
**Comparative Analyses of Obesity and Overweight in Georgia, Slovakia,
Denmark, and Turkey**

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Abstract

This analysis explores obesity and overweight trends in Georgia, Slovakia, Turkey, and Denmark, using insights from sources like the WHO European Regional Obesity Report (2022) and various national studies. It examines factors such as obesity prevalence, eating habits, physical activity levels, and socio-economic influences. The findings reveal that Turkey and Georgia have the highest obesity rates, particularly among women, driven by cultural norms, sedentary lifestyles, and the growing popularity of unhealthy diets. Slovakia has moderate obesity rates, with men being more affected, while Denmark has the lowest rates but still faces challenges, such as health disparities among lower-income groups. Urbanization, the rise in fast food consumption, and physical inactivity among young people are common drivers across all four countries. Denmark stands out for its success in promoting active lifestyles, showing how well-designed infrastructure and public health policies can make a real difference in addressing obesity.

Keywords: Obesity, Overweight, Comparative Analyses

Introduction:

Since the 1980s, obesity has become a serious issue across many countries in the WHO European Region. Rates have tripled, especially among children, and the problem keeps growing. Obesity isn't just about numbers—it affects real people and their lives. Carrying extra weight can make daily activities harder, cause emotional distress, and lead to serious health problems like heart disease, diabetes, and cancer [1]. Many people end up dealing with multiple health issues at once, and the risks increase with higher weight. The impact isn't limited to individuals—healthcare systems are also under pressure. Obesity accounts for 2–8% of healthcare costs and 10–13% of deaths in some areas. These figures reflect the lives of real families and communities [1]. Among children and teens aged 5 to 19, obesity rates have risen from 2% in 1990 to 8% in 2022. Among adults aged 18 and older, rates have jumped from 7% to

16% over the same period. These trends highlight the urgent need for public health action to address the growing problem of obesity [1].

The prevalence of noncommunicable diseases (NCDs) has risen consistently worldwide in recent years. In 2021, NCDs accounted for 90% of fatalities and 85% of disability-adjusted life years (DALYs) in the WHO European Region [2]. This area is recognized as being significantly affected by NCD-related health issues, emphasizing its importance as a priority for public health initiatives.

Urbanization, changing diets, and increasingly sedentary lifestyles are reshaping health behaviors across Europe, turning obesity into a complex public health challenge. According to the WHO European Regional Obesity Report 2022, over 59% of adults and nearly one in three children in the region are now classified as overweight or obese [1].

This analysis compares the trends, root causes, and potential interventions for obesity among young people in four distinct nations: Georgia, Slovakia, Denmark, and Turkey, each offering unique insights into this growing issue. We chose Georgia, Slovakia, Denmark, and Turkey because they offer unique perspectives on obesity. These countries represent different parts of Europe, with diverse lifestyles, economies, and public health systems. Together, they provide valuable insights into the factors contributing to obesity and the challenges in addressing it [2].

In Georgia, the "double burden of malnutrition" is a significant issue. Rural areas face undernutrition, while urban areas experience rising obesity rates. This contrast highlights how different environments within one country can shape health outcomes. Slovakia, a middle-income EU country, is seeing an increase in obesity rates. The growing popularity of fast food and processed diets shows how Western eating habits are influencing health in Central Europe, reflecting the impact of modernization. Denmark is recognized for its progressive public health initiatives and the Nordic diet, which emphasizes whole grains, fish, and fresh vegetables. While obesity rates are relatively low compared to other countries, challenges remain in addressing disparities across different population groups. This provides an opportunity to assess the effectiveness of existing health programs and identify areas for improvement. Turkey has some of the highest obesity rates in Europe, with the problem escalating rapidly. Urban areas, like Istanbul, face challenges from a fast-food culture, while rural regions deal with resource limitations and traditional practices. Turkey offers a chance to examine how inequality, cultural factors, and modernization affect health outcomes. By comparing these four countries, we can gain a deeper understanding of how factors such as diet, lifestyle, resources, and socio-economic conditions influence obesity. These insights can help develop more effective strategies to combat obesity across Europe and beyond.

Aim:

This study aims to examine the impact of obesity and overweight in four specific countries: Georgia, Slovakia, Denmark, and Turkey. It focuses on understanding how social, economic, and

cultural factors shape these trends within each nation. By comparing these countries, the study seeks to uncover both commonalities and differences that could provide meaningful insights for developing more effective public health strategies.

Methodology:

This article is based on the latest information from trusted sources, including the WHO European Regional Obesity Report 2022, the Global Nutrition Report 2022, and national studies from various countries. Additionally, we reviewed articles from PubMed, Google Scholar, and other reliable sources. Our analysis focuses on key data such as obesity and overweight rates, dietary habits, physical activity levels, and socio-economic factors influencing health outcomes.

