in Albania for the year 2013 at 12.8 deaths per 1,000 live births (Table 16). This is pretty close to the figure reported from the UN Inter-agency Group for Child Mortality Estimation mentioned above (Table 15).

The early neonatal mortality (deaths within 0-6 days) was estimated at 2.7 (95%CI=1.0-4.8), whereas the late neonatal mortality (deaths from 7 to 28 days) was estimated at 1.8 (95%CI=0.9-2.8) (Table 16).

**Table 16. Infant mortality (deaths per 1,000 live births) in Albania in 2013**  
(source: GBD, 2013; Wang H et al., 2014)

Early neonatal deaths (0-6 days)	Late neonatal deaths (7-28 days)	Post to neonatal deaths (29-364 days)
Rate (95%CI)	Rate (95%CI)	Rate (95%CI)
2.7 (1.0-4.8)	1.8 (0.9-2.8)	8.3 (4.0-18.4)
<b>Overall infant mortality: 2.7 + 1.8 + 8.3 = 12.8</b>		

In summary, the sex-pooled infant mortality rate (deaths per 1,000 live births) in Albania for the year 2013 was reported at 7.8 from INSTAT, and 7.2 from the Albanian Ministry of Health. Conversely, the UN and GBD 2013 estimates were 13.0 and 12.8, respectively.

Finally, Table 17 presents the GBD 2010 estimates for the mortality rate (deaths per 100,000 population) from neonatal disorders in Albania for selected years. There was evidence of a steady decline in both sexes in the past two decades (overall estimates were 13.5 and 5.3 deaths per 100,000 population in 1990 and 2010, respectively).

**Table 17. CMR (per 100,000; all ages) from neonatal disorders in Albania in selected years**  
(source: GBD, 2010)

Sex	Year: 2010		Year: 2000		Year: 1990	
	Average rate	95%CI	Average rate	95%CI	Average rate	95%CI
Males	5.9	3.8-8.2	11.1	8.1-14.1	15.5	11.9-20.0
Females	4.6	2.9-6.7	8.3	5.7-10.8	11.4	8.7-15.5
Both sexes	5.3	3.8-6.9	9.7	7.6-11.7	13.5	11.2-16.5

### Under-five mortality

According to the operational data from the Ministry of Health, under-five year mortality rate (deaths per 1,000 live births) in Albania has decreased monotonously after 2002 (Table 18). Hence, the overall under-five mortality rate has declined from 20.7 deaths (per 1,000 live births) in 2002 to 8.4 deaths (per 1,000 live births) in 2013.

**Table 18. Under-five mortality rate (deaths per 1,000 live births) in Albania during 2001-2013**  
(source: Albanian Ministry of Health, 2014)

2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
20.2	20.7	17.6	17.5	16.7	14.7	13.4	12.5	11.5	10.8	9.7	8.8	8.4

On the other hand, based on the UN Inter-agency Group for Child Mortality Estimation, under-five mortality rate in Albanian children is considerably higher than the national estimates provided either by INSTAT (official data), or the Ministry of Health (operational data).

From this point of view, according to the UN reports, under-five mortality rate in Albania

in 2013 was 16 deaths and 13 deaths (per 1,000 live births) in males and females, respectively (Table 19). Yet, in both sexes, there was evidence of an almost threefold decrease compared with 1990 (with an estimated 44 and 36 deaths per 1,000 live births, respectively).

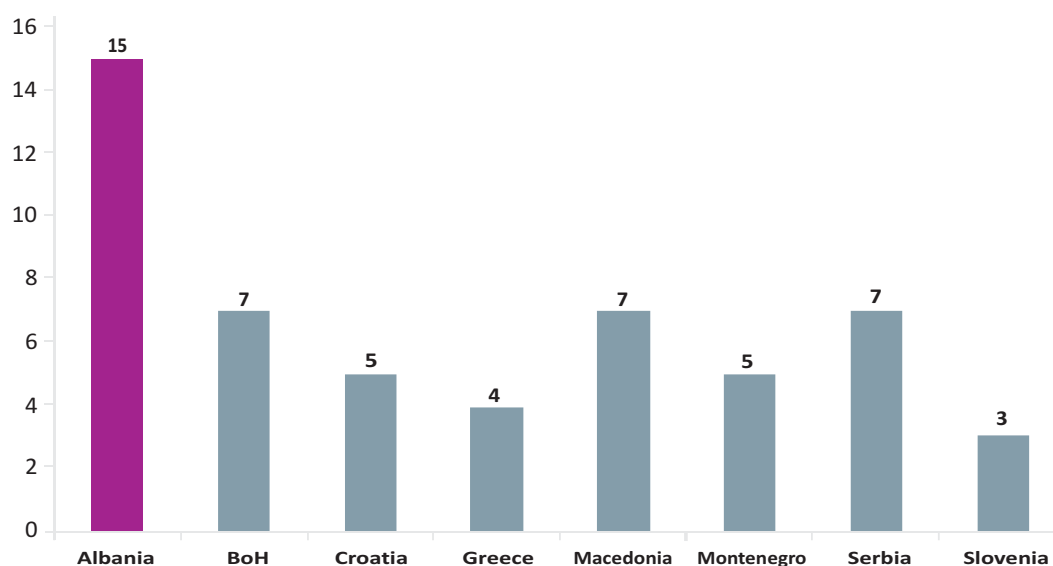
**Table 19. Sex-specific under-five mortality rate (deaths per 1,000 live births) in Albania in selected years (source: IGME reports, 2010-2014)**

1990		2011		2012		2013	
Male	Female	Male	Female	Male	Female	Male	Female
44	36	15	14	18	15	16	13

Compared with the other countries in the region, under-five mortality rate in Albania (sex-pooled: about 15 deaths per 1,000 live births in 2013) is currently the highest (Figure 27). All the other countries in the region have under-five mortality rates of  $\leq 7$  deaths (per 1,000 live births), with Slovenia exhibiting the lowest rate of under-five mortality (3 deaths per 1,000 live births) (IGME report, 2014).

In addition, the annual reduction rate in under-five mortality rate in Albania was 4.3%, which was very similar to Bosnia and Herzegovina, Croatia and Greece (4.4%-4.5%), but significantly lower than Serbia (6.3%) and particularly Macedonia (7.4%) (IGME report, 2014).

**Figure 27. Under-five mortality rate (deaths per 1,000 live births) in Albania and in the other countries of the SEE region in 2013 (source: IGME report, 2014)**



Furthermore, a recent publication based on the GBD 2013 Study estimated that the overall under-five mortality rate (deaths per 1,000 live births) in Albania in 2013 was 17.9 (95%CI=8.6-35.1) (Table 20). Actually, this estimate is not very stable given the

upper bound of the confidence interval which is quite wide. In any case, the GBD 2013 calculations indicate a considerable and steady decrease in the under-five mortality rate in Albania.

From the same GBD 2013 report, the overall 1-4 mortality rate (deaths per 1,000 live births) in Albania in 2013 was 5.2 (95%CI=2.6-10.4) (Wang et al., 2014).

**Table 20. Under-five mortality rate (deaths per 1,000 live births) in Albania in selected years**  
(source: GBD, 2013; Wang H et al., 2014)

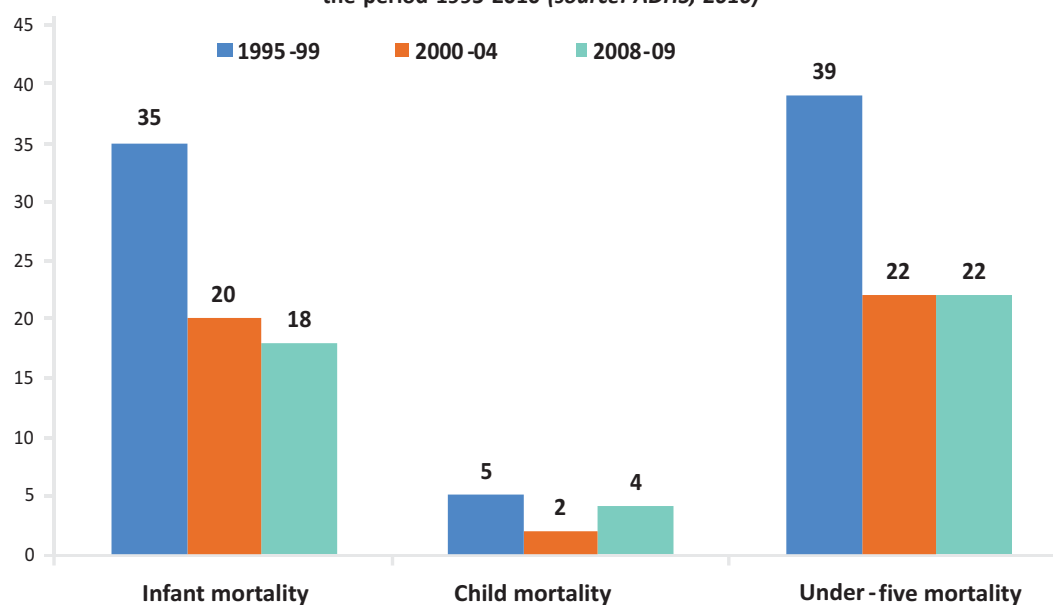
1970		1980		1990		2000		2013	
Rate	95%CI	Rate	95%CI	Rate	95%CI	Rate	95%CI	Rate	95%CI
98.5	53.5-168.1	59.8	41.8-84.5	40.2	35.1-45.1	26.8	22.7-31.6	17.9	8.6-35.1

Similar to the issue of infant mortality, it is obvious that there is a substantial underestimation of child mortality based on the official reports from the national institutions in Albania due to the under-registration of deaths in addition to miscoding of death certificates.

Thus, in summary, according to the Albanian Ministry of Health, under-five mortality rate (deaths per 1,000 live births) in Albania in 2013 was 8.4, whereas the UN and GBD 2013 estimates were 14.5 and 17.9, respectively.

Finally, Figure 28 summarizes the trends in early childhood mortality rates (deaths per 1,000 live births) in Albania based on household surveys included in the ADHS 2008-09 final report (ADHS, 2010).

**Figure 28. Trends in early childhood mortality rates (deaths per 1,000 live births) in Albania over the period 1995-2010** (source: ADHS, 2010)



### Maternal mortality

According to the operational data provided by the Albanian Ministry of Health, maternal mortality ratio (maternal deaths per 100,000 live births) in Albania has experienced a twofold decrease in the past decade (Table 21). Hence, maternal mortality declined from 22.7 (in 1990) to 11.8 (in 2013).

Based on the data from the Albanian Ministry of Health, main causes of maternal mortality include bleeding, post-partum infections, pre-eclampsia and eclampsia during pregnancy, and unsafe abortion.

Nonetheless, there is evidence of a considerable fluctuation in maternal mortality ratio during the past ten years: the sharp decline in 2004 (7.3 maternal deaths per 100,000 live births) was surprisingly followed by a similarly blunt increase in 2005 (23.2 maternal deaths per 100,000 live births). Even more surprisingly, the operational data from the Ministry of Health claim that there were no cases of maternal deaths in 2009. Finally, in 2013, there was a twofold increase compared with the preceding three years (Table 21).

**Table 21. Maternal mortality ratio (maternal deaths per 100,000 live births) in Albania during 2001-2013 (source: Albanian Ministry of Health, 2014)**

2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
22.7	26.0	17.7	7.3	23.2	16.8	14.5	21.0	0.0	5.9	5.8	5.7	11.8

Based on these highly inconsistent figures, with all likelihood, there is a considerable misreporting from the Directorates of Public Health at regional level, which supply the operational data to the Albanian Ministry of Health.

However, maternal mortality ratio is highly volatile (unstable) due to the small numbers (i.e. the small absolute number of maternal deaths annually, which are expressed per 100,000 live births), which may – to some extent – explain the inconsistencies from different sources of information.

Although rather unstable due to the small numbers, this indicator is directly linked to the quality and access to health services and, therefore, careful auditing of deaths will contribute to prevention of future maternal deaths.

According to the UN estimates, maternal mortality ratio in Albania in 2013 was 21 maternal deaths per 100,000 live births (95%CI=13-34) (WHO/UNICEF/UNFPA/WB estimates; WHO 2014). Furthermore, the estimated proportion of deaths among women of reproductive age that are due to maternal causes was 0.9% in Albania in 2013 (WHO, 2014).

In any case, the UN estimates for Albania point to a steady decrease in the maternal mortality ratio in the past two decades (Table 22). Overall, the change between 1990 and 2013 related to a decrease of 33%. More specifically, the mean change involved a decline of about 1.7% per year (WHO, 2014).

**Table 22. UN estimates of maternal mortality ratio (maternal deaths per 100,000 live births) in Albania for selected years (source: WHO, 2014)**

1990	1995	2000	2005	2013
31	29	28	24	21

Table 23 displays a few GBD 2010 estimates for the mortality ratio from maternal disorders in Albania. Overall, maternal mortality ratio declined from 1.5 (in 1990) to 0.3 (in 2010) maternal deaths per 100,000 population.

**Table 23. Mortality ratio (per 100,000) from maternal disorders in Albania in selected years (crude estimates, all ages) (source: GBD, 2010)**

Year: 2010		Year: 2000		Year: 1990	
Average rate	95%CI	Average rate	95%CI	Average rate	95%CI
0.3	0.2-0.4	0.6	0.4-0.8	1.5	0.8-2.2

Regardless of information discrepancies though, there is evidence of a declining trend in maternal mortality in Albania which may be explained by significant improvements in the quality of health care services, and the general improvement in the socioeconomic status and living conditions of the Albanian population.

Nevertheless, according to WHO (estimates by WHO, UNICEF, UNFPA, WB, in 2014), compared with the neighboring countries, maternal mortality ratio in Albania in 2013 (21 maternal deaths per 100,000 live births) was the highest in the SEE region. The lowest maternal mortality ratio was observed in Greece (5 maternal deaths per 100,000 live births) followed by Macedonia, Montenegro and Slovenia (7 maternal deaths per 100,000 live births in each), whereas the highest ratio (after Albania) was evident in Serbia (16 maternal deaths per 100,000 live births) (WHO, 2014).

In summary, communicable diseases, maternal, neonatal and nutritional disorders accounted for 21.6% of the overall mortality rate in Albania in 1990, but only for 5.8% in 2010.

In Albania, there is evidence of a sharp and significant linear decrease in both mortality rate and burden of disease due to the joint share of communicable diseases, mother and child health conditions and nutritional deficiencies.

## 4. BURDEN OF DISEASE (DISABILITY-ADJUSTED LIFE YEARS)

Disability-adjusted life years (DALYs) is a common measure of the total burden of disease at a population level. DALYs represent the overall costs, morbidity and mortality related to all diseases/conditions affecting the whole population for a given period of time (Murray CJ et al., 2004). From this point of view, DALY is a time-based measure that combines years of life lost due to premature mortality and years of life lost due to time lived in health states less than ideal health (Murray CJ et al., 2004).

Hence, one DALY can be thought of as one lost year of “healthy” life, and the burden of disease can be thought of as a measurement of the gap between current health status and an ideal situation where everyone lives into old age, free of disease and disability (Murray CJ et al., 2004).

DALYs are the sum of two dimensions: (i) the present value of future years of lifetime lost through premature mortality, and; (ii) the present value of years of future lifetime adjusted for the average severity (frequency and intensity) of any mental or physical disability caused by a disease or injury.

As a new single summary measure, DALY was introduced in a 1990 Global Burden of Disease Study, which represented a major step in quantifying global and regional effects of diseases, injuries and risk factors on population health (Murray CJ et al., 2012; WHO, 2008).

Table 24 displays the overall DALYs (per 100,000 population) in Albania according to GBD 2010 estimates for the years 1990 and 2010.

Overall, there was a decrease of about 1,270 DALYs/100,000 from 1990 to 2010, which was explained by a drop in females (about 2,250 DALYs/100,000) rather than in males where, on the contrary, there was evidence for a slight increase in the past two decades (of about 170 DALYs/100,000).

**Table 24. Sex-specific overall DALYs (per 100,000) in Albania (crude estimates, all ages) in 1990 and 2010 (source: GBD, 2010)**

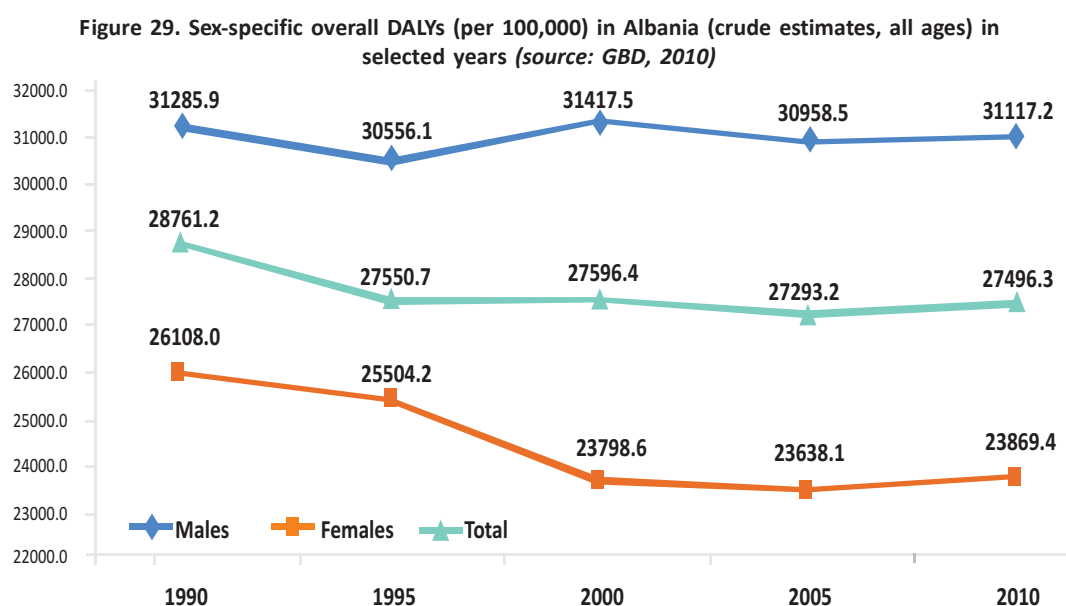
Sex	Year: 2010		Year: 1990	
	Average rate	95%CI	Average rate	95%CI
<b>Males</b>	31117.2	27931.8-35162.0	31285.9	28819.9-34095.7
<b>Females</b>	23869.4	21136.3-26972.0	26108.0	23836.8-28818.2
<b>Both sexes</b>	27496.3	25007.4-30497.2	28761.2	26704.6-31097.0



Figure 29 presents the sex-specific overall DALYs (per 100,000 population) in Albania by 5-year bands in the past two decades.

In females, there was a decline in the overall DALYs from 1990 to 1995, but much more so in the subsequent five years (from 1995 to 2000). Conversely, in the past decade, the overall DALYs in females were somehow stable.

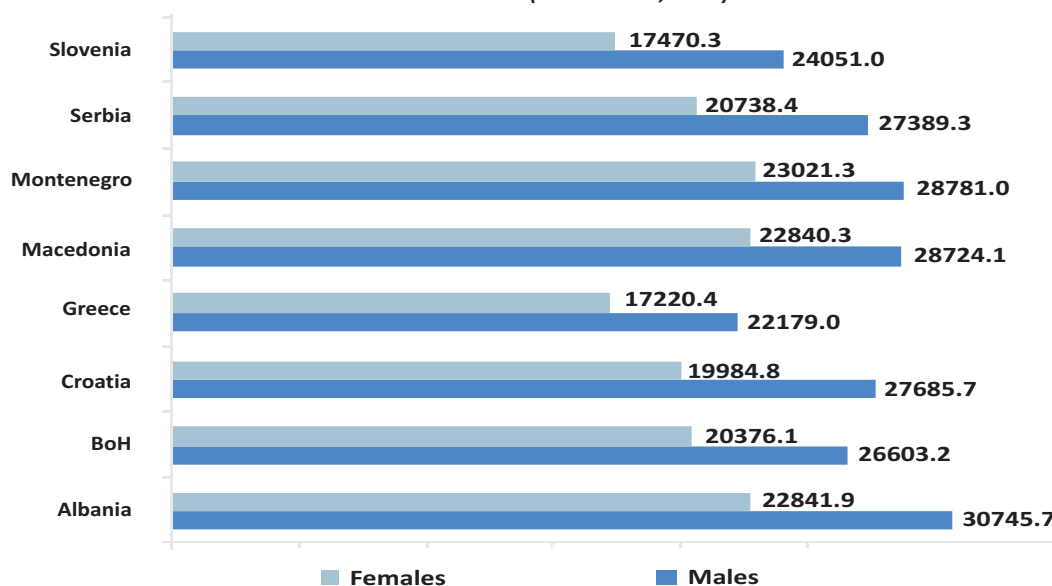
In males, there was evidence of an inconsistent trend, with a decrease in the period 1990-1995 which was followed by an increase in the following five years. Subsequently, there was a decrease from 2000 to 2005 followed by a slight increase during 2005-2010.



Remarkably, the age-standardized DALYs (per 100,000 population) in 2010 were the highest among Albanian males compared with all the other counterparts in the SEE region (Figure 30). The excess DALYs in Albanian males was about 6,700/100,000 compared with Slovenia and up to 8,570/100,000 compared with the Mediterranean Greece.

Likewise, the age-standardized DALYs in Albanian females in 2010 were the highest in the region together with Macedonia. The excess DALYs in Albanian females was about 5,370/100,000 compared with Slovenia and up to 5,620/100,000 compared with Greece.

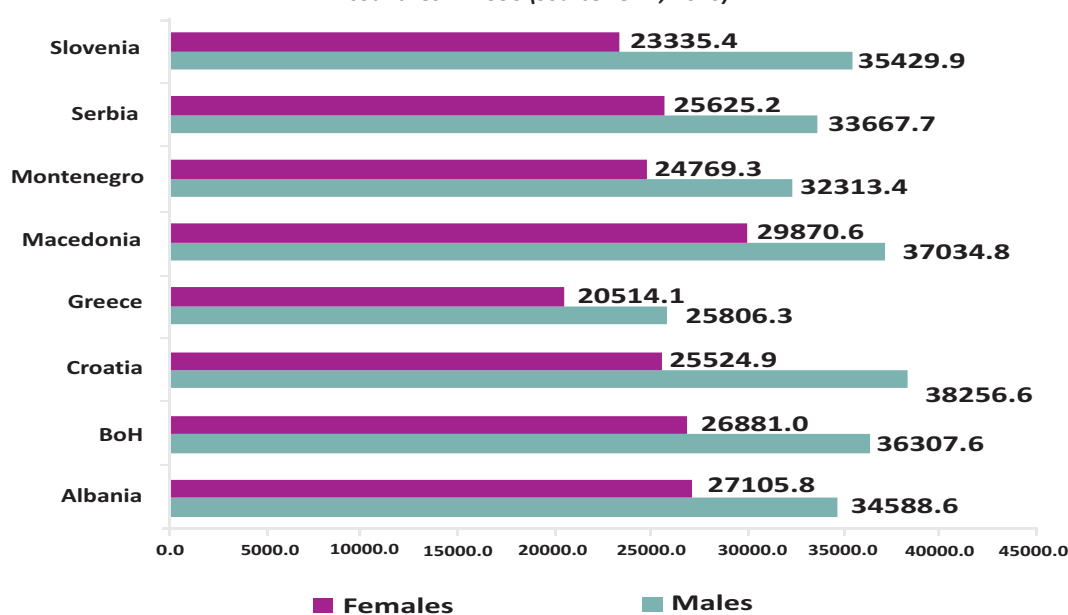
Figure 30. Sex-specific age-standardized DALYs (per 100,000) in Albania and in the neighboring countries in 2010 (source: GBD, 2010)



On the other hand, the age-standardized DALYs in 1990 in Albanian males (about 34,590 per 100,000) resembled the average value of the SEE region (Figure 31). DALYs were the highest among Croatian males (about 38,260 per 100,000) and the lowest in Greek males (about 25800 per 100,000).

Interestingly, in 1990, the overall DALYs in Slovenian males were higher than among their Albanian counterparts (with an excess DALYs of about 840/100,000) – a trend which was entirely reversed two decades later (Figure 30).

Figure 31. Sex-specific age-standardized DALYs (per 100,000) in Albania and in the neighboring countries in 1990 (source: GBD, 2010)



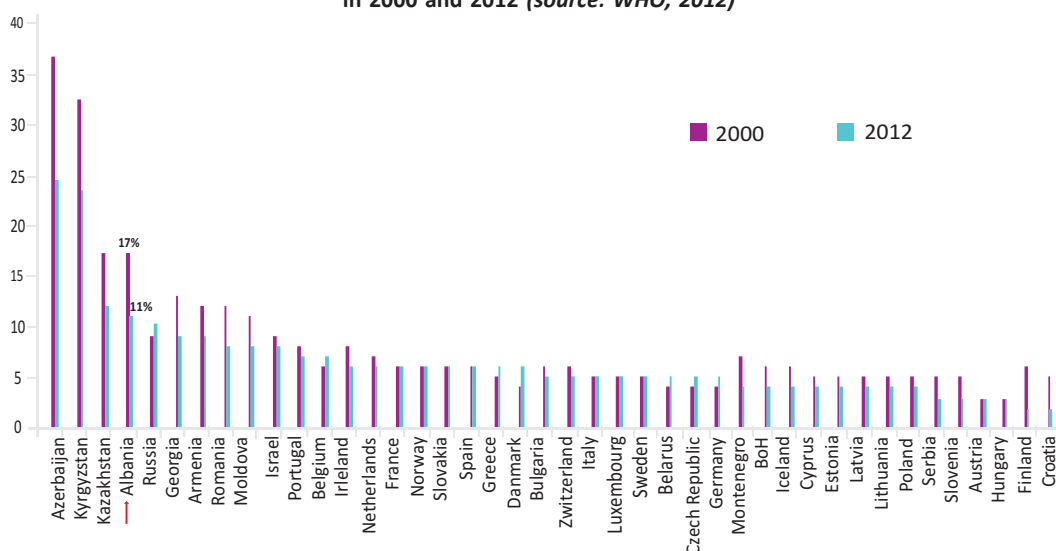
### 4.1. Share of DALYs

In the European Region (excluding Turkey), Albania had in 2012 still a rather high percentage of its total burden of disease (expressed in DALYs lost) caused by infectious diseases, although the level in 2012 (11%) was about 30% less as compared to 2000 (17%) (Figure 32).

In 2000, the highest share of infectious diseases in the European Region was evident in Azerbaijan (36% of the total burden of disease), whereas the lowest level was observed in Austria and Hungary (3%). On the other hand, in 2012, the highest proportion of infectious diseases was observed in Azerbaijan and Kyrgyzstan (24% and 23%, respectively), whereas the lowest proportion was evident in Finland and Croatia (2%). On average, the share of infectious diseases in Europe is currently about 5% of the total burden of disease.

Regarding Albania, given this rate of improvement, the current European average level of 5% of the total burden of disease could be reached in Albania in another 10 to 12 years, by reducing infectious diseases in the childhood.

**Figure 32. Infectious diseases as a percentage of total DALYs in 42 countries of the European region in 2000 and 2012 (source: WHO, 2012)**



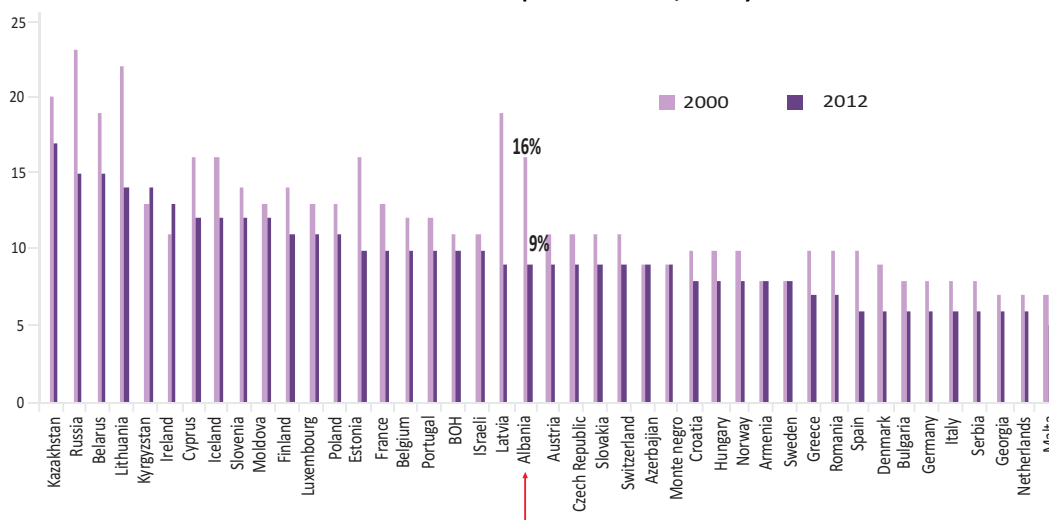
The improvement in contribution of injuries to Albania's total burden of disease (in DALYs) between 2000 and 2012 has been spectacular from the perspective of the European Region (Turkey excluded).

In 2000, the proportion of injuries was 16% of the total burden of disease, whereas in 2012 this share was only 9% (Figure 33). In this way, Albania's position shifted from the fourth worst performer (in 2000) to an average European position (in 2012).

A likely explanation for this excess risk of injuries in 2000 may relate to the relatively high level of homicide and especially the (non-fatal) interpersonal and community violence following the civil unrests in late 1990s (due to the collapse of the saving schemes) and the war in Kosovo (in 1999).

On the contrary, there is no plausible reason to assume a drop in road traffic accidents, which are considered a major killer in Albania, as far as the external causes of death are concerned.

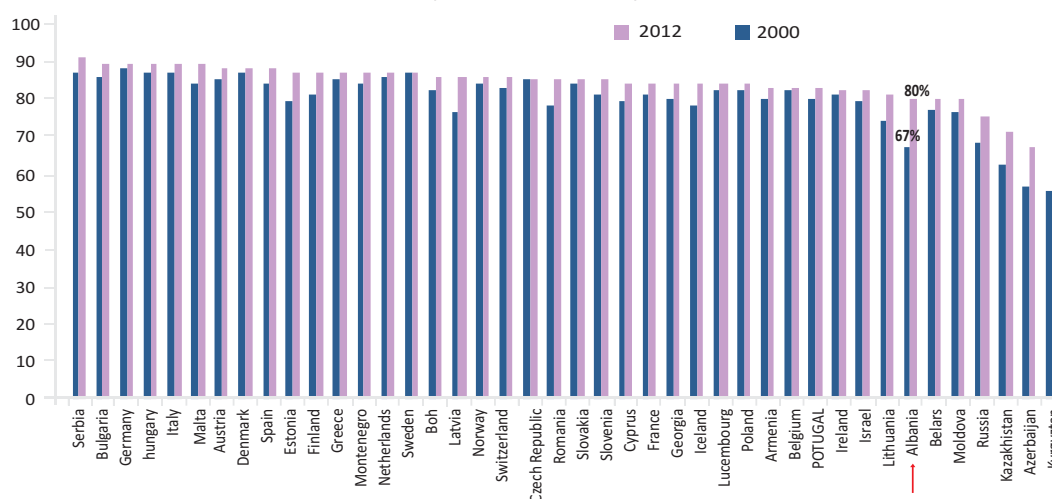
**Figure 33. Injuries as a percentage of total DALYs in 42 countries of the European region in 2000 and 2012 (source: WHO, 2012)**



The contribution of NCDs to the total burden of disease in nearly all countries of the European Region was in 2000 and 2012 around 80% or higher. This was less in 2000 for Albania, because of the still high contributions of infectious diseases and injuries (Figure 34).

However, the importance of NCDs has risen also for Albania to 80% in 2012. Albania has thus joined the European countries that face the NCD epidemic as its most important public health challenge.

**Figure 34. NCDs as a percentage of total DALYs in 42 countries of the European region in 2000 and 2012 (source: WHO, 2012)**



## 4.2. Cause-specific DALYs

### Cardiovascular diseases

In Albania, the overall DALYs for cardiovascular diseases (CVD) have increased by more than 50% from 1990 (sex-pooled: about 6,626 per 100,000) to 2010 (4,311 per 100,000) (Table 25). Hence, the share of CVD as a percentage of total DALYs increased 60% (from 15% in 1990 to 24% in 2010). In males, there was evidence of a steeper increase than in females both for the absolute DALYs pertinent to CVD (68% vs. 38%, respectively) and the share of DALYs explained by CVD (68% vs. 51%, respectively).

**Table 25. Sex-specific DALYs for cardiovascular diseases in Albania in 1990 and 2010 (crude estimates, all ages) (source: GBD, 2010)**

Sex	Year: 2010		Year: 1990	
	DALYs (per 100,000)	Percent DALYs	DALYs (per 100,000)	Percent DALYs
<b>Males</b>	7851.4	25.2	4685.8	15.0
<b>Females</b>	5399.7	22.7	3917.3	15.0
<b>Both sexes</b>	6626.5	24.1	4311.1	15.0

In Albanian males, the absolute DALYs from CVD increased steeply, especially during 1995-2000 (with an excess DALYs of about 1,550 per 100,000, or 28% in relative terms) (Figure 35).

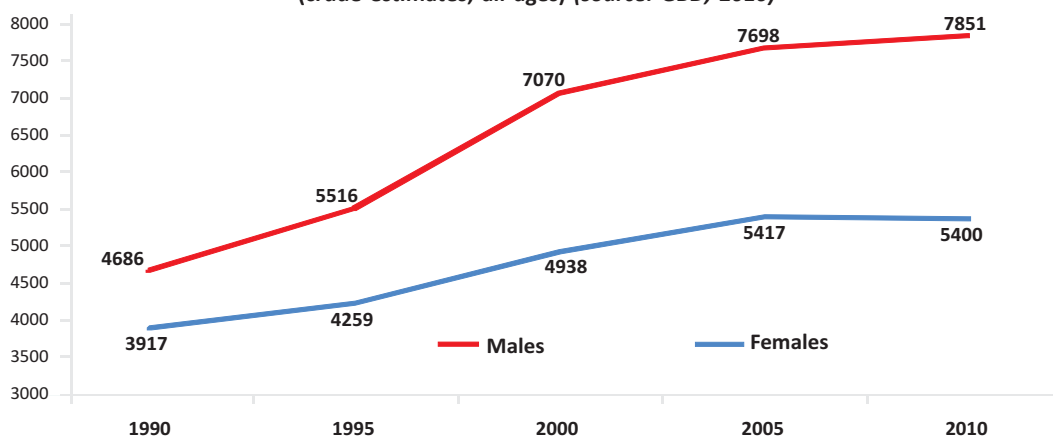
A plausible explanation for this sharp increase in CVD morbidity and mortality relates to the social turmoil and civil unrest which was experienced in Albania in 1997-2000 (as a consequence of the collapse of the “pyramid” scams and the following devastating political and socioeconomic breakdown coupled with an excessive interpersonal and community violence involving largely the male sex).

Actually, unpublished data indicate a particularly excessive number of myocardial infarction cases hospitalized in Tirana, the Albanian capital in 1997-2000. From 1990-1996, the average number of hospitalized patients with myocardial infarction in Tirana was about 220 (in 1996, there were 264 cases).

In 1997, at the peak of the collapse of the saving schemes, there were 497 hospitalized cases with myocardial infarction in Tirana. Subsequently, the number of hospitalized cases was 478 (in 1998), 373 (in 1999) and 395 (in 2000) (Celiku N, personal communication, 2007).

A similar situation with an excess CVD risk has been reported, notwithstanding the lack of proper documentation, in most of the other districts of Albania involving primarily male cases hospitalized with myocardial infarction and other CVD conditions. On the other hand, Albanian females have experienced a more gradual increase of CVD toll from 1990 to 2005. Subsequently, there was evidence of a plateau in DALYs from CVD in Albanian females.

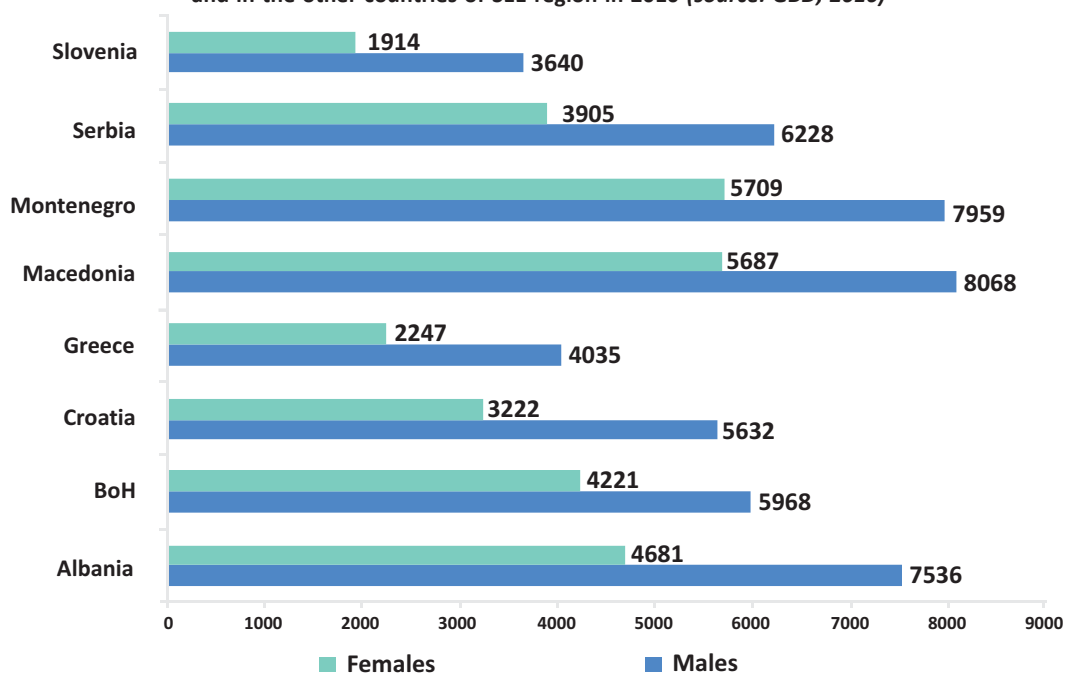
**Figure 35. Sex-specific DALYs (per 100,000) for cardiovascular diseases in Albania in selected years (crude estimates, all ages) (source: GBD, 2010)**



In 2010, the age-standardized DALYs from CVD in Albanian males (about 7,500 per 100,000) were lower than the rate observed in Montenegro or Macedonia (with 8,000 on average), but higher than the other countries in the region (Figure 36). In particular, Slovenia exhibited the lowest level in the region for males (3,640 DALYs per 100,00) – a rate which was even lower than Greece (4,035 per 100,000).

A similar pattern was evident in females, where Albania (about 4,680 DALYs per 100,000) displayed a lower rate than Macedonia and Montenegro, but higher than the other SEE countries. Again, the rate among Slovenian females was the lowest in the region, Greece included.

**Figure 36. Sex-specific age-standardized DALYs (per 100,000) for cardiovascular diseases in Albania and in the other countries of SEE region in 2010 (source: GBD, 2010)**



Considering the overall DALYs from CVD, there was definitely a rather strong increasing trend from 1990 to 2005, most probably due to unhealthy lifestyle/behavioral factors including cigarette smoking (especially in men), excessive alcohol consumption in men (including binge drinking), high rates of overall obesity and abdominal obesity (in both sexes), as well as lack of physical activity (also, evident in both sexes).

