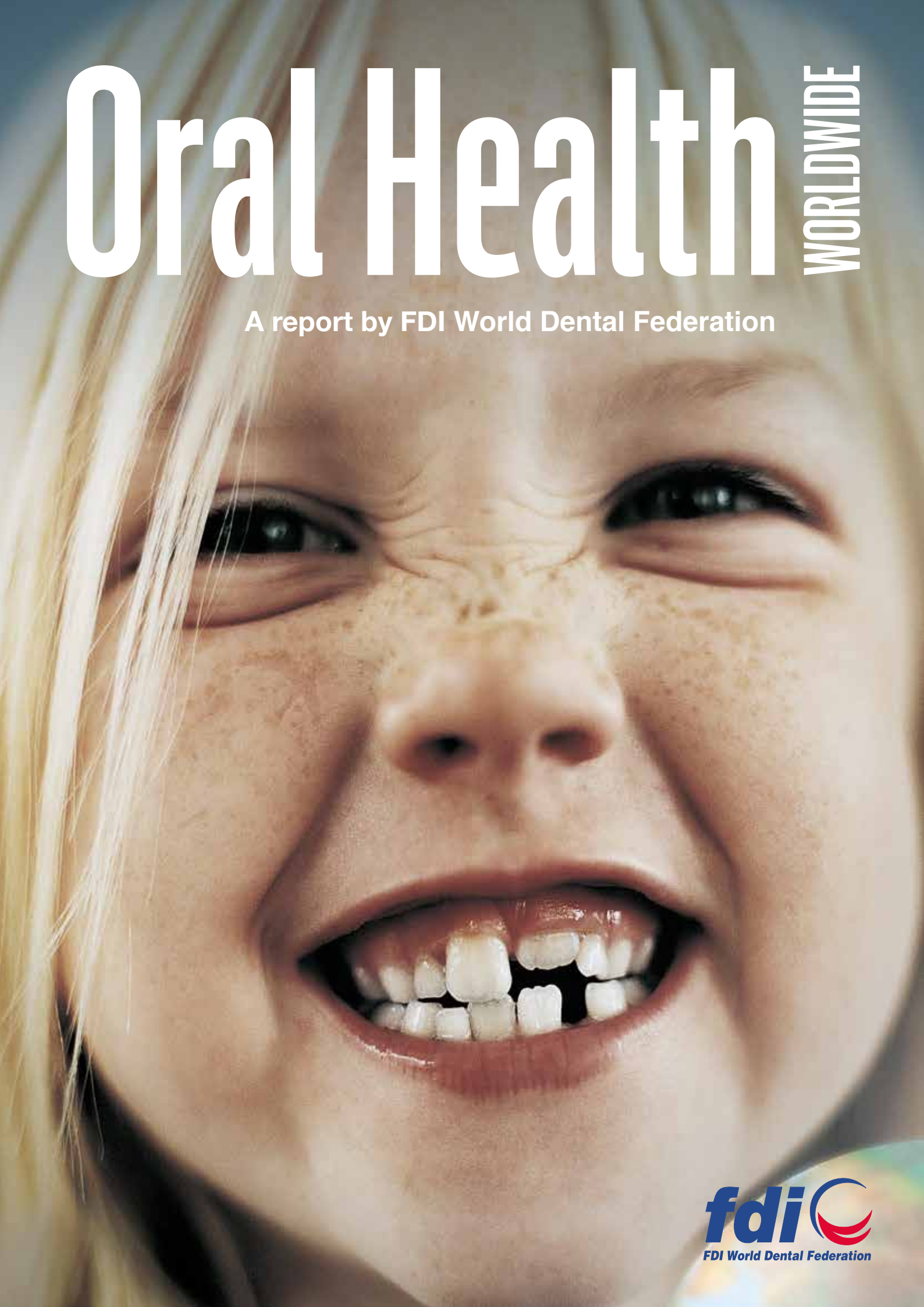
Oral Health WORLDWIDE

A report by FDI World Dental Federation



FDI World Dental Federation

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"Oral diseases are caused or influenced by the same preventable risk factors as over 100 noncommunicable diseases"

STARK FACTS ABOUT ORAL HEALTH

ORAL CONDITIONS ARE THE MOST COMMON CONDITIONS OF HUMANKIND

As part of the recent international collaborative Global Burden of Disease Study (1990-2010), untreated tooth decay was identified as the most common condition among 291 diseases studied.

