

## EVOLUTIONARY TRENDS IN ORAL HEALTH: REVIEW

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### ABSTRACT

Oral diseases are widespread around the world, posing a major challenge to public health and policy makers. Although improvements in oral health have been found in some countries, this is only an isolated trend. Even in countries with visible phenomena of declining prevalence of oral diseases, there are disadvantaged population groups that are marginalized from an economic, medical and social perspective.

The international organizations recommend making greater efforts and potentially different approaches depending on the specifics of each health system.

Oral health condition is an important component of general health, both in children and adolescents and in adults [1].

Although progress has been made in the field of population oral health worldwide, there are still countries and communities where oral health is a public health issue [2].

Over the last 30 years, in Europe there has been a declining trend in the prevalence of tooth decay in children and adults living in Western Europe, as well as the percentage of people without natural teeth.

This is mainly due to the improvement of living conditions, the use of fluoridation methods, especially fluoride toothpaste, and the improvement of oral hygiene skills. Another explanation is that in Western countries there are national programs for the prevention of oral diseases, as opposed to those in Eastern Europe [3].

According to the statistical data provided by WHO/*Data and statistics/Regional Office for Europe*, we have the following picture of oral pathology [4]:

- In Europe, 20-90% of 6-year-olds have tooth decay.
- At the age of 12, an average of 0.5-3.5 teeth are affected by tooth decay and almost 100% of adults experience carious disease.
- Severe periodontid disease is found in 5-20% of middle-aged adults (aged 35-44) in Europe and up to 40% of older people (aged 65-74).
- About 30% of Europeans between the ages of 65 and 74 do not have natural teeth.
- In Europe, the incidence of oral cancer varies from 5 to 10 cases per 100,000 people.
- The prevalence of oral cancer is relatively higher in men, the elderly and people with low education and low income.

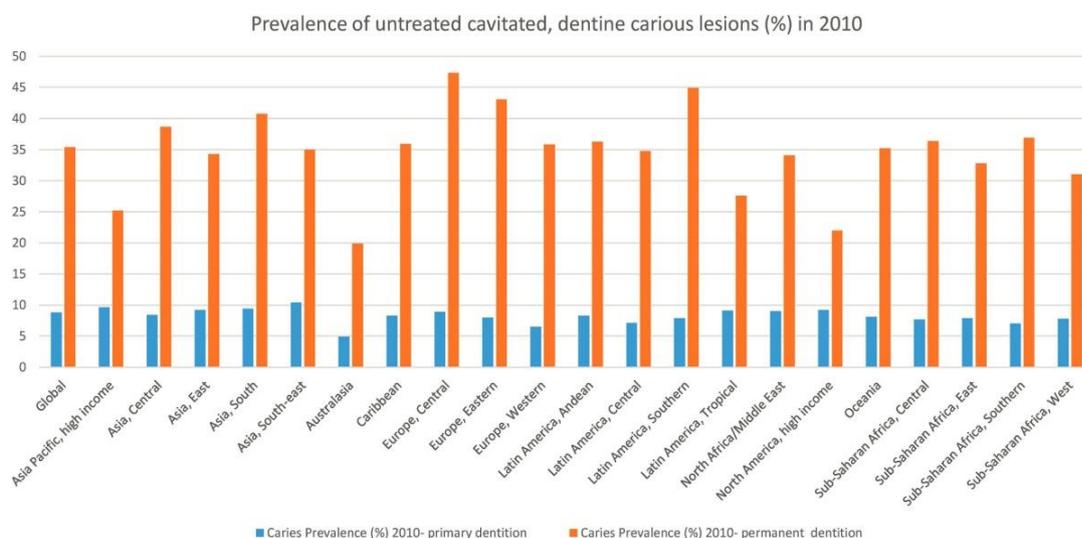
### Trends in dental health

WHO/ *Global Burden of Disease Study 2017*, estimated that diseases of the tooth decay affect almost 3.5 million people worldwide, with permanent tooth decay being the most common condition. Worldwide, it estimated that 2.3 million people suffer from permanent tooth decay and almost 530 million children suffer from temporary tooth decay.

