Burden of non-communicable diseases in the European region: Cross-country comparison between Greece and Albania

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Abstract

Aim: The European region is facing major health challenges attributable to non-communicable diseases. Non-communicable diseases are the leading cause of premature mortality in Europe. This paper aims to indicate how Disability-Adjusted Life Years (DALYs) attributable to tobacco smoking, alcohol use and diet have changed over the past 20 years in Albania and Greece. Moreover, the paper discusses the impact of policies and preventions to reduce the burden of diseases attributable to lifestyle.
Methods: Review by using statistics of the Institute for Health Metrics and Evaluation (IHME). In order to compare the burden of disease (BoD) attributable to lifestyle, the health indicator DALY was used. Statistics were retrieved from the IHME database.
Results: Greece and Albania differ in DALYs attributable to tobacco use, alcohol use and diet. Whereas DALYs related to all the three risk factors are decreasing in Greece, Albania experienced increasing DALYs until 2005. Since 2005, DALYs are slightly decreasing in Albania. The greatest gap in DALYs between the countries can be seen for nutritional deficiencies. DALYs attributable to nutritional deficiencies are almost 12 higher in Albania than in Greece.
Conclusion: The countries differ in their policies and strategies on the prevention of lifestyle risk factors. Albania is facing changes in lifestyle behaviour since the opening to the West in 1990. The BoD increased in Albania due to lacking policies and health programs on lifestyle characteristics. The awareness about prevention is increasing, but policies are still lacking and are ineffective. Improvements of preventions and policies are needed to tackle the BoD, especially in Albania.

Keywords: burden of disease, cross-country comparison, non-communicable diseases.

Introduction

The European region is facing major health challenges. Over the last decades, the shift from infectious diseases to non-communicable diseases as major cause of premature mortality and disability can be observed. Each year four millions deaths are attributable to cardiovascular diseases within the European region. Ischemic heart diseases (IHD) and strokes are the two major causes of premature mortality in Europe. Especially Eastern and Central European countries are facing high rates of IHD's and strokes compared to the Western countries (1). Changes in lifestyle behaviour are known as main risk factors for non-communicable diseases. Especially smoking, alcohol consumption, high saturated fat intake and physical inactivity are main contributors to premature mortality attributable to non-communicable diseases (2).

Diseases can affect the population health in various ways. The concept of burden of disease (BoD) is referring to mortality rates, morbidity rates and cost attributable to a disease. In 1993, the World Bank released the first 'Global Burden of Disease Study' in order to quantify the burden of disease (3). The aim of the study was to estimate the BoD to provide comparable and consistent data on health. The objective was to provide comparable data on burden of disease to improve decision-making on health of policy makers. In order to quantify the burden of disease the author's of the first GBD study evaluated the health indicator 'DALY- disability adjusted life years' (4). Disability adjusted life years belong to the 'summary measures of population health'. DALY was developed as health indicator to quantify the amount of lost years of life caused by disability and premature mortality.

Differences in BoD are seen between the 28 European Union member states and states of the European region. As mentioned before, lifestyle and related non-communicable disease have great impact on the burden of disease in countries. Therefore the objective of the paper is to compare DALYs related to lifestyle between a European member state and a state of the European region. DALYs related to smoking, alcohol consumption and nutritional deficiencies will be compared between the two countries. The main focus of the paper is on dietary patterns and nutritional deficiencies. Both countries employ a Mediterranean diet pattern. Therefore, it is aim of the paper to investigate whether the countries differ in the nutritional and Mediterranean diet patterns and how these differences have impact on the health of the citizens in Albania and Greece.