Results and Discussion:

The 2022 World Health Organization (WHO) European Regional Obesity Report highlights a steady increase in obesity rates in Georgia, rising from 33.2% in 2020 to 34.7% in 2022 [1]. Women consistently exhibited higher rates than men, with 34.9% of women and 33.3% of men classified as obese in 2022 [Table 1]. The 2024 Global Nutrition Report notes that Georgia has made only modest progress in addressing diet-related non-communicable disease (NCD) goals. Among adults aged 18 and older, 26.8% of women and 22.2% of men are categorized as obese [3]. Georgia's obesity rates exceed the regional averages of 10.3% for women and 7.5% for men [1]. These figures reflect disparities in access to food, lifestyle habits, and available resources across regions. Women are more affected, likely due to cultural norms that shape food practices and limit opportunities for physical activity. This is particularly evident in rural areas, where household responsibilities often take precedence, leaving minimal time for exercise or recreational activities [2].

In Slovakia, obesity prevalence increased from 25.2% in 2020 to 26.8% in 2022. Men exhibited significantly higher obesity rates than women, with 30.4% of men and 23.1% of women classified as obese in 2022 [1] [table1]. According to Euractiv (2022), approximately 60% of Slovaks are either overweight or obese [4]. A major contributing factor is the rising consumption of fast food and sugary drinks among Slovak youth. Additionally, urbanization has led to more sedentary lifestyles, with fewer young people engaging in regular physical activity. If effective public health interventions are not implemented, these trends may pose increasingly significant challenges in the future [4].

Turkey recorded one of the highest obesity rates, rising slightly from 32.6% in 2020 to 33.3% in 2022 [1] [Table]. Women were disproportionately affected, with 40.9% classified as obese compared to 25.2% of men, and 61% of the population was categorized as overweight. A significant factor is the pronounced gender disparity, which is often linked to cultural norms discouraging women from engaging in outdoor physical activities or sports, particularly in more conservative regions. Additionally, urbanization and the growing availability of fast food in cities like Istanbul have further contributed to the increase in obesity rates. Denmark had the

lowest obesity rates, increasing slightly from 13.1% in 2020 to 13.3% in 2022 [1]. Men had higher rates than women, with 15.3% of men and 11.2% of women affected [Table 1]. The Danish National Health Survey (2022) showed that 18% of young people are overweight, and 6% are obese [5]. While these numbers are much lower than in Georgia, Slovakia, and Turkey, obesity is rising among low-income youth who struggle to afford healthy food. This shows that even in countries with strong health policies, economic inequalities affect health outcomes. Turkey and Georgia had the highest obesity rates, especially among women, showing large gender differences. Slovakia saw a moderate increase, with men more affected. Denmark's low rates reflect successful health measures, though men still had higher obesity rates than women.

Table1. The table illustrates the age-standardized prevalence of obesity among adults aged 18 and older in Georgia, Slovakia, Turkey, and Denmark based on the WHO 2022 report. The data spans three years (2020–2022) and is categorized by total population, as well as by gender (female and male).

	Total	Female	Male
Georgia 2020	33.2%	34%	31,3%
slovakia	25.2%	22.2%	28,6%
turkey	32.6%	40.1%	24,6%
denmark	13.1%	11,1%	15,1%
Georgia 2021	33.9%	34.4%	32.3%
Slovakia	26,2%	22,6%	24,5%
Turkey	33%	40,5%	24,9%
Denmark	13.2%	11,1%	15,2%
Georgia 2022	34,7%	34,9%	33,3%
Slovakia	26,8%	23,1%	30,4%
Turkey	33,3%	40,9%	25,2%
Denmark	13,3%	11,2%	15,3%

Key Drivers of Obesity and Overweight

Dietary Patterns. Changing dietary habits influenced by Westernized food culture have played a major role in the rising obesity rates in Georgia and Turkey, with notable trends in Slovakia and Denmark as well. A 2022 survey by the National Center for Disease Control and Public Health (NCDC) found that 62% of young people in urban areas consume fast food at least twice a week, compared to 28% in rural areas [6]. Processed snacks and sugary drinks contribute to 35% of the daily caloric intake among youth. This marks a sharp contrast with traditional Georgian diets, which focus on vegetables, beans, and grains. The Turkish Ministry of Health (2022) reported that 78% of youth aged 15–29 consume fast food at least three times a week, with the number rising to 85% in urban areas like Istanbul and Ankara [7]. Sugary drinks, such as carbonated beverages, account for 20% of total caloric intake, displacing traditional drinks like ayran and herbal teas [7]. A 2019 Hacettepe University study highlighted that many youths are skipping