In the European Region as a whole, the average number of teeth affected by tooth decay varies greatly between different European countries, and tooth decay is the most common non-communicable disease [5].

In terms of prevalence, the lowest rate of dental caries in children aged 6 years is 17%, while the highest is 94%. In children aged 12 years the DMFT/dmft index decreased from 3.0 in 1990 to 1.8 in 2015 [5].

In a study by Kassebaum, the authors concluded that untreated carious lesions on permanent teeth remained the most common health condition in the world in 2010, affecting 2.4 billion people and that untreated carious lesions on temporary teeth is the 10th most common health condition, affecting 621 million children worldwide (Figure 1) [6].



**Figure 1.**Prevalence of carious lesions (%) by region in 2010 (Kassebaum, 2014).

In Europe, declining prevalence of tooth decay began in the 1960s and 1970s in the Scandinavian countries and Switzerland, followed by the United Kingdom, Ireland and the Netherlands. In these countries fluoride became available to the general population forty years ago through the fluoridation of drinking water, toothpaste,

salts and through special school programs. Despite this, water fluoridation was interrupted in the Netherlands (in 1970), and the decline in the prevalence of tooth decay continued there and in other countries. [6].

**Total edentulism** is still a major problem in this age group, although in some industrialized countries there is a decrease in its prevalence. The main cause of tooth loss remains tooth decay, although some studies show that after the age of 45, parodontitis plays a major role. Numerous studies show that in some countries oral status has improved by reducing the number of people completely edentulous. This situation is encountered, for example, in the United Kingdom, where the prevalence of

edentulism has been observed, from 85% in 1962 to 57% in 1992. In Europe, the percentage of people over the age of 65 completely edentulous varies considerably: from 12% in Switzerland, 13% in Sweden, 25% in Germany, 57% in the United Kingdom, to 70% in Portugal [7].

Despite all these positive aspects, found only in certain regions, however in most countries, the treatment needs for this age group are represented by prosthesis (table 1).

**Table 1** Prevalence of complete edentulous in people over 65 years of age  
(OMS, 2005)

COUNTRY	YEAR	% TOTAL EDENTATION
Albania	1996	69
Saudi Arabia	1992	31-46
Austria	1992	14.9
Bulgaria	2000	56
Czech Republic	2002	33.6
China	1995-96	10.5
Canada	1999	58
Denmark	2000-01	17.9
France	1995	16.3
Germany	1997	25
Greece	1998	25
Great Britain	1997	57
Italy	1997	12.8
Norway	2000	40
Poland	1991	35.5
Portugal	2000	70
Switzerland	2000	12
Sweden	1996-1997	13
USA	1988-1991	26

### Trends in periodontal health

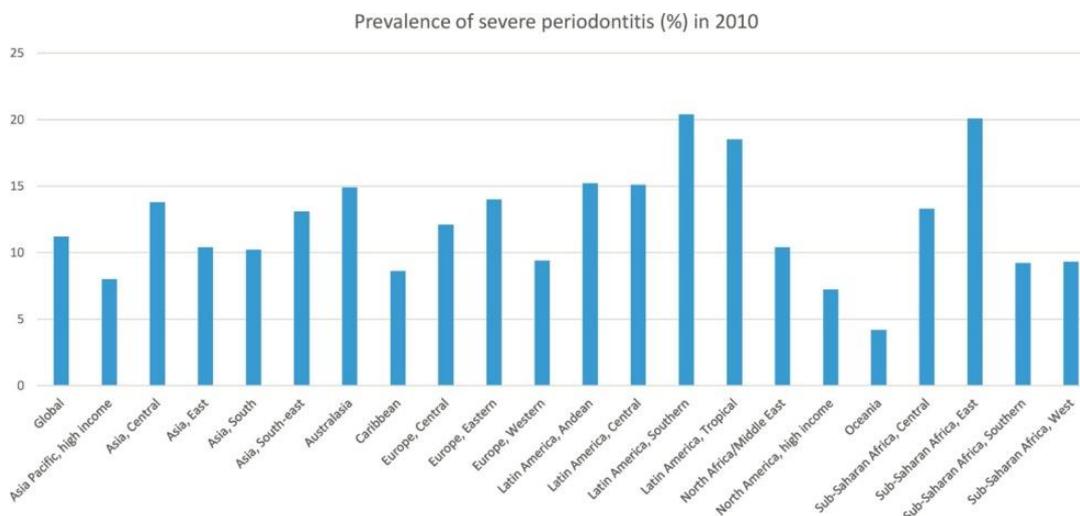
Periodontitis affects the adult population differently, depending on regional characteristics, risk factors, habits and unhealthy behaviors. In fact, it is known that this condition has an important social character [8]. Its appearance and spread over time is related to age, sex, occupation,