Methods

Since health of the populations is affected at different levels, health indictors such as quality-adjusted life expectancy, quality adjusted life years and disability adjusted life years exist to quantify the burden of diseases, injuries and risk factors. The BoD indicators are also known as 'summary measures of populations health' (4). The summary measures can be split into two categories: 'health expectancies' and 'health gaps'. Health expectancies indicators quantify the increase in life years and increasing life expectancy to improvements in quality of life. The second category covers health gaps in populations' health. The health gap indicators quantify lost years of full health compared with an agreed standard of ideal health status (4). In 1990, the author's of the first GBD study introduced the concept of disability adjusted life years as new indicator to quantify the burden of disease. The concept of DALYs refers to premature mortality and disabilities related to diseases and injuries and risk factors such as age. DALYs are calculated by using the sum of 'years of life lost due to premature mortality (YLL)' and 'years lived with disability (YLD)' (5).

Data collection

In order to make the cross-national comparison on DALY, data on disability adjusted life years is obtained from the Institute for Health Metrics and Evaluation (IHME) database. The GBD 2010 study evaluated 187 country profiles related to burden of disease, injuries and risk factors. The

country profiles of Albania and Greece are obtained from the IHME database. Moreover, reports by the World Bank and IHME on the BoD are used to quantify the leading causes and risk factors of the burden of disease in Europe. The 'European Cardiovascular Disease Report 2012' by Nichols et al. is utilized to give an overview on the burden of cardiovascular diseases in the European region. To obtain further information on BoD, non-communicable diseases and lifestyle risk factors the databases 'PubMed' and 'Web of Science' are used. The following search terms were used 'non-communicable diseases'; 'burden of disease'; 'health in transition'; 'lifestyle'; 'risk factors'; 'Mediterranean diet Greece'; 'Mediterranean diet Albania'; 'Mediterranean diet and impact on health'; 'Mediterranean diet and CVD' in order to retrieve additional literature.

Countries

Albania and Greece are both located at the Southeast part of Europe and neighbouring states. Beside their geographical similarities, the two countries differ greatly in their political past. Since 1981 Greece is a member state of the European Union. Albania did experience a communist governed past. During the early 60's Albania distanced from the Soviet regime and aligned with the communist China. In order to compare BoD in the two countries it is important to consider the communist political background of Albania.

Limitation

Although the introduction of DALYs is often seen as milestone in measuring burden of disease, many argue that the concept of DALYs has disadvantages and weaknesses. Using DALYs for comparisons the following critics have to be taken into account. The concept of DALY weights life years for men and women separately while it is known that the differences are small. Critics urge for more equality by weighing sexes. Furthermore, all years lost have to be weighted equally without differentiating age on which years are lost. Moreover, discounting it is often criticised. Critics argue that a current healthy year should have the same value than a healthy year in the future. Another argument of criticism refers to the severity weighting of disability, which is closely related to the concept of quality of life. Weighting disability with a single number launches debates and criticisms because individuals and cultures differ in their perception of quality of life. In order to interpret DALYs the explained critics have to be considered (6).