WORLDWIDE, BETWEEN 60 AND 90% OF SCHOOLCHILDREN HAVE DENTAL CARIES

Most of the disease remains untreated. Dental decay causes pain, results in missed days in school and work and usually requires costly treatment, which is often not affordable or available. The good news: the most common chronic disease of humankind is largely preventable through simple and cost-effective measures.

ORAL CANCER IS THE WORLD'S 8TH MOST COMMON CANCER AND THE 3RD MOST COMMON CANCER IN SOUTHEAST ASIA

Low-income countries carry the biggest burden as oral cancer is twice as prevalent there compared to most high-income countries. The risk of oral cancer is 15 times higher when tobacco use and alcohol consumption are combined and these two risk factors are estimated to account for causing about 90% of oral cancers.

50% OF GUM DISEASE IS CAUSED BY TOBACCO USE

Half of all lifetime smokers will die from a smoking-related disease.

90% OF CHILDREN WITH NOMA DO NOT RECEIVE CARE AND HAVE LOW CHANCES OF SURVIVAL

Noma is a disfiguring gangrenous disease mostly affecting young children in Sub-Saharan Africa. The disease is a result of extreme poverty, poor hygiene, malnutrition as well as compromised immunity and other factors. Simple, but early treatment can save lives!

25% OF ALL GENETIC BIRTH DEFECTS ARE CRANIOFACIAL MALFORMATIONS

The most common congenital malformations include cleft lip and palate. With complex surgery and long-term rehabilitation normal growth and function can be restored.

30% OF PEOPLE WORLDWIDE AGED 65–74 YEARS HAVE LOST ALL THEIR NATURAL TEETH

Living without teeth severely affects quality of life and can lead to unhealthy diets, malnutrition and social isolation.

MILLIONS OF WORK AND SCHOOL DAYS LOST

In 1996, oral diseases resulted in 2.4 million days of work and 1.6 million days of school lost in the United States alone. In Thailand, dental problems caused 1,900 hours of school lost per 1,000 children in 2008. Thus, oral diseases are major causes of economic and social loss for individuals and countries.

THE BURDEN OF ORAL DISEASES IS HIGHER AMONG POOR AND DISADVANTAGED POPULATION GROUPS

All oral diseases are linked to socio-economic status – the poor and disadvantaged suffer from a higher burden while at the same time having less access to appropriate care.

ORAL DISEASES SHARE RISK FACTORS WITH OTHER NONCOMMUNICABLE DISEASES

Oral diseases are caused or influenced by the same preventable risk factors as over 100 noncommunicable diseases (NCDs), of which the most prevalent are heart disease, diabetes, cancer and chronic respiratory disease. Tackling such common risk factors as tobacco use, high sugar intake, and lack of physical activity will reduce the burden of a number of high-impact diseases.

BRUSHING TEETH TWICE DAILY USING FLUORIDE TOOTHPASTE HELPS TO PREVENT TOOTH DECAY AND GUM DISEASE

Regular toothbrushing, at least in the morning after breakfast and in the evening before going to sleep, using fluoride toothpaste is highly effective in preventing tooth decay and gum disease. Other simple measures also contribute to maintaining good oral health; eating a healthy diet low in sugar, avoiding sugary snacks between meals, and regular dental check-ups help to prevent oral diseases.

INTRODUCTION

Oral diseases are among the most common diseases of humankind, yet they receive little attention in many countries with weak health care systems. Despite a high social and economic burden from oral diseases they are considered a neglected area of international health. World Oral Health Day provides an opportunity to increase awareness of the poor state of oral health in many places and offers an occasion to highlight realistic and cost-effective solutions for health care systems and individuals alike.

WHAT IS ORAL HEALTH?

