

Oral health

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Key facts

- Oral diseases are the most common noncommunicable diseases (NCDs) and affect people throughout their lifetime, causing pain, discomfort, disfigurement and even death.
 - The Global Burden of Disease Study 2016 estimated that oral diseases affected half of the world's population (3.58 billion people) with dental caries (tooth decay) in permanent teeth being the most prevalent condition assessed.
 - Severe periodontal (gum) disease, which may result in tooth loss, was estimated to be the 11th most prevalent disease globally.
 - Severe tooth loss and edentulism (no natural tooth) was one of the leading ten causes of Years Lived with Disability (YLD) in some high-income countries
 - In some Asian-Pacific countries, the incidence of oral cancer (cancer of the lip and oral cavity) is within the top 3 of all cancers.
 - Dental treatment is costly, averaging 5% of total health expenditure and 20% of out-of-pocket health expenditure in most high-income countries.
 - The oral health care demands are beyond the capacities of the health care systems in most low-and middle-income countries (LMICs).
 - Oral health inequalities exist among and between different population groups around the world and through the entire life course. Social determinants have a strong impact on oral health.
 - Behavioural risk factors for oral diseases are shared with other major NCDs, such as an unhealthy diet high in free sugars, tobacco use and harmful use of alcohol.
 - Poor oral hygiene and inadequate exposure to fluoride have negative effects on oral health.
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Oral health is a key indicator of overall health, wellbeing and quality of life. WHO defines oral health as “a state of being free from chronic mouth and facial pain, oral and throat cancer, oral infection and sores, periodontal (gum) disease, tooth decay, tooth loss, and other diseases and

disorders that limit an individual's capacity in biting, chewing, smiling, speaking, and psychosocial wellbeing.”¹

Oral diseases and conditions

Seven oral diseases and conditions account for most of the oral disease burden. They include dental caries (tooth decay), periodontal (gum) diseases, oral cancers, oral manifestations of HIV, oro-dental trauma, cleft lip and palate, and noma. Almost all diseases and conditions are either largely preventable or can be treated in their early stages.

The *Global Burden of Disease Study 2016* estimated that oral diseases affected at least 3.58 billion people worldwide, with caries of the permanent teeth being the most prevalent of all conditions assessed.² Globally, it is estimated that 2.4 billion people suffer from caries of permanent teeth and 486 million children suffer from caries of primary teeth.²

In most LMICs, with increasing urbanization and changes in living conditions, the prevalence of oral diseases continues to increase notably due to inadequate exposure to fluoride and poor access to primary oral health care services. Heavy marketing of sugars, tobacco and alcohol leads to growing consumption of unhealthy products.

Dental caries (tooth decay)

Dental caries results when microbial biofilm (plaque) formed on the tooth surface converts the free sugars contained in foods and drinks into acids that dissolve tooth enamel and dentine over time. With continued high intake of free sugars, inadequate exposure to fluoride and without regular microbial biofilm removable, tooth structures are destroyed, resulting in development of cavities and pain, impacts on oral-health-related quality of life, and, in the advanced stage, tooth loss and systemic infection.

Periodontal (gum) disease

Periodontal disease affects the tissues that both surround and support the tooth. This often presents as bleeding or swollen gums (gingivitis), pain and sometimes as bad breath. In its more severe form, loss of gum attachment to the tooth and supporting bone causes “pockets” and loosening of teeth (periodontitis). Severe periodontal disease, which may result in tooth loss, was the 11th most prevalent disease globally in 2016.² The main causes of periodontal disease are poor oral hygiene and tobacco use.³

Tooth loss

Dental caries and periodontal diseases are major causes of tooth loss. Severe tooth loss and edentulism (no natural teeth remaining) are widespread and particularly seen among older people. Severe tooth loss and edentulism was one of the leading ten causes of Years Lived with Disability (YLD) in some high income countries due to their aging populations.²

Oral cancer

Oral cancer includes cancers of lip and all subsites of the oral cavity, and oropharynx. The age-adjusted incidence of oral cancer (cancers of the lip and oral cavity) in the world is estimated at 4 cases per 100 000 people. However, there is wide variation across the globe: from no recorded cases to around 20 cases per 100 000 people.⁴ Oral cancer is more common in men, in older people, and varies strongly by socio-economic condition.