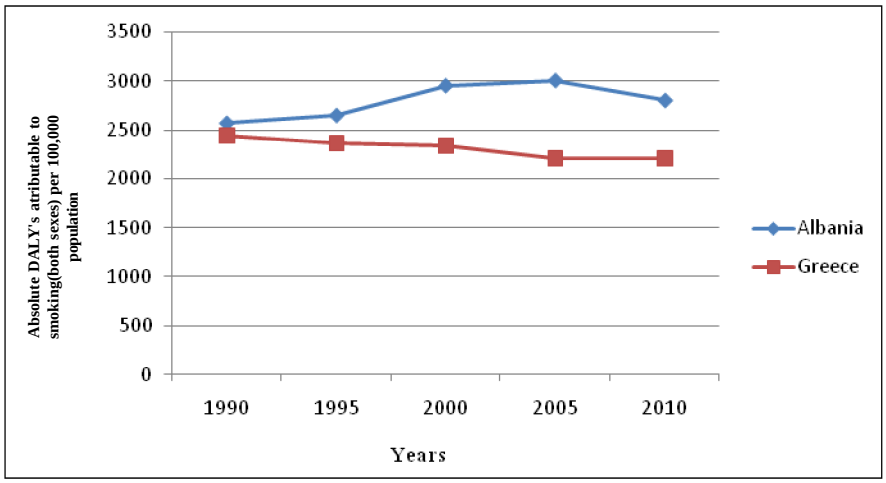
Results

The GBD 2010 study indicates that the three leading causes of DALYs in Europe are attributable to non-communicable diseases. The major cause of DALYs within the European region is ischaemic heart diseases, followed by cerebrovascular diseases (stroke) and lung cancer. This part will focus on changes in DALYs in Greece and Albania related to the following three lifestyle risk factors: tobacco smoking, nutritional deficiencies and alcohol consumption. In Greece, the leading causes of disability adjusted life years were dietary risks, smoking, high-blood pressure and body-mass index. In Albania similar trends have been estimated just in a slightly different order. In 2010, the leading causes of DALYs were dietary risks, high smoking and high body-mass index (7,8).

DALYs related to smoking

The burden of diseases related to smoking decreased over the last 20 years among the Greek population. DALYs related to smoking decreased from 2439 DALYs per 100,000 in 1990 to 2123 DALYs in 2010. DALYs attributable to smoking for both sexes did increase until 2005 to 3000 DALYs in Albania. Since 2005, a decrease in disability adjusted life years related to smoking is estimated. Figure 1 illustrates changes in DALYs attributable to smoking over the last 20 years. The gap in DALYs related to smoking (both sexes) between Albania and Greece increased by more than 550 DALYs per 100,000 population over the last twenty years (7,8).

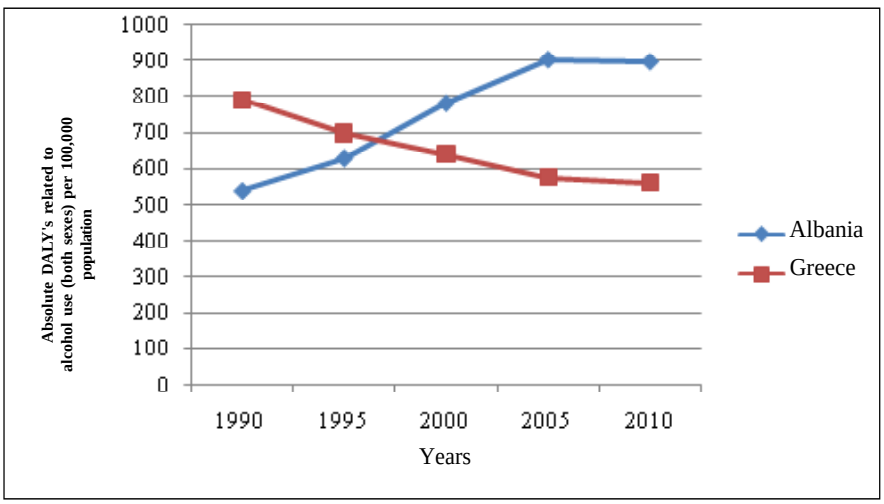
Figure 1. DALYs related to tobacco (both sexes) per 100,000 populations in Greece and Albania *(Source: IHME, http://www.healthdata.org/, September 2014)*



DALYs related to alcohol use

Since 1990, Greece and Albania experienced totally different trends in DALYs attributable to alcohol consumption. Whereas DALYs did steadily decrease in Greece, DALYs greatly increased in Albania. In Albania, DALYs related to alcohol use increased by more than 450 DALYs per 100,000 population over the last 20 years. Greece is experiencing declining DALYs attributable to alcohol. In 2010, the gap between Albania was 336 DALYs per 100,000 populations. Figure 2 indicates the shift in DALYs attributable to alcohol over the last two decades (7,8).

