

Dental health in international comparison

Methodology

This study aimed to identify the European citizens with the healthiest teeth. Selected countries were examined for various factors that determine dental health, including lifestyle choices and government investments. The results were standardised and ranked to give an overall comparative result.

Country selection

The study covered all Member States of the European Union - except Cyprus, Luxembourg and the Czech Republic - the United Kingdom and Switzerland. For the Czech Republic, Cyprus and Luxembourg, the necessary data was not available to allow for a fair comparison of these countries.

Areas of investigation and factors

The areas of investigation and associated factors were selected for their relevance to dental health and completeness of data.

Area of investigation 1: Dental Health

The majority of people have their full set of adult teeth by the age of 12. The health of permanent adult teeth in young people and adolescents determines their dental health in later life. The DMFT index was therefore selected as the main indicator of dental health in each country. The DMFT index describes the average number of teeth that have been decayed, lost (missing) or filled-in at the age of 12. The results for this factor were taken from the [Oral Health Country/Area Profile Project by the University of Malmö on behalf of the World Health Organization](#).

Area of Investigation 2: Dental Facilities

The distribution of dentists and institutions with dental staff contributes significantly to general dental health.

Dentists per 100,000 inhabitants

Adequate dental care is only possible with enough practising dentists. The total number of practising dentists in a country was taken from the [Oral Health Country/Area Profile Project by the University of Malmö on behalf of the World Health Organization](#). For better comparability,

the value was calculated to one per 100,000 inhabitants using population data. The population data were taken from the [Eurostat](#) database and the [population report](#) of the Swiss Federal Statistical Office.

Dental Schools

The number of dental schools in each country was taken from the [Oral Health Country/Area Profile Project by the University of Malmö on behalf of the World Health Organization](#).

Area of investigation 3: Negative Influences on Dental Health

Alcohol consumption, smoking, increased sugar consumption and a lack of fluoride have a negative effect on dental health.

Alcohol consumption

Alcohol contains particularly high levels of sugar and acids that attack tooth enamel. The average annual alcohol consumption of a person aged 15 years and over is recorded in litres per capita. This data was taken from the article ["Alcohol Consumption" by Hannah Ritchie and Max Roser \(2020\)](#).

Smoking

Tobacco and cigarettes are carcinogenic. Smoking often leads to teeth discolouration and an increased risk of cancer. The information on the percentage of persons aged 15 and over who smoke tobacco was taken from the article ["Smoking" by Hannah Ritchie and Max Roser \(2020\)](#).

Sugar consumption

A diet rich in sugar not only has a negative effect on the general well-being but also has a long-term effect on the condition of the teeth. The annual average per capita consumption of sugar in kilograms was taken from the [Oral Health Country/Area Profile Project by the University of Malmö on behalf of the World Health Organization](#).

Fluoridation measures

Measures that contribute to the optimal supply of fluoride include toothpaste, salt, and milk that contain fluoride, and the availability of fluoride tablets and treatments. In some countries, drinking water is already enriched with fluoride to provide better natural protection against tooth decay. The data for this factor was taken from the [EU Manual of Dental Practice des Council of European Dentists](#).

Scoring

The data was ranked by standardising each factor on a scale of 0 to 100, with 0 the lowest score and 100 the highest.

The following normalisation formula was applied to calculate each score per country:

$$x_{new} = \frac{x - x_{min}}{x_{max} - x_{min}}$$

The factors within each cluster were also summed to give an overall cluster score. An average of the scores for each cluster was then calculated to give a final score and ranking. High scores equated to a high position in the overall ranking. The higher a country is in the ranking, the better the overall dental health in that country, with 1 the highest-ranking, and 26 the lowest.

This research was completed on the 06.03.2020.