Yet, as indicated earlier, after 2005, there is evidence of a plateau in females and only a small increase in males, which may suggest an overall leveling off in the CVD toll in Albania, possibly due to the introduction of national health prevention programs aiming at promoting a healthy lifestyle.

### Cancer

In the past two decades, it is estimated that there has been an increase of 56% in the total burden of disease from cancer in Albania (overall, the absolute increase was almost 1,200 DALYs per 100,000 from 1990 to 2010) (Table 26). The increase in the proportion of total burden of disease was 4.6% (from 7.4% in 1990 to 12.0% in 2010). There was a similar increase in both sexes (59% in males vs. 54% in females), notwithstanding the higher overall DALYs from cancer in males compared to females (68% and 63% higher in 2010 and 1990, respectively).

**Table 26. Sex-specific DALYs for cancer conditions in Albania in 1990 and 2010**  
(crude estimates, all ages) (source: *GBD, 2010*)

Sex	Year: 2010		Year: 1990	
	DALYs (per 100,000)	Percent DALYs	DALYs (per 100,000)	Percent DALYs
<b>Males</b>	4169.0	13.4	2618.3	8.4
<b>Females</b>	2477.6	10.4	1605.8	6.2
<b>Both sexes</b>	3324.0	12.0	2124.6	7.4

In males, there was a sharp increase in DALYs from cancer especially from 1995-2000 (Figure 37) with an absolute increase of 787 DALYs per 100,000 (or, an increase of 27%). Subsequently, there a gradual increase, albeit far smaller.

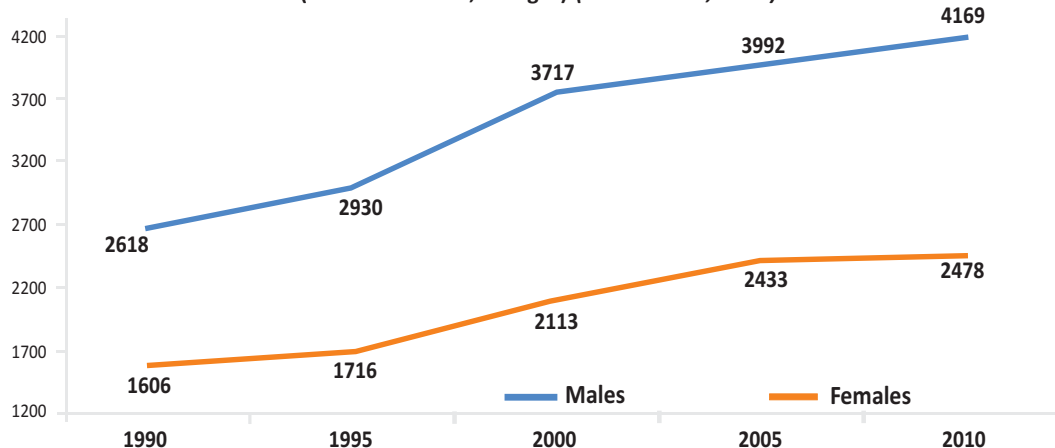
In females, there was evidence of a steady increase from 1995 to 2005 (1,716 and 2,433 DALYs per 100,000, respectively), which almost leveled off in the next five years.

Nevertheless, similar to CVD, there is evidence of a very strong increase in the toll of cancer in the Albanian population in the past 20 years. Currently, the share of cancer (12% of the overall DALYs) constitutes the second contributor to the total burden of disease in the Albanian population after CVD (which, in turn, accounts for 24% of the total DALYs).

Similar to the aforementioned considerations related to the CVD conditions, a likely explanation for the rapid increase in the overall DALYs from cancer in the Albanian population may relate to the increasing rates of unhealthy behaviors such as smoking, harmful alcohol consumption (excessive intake, as well as the deleterious patterns including bingeing), high levels of obesity, as well as physical inactivity.

All these issues will be further addressed in Chapter 5 on “Risk factors”.

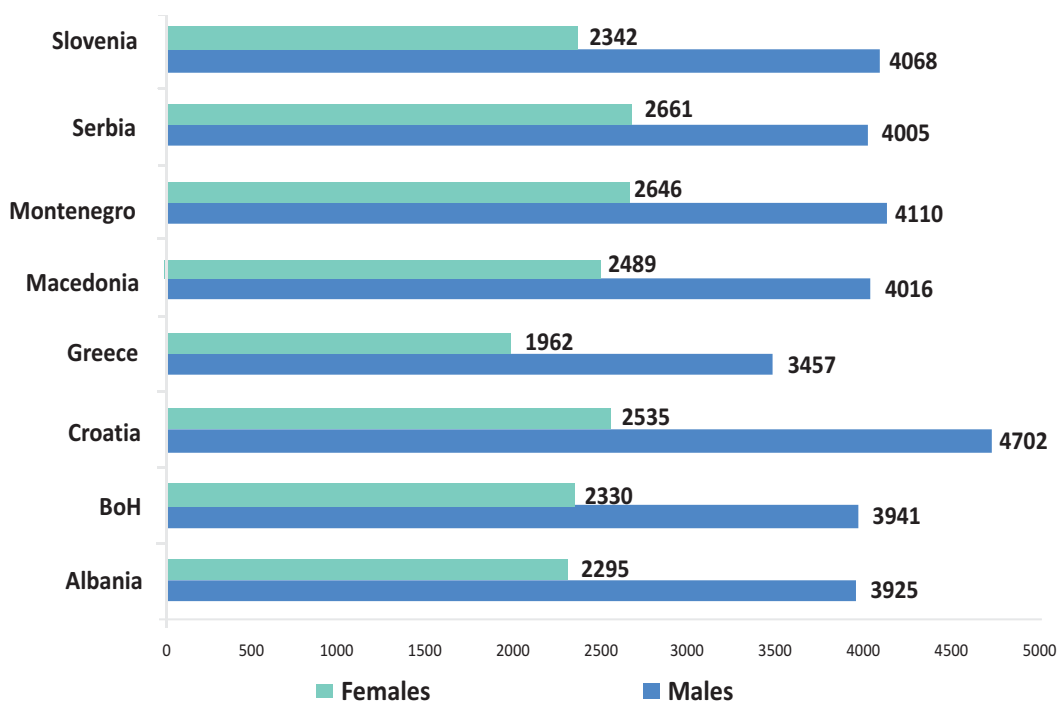
Figure 37. Sex-specific DALYs (per 100,000) for cancer in Albania in selected years (crude estimates, all ages) (source: GBD, 2010)



Notwithstanding the increase in the cancer burden, Albanian males displayed the lowest (age-standardized) DALYs in the region in 2010 (excluding Greece), with 3,925 DALYs per 100,000 (Figure 38). Croatian men exhibited the highest toll (4,702 DALYs/100,000).

A similar pattern was observed in females, with Albania showing the lowest DALYs in the region (2,995 per 100,000), except Greece. On the contrary, Serbian females showed the highest rate in the region (2,661 DALYs per 100,000).

Figure 38. Sex-specific age-standardized DALYs (per 100,000) for cancer in Albania and in the other countries of SEE region in 2010 (source: GBD, 2010)





According to the official national data – available from the registry of the Oncology Service of the University Hospital Center “Mother Teresa” in Tirana and partly from the registries of the district hospitals and pathology services – there are approximately 3,500 new cases of cancer each year in Albania (Ministry of Health, 2014).

However, the extremely low (registered) incidence of cancer in Albania (about 100 new cases per 100,000 population) (operational data from the Albanian Ministry of Health), as compared with the same rate in the other European countries, is very likely to be due to incomplete registration and only partly due to the relatively high percentage of young people in Albania. Indeed, over 70% of the Albanian population is less than 45 years – constituting the youngest population in Europe (excluding Kosovo).

Therefore, based on all these considerations, the toll of the overall cancer conditions in Albania is undoubtedly higher than the official national reports. Furthermore, given the unabated trend in the ageing of the population, a substantial increase in the incidence of cancer is foreseen to affect Albania in the coming years.

A national cancer control program was officially envisaged in Albania in 2011 with technical expertise and support from international agencies (Albanian Ministry of Health, 2011). The national cancer control program was designed in line with the WHO recommendations for implementation in a stepwise manner (referred to as “piecemeal” approach) by identifying and undertaking first those activities that are the most urgent and that promise the greatest benefit (Albanian Ministry of Health, 2011). The first two preliminary steps have been already accomplished namely getting on board all the main national stakeholders and subsequently the international technical agencies and funding institutions.

In addition, a national action plan has been already developed including concrete steps and activities for each of the main pillars of the national program for cancer control in Albania, which are briefly summarized below:

- i. Primary prevention (avoidance of risk factors which account for at least one-third of all types of cancers) (WHO, 2011);
- ii. Secondary prevention (early detection by selection and prioritization of the types of cancers which can be effectively detected at a preclinical stage and for which there is an effective treatment when detected at an early stage; of the eight leading cancers in Albania, the national program for cancer control has identified four types of cancer which are amenable to early detection including breast, cervical, skin and larynx/oropharynx) (Ministry of Health, 2011);
- iii. Tertiary prevention (effective treatment by: strengthening national human resource development; provision of adequate equipment, up-to-date technology for both pathology and radiotherapy, and; availability of cost-effective drugs);
- iv. Quaternary prevention (palliative care by provision of affordable and cost-effective drugs, which should primarily reach individuals most in need for such health care services), and;

- v. Population-based cancer registry (establishment of a register covering ideally the whole population which will considerably help policymakers and health professionals to plan, monitor and evaluate the cancer control program).

### Chronic respiratory diseases

In Albania, there has been an overall increase in the chronic respiratory diseases in the past two decades (from about 964 DALYs to 1,094 DALYs per 100,000 in 1990 and 2010, respectively) (Table 27). DALYs from chronic respiratory diseases accounted for 3.4% and 4.0% of the total burden of disease in Albania in 1990 and 2010, respectively.

In males, there is evidence of a somehow higher risk in absolute terms, whereas the contribution of chronic respiratory diseases to total burden of disease is similar in both sexes (in 2010: 3.9% in females and 4.1% in males).

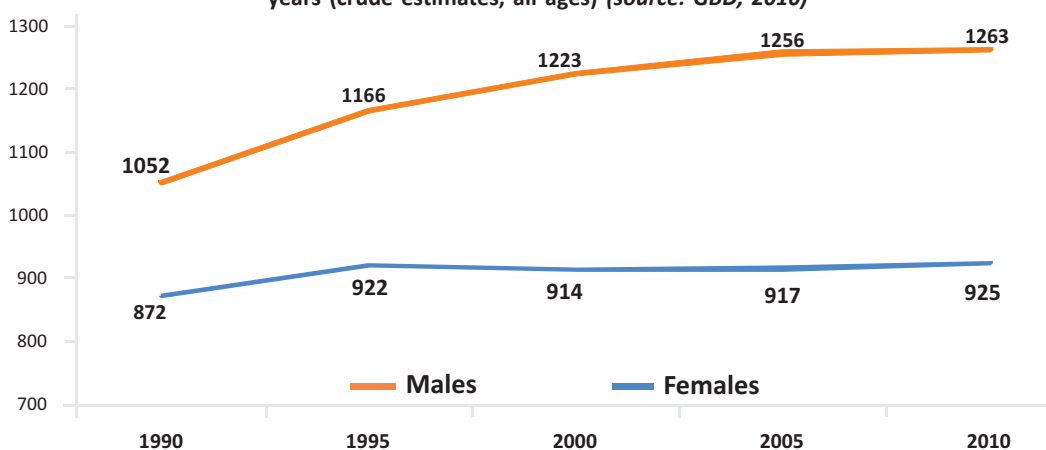
**Table 27. Sex-specific DALYs for chronic respiratory diseases in Albania in 1990 and 2010 (crude estimates, all ages) (source: GBD, 2010)**

Sex	Year: 2010		Year: 1990	
	DALYs (per 100,000)	Percent DALYs	DALYs (per 100,000)	Percent DALYs
<b>Males</b>	1262.9	4.1	1051.6	3.4
<b>Females</b>	925.1	3.9	871.8	3.3
<b>Both sexes</b>	1094.1	4.0	963.9	3.4

A more refined analysis reveals that in females there has been an increase during 1990-1995 (from 872 to 922 DALYs per 100,000), which has subsequently negligibly declined (from 1995 to 2005) and leveled off in the following years (2005-2010) (Figure 39). The trend of chronic respiratory diseases in females goes in line with the prevalence of smoking which, notwithstanding the rapid transition in Albania, has not increased significantly especially in middle-aged and older women.

On the other hand, in males there has been a sharper increase in 1990-1995 (from 1,052 to 1,166 DALYs per 100,000), which has been followed by a slower increase in the next 15 years.

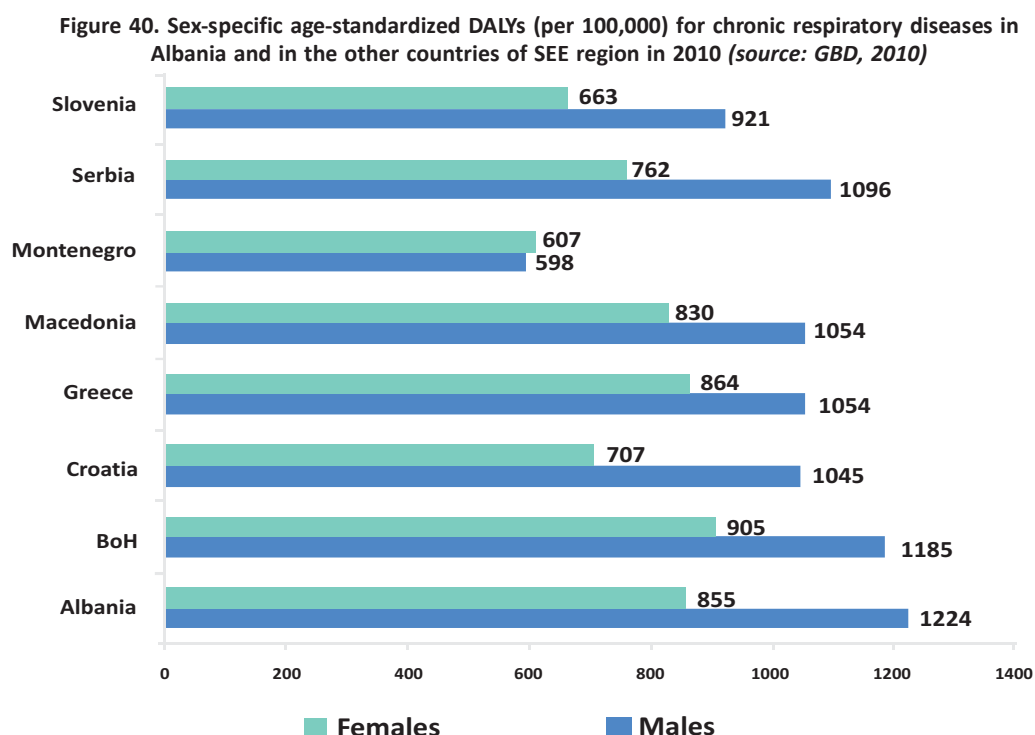
**Figure 39. Sex-specific DALYs (per 100,000) for chronic respiratory diseases in Albania in selected years (crude estimates, all ages) (source: GBD, 2010)**



Overall, the current evidence suggests a modest increase in the toll of chronic respiratory diseases in Albania in the past two decades which, with all likelihood, will increase further in the years to come given the high prevalence of smoking, especially in males.

The age-standardized estimates (Figure 40) indicate that chronic respiratory diseases in Albanian males in 2010 were the highest in the region (1,224 DALYs per 100,000) followed by Bosnia and Herzegovina. Surprisingly, males in Montenegro had an exceptionally low rate (598 DALYs per 100,000), which is hard to explain given the relatively high prevalence of smoking in this population.

In females, the highest level in 2010 was observed in Bosnia and Herzegovina. Nonetheless, Albanian females had one of the highest rates in the region (855 DALYs per 100,000) together with Greece and Macedonia. Interestingly, females in Montenegro had a slightly higher rate compared with their male counterparts – a finding which is counterintuitive given the lower prevalence of smoking in women.



### Diabetes and other endocrine, blood and urogenital diseases

In Albania, DALYs for endocrine, blood and urogenital diseases have moderately increased in the past 20 years (overall, the share of total burden of disease increased from 4.4% in 1990 to 5.2% in 2010) (Table 28).

The increase was similar in males and females (proportional DALYs increased in males from 4.0% in 1990 to 4.7% in 2010, and in females from 5.0% to 5.8%, respectively).

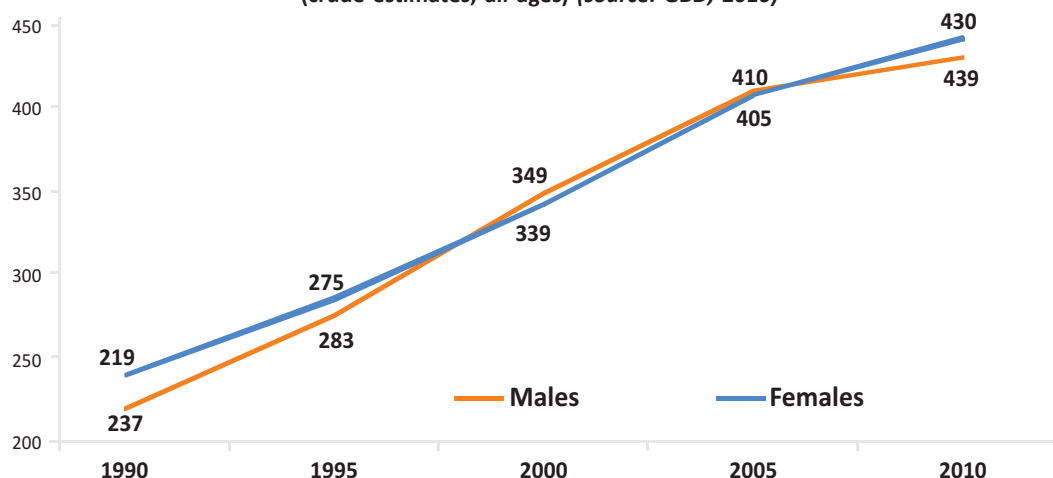
**Table 28. Sex-specific DALYs for endocrine, blood and urogenital diseases in Albania in 1990 and 2010 (crude estimates, all ages) (source: GBD, 2010)**

Sex	Year: 2010		Year: 1990	
	DALYs (per 100,000)	Percent DALYs	DALYs (per 100,000)	Percent DALYs
<b>Males</b>	1461.2	4.7	1243.6	4.0
<b>Females</b>	1390.1	5.8	1316.1	5.0
<b>Both sexes</b>	1425.7	5.2	1279.0	4.4

The toll of diabetes mellitus has almost doubled in Albania in both sexes in the past two decades. In males, there was an increase of 96% in DALYs from diabetes, whereas in females this increase was 85% (Figure 41).

In males, there was somehow a sharper increase until 2005, which was followed by a more moderate raise. Conversely, in females there was evidence of a slower, yet more steady increase.

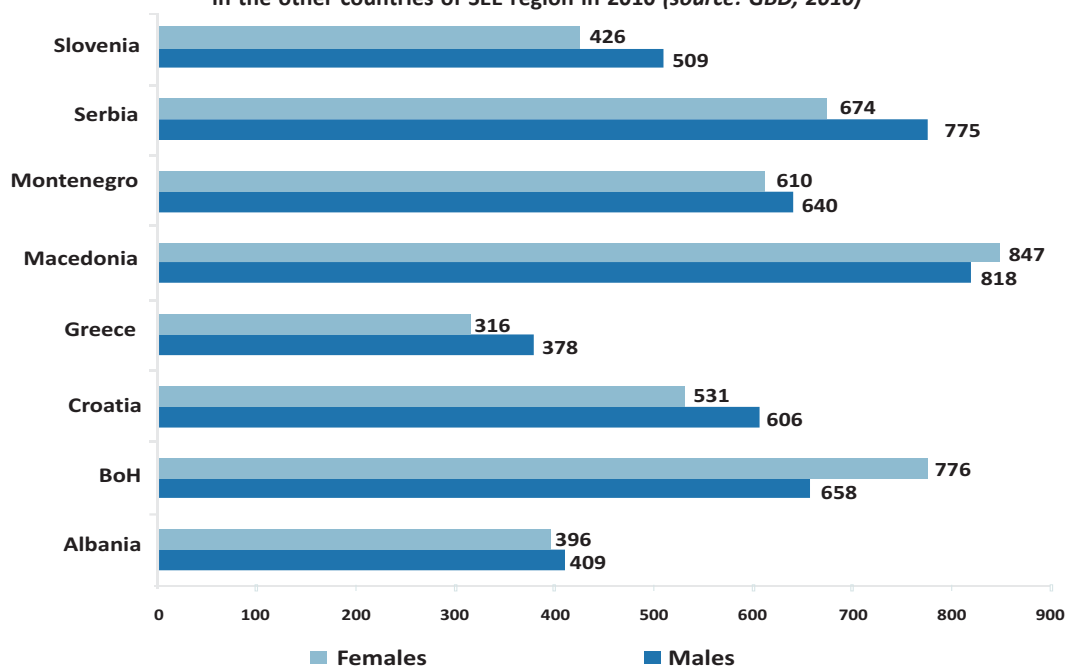
**Figure 41. Sex-specific DALYs (per 100,000) for diabetes in Albania in selected years (crude estimates, all ages) (source: GBD, 2010)**



With the exception of Greece, Albania had the lowest level of (age-standardized) DALYs from diabetes in 2010 (Figure 42). Hence, in 2010, in males there were 409 DALYs per 100,000 which was 100 DALYs less than Slovenia (the second lowest country in the region). The proportional DALYs from diabetes was 1.3% in Albanian males in 2010, whereas in 1990 it was only 0.9%.

A similar trend was evident in females, notwithstanding a smaller difference with Slovenia (the second lowest level in the region, except Greece). The proportional DALYs from diabetes was 1.7% in the Albanian females in 2010, while in 1990 it was 1.1%. Overall, the sex-pooled proportional DALYs in Albania (1.5%) was the lowest in the region in 2010, notwithstanding a 50% increase compared with 1990 (where this share was only 1%).

Figure 42. Sex-specific age-standardized DALYs (per 100,000) for diabetes mellitus in Albania and in the other countries of SEE region in 2010 (source: GBD, 2010)



Essentially, the toll of diabetes is increasing in Albania, but it still remains quite low compared with the other countries in the SEE region and beyond. As a matter of fact, according to the Diabetes Atlas, about 2.9% of the adult population in Albania has diabetes, i.e. about 65,460 adult citizens (International Diabetes Federation, 2012). Conventional wisdom suggests this figure is pretty low and, on the face of it, health system in Albania is not fully adequate in finding diabetes cases, which leads to a substantial underestimation of the exact toll of this chronic condition in Albania. Indeed, it is estimated that at least an additional 212,520 individuals in Albania (constituting about 10% of the overall population) suffer from impaired glucose tolerance (pre-diabetes) (International Diabetes Federation, 2012).

Hence, it is assumed in the near future that Albania will gradually catch-up the other countries in terms of a gradual increase in the toll of diabetes due to an improvement in the accessibility of health care (i.e. adequate registration and management of all cases with diabetes) coupled with a steady increase in the ageing population (which, inevitably, is associated with an increase in the prevalence of diabetes).

### Overall non-communicable diseases (NCDs)

Overall, the toll of NCDs in Albania has increased by 34% (in men: DALYs per 100,000 about 17,498 in 1990 vs. 23,448 in 2010) (Table 29).

The overall proportion of NCDs to the total burden of disease increased from 59% in 1990 to 79% in 2010. The pace of increase was similar in both sexes.

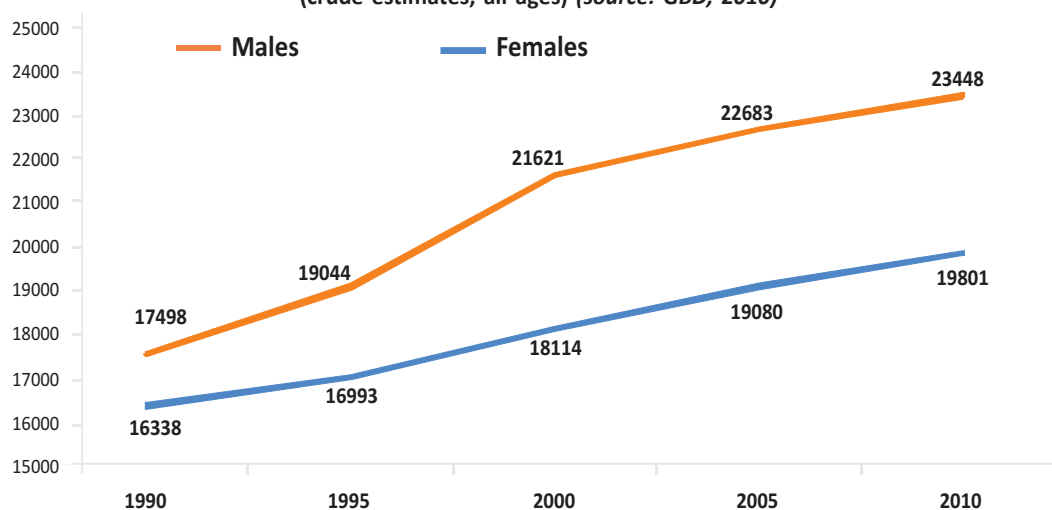
**Table 29. Sex-specific DALYs for the overall NCDs in Albania in 1990 and 2010**  
(crude estimates, all ages) (source: GBD, 2010)

Sex	Year: 2010		Year: 1990	
	DALYs (per 100,000)	Percent DALYs	DALYs (per 100,000)	Percent DALYs
<b>Males</b>	23447.5	75.3	17497.6	55.9
<b>Females</b>	19800.9	82.9	16337.9	62.5
<b>Both sexes</b>	21625.7	78.6	16.932.2	58.9

A detailed analysis reveals a particularly sharp increase of the overall NCDs in Albanian males during the period 1995-2000 (Figure 43). Subsequently, during 2000-2010, there was a stable increase, less strong though.

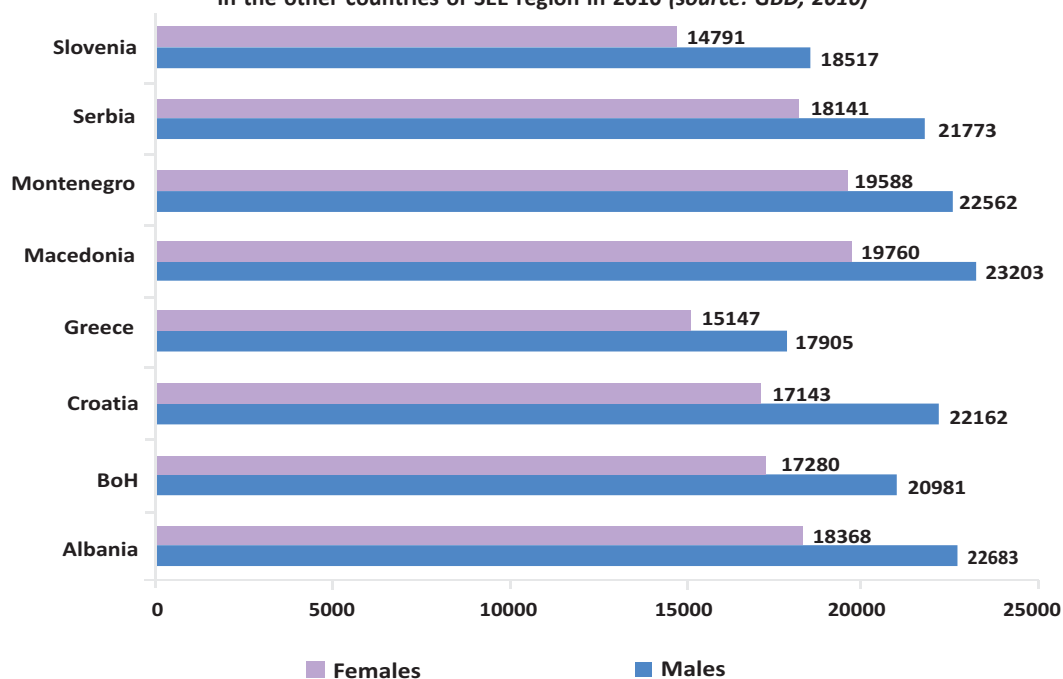
On the other hand, in females, there was evidence of a smoother yet steady increase in the overall NCD toll in the past two decades.

**Figure 43. Sex-specific DALYs (per 100,000) for the overall NCDs in Albania in selected years**  
(crude estimates, all ages) (source: GBD, 2010)



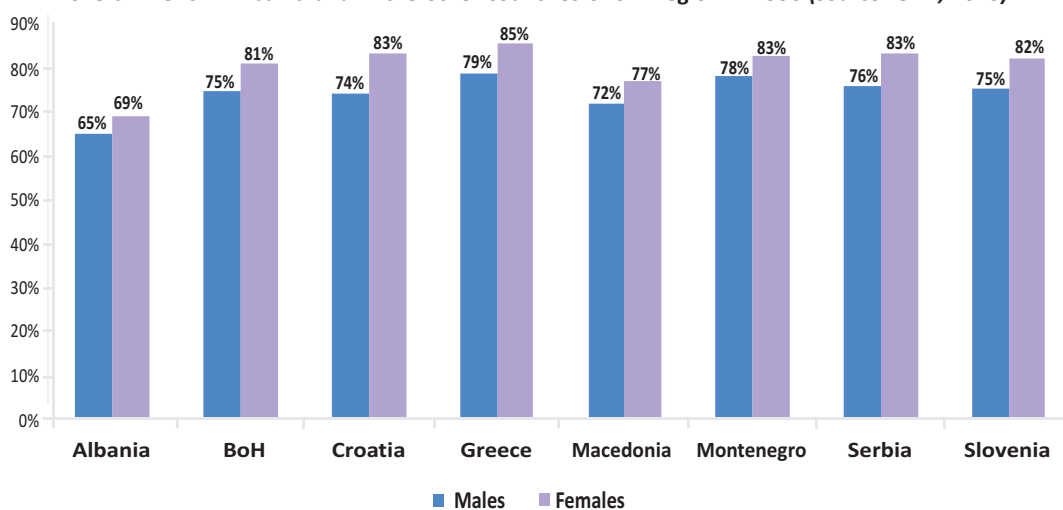
The age-standardized toll of the overall NCDs in Albanian males in 2010 (22,683 DALYs per 100,000) was among the highest in the region together with Macedonia (the highest) and Montenegro. Conversely, the age-standardized proportional DALYs from NCDs in Albanian males in 2010 was about 74%, which was the lowest in the region. In females, Macedonia and Montenegro exhibited the highest rates, followed by Albania (18,368 DALYs per 100,000) and Serbia. The age-standardized proportional DALYs from NCDs in Albanian females in 2010 was about 80% which, again, was the lowest in the region. This finding, evident in both sexes, indicates that other ill-health conditions including infectious diseases still constitute a larger share in the total burden of disease in Albania compared with the other countries in SEE region.

Figure 44. Sex-specific age-standardized DALYs (per 100,000) for the overall NCDs in Albania and in the other countries of SEE region in 2010 (source: GBD, 2010)



Interestingly, in 1990, the age-standardized proportional DALYs (to the total burden of disease) for the overall NCDs in Albania were much lower than the average value of SEE region (only 65% in males and 69% in females) (Figure 45). This relatively low score was due to the relatively high score for other categories in the burden of disease, e.g. infectious diseases and accidents and injuries, including also suicide and homicide. This gap has been considerably reduced in the past two decades, regardless the fact that Albania's share of NCDs continues to be the lowest in the region.

Figure 45. Sex-specific age-standardized proportional DALYs (to the total burden of disease) for the overall NCDs in Albania and in the other countries of SEE region in 1990 (source: GBD, 2010)



### Musculoskeletal disorders

The burden of musculoskeletal disorders has also increased in Albania in the past two decades. Overall, the share of these disorders accounted for 8.5% of the total burden of disease in 1990, whereas in 2010 it increased up to 11.0% (Table 30).

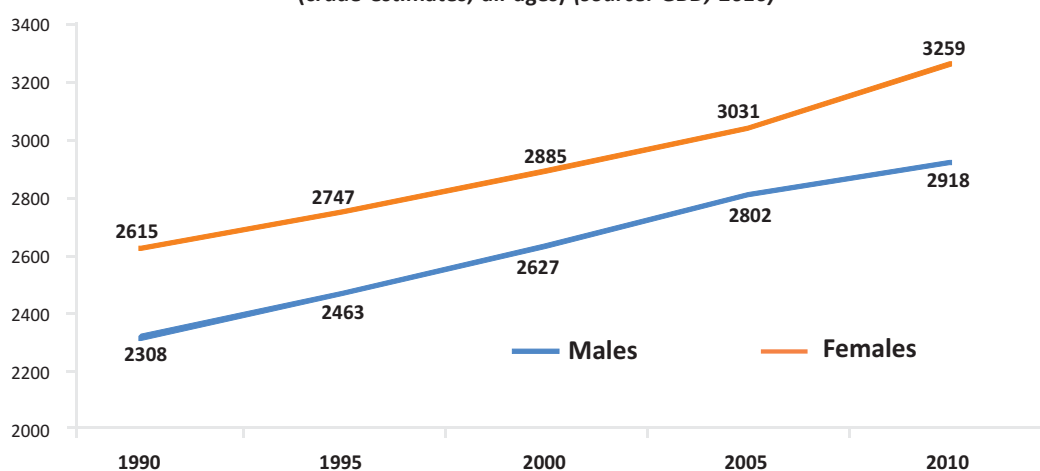
In relative terms, there was evidence of a stronger increase in females (with 3.7% increase in the proportional DALYs) compared to males (only 2.0%).

**Table 30. Sex-specific DALYs for musculoskeletal disorders in Albania in 1990 and 2010**  
(crude estimates, all ages) (source: GBD, 2010)

Sex	Year: 2010		Year: 1990	
	DALYs (per 100,000)	Percent DALYs	DALYs (per 100,000)	Percent DALYs
<b>Males</b>	2917.8	9.4	2308.1	7.4
<b>Females</b>	3259.4	13.7	2615.1	10.0
<b>Both sexes</b>	3088.5	11.0	2457.8	8.5

In both sexes, there was a similar moderate yet steady increase from 1990-2005 (Figure 46). Afterwards, there was a steeper increase in females, but a smaller increase in males, which additionally accentuated the excess burden of disease explained by the musculoskeletal disorders in females compared to males.

**Figure 46. Sex-specific DALYs (per 100,000) for musculoskeletal disorders in Albania in selected years**  
(crude estimates, all ages) (source: GBD, 2010)



Compared with the other countries in the region, the age-standardized DALYs for musculoskeletal disorders in Albania were similar with most of SEE countries in both 1990 and 2010 (Table 31). In 2010, the share of musculoskeletal disorders was 11.0% of the total burden of disease in several SEE countries including Albania.

Basically, musculoskeletal disorders have increased in Albania probably due to a higher accessibility to the health care services in addition to the ageing pattern of the Albanian population – the later explaining the higher share of these disorders in Slovenia and particularly in Greece which have the largest proportion of the older populations in the SEE region.



**Table 31. Sex-pooled age-standardized DALYs for musculoskeletal disorders in Albania and in the other countries of SEE region in 1990 and 2010 (source: GBD, 2010)**

Musculoskeletal disorders (both sexes)	Year: 1990		Year: 2010	
	DALYs (100,000)	Percent DALYs	DALYs (100,000)	Percent DALYs
<b>Albania</b>	<b>2920.6</b>	<b>9.4</b>	<b>2935.8</b>	<b>11.0</b>
Bosnia and Herzegovina	2485.2	7.9	2514.1	11.0
Croatia	2812.8	9.0	2829.9	12.0
Greece	3225.8	14.0	3202.1	16.0
Macedonia	2894.6	8.6	2953.7	11.0
Montenegro	2930.5	10.0	2915.6	11.0
Serbia	2928.6	9.9	2942.6	12.0
Slovenia	2844.1	9.9	2860.5	14.0

### Digestive diseases

Diseases related to the digestive system (excluding cirrhosis) have decreased in Albania in the past two decades in both sexes, but more so among females.

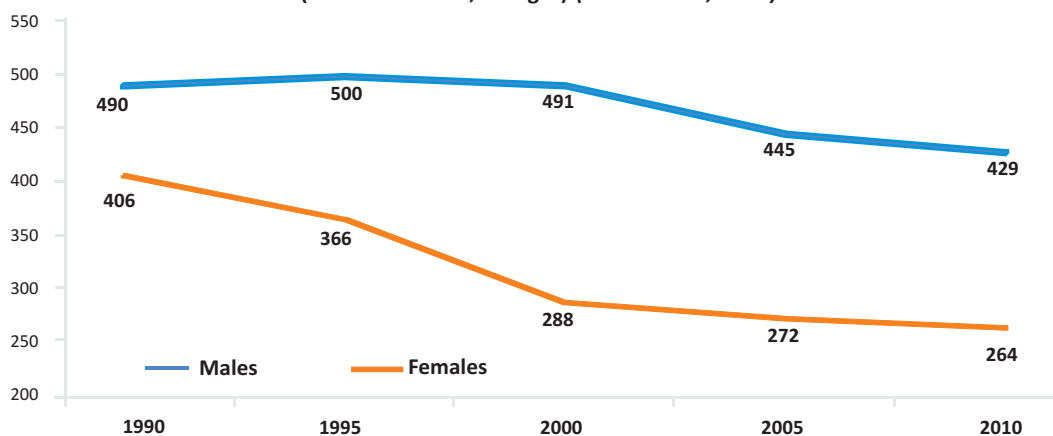
Hence, among females, the share of these conditions decreased from 1.6% in 1990 to 1.1% in 2010, whereas in males from 1.6% to 1.4%, respectively (Table 32).

**Table 32. Sex-specific DALYs for digestive diseases (excluding cirrhosis) in Albania in 1990 and 2010 (crude estimates, all ages) (source: GBD, 2010)**

Sex	Year: 2010		Year: 1990	
	DALYs (per 100,000)	Percent DALYs	DALYs (per 100,000)	Percent DALYs
<b>Males</b>	429.1	1.4	490.0	1.6
<b>Females</b>	263.8	1.1	405.5	1.6
<b>Both sexes</b>	346.5	1.3	448.8	1.6

The decline in females was much steeper from 1990-1995, but especially from 1995-2000 (Figure 47). Subsequently, there was almost a plateau. On the other hand, in males, there was a stable rate from 1990-2000, which was followed by a steady decline in the next decade.

**Figure 47. Sex-specific DALYs (per 100,000) for digestive diseases in Albania in selected years (crude estimates, all ages) (source: GBD, 2010)**



Overall, in 1990, the toll of digestive diseases in Albania was the highest in the region (with about 476 DALYs per 100,000) (Table 33). Digestive diseases accounted for 1.5% of the total burden of disease in Albania in 1990.

Two decades later, digestive diseases account for 1.2% of the total burden of disease in Albania – a situation which is similar in most of the countries in the region.

**Table 33. Sex-pooled age-standardized DALYs for digestive diseases in Albania and in the other countries of SEE region in 1990 and 2010 (source: GBD, 2010)**

Digestive diseases (both sexes)	Year: 1990		Year: 2010	
	DALYs (100,000)	Percent DALYs	DALYs (100,000)	Percent DALYs
<b>Albania</b>	<b>476.1</b>	<b>1.5</b>	<b>331.2</b>	<b>1.2</b>
Bosnia and Herzegovina	399.1	1.3	282.5	1.2
Croatia	399.8	1.3	275.3	1.2
Greece	232.3	1.0	213.6	1.1
Macedonia	300.6	0.9	228.3	0.9
Montenegro	312.9	1.1	304.7	1.2
Serbia	375.3	1.3	328.3	1.4
Slovenia	416.6	1.5	262.9	1.3

Hence, the current toll of digestive diseases in Albania resembles the regional average, exhibiting a decreasing trend in the past 20 years. This decline may be an indication of a better health care in terms of prompt and adequate treatment of digestive conditions in the Albanian population.