home-cooked meals in favor of processed foods, leading to nutrient deficiencies alongside weight gain [8]. The Nutritional Science in Central Europe Study (2022) revealed that 72% of Slovak adolescents consume fast food and sugary drinks multiple times a week [9]. This dietary shift raises significant concerns about the long-term health effects on the country's youth. Despite the traditionally healthy Nordic diet, a 2022 Danish Health Authority report showed that fast food is becoming increasingly popular among younger Danes, particularly in urban areas. The report indicated that 68% of Danish youth consume fast food at least twice a week, with sugary beverages making up 18% of their daily caloric intake [10]. These trends reflect a global shift toward processed and fast foods, contributing to rising obesity rates and potential long-term health challenges [Table 2]. According to the Global Nutrition Report (2022), nutrition profiles for Georgia, Slovakia, and Denmark highlight significant differences in dietary intake [6]. Georgia has a lower intake of dairy and nuts, Slovakia consumes high amounts of red meat, and Denmark adheres more closely to recommendations for fruits and vegetables. Explanation of Dietary Intake Data Georgia, Slovakia, and Denmark all consume more than the recommended daily limit of 70 grams of red meat, which is linked to an increased risk of cardiovascular diseases and certain types of cancer [6]. In terms of dairy, Denmark meets or exceeds the recommended intake of 250–500 grams per day, while Georgia falls on the lower end of the scale. Slovakia shows moderate to high dairy consumption as well [6]. However, fish consumption in all three countries is below the recommended level of at least 28 grams per day (equal to two servings per week). Although Denmark has the highest fish intake among the three, it still does not meet the recommended amount [11]. When it comes to whole grains, intake is lower than the recommended 125 grams per day across all three countries, signaling a need to improve diets to boost fiber and nutrient consumption [11]. Similarly, the consumption of nuts and seeds is well below the recommended 20 grams per day in all three nations, highlighting an opportunity to enhance healthy fat and protein intake [11]. For fruits and vegetables, Denmark has the highest consumption but still does not reach the WHO's recommendation of 400 grams per day. Georgia and Slovakia consume even fewer fruits and vegetables, leading to deficiencies in essential micronutrients and fiber [6].

Diagram 1. Global Nutrition Report (2022). Nutrition Profiles for Georgia, Slovakia, and Denmark. Retrieved from <https://globalnutritionreport.org>. The data represents the average dietary intake for adults aged 18 years and older

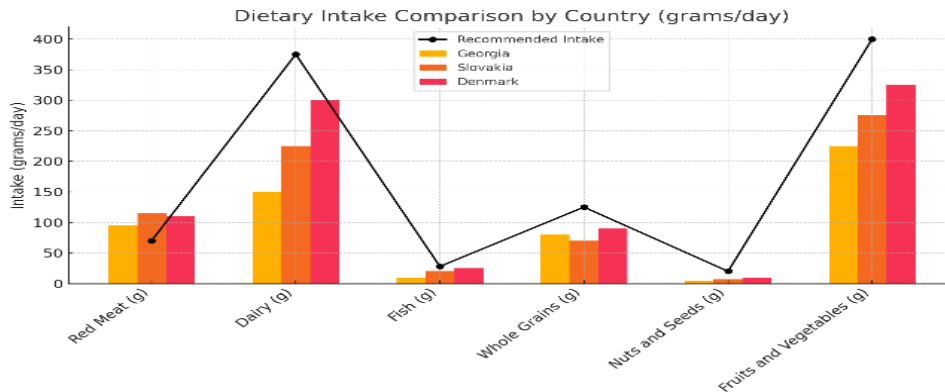


Table 2. Cross-Country Examination of Dietary Habits and Obesity Trends

Country	Key Findings	Obesity and Overweight Trend	References
Georgia	<ul style="list-style-type: none"> - 62% of urban youth consume fast food at least twice weekly (2022). - 28% of rural youth consume fast food at least twice weekly. - Processed snacks and sugary beverages account for 35% of daily caloric intake. - Traditional diets emphasize vegetables, beans, and grains. 	Upward trend in obesity and overweight percentages.	National Center for Disease Control and Public Health (NCDC), 2022 WHO European Regional Obesity Report 2022
Turkey	<ul style="list-style-type: none"> - 78% of youth (aged 15–29) consume fast food at least three times weekly, increasing to 85% in urban areas. - Sugary beverages make up 20% of total caloric intake. - Traditional beverages like ayran are being replaced. - Micronutrient deficiencies noted due to skipping home-cooked meals. 	Upward trend in obesity and overweight percentages.	Turkish Ministry of Health, 2022 Hacettepe University Study, 2019 WHO European Regional Obesity Report 2022