In some Asian-Pacific countries, the incidence of oral cancer ranks among the three top cancers.⁴ Tobacco, alcohol and areca nut (betel quid) use are among the leading causes of oral cancer.^{5,6} In regions like North America and Europe, “high risk” human papillomavirus infections are responsible for a growing percentages of oro-pharyngeal cancers among young people.^{6,7}

Oral manifestations of HIV infection

Oral manifestations occur in 30–80% of people with HIV,⁸ with considerable variations depending on the situations such as affordability of standard antiretroviral therapy (ART).

Oral manifestations include fungal, bacterial or viral infections of which oral candidiasis is the most common and often the first symptom early in the course of the disease. Oral HIV lesions cause pain, discomfort, dry mouth, eating restrictions and are a constant source of opportunistic infection.

Early detection of HIV-related oral lesions can be used to diagnose HIV infection, monitor the disease’s progression, predict immune status and result in timely therapeutic intervention. The treatment and management of oral HIV lesions can considerably improve oral health, quality of life and wellbeing.⁹

Oro-dental trauma

Oro-dental trauma is an impact injury to the teeth and/or other hard or soft tissues within and around the mouth and oral cavity.¹⁰ The world prevalence of traumatic dental injuries in either dentition (primary and permanent) is around 20%.¹¹ Oro-dental trauma can be caused by oral factors (e.g. increased overjet); environmental factors (for example, unsafe playgrounds or schools); risk-taking behaviour; and violence.¹² Treatment is costly and lengthy and sometimes can even lead to tooth loss, resulting in complications for facial and psychological development and quality of life.

Noma

Noma is a necrotizing disease that affects children between the ages of 2 and 6 years suffering from malnutrition, affected by infectious disease, living in extreme poverty and with weakened immune systems.

Noma is mostly prevalent in sub-Saharan Africa, but rare cases are reported in Latin America and Asia. Noma starts as a soft tissue lesion (a sore) of the gums, inside the mouth. The initial gum lesion then develops into an ulcerative, necrotizing gingivitis that progresses rapidly, destroying the soft tissues and further progressing to involve the hard tissues and skin of the face.

In 1998, WHO estimated that there were 140 000 new cases of noma annually.¹³ Without treatment, noma is fatal in 90% of cases. Where noma is detected at an early stage, its progression can be rapidly halted, through basic hygiene, antibiotics and nutritional rehabilitation. Such early detection helps to prevent suffering, disability and death. Survivors suffer from severe facial disfigurement, have difficulty speaking and eating, face social stigma, and require complex surgery and rehabilitation.¹³

Cleft lip and palate

Clefts of the lip and palate are heterogeneous disorders that affect the lips and oral cavity and occur either alone (70%) or as part of a syndrome, affecting more than 1 in 1000 newborns worldwide. Although genetic predisposition is an important factor for congenital anomalies, other modifiable risk factors such as poor maternal nutrition, tobacco consumption, alcohol and obesity during pregnancy also play a role.¹⁴ In low-income settings, there is a high mortality rate in the neonatal period.¹⁵ If lip and palate clefts are properly treated by surgery, complete rehabilitation is possible.

NCDs and common risk factors

Most oral diseases and conditions share modifiable risk factors (such as tobacco use, alcohol consumption and unhealthy diets high in free sugars) common to the four leading NCDs (cardiovascular diseases, cancer, chronic respiratory diseases and diabetes).

In addition, it is reported that diabetes mellitus is linked in a reciprocal way with the development and progression of periodontitis.^{16,17}

Moreover, there is a causal link between high sugars consumption and diabetes, obesity and dental caries.