### Mental and behavioral disorders

Mental and behavioral disorders have increased in Albania during the transition period, slightly more so among females (in absolute terms).

Regarding the relative burden, in 1990, the proportion of these conditions constituted 7.2% and 9.9% of the total burden of disease in males and females, respectively. In 2010, these figures were 8.8% in males and 13.4% in females (Table 34) pointing to a much higher rate of relative increase among females.

**Table 34. Sex-specific DALYs for mental and behavioral disorders in Albania in 1990 and 2010 (crude estimates, all ages) (source: GBD, 2010)**

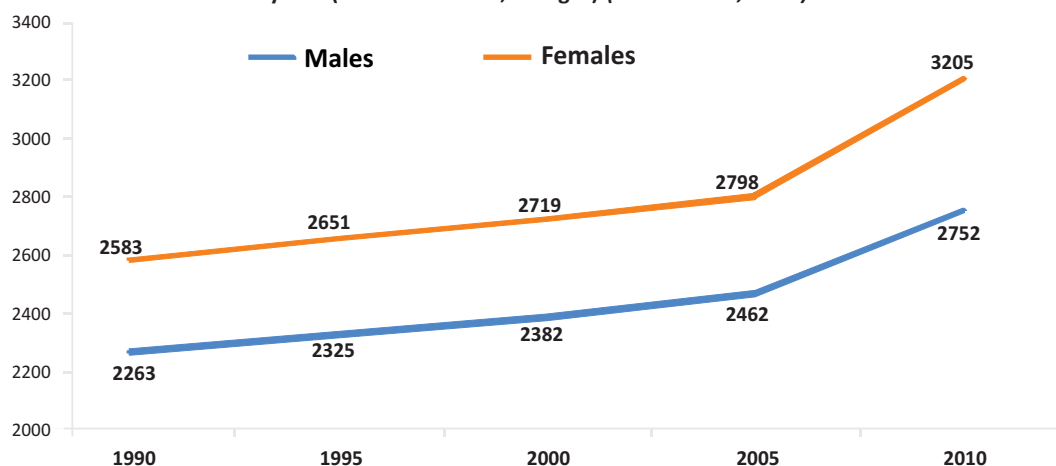
Sex	Year: 2010		Year: 1990	
	DALYs (per 100,000)	Percent DALYs	DALYs (per 100,000)	Percent DALYs
<b>Males</b>	2752.4	8.8	2262.7	7.2
<b>Females</b>	3205.3	13.4	2583.4	9.9
<b>Both sexes</b>	2978.6	11.0	2419.1	8.4

As a matter of fact, the increasing trend was moderate but steady in both sexes from 1990 to 2005. Subsequently, in both sexes there was a similar sharper increase (Figure 48) indicating that, currently, mental and behavioral disorders consist of an important part of the health problems in transitional Albania, which will definitely increase

further in the years to come.

Of important note, these conditions are unstable and often times difficult to measure which should be always taken into consideration when assessing trends over time and/or conducting cross-country comparisons (definition and classification criteria should be compatible for such cross-national comparisons).

**Figure 48. Sex-specific DALYs (per 100,000) for mental and behavioral disorders in Albania in selected years (crude estimates, all ages) (source: GBD, 2010)**



Regardless of the aforementioned methodological considerations, concerning the regional positioning, Albania exhibits a relatively low toll of mental and behavioral disorders compared with the other SEE countries (Table 35).

In 2010, the age-standardized proportional burden from mental and behavioral disorders in Albania was 11.0% in Albania which, together with Macedonia constitutes the lowest share in the region.

Compared with two decades earlier (8.2% in 1990), however, there is a significant increase pointing to the serious public health implications involved with these conditions in Albania currently, but especially in the near future. Therefore, policymakers and decision-makers in Albania should be aware of the burden and consequences for the health care system of mental and behavioral disorders in the Albanian population.

**Table 35. Sex-pooled age-standardized DALYs for mental and behavioral disorders in Albania and in the other countries of SEE region in 1990 and 2010 (source: GBD, 2010)**

Mental and behavioral disorders (both sexes)	Year: 1990		Year: 2010	
	DALYs (100,000)	Percent DALYs	DALYs (100,000)	Percent DALYs
<b>Albania</b>	<b>2534.8</b>	<b>8.2</b>	<b>2890.7</b>	<b>11.0</b>
Bosnia and Herzegovina	3567.3	11.0	2831.0	12.0
Croatia	3885.8	12.0	3516.5	15.0
Greece	2739.7	12.0	2939.6	14.0
Macedonia	3147.7	9.4	2876.2	11.0
Montenegro	3250.2	11.0	3249.6	13.0
Serbia	3907.9	13.0	3311.5	14.0
Slovenia	3010.9	10.0	2851.7	14.0

### Neurological disorders

Overall, the burden of neurological disorders has only slightly increased in Albania during the past two decades of transition. The proportion of neurological disorders accounted for 3.7% of the total burden of disease in the overall Albanian population in 1990 and, in 2010, this share increased only to 4.1%, slightly more so in females compared to males (Table 36).

**Table 36. Sex-specific DALYs for neurological disorders in Albania in 1990 and 2010 (crude estimates, all ages) (source: GBD, 2010)**

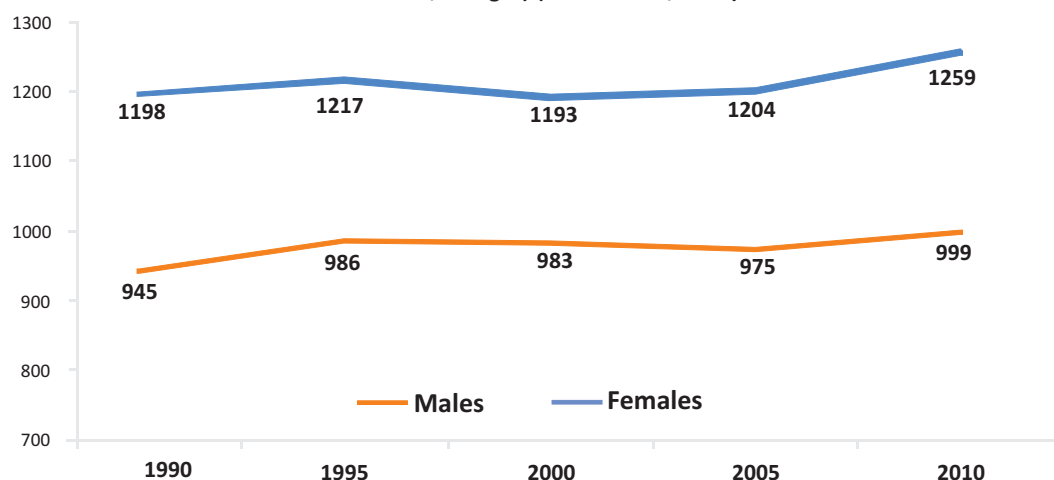
Sex	Year: 2010		Year: 1990	
	DALYs (per 100,000)	Percent DALYs	DALYs (per 100,000)	Percent DALYs
<b>Males</b>	999.1	3.2	945.0	3.0
<b>Females</b>	1259.0	5.3	1198.1	4.6
<b>Both sexes</b>	1128.9	4.1	1068.4	3.7

The trend in females regarding the neurological disorders is inconsistent. After an initial trivial increase (from 1990 to 1995), there was evidence of a modest decrease in the following five years. After 2000, there was evidence of a steady increase, albeit small (Figure 49).

A similar inconsistent pattern was observed in males, with an initial slight increase in 1990-1995, followed by a negligible decrease in the next ten years (until 2005). Afterwards, there was a rather slight increase.

Overall, there was evidence of a slight increase in the burden of neurological disorders in Albania which nonetheless should be interpreted with caution given not only the underreporting, but especially misclassification of these conditions in the context of Albania, where neurological disorders together with mental and behavioral disorders are highly stigmatized.

Figure 49. Sex-specific DALYs (per 100,000) for neurological disorders in Albania in selected years (crude estimates, all ages) (source: GBD, 2010)



Notwithstanding these considerations, the sex-pooled age-standardized burden of neurological disorders in Albania was the highest in SEE region in both 1990 and in 2010 (Table 36.a).

This is not necessarily reflected in a higher share of these conditions for the total burden of disease though. Hence, the proportional DALYs for neurological disorders in Albania in 2010 accounted for 4.1% of the total burden of disease, which places Albania somewhere at an average value in the SEE region.

Table 36.a. Sex-pooled age-standardized DALYs for neurological disorders in Albania and in the other countries of SEE region in 1990 and 2010 (source: GBD, 2010)

Neurological disorders (both sexes)	Year: 1990		Year: 2010	
	DALYs (100,000)	Percent DALYs	DALYs (100,000)	Percent DALYs
Albania	1134.6	3.7	1102.7	4.1
Bosnia and Herzegovina	997.8	3.2	975.6	4.2
Croatia	924.9	2.9	916.0	3.9
Greece	840.5	3.6	862.7	4.4
Macedonia	984.0	2.9	963.4	3.8
Montenegro	950.8	3.4	983.5	3.8
Serbia	988.0	3.4	964.7	4.0
Slovenia	1041.4	3.6	978.2	4.8

### Injuries

In this category are included unintentional injuries, intentional injuries and road injuries. In the past twenty years, Albania has experienced an increase in the burden of overall injuries (absolute DALYs per 100,000 were about 3,059 in 1990 and 3,268 in 2010, reflecting a moderate proportional increase from 10.6% in 1990 to 11.9% in 2010) (Table 37).

There has been a higher increase in males compared to their female counterparts (in 2010, the proportional burden of the overall injuries was 15.2% in males vs. 7.6% in females). In

absolute terms, the burden of overall injuries in 2010 was 2.6 times higher in males than in females (about 4,717 in males vs. 1,817 DALYs in females, per 100,000) (Table 37).

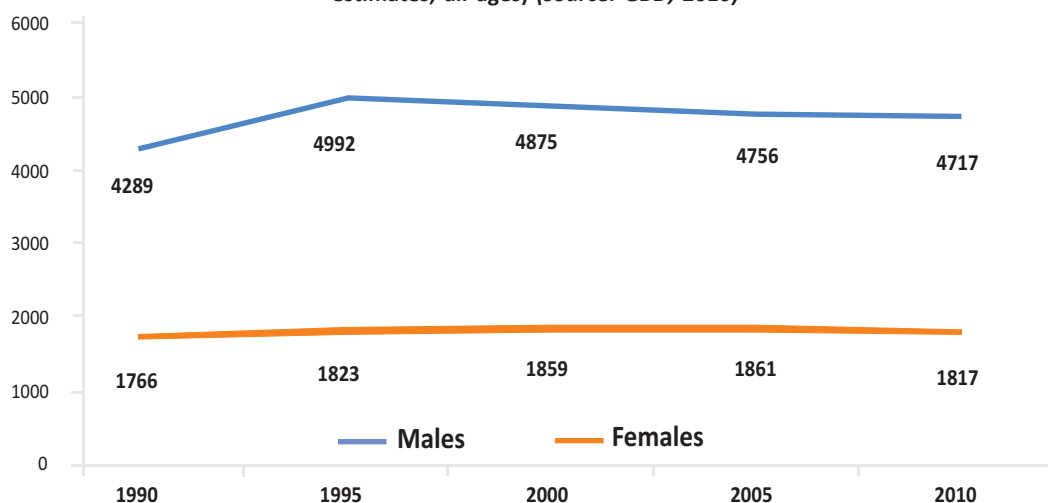
**Table 37. Sex-specific DALYs for the overall injuries in Albania in 1990 and 2010 (crude estimates, all ages) (source: GBD, 2010)**

Sex	Year: 2010		Year: 1990	
	DALYs (per 100,000)	Percent DALYs	DALYs (per 100,000)	Percent DALYs
Males	4717.2	15.2	4289.3	13.7
Females	1817.1	7.6	1765.8	6.8
Both sexes	3268.3	11.9	3058.9	10.6

A more detailed sex-specific analysis, reveals a sharp increase in the rate of overall injuries in males during the period 1990-1995 (Figure 50). Subsequently, there was evidence of a slight decline indicating stabilization of these conditions among Albanian males after the initial rise which coincides with the first years of harsh transition after the breakdown of the communist regime in early 1990s (where males were affected much more than females with regard to especially intentional injuries).

On the other hand, in females there was evidence of a moderate increase in the first decade of transition, followed by a stabilization period (during 2000-2005) and next a slight decline (2005-2010) – exhibiting a non-significant quadratic trend (Figure 50).

**Figure 50. Sex-specific DALYs (per 100,000) for the overall injuries in Albania in selected years (crude estimates, all ages) (source: GBD, 2010)**



Compared with the other countries in the region, the age-standardized burden of overall injuries in Albania was the highest in 2010 with about 3,195 DALYs per 100,000 (Table 38).

Two decades ago – at the fall of the communist rule – Albania was placed somewhere in the middle in terms of the absolute burden of the overall injuries, with Croatia and Slovenia on top. This regional positioning has changed in the past twenty years, as most of the countries in the SEE region have made progress towards a significant decline

of the toll of injuries, except Montenegro and especially Albania where there has been an increase in both the absolute and the relative burden of the overall injuries (Table 38).

**Table 38. Sex-pooled age-standardized DALYs for the overall injuries in Albania and in the other countries of SEE region in 1990 and 2010 (source: GBD, 2010)**

Overall injuries (both sexes)	Year: 1990		Year: 2010	
	DALYs (100,000)	Percent DALYs	DALYs (100,000)	Percent DALYs
<b>Albania</b>	<b>3098.6</b>	<b>10.1</b>	<b>3194.7</b>	<b>12.0</b>
Bosnia and Herzegovina	3323.9	10.6	2406.1	10.3
Croatia	4538.1	14.5	2657.3	11.3
Greece	2544.4	11.1	2043.5	10.4
Macedonia	2807.2	8.4	2214.5	8.6
Montenegro	2679.8	9.5	2877.1	11.2
Serbia	3136.9	10.7	2535.2	10.6
Slovenia	4335.9	15.1	2787.0	13.6

A cause-specific analysis (Table 39) reveals that intentional injuries have increased in Albania in both sexes in the past two decades, especially in the first decade of transition, after which they are stabilizing (data not shown in Table 39). Yet, given the fully preventable nature, these conditions are still considered highly prevalent and particularly worrying in the context of rapid transition in Albania.

Regarding the unintentional injuries, there is evidence of a moderate decrease in both sexes, especially after the peak in 2000 (not shown in Table 39).

However, the registration and the exact classification of both intentional and unintentional injuries is questionable in the case of Albania. Therefore, these estimates should always be interpreted with caution.

In turn, road injuries have increased in both sexes, particularly in males who are more frequent road users in the capacity of drivers. The overall increasing trend in road traffic accidents point to the urgent need for infrastructural and preventive measures in the rapidly urbanizing Albania.

**Table 39. Sex-specific DALYs separately for intentional, unintentional and road injuries in Albania in 1990 and 2010 (source: GBD, 2010)**

Sex / Injury	Year: 2010		Year: 1990	
	DALYs (per 100,000)	Percent DALYs	DALYs (per 100,000)	Percent DALYs
<b>Males:</b>				
<i>Intentional injuries</i>	1026.6	3.3	733.9	2.3
<i>Unintentional injuries</i>	2091.6	6.7	2241.8	7.2
<i>Road injuries</i>	1598.9	5.1	1313.6	4.2
<b>Females:</b>				
<i>Intentional injuries</i>	329.4	1.4	206.2	0.8
<i>Unintentional injuries</i>	957.8	4.0	1121.1	4.3
<i>Road injuries</i>	529.9	2.2	438.5	1.7
<b>Both sexes:</b>				
<i>Intentional injuries</i>	678.3	2.5	476.6	1.7
<i>Unintentional injuries</i>	1525.2	5.6	1695.4	5.9
<i>Road injuries</i>	1064.9	3.9	886.9	3.1

However, the age-standardized burden of road injuries in Albania in 2010 was very

similar to the rates observed in Montenegro, or Croatia (Table 40), but higher than the neighboring Macedonia and especially Bosnia and Herzegovina which exhibited a particularly low rate of road injuries.

**Table 40. Sex-pooled age-standardized DALYs for road injuries in Albania and in the other countries of SEE region in 1990 and 2010 (source: GBD, 2010)**

Road injuries (both sexes)	Year: 1990		Year: 2010	
	DALYs (100,000)	Percent DALYs	DALYs (100,000)	Percent DALYs
<b>Albania</b>	<b>823.1</b>	<b>2.7</b>	<b>861.3</b>	<b>3.2</b>
Bosnia and Herzegovina	339.4	1.1	378.8	1.6
Croatia	1423.6	4.5	868.1	3.7
Greece	1190.2	5.2	895.1	4.6
Macedonia	669.5	2.0	590.4	2.3
Montenegro	771.5	2.7	863.9	3.4
Serbia	945.7	3.2	786.2	3.2
Slovenia	1418.0	4.9	795.3	3.9

In summary, the rate of road injuries burden in Albania resembles the average of SEE region, but it is increasing though.

Furthermore, there should be a substantial underestimate of these events due to under-registration of road traffic accidents in the official health statistics in Albania. This is particularly worrying given the economic progress of the Albanian society which is associated with a considerable increase in the number of cars.

The excessive number of cars, in turn, coupled with the inadequate infrastructure inevitably leads to a rise in road injuries in Albania, a country where private cars were “banned” during the communist regime.

### Liver cirrhosis

Overall, there has been an increase in the burden of liver cirrhosis in Albania in the past twenty years (from about 117 to 150 DALYs per 100,000 in 1990 and 2010, respectively) (Table 41).

This rise was almost similar in males and females, suggesting that excessive alcohol consumption – a lifestyle characteristic much more prevalent in males – may not entirely explain the increase in the burden of cirrhosis in Albania.

Instead, hepatitis B may play a significant role in the increasing rates of cirrhosis given the rise of this infection during the transition period in Albania (through unprotected sexual intercourse, injecting drug use, as well as unsafe blood transfusions).

**Table 41. Sex-specific DALYs for liver cirrhosis in Albania in 1990 and 2010 (crude estimates, all ages) (source: GBD, 2010)**

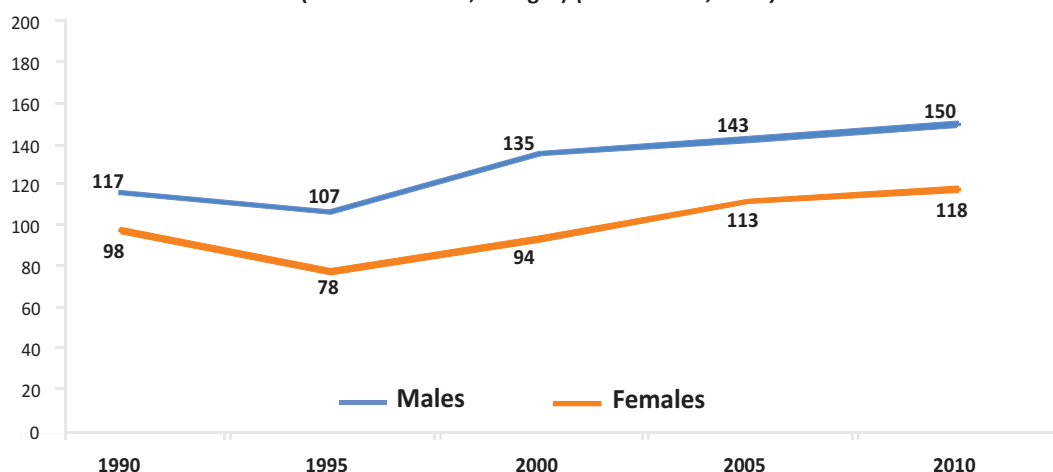
Sex	Year: 2010		Year: 1990	
	DALYs (per 100,000)	Percent DALYs	DALYs (per 100,000)	Percent DALYs
<b>Males</b>	150.0	0.5	116.8	0.4
<b>Females</b>	117.8	0.5	98.4	0.4
<b>Both sexes</b>	133.9	0.5	107.8	0.4



Interestingly, there was a moderate decline in the burden of cirrhosis in both sexes from 1990 to 1995 (Figure 51).

Afterwards, there was evidence of a steady though moderate increase in both sexes.

**Figure 51. Sex-specific DALYs (per 100,000) for liver cirrhosis in Albania in selected years (crude estimates, all ages) (source: GBD, 2010)**



Nevertheless, the sex-pooled age-standardized burden of liver cirrhosis for Albania in 2010 (about 123 per 100,000 DALYs, constituting only 0.5% of the total burden of disease) was the lowest in the SEE region after Montenegro (Table 42).

Rates of liver cirrhosis burden were particularly high in Slovenia and Croatia in 2010 notwithstanding the considerable decline compared with 1990.

**Table 42. Sex-pooled age-standardized DALYs for liver cirrhosis in Albania and in the other countries of SEE region in 1990 and 2010 (source: GBD, 2010)**

Cirrhosis (both sexes)	Year: 1990		Year: 2010	
	DALYs (100,000)	Percent DALYs	DALYs (100,000)	Percent DALYs
Albania	147.2	0.5	123.2	0.5
Bosnia and Herzegovina	403.2	1.3	298.7	1.3
Croatia	792.1	2.5	493.9	2.1
Greece	201.2	0.9	140.4	0.7
Macedonia	192.4	0.6	147.4	0.6
Montenegro	104.4	0.4	94.8	0.4
Serbia	220.0	0.8	191.0	0.8
Slovenia	953.6	3.3	503.5	2.5

### Nutritional deficiencies

Nutritional deficiencies comprise a group of diseases whose rates are sometimes cumbersome to interpret and communicate to policymakers. In Albania, the toll of nutritional deficiencies has decreased in the past two decades (from about 804 to 598 DALYs per 100,000 in 1990 and 2010, respectively) (Table 43).

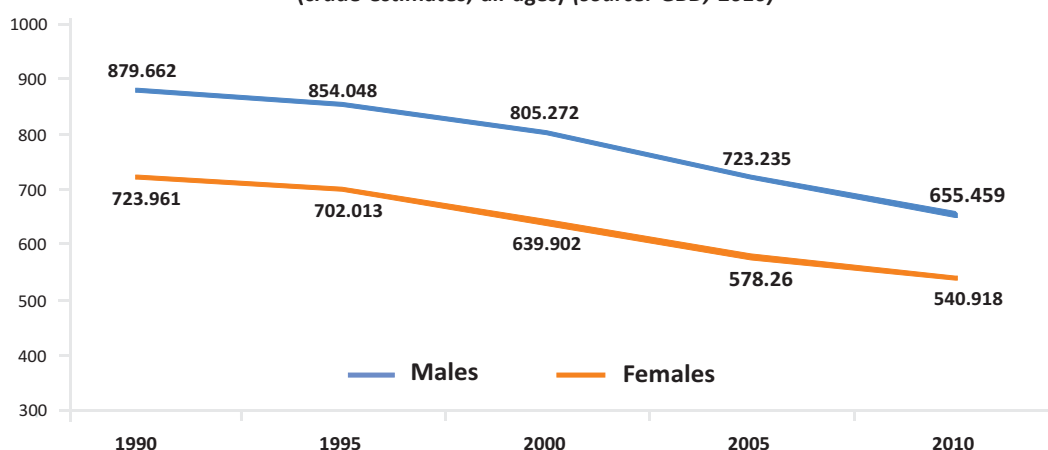
The decline in the rate of nutritional deficiencies has been similar in both males and females, which may be linked to the improvement of food availability and the relative economic prosperity in general.

**Table 43. Sex-specific DALYs for nutritional deficiencies in Albania in 1990 and 2010 (crude estimates, all ages) (source: GBD, 2010)**

Sex	Year: 2010		Year: 1990	
	DALYs (per 100,000)	Percent DALYs	DALYs (per 100,000)	Percent DALYs
Males	655.5	2.1	879.7	2.8
Females	540.9	2.3	724.0	2.8
Both sexes	598.2	2.2	803.7	2.8

Indeed, in both sexes, there was evidence of a steady decline of nutritional deficiencies burden in Albania, which was steeper in the last decade (i.e. from 2000 to 2010) (Figure 52).

**Figure 52. Sex-specific DALYs (per 100,000) for nutritional deficiencies in Albania in selected years (crude estimates, all ages) (source: GBD, 2010)**



Notwithstanding the decrease in the nutritional deficiencies, Albania continues to exhibit the highest burden of these disorders among all SEE countries – similar to the top position observed at the fall of the communist era in 1990 (Table 44).

This may be explained by the fact that Albania is still probably the poorest country in the region. Nutritional deficiencies are greatly affected by economic affluence and, therefore, such a top position for Albania is not surprising.

**Table 44. Sex-pooled age-standardized DALYs for nutritional deficiencies in Albania and in the other countries of SEE region in 1990 and 2010 (source: GBD, 2010)**

Nutritional deficiencies (both sexes)	Year: 1990		Year: 2010	
	DALYs (100,000)	Percent DALYs	DALYs (100,000)	Percent DALYs
<b>Albania</b>	<b>761.0</b>	<b>2.5</b>	<b>608.5</b>	<b>2.3</b>
Bosnia and Herzegovina	553.8	1.8	408.5	1.7
Croatia	424.2	1.4	415.3	1.8
Greece	64.6	0.3	47.2	0.2
Macedonia	335.6	1.0	297.4	1.2
Montenegro	432.3	1.5	430.0	1.7
Serbia	325.3	1.1	318.8	1.3
Slovenia	410.3	1.4	388.0	1.9

### Diarrheal diseases and respiratory infections

The burden of diarrheal diseases and respiratory infections has remarkably declined in Albania in the past two decades. At the fall of communist rule, these infectious diseases accounted for 21.4% of the total burden of disease (Table 45). Instead, in 2010, this figure was only 4.3%.

There was evidence of a pretty similar decline in both sexes pointing to the effective measures regarding water sanitation and other preventive measures in general.

Also, the particularly sharp decline in the levels of diarrheal diseases and respiratory infections should be attributed to the increase in the effectiveness of health care services during the past few years in Albania.

**Table 45. Sex-specific DALYs for diarrheal diseases and respiratory infections in Albania in 1990 and 2010 (crude estimates, all ages) (source: GBD, 2010)**

Sex	Year: 2010		Year: 1990	
	DALYs (per 100,000)	Percent DALYs	DALYs (per 100,000)	Percent DALYs
<b>Males</b>	1328.2	4.3	6580.5	21.0
<b>Females</b>	1030.2	4.3	5733.7	22.0
<b>Both sexes</b>	1179.4	4.3	6167.6	21.4

Upon a breakdown analysis, there was evidence of a substantial decline of diarrheal diseases in both sexes in Albania, accounting only for 0.3% of the total burden of disease in 2010 (Table 46).

Similarly, the lower respiratory infections – which accounted for almost 18% of the total burden of disease in Albania in 1990 – have also decreased considerably in the past two decades, constituting only about 3% of the overall burden of disease in 2010.

Table 46. Sex-specific DALYs for diarrheal diseases and lower respiratory infections (LRI) in Albania in 1990 and 2010 (crude estimates, all ages) (source: GBD, 2010)

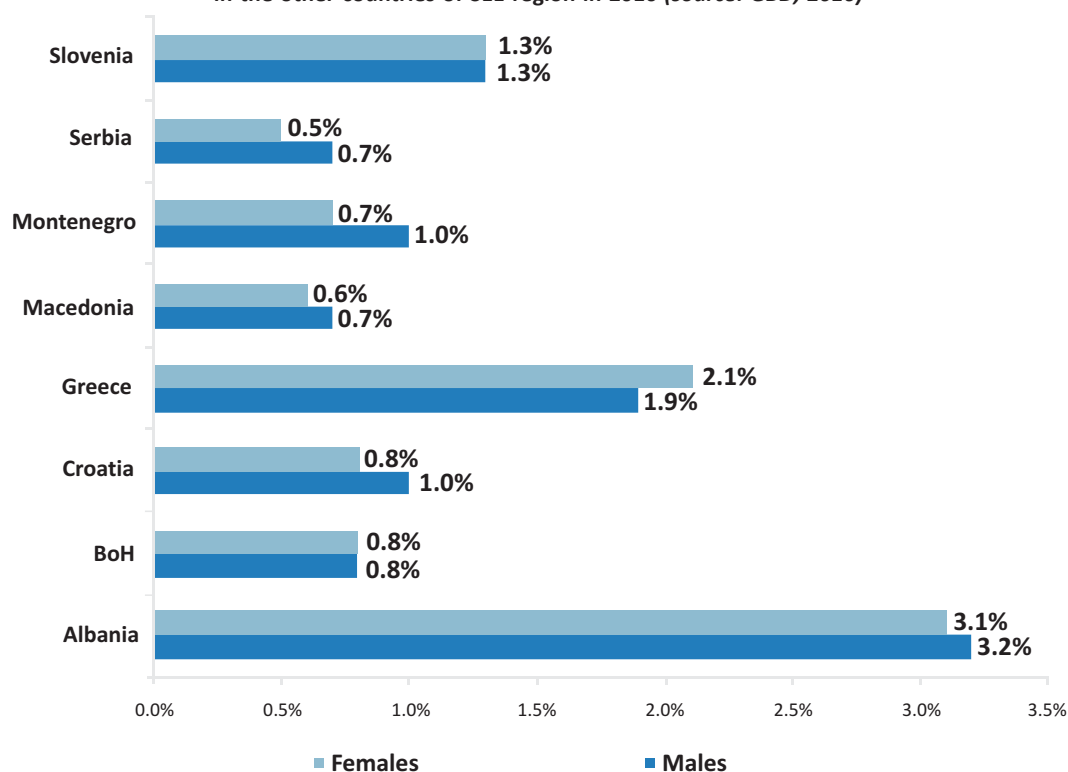
Diarrheal diseases	Year: 2010		Year: 1990	
	DALYs (per 100,000)	Percent DALYs	DALYs (per 100,000)	Percent DALYs
Males	72.9	0.2	440.4	1.4
Females	71.2	0.3	430.9	1.6
Both sexes	72.1	0.3	435.7	1.5

LRI	Year: 2010		Year: 1990	
	DALYs (per 100,000)	Percent DALYs	DALYs (per 100,000)	Percent DALYs
Males	1006.3	3.2	5477.4	17.5
Females	749.4	3.1	4755.9	18.2
Both sexes	877.9	3.2	5125.6	17.8

The remarkable decline in diarrheal diseases and respiratory infections in Albania though does not help much in its positing at the highest level in the SEE region. For example, in 2010, the share of the (age-standardized) lower respiratory infections in Albania was 3.2%, which was much higher than in the neighboring countries (Figure 53).

Figure 53. Age-standardized proportional DALYs for the lower respiratory infections in Albania and in the other countries of SEE region in 2010 (source: GBD, 2010)



### HIV/AIDS and Tuberculosis

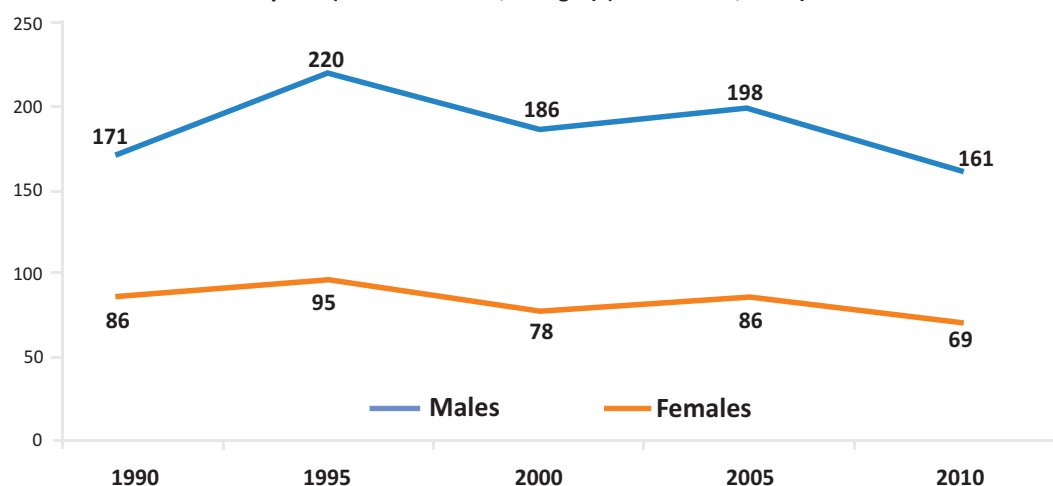
Overall, there has been a mild decrease in the burden of HIV/AIDS and tuberculosis in Albania in the past twenty years (Table 47).

**Table 47. Sex-specific DALYs for HIV/AIDS and Tuberculosis in Albania in 1990 and 2010 (crude estimates, all ages) (source: GBD, 2010)**

Sex	Year: 2010		Year: 1990	
	DALYs (per 100,000)	Percent DALYs	DALYs (per 100,000)	Percent DALYs
Males	160.7	0.5	171.1	0.5
Females	69.3	0.3	85.7	0.3
Both sexes	115.0	0.4	129.4	0.4

A more refined analysis reveals that there has been an increase in the burden of HIV/AIDS and tuberculosis in the first half of 1990s, particularly in Albanian males (Figure 54). Afterwards, regardless of some fluctuations in both sexes, there is evidence of an overall decline, but there is definitely room for further improvement.

**Figure 54. Sex-specific DALYs (per 100,000) for HIV/AIDS and Tuberculosis in Albania in selected years (crude estimates, all ages) (source: GBD, 2010)**

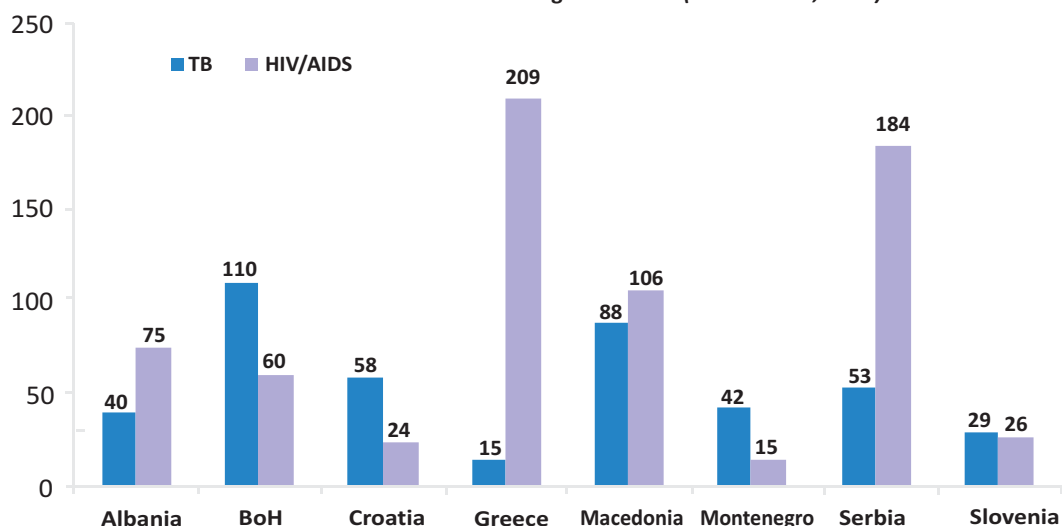


Regarding the regional differences, Albania resembles the low-prevalence pattern of HIV/AIDS, as well as tuberculosis.

In 2010, the age-standardized burden of tuberculosis in Albania was among the lowest in the region (40 DALYs per 100,000), whereas the burden of HIV/AIDS (75 DALYs per 100,000) was somewhere in the middle (Figure 55).

Of note, the burden of HIV/AIDS in Greece in 2010 was the highest in the region, followed by Serbia. On the contrary, Montenegro – a bordering country with Serbia – displayed a particularly low burden of HIV/AIDS (15 per 100,000 DALYs), followed by Croatia and Slovenia.

Figure 55. Age-standardized DALYs (per 100,000) for HIV/AIDS and Tuberculosis in Albania and in the other countries of SEE region in 2010 (source: GBD, 2010)



### Other communicable diseases

Besides the diarrheal diseases and the respiratory infections, there has been also a significant decline in the burden of the other infectious diseases in Albania in the past two decades including hepatitis (primarily the water-borne hepatitis A), nephritis, pyelonephritis, or urinary tract infections.

The overall decrease of these infections was from about 262 to 104 DALYs per 100,000 in 1990 and 2010, respectively (Table 48).

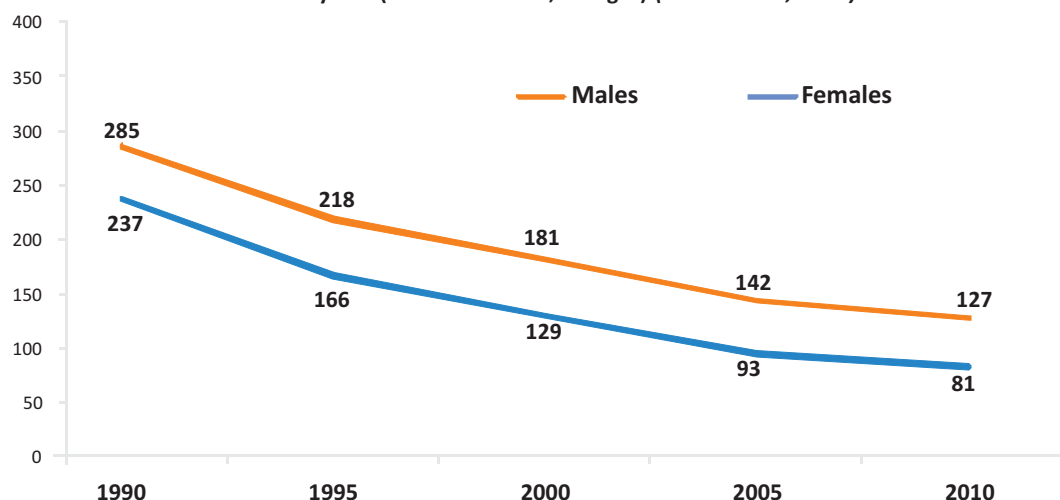
In 2010, the share of these infections accounted for only 0.4% of the total burden of disease in Albania.

Table 48. Sex-specific DALYs for the other communicable diseases in Albania in 1990 and 2010 (crude estimates, all ages) (source: GBD, 2010)

Sex	Year: 2010		Year: 1990	
	DALYs (per 100,000)	Percent DALYs	DALYs (per 100,000)	Percent DALYs
Males	126.7	0.4	285.1	0.9
Females	81.2	0.3	236.7	0.9
Both sexes	104.0	0.4	261.5	0.9

As a matter of fact, there was evidence of a linear sharp decline of these communicable diseases in both sexes in Albania as evidenced in Figure 56.

Figure 56. Sex-specific DALYs (per 100,000) for the other communicable diseases in Albania in selected years (crude estimates, all ages) (source: GBD, 2010)



But, again, the burden of infectious diseases continues to place Albania on top of the countries of the SEE region and, therefore, there is a lot of room for improvement, taking especially into account the reemergence of several “classical” infectious diseases and the appearance of “new” communicable diseases for which the health systems are often unprepared to face them promptly and effectively.