Slovakia	<ul style="list-style-type: none"> - 72% of Slovak youth consume fast food and sugary drinks multiple times per week. - Concerns raised about long-term health impacts due to significant dietary shifts. 	Upward trend in obesity and overweight percentages.	Nutritional Science in Central Europe Study, 2022 WHO European Regional Obesity Report 2022
Denmark	<ul style="list-style-type: none"> - 68% of Danish youth consume fast food at least twice weekly. - Sugary beverages contribute 18% of daily caloric intake. - Fast food habits are replacing Nordic dietary traditions, especially in urban areas. 	Upward trend in obesity and overweight percentages.	Danish Health Authority Report, 2022 WHO European Regional Obesity Report 2022

Physical activity

The table compares physical activity levels in Georgia, Slovakia, Denmark, and Turkey based on the WHO's Global Status Report on Physical Activity (2022). Key highlights include: Denmark leads with 78% of adults meeting WHO activity guidelines, attributed to robust infrastructure and a cultural focus on active commuting like cycling and walking. Inactivity prevalence is lowest at 22%. Slovakia shows 66% of adults meeting guidelines, with notable policies on green spaces and school-based programs. However, urbanization and sedentary lifestyles pose challenges, leading to 34% inactivity. Georgia has 60% of adults meeting activity guidelines, hindered by a lack of infrastructure in urban areas and socioeconomic barriers in rural regions. Inactivity stands at 40%. Turkey has the lowest compliance, with only 55% of adults meeting guidelines. Cultural norms, limited infrastructure, and a significant gender gap contribute to 45% inactivity. The findings emphasize the importance of targeted public health interventions and infrastructure investments to increase physical activity levels, especially in Turkey and Georgia, while highlighting Denmark's success as a model [12,13,14,15,16]

Table 3. comparative summary of physical activity levels in Georgia, Slovakia, Denmark, and Turkey based on WHO's Global Status Report on Physical Activity (2022) and country-specific factsheets:

Country	Adults Meeting WHO Guidelines (%)	Physical Inactivity Prevalence (%)	Notable Challenges
Georgia	60%	40%	Limited infrastructure in urban areas; socioeconomic barriers in rural regions.
Slovakia	66%	34%	Urbanization and sedentary lifestyles among working-age adults.
Denmark	78%	22%	Seasonal variation; high reliance on cycling infrastructure.
Turkey	55%	45%	Cultural norms and limited infrastructure; gender gap in activity levels.

A study in the *Caucasus Journal of Health Sciences and Public Health* connects inactivity to rising rates of obesity and overweight individuals, which significantly elevate the risks of chronic diseases, including diabetes and cardiovascular disorders. Youth in Turkey face concerning levels of physical inactivity. According to a report by the Turkish Ministry of Health, approximately 71.9% of adolescents fail to participate in regular exercise. This trend poses long-term risks to public health and underscores the importance of targeted interventions for this age group [17]

Among university students, a study published in the *Slovak Journal of Sport Science* (2022) assessed activity levels using the International Physical Activity Questionnaire Short Form (IPAQ-SF). While the research highlighted variability in activity patterns, it lacked detailed statistics on the proportion of students who did not meet recommended activity guidelines, leaving gaps in understanding inactivity trends in this population.

The study conducted by Gavora and Kubicová (2023) sheds light on the gender disparity in physical activity levels among Slovak adolescents who are not involved in athletic activities. Research generally indicates that 70–80% of boys engage in moderate-to-vigorous physical activity, while only 40–50% of girls meet the recommended activity levels. This highlights a significant gap between genders. These findings align with global trends and are likely reflected in the results of this study as well [18].

Denmark is an example of higher adherence to physical activity recommendations compared to many other countries. The COVID-19 pandemic also influenced activity levels, with a study

documenting positive changes in moderate-to-vigorous physical activity (MVPA) post-lockdown, particularly for couples. However, weight fluctuations were reported, with an average gain of 3.0 kg and a loss of 3.5 kg for some individuals during the lockdown period. Research conducted in 2023 provided additional insights into daily physical activity among Danish adults aged 18–80 years. On average, participants took 6,095 steps daily, spent 3.7 hours standing, 1.4 hours walking, and 7.0 hours in sedentary activities [Table 4].