Figure 2. DALYs related to alcohol use (both sexes) per 100,000 in Greece and Albania

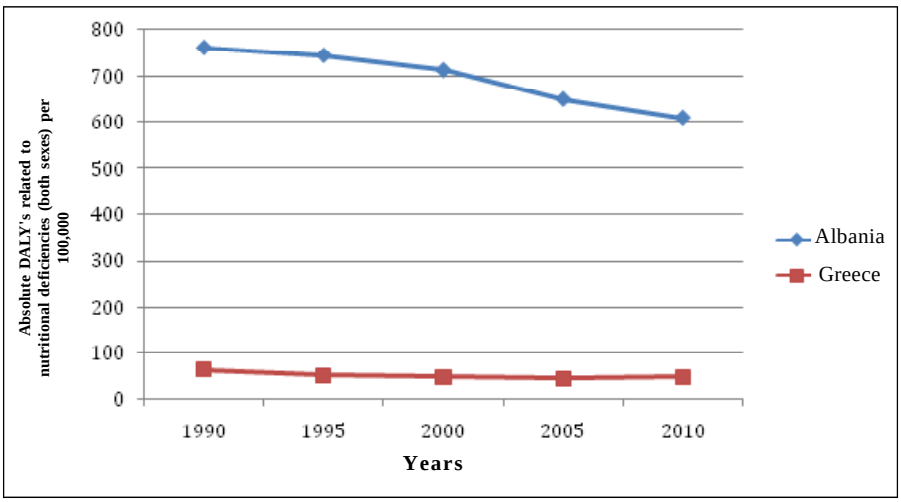


DALYs related to nutritional deficiencies

The greatest differences in DALYs attributable to the five chosen lifestyle indictors between the two countries can be seen for nutritional deficiencies. In 2010, DALYs attributable to nutritional deficiencies were almost 12 times higher in Albania than in Greece. Figure 3 indicates a change in DALYs related to nutritional deficiencies between Greece and Albania over the last 20 years. In Albania, DALYs attributable to poor diet did

decrease from 761 DALYs per 100,000 in 1990 to 608 DALYs in 2010. DALYs caused by poor diet are much lower in Greece. Since 1990, DALYs related to nutritional deficiencies decreased from 64 DALYs in 1990 to 47 DALYs per 100,000 in 2010. In 2010, the gap in nutritional deficiencies between Albania and Greece was 561 DALYs per 100,000.

Figure 3. DALYs related to nutritional deficiencies (both sexes) per 100,000 populations in Greece and Albania *(Source: IHME, http://www.healthdata.org/, September 2014)*



Discussion

By analysing the trends in DALYs it is of prime importance to consider that Albania is still facing major challenges of the transition process. Policies and preventions on tobacco, alcohol and diet will be discussed to understand changes in DALYs attributable to lifestyle.

Tobacco

In the early 90's Western tobacco companies started to flood the Albanian market with foreign cigarettes, due to limited tobacco policies and low taxes. Until 2000 the smoking prevalence increased significantly. The changes in DALYs attributable to smoking can be explained by lack of tobacco policies. To tackle the increasing burden of smoking the Albanian government implemented new policies on tobacco. In 2007, Albania signed the 'Framework Convention for Tobacco Control'. Since 2005, the strengthening of tobacco policies shows beneficial impact on the reduction of DALYs attributable to tobacco use in Albania (9). Greece is facing the one of the highest smoking prevalences in Europe. The government did comply with several EU directives on smoking to tackle the burden tobacco. The introduction of large warning labels on cigarette packages, tobacco free zones and several other interventions on tobacco did not affect the Greek smoking prevalence. Moreover, the smoking epidemic is increasing among students and young adults (10). In order to decrease the burden of disease, interventions on adolescents are of great importance. The Albanian and Greek governments are facing major challenges in the future of implementing effective interventions to decrease the burden of smoking.

Alcohol consumption

Alcohol consumption is widely accepted within the Greek population. Nevertheless, the awareness of the Greek government of preventing alcohol problems is increasing since the 90's. Policy actions on alcohol increased over the last two decades.

Major focus lies on prevention of alcohol related road accidents, advertisement and restriction of availability. The Greek government implemented policies on drunk driving testing to reduce the burden of alcohol related accidents (11). The burden of disease related to alcohol use is decreasing which indicates that the implemented policies seem to have beneficial impact in Greece. Since 1990, Albania is facing increasing DALYs attributable to alcohol. In order to address the burden of alcohol Albania implemented the 'Political Strategy for Prevention and Minimize Alcohol in Albania 2011-2015'. The strategy was introduced to increase the awareness of alcohol related problems and to increase actions on preventions to reduce the burden of alcohol in Albania (12). Nonetheless, Albania has to strengthen policies on to decrease DALYs attributable to alcohol in the future.