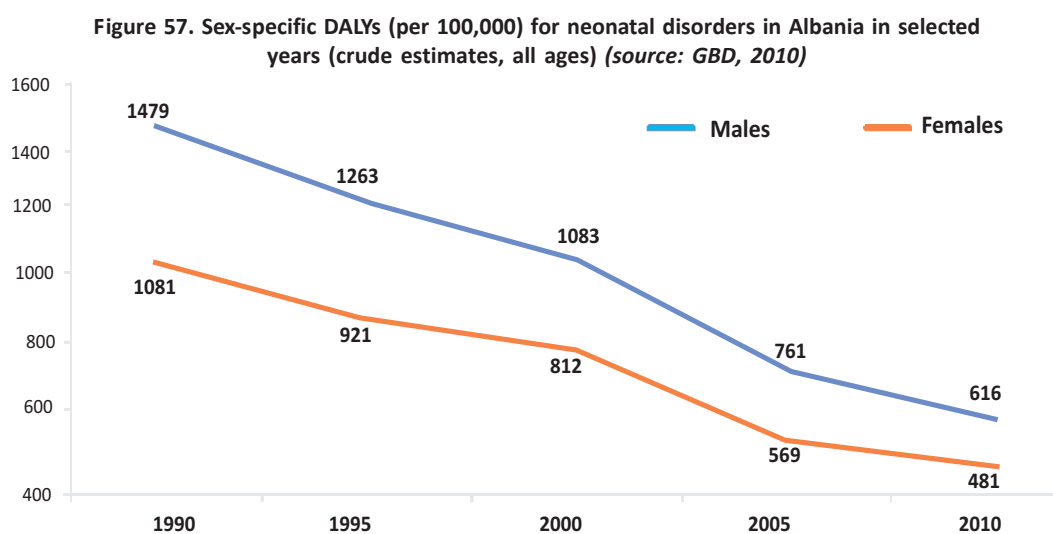
### Neonatal disorders

Neonatal disorders have decreased considerably in Albania in the past two decades. Overall, in 1990 these disorders accounted for 4.5% of the total burden of disease, whereas in 2010 they accounted for only 2.0% (Table 49).

Table 49. Sex-specific DALYs for neonatal disorders in Albania in 1990 and 2010 (crude estimates, all ages) (source: GBD, 2010)

Sex	Year: 2010		Year: 1990	
	DALYs (per 100,000)	Percent DALYs	DALYs (per 100,000)	Percent DALYs
Males	616.1	2.0	1479.0	4.7
Females	480.8	2.0	1080.8	4.1
Both sexes	548.5	2.0	1284.8	4.5

In both sexes, there was evidence of a strong linear association with the sharpest decline in the period 2000-2005 (Figure 57). The decreasing trend was stronger in males in the past decade. Hence, the sex-gap in 1990 was about 400 DALYs per 100,000, whereas in 2010 it was reduced to 135 DALYs per 100,000.



Interestingly, at the fall of the communist rule, the age-standardized burden of neonatal disorders in Albania (about 1,017 DALYs per 100,000) was even lower than the average of the SEE region (Table 50). Except Greece and Slovenia, Albania’s toll of neonatal disorders was the lowest in the region in 1990. At that time, the burden of neonatal disorders was exceptionally high in Macedonia, followed by Bosnia and Herzegovina, Montenegro and Serbia.

However, accurate registration of neonatal disorders in Albania during the communist rule is questionable. Child and maternal health status were considered as the most important indicators for a proper performance of the health care system and, therefore, under-registration of these events during communist era should have taken place systematically – at least, to some extent.

In 2010, with the exception of Macedonia, the burden of neonatal disorders in Albania – regardless of its decline in absolute terms – was one of the highest in the region together with Montenegro and Bosnia and Herzegovina. Of note, Serbia has managed diligently to reduce substantially (almost threefold) the burden of neonatal disorders in the past twenty years.

**Table 50. Sex-pooled age-standardized DALYs for neonatal disorders in Albania and in the other countries of SEE region in 1990 and 2010 (source: GBD, 2010)**

Neonatal disorders (both sexes)	Year: 1990		Year: 2010	
	DALYs (100,000)	Percent DALYs	DALYs (100,000)	Percent DALYs
<b>Albania</b>	<b>1016.8</b>	<b>3.3</b>	<b>753.8</b>	<b>2.8</b>
Bosnia and Herzegovina	1621.7	5.2	726.1	3.1
Croatia	998.5	3.2	484.1	2.1
Greece	761.3	3.3	325.0	1.7
Macedonia	2603.2	7.8	890.4	3.5
Montenegro	1547.0	5.5	762.4	3.0
Serbia	1472.9	5.0	493.3	2.1
Slovenia	717.7	2.5	338.7	1.6



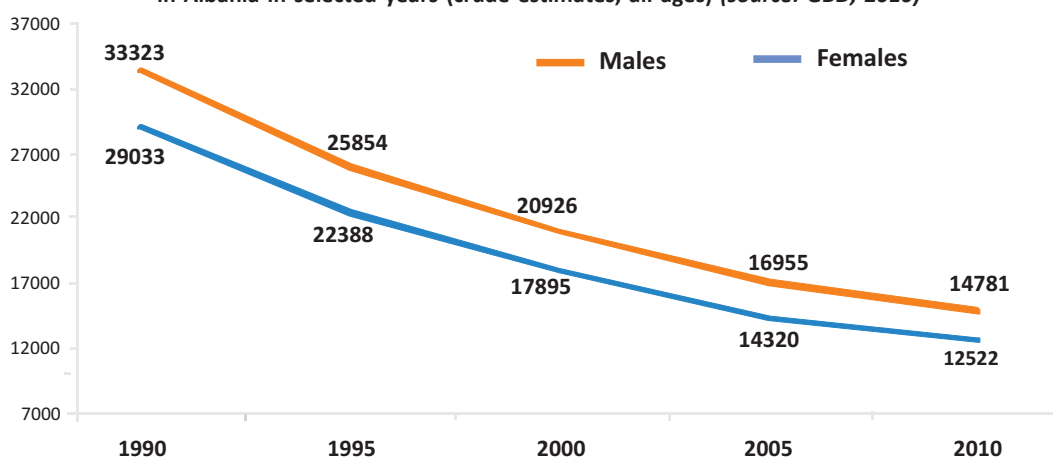
In brief, there is evidence of a strong decrease of neonatal disorders in Albania during the transition period towards a market-oriented system. This important decline is likely attributed to both the improvement of health care services and introduction of effective preventive measures.

However, accurate registration of neonatal disorders remains of particular concern and deserves in-depth investigation.

### Burden of disease in children aged 1-4 years

Overall, the burden of disease among children aged 1-4 years has considerably declined in Albania in the past twenty years (Figure 58).

**Figure 58. Sex-specific DALYs (per 100,000) for the burden of disease in children aged 1-4 years in Albania in selected years (crude estimates, all ages) (source: GBD, 2010)**



In both sexes, there was evidence of a linear decreasing trend. Yet, the sharpest decline in both sexes occurred in the first five years of post-communist regime (from 1990 to 1995).

Likewise the neonatal disorders, this important change in the burden of disease among children aged 1-4 years is probably due to the progress and modernization of the health care services and implementation of successful preventive programs.

In 1990, the burden of disease among children 1-4 years for Albania was more than three times higher than the average of the SEE region (31,246 DALYs per 100,000) (Table 51). The excess burden with the second highest country (Macedonia) was about 19,000 DALYs per 100,000.

In 2010, there was a substantial decline (more than twofold) in the burden of disease in children aged 1-4 years in Albania. Nonetheless, Albania continued to display the highest rate in the region – more than double compared with Montenegro, which had the second highest burden in the SEE region (Figure 51).

**Table 51. Sex-pooled age-standardized DALYs for the burden of disease in children aged 1-4 years in Albania and in the other countries of SEE region in 1990 and 2010 (source: GBD, 2010)**

<b>Burden of disease in children 1-4 years (both sexes)</b>	<b>Year: 1990</b>	<b>Year: 2010</b>
<b>Albania</b>	<b>31246.1</b>	<b>13688.1</b>
Bosnia and Herzegovina	8941.6	5908.1
Croatia	7132.3	5132.9
Greece	5788.2	3813.3
Macedonia	12529.4	6238.5
Montenegro	10379.3	6292.4
Serbia	8817.9	5098.5
Slovenia	7061.8	4804.1

Although acute respiratory infections (ARI) and diarrhea have been among the main causes of under-five mortality and morbidity, there is evidence of a declining trend. Thus, the prevalence of diarrhea has decreased steadily from 14% in 2000 (Multiple Indicator Cluster Survey [MICS], 2000), to 7% in 2005 (MICS 2005) and subsequently to 5% in 2009 (ADHS, 2010).

According to ADHS 2010, only 5% of the children under five years had symptoms of ARI in the two weeks preceding the survey. Children in the households that used wood for cooking were twice as likely to experience ARI symptoms as children in the households that used electricity or gas for cooking (8% vs. 4%, respectively). The prevalence of ARI in 2009 remained similar to 2005 in Albanian children.

## **Burden of malnutrition in children**

### *Nutritional deficiencies*

Although the economic growth in Albania has improved food security and the overall nutritional status, malnutrition among children persists. Causes of micronutrient malnutrition in Albania include a combination of household food insecurity, poor infant and young child feeding and care practices and inadequate access to quality health services (ADHS, 2010).

Stunting and other forms of under-nutrition reduce a child's chance of survival, hindering also optimal health and growth. On the other hand, overweight and obesity as manifestations of over-nutrition contribute significantly to diabetes and other NCDs in adulthood. Both under and over nutrition have serious consequences on child survival, development, health outcomes in adulthood and economic productivity of individuals, communities and nations (WHO, 2011).

According to ADHS 2008-09, 19% of Albanian children under five years were stunted, 5% were underweight and 22% were overweight (ADHS, 2010).

*Iodine deficiency* is one of the most preventable causes of mental retardation in children that can cause a loss of 13.5 IQ points and poor school achievements (WHO, 2014). This deficiency is easily addressed by the use of iodized salt for human and animal consumption.

According to a study conducted by the IPH in 2007, the prevalence of iodine deficiency disorders has been reduced to 55% in schoolchildren compared to an earlier study carried out by the same institution in 1993 indicating a prevalence of 93% (IPH, 2007). *Anemia* is an important public health problem, and its consequences include increased morbidity and mortality, stunting, lower performance in school, cognitive delays, and apathy. In adults, anemia is associated with weakness and fatigue, lower productivity, and increased risk of maternal mortality from postpartum hemorrhage (WHO, 2014). ADHS 2008-09 was the first nationwide study including a population-representative sample which reported on the prevalence of anemia among children in Albania. According to this survey, 17% of the children aged 6-59 months had some level of anemia, including 11% of the children who were mildly anemic (10.0-11.9 g/dl) and 6% who were moderately anemic (7.0-9.9 g/dl) (ADHS, 2010).

*Inadequate infant and young child feeding practices* including suboptimal breastfeeding and complementary feeding contribute to child malnutrition and micronutrient deficiencies. ADHS 2008-09 showed that 39% of the children aged 0-6 months were exclusively breastfed, as recommended by WHO and UNICEF, and only 25% of the children were fed according to the recommended infant and young child feeding practices (ADHS, 2010).

*Household food insecurity* contributes to poor nutrition outcomes of the Albanian children. According to a baseline nutritional survey conducted in 2010 in the Northern part of Albania and peri-urban areas of Tirana, 34%-43% of households had difficulties in providing food for their families year round.

Finally, according to a cost-benefit analysis conducted in 2010, malnutrition was associated with about one-third of child mortality in Albania and the burden of malnutrition on the national economy may total nearly \$100 million annually, or 0.7% of the GDP. For each \$US invested in preventing malnutrition, Albania may save 4 \$US in return (UNICEF, 2010).

### Maternal disorders

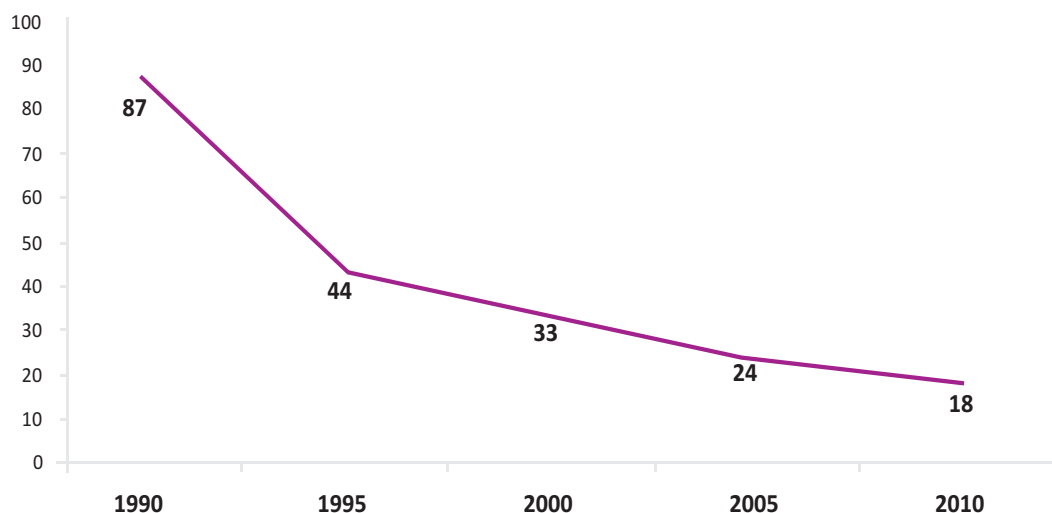
In line with improvements in child health indicators, maternal disorders have also declined in Albania from 87 to 18 DALYs per 100,000 in 1990 and 2010, respectively (Table 52).

Table 52. DALYs for maternal disorders in Albanian females in 1990 and 2010 (crude estimates, all ages) (source: GBD, 2010)

Year: 2010		Year: 1990	
DALYs (per 100,000)	Percent DALYs	DALYs (per 100,000)	Percent DALYs
18.0	0.08	87.1	0.33

The sharpest decrease was observed in the first period after the communist breakdown (from 1990 to 1995) (Figure 59). Subsequently, there was a steady decline during the period 1995-2010.

Figure 59. DALYs (per 100,000) for maternal disorders in Albania in selected years (crude estimates, all ages) (source: GBD, 2010)



In 1990, the burden of maternal disorders in Albania was the highest in the SEE region (with about 85 DALYs per 100,000), constituting 0.3% of the total burden of disease in females (Table 53).

In 2010, the Albanian estimate of maternal disorders was lower than in Serbia, Macedonia and Montenegro, but higher than in Croatia and Bosnia and Herzegovina. The decrease in maternal disorders in Albania is amazing and probably due to the general improvement of socioeconomic conditions, but also due to a particularly strong emphasis on mother and child health during the transition period. In any case, accurate registration of maternal disorders may be questionable for Albania and, thus, cross-country comparisons should be interpreted with caution.

Table 53. Age-standardized DALYs for maternal disorders in Albania and in the other countries of SEE region in 1990 and 2010 (source: GBD, 2010)

Maternal disorders	Year: 1990		Year: 2010	
	DALYs (100,000)	Percent DALYs	DALYs (100,000)	Percent DALYs
<b>Albania</b>	<b>85.2</b>	<b>0.31</b>	<b>17.5</b>	<b>0.08</b>
Bosnia and Herzegovina	38.2	0.14	13.9	0.07
Croatia	26.7	0.10	14.8	0.07
Greece	13.5	0.07	10.7	0.06
Macedonia	56.2	0.19	25.3	0.11
Montenegro	29.7	0.12	23.9	0.10
Serbia	46.0	0.18	27.2	0.13
Slovenia	22.8	0.10	9.9	0.06

In brief, communicable diseases, maternal, neonatal and nutritional disorders accounted for 30.5% of the total burden of disease in Albania in 1990, but only for 9.5% in 2010. Furthermore, as pointed out earlier, there is evidence of a sharp and significant linear decrease in both mortality rate and burden of disease due to the

combined toll of communicable diseases, mother and child health conditions and nutritional deficiencies.

## 5. RISK FACTORS

As the epidemiological transition is clearly taking place in Albania, there is a huge obvious need to address the major risk factors that cause the burden of NCDs (WHO, 2014).

Besides the biological and constitutional factors (such as age, sex and genetic factors), most of the NCDs are known to be caused by behavioral/lifestyle risk factors. This includes cigarette smoking, excessive and harmful alcohol use, physical inactivity and unhealthy dietary habits (characterized by high fat intakes in general and saturated fat in particular, high consumption of sugar, or low intake of fresh fruit and vegetables). These behavioral risk factors are common for several NCDs, particularly for CVD, cancer and diabetes. These factors, in turn, also relate to other major risk factors, such as obesity, high cholesterol levels and high blood pressure.

### 5.1. Smoking

There is sufficient evidence linking tobacco smoking with several NCDs including CVD (IHD and cerebrovascular accidents), lung cancer and several other cancers and other diseases such as COPD. As a matter of fact, tobacco smoking is considered the single most preventable cause of ill-health (WHO, 2011).

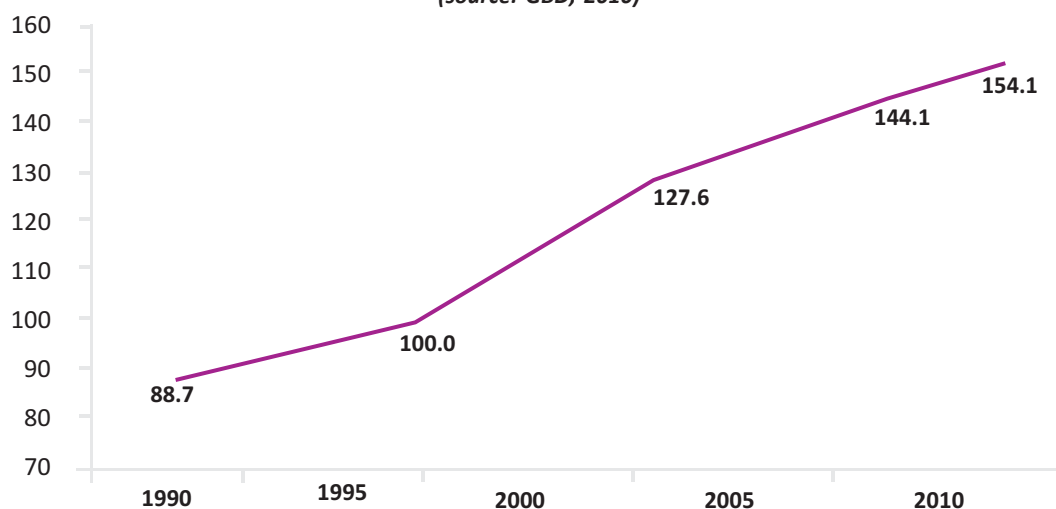
According to GBD 2010, the overall CMR attributable to smoking has increased considerably in Albania in the past two decades (from about 89 to 154 deaths per 100,000 population in 1990 and 2010, respectively) (Table 54).

There was evidence of a steady increasing linear trend during the transitional period (Figure 60). Furthermore, the proportional mortality attributable to smoking increased from about 18% in 1990 to 22% in 2010.

Table 54. Overall mortality rate attributable to smoking in Albania in selected years  
(source: GBD, 2010)

Indicator	Year: 1990	Year: 1995	Year: 2000	Year: 2005	Year: 2010
Smoking attributable total CMR (per 100,000)	88.7	100.0	127.6	144.1	154.1
Smoking attributable total CMR (%)	17.6	18.7	20.4	21.4	21.8

Figure 60. CMR (per 100,000) attributable to smoking in Albania in selected years  
(source: GBD, 2010)



On the other hand, the proportion of the burden of disease attributable to smoking increased from 9.9% in 1990 to 12.1% (in 2010) (Table 55). It increased much more in males (from 11.6% in 1990 to 14.6% in 2010) than in females (7.9% vs. 8.8%, respectively). After 1990, there was a sharp increase in the overall DALYs attributable to smoking (Figure 61).

Table 55. Crude DALYs attributable to smoking in Albania in selected years (source: GBD, 2010)

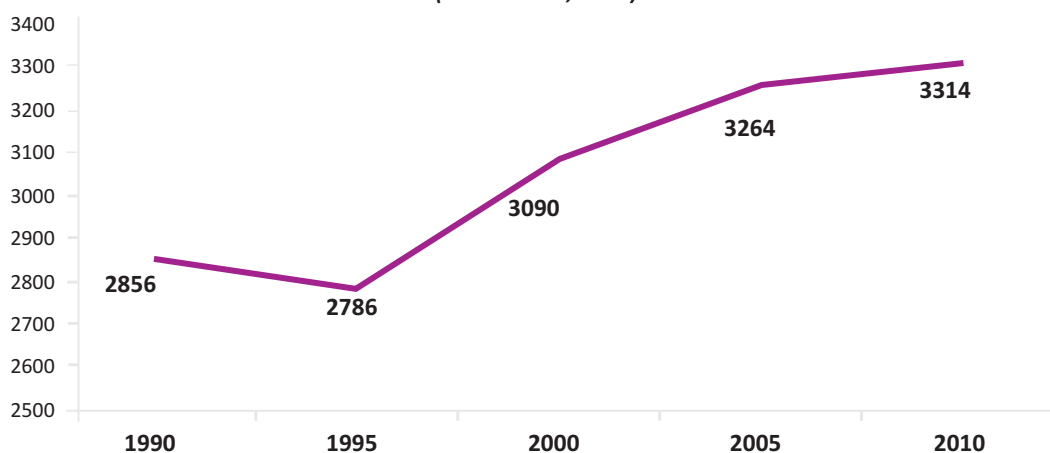
Sex	Year: 1990		Year: 1995		Year: 2000		Year: 2005		Year: 2010	
	DALYs (100,000)	Percent DALYs	DALYs (100,000)	Percent DALYs	DALYs (100,000)	Percent DALYs	DALYs (100,000)	Percent DALYs	DALYs (100,000)	Percent DALYs
<b>Males</b>	3607.2	11.6	3666.9	12.0	4264.1	13.5	4452.7	14.4	4537.3	14.6
<b>Females</b>	2067.1	7.9	1890.5	7.7	1921.9	8.1	2078.6	8.8	2087.8	8.8
<b>Total</b>	2856.3	9.9	2785.7	10.1	3090.3	11.1	3264.0	12.0	3313.5	12.1

According to WHO, the prevalence of regular daily smokers among individuals aged 15 years and above in Albania was 39% in 2012 (WHO, HFA database, 2014). Exactly the same estimate was reported in the WHO, HFA database, for the year 2000, indicating a stable smoking prevalence among adult individuals in Albania.

Yet, these estimates, presumably obtained from population-based surveys, bear serious inconsistencies, as the same prevalence of regular daily smokers in Albania in 2002 was reported by WHO as 24.7%. On the other hand, the NCD country profile published by the WHO, reported the prevalence of current daily tobacco smoking in Albania in 2008 as 19.6% (37.7% among males and 2.5% among females) (WHO, NCD country profiles, 2011). A fairly recent report on the World Health Statistics reported a smoking prevalence of 48% in men and 5% in women aged 15 years and over for the year 2011 (WHO, World Health Statistics, 2014). We have to realize, however, that the current burden of disease is caused by the prevalence of smoking some 20 or 30 years ago.

Better and more consistent data are needed about smoking in Albania to be able to monitor its progress, or more desirably, its decline.

**Figure 61. Crude DALYs (per 100,000) attributable to smoking in Albania in selected years**  
(source: GBD, 2010)



National reports argue that smoking epidemics affects male sex predominantly and this trend is said to increase further (ADHS, 2010). On the other hand, the proportion of females who smoke is still quite small (less than 10%) compared with other countries in the region, but female smoking is considered to be in steady increase too (National Cancer Control Program [NCCP], 2011). This is a pattern that can be recognized in other countries as well. Eventually, smoking rates for men and women tend to become equal as in countries like Denmark, The Netherlands and the UK. With concomitant rises in female NCD mortality.

According to NCCP, the male differences in prevalence rates of smoking in different socio-economic strata are not significant, whereas among females there are significant socio-economic differences (NCCP, 2011). Again, this pattern has been observed in other countries before. The shift will probably be going in the direction that in a next phase of the smoking epidemic there will be large socioeconomic differences with lower classes smoking by far the most. From this point of view, smoking is currently considered more frequent in women residing in urban Tirana and other major urban areas in Albania, and in more “empowered” women (those with a higher educational attainment, women with a “white collar” occupation, or a higher income level) (ADHS, 2010). These findings are in line with theories which explain the changes occurring in the transition phase of traditional and patriarchal societies including Albania, where female “empowerment” is primarily manifested among more educated and wealthy females who also tend to exhibit a more “westernized” behavioral pattern (ADHS, 2010), including more risky health behavior.

Also, smoking prevalence increases with age in Albania, especially in men, but trends are quite striking also among young people, where the prevalence of those who experiment with and start smoking is about 25% (NCCP, 2011).

Furthermore, the mortality rate from NCDs attributable to smoking has doubled in Albania in the past two decades with a clear (increasing) linear trend, whereas the burden of disease has increased by more than 70% in a linear fashion too (Table 56).



**Table 56. Mortality rate and burden of NCDs attributable to smoking in Albania in selected years**  
(source: *GBD, 2010*)

Indicator	Year: 1990	Year: 1995	Year: 2000	Year: 2005	Year: 2010
Smoking attributable CMR from NCDs (per 100,000)	76.8	92.5	123.7	142.1	152.7
Smoking attributable CMR from NCDs (%)	21.6	22.6	23.9	24.5	24.6
Smoking attributable DALYs for NCDs (per 100,000)	1842.7	2153.8	2763.4	3092.2	3189.8
Smoking attributable DALYs for NCDs (%)	10.9	12.0	13.9	14.9	14.9

As for the disease-specific role, the CMR from CVD attributable to smoking has doubled in Albania from 1990 to 2010 (Table 57). The proportional mortality from CVD attributable to smoking has increased from about 23% (in 1990) to 25% (in 2010).

**Table 57. Mortality rate and burden of CVD attributable to smoking in Albania in selected years**  
(source: *GBD, 2010*)

Indicator	Year: 1990	Year: 1995	Year: 2000	Year: 2005	Year: 2010
Smoking attributable CMR from CVD (per 100,000)	48.9	58.5	77.0	88.3	96.6
Smoking attributable CMR from CVD (%)	22.9	23.4	23.8	24.1	24.7
Smoking attributable DALYs for CVD (per 100,000)	1049.8	1216.1	1544.6	1724.9	1798.2
Smoking attributable DALYs for CVD (%)	24.4	24.8	25.7	26.3	27.1

A similar increase is also evident for cerebrovascular disease where the CMR attributable to smoking has increased almost twice, whereas the burden of this disease due to smoking has increased by more than 50% (Table 58).

**Table 58. Mortality rate and burden of cerebrovascular disease attributable to smoking in Albania in selected years** (source: *GBD, 2010*)

Indicator	Year: 1990	Year: 1995	Year: 2000	Year: 2005	Year: 2010
Smoking attributable CMR from cerebrovascular disease (per 100,000)	22.5	26.7	33.8	37.4	41.1
Smoking attributable CMR from cerebrovascular disease (%)	24.4	24.5	24.4	24.6	25.2
Smoking attributable DALYs for cerebrovascular disease (per 100,000)	431.3	493.2	596.0	640.3	671.4
Smoking attributable DALYs for cerebrovascular disease (%)	26.6	26.7	26.9	27.3	28.1

In addition, during the period 1990-2010, there was a more than twofold increase in the CMR from IHD attributable to smoking (Table 59). Also, the burden of IHD attributable to smoking almost doubled.

**Table 59. Mortality rate and burden of IHD attributable to smoking in Albania in selected years**  
(source: GBD, 2010)

Indicator	Year: 1990	Year: 1995	Year: 2000	Year: 2005	Year: 2010
Smoking attributable CMR from IHD (per 100,000)	21.8	26.6	36.7	43.4	47.2
Smoking attributable CMR from IHD (%)	26.7	27.0	27.0	27.1	27.5
Smoking attributable DALYs for IHD (per 100,000)	501.4	593.7	793.2	912.2	941.5
Smoking attributable DALYs for IHD (%)	30.3	30.1	30.2	30.3	31.0

There was a more than twofold increase in the CMR from neoplasms attributable to smoking in the past two decades (Table 60). In 2010, about 29% of mortality from neoplasms was due to smoking (39% in males vs. 12% in females). In addition, smoking was responsible for more than a twofold increase in the CMR from trachea, bronchus and lung cancer. In 2010, about 84% of deaths from lung cancer were due to smoking. Furthermore, the burden of disease from neoplasms in general and lung cancer in particular almost doubled during 1990-2010 (Table 60).

**Table 60. Mortality rate and burden of neoplasms attributable to smoking in Albania in selected years**  
(source: GBD, 2010)

Indicator	Year: 1990	Year: 1995	Year: 2000	Year: 2005	Year: 2010
Smoking attributable CMR from neoplasms (per 100,000)	19.2	23.8	33.4	38.2	39.8
Smoking attributable CMR from neoplasms (%)	26.0	27.8	29.6	30.0	29.1
Smoking attributable CMR from trachea, bronchus and lung cancer (per 100,000)	12.9	16.1	22.6	25.6	27.2
Smoking attributable CMR from trachea, bronchus and lung cancer (%)	79.6	80.4	81.9	84.3	83.5
Smoking attributable DALYs for neoplasms (per 100,000)	494.7	591.1	797.8	885.5	903.7
Smoking attributable DALYs for neoplasms (%)	23.3	25.4	27.4	27.6	27.1
Smoking attributable DALYs for trachea, bronchus and lung cancer (per 100,000)	324.1	388.9	525.2	575.0	600.6
Smoking attributable DALYs for trachea, bronchus and lung cancer (%)	79.7	80.7	82.2	84.3	83.7

Mortality rate from COPD attributable to smoking has almost doubled from 1990 to 2010, whereas the burden of COPD has increased by 65% (Table 61). In 2010, about 67% of the CMR from COPD and 61% of the burden of COPD were due to smoking.

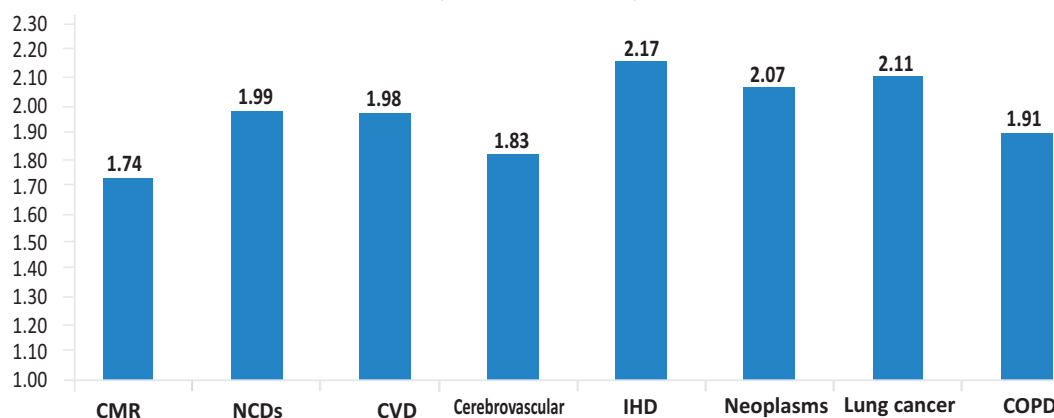
**Table 61. Mortality rate and burden of COPD attributable to smoking in Albania in selected years (source: GBD, 2010)**

Indicator	Year: 1990	Year: 1995	Year: 2000	Year: 2005	Year: 2010
Smoking attributable CMR from COPD (per 100,000)	6.6	7.6	10.1	12.1	12.6
Smoking attributable CMR from COPD (%)	51.8	56.8	63.2	69.7	67.3
Smoking attributable DALYs for COPD (per 100,000)	231.8	266.4	325.5	375.6	382.7
Smoking attributable DALYs for COPD (%)	45.2	48.6	55.3	62.2	60.5

Figure 62 summarizes the increase in the overall and cause-specific mortality rate attributable to smoking in Albania in the past two decades. On the other hand, Figure 63 presents the increase in the total burden of disease and cause-specific burden of disease due to smoking in Albania in the past twenty years.

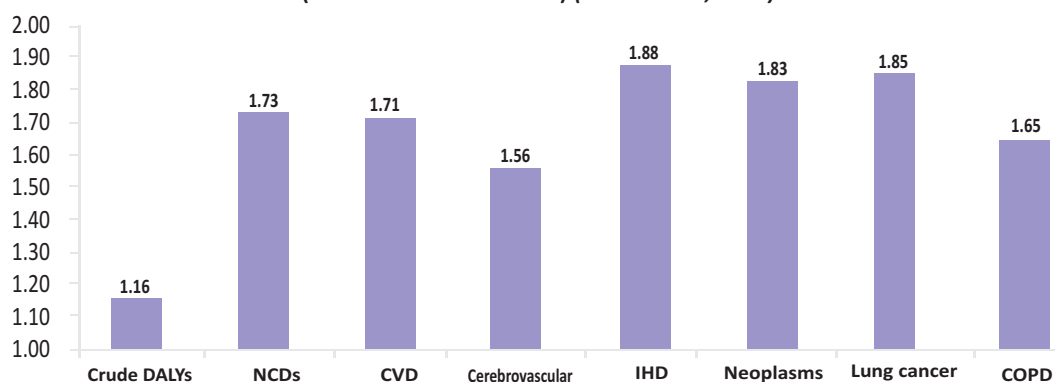
According to GBD data, smoking was the third risk factor which accounted for most of the total burden of disease in Albania in 2010 after dietary risk factors and high blood pressure (GBD, 2010). This is different in many other countries, where smoking is the major risk factor. Albania faces the challenge that smoking will become the largest as well, because it can potentially overtake the other risk factors easily.

**Figure 62. Increase in mortality rate attributable to smoking in Albania (rate ratio: 2010 vs. 1990) (source: GBD, 2010)**



The age-standardized DALYs attributable to smoking in Albania in 1990 were below the average of the other countries of the SEE region (Table 62). On the other hand, in 2010, this estimate was above the mean value in the SEE region, resembling countries such as Bosnia and Herzegovina, or Montenegro. The highest burden of disease in the region due to smoking was in Macedonia (age-standardized: 3,445 DALYs per 100,000). Of particular note, Slovenia has made a remarkable achievement in the past twenty years in terms of decreasing almost twice the burden of disease attributable to smoking (Table 62).

**Figure 63. Increase in the burden of disease attributable to smoking in Albania**  
(rate ratio: 2010 vs. 1990) (source: GBD, 2010)



Currently, Albania has established a comprehensive tobacco control program with a full-time coordinator in place at the Institute of Public Health (IPH) and a dynamic, comprehensive tobacco control plan is being implemented (NCCP, 2011).

Therefore, the new initiatives and future programs are not recommended to establish a separate or new approach, but should preferably join forces with this ongoing program.

In any case, it is recommended that regular Knowledge, Attitude and Practice (KAP) surveys should be conducted with the aim of monitoring the effectiveness of interventions and programs, as well as measuring the prevalence of smoking among different socioeconomic groups in Albania. Such surveys require funding and thus should be properly planned and scheduled in the annual national plans and activities of the Albanian Ministry of Health and the IPH (NCCP, 2011).

**Table 62. Age-standardized DALYs (per 100,000) attributable to smoking in Albania and in the other countries of SEE region in selected years (source: GBD, 2010)**

Country	Year: 1990	Year: 1995	Year: 2000	Year: 2005	Year: 2010
<b>Albania</b>	<b>3428.1</b>	<b>3248.4</b>	<b>3378.5</b>	<b>3321.0</b>	<b>3072.4</b>
Bosnia and Herzegovina	4643.5	5093.8	3994.5	3570.5	3107.7
Croatia	3660.6	3330.7	3050.4	2781.7	2391.1
Greece	2630.8	2531.4	2510.8	2359.6	2256.8
Macedonia	4468.5	4341.7	4071.5	3885.8	3445.2
Montenegro	3579.8	3742.7	3928.4	3501.2	3122.0
Serbia	3897.7	4050.8	3797.9	3596.2	2966.7
Slovenia	3250.3	2880.9	2510.2	2103.0	1696.2

## 5.2. Alcohol use

Harmful alcohol consumption includes not only the excessive amounts of alcohol intake, but also the damaging pattern of alcohol consumption commonly referred to as “binge drinking” (which consists of a consumption of not necessarily large amounts of alcohol, but within a very short period time – a pattern which is typical for the former

Soviet Union republics such as e.g. Russia). Harmful alcohol consumption is a well-established risk factor for CVD and some types of cancers, in particular the cancers of pancreas and liver.

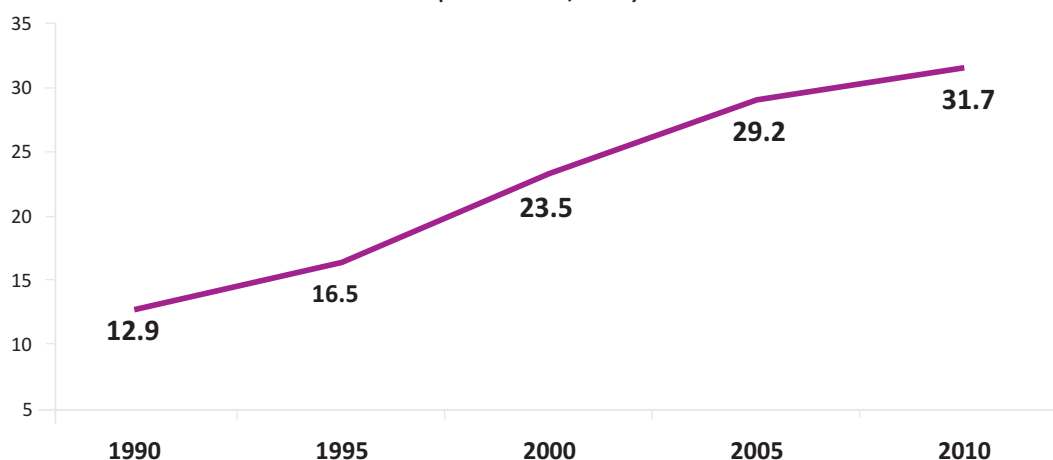
The total CMR attributable to alcohol use has significantly increased in Albania (about 2.5 times from 1990 to 2010) (Table 63). The proportional mortality due to alcohol use has also increased from 2.6% (in 1990) to 4.5% (in 2010).

**Table 63. Overall mortality rate attributable to alcohol use in Albania in selected years**  
(source: GBD, 2010)

Indicator	Year: 1990	Year: 1995	Year: 2000	Year: 2005	Year: 2010
Alcohol attributable total CMR (per 100,000)	12.9	16.5	23.5	29.2	31.7
Alcohol attributable total CMR (%)	2.6	3.1	3.8	4.3	4.5

There was evidence of a linear increase in the overall mortality rate due to alcohol use for the period 1990-2010 (Figure 64).