Table 4. Physical Activity and Obesity Trends in Four Countries

Country	Key Findings	Overweight/Obesity Trends	References
Denmark	78% of adults meet WHO guidelines. Inactivity prevalence is 22%. Strong cycling/walking culture and policies.	Weight changes during COVID lockdown (+3.0 kg/-3.5 kg). Lower obesity rates due to active commuting culture.	WHO 2022; Danish study (2023): COVID impacts on weight and daily activity levels.
Slovakia	66% meet WHO guidelines. Gender gap: 70–80% of boys vs. 40–50% of girls meet activity levels.	Urbanization and sedentary trends contribute to moderate obesity rates. Green spaces and school programs help.	WHO 2022; Gavora & Kubicová (2023); Slovak Journal (2022): Gender disparities and variable student activity.
Georgia	60% of adults meet WHO guidelines. Lack of infrastructure and rural socioeconomic barriers limit activity.	Rising obesity and diabetes rates linked to inactivity. Cardiovascular disease risk is significant.	WHO 2022; Caucasus Journal: Inactivity and chronic disease correlations.
Turkey	55% meet WHO guidelines. Youth inactivity at 71.9%. Significant gender disparities.	High obesity rates, especially in youth and women, linked to inactivity and cultural barriers.	WHO 2022; Turkish Ministry: Youth inactivity; Caucasus Journal: Obesity and inactivity trends.

Socio-Economic factors

This study analyzed obesity trends in Turkey (2008–2016), revealing higher rates among women, low-income, and low-education groups [20,21] Obesity prevalence rose from 16.2% to 22%, emphasizing the need for targeted strategies addressing socio-economic disparities in health. Limited access to fresh fruits and vegetables, exacerbated by inadequate infrastructure, forces

rural populations to rely on calorie-dense, nutrient-poor foods. Regarding access to fresh fruits and vegetables, Turkey is a significant producer, ranking fourth in world vegetable production and sixth in fruit production. However, disparities exist in the distribution and availability of these products, particularly in rural areas. The concentration of production in specific regions, such as Antalya, Mersin, and Hatay, poses a risk for consistent access across the country. Addressing these disparities is crucial for combating the rising prevalence of obesity linked to socio-economic factors. Educational attainment also plays a role. A 2021 report by the Turkish Ministry of Health highlighted that individuals with higher education levels are significantly more likely to maintain healthier diets. This disparity underlines the importance of improving food affordability and access, particularly in rural and underprivileged communities. The study "Socioeconomic factors affecting the probability of obesity: evidence from a nationwide survey in Turkey" (2023) explores how socioeconomic factors influence obesity rates using data from the 2016 Turkey Health Survey, which included 23,606 respondents. The analysis utilized a generalized ordered logit model to account for heterogeneity in responses. Key findings include that Higher incomes were associated with an increased risk of obesity. Having social security insurance was positively correlated with obesity rates [20,21]

Georgia faces similar challenges, with socio-economic factors shaping the prevalence of overweight and obesity. According to the National Center for Disease Control and Public Health (NCDC, 2022), 41% of low-income households reported difficulties affording fresh produce, while 65% relied on high-calorie, low-nutrient foods [22].

Educational inequalities further compound the problem. A 2023 study published in the *Caucasus Journal of Public Health* found that individuals with higher education were 40% more likely to adopt healthier eating habits. This underscores the need for targeted educational campaigns and subsidies to promote healthier food choices [22,23]

In Slovakia, socio-economic inequalities are particularly evident among adolescents. A longitudinal study conducted in 2020 found that children from families with lower parental education were 25% more likely to be overweight or obese compared to those from higher-education households. These trends are exacerbated by the increasing availability of processed foods, often consumed by low-income families due to their affordability.

The HBSC Study (2022), which surveyed over 10,000 adolescents, further highlighted that obesity rates are significantly higher in families with low socio-economic status. The study also found that parental education and occupation strongly influence dietary choices and physical activity levels [24,25]

Denmark, despite its robust social welfare system, faces socio-economic disparities in obesity. According to a study spanning from 1987 to 2021, obesity prevalence increased from 6.1% to 18.4%, with the steepest increases among low-income and low-education groups. Individuals with primary education were 14% more likely to be obese than those with tertiary education, highlighting a widening disparity. Additionally, the consumption of calorie-dense, nutrient-poor

foods remains higher among low-income groups. While national campaigns promote healthy eating, these efforts have not sufficiently reached socio-economically disadvantaged populations [26,27].

Conclusion:

Across all four nations, addressing socio-economic inequalities, encouraging traditional dietary habits, and improving access to opportunities for physical activity are crucial steps in combating obesity. This study underscores the urgency of implementing culturally sensitive and targeted policies to handle obesity and reduce its long-term health impacts.

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