standard of living, education, frequency of regular check-ups at the office, factors that greatly influence the risk predictors of periodontal disease [9].

Frencken and colleagues conducted a systematic study in 2017 on the global epidemiology of tooth decay and periodontitis for various age groups, which was conducted by gathering information

from specialized articles published in 187

countries between 1990 and 2010. [10,11].



**Figure 2** Prevalence of severe periodontitis (%) by region in 2010 (Kassebaum,2014).

### Trends of oral diseases in Romania

The information regarding tooth decay in Romania is quite poor, and the studied groups are small in number and insufficiently representative for the total population.

Studies conducted by Rusu in 1986 showed a CAO-D value of 3.1 in 12-year-olds, while in 1992, Petersen and colleagues found a higher CAO-D indicator value of 4 [12,13].

A study conducted in Iasi County established a prevalence of tooth decay of 66.7% in adults aged between 35 and 44 years, and a value of 10.33 was recorded for the CAO-D indicator [14]. The highest level of damage was observed in those from rural areas or those with a low socio-economic level.

In 2013, in a study conducted in the counties of Moldova, the prevalence of tooth decay was 70.2% in urban areas, respectively 72.7% in rural areas. In the same study, the prevalence of total edentulism in the elderly

population in the counties of Moldova in 2013 was 3% for the urban population, respectively 3.5% for the rural area [15].

The "European Platform for Better Oral Health" report (2012) showed that Romania is placed on the last ranks on the status of oral health and the budget allocated from public funds for preventive and therapeutic procedures on oral diseases [16].

Regarding the situation of the N-E region of Romania, physicians draw attention to the high degree of oral damage due to tooth decay, periodontitis, edentulism, above the average recorded in the Romanian population. It is very probable that the low socio-economic level of the population of some counties in the N-E Romania region contribute to this state of affairs, knowing that the socio-economic income is strongly related to the general and oral health. [17]

The World Health Organization's goals for children's oral health for 2025 remain a

major desideratum, which cannot be achieved by many developing and poor

countries (Table 2) [18].

**Table 2** WHO Objectives for the years 2000, 2010 and 2025

Years	2000	2010	2025
5-6	50% caries free	90% caries free	90% caries free
12	DMFT max 3	DMFT max 2	DMFT max 1
18-20	85% complete dentate	75% caries free 75% without periodontal disease	90% caries free 90% without periodontal disease
75% of the young population to have sufficient knowledge on the etiology and prevention of oro-dental diseases, to establish a diagnosis on their own as well as the preventive attitude			
Computerized evidence of epidemiological data			

**CONCLUSIONS:**

Globally, it is necessary to conduct extensive epidemiological studies on oral health, especially in disadvantaged regions, the results of which support the development of preventive and therapeutic strategies adapted to the characteristics of the population in the geographical area investigated.

At present, in Romania there are no national population studies that include a complete picture of oral health, being important to design appropriate epidemiological tools, such as questionnaires, clinical and paraclinical examination methods to collect information on socioeconomic, educational and motivational factors that allow correlation with oral health condition.

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