**Figure 64. CMR (per 100,000) attributable to alcohol use in Albania in selected years**  
(source: GBD, 2010)



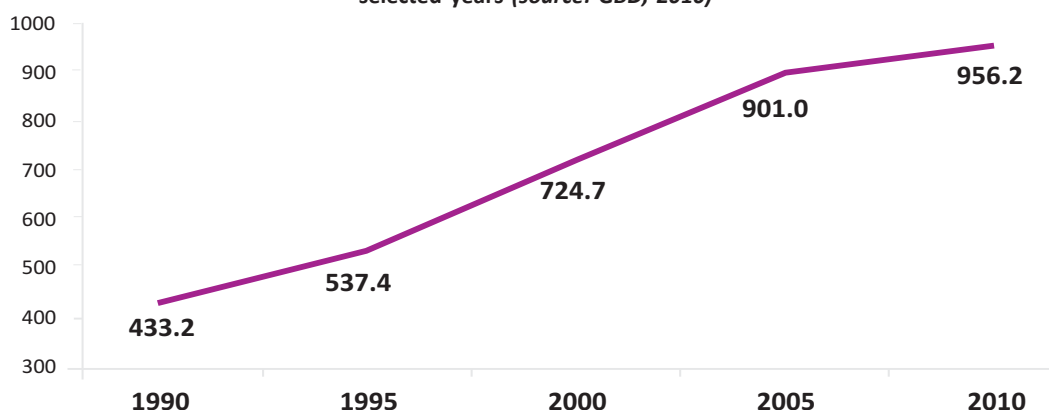
Likewise, the burden of disease due to alcohol use has increased in Albania 2.2 times in the past two decades, more so in men (2.5 times) than in women (1.7 times) (Table 64). The proportional mortality attributable to alcohol use had increased from 1.5% (in 1990) to 3.5% (in 2010). In women, it increased by only 0.9%, whereas in men this proportional increase was up to 2.8%.

**Table 64. Crude DALYs attributable to alcohol use in Albania in selected years** (source: GBD, 2010)

Sex	Year: 1990		Year: 1995		Year: 2000		Year: 2005		Year: 2010	
	DALYs (100,000)	Percent DALYs	DALYs (100,000)	Percent DALYs	DALYs (100,000)	Percent DALYs	DALYs (100,000)	Percent DALYs	DALYs (100,000)	Percent DALYs
Males	588.0	1.9	780.4	2.6	1093.2	3.5	1365.5	4.4	1460.2	4.7
Females	270.4	1.0	290.5	1.2	358.0	1.5	437.7	1.9	451.4	1.9
Total	433.2	1.5	537.4	1.9	724.7	2.6	901.0	3.3	956.2	3.5

There was evidence of a linear increase in the total burden of disease attributable to alcohol use for the period 1990-2010 (Figure 65).

**Figure 65. Total burden of disease (DALYs per 100,000) attributable to alcohol use in Albania in selected years (source: GBD, 2010)**



Mortality rate from NCDs due to alcohol use has more than doubled in the past twenty years, whereas the burden of disease attributable to alcohol has increased by 88% (Table 65). The proportional mortality due to alcohol use has increased from 2.8% (in 1990) to 3.8% (in 2010), while the share of the burden of NCDs due to alcohol has increased from 1.8% to 2.6%, respectively.

**Table 65. Mortality rate and burden of NCDs attributable to alcohol use in Albania in selected years (source: GBD, 2010)**

Indicator	Year: 1990	Year: 1995	Year: 2000	Year: 2005	Year: 2010
Alcohol attributable CMR from NCDs (per 100,000)	10.0	12.5	17.7	21.5	23.5
Alcohol attributable CMR from NCDs (%)	2.8	3.1	3.4	3.7	3.8
Alcohol attributable DALYs for NCDs (per 100,000)	294.9	345.3	448.1	525.7	554.5
Alcohol attributable DALYs for NCDs (%)	1.8	1.9	2.3	2.5	2.6

The mortality rate from CVD attributable to alcohol use has significantly increased in Albania (from 5.9 in 1990 to 13.7 in 2010, per 100,000 population), with an increase in the proportional mortality from 2.8% (in 1990) to 3.5% (in 2010) (Table 66).

On the other hand, the burden of CVD due to alcohol use has almost doubled in the past two decades (from about 97 to 190 per 100,000 in 1990 and 2010, respectively).

**Table 66. Mortality rate and burden of CVD attributable to alcohol use in Albania in selected years (source: GBD, 2010)**

Indicator	Year: 1990	Year: 1995	Year: 2000	Year: 2005	Year: 2010
Alcohol attributable CMR from CVD (per 100,000)	5.9	7.6	10.5	12.3	13.7
Alcohol attributable CMR from CVD (%)	2.8	3.0	3.2	3.4	3.5
Alcohol attributable DALYs for CVD (per 100,000)	97.4	120.4	157.8	178.8	190.1
Alcohol attributable DALYs for CVD (%)	2.3	2.5	2.6	2.7	2.9

Death rate from cerebrovascular disease attributable to alcohol use has almost tripled in the past twenty years, whereas the proportional mortality has increased from 4.8% (in 1990) to 7.5% (in 2010) (Table 67).

The burden of cerebrovascular disease due to alcohol has increased almost 2.5 times, while the proportional DALYs have increased from 5.2 (in 1990) to 8.7% (in 2010).

**Table 67. Mortality rate and burden of cerebrovascular disease attributable to alcohol use in Albania in selected years (source: GBD, 2010)**

Indicator	Year: 1990	Year: 1995	Year: 2000	Year: 2005	Year: 2010
Alcohol attributable CMR from cerebrovascular disease (per 100,000)	4.4	6.1	9.0	11.1	12.2
Alcohol attributable CMR from cerebrovascular disease (%)	4.8	5.6	6.5	7.3	7.5
Alcohol attributable DALYs for cerebrovascular disease (per 100,000)	85.2	113.9	161.3	196.2	207.4
Alcohol attributable DALYs for cerebrovascular disease (%)	5.2	6.2	7.3	8.4	8.7

Interestingly, mortality rate from IHD due to alcohol use has decreased in Albania from 1.2 to 0.4 (per 100,000) in 1990 and 2010, respectively (Table 68). This has led to a decrease in the proportional mortality from 1.5% to 0.3%.

Similarly, the burden of IHD has decreased both in absolute and relative terms, notwithstanding the lack of statistical significance for such estimates (GBD, 2010).

**Table 68. Mortality rate and burden of IHD attributable to alcohol use in Albania in selected years (source: GBD, 2010)**

Indicator	Year: 1990	Year: 1995	Year: 2000	Year: 2005	Year: 2010
Alcohol attributable CMR from IHD (per 100,000)	1.2	1.1	1.0	0.5	0.4
Alcohol attributable CMR from IHD (%)	1.5	1.2	0.7	0.3	0.3
Alcohol attributable DALYs for IHD (per 100,000)	5.0	-2.8	-17.2	-37.6	-40.3
Alcohol attributable DALYs for IHD (%)	0.3	-0.1	-0.7	-1.3	-1.3

Conversely, death rate from liver cirrhosis attributable to alcohol has increased in Albania from 1.8 to 3.3 (per 100,000) in 1990 and 2010, respectively (Table 69). In 2010, the proportional mortality from liver cirrhosis due to alcohol consumption was more than 55%.

The increase in the burden of liver cirrhosis was from about 44 to 78 DALYs (per 100,000) in 1990 and 2010, respectively, with a proportional increase from 41% (in 1990) to 59% (in 2010).

Based on the other deleterious social and health effects of alcohol, including the increased risk of liver cirrhosis, of primary liver cell cancer and pancreas cancer, it is

recommended that fighting of harmful alcohol consumption should be included in the future comprehensive Albanian NCD public awareness program on avoidable risk factors.

**Table 69. Mortality rate and burden of liver cirrhosis attributable to alcohol use in Albania in selected years (source: GBD, 2010)**

Indicator	Year: 1990	Year: 1995	Year: 2000	Year: 2005	Year: 2010
Alcohol attributable CMR from liver cirrhosis (per 100,000)	1.8	1.7	2.4	3.0	3.3
Alcohol attributable CMR from liver cirrhosis (%)	41.0	44.8	49.7	54.6	55.4
Alcohol attributable DALYs for liver cirrhosis (per 100,000)	44.1	41.6	58.7	73.2	78.4
Alcohol attributable DALYs for liver cirrhosis (%)	40.9	44.9	51.2	57.4	58.5

Figure 66 summarizes the change in the total and cause-specific mortality rate attributable to alcohol use for the period 1990-2010.

**Figure 66. Change in mortality rate attributable to alcohol use in Albania (rate ratio: 2010 vs. 1990) (source: GBD, 2010)**

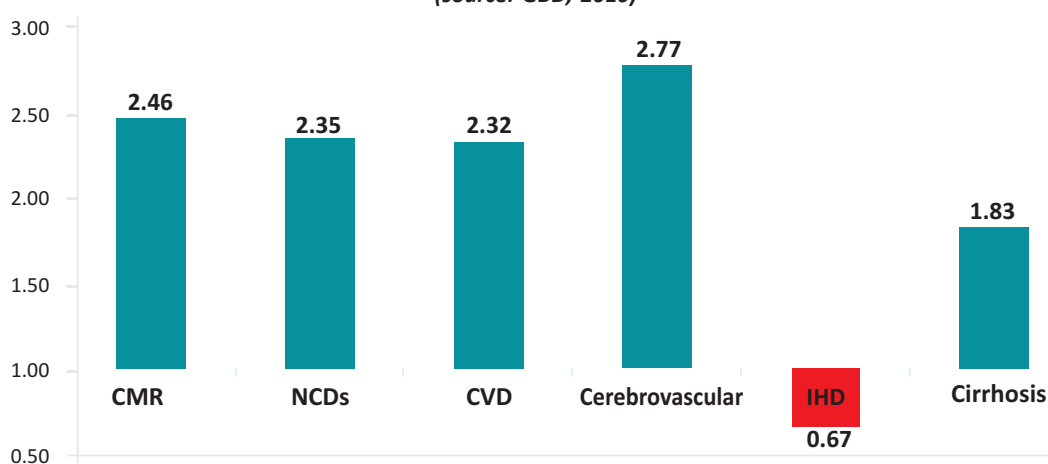
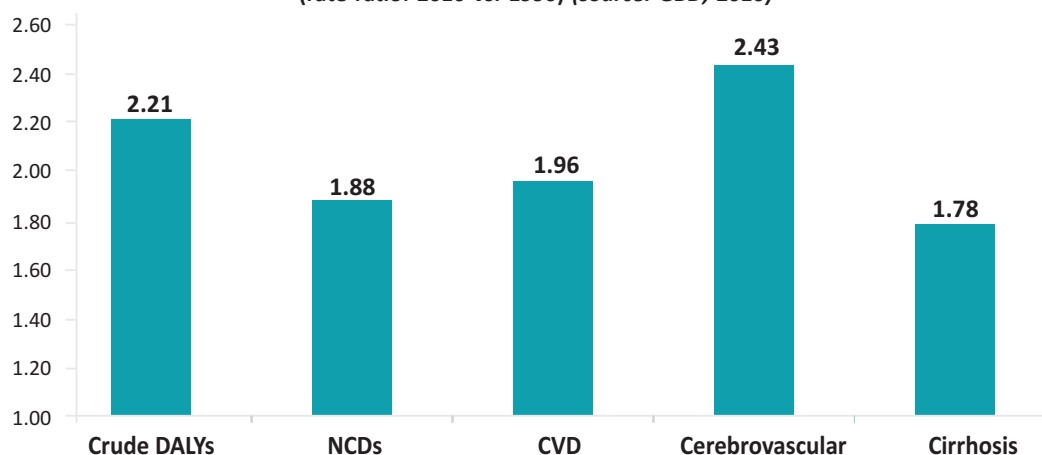


Figure 67 summarizes the changes in the total burden of disease and in cause-specific burden of disease due to alcohol consumption over the period 1990-2010.



**Figure 67. Change in the burden of disease attributable to alcohol use in Albania (rate ratio: 2010 vs. 1990) (source: GBD, 2010)**



Compared with the other countries in the SEE region, the age-standardized burden of disease attributable to alcohol use in Albania was one of the lowest in the region in 1990 with about 540 DALYs per 100,000 (Table 70). However, Macedonia and Montenegro had an exceptionally low burden of disease due to alcohol consumption at the fall of the communist rule.

In 2010, the burden of disease due to alcohol use in Albania increased to 899 DALYs per 100,000 which was lower than Bosnia and Herzegovina (interestingly, this predominantly Muslim country surprisingly exhibited the highest burden of disease due to alcohol in the region), Croatia and Slovenia, but higher than Serbia and Montenegro which in turn displayed a surprisingly low disease burden attributable to alcohol consumption.

Estimates of alcohol intake should be carefully interpreted as they are often based on aggregate measures (based on production and sales) rather than on individual-based measurements from population-based surveys.

**Table 70. Age-standardized DALYs (per 100,000) attributable to alcohol use in Albania and in the other countries of SEE region in selected years (source: GBD, 2010)**

Country	Year: 1990	Year: 1995	Year: 2000	Year: 2005	Year: 2010
<b>Albania</b>	<b>540.4</b>	<b>631.9</b>	<b>783.4</b>	<b>904.7</b>	<b>899.0</b>
Bosnia and Herzegovina	3000.4	3411.9	2509.5	2274.9	2148.9
Croatia	4398.4	3479.3	2693.6	2228.2	1928.2
Greece	792.7	700.9	640.9	576.4	562.7
Macedonia	191.4	398.8	655.9	1006.5	919.1
Montenegro	196.2	266.2	324.9	369.4	366.2
Serbia	363.3	429.4	432.6	457.6	429.2
Slovenia	2984.5	2719.3	2370.2	1995.2	1633.8

For Albania, there is little information regarding the patterns of harmful alcohol consumption in the general population. Therefore, there is a pressing need for regular

health interview surveys in Albania and occasional in-depth studies in the form of health examination surveys. These studies should be conducted in close collaboration with universities and other scientific institutions to further strengthen the epidemiological capacities of the Albanian research community.

The available evidence suggests that the distribution of alcohol consumption in the general population follows similar patterns as the smoking distribution, with an increasing trend especially among females and young individuals (ADHS, 2010).

From this point of view, the available data from the ADHS 2008-09 suggests that the prevalence of frequent (almost daily) female users of alcohol is increasing in Albania. Individuals pertinent to the higher social and economic groups and those residing in big urban centers appear to consume more alcohol compared with their lower socioeconomic group counterparts and inhabitants of rural areas.

Furthermore, in Albania, alcohol consumption among adolescent females appears similar to that in adult females (over 40%). Overall, according to ADHS 2008-2009, the prevalence of frequent alcohol consumption in Albania is about 20% (ADHS, 2010).

A population-based interview-survey conducted in Albania including a representative sample of middle-aged men and women found a very low prevalence of alcohol consumption among women (Burazeri G et al., 2010). The prevalence of almost daily intake of alcohol was about 31% in men and 6% in women. Furthermore, 17% of men and 47% of women abstained from alcohol. In men, frequent drinking was positively associated with age, but strongly inversely related to religious observance in both Muslims and Christians. In women, it was associated with smoking and upward social mobility. On the other hand, alcohol intake was not associated with religious affiliation in either sex. In men, intake of spirits (predominantly *raki*) and beer were associated with lower socioeconomic indices, smoking and obesity (beer only), whereas wine intake was associated with financial security, being secular, and not smoking. Among men, about 11% reported high intakes ( $\geq 210$  g of pure alcohol/week) and 6% very high intakes ( $\geq 420$  g/week) of alcohol. Of particular note, high intakes were associated with frequent, rather than episodic, drinking. Finally, consistent very heavy intake of alcohol was more frequent among Albanian men than in many former communist countries in Europe (Burazeri G et al., 2010). This probably contributes to an increased risk of sudden death due to cardiovascular causes.

According to WHO, pure alcohol consumption in Albania (WHO, HFA database, 2014) was about 5 liters per capita in the population aged 15 years and above in 2010. This estimate represented a slight decrease from the previous years (5.6 in 2009, 5.4 in 2008 and 5.2 in 2007).

In Albania, the overall rate of road traffic accidents (fatal and nonfatal accidents) involving alcohol consumption was 1.88 per 100,000 population in 2009 (WHO, HFA database, 2014). In 2008, this was 2.07 per 100,000 population. On the other hand, in 2007, this estimate was only 0.48 per 100,000 (WHO, 2014). This may be due to a different strategy of reporting by the Albanian statistical office.

An ecological analysis including all the countries of the WHO-European Region indicates that there is a moderate yet statistically significant correlation between alcohol consumption (liters per capita) and the overall rate of road traffic accidents ( $r=0.46$ ,  $95\%CI=0.20-0.66$ ) (WHO, HFA database, 2014).

### 5.3. Physical inactivity

Physical activity is difficult to measure, even in population-based studies. It consists of physical exercise at work, at home, as well as leisure-time physical activity. For each component, a meaningful assessment should tap the frequency, intensity and duration of physical exercise. In general, more physical activity is beneficial to health as it decreases the risk for CVD, depression and obesity, which in itself is a risk factor as well. In Albania, to date, there are no population-based studies which have assessed the level of physical activity in nationwide representative samples of adult men and women. Measuring sedentary activities, such as sitting at work, watching TV, sitting at home and the like would also be indirect yet pretty useful indicators.

The available information consists mainly of the rough estimates of the GBD for the years 2005 and 2010 which inform about the putative mortality and burden of disease attributable to physical activity in the Albanian population.

Based on such information, the overall mortality rate in Albania due to physical inactivity was 52 and 56 per 100,000 population in 2005 and 2010, respectively (Table 71). About 8% of the overall death rate in Albania was due to physical inactivity in 2010.

**Table 71. Overall mortality rate attributable to physical inactivity in Albania in selected years**  
(source: GBD, 2010)

Indicator	Year: 2005	Year: 2010
Physical inactivity attributable total CMR (per 100,000)	51.9	56.0
Physical inactivity attributable total CMR (%)	7.7	7.9

The total burden of disease attributable to physical inactivity was higher in men than in women (in 2010: 1,346 vs. 987 DALYs per 100,000, respectively) (Table 72).

Overall, in 2010, 4.3% of the total burden of disease in Albania was attributable to physical inactivity.

**Table 72. Crude DALYs attributable to physical inactivity in Albania in selected years**  
(source: GBD, 2010)

Sex	Year: 2005		Year: 2010	
	DALYs (100,000)	Percent DALYs	DALYs (100,000)	Percent DALYs
Males	1288.2	4.2	1346.5	4.3
Females	959.8	4.1	987.2	4.1
Total	1123.8	4.1	1167.0	4.3

The exclusive deleterious health effect of a sedentary lifestyle concerns the development of various NCDs including CVD, diabetes and cancer. In Albania, in 2010, 9% of the CMR from NCDs and 5.4% of the total burden of NCDs was due to physical inactivity (Table 73).

**Table 73. Mortality rate and burden of NCDs attributable to physical inactivity in Albania in selected years (source: GBD, 2010)**

Indicator	Year: 2005	Year: 2010
Physical inactivity attributable CMR from NCDs (per 100,000)	51.9	56.0
Physical inactivity attributable CMR from NCDs (%)	9.0	9.0
Physical inactivity attributable DALYs for NCDs (per 100,000)	1123.8	1167.0
Physical inactivity attributable DALYs for NCDs (%)	5.4	5.4

In Albania, sedentary behavior was responsible for 13% of the mortality rate from CVD in 2010 (Table 74). On the other hand, in the same year, about 14% of the total burden of CVD in the Albanian population was due to physical inactivity.

**Table 74. Mortality rate and burden of CVD attributable to physical inactivity in Albania in selected years (source: GBD, 2010)**

Indicator	Year: 2005	Year: 2010
Physical inactivity attributable CMR from CVD (per 100,000)	47.2	51.0
Physical inactivity attributable CMR from CVD (%)	12.9	13.0
Physical inactivity attributable DALYs for CVD (per 100,000)	925.3	955.1
Physical inactivity attributable DALYs for CVD (%)	14.1	14.4

In relative terms, the negative health effect of physical inactivity on the metabolic disorders including diabetes is even stronger. Hence, notwithstanding the low CMR from diabetes due to physical inactivity (1.6 per 100,000 in 2010), about 25% of this mortality rate from diabetes was due to physical inactivity in 2010 (Table 75). Furthermore, for the same year, 27% of the total burden of diabetes was attributable to a sedentary lifestyle.

**Table 75. Mortality rate and burden of diabetes attributable to physical inactivity in Albania in selected years (source: GBD, 2010)**

Indicator	Year: 2005	Year: 2010
Physical inactivity attributable CMR from diabetes (per 100,000)	1.5	1.6
Physical inactivity attributable CMR from diabetes (%)	24.6	24.6
Physical inactivity attributable DALYs for diabetes (per 100,000)	108.7	117.4
Physical inactivity attributable DALYs for diabetes (%)	26.7	27.0

A population-based study conducted in Albania including a representative sample of middle-aged men and women has reported that energy expenditure in leisure-time physical exercise was a substantial protective factor, especially in men (Burazeri G et al., 2008).

The prevalence of physical exercise during the communist regime in Albania, where until 1990 private cars were banned and agriculture was not mechanized, is traditionally believed to have been high (Shapo L et al., 2004). Subsequently, car ownership increased rapidly and pedestrian areas became more limited in Tirana, reflecting a rapid transition towards a mechanized society, in which leisure-time exercise becomes a useful indicator of the overall rate of physical activity among adults (Burazeri G et al., 2008).

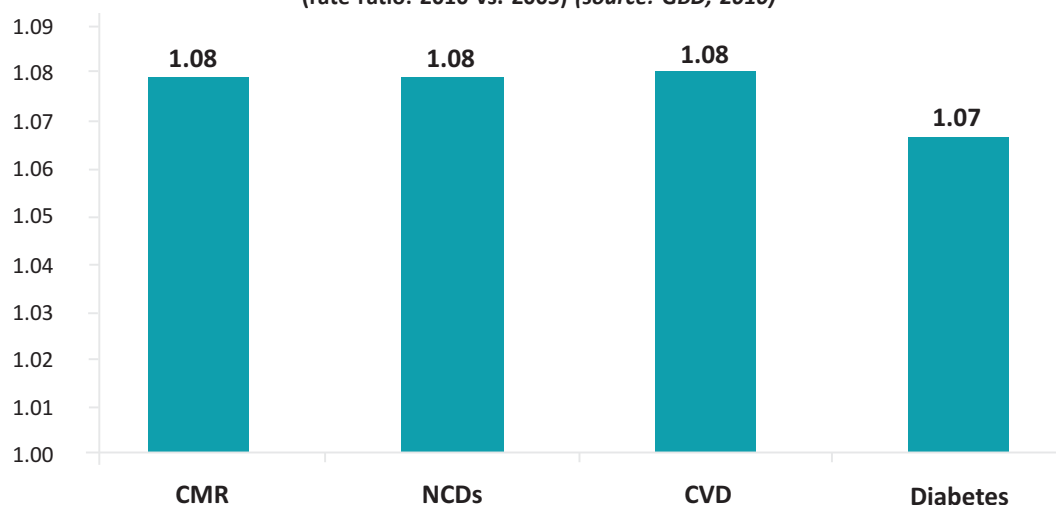
Findings from the aforementioned study in Albania indicated that about one fifth of the “healthy” population (19% of males and 26% of females) have extremely low energy expenditures of <45 Kcal/day (Burazeri G et al., 2008).

A prior study in 2001 has reported predominantly sedentary leisure-time activities (mainly reading and watching TV) among 50% of men and 58% of women in Tirana (Shapo L et al., 2004).

Therefore, the low extent of leisure-time exercise among Albanian adults is a public health concern impacting also on future trends of obesity, impaired glucose tolerance, diabetes, hypertension and heart disease.

Figure 68 presents the increase in the overall and cause-specific mortality rate attributable to physical inactivity in Albania for the period 2005-2010 (GBD database contains information on physical activity in Albania only for this 5-year time span). Overall, there was an increase of 8% in the CMR due to physical inactivity, NCDs in general and CVD in particular. In addition, mortality rate from diabetes increased 7%.

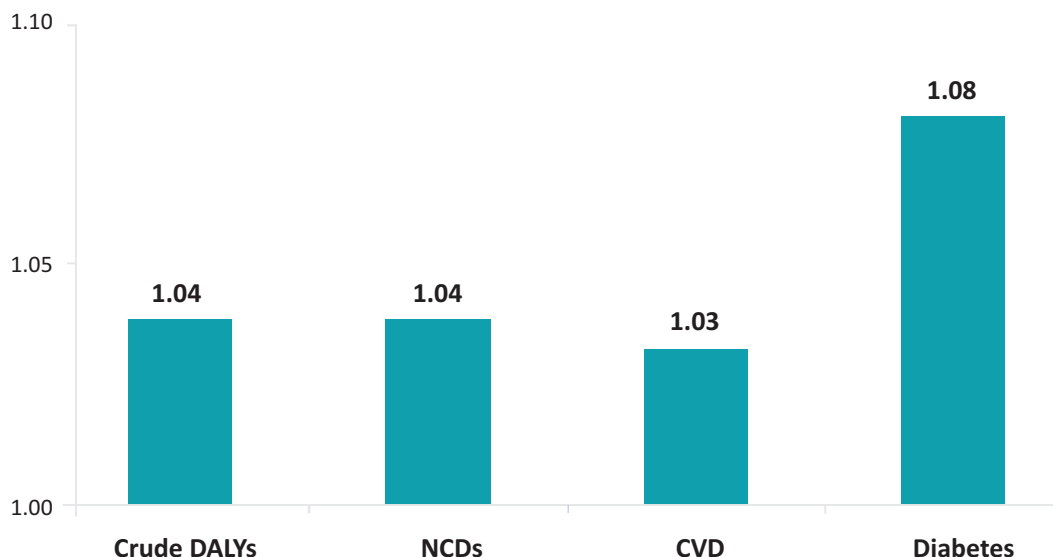
**Figure 68. Increase in mortality rate attributable to physical inactivity in Albania (rate ratio: 2010 vs. 2005) (source: GBD, 2010)**



On the other hand, Figure 69 exhibits the increase in the total and cause-specific burden of disease in Albania due to physical inactivity for the period 2005-2010.

The total burden of disease and/or the burden of NCDs attributable to physical inactivity increased 4%. The burden of diabetes due to physical inactivity increased significantly more than the burden of CVD (8% vs. 3%, respectively).

Figure 69. Increase in the burden of disease attributable to physical inactivity in Albania (rate ratio: 2010 vs. 2005) (source: GBD, 2010)



The overall age-standardized burden of disease attributable to physical inactivity in Albania in 2010 was about 1,064 DALYs per 100,000 (Table 76), which was slightly lower than the average of the SEE region. Greece and Slovenia exhibited the lowest toll due to sedentary behavior, whereas Serbia and especially Macedonia had the highest burden of disease attributable to physical inactivity.

However, as pointed out earlier, valid and reliable information on physical activity is difficult to obtain, especially for Albania.

Population-based surveys should be carefully designed and properly conducted in order to assess accurately the levels of physical exercise in the Albanian adult population.

Table 76. Age-standardized DALYs (per 100,000) attributable to physical inactivity in Albania and in the other countries of SEE region in selected years (source: GBD, 2010)

Country	Year: 2005	Year: 2010
<b>Albania</b>	<b>1132.2</b>	<b>1063.6</b>
Bosnia and Herzegovina	1442.7	1309.1
Croatia	1226.6	1117.4
Greece	846.8	818.4
Macedonia	1627.4	1496.3
Montenegro	1304.1	1203.8
Serbia	1675.6	1416.4
Slovenia	954.3	826.1

### 5.4. High body mass index

A high body mass index (BMI) increases the risk for several chronic diseases (WHO, NCD country profile, 2011). BMI is calculated as the ratio between body weight (kg) and height squared (m<sup>2</sup>). Overweight is defined as a BMI from 25.0 to 29.9 (kg/m<sup>2</sup>), whereas obesity refers to BMI $\geq$ 30 (kg/m<sup>2</sup>) (WHO, 2011).

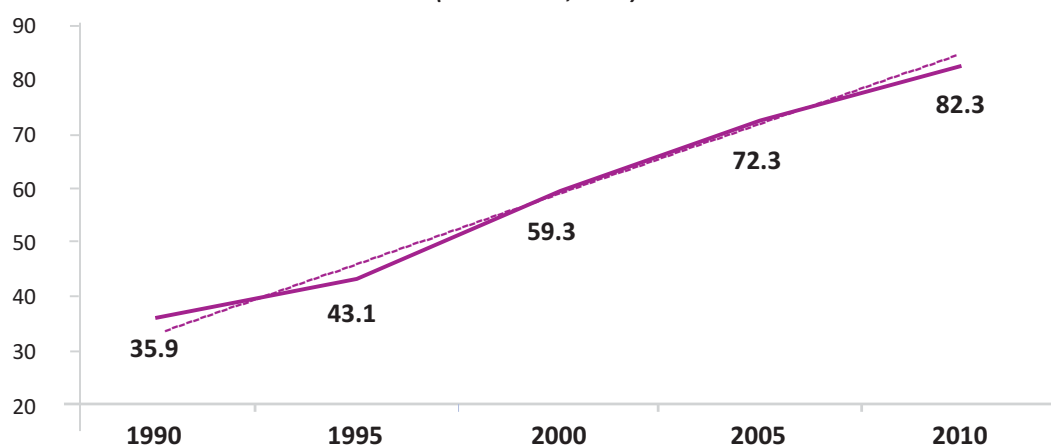
The overall mortality rate attributable to BMI has considerably increased in Albania in the past two decades (from about 36 to 82 deaths per 100,000 in 1990 and 2010, respectively) (Table 77). The proportional CMR due to a higher BMI has increased from about 7% (in 1990) to 12% (in 2010).

**Table 77. Overall mortality rate attributable to high BMI in Albania in selected years**  
(source: GBD, 2010)

Indicator	Year: 1990	Year: 1995	Year: 2000	Year: 2005	Year: 2010
High BMI attributable total CMR (per 100,000)	35.9	43.1	59.3	72.3	82.3
High BMI attributable total CMR (%)	7.1	8.1	9.5	10.7	11.6

There was evidence of a sharp linear increase in the overall mortality rate in Albania attributable to a higher BMI, especially after the year 1995 (p-value for linear trend: <0.01) (Figure 70).

**Figure 70. CMR (per 100,000) attributable to a higher BMI in Albania in selected years**  
(source: GBD, 2010)



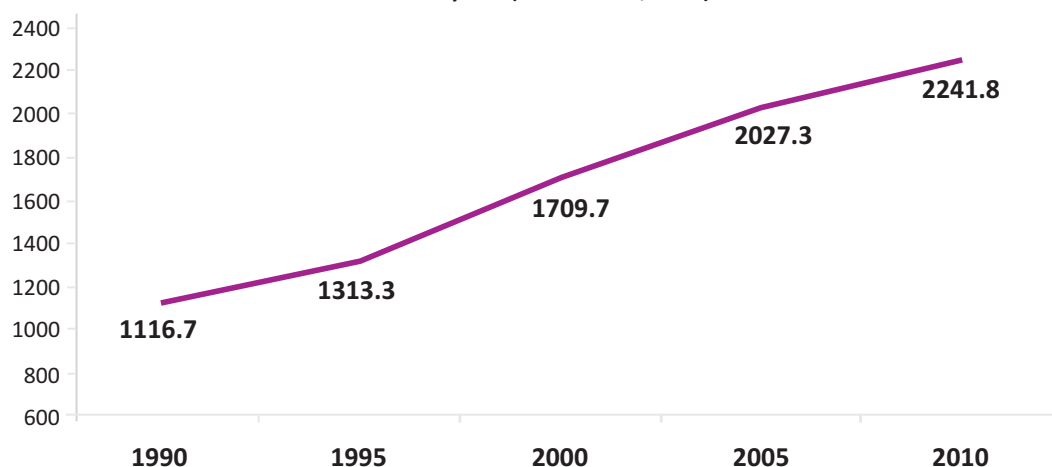
In the past twenty years, the burden of disease due to a higher BMI has also increased substantially and linearly in both sexes in Albania. The total burden of disease attributable to a higher BMI was 8.2% in 2010, with an increase of more than two times compared with the year 1990 (3.9%) (Table 78).

**Table 78. Crude DALYs attributable to high BMI in Albania in selected years (source: GBD, 2010)**

Sex	Year: 1990		Year: 1995		Year: 2000		Year: 2005		Year: 2010	
	DALYs (100,000)	Percent DALYs	DALYs (100,000)	Percent DALYs	DALYs (100,000)	Percent DALYs	DALYs (100,000)	Percent DALYs	DALYs (100,000)	Percent DALYs
Males	1159.0	3.7	1417.0	4.6	1932.2	6.1	2291.6	7.4	2563.1	8.3
Females	1072.2	4.1	1208.1	4.9	1488.3	6.2	1763.8	7.5	1920.0	8.1
<b>Total</b>	<b>1116.7</b>	<b>3.9</b>	<b>1313.3</b>	<b>4.8</b>	<b>1709.7</b>	<b>6.2</b>	<b>2027.3</b>	<b>7.4</b>	<b>2241.8</b>	<b>8.2</b>

Furthermore, there was evidence of an increasing trend of the burden of disease attributable to a higher BMI during the period 1990-2010 (Figure 71).

**Figure 71. Burden of disease (DALYs per 100,000) attributable to a higher BMI in Albania in selected years (source: GBD, 2010)**



Mortality rate from NCDs due to a higher BMI has increased more than twice during the past twenty years in Albania (Table 79). In 2010, the share of NCD mortality due to a higher BMI was 13.3%, whereas the proportion of the total burden of disease attributable to a higher BMI was 10.4%.

**Table 79. Mortality rate and burden of NCDs attributable to high BMI in Albania in selected years (source: GBD, 2010)**

Indicator	Year: 1990	Year: 1995	Year: 2000	Year: 2005	Year: 2010
High BMI attributable CMR from NCDs (per 100,000)	35.9	43.1	59.3	72.3	82.3
High BMI attributable CMR from NCDs (%)	10.1	10.5	11.4	12.5	13.3
High BMI attributable DALYs for NCDs (per 100,000)	1116.7	1313.3	1709.7	2027.3	2241.8
High BMI attributable DALYs for NCDs (%)	6.6	7.3	8.6	9.8	10.4

Mortality rate from CVD attributable to an excess BMI has increased from 31 deaths to 71 deaths (per 100,000 population) from 1990 to 2010, respectively (Table 80). This has led to an 18.3% proportional mortality from CVD attributable to a higher BMI in the year 2010.



Similarly, the burden of CVD due to a higher BMI has doubled from 1990 to 2010, whereas the proportional DALYs attributable to a higher BMI exceeded 22% in 2010 (Table 80).

**Table 80. Mortality rate and burden of CVD attributable to high BMI in Albania in selected years**  
(source: *GBD, 2010*)

Indicator	Year: 1990	Year: 1995	Year: 2000	Year: 2005	Year: 2010
High BMI attributable CMR from CVD (per 100,000)	31.5	37.5	51.4	62.6	71.4
High BMI attributable CMR from CVD (%)	14.7	15.0	15.9	17.1	18.3
High BMI attributable DALYs for CVD (per 100,000)	726.0	848.7	1129.6	1337.7	1465.1
High BMI attributable DALYs for CVD (%)	16.8	17.3	18.8	20.4	22.1

In addition, mortality rate from cerebrovascular disease due to an excessive BMI has doubled in the past two decades, with a proportional mortality attributable to this risk factor of 4.4% in 2010 (Table 81).

A similar increase was evident for the burden of disease attributable to a higher BMI, which has doubled during the period 1990-2010. In 2010, excessive BMI accounted for 5.2% of the burden of cerebrovascular disease in the Albanian population (Table 81).

**Table 81. Mortality rate and burden of cerebrovascular disease attributable to high BMI in Albania in selected years** (source: *GBD, 2010*)

Indicator	Year: 1990	Year: 1995	Year: 2000	Year: 2005	Year: 2010
High BMI attributable CMR from cerebrovascular disease (per 100,000)	3.5	3.5	4.7	5.8	7.1
High BMI attributable CMR from cerebrovascular disease (%)	3.7	3.2	3.4	3.8	4.4
High BMI attributable DALYs for cerebrovascular disease (per 100,000)	66.8	68.7	88.8	107.0	122.8
High BMI attributable DALYs for cerebrovascular disease (%)	4.1	3.7	4.0	4.6	5.2

In particular, mortality rate from IHD attributable to a higher BMI has increased significantly during the period 1990-2010 (from 19 to 47 deaths per 100,000 population in 1990 and 2010, respectively (Table 82). In 2010, the proportional IHD mortality due to an excessive BMI was about 28% in the overall Albanian population.

A similar trend was observed for the burden of IHD, where a higher BMI accounted for about 32% of proportional DALYs in 2010 (Table 82).

**Table 82. Mortality rate and burden of IHD attributable to high BMI in Albania in selected years**  
(source: GBD, 2010)

Indicator	Year: 1990	Year: 1995	Year: 2000	Year: 2005	Year: 2010
High BMI attributable CMR from IHD (per 100,000)	19.0	24.0	34.1	41.9	47.2
High BMI attributable CMR from IHD (%)	23.4	24.3	25.1	26.1	27.5
High BMI attributable DALYs for IHD (per 100,000)	440.6	539.3	746.5	893.1	965.2
High BMI attributable DALYs for IHD (%)	26.7	27.4	28.4	29.7	31.8

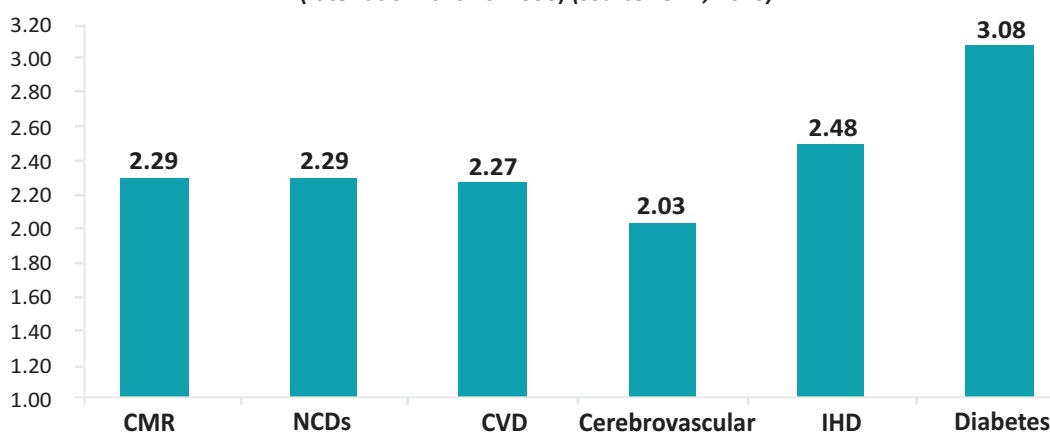
Notwithstanding the relatively low death rate from diabetes, the deleterious effect of excessive body mass is remarkable for this health condition. In 2010, about 62% of the overall mortality rate from diabetes and 69% of the total burden of this condition in the Albanian population were explained by a higher BMI (Table 83).