Mediterranean diet and nutritional deficiencies

The citizens of the countries which surround the Mediterranean, have a lower risk for chronic diseases and have a longer life-expectancy compared to other parts of the world (13). It is often believed that the Mediterranean diet has great impact on the lower risk for chronic diseases, cardiovascular diseases and the longer LE. The traditional Mediterranean diet consists of a mixture of vegetable foods such as bread, fruits, nuts and vegetables and a moderate consumption of fish, dietary products and meat. The main source of fat is predominately olive oil. Most of these elements of the Mediterranean diet are functional components with beneficial effects on health. Therefore, it can be argued that these health components of the Mediterranean diet are responsible for the longer LE and lower risk of chronic diseases (13,14).

With the opening to the Western world, the Albanian population started to adopt western lifestyle behaviours. Evidence did indicate in almost all parts of the country the deviation from the traditional Mediterranean diet. The Albanian citizens did adopt more and more Western dietary patterns over the last two decades (15). Many of the healthy functional components of the Mediterranean diet are replaced by foods with higher salt and saturated fats content (15). Mone and Bulo (2012) highlighted in their study a positive association of acute coronary syndrome with non-Mediterranean diet components such as junk food, high salt and saturated fat intake. Whereas the non traditional Mediterranean diet is associated with an increased risk of ACS, the traditional Albanian Mediterranean diet was associated with a lower risk of ACS and strongly protective (15). Physical activity decreased and nutritional deficiencies increased. Albania is facing a dramatic increase of obesity and type 2 diabetes. The immense increase will lead to increasing mortality and morbidity attributable to diabetes and obesity (16,17). Changes in dietary habits from the traditional Mediterranean diet to a diet higher in fat and salt intake and physical inactivity did attribute to the increasing burden of obesity in Albania over the last two decades (17). The awareness of the burden of nutritional deficiencies is increasing. The Albanian government implemented several strategies in order to tackle the burden of nutritional deficiencies but evidence shows that the interventions were lacking and not effective (18). DALYs attributable to nutritional deficiencies are decreasing in Albania, but are still 12 times higher than in Greece. Further improvements of policies and interventions are needed to decrease the high burden in Albania.

Greece is experiencing a low rate of DALYs attributable to nutritional deficiencies. The Greek Mediterranean diet is known for a high consumption of fruits, vegetable, cereals and vegetable oils. Evidence showed that the Mediterranean diet has beneficial effects on reduction and prevention of heart diseases. The healthy diet is a main reason for the low share of DALYs attributable to nutritional deficiencies (19). A population-based cohort study in Greece by Trichopoulou et al. (20) indicated that the traditional Mediterranean diet was associated with a decrease in total mortality. A large part of the Greek population is still employing the

traditional Mediterranean diet which consequently leads to the lower amount of DALYs attributable to nutritional deficiencies as Figure 3 is highlighting.

Conclusion

Both countries employed in the past a traditional Mediterranean diet. Evidence has indicated that Albania is experiencing an increase in obesity, diabetes and cardiovascular diseases. Since the opening to the West, the citizens of Albania are applying Western lifestyle behaviours. The burden of diseases attributable to alcohol was in the early 1990's higher in Greece than in Albania. Over the last two decades, Albania is facing an increase in DALYs attributable to alcohol consumption. Moreover, the citizens are employing a more unhealthy Western diet than they did in the early 90's. A shift from the traditional Mediterranean diet to a diet higher in salt and saturated fat intake can be observed. The gap in nutritional deficiency is increasing due to the fact that among the Greek population a large amount is still employing the health Mediterranean diet, whereas in Albania the consumption of processed food is increasing. Both countries are facing a similar burden of disease attributable to smoking.

Conflicts of interest: None declared.

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