Oral health inequalities

Oral health inequalities are caused by a broad range of interacting biological, socio-behavioural, psychosocial, societal and political factors that create ‘the conditions in which people are born, grow, live, work, and age’ – the so-called social determinants.¹⁸

Oral diseases disproportionately affect the poor and socially-disadvantaged members of society. There is a very strong and consistent association between socioeconomic status (income, occupation and educational level) and the prevalence and severity of oral diseases. This association exists across the life course from early childhood to older age, and across populations in high, middle and low-income countries. Oral health inequalities are therefore considered as differences in oral health that are avoidable, and deemed both unfair and unjust in modern society.¹⁹

Prevention

The burden of oral diseases and other NCDs can be reduced through public health interventions by addressing common risk factors.

These include:

- **promoting a well-balanced diet:**
 - **low in free sugars to prevent development of dental caries, premature tooth loss and other diet-related NCDs;**
 - **with adequate fruit and vegetable intake, which may have a protective role in oral cancer prevention;**
- **reducing smoking, the use of smokeless tobacco including chewing of areca nuts, and alcohol consumption to reduce the risk of oral cancers, periodontal disease and tooth loss; and**
- **encouraging use of protective equipment when doing sports and travelling in motor vehicles to reduce the risk of facial injuries.**

In addition to the NCDs' common risk factors, inadequate exposure to fluoride and a number of social determinants of health should be addressed to prevent oral diseases and reduce oral health inequalities.

Dental caries can be largely prevented by maintaining a constant low level of fluoride in the oral cavity. Optimal fluoride can be obtained from different sources such as fluoridated drinking water, salt, milk and toothpaste. Twice-daily tooth brushing with fluoride-containing toothpaste (1000 to 1500 ppm) should be encouraged.²⁰ Long-term exposure to an optimal level of fluoride results in substantially lower incidence and prevalence of tooth decay across all ages.²¹

Oral health inequalities must be reduced by tackling the broader social determinants through a range of complementary downstream, midstream and integrated upstream policies such as: water fluoridation; regulation of the marketing and promotion of sugary foods to children and taxes on sugar-sweetened beverages. Moreover, promoting healthy settings such as healthy cities, healthy workplaces and health promoting schools is critical to building comprehensive supporting environments to promote oral health.

Health system and Universal Health Coverage (UHC)

Unequal distribution of oral health professionals and lack of appropriate health facilities in most countries means that access to primary oral health services is often low. Overall coverage for oral health service in adults with expressed needs ranges from 35% in low-income countries, 60% in lower-middle-income countries, 75% in upper-middle income countries to 82% in high-income countries.²² The oral health service demands are beyond the capacities of the health systems in most LMICs. This results in a high proportion of oral diseases being untreated and leads to significant unmet patient needs. Moreover, even in high income settings, dental treatment is costly, averaging 5% of total health expenditure²³ and 20% of out-of-pocket health expenditure.²⁴

WHO defines UHC as “all individuals and communities receive the health services they need without suffering financial hardship.”²⁵ Based on this definition, three areas are critical to achieving Universal Health Coverage:

1. **integrated essential oral health services;**
2. **oral health workforce geared towards population health needs and the social determinants of health;**
3. **financial protection and expanding fiscal space for oral health care.**²⁶

WHO response

Public health solutions for oral diseases are most effective when they are integrated with those for other NCDs and with national public health programmes. The WHO Global Oral Health Programme aligns its work with the Global NCD agenda and the Shanghai Declaration on promoting health in the 2030 Agenda for Sustainable Development.²⁷

The WHO Global Oral Health Programme assists Member States by:

- developing and disseminating robust advocacy materials that reinforce the commitment to oral health among policymakers and other stakeholders at a global level;
- building capacity and providing technical assistance to countries to support a life-course approach and population-based strategies related to reducing sugars consumption, controlling tobacco use and promoting fluoride-containing toothpaste and others vehicles of fluoride, with a focus on disadvantaged and poor population groups;
- supporting to strengthen oral health systems based on a people-centred health care approach as a part of Primary Health Care (PHC);
- reinforcing oral health information systems and integrated surveillance with other NCDs to demonstrate the scale and the impact of the problem and to monitor progress achieved in countries.

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