**Table 83. Mortality rate and burden of diabetes attributable to high BMI in Albania in selected years**  
(source: GBD, 2010)

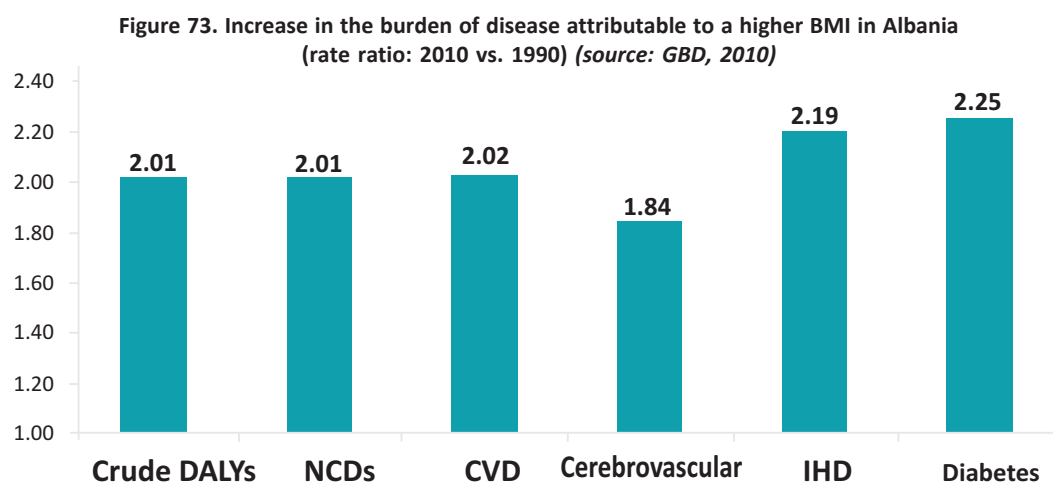
Indicator	Year: 1990	Year: 1995	Year: 2000	Year: 2005	Year: 2010
High BMI attributable CMR from diabetes (per 100,000)	1.3	1.9	2.9	3.7	4.0
High BMI attributable CMR from diabetes (%)	54.4	57.1	58.5	60.1	62.2
High BMI attributable DALYs for diabetes (per 100,000)	132.6	165.6	214.6	268.4	297.7
High BMI attributable DALYs for diabetes (%)	58.0	59.5	62.1	65.9	68.5

Figure 72 summarizes the increase in the overall and cause-specific mortality rates attributable to an excessive BMI in Albania for the period 1990-2010. The overall mortality rate due to a higher BMI has increased more than twice (2.3 times). In particular, the death rate from IHD due to an excessive BMI has increased 2.5 times, whereas the death rate from diabetes has tripled.

**Figure 72. Increase in mortality rate attributable to a higher BMI in Albania**  
(rate ratio: 2010 vs. 1990) (source: GBD, 2010)



On the other hand, Figure 73 presents the increase in the total and cause-specific burden of disease explained by a higher BMI in the Albanian population during 1990-2010. The total burden of disease due to a higher BMI has doubled in Albania during the past two decades. There is a more than twofold increase in the burden of some major NCDs including IHD and diabetes.



Interestingly, in 1990, the age-standardized total burden of disease attributable to a higher BMI in Albania was, by far and large, the lowest in the SEE region (Greece excluded) (Table 84). On the other hand, in 2010, Albania resembles the average toll of the region.

Serbia and Macedonia bear the highest burden of disease due to an excessive BMI in the region, whereas Slovenia and Greece have the lowest burden of disease attributable to a higher BMI (Table 84).

**Table 84. Age-standardized DALYs (per 100,000) attributable to high BMI in Albania and in the other countries of SEE region in selected years (source: GBD, 2010)**

Country	Year: 1990	Year: 1995	Year: 2000	Year: 2005	Year: 2010
Albania	1572.8	1652.5	1886.7	2040.9	2056.2
Bosnia and Herzegovina	2630.2	3106.8	2687.0	2600.3	2500.2
Croatia	2570.9	2415.9	2319.8	2242.1	2145.6
Greece	1486.6	1449.8	1472.7	1454.7	1459.3
Macedonia	2578.5	2657.7	2645.0	2678.2	2596.6
Montenegro	2351.6	2468.8	2655.7	2505.4	2464.6
Serbia	2777.1	2897.5	2877.2	2828.7	2555.4
Slovenia	2342.5	2221.2	2070.7	1877.8	1698.4

According to a recent WHO country profile, the estimated prevalence of overweight in Albania in 2008 was 54.4% (60.5% in males and 48.5% in females) (WHO, NCD country profiles, 2011). Conversely, the prevalence of obesity was 21.3% (21.8% in males and 20.8% in females).

The World Health Statistics 2014 report presented the same prevalence of obesity among Albanian men and women for the year 2008 with some minor corrections (21.7% in males and 20.5% in females) (WHO, World Health Statistics, 2014).

On the other hand, the ADHS 2008-09 reported a different BMI for women aged 15-49 years in Albania (ADHS, 2010). Mean BMI was 24.5 (with a range from 22 to 27 among different women categories). Slightly over 3% of Albanian women had BMI<18.5, which points to a low level of nutritional deficiency (under-nutrition). Conversely, 39% of women were overweight or obese (about 29% overweight and 10% obese). Overweight and obesity were more prevalent among older women and those residing in the Coastal region of Albania. Regardless of geographical location though, overweight and obesity were positively related to age of the women. Women in the lowest wealth quintile had lower levels of overweight and obesity; yet, according to the report, there was no evidence of an overall pattern by wealth quintile (ADHS, 2010).

On the other hand, in men, mean BMI was 25.4 (which was similar to women) and increased with age. Only 1% of men were thin, as opposed to 3% of women. The prevalence of overweight in men (53%) was higher than in women (39%), but the level of obesity in men (9%) was slightly lower than in women (10%). The demographic and socioeconomic patterns of overweight and obesity were similar for men and women (ADHS, 2010).

A cross-sectional study conducted in Tirana including a representative sample of adult men and women aged 35-74 years reported a higher prevalence of obesity (BMI>30 Kg/m<sup>2</sup>) in men than in women (18% vs. 13%, respectively) (Burazeri G et al., 2007).

Conversely, an earlier population-based study conducted in Tirana in 2001 including 1,120 adults aged 25 years and over reported a higher overall prevalence of obesity (22% in men and 31% in women) (Shapo L et al., 2003).

In any case, regardless of the discrepancy between different sources of information which constitute a pressing challenge for Albania, overweight and obesity pose a serious public health concern in view of the rapid changes in lifestyle where processed foods are increasingly replacing traditional foods in Albania (Burazeri et al., 2011).

### **5.5. High blood pressure**

High blood pressure (HBP) – defined as systolic blood pressure  $\geq 140$  mmHg and/or diastolic blood pressure  $\geq 90$  mmHg – increases especially the risk of IHD and stroke (WHO, 2011).

Based on GBD data, HBP was the second risk factor which accounted for most of the burden of disease in Albania in 2010 after dietary risk factors (GBD, 2010).

According to the WHO country profile based on the official information received from national institutions, the prevalence of HBP in Albania in 2008 was 46.3% (49.3% in males and 43.5% in females) (WHO, NCD country profiles, 2011).

On the other hand, the World Health Statistics 2014 reported a prevalence of raised blood pressure (using seemingly the same measurement criteria) of 39.5% in males and 31.7% in females among individuals aged 25 years and over (in both sexes) in 2008 (WHO, World Health Statistics, 2014).

Again, the discrepancy between the national data and the WHO estimations points to the urgent need for strengthening national capacities regarding the establishment of an effective and responsive health information system in Albania.

ADHS 2008-09 has reported data on blood pressure measurement for males and females aged 15-49 years. Overall, findings from this survey indicated that 20% of women and 28% of men in Albania had HBP (ADHS, 2010). Hypertension was more prevalent among older individuals (those aged 45-49 years), with 40% of women and 45% of men in this age-group who had HBP. Furthermore, almost 80% of women and 90% of men with hypertension were unaware of this health condition (ADHS, 2010).

A population-based study conducted in Tirana in mid-2000 including a representative sample of men and women aged 35-74 years indicated a prevalence of self-reported hypertension of 15% in men and 19% in women (Burazeri et al., 2007).

A previous population-based study conducted in Tirana in 2001 reported a prevalence of hypertension of 37% in men and 27% in women (Shapo et al., 2003).

According to GBD 2010 estimates, the overall mortality rate attributable to raised blood pressure in Albania has increased significantly in the past twenty years.

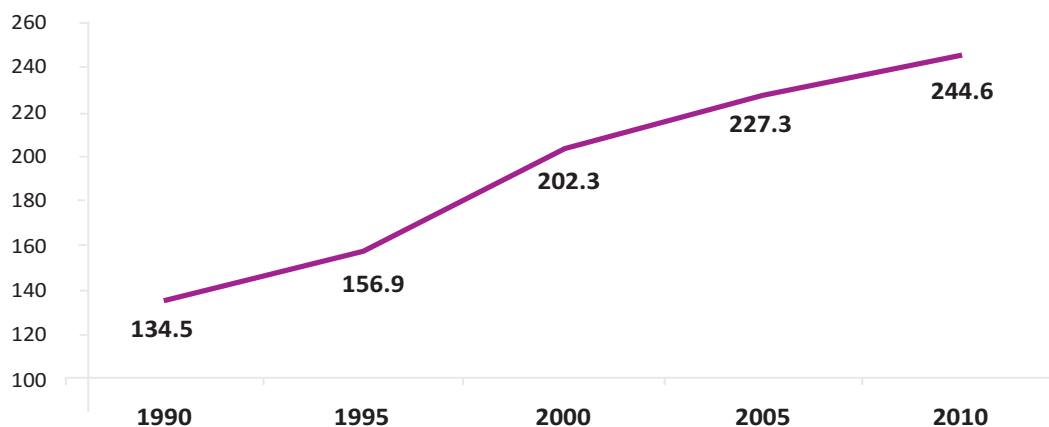
As a matter of fact, HBP accounted for about 35% of the total CMR in Albania in 2010, whereas in 1990 this share was 27% (Table 85).

**Table 85. Overall mortality rate attributable to HBP in Albania in selected years**  
(source: GBD, 2010)

Indicator	Year: 1990	Year: 1995	Year: 2000	Year: 2005	Year: 2010
HBP attributable total CMR (per 100,000)	134.5	156.9	202.3	227.3	244.6
HBP attributable total CMR (%)	26.8	29.4	32.3	33.7	34.5

Furthermore, there was a sharp increasing trend in the overall mortality rate due to HBP from 1990 to 2010, especially in the period 1995-2000 which coincided with the civil unrests of 1997-1998 and subsequently with the war in Kosovo – a 5-year period characterized by a particularly high burden of CVD attributable to a large extent to raised blood pressure (Figure 74).

Figure 74. CMR (per 100,000) attributable to HBP in Albania in selected years (source: GBD, 2010)



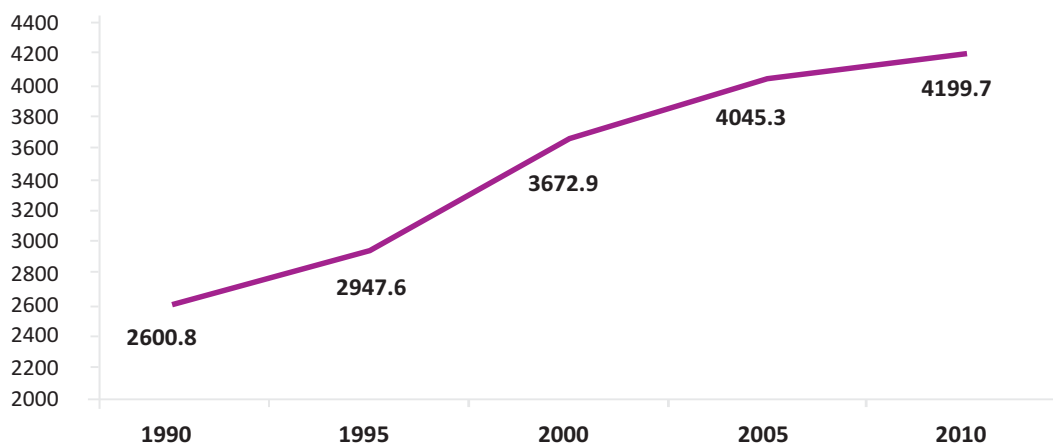
The total burden of disease explained by HBP increased from about 2,601 to 4,200 DALYs per 100,000 from 1990 to 2010 (Table 86). The increase in the proportional DALYs was from about 9% (in 1990) to 15% (in 2010). The burden of disease due to HBP was significantly higher in men than in women (in 2010: 5,070 vs. 3,328 per 100,000, respectively).

Table 86. Crude DALYs attributable to HBP in Albania in selected years (source: GBD, 2010)

Sex	Year: 1990		Year: 1995		Year: 2000		Year: 2005		Year: 2010	
	DALYs (100,000)	Percent DALYs	DALYs (100,000)	Percent DALYs	DALYs (100,000)	Percent DALYs	DALYs (100,000)	Percent DALYs	DALYs (100,000)	Percent DALYs
Males	2852.5	9.1	3343.8	10.9	4385.6	13.9	4812.0	15.6	5070.4	16.4
Females	2336.3	9.0	2545.2	10.4	2963.4	12.5	3280.8	13.9	3327.5	14.0
Total	2600.8	9.1	2947.6	10.7	3672.9	13.2	4045.3	14.9	4199.7	15.3

In the same way as the mortality rate, there was evidence of a linear increase in the total burden of disease attributable to HBP in Albania for the period 1990-2010, especially during 1995-2000 (Figure 75).

Figure 75. Burden of disease (DALYs per 100,000) attributable to HBP in Albania in selected years (source: GBD, 2010)



Mortality rate from NCDs due to HBP increased from about 135 to 245 deaths per 100,000 in 1990 and 2010, respectively (Table 87). In 2010, the proportional NCD mortality explained by raised blood pressure in Albania was about 40%.

On the other hand, the proportional burden of NCDs attributable to HBP in Albania in 2010 was about 20%.

**Table 87. Mortality rate and burden of NCDs attributable to HBP in Albania in selected years**  
(source: GBD, 2010)

Indicator	Year: 1990	Year: 1995	Year: 2000	Year: 2005	Year: 2010
HBP attributable CMR from NCDs (per 100,000)	134.5	156.9	202.3	227.3	244.6
HBP attributable CMR from NCDs (%)	37.8	38.3	39.0	39.2	39.5
HBP attributable DALYs for NCDs (per 100,000)	2600.8	2947.6	3672.9	4045.3	4199.7
HBP attributable DALYs for NCDs (%)	15.4	16.4	18.5	19.5	19.6

CVD mortality explained by HBP increased up to 240 deaths per 100,000 in 2010, accounting for 61% of the overall CVD death rate (Table 88).

The total burden of CVD attributable to HBP was 4,076 DALYs per 100,000 in 2010, accounting for about 62% of the overall toll of this condition.

**Table 88. Mortality rate and burden of CVD attributable to HBP in Albania in selected years**  
(source: GBD, 2010)

Indicator	Year: 1990	Year: 1995	Year: 2000	Year: 2005	Year: 2010
HBP attributable CMR from CVD (per 100,000)	131.7	153.8	198.3	222.9	239.8
HBP attributable CMR from CVD (%)	61.6	61.5	61.2	61.0	61.3
HBP attributable DALYs for CVD (per 100,000)	2517.8	2860.6	3564.7	4045.3	4076.4
HBP attributable DALYs for CVD (%)	58.4	58.4	59.3	59.9	61.5

In particular, cerebrovascular death rate due to HBP increased from 66 to 115 deaths per 100,000 in 1990 and 2010, respectively (Table 89).

In 2010, HBP accounted for 70% of the proportional mortality and 73% of the burden of cerebrovascular disease.

**Table 89. Mortality rate and burden of cerebrovascular disease attributable to HBP in Albania in selected years**  
(source: GBD, 2010)

Indicator	Year: 1990	Year: 1995	Year: 2000	Year: 2005	Year: 2010
HBP attributable CMR from cerebrovascular disease (per 100,000)	66.3	77.9	98.2	107.1	114.5
HBP attributable CMR from cerebrovascular disease (%)	71.7	71.3	70.7	70.3	70.4
HBP attributable DALYs for cerebrovascular disease (per 100,000)	1150.0	1306.7	1572.3	1673.9	1731.5
HBP attributable DALYs for cerebrovascular disease (%)	70.8	70.7	71.0	71.4	72.6

Furthermore, mortality rate from IHD due to raised blood pressure has doubled in the past twenty years in Albania (Table 90). In 2010, HBP accounted for 56% of the IHD mortality and for 59% of the burden of IHD in the overall Albanian population.

**Table 90. Mortality rate and burden of IHD attributable to HBP in Albania in selected years**  
(source: GBD, 2010)

Indicator	Year: 1990	Year: 1995	Year: 2000	Year: 2005	Year: 2010
HBP attributable CMR from IHD (per 100,000)	46.4	56.0	76.4	89.6	96.4
HBP attributable CMR from IHD (%)	57.1	56.7	56.3	55.9	56.1
HBP attributable DALYs for IHD (per 100,000)	969.9	1142.9	1516.7	1736.9	1791.9
HBP attributable DALYs for IHD (%)	58.7	58.0	57.7	57.7	59.0

Figure 76 summarizes the increase in the overall and cause-specific mortality rate due to raised blood pressure in Albania in the past twenty years. Remarkably, the mortality rate from IHD attributable to HBP has increased twice in Albania, whereas death rate from cerebrovascular disease has increased by 73%.

**Figure 76. Increase in mortality rate attributable to HBP in Albania**  
(rate ratio: 2010 vs. 1990) (source: GBD, 2010)

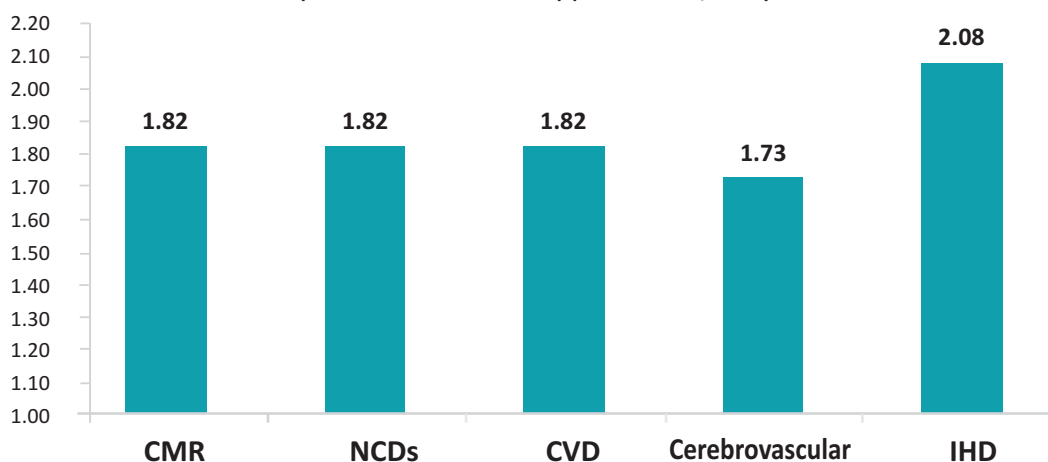
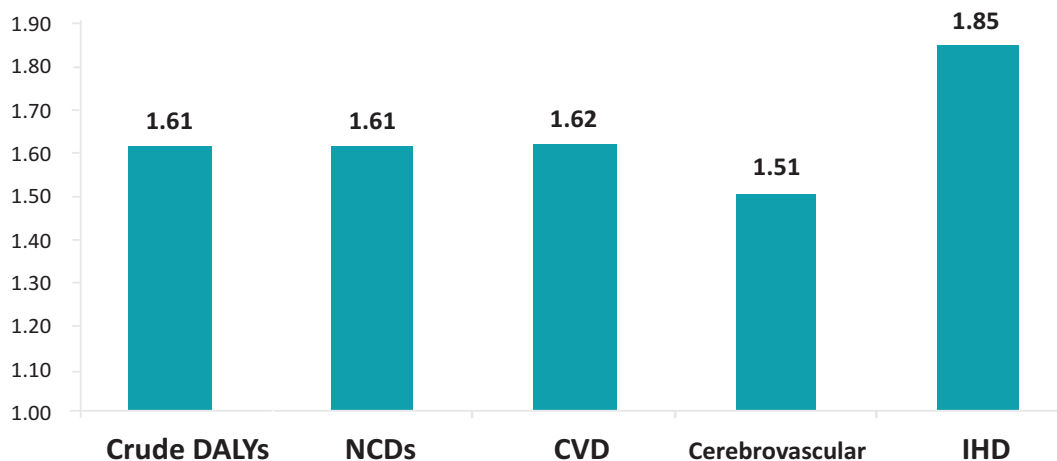


Figure 77 presents the increase in the overall and cause-specific burden of disease explained by HBP in Albania during 1990-2010.

The burden of IHD attributable to HBP in Albania has increased 85%, whereas the burden of cerebrovascular disease has increased by 51%.



Figure 77. Increase in the burden of disease attributable to HBP in Albania (rate ratio: 2010 vs. 1990) (source: GBD, 2010)



Compared with the other countries of the region, the total burden of disease attributable to raised blood pressure in Albania in 1990 was below the average of the SEE countries (Table 91). At the fall of the communist rule, a particularly high burden of disease due to HBP was observed in several Yugoslavian republics including Bosnia and Herzegovina, Croatia and especially Macedonia.

Twenty years later, the burden of disease due to HBP in Albania was higher than the regional average (Table 91). Even worse, Albania is the only country in the region which has not implemented a program to ensure an effective control and management of hypertension at a population level, in contrast with most of the former Yugoslavian republics which have made a significant progress in this regard (WHO, World Health Statistics, 2014).

Table 91. Age-standardized DALYs (per 100,000) attributable to HBP in Albania and in the other countries of SEE region in selected years (source: GBD, 2010)

Country	Year: 1990	Year: 1995	Year: 2000	Year: 2005	Year: 2010
Albania	3792.9	3792.2	4092.1	4071.7	3773.8
Bosnia and Herzegovina	5228.6	5658.6	4519.2	4039.0	3594.5
Croatia	5221.2	4558.2	3990.9	3502.3	3027.5
Greece	2837.0	2537.4	2375.0	2038.7	1797.4
Macedonia	6069.1	6010.1	5573.6	5286.0	4766.3
Montenegro	4956.7	5176.5	5444.3	4768.2	4274.9
Serbia	4897.9	5118.2	4931.8	4476.0	3591.3
Slovenia	4124.9	3398.8	2817.4	2207.9	1854.1

### 5.6. High fasting glucose level

According to the World Health Statistics 2014, the prevalence of raised fasting blood glucose level was 10.3% in males and 9.0% in females among individuals aged 25 years and over in 2008 (WHO, World Health Statistics, 2014).

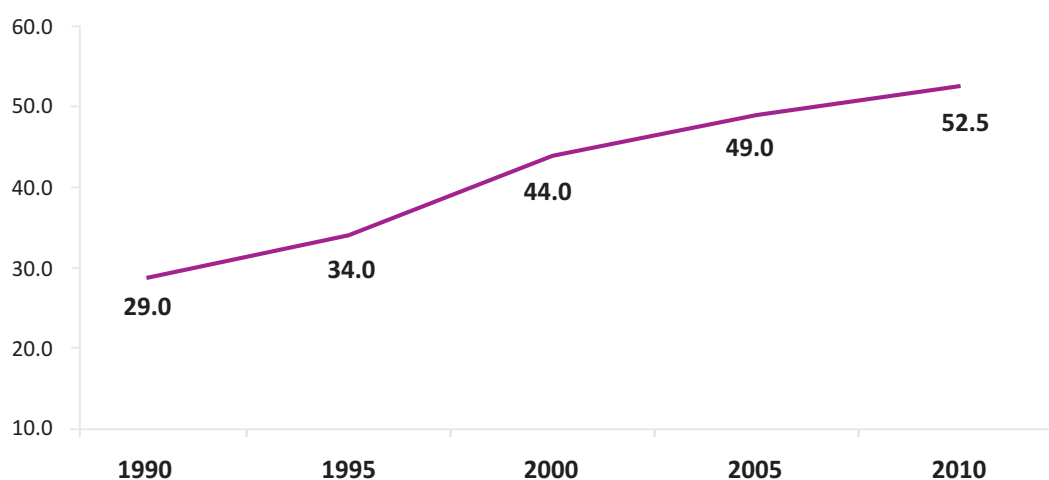
According to GBD 2010, the overall mortality due to high fasting glucose level in Albania had increased from 29 to 53 deaths per 100,000 population from 1990 to 2010 (Table 92). In 2010, the proportional mortality attributable to hyperglycemia was 7.4%.

**Table 92. Overall mortality rate attributable to hyperglycemia in Albania in selected years**  
(source: GBD, 2010)

Indicator	Year: 1990	Year: 1995	Year: 2000	Year: 2005	Year: 2010
Hyperglycemia attributable total CMR (per 100,000)	29.0	34.0	44.0	49.0	52.5
Hyperglycemia attributable total CMR (%)	5.8	6.4	7.0	7.3	7.4

Furthermore, there was evidence of a linear increase in the overall mortality rate explained by the high fasting glucose level in Albania during the past twenty years (Figure 78).

**Figure 78. CMR (per 100,000) attributable to hyperglycemia in Albania in selected years**  
(source: GBD, 2010)



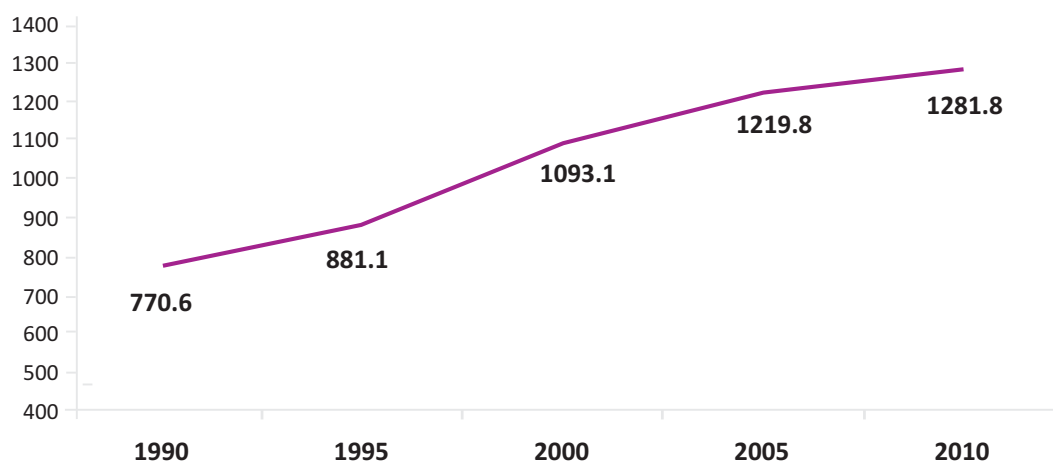
Similarly, there has been an increase in the total burden of disease due to hyperglycemia in Albania in the past two decades. In 2010, overall DALYs due to hyperglycemia in Albania were about 1,282 per 100,000 (1,532 in men vs. 1,032 in women), while the proportional burden of disease attributable to hyperglycemia was 4.7% (4.9% in men vs. 4.3% in women) (Table 93).

**Table 93. Crude DALYs attributable to hyperglycemia in Albania in selected years**  
(source: GBD, 2010)

Sex	Year: 1990		Year: 1995		Year: 2000		Year: 2005		Year: 2010	
	DALYs (100,000)	Percent DALYs	DALYs (100,000)	Percent DALYs	DALYs (100,000)	Percent DALYs	DALYs (100,000)	Percent DALYs	DALYs (100,000)	Percent DALYs
Males	864.9	2.8	1016.4	3.3	1314.9	4.2	1448.1	4.7	1531.7	4.9
Females	671.5	2.6	743.6	3.0	872.4	3.7	992.2	4.2	1031.6	4.3
Total	770.6	2.7	881.1	3.2	1093.1	3.9	1219.8	4.5	1281.8	4.7

In addition, there was evidence of a linear increase in the total burden of disease due to hyperglycemia in Albania during the period 1990-2010, especially for the period 1995-2000 (Figure 79). After 2005, there was only a slower increase, notwithstanding the overall significant linear trend.

**Figure 79. Burden of disease (DALYs per 100,000) attributable to hyperglycemia in Albania in selected years (source: GBD, 2010)**



The mortality rate from NCDs in general due to high fasting glucose level almost doubled during 1990-2010 in transitional Albania (Table 94). In 2010, the proportional NCD mortality and the proportional burden of disease explained by hyperglycemia in Albania were 8.4% and 6.0%, respectively.

**Table 94. Mortality rate and burden of NCDs attributable to hyperglycemia in Albania in selected years (source: GBD, 2010)**

Indicator	Year: 1990	Year: 1995	Year: 2000	Year: 2005	Year: 2010
Hyperglycemia attributable CMR from NCDs (per 100,000)	28.8	33.8	43.8	48.8	52.3
Hyperglycemia attributable CMR from NCDs (%)	8.1	8.3	8.5	8.4	8.4
Hyperglycemia attributable DALYs for NCDs (per 100,000)	764.8	875.4	1087.7	1215.0	1277.1
Hyperglycemia attributable DALYs for NCDs (%)	4.5	4.9	5.5	5.9	6.0

On the other hand, mortality rate from CVD increased from about 25 to 43 deaths per 100,000 population in the past twenty years (Table 95). The proportional mortality and the proportional burden of CVD due to high fasting glucose level in 2010 were about 11% and 12%, respectively.

**Table 95. Mortality rate and burden of CVD attributable to hyperglycemia in Albania in selected years (source: GBD, 2010)**

Indicator	Year: 1990	Year: 1995	Year: 2000	Year: 2005	Year: 2010
Hyperglycemia attributable CMR from CVD (per 100,000)	24.5	28.4	36.1	39.8	42.7
Hyperglycemia attributable CMR from CVD (%)	11.5	11.4	11.2	10.9	10.9
Hyperglycemia attributable DALYs for CVD (per 100,000)	500.7	564.6	696.1	750.9	778.9
Hyperglycemia attributable DALYs for CVD (%)	11.6	11.5	11.6	11.5	11.8

Death rate from cerebrovascular disease attributable to hyperglycemia has increased too, notwithstanding the gradual decline in the proportional mortality of this condition (Table 96).

A similar pattern was observed for the burden of cerebrovascular disease due to hyperglycemia, which showed an absolute increase, but a steady decrease in relative terms.

**Table 96. Mortality rate and burden of cerebrovascular disease attributable to hyperglycemia in Albania in selected years (source: GBD, 2010)**

Indicator	Year: 1990	Year: 1995	Year: 2000	Year: 2005	Year: 2010
Hyperglycemia attributable CMR from cerebrovascular disease (per 100,000)	13.0	14.8	18.0	19.1	20.5
Hyperglycemia attributable CMR from cerebrovascular disease (%)	14.0	13.5	13.0	12.5	12.6
Hyperglycemia attributable DALYs for cerebrovascular disease (per 100,000)	243.0	268.1	312.7	323.6	336.7
Hyperglycemia attributable DALYs for cerebrovascular disease (%)	15.0	14.5	14.1	13.8	14.1

On the other hand, IHD mortality attributable to hyperglycemia doubled from 1990 to 2010 (Table 97). In 2010, high fasting glucose level accounted for about 13% of the CMR from IHD and 15% of the burden of this chronic condition.

**Table 97. Mortality rate and burden of IHD attributable to hyperglycemia in Albania in selected years (source: GBD, 2010)**

Indicator	Year: 1990	Year: 1995	Year: 2000	Year: 2005	Year: 2010
Hyperglycemia attributable CMR from IHD (per 100,000)	11.6	13.6	18.1	20.7	22.2
Hyperglycemia attributable CMR from IHD (%)	14.2	13.8	13.4	12.9	12.9
Hyperglycemia attributable DALYs for IHD (per 100,000)	257.7	296.5	383.4	427.3	442.2
Hyperglycemia attributable DALYs for IHD (%)	15.6	15.0	14.6	14.2	14.5

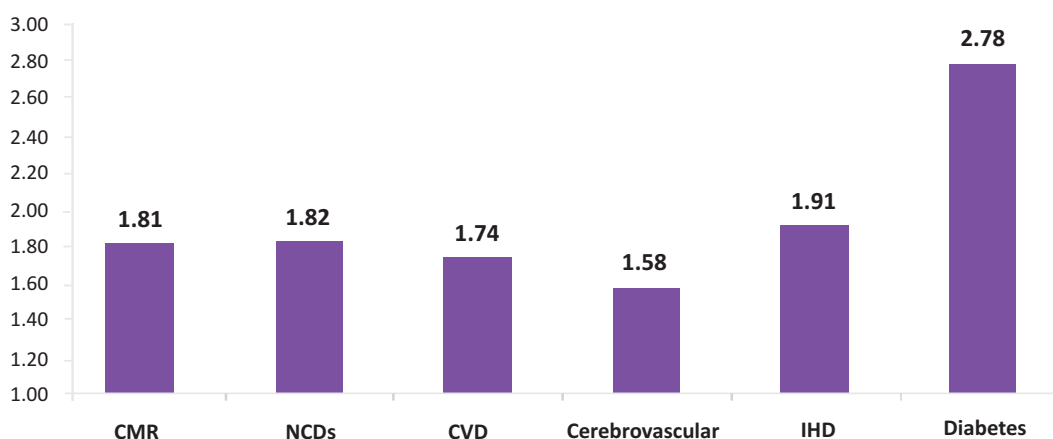
Regarding diabetes, the mortality rate due to hyperglycemia increased from 2.3 to 6.4 deaths per 100,000 population in 1990 and 2010, respectively (Table 98). In 2010, high fasting glucose level accounted for about 99% of the mortality rate from diabetes and 95% of the overall burden of this chronic condition.

**Table 98. Mortality rate and burden of diabetes attributable to hyperglycemia in Albania in selected years (source: GBD, 2010)**

Indicator	Year: 1990	Year: 1995	Year: 2000	Year: 2005	Year: 2010
Hyperglycemia attributable CMR from diabetes (per 100,000)	2.3	3.2	4.9	6.1	6.4
Hyperglycemia attributable CMR from diabetes (%)	94.4	96.4	97.9	98.4	98.8
Hyperglycemia attributable DALYs for diabetes (per 100,000)	203.2	248.3	315.6	384.5	414.5
Hyperglycemia attributable DALYs for diabetes (%)	89.0	89.3	91.3	94.5	95.4

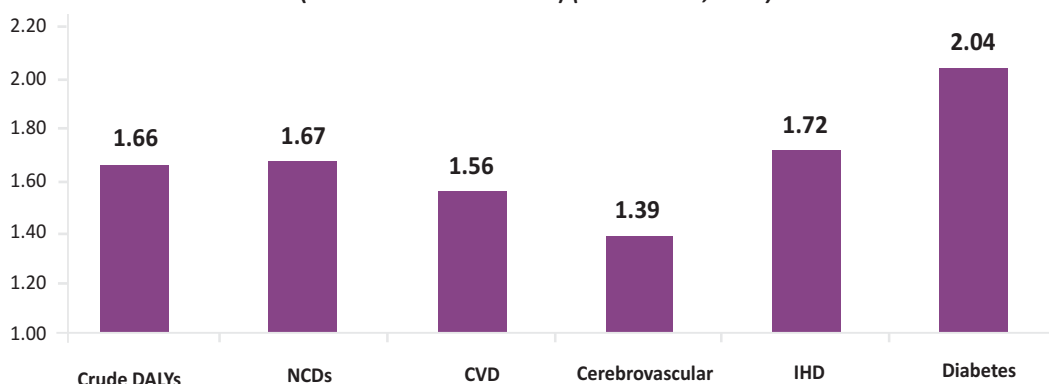
Figure 80 summarizes the increase in the overall and disease-specific mortality rate from high fasting glucose level in Albania for the period 1990-2010. The overall mortality rate due to high fasting glucose level increased 81%. Furthermore, there was an almost twofold increase in the mortality rate from IHD and a threefold increase in the mortality rate from diabetes due to hyperglycemia.

**Figure 80. Increase in mortality rate attributable to hyperglycemia in Albania (rate ratio: 2010 vs. 1990) (source: GBD, 2010)**



On the other hand, Figure 81 summarizes the increase in the overall and disease-specific burden from high fasting glucose level in Albania for the period 1990-2010.

**Figure 81. Increase in the burden of disease attributable to hyperglycemia in Albania**  
(rate ratio: 2010 vs. 1990) (source: GBD, 2010)



The age-standardized burden of disease attributable to hyperglycemia in Albania was the lowest in the region in 1990 (except Greece) (Table 99).

In 2010, Albania had a burden of disease due to hyperglycemia which was comparable to Croatia, but significantly lower than Bosnia and Herzegovina and especially Macedonia. On the other hand, in 2010, Greece and particularly Slovenia exhibited the lowest burden of disease attributable to high fasting glucose level (Table 99).

**Table 99. Age-standardized DALYs (per 100,000) attributable to hyperglycemia in Albania and in the other countries of SEE region in selected years** (source: GBD, 2010)

Country	Year: 1990	Year: 1995	Year: 2000	Year: 2005	Year: 2010
Albania	1101.0	1117.8	1209.6	1225.7	1164.5
Bosnia and Herzegovina	1953.9	2203.6	1787.4	1643.8	1473.8
Croatia	1494.6	1378.5	1252.3	1173.9	1097.8
Greece	933.7	859.4	833.3	797.5	780.6
Macedonia	1900.8	1922.1	1889.3	1860.6	1711.9
Montenegro	1606.3	1616.6	1652.8	1427.6	1292.4
Serbia	1599.9	1617.3	1574.6	1510.8	1343.5
Slovenia	1276.9	1229.5	1090.0	929.6	769.8

### 5.7. High total cholesterol level

According to the WHO country profile, the estimated prevalence of raised total cholesterol level in Albania in 2008 was 46.1% (46.8% in males and in 45.4% in females) (WHO, NCD country profiles, 2011).

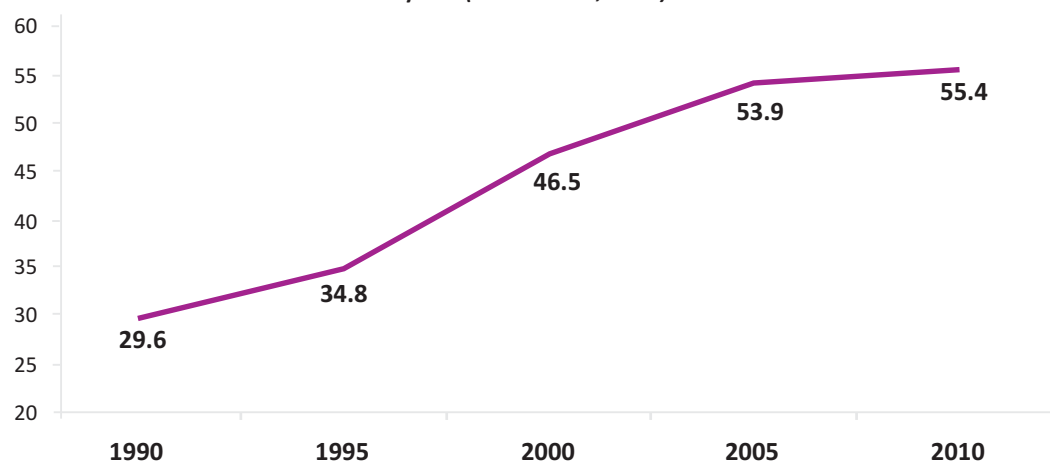
According to GBD 2010 estimates, the overall mortality rate attributable to hypercholesterolemia has increased in Albania from about 30 to 55 deaths per 100,000 population in 1990 and 2010, respectively (Table 100). In 2010, the proportional mortality due to hypercholesterolemia was 7.8%.

**Table 100. Overall mortality rate attributable to hypercholesterolemia in Albania in selected years (source: GBD, 2010)**

Indicator	Year: 1990	Year: 1995	Year: 2000	Year: 2005	Year: 2010
Hypercholesterolemia attributable total CMR (per 100,000)	29.6	34.8	46.5	53.9	55.4
Hypercholesterolemia attributable total CMR (%)	5.9	6.5	7.4	8.0	7.8

Furthermore, there was evidence of steady increase in the mortality rate explained by high cholesterol level in Albania, especially from 1995 to 2005, followed by a leveling off during 2005-2010 (Figure 82).

**Figure 82. CMR (per 100,000) attributable to hypercholesterolemia in Albania in selected years (source: GBD, 2010)**



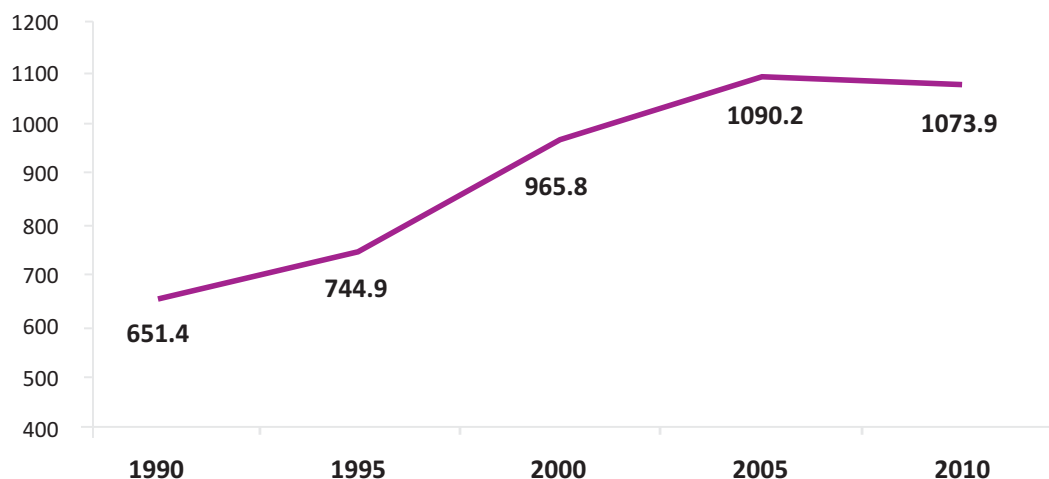
The burden of disease due to hypercholesterolemia has increased in both sexes during 1990-2010 in Albania. In 2010, hypercholesterolemia accounted for 3.9% of the total burden of disease in the general Albanian population (Table 101).

**Table 101. Crude DALYs attributable to hypercholesterolemia in Albania in selected years (source: GBD, 2010)**

Sex	Year: 1990		Year: 1995		Year: 2000		Year: 2005		Year: 2010	
	DALYs (100,000)	Percent DALYs	DALYs (100,000)	Percent DALYs	DALYs (100,000)	Percent DALYs	DALYs (100,000)	Percent DALYs	DALYs (100,000)	Percent DALYs
Males	754.2	2.4	889.9	2.9	1193.2	3.8	1328.3	4.3	1318.4	4.3
Females	543.4	2.1	597.5	2.5	739.5	3.1	852.7	3.6	829.0	3.5
Total	651.4	2.3	744.9	2.7	965.8	3.5	1090.2	4.0	1073.9	3.9

The burden of disease attributable to hypercholesterolemia increased sharply between 1995-2000 (Figure 83). Afterwards, it increased moderately from 2000-2005 and leveled off in the following years (2005-2010).

**Figure 83. Burden of disease (DALYs per 100,000) attributable to hypercholesterolemia in Albania in selected years (source: GBD, 2010)**



Mortality rate from NCDs due to high cholesterol level increased from about 30 to 55 deaths per 100,000 population in 1990 and 2010, respectively (Table 102) – replicating the figures of the overall mortality (i.e. the fact that the role of high cholesterol level is entirely related to the NCD occurrence).

In 2010, almost 9% of mortality and 5% of the burden of NCDs were explained by hypercholesterolemia.

**Table 102. Mortality rate and burden of NCDs attributable to hypercholesterolemia in Albania in selected years (source: GBD, 2010)**

Indicator	Year: 1990	Year: 1995	Year: 2000	Year: 2005	Year: 2010
Hypercholesterolemia attributable CMR from NCDs (per 100,000)	29.6	34.8	46.5	53.9	55.4
Hypercholesterolemia attributable CMR from NCDs (%)	8.3	8.5	9.0	9.3	8.9
Hypercholesterolemia attributable DALYs for NCDs (per 100,000)	651.4	744.9	965.8	1090.2	1073.9
Hypercholesterolemia attributable DALYs for NCDs (%)	3.9	4.1	4.9	5.3	5.0

Even more specifically, hypercholesterolemia concerns the establishment of CVD which constitutes entirely and solely the deleterious health effect of this risk factor. Indeed, as presented in Table 103, mortality rate from CVD due to high cholesterol level replicates the aforementioned figures for the overall mortality or the NCD mortality. In 2010, about 14% of the CVD death and 16% of the burden of CVD was due to hypercholesterolemia.



**Table 103. Mortality rate and burden of CVD attributable to hypercholesterolemia in Albania in selected years (source: GBD, 2010)**

Indicator	Year: 1990	Year: 1995	Year: 2000	Year: 2005	Year: 2010
Hypercholesterolemia attributable CMR from CVD (per 100,000)	29.6	34.8	46.5	53.9	55.4
Hypercholesterolemia attributable CMR from CVD (%)	13.8	13.9	14.4	14.8	14.1
Hypercholesterolemia attributable DALYs for CVD (per 100,000)	651.4	744.9	965.8	1090.2	1073.9
Hypercholesterolemia attributable DALYs for CVD (%)	15.1	15.2	16.1	16.6	16.2

Regarding cerebrovascular disease, there was a mild increase in the absolute mortality rate, but a decrease in relative terms due to high cholesterol level in Albania during 1990-2010 (Table 104). Same pattern was observed for the burden of cerebrovascular disease attributable to hypercholesterolemia.

**Table 104. Mortality rate and burden of cerebrovascular disease attributable to hypercholesterolemia in Albania in selected years (source: GBD, 2010)**

Indicator	Year: 1990	Year: 1995	Year: 2000	Year: 2005	Year: 2010
Hypercholesterolemia attributable CMR from cerebrovascular disease (per 100,000)	1.4	1.4	1.7	1.9	1.9
Hypercholesterolemia attributable CMR from cerebrovascular disease (%)	1.5	1.3	1.2	1.2	1.2
Hypercholesterolemia attributable DALYs for cerebrovascular disease (per 100,000)	38.9	37.7	45.5	50.6	50.1
Hypercholesterolemia attributable DALYs for cerebrovascular disease (%)	2.4	2.0	2.1	2.2	2.1

In addition, mortality rate from IHD has increased in Albania during the past twenty years (from about 28 to 54 deaths per 100,000 population in 1990 and 2010, respectively) (Figure 105). In 2010, 31% of the proportional IHD mortality and 34% of the burden of this condition were explained by hypercholesterolemia.

**Table 105. Mortality rate and burden of IHD attributable to hypercholesterolemia in Albania in selected years (source: GBD, 2010)**

Indicator	Year: 1990	Year: 1995	Year: 2000	Year: 2005	Year: 2010
Hypercholesterolemia attributable CMR from IHD (per 100,000)	28.2	33.4	44.8	52.0	53.5
Hypercholesterolemia attributable CMR from IHD (%)	34.7	33.9	33.0	32.5	31.1
Hypercholesterolemia attributable DALYs for IHD (per 100,000)	612.5	707.1	920.3	1039.5	1023.8
Hypercholesterolemia attributable DALYs for IHD (%)	37.0	35.9	35.0	34.5	33.7

Figure 84 presents the increase in the overall and disease-specific mortality rate attributable to hypercholesterolemia in Albania during 1990-2010. The sole negative health effect of high cholesterol level concerns the development of CVD. In 2010, compared with two decades earlier, there was an increase of 87% in the mortality rate from CVD due to hypercholesterolemia. The increase in cerebrovascular death was smaller (36%), whereas the IHD mortality attributable to hypercholesterolemia increased by 90%.

**Figure 84. Increase in mortality rate attributable to hypercholesterolemia in Albania (rate ratio: 2010 vs. 1990) (source: GBD, 2010)**

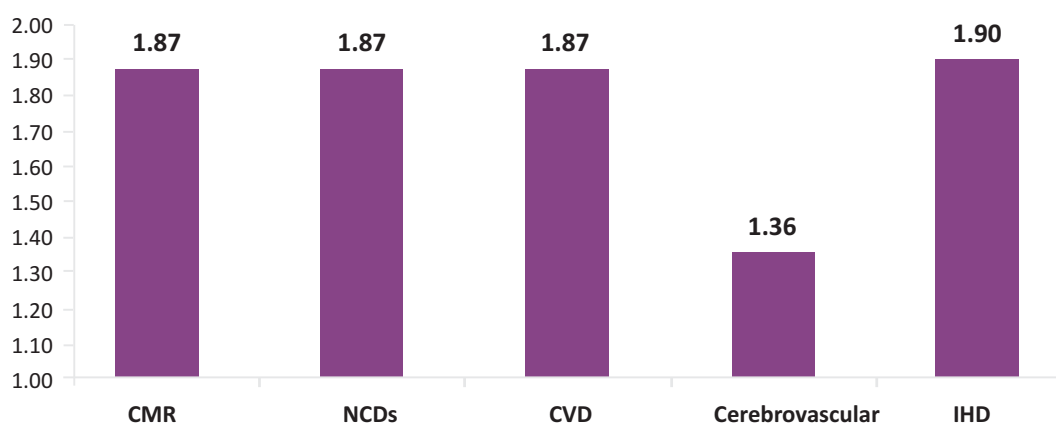
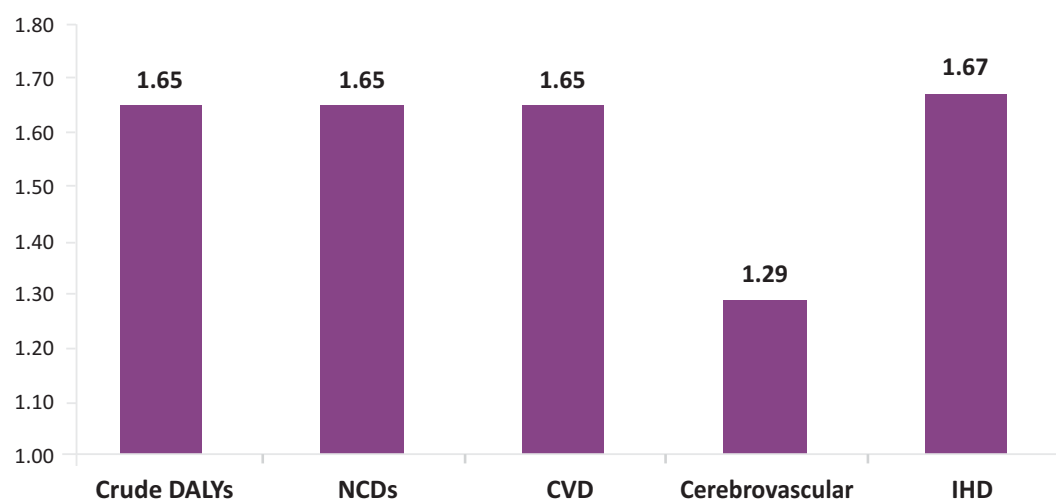


Figure 85 exhibits the increase in the total and cause-specific burden of disease attributable to hypercholesterolemia in Albania during 1990-2010. There was an increase of 29% in the burden of cerebrovascular disease and 67% in the burden of IHD attributable to hypercholesterolemia.

**Figure 85. Increase in the burden of disease attributable to hypercholesterolemia in Albania (rate ratio: 2010 vs. 1990) (source: GBD, 2010)**



The age-standardized burden of hypercholesterolemia in Albania was the lowest in the SEE region in 1990 (Table 106). Croatia followed by Macedonia had the highest burden of high cholesterol level at the fall of the communist regime.

On the contrary, two decades later, Albania had the highest burden of disease due to hypercholesterolemia after Macedonia. However, all countries of the SEE region except Albania have made a significant progress regarding a considerable lowering of the toll of disease attributable to hypercholesterolemia. Croatia shows a twofold decrease, whereas Slovenia has reduced by 2.5 times the cholesterol-related disease burden (Table 106).

**Table 106. Age-standardized DALYs (per 100,000) attributable to hypercholesterolemia in Albania and in the other countries of SEE region in selected years (source: GBD, 2010)**

Country	Year: 1990	Year: 1995	Year: 2000	Year: 2005	Year: 2010
<b>Albania</b>	<b>935.1</b>	<b>947.9</b>	<b>1070.4</b>	<b>1096.7</b>	<b>975.5</b>
Bosnia and Herzegovina	1302.1	1352.0	1025.1	866.8	753.6
Croatia	1682.4	1401.8	1178.1	990.3	833.8
Greece	1069.1	933.1	851.7	729.7	665.1
Macedonia	1585.3	1467.1	1276.5	1128.9	990.4
Montenegro	1263.9	1266.5	1296.8	1117.4	955.5
Serbia	1049.3	1077.4	1013.9	924.8	756.0
Slovenia	1346.3	1110.3	870.5	648.9	523.3

### 5.8. Dietary risks

According to GBD 2010 Study, in Albania, the three risk factors that accounted for the most disease burden in 2010 were dietary risks, high blood pressure and tobacco smoking. Therefore, specific consideration of dietary risk factors is of particular importance for Albania.

The GBD 2010 Study (Chan M, 2012; Horton R, 2012) has employed an expanded list of dietary risk factors related to chronic diseases including 14 items (fruits, vegetables, whole grains, milk, sugar-sweetened beverages, fibers, red meat, processed meat, nuts/seeds, calcium, sodium, seafood omega-3s, trans-fatty acids, and polyunsaturated fatty acids) (Lim SS et al., 2012). The quantification of effect sizes and especially the estimation of dietary intake in the Albanian context bears a considerable amount of uncertainty though. Therefore, GBD estimates on the burden of disease attributable to dietary risk factors should be interpreted with caution.

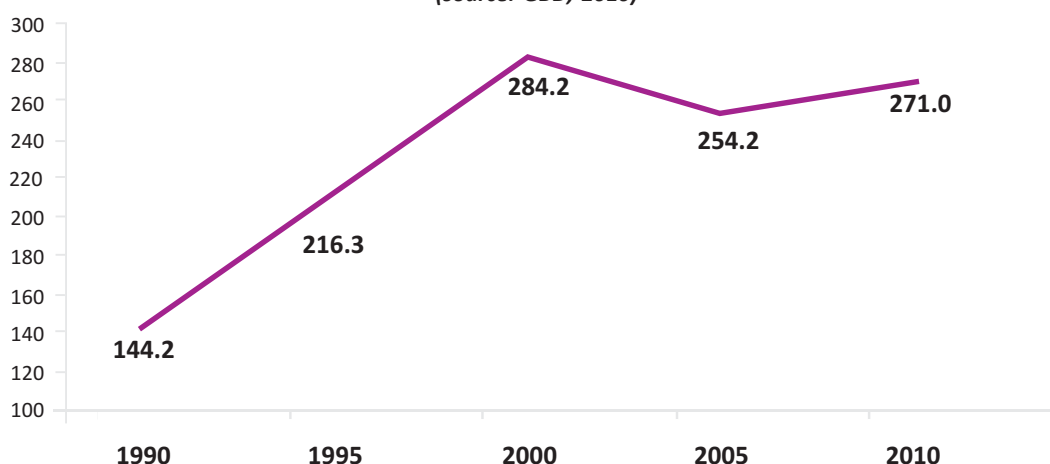
According to the GBD 2010, the overall mortality rate attributable to dietary risks in Albania increased from about 144 to 271 deaths per 100,000 population (Table 107). In 2010, dietary risks accounted for 38.3% of the total mortality rate, constituting the top risk factor in Albania (second was hypertension accounting for 34.5% of total mortality followed by smoking which explained 21.8% of the overall mortality in Albania) (GBD, 2010).

**Table 107. Overall mortality rate attributable to dietary risks in Albania in selected years**  
(source: GBD, 2010)

Indicator	Year: 1990	Year: 1995	Year: 2000	Year: 2005	Year: 2010
Dietary risks attributable total CMR (per 100,000)	144.2	216.3	284.2	254.2	271.0
Dietary risks attributable total CMR (%)	28.7	40.6	45.3	37.7	38.3

Overall, there was a remarkably sharp increase in the mortality rate due to dietary risks from 1990 to 2000 in Albania, followed by a slight decline (2000-2005), which subsequently leveled off in 2010 (Figure 86).

**Figure 86. CMR (per 100,000) attributable to dietary risks in Albania in selected years**  
(source: GBD, 2010)



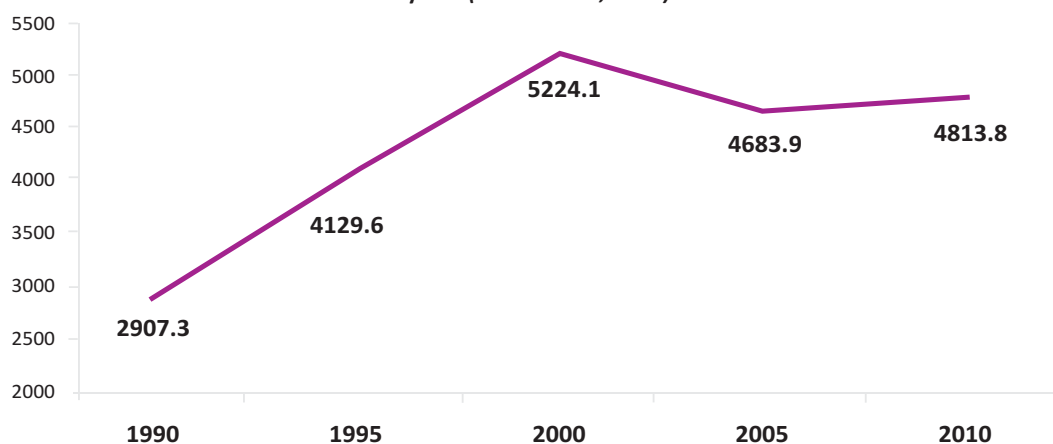
Furthermore, there was evidence of an overwhelming increase in the burden of disease attributable to dietary risks in Albania in the past two decades. Hence, in 2010, dietary risks were related to slightly more than 4,800 DALYs per 100,000 accounting for about 18% of the total burden of disease in Albania [more so in men (19%) than in women (15%)] (Table 108).

**Table 108. Crude DALYs attributable to dietary risks in Albania in selected years** (source: GBD, 2010)

Sex	Year: 1990		Year: 1995		Year: 2000		Year: 2005		Year: 2010	
	DALYs (100,000)	Percent DALYs	DALYs (100,000)	Percent DALYs	DALYs (100,000)	Percent DALYs	DALYs (100,000)	Percent DALYs	DALYs (100,000)	Percent DALYs
Males	3411.2	10.9	4910.3	16.1	6456.8	20.5	5803.2	18.8	6002.8	19.4
Females	2377.8	9.1	3336.5	13.7	3997.2	16.8	3567.8	15.1	3622.8	15.2
Total	2907.3	10.1	4129.6	15.0	5224.1	18.8	4683.9	17.2	4813.8	17.6

The increase in the burden of disease due to dietary risks followed a similar pattern to the overall mortality, with a sharp linear increase between 1990-2000, followed by a decline (during 2000-2005) and subsequently a moderate increase (2005-2010) (Figure 87).

Figure 87. Burden of disease (DALYs per 100,000) attributable to dietary risks in Albania in selected years (source: GBD, 2010)



Dietary risks concern the development of NCDs and, therefore, the absolute mortality rate from NCDs (presented in Table 109) replicates the figures of the overall mortality due to dietary risks.

In 2010, dietary risks accounted for about 44% of the NCD mortality and 22% of the burden of NCDs in general (Table 109).

Table 109. Mortality rate and burden of NCDs attributable to dietary risks in Albania in selected years (source: GBD, 2010)

Indicator	Year: 1990	Year: 1995	Year: 2000	Year: 2005	Year: 2010
Dietary risks attributable CMR from NCDs (per 100,000)	144.2	216.3	284.2	254.2	271.0
Dietary risks attributable CMR from NCDs (%)	40.6	52.8	54.8	43.8	43.7
Dietary risks attributable DALYs for NCDs (per 100,000)	2907.3	4129.6	5224.1	4683.9	4813.8
Dietary risks attributable DALYs for NCDs (%)	17.3	22.9	26.3	22.6	22.4

In the past twenty years, mortality rate from CVD due to dietary risks has increased in Albania from about 136 to 256 deaths per 100,000 population (Table 110). In 2010, dietary risks accounted for 65% of the CVD death rate and 66% of the total burden of CVD in Albania.

Table 110. Mortality rate and burden of CVD attributable to dietary risks in Albania in selected years (source: GBD, 2010)

Indicator	Year: 1990	Year: 1995	Year: 2000	Year: 2005	Year: 2010
Dietary risks attributable CMR from CVD (per 100,000)	135.5	199.6	262.5	240.2	256.2
Dietary risks attributable CMR from CVD (%)	63.3	79.8	81.1	65.7	65.4
Dietary risks attributable DALYs for CVD (per 100,000)	2615.3	3595.6	4559.0	4242.2	4350.3
Dietary risks attributable DALYs for CVD (%)	60.7	73.5	75.9	64.7	65.6

In Albania, mortality rate from cerebrovascular disease attributable to dietary risks has considerable increased too. In 2010, about 70% of cerebrovascular deaths and 73% of the overall burden of this health condition were explained by the dietary risks (Table 111).

**Table 111. Mortality rate and burden of cerebrovascular disease attributable to dietary risks in Albania in selected years (source: GBD, 2010)**

Indicator	Year: 1990	Year: 1995	Year: 2000	Year: 2005	Year: 2010
Dietary risks attributable CMR from cerebrovascular disease (per 100,000)	65.9	97.7	124.1	106.8	113.5
Dietary risks attributable CMR from cerebrovascular disease (%)	71.3	89.5	89.3	70.2	69.7
Dietary risks attributable DALYs for cerebrovascular disease (per 100,000)	1163.8	1596.8	1929.7	1685.7	1730.4
Dietary risks attributable DALYs for cerebrovascular disease (%)	71.7	86.4	87.1	71.9	72.5

In the past twenty years, mortality rate from IHD attributable to dietary risks has increased more than twice in Albania (Table 112). In 2010, the proportional IHD mortality due to dietary risks was about 79%, whereas the share of the total IHD burden due to dietary risks was 81%.

**Table 112. Mortality rate and burden of IHD attributable to dietary risks in Albania in selected years (source: GBD, 2010)**

Indicator	Year: 1990	Year: 1995	Year: 2000	Year: 2005	Year: 2010
Dietary risks attributable CMR from IHD (per 100,000)	64.9	92.9	127.5	126.5	135.0
Dietary risks attributable CMR from IHD (%)	79.9	94.1	94.0	79.0	78.6
Dietary risks attributable DALYs for IHD (per 100,000)	1354.2	1811.8	2408.3	2420.3	2471.2
Dietary risks attributable DALYs for IHD (%)	81.9	91.9	91.7	80.4	81.3

The mortality rate from diabetes attributable to dietary risks is very low for Albania, notwithstanding the overall twofold increase in the past two decades (Table 113). On the other hand, the burden of diabetes due to dietary risks has almost doubled (from 65 to 123 DALYs per 100,000 in 1990 and 2010, respectively). In 2010, dietary risks accounted for about 28% of the total burden of diabetes in the Albanian population (Table 113).

**Table 113. Mortality rate and burden of diabetes attributable to dietary risks in Albania in selected years (source: GBD, 2010)**

Indicator	Year: 1990	Year: 1995	Year: 2000	Year: 2005	Year: 2010
Dietary risks attributable CMR from diabetes (per 100,000)	0.1	0.2	0.2	0.2	0.2
Dietary risks attributable CMR from diabetes (%)	2.2	4.6	4.9	2.7	2.8
Dietary risks attributable DALYs for diabetes (per 100,000)	65.1	117.9	143.0	110.5	122.7
Dietary risks attributable DALYs for diabetes (%)	27.8	41.7	40.7	26.5	27.6

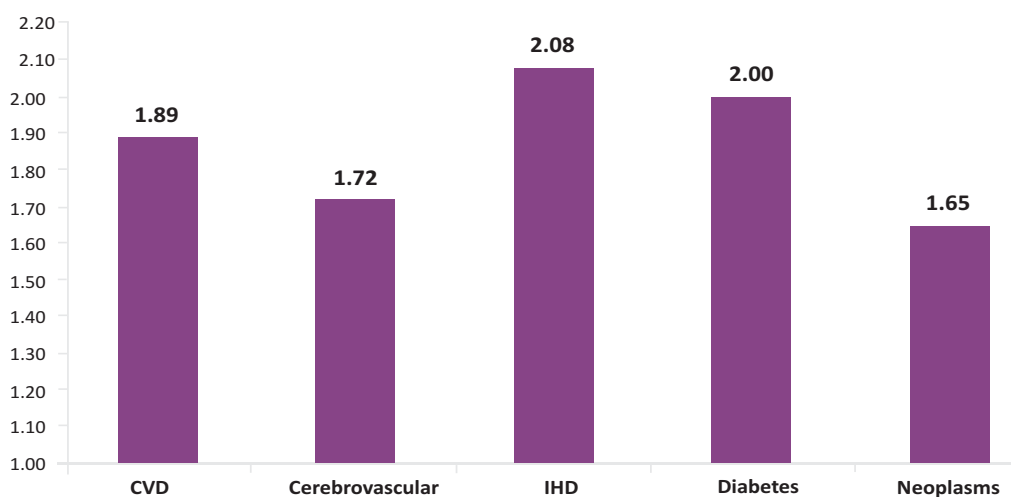
Mortality rate from neoplasms due to dietary risks has increased from about 8 to 13 deaths per 100,000 (Table 114). In 2001, about 10% of deaths and 9% of the total burden of neoplasms were attributable to dietary risks.

**Table 114. Mortality rate and burden of neoplasms attributable to dietary risks in Albania in selected years (source: GBD, 2010)**

Indicator	Year: 1990	Year: 1995	Year: 2000	Year: 2005	Year: 2010
Dietary risks attributable CMR from neoplasms (per 100,000)	8.1	15.2	19.7	12.8	13.4
Dietary risks attributable CMR from neoplasms (%)	11.0	17.8	17.5	10.0	9.8
Dietary risks attributable DALYs for neoplasms (per 100,000)	208.7	378.5	474.2	303.3	310.3
Dietary risks attributable DALYs for neoplasms (%)	9.8	16.3	16.3	9.5	9.3

Figure 88 summarizes the increase in disease-specific mortality rate attributable to dietary risks in Albania in the past two decades. Mortality rates from IHD and diabetes due to dietary risks have doubled during 1990-2010, whereas death rates from cerebrovascular disease and neoplasms have increased by about 70%.

**Figure 88. Increase in mortality rate attributable to dietary risks in Albania (rate ratio: 2010 vs. 1990) (source: GBD, 2010)**



Interestingly, in 1990, the age-standardized burden of disease attributable to dietary risks in Albania (about 4,200 DALYs per 100,000) was the lowest in the SEE region, excluding Greece (Table 115).

In 2010, the burden of disease due to dietary risks in Albania (about 4,350 DALYs per 100,000) was the highest in the region after Macedonia.

Of particular note, the burden of disease due to dietary risks was the highest in 2000 for almost all of the SEE countries. Afterwards, the burden of disease attributable to dietary risks has decreased significantly in most of these countries (Table 115).

**Table 115. Age-standardized DALYs (per 100,000) attributable to dietary risks in Albania and in the other countries of SEE region in selected years (source: GBD, 2010)**

Country	Year: 1990	Year: 1995	Year: 2000	Year: 2005	Year: 2010
<b>Albania</b>	<b>4207.0</b>	<b>5304.6</b>	<b>5822.1</b>	<b>4721.0</b>	<b>4347.1</b>
Bosnia and Herzegovina	5811.2	7911.8	6317.3	4493.4	3992.6
Croatia	5530.1	6323.4	5682.7	3999.0	3532.8
Greece	2975.4	3618.2	3467.3	2282.7	2130.2
Macedonia	6023.7	7707.6	7333.9	5545.6	5059.2
Montenegro	4850.6	6421.7	6833.5	4833.9	4327.4
Serbia	4770.0	6541.6	6390.4	4622.3	3852.4
Slovenia	4349.6	4942.8	4213.2	2576.9	2216.4

### Summary about lifestyle/behavioral factors

In 1990, the overall lifestyle/behavioral characteristics accounted for 40.6% of the total burden of disease in Albania, whereas in 2010 the proportional DALYs due to lifestyle factors increased to 71.2% (Table 116).

As pointed out earlier, the top three lifestyle determinants of ill-health included dietary risks (17.6%), followed by HBP (15.3%) and next smoking (12.1%). High BMI ranked fourth (8.2%) followed by high fasting plasma glucose (4.7) and physical inactivity (4.3).

Astonishingly, there has been a significant increase in the burden of disease attributable to each lifestyle/behavioral characteristic in Albania in the past twenty years.

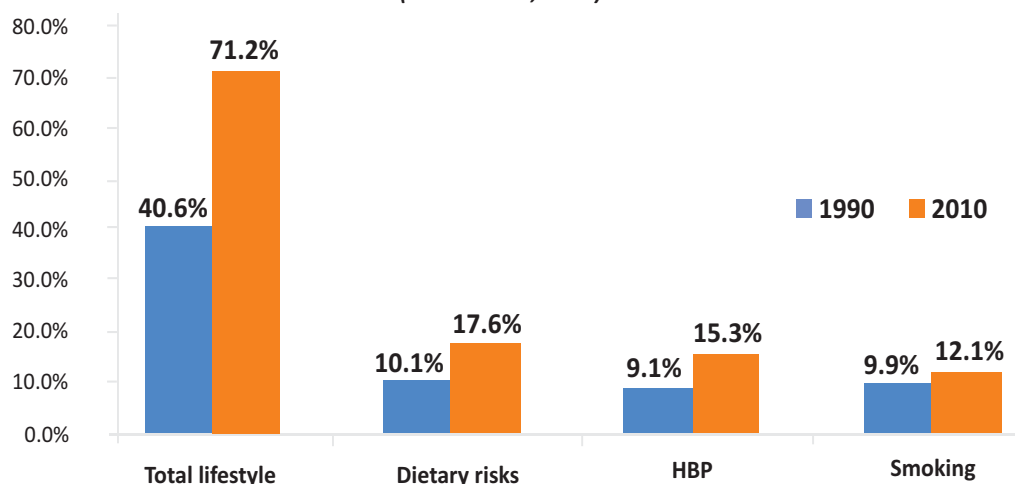
**Table 116. Burden of disease attributable to the overall lifestyle/behavioral factors in Albania in 1990 and 2010 (source: GBD, 2010)**

Lifestyle factor	Year: 1990		Year: 2010	
	DALYs (per 100,000)	Percent DALYs	DALYs (per 100,000)	Percent DALYs
<b>Dietary risks</b>	<b>2907.3</b>	<b>10.1</b>	<b>4813.8</b>	<b>17.6</b>
<b>High blood pressure</b>	<b>2600.8</b>	<b>9.1</b>	<b>4199.7</b>	<b>15.3</b>
<b>Smoking</b>	<b>2856.3</b>	<b>9.9</b>	<b>3313.5</b>	<b>12.1</b>
<b>High body-mass index</b>	<b>1116.7</b>	<b>3.9</b>	<b>2241.8</b>	<b>8.2</b>
<b>High fasting plasma glucose</b>	<b>770.6</b>	<b>2.7</b>	<b>1281.9</b>	<b>4.7</b>
<b>Physical inactivity</b>	<b>-</b>	<b>-</b>	<b>1167.0</b>	<b>4.3</b>
<b>High total cholesterol</b>	<b>651.4</b>	<b>2.3</b>	<b>1073.9</b>	<b>3.9</b>
<b>Alcohol use</b>	<b>433.2</b>	<b>1.5</b>	<b>956.2</b>	<b>3.5</b>
<b>Drug use</b>	<b>268.8</b>	<b>0.9</b>	<b>369.2</b>	<b>1.3</b>
<b>Low bone mineral density</b>	<b>45.8</b>	<b>0.2</b>	<b>84.7</b>	<b>0.3</b>
<b>Total lifestyle</b>	<b>11650.9</b>	<b>40.6</b>	<b>19501.7</b>	<b>71.2</b>



Figure 89 summarizes the attributable risk for the overall and the three major lifestyle factors in Albania in 1990 and 2010.

**Figure 89. Attributable risk of the major lifestyle/behavioral factors in Albania in 1990 and 2010**  
(source: GBD, 2010)



### 5.9. Other risk factors

Table 117 presents the burden of disease for some additional risk factors in the Albanian population.

Occupational risks continue to pose a relatively high burden of disease in Albania regardless the decreasing trend in the past two decades. Hence, in 2010, the burden of disease attributable to occupational risks was 3%, which is high compared with most of the countries in the SEE region. Professionals working in construction (builders) are particularly prone to high occupational risks in Albania. Certain types of factories involving wood and metal materials pose also serious health threats.

The burden of disease due to household air pollution has decreased significantly in Albania in the past two decades. Yet, in 2010, this risk factor accounted for 6.4% of the total burden of disease in Albania.

Similarly, the burden of disease due to ambient particulate matter (PM) has decreased in Albania (in 2010, it accounted for 3.4% of the total burden of disease). However, there are risk factors that may increase this again including use of coal, or gasoline, in addition to environmental tobacco smoke which is still a very important health risk in public areas in Albania.

According to GBD 2010, the leading risk factor in 2010 among children under five years was household air pollution from solid fuels. On the other hand, in the same year, among adults aged 15-49 years, the leading risk factors were occupational risks ([https://www.healthdata.org/sites/default/files/files/country\\_profiles/GBD/ihme\\_gbd\\_country\\_report\\_albania.pdf](https://www.healthdata.org/sites/default/files/files/country_profiles/GBD/ihme_gbd_country_report_albania.pdf)).

Micronutrient deficiencies are generally decreasing in Albania which is reflected in a

steady decline in the burden of disease attributable to such risk factors. This may be due to a better and more balanced food availability.

Importantly, there is a tenfold decrease in the burden of disease attributable to childhood underweight in Albania in the past two decades (Table 117). Seemingly, malnutrition, hunger, and extreme poverty have decreased in Albania.

**Table 117. Burden of disease attributable to some additional risk factors in Albania in 1990 and 2010 (source: GBD, 2010)**

Lifestyle factor	Year: 1990		Year: 2010	
	DALYs (per 100,000)	Percent DALYs	DALYs (per 100,000)	Percent DALYs
Household air pollution	3837.2	13.0	1752.9	6.4
Ambient PM pollution	1478.5	5.1	933.0	3.4
Occupational risks	979.9	3.4	828.6	3.0
Lead exposure	136.2	0.5	436.0	1.6
Iron deficiency	499.4	1.7	387.7	1.4
Intimate partner violence	-	-	198.1	0.7
Radon	-	-	117.6	0.4
Childhood underweight	890.0	3.1	81.9	0.3
Childhood sexual abuse	-	-	55.5	0.2
Zinc deficiency	198.8	0.7	21.8	0.1
Vitamin A deficiency	49.3	0.2	-	-
Ambient ozone pollution	15.5	-	-	-
Unimproved water	29.1	0.1	-	-



## 6. HEALTH SYSTEM, SERVICE COVERAGE, EXPENDITURE, AND INEQUITIES

### 6.1. Health workforce

Human resources in the health care sector in Albania include physicians (general practitioners, family physicians, and specialists), nurses and midwives, as well as other health care workers who are together vital for the delivery of high-quality health care and preventive services at a population level. Information on human resources and their level of training is very important in order to plan and organize service delivery at a given population based on its needs and demands. Estimates of health personnel densities refer to the active health workforce, that is the manpower participating in the health labor market (WHO, 2014).

According to the World Health Statistics (WHO, 2014), during the period 2006-2013, there were on average 115 physicians and 399 nurses and midwives per 100,000 population in Albania (Table 118). On average, the number of general practitioners was 50 per 100,000 population during 2006-2012. Furthermore, there were 33 dentists and 43 pharmacists per 100,000 population in 2006 and 2011, respectively.

Table 118. Human resources in the health care sector in Albania (source: WHO, 2014)

Indicator	Number per 100,000 population	Year
Physicians	115	2006-2013
General practitioners	50	2006-2012
Psychiatrists	2	2006-2010
Nurses and midwives	399	2006-2013
Dentists	33	2006
Pharmacists	43	2011
Physicians graduated	8	2009
Nurses graduated	34	2010
Midwives graduated	6	2010
Pharmacists graduated	3	2008-2010
Dentists graduated	4	2008-2010

Recent research work has indicated that there is a mild-to-moderate degree of mal-distribution of general practitioners in Albania (Adhami A, 2014), who also serve as pediatricians at district level. This may lead to inequalities in access to health care services.

Table 119 presents selected indices of inequality in the distribution of general practitioners in Albania for the year 2011 (source: Adhami A, 2014).

**Table 119. Indexes of inequality in the distribution of general practitioners in Albania in 2011**  
(source: Adhami A, 2014)

Indicator	Crude/unadjusted	Adjusted for under-5 mortality
<b>Gini coefficient</b>	0.139	0.121
<b>Atkinson index</b>	0.09	0.08
<b>Robin Hood index</b>	5.8% (N=97)	6.1% (N=102)

The crude (unadjusted) Gini coefficient was about 0.14, indicating a mild inequality in the distribution of general practitioners in Albania in 2011. After adjustment for under-5 year mortality, there was evidence of slight reduction of the Gini coefficient (0.12) indicating that, a part (but not all) of inequality in the distribution of general practitioners was due to the need for over-serving the areas which had a higher child mortality rate in Albania (Adhami A, 2014).

#### Inequality measures

- Gini coefficient is a measure of the aggregate level of inequality, which ranges from 0 to 1, with higher values indicating higher levels of inequality (Munga MA, et al., 2009).
- Atkinson index allows for varying sensitivity to inequalities in different parts of the income distribution. Similar to Gini coefficient, theoretically, values of Atkinson index range from 0 (equal distribution) to 1 (extremely unequal distribution) (De Maio FG, 2007).
- Robin Hood index varies from 0 to 1 (or, 0-100 percent) and it can be interpreted as *“the proportion of income that has to be transferred from those above the mean to those below the mean in order to achieve an equal distribution”* (De Maio FG, 2007).

In 2011, the crude Atkinson index for the distribution of general practitioners in Albania was 0.09 (Table 119), which was slightly lower than Gini coefficient. Upon adjustment for under-5 year mortality, Atkinson index was slightly reduced to 0.08, indicating that – similar to Gini coefficient – a small part of unequal distribution of physicians was due to the need for providing extra services to the areas with a higher child mortality rate in Albania (Adhami A, 2014).

In 2011, the crude (unadjusted) Robin Hood index was 5.8% (or, N=97) (Table 119), indicating that 97 physicians (out of about 1,500) would need to be redistributed in order to achieve an equal nationwide distribution of general practitioners in Albania. After adjustment for under-5 mortality rate, there was a slight increase in Robin Hood

index indicating that, overall, 102 general practitioners should be reallocated (redistributed) in order to achieve an equal distribution of physicians in Albania (Adhami A, 2014).

## 6.2. Health service coverage

Information on health infrastructure (including the number of hospitals, number of hospital beds, as well as the number of primary health care units), medical technologies and devices (radiotherapy, computed tomography units and mammography units) and essential medicines (generic drugs including basic antibiotics and other necessary medicines) is critical for policymakers and decision-makers in order to provide high-quality health care services at a population level.

The density of hospital beds is used as a proxy to indicate the availability of inpatient services. Statistics on hospital-bed density in the case of Albania were based on routine administrative records, but include only public-sector beds, as the private hospital sector has only recently flourished in Albania.

The number of hospitals in Albania in 2013 was 1.4 per 100,000 population (Table 120). During 2006-2012, on average, there were 260 hospital beds, about 236 acute hospital beds and 21 psychiatric beds per 100,000 population. However, the number of hospitals is not very essential. The numbers suggest that the average hospital had (only) 186 beds, but it should be noted that there are huge differences and, therefore, many small hospitals in different districts of Albania. Besides the hospitals, there were about 76 primary health care facilities per 100,000 population in Albania.

Regarding the health technology, in 2013, there were 5.4 computed tomography units and 0.3 radiotherapy units per one million inhabitants in Albania. Finally, there were about 54 mammography units per one million women aged 50-69 years (Table 120), which was the lowest among the SEE countries where it ranged from 84.6 units (in Serbia) to 206.5 (in Croatia) (WHO, 2014). Nonetheless, there is a clear improvement in the overall health technology in Albania in the past year.

**Table 120. Health infrastructure and health technology in Albania (source: WHO, 2014)**

Indicator	Amount	Year
Hospitals (per 100,000 population)	1.4	2013
Hospital beds (per 100,000 population)	260.0	2006-2012
Acute care hospital beds (per 100,000 population)	236.2	2012
Psychiatric beds (per 100,000 population)	21.0	2006-2010
Primary health care units (per 100,000 population)	76.2	2009
Computed tomography units (per million population)	5.4	2013
Radiotherapy units (per million population)	0.3	2013
Mammography units (per million females aged 50-69 years)	54.4	2013

A thorough health care infrastructure and appropriate availability of health technology are basic prerequisites for an effective and efficient coverage of some essential health

care services. As a matter of fact, according to WHO, indicators pertinent to health service coverage reflect the extent to which people in need actually receive essential health care interventions (WHO, 2014).

Just to mention a few, these interventions may include reproductive health services, skilled care to women during pregnancy and birth, immunization against common childhood infections, vitamin A supplementation in children, as well as preventive and curative services for children, adolescents and adults (WHO, 2014). In this regard, it should be pointed out that Albania has no programs for prenatal or neonatal screening. Recently though, there has been an active screening campaign for breast and cervical cancer in Albanian women.

Table 121 summarizes the level of health services coverage for selected key public health services in Albania, based on the fairly recent report on the World Health Statistics (WHO, 2014).

The overall prevalence of unmet need for family planning (consisting mainly of counseling) in Albania was, on average, 13% during 2006-2012. For the same time period, the prevalence of contraceptive use was 69%. The majority of pregnant women (97%) had at least one antenatal care visit during 2006-2013, whereas 67% of women had at least four such visits.

Almost all births (99%) in Albania during 2006-2013 were attended by skilled health professionals. Based on official statistics, the prevalence of Cesarean sections was 19% during 2006-2012. This is probably an underestimation of the true prevalence given the fact that there are children born in private hospitals with many more Cesarean interventions. During the same period of time, 83% of newborns in Albania had a postnatal visit within two days of birth.

The overall immunization coverage in 2012 was 99% for measles, DTP3, HepB3, or Hib3. During 2006-2013, among under-five year children, 70% of them with acute respiratory infections (ARI) symptoms were taken to a health facility, 60% of them with suspected pneumonia received antibiotics, whereas 68% of them with diarrhea received oral rehydration therapy (ORT).

The overall case-detection rate of tuberculosis in Albania was 81% in 2012, whereas the smear-positive tuberculosis treatment-success rate was 93% in 2011 (Table 121). The number of detected tuberculosis cases is not increasing in Albania.

Table 121. Health service coverage for selected key health care services in Albania  
(source: WHO, 2014)

Health care service	Prevalence (in percent)	Year
Unmet need for family planning	13	2006-2012
Contraceptive use	69	2006-2012
<b>Antenatal care:</b>		
≥1 visit	97	2006-2013
≥4 visits	67	
Births attended by skilled health personnel	99	2006-2013
Cesarean sections	19	2006-2012
Postnatal visit within two days of birth	83	2006-2012
Administration of neonatal tetanus	87	2012
<b>Immunization for measles among 1-year-olds:</b>		
1990	88	-
2000	95	
2012	99	
Immunization for DTP3	99	2012
Immunization for HepB3	99	2012
Immunization for Hib3	99	2012
Under 5-year with ARI symptoms taken to a health clinic	70	2006-2013
Under 5-year with suspected pneumonia receiving antibiotics	60	2006-2013
Under 5-year with diarrhea receiving ORT	68	2006-2013
<b>Case-detection rate for all forms of tuberculosis:</b>		
2000	81	-
2012	81	
Smear-positive tuberculosis treatment-success rate	93	2011

Regarding the general environmental and sanitation conditions, 96% of the Albanian population used improved drinking-water sources in 2012 (Table 122).

Furthermore, 91% of the population used improved sanitation in 2012, compared with only 79% of the population in 1990.

On the other hand, in 2012, 38% of the population was still using solid fuels – a well-established risk factor for COPD and other respiratory diseases.

Table 122. Environmental and sanitation conditions of the Albanian population (source: WHO, 2014)

Environmental condition	Prevalence (in percent)
<b>Population using improved drinking-water sources:</b>	
2000	96
2012	96
<b>Population using improved sanitation:</b>	
1990	79
2000	84
2012	91
<b>Population using solid fuels (in 2012)</b>	38

### 6.3. Health expenditure

Health expenditure consists of government expenditure on health and private expenditure on health (WHO, 2014). In Albania, private expenditure on health consists mainly of “out-of-pocket expenditure”, whereas “private prepaid insurance plans” are still in the early stage of development. WHO has collected data on health expenditure



since 1999. In many industrialized countries, a complete list of health expenditure data is available from national health accounts (NHAs) that collect expenditure information based on an internationally standardized protocol, the system of health accounts (WHO, 2014). In the case of Albania, a NHA has not been established yet. Therefore, WHO obtains data from Albania through technical contacts in the country, or from publicly available documents and reports (WHO, 2014).

Table 123 presents selected health expenditure indicators in Albania, based on the recent report on the World Health Statistics (WHO, 2014).

In 2011, the total expenditure on health in Albania as a share of GDP was 6%, exhibiting a slight decline compared to the year 2000 (6.4%). Compared with the other countries of the SEE region, Albania's expenditure on health as a percentage of GDP in 2011 was the lowest. Health expenditure in the other countries of the region in 2011 ranged from a minimum of 6.8%-6.9% (in Croatia and Macedonia, respectively) to a maximum of 10.3% (in Serbia). Interestingly, Bosnia and Herzegovina, one of the lowest-income countries in Europe, spent 9.9% of its GDP on health in 2011 (WHO, 2014).

**Table 123. Health expenditure indicators in Albania in 2000 and in 2011 (source: WHO, 2014)**

Indicator	Amount
<b>Total expenditure on health as % of GDP:</b>	
2000	6.4
2011	6.0
<b>Government expenditure on health as % of total expenditure on health:</b>	
2000	36.1
2011	47.9
<b>Private expenditure on health as % of total expenditure on health:</b>	
2000	63.9
2011	52.1
<b>Government expenditure on health as % of total government expenditure:</b>	
2000	7.1
2011	9.8
<b>External resources for health as % of total expenditure on health:</b>	
2000	6.0
2011	1.0
<b>Social security expenditure on health as % of government expenditure on health:</b>	
2000	20.4
2011	74.1
<b>Out-of-pocket expenditure as % of private expenditure on health:</b>	
2000	99.9
2011	99.7
<b>Per capita total expenditure on health at average exchange rate (US\$):</b>	
2000	70
2011	243
<b>Per capita total expenditure on health (PPP \$):</b>	
2000	248
2011	534
<b>Per capita government expenditure on health at average exchange rate (PPP \$):</b>	
2000	25
2011	116
<b>Per capita government expenditure on health (PPP \$):</b>	
2000	89
2011	256

Conversely, government expenditure on health as a share of total expenditure on health increased from about 36% in 2000 to 48% in 2011. This means that the proportion of private expenditure on health decreased from about 64% (in 2000) to 52% (in 2011). It is not clear whether this includes payments to private hospitals though. Yet, this was the highest figure in the region, where the share of private expenditure on health in 2011 ranged from 17.5% (in Croatia) to 41.8% (in Montenegro) (WHO, 2014). Private expenditure on health in Albania consists almost exclusively of out-of-pocket payments including both formal and informal payments. To date, there is no official information on catastrophic spending of Albanian families. According to a recent press release of the World Bank, however, there is a limited financial protection for the poor in Albania, with high out-of-pocket expenditure rates, estimated at 55% of the total expenditures on health (World Bank, 2014).

In 2011, about 10% of the total government expenditure in Albania was spent on health. Social security expenditure constituted 74% of government expenditure on health in Albania in 2011. With the exception of Greece, this was remarkably lower than in the other countries in the SEE region, where it varied from a minimum of 89% (in Montenegro) to a maximum of 94% (in Croatia).

Finally, per capita expenditure on health in Albania has increased significantly in the past decade (Table 123). Yet, the health sector remains largely underfinanced as indicated by the lack of access for certain disadvantaged groups, or waiting lists for several examinations and interventions involving mainly heart disease. In 2011, per capita total expenditure on health (PPP \$) in Albania was 534, constituting the lowest figure in the region (where the range was from a minimum of 784 in Macedonia to a maximum of 2,423 in Slovenia) (WHO, 2014).

#### 6.4. Health inequities

Table 124 presents selected child health indicators for Albania at a national level. In 2010, the prevalence of the preterm birth rate was 9%. According to ADHS 2008-09, the prevalence of exclusive breastfeeding in the first six months of life was about 39%. During 2006-2012, on average, among Albanian children under-five years, the prevalence of wasting, stunting, underweight and overweight were about 9%, 23%, 6% and 23%, respectively.

**Table 124. Selected child health indicators in the overall Albanian population (source: WHO, 2014)**

Child health indicator	Prevalence (in percent)	Year
Preterm birth rate (per 100 live births)	9	2010
Infants exclusively breastfed for the first 6 months	38.6	ADHS, 2010
Children under 5-year wasted	9.4	2006-2012
Children under 5-year stunted	23.1	2006-2012
Children under 5-year underweight	6.3	2006-2012
Children under 5-year overweight	23.4	2006-2012

In general, reporting of health indicators concerns national averages, which is of utmost importance for the central government decision-makers and policymakers. However, it is also important for public health policy to have an indication about the division of health problems between different population groups or regions to be able to concentrate policies towards those that need it the most. It is essential to combat *“unfair and avoidable differences in health and health service provision”* (WHO, 2014). Data on the distribution of health status and health care services between different categories of the population is very scarce, however.

Key parameters to assess potential inequities in health status and health care provision in the Albanian context include such demographic and socioeconomic indicators as sex, place of residence (urban vs. rural areas), educational attainment, or level of income. Table 125 displays several health inequity indicators in Albania based on the findings of ADHS 2008-09. They point at important inequities at the start of life.

There was evidence of a slightly higher prevalence of contraceptive use among individuals residing in urban areas compared with their rural counterparts (12% vs. 10%, respectively). Furthermore, modern methods of contraceptive use were more prevalent among better-off individuals than their worse-off counterparts (14% vs. 11%, respectively).

Regarding antenatal care, the prevalence of at least four visits was substantially higher in urban areas (82%) than in rural areas (57%). Similarly, it was considerably higher among higher-income individuals (91%) than those in the lower-income category (49%). In addition, there was a slight difference in the level of births attended by skilled health personnel between income groups (95% in worse-off subgroup vs. 100% in the better-off category).

DTP3 immunization coverage was slightly higher in females (98%) than in males (97%). Also, it was higher in urban areas (99%) than in rural areas (97%). However, among the lower income category, the immunization rate was 100%.

Concerning under-five stunting, the prevalence was higher in females than in males (21% vs. 18%, respectively), but especially so among the worse-off individuals compared with their better-off counterparts (27% vs. 13%, respectively).

Lastly, under-five mortality rate was considerably higher in males compared to females (27 vs. 16 deaths per 1,000 live births), in rural areas than in urban areas (28 vs. 13) and especially in the lower-income group than in the higher-income category (34 vs. 13) (Table 125).

Table 125. Selected health inequity indicators in Albania based on the findings of ADHS 2008-09  
 (source: ADHS, 2010)

Indicator	Prevalence (percent, except for under-five mortality rate)
<b>Contraceptive use (modern methods):</b>	
Rural	10
Urban	12
<b>Contraceptive use (modern methods):</b>	
Lowest wealth quintile	11
Highest wealth quintile	14
<b>Contraceptive use (modern methods):</b>	
No educational attainment	<i>not computed (&lt;25 cases)</i>
Secondary or higher	13
<b>At least four visits for antenatal care:</b>	
Rural	57
Urban	82
<b>At least four visits for antenatal care:</b>	
Lowest wealth quintile	49
Highest wealth quintile	91
<b>At least four visits for antenatal care:</b>	
No educational attainment	<i>not computed (&lt;25 cases)</i>
Secondary or higher	80
<b>Births attended by skilled health personnel:</b>	
Rural	99
Urban	100
<b>Births attended by skilled health personnel:</b>	
Lowest wealth quintile	98
Highest wealth quintile	100
<b>Births attended by skilled health personnel:</b>	
No educational attainment	<i>not computed (&lt;25 cases)</i>
Secondary or higher	100
<b>DTP3 immunization coverage among 1-year olds:</b>	
Male	97
Female	98
<b>DTP3 immunization coverage among 1-year olds:</b>	
Rural	97
Urban	99
<b>DTP3 immunization coverage among 1-year olds:</b>	
Lowest wealth quintile	100
Highest wealth quintile	<i>97 (based on a small number)</i>
<b>DTP3 immunization coverage among 1-year olds:</b>	
No educational attainment	<i>not computed (&lt;25 cases)</i>
Secondary or higher	97
<b>Children aged &lt;5 years who are stunted:</b>	
Male	18
Female	21
<b>Children aged &lt;5 years who are stunted:</b>	
Rural	19
Urban	20
<b>Children aged &lt;5 years who are stunted:</b>	
Lowest wealth quintile	27
Highest wealth quintile	13
<b>Children aged &lt;5 years who are stunted:</b>	
No educational attainment	<i>not computed (&lt;25 cases)</i>
Secondary or higher	17

Indicator	Prevalence (percent, except for under-five mortality rate)
<b>Under-five mortality rate (per 1000 live births):</b>	
Male	27
Female	16
<b>Under-five mortality rate (per 1000 live births):</b>	
Rural	28
Urban	13
<b>Under-five mortality rate (per 1000 live births):</b>	
Lowest wealth quintile	34
Highest wealth quintile	13
<b>Under-five mortality rate (per 1000 live births):</b>	
No educational attainment	<i>not computed (small numbers)</i>
Secondary or higher	19

Table 126 presents some inequality indicators in mother and child health in Albania – again, based on the ADHS 2008-09 findings (World Bank calculations, 2012).

#### Concentration index as a measure of inequality

Concentration index ranges between -1 and 1, with negative signs indicating that the health outcome is higher among the poor. The larger the concentration index in absolute size, the higher the inequality (World Bank, 2012).

According to the ADHS reports and based on the World Bank calculations, infant mortality rate in Albania was higher among the poor – a difference which nevertheless was not statistically significant. On the other hand, under-five mortality rate was significantly more concentrated among the worse-off (40.1 per 1,000 live births) than the better-off (12.9 per 1,000 live births) (concentration index: -0.19,  $P \leq 0.01$ ). Similarly, stunting showed a negative value (concentration index: -0.12) indicating that it was more concentrated among the poor ( $P \leq 0.01$ ). Underweight was also significantly more concentrated among the poor ( $P \leq 0.05$ ). Conversely, antenatal care was significantly more concentrated among the better-off individuals (concentration index: 0.14,  $P \leq 0.01$ ). Skilled birth attendance was also more concentrated among the better-off individuals, albeit less so (concentration index: 0.003,  $P \leq 0.01$ ). In addition, contraceptive prevalence was more concentrated among the higher-income group (concentration index: 0.11,  $P \leq 0.01$ ) (Table 126).

**Table 126. Inequalities in mother and child health in Albania based on ADHS 2008- 09 findings (source: World Bank, 2012)**

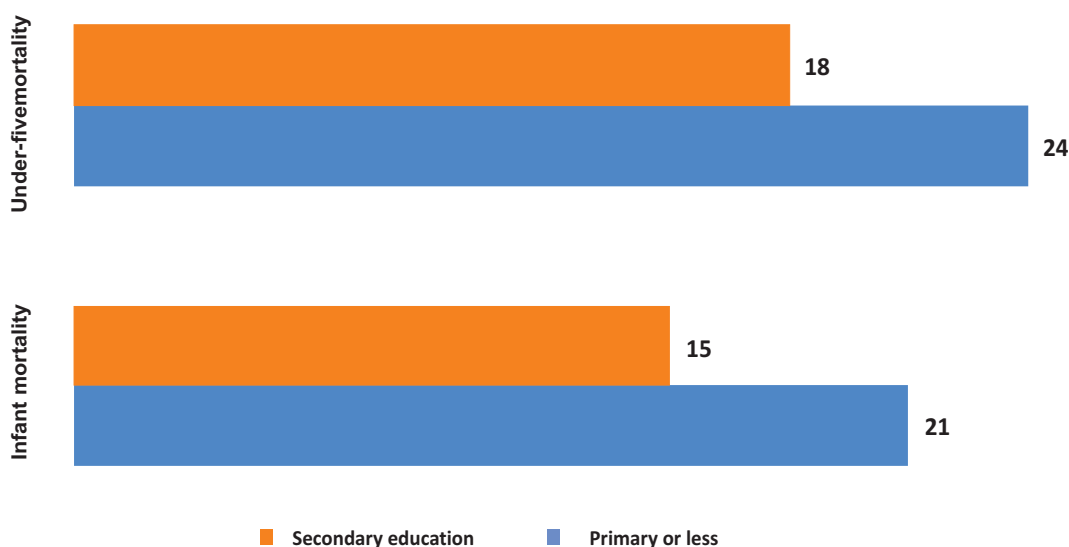
Outcome	Q1 (the poorest)	Q2	Q3	Q4	Q5	Total	Concentration Index	P
Infant mortality rate	29.9‰	10.3‰	24.7‰	17.4‰	14.3‰	19.9‰	-0.127	>0.05
Under-five mortality rate	40.1‰	18.7‰	29.2‰	14.2‰	12.9‰	24.2‰	-0.194	≤0.01
Stunting	30.6%	24.8%	19.9%	20.8%	15.9%	22.7%	-0.122	≤0.01
Underweight	9.6%	5.1%	5.4%	5.4%	3.7%	6.0%	-0.153	≤0.05
Diarrhea	5.5%	5.9%	7.2%	3.4%	4.2%	5.4%	-0.063	>0.05
ARI	9.6%	8.8%	12.7%	5.5%	6.6%	8.9%	-0.098	>0.05
Fever	8.1%	8.7%	9.6%	6.8%	5.0%	7.8%	-0.078	>0.05
Full immunization	91.3%	91.5%	89.7%	86.9%	91.7%	90.2%	-0.002	>0.05
Antenatal care ≥4 visits	49.3%	53.8%	67.3%	81.3%	91.4%	67.3%	0.137	≤0.01
Skilled birth attendance	98.7%	99.2%	99.4%	100.0%	100.0%	99.4%	0.003	≤0.01
Contraceptive prevalence	7.2%	6.1%	7.5%	7.1%	11.4%	7.9%	0.110	≤0.01

In spite of a clear declining pattern in infant and child mortality rates in Albania, within-country disparities remain evident. According to ADHS 2008-09, infant mortality in rural areas (24 deaths per 1,000 births) was twice as high as in urban areas (12 deaths per 1,000 births).

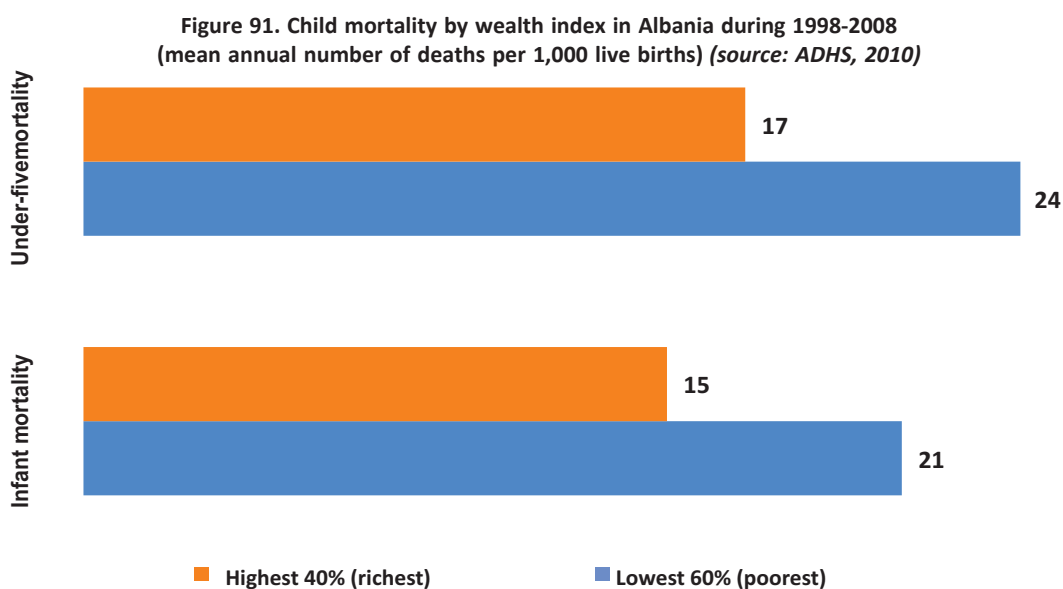
As pointed earlier, the same pattern was observed for under-five mortality (28 deaths per 1,000 births in rural areas and 13 deaths per 1,000 births in urban areas) (Table 125). Infants and children under five years in the Mountain region of Albania had the highest mortality rates compared to the national averages (42 vs. 22 per 1,000 live births, respectively) (ADHS, 2010).

Higher levels of educational attainment are usually associated with lower mortality rates in early childhood, in part because education exposes women to information about child feeding practices, child illnesses and treatment, and the importance of spacing births (ADHS, 2010). In Albania, the differences in the mortality rates by mother’s level of education show that children of mothers with primary education or less are more likely to die before their first or fifth birthday than children of mothers with secondary education or higher (Figure 90).

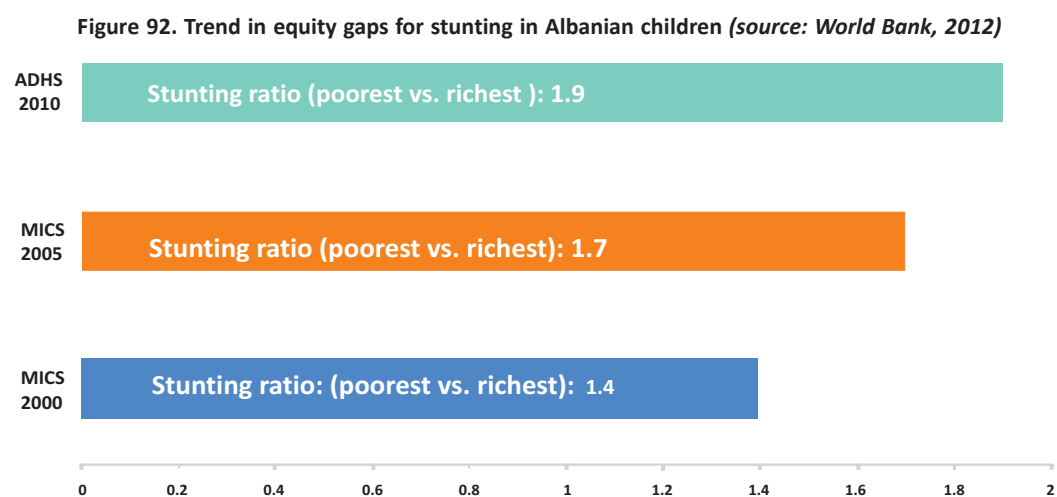
**Figure 90. Child mortality by mother’s educational level in Albania during 1998-2008 (mean annual number of deaths per 1,000 live births) (source: ADHS, 2010)**



In addition, mortality estimates by household wealth status in Albania show the expected differentials: infant and under-five mortality rates are lowest for children in households in the highest wealth quintiles and highest for those in the lowest wealth quintiles. For example, infant mortality is 21 deaths per 1,000 births in the lowest 60% of the population, compared with 15 deaths per 1,000 births in the highest 40% of the population. Thus, there are 40% more infant deaths in poorer households than in the wealthier households in Albania (ADHS, 2010).



Furthermore, based on the analysis of stunting across wealth quintiles in MICS 2000, MICS 2005, and ADHS 2008-09, there is evidence that alongside the reduction of stunting prevalence in absolute numbers, the equity gap has increased. As shown in Figure 92, in 2000, the poorest (Q1) were 1.4 times more likely to be stunted as compared to the richest (Q5). This ratio increased to 1.7 in 2005 and further to 1.9 in 2009 (World Bank, 2012).



As for adult risky behavior, according to the World Bank's calculations which were based on ADHS 2008-09 data, female smoking in Albania was strongly and significantly more concentrated among the better-off category (concentration index: 0.52,  $P \leq 0.01$ ) (Table 127). Furthermore, concurrent partnership was also more concentrated among wealthier individuals (concentration index: 0.27,  $P \leq 0.01$ ), as was condom use for more than one partner (concentration index: 0.31,  $P \leq 0.01$ ).

Overall, the prevalence of condom use among 15-49 year-old Albanian males during high-risk sexual behavior was 37% in 2010 (WHO, 2014). For the same year, the prevalence of females with correct knowledge about HIV/AIDS was higher than among their male counterparts (36% vs. 22%, respectively) (data not shown in the table).

**Table 127. Inequalities in health behavior characteristics in Albania based on ADHS 2008-09 findings**  
(source: World Bank, 2012)

Outcome	Q1 (the poorest)	Q2	Q3	Q4	Q5	Total	Concentration Index	P
Female smoking	0.8%	1.1%	2.1%	5.0%	11.6%	4.2%	0.519	$\leq 0.01$
Concurrent partnerships	2.5%	2.7%	3.3%	5.5%	8.2%	4.5%	0.268	$\leq 0.01$
Condom use (>1 partner)	11.6%	2.9%	15.0%	24.0%	40.1%	25.0%	0.310	$\leq 0.01$





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## 7. CONCLUSIONS AND RECOMMENDATIONS

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This comprehensive report informs about the health status of the Albanian population based on official national data, as well as reliable international sources of information including UN agencies such as WHO and UNICEF.

Given uncertainties in available estimates and national data gaps, this report summarizes – to the extent possible – the mortality and morbidity patterns that the Albanian population has experienced in the past two decades. These have been influenced by a particularly rapid political and socioeconomic transition from a rigid communist regime towards a democratic system and a market-oriented economy with its changes in lifestyle patterns and socioeconomic opportunities.

Essentially, this report highlights the main causes of death and burden of disease vis-à-vis the major risk factors and other health determinants of the Albanian population.

In addition, this report provides a quick scan of the available health care resources and their distribution, including manpower in the health sector, health care coverage, as well as health care expenditure by the Albanian health care sector.

Last but not least, this report summarizes a few disaggregated data pointing to potential health inequalities and health inequities, which are basically considered as “unfair and avoidable differences in health and health service provision” (WHO, 2014).

It is important to note, there are serious inconsistencies between different data sources including those from INSTAT, from the Albanian Ministry of Health, from UN agencies and the estimates from the GBD 2010 Study. The discrepancies between the national (official) information and the international estimates point to the critical need for a better quality of health data registration in Albania, especially for mortality indicators and causes of death in order to adequately monitor Albania’s health and effectively inform health policy making.

Regardless of these methodological limitations, a few salient findings emerged from this desk review, which are briefly summarized below together with some specific suggested recommendations:

### *Longevity, mortality and burden of disease among adults:*

- Life expectancy in Albania has increased steadily in the past twenty years in both sexes (in males: from 67 years in 1990 to 73 years in 2012; in females: from 71 years in 1990 to 75 years in 2012; WHO, 2014).

- Various changes, among which demographic changes (11% of the population was aged 65 years and over in 2011) have naturally led to a clear epidemiological transition in Albania over the past two decades with a significant shift from infectious diseases to NCDs.
- In 2012, infectious diseases accounted for 11% of the total burden of disease in Albania, exhibiting a significant declining trend in the past twenty years. Yet, given the current rate of improvement, the actual European average level of 5% of the total burden could be reached within 10-12 years.
- In 2010, NCDs in Albania accounted for about 88% of all deaths (55% cardiovascular diseases and 19% cancer; GBD, 2010). Albania has thus joined the majority of European countries that face the NCD epidemic as its most important public health challenge.
- Remarkably, the (age-standardized) total burden of disease in Albanian males and females in 2010 was the highest in the SEE region (GBD, 2010).
- Specifically, the mortality rate from ischemic heart disease (IHD) in Albania is the highest in the SEE region (GBD, 2010). Furthermore, Albania is the only country in the region which has experienced an increase in the mortality rate from IHD and cerebrovascular diseases in the past two decades (GBD, 2010) – indicating an early evolutionary stage of the coronary epidemic, which was observed many decades ago in the Western countries.
- As a matter of fact, IHD, cerebrovascular disease and lower respiratory infections were the highest ranking causes regarding the number of years of life lost due to premature death in Albania in 2010 (GBD, 2010).
- There is evidence of a gradual increase in the mortality rates from neoplasms in Albania in both sexes. Yet, in 2010, death rates from neoplasms in Albania were the lowest in the SEE region (GBD, 2010). This may all have been related to a previously relatively low smoking prevalence which is now demanding and increasing death-toll in Albania.
- Mortality rate from diabetes in Albania in 2010 was one of the lowest in the SEE region (GBD, 2010).
- Conversely, death rate from chronic obstructive pulmonary disease (COPD) in Albania constitutes one of the highest levels in the region (GBD, 2010).

There is a tremendous increase in the total burden of NCDs in Albania including heart disease, cancer, lung and liver diseases, and diabetes.

In this framework, there is an urgent need for an integrated approach for both prevention and improvement of health care in order to face the high burden of NCDs in transitional Albania.

The relevance of health information systems for evidence-based policy formulation is a well-acknowledged priority of the international agenda, particularly in the field of NCDs, where targeted action for public health monitoring is urgently required (WHO, 2014).

In this framework, NCDs' monitoring should be based on establishment of national disease registers regardless of the organizational and financial challenges. As a matter of fact, the rapidly growing burden of NCDs in Albania urge all stakeholders and institutions to take action and tackle this demanding issue.

National NCDs' registries may provide long-term collection of data that allow comparison and sharing of information for best practices among health care providers and suffering individuals (in clinical practice referred to as "patients"). Also, registries can centralize information and standardize NCDs' treatment plans within country. Electronic medical records and structured health care are also associated with increased benefits and improvement in health status of the population.

Regular reporting and monitoring via registries can lead to a significant improvement in the majority of risk factors and health indicators. The effect could be attributed to a more comprehensive and regular insight and better care at a population level associated with continuous monitoring (WHO, 2014).

#### *Mother and child health:*

- In 2013, infant mortality rate in Albania was estimated at 13 per 1,000 live births (UNICEF, 2014), which constitutes one of the highest rates in the region and is astonishingly above the official national report of 7.8 per 1,000 live births (INSTAT, 2014).
- Under-five year mortality in Albania has gradually decreased in the past decade (8.4 per 1,000 live births in 2013; Albanian Ministry of Health, 2014). Nonetheless, similar to infant mortality, there is probably a substantial underestimation of child mortality, if the figures are based on the official reports from the national institutions in Albania due to the under-registration of deaths.
- Also, there is evidence of a steady decrease in the maternal mortality ratio in Albania in the past two decades. Overall, the change between 1990 and 2013 relates to a decrease of 33% (WHO, 2014).
- Communicable diseases, maternal, neonatal and nutritional disorders accounted for about 22% of the overall mortality rate in Albania in 1990, but only for 6% in 2010.
- In spite of the improving trend in child health and nutritional outcomes, there are disparities by age, gender, socioeconomic status, geographical location and place of residence.

- Double burden of malnutrition and shifting of the burden towards child overweight and obesity indicate that Albania is undergoing nutritional transition.

Notwithstanding the considerable decrease in both child and maternal mortality and morbidity, there is still room for further improvement to catch up with other European counterparts. Indeed, malnutrition is still evident among Albanian children, especially in the disadvantaged rural areas and the lower-income groupings.

Evidence of inequities in child health and nutrition calls for prioritization of the most vulnerable mothers and children in the process of planning for universal health coverage.

Albania needs to prepare a specific programmatic response to address the consequences of the dual problems of under and over nutrition. Specific interventions are needed to promote good infant and young child feeding practices that support linear growth without causing excessive weight gain.

As indicated by UNICEF, WHO and WB, the economic growth is not sufficient to address the double burden of malnutrition. A combination of nutrition-specific interventions (through the health sector) and nutrition-sensitive interventions (through other sectors including agriculture), as well as other broad multi-sectoral interventions are required to address this significant public health problem.

*Risk factors:*

- In Albania, the three risk factors that accounted for the largest disease burden in 2010 were dietary risks (first), high blood pressure (second) and tobacco smoking (third) (GBD, 2010). The prevalence of smoking may increase if measures are not taken and this could seriously threaten a further increase in life expectancy and a possible decrease of the NCD burden.
- Astonishingly, there has been a significant increase in the burden of disease attributable to each lifestyle/behavioral characteristic in Albania in the past twenty years. In 2010, lifestyle factors accounted for more than 70% of the total burden of disease in Albania.
- In 2010, dietary risks accounted for 38% of the total mortality rate in Albania, constituting, by far and large, the most important risk factor for ill-health in this transitional society.
- In 2010, smoking accounted for 22% of all deaths in Albania. In the past two decades of the particularly rapid political and socioeconomic transition, mortality rate attributable to smoking has almost doubled for NCDs in general and for heart disease, cerebrovascular disease, total cancers, lung cancer and COPD, in particular.
- The overall mortality rate and the total burden of disease attributable to alcohol use has increased 2.5 times in Albania in the past two decades. In particular,

mortality rates from CVD and liver cirrhosis due to alcohol consumption have doubled, whereas the death rate from cerebrovascular disease has almost tripled during 1990-2010.

- In Albania, in the past two decades, the overall mortality rate due to overweight and obesity has increased more than twice. In particular, the death rate from IHD has increased 2.5 times, whereas the death rate from diabetes has tripled.
- Mortality rate from IHD attributable to hypertension has increased twice in Albania in the past twenty years, whereas death rate from cerebrovascular disease due to hypertension has increased by more than 70%.
- In the past twenty years, in Albania, there has been an almost twofold increase in the mortality rate from IHD and a threefold increase in the mortality rate from diabetes due to high fasting glucose level, unhealthy diet, obesity and physical inactivity.
- In 2010, the IHD mortality attributable to hypercholesterolemia has almost doubled in Albania, which is the only country in the SEE region experiencing a gradual increase in burden of disease attributable to higher levels of total cholesterol.

A cluster of preventable risk factors (smoking, alcohol abuse, overweight, unhealthy diet, and lack of physical activity) are at the moment in Albania contributing in a very important way to the observed increase in the total burden of NCDs such as cancer, heart disease, lung and liver diseases, and diabetes. Preventing Albanian youth from starting to smoke and refraining from alcohol abuse and unhealthy diets and promoting their physical activity are major challenges for the near future in Albania.

*Health system, service coverage, and health expenditure:*

- The overall number of physicians in Albania is scarce and exhibits a mild degree of unequal distribution.
- The number of hospitals and hospital beds has decreased in Albania in the past years, but the bed occupancy rate is still low.
- Virtually all births in Albania are attended by skilled health personnel.
- The overall immunization coverage is very high (99%).
- The absolute majority of women (97%) had at least one antenatal care visit during 2006-2013, whereas 67% of them had at least four such visits.
- In 2011, the total expenditure on health in Albania as a share of GDP was 6%.
- About 10% of the total government expenditure in Albania was spent on health.

- Social security expenditure constituted 74% of government expenditure on health in Albania in 2011.

Generally, the Albanian population is adequately covered with essential health care services, which is a basic prerequisite to ensure universal health coverage.

Per capita expenditure on health in Albania has increased significantly in the past decade. Yet, the Albanian health sector remains underfinanced.

However, in the past year, there has been a significant progress in health technology in Albania including provision of adequate computed tomography, radiotherapy and mammography units.

*Health inequities:*

- In 2008-09, under-five mortality rate was considerably higher in rural areas than in urban areas of Albania (28 vs. 13, per 1,000 live births) and especially in the lower-income group than in the higher-income category (34 vs. 13, per 1,000 live births) (ADHS, 2010).
- In 2008-09, under-five mortality rate and stunting were significantly more concentrated among the poor. Conversely, proper antenatal care, skilled birth attendance and contraceptive use were all significantly more concentrated among the better-off population subgroup (World Bank, 2012).
- In Albania, there is a limited financial protection for the poor, with high out-of-pocket expenditure rates, estimated at 55% of total expenditures on health (World Bank, 2014).

Measuring and reporting inequalities and inequities in health provides important evidence to policymakers for designing and implementing equity-centered programs and activities which are feasible in the Albanian environment. The ultimate goal would be to ensure a more equal distribution of health and access to care and may include universal health coverage for the Albanian population.

### **Concluding remarks**

In summary, the burden of chronic diseases such as cancer, CVD, diabetes and COPD are a central point of concern in Albania with a potential further increase in the next decades, if serious countermeasures will not take place. Apart from lining up an efficient, accessible and affordable healthcare system, chances exist in preventing young people from smoking, alcohol abuse, taking too little physical exercise and employing unhealthy diets, which all contribute to the future burden of chronic diseases in Albania.

The health information system of Albania needs serious revival and renewal to allow for an adequate management and assessment of the Albanian health system. This

includes the monitoring of preventive interventions and of essential steps in healthcare renewal or reform.

Better statistics, regular health surveys and improved healthcare administrative data will allow for better research into the quality of the Albanian health system which in turn can support better evidence-based health policy making and priority setting.

Indeed, at least for Albania, there is little information on the patterns of lifestyle characteristics and other health determinants in the general population. Therefore, there is a pressing need for regular health interview surveys in Albania and occasional in-depth studies in the form of health examination surveys. These studies should be conducted in close collaboration with universities and other scientific and research institutions to further strengthen the epidemiological capacities of the Albanian research community.

A strong public health system is needed to protect against health risks and promote and facilitate healthy behavior in the Albanian population. A strong healthcare system, staffed with sufficient and appropriately trained personnel, must provide adequate and equal access to quality care. Finally, special emphasis may be needed to combat unacceptable differences in health and in access to care and prevention that exist throughout within the country.

Focusing on chronic diseases will combat the major burden of disease and secure a better health in the future. This does not mean, however, that other existing health issues should be neglected. Fighting infectious diseases, among which AIDS and tuberculosis, reducing drug abuse, eradicating serious poverty, inappropriate housing conditions and unacceptable risks at the workplace, as well as improving the conditions and care during pregnancy and childbirth should remain on the public health agenda of Albania as well.

In conclusion, this report may serve as a baseline document for both the current assessment of health status of the Albanian population and cross-national comparison with neighboring countries and beyond, as well as for monitoring future trends in morbidity and mortality rates within the Albanian population. These can provide valuable clues and input to decision-makers and policymakers for their priority setting.





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