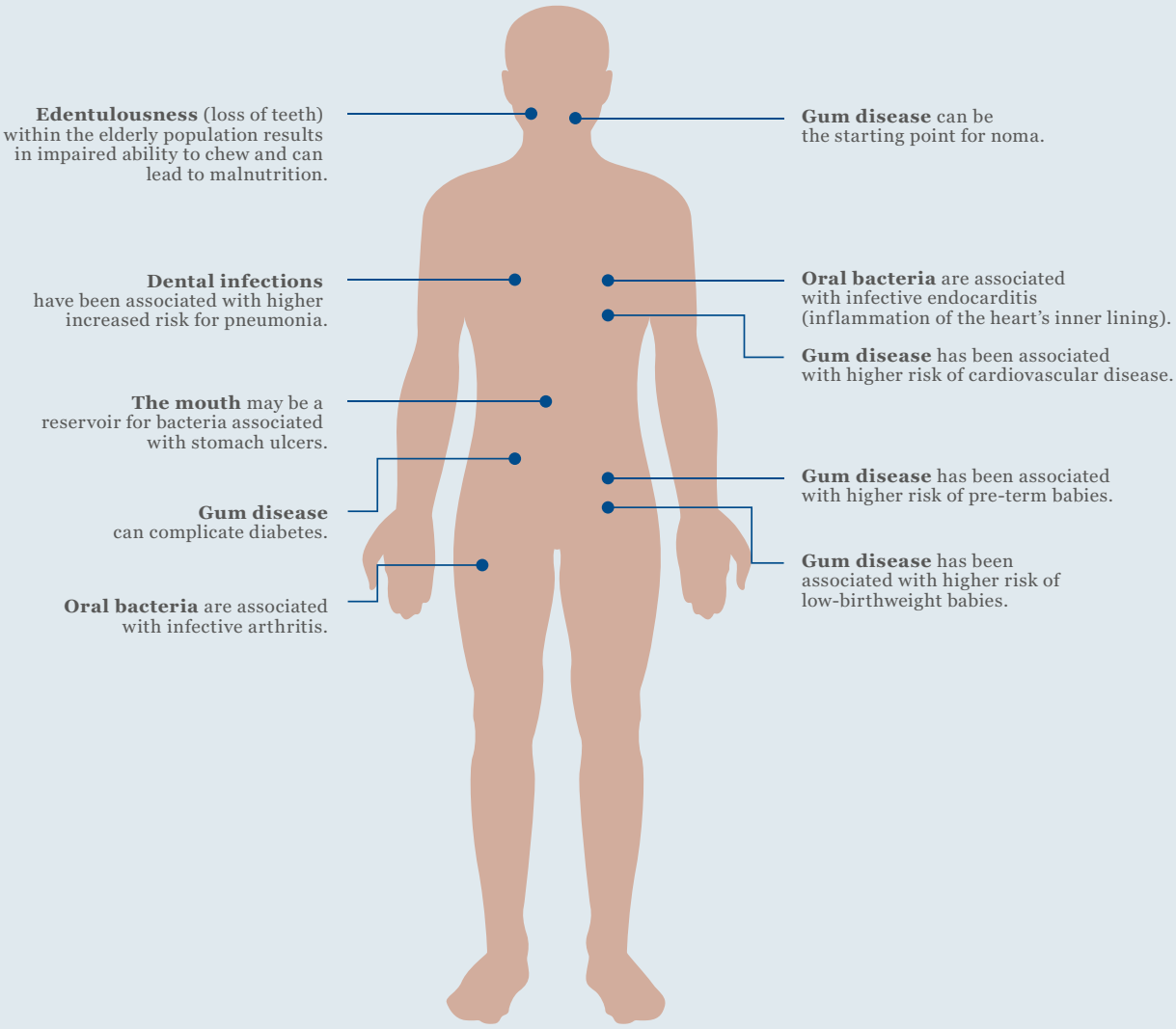
Oral health is more than dental health. It includes healthy gums, hard and soft palate, linings of the mouth and throat, tongue, lips, salivary glands, chewing muscles, and upper and lower jaws. Good oral health enables us to speak, smile, kiss, breathe, whistle, smell, taste, drink, eat, bite, chew, swallow and express feelings. The oral cavity plays a central role for intake of basic nutrition and protection against microbial infections.

The World Health Organization (WHO) defines oral health as "a state of being free from 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 health is a human right, an integral part of general health and essential for overall wellbeing [2].

WHAT IS THE CONNECTION BETWEEN ORAL HEALTH AND GENERAL HEALTH?

Oral health and general health have close linkages. On the one hand, oral health can be compromised by a number of chronic and infectious diseases which show symptoms in the mouth. On the other hand, oral diseases can lead to infection, inflammation, and other serious impacts on overall health. Thus, maintaining good oral health is crucial to sustain general health and vice versa.

IMPACTS OF ORAL CONDITIONS ON GENERAL HEALTH



**THE MOUTH CAN REFLECT THE STATE OF GENERAL HEALTH.
CONVERSELY, ORAL DISEASES CAN HAVE AN IMPACT ON GENERAL HEALTH.**

***Figure 1:
Impacts of oral conditions on general health.*** *[3]*

IMPACTS OF SYSTEMIC DISEASE ON ORAL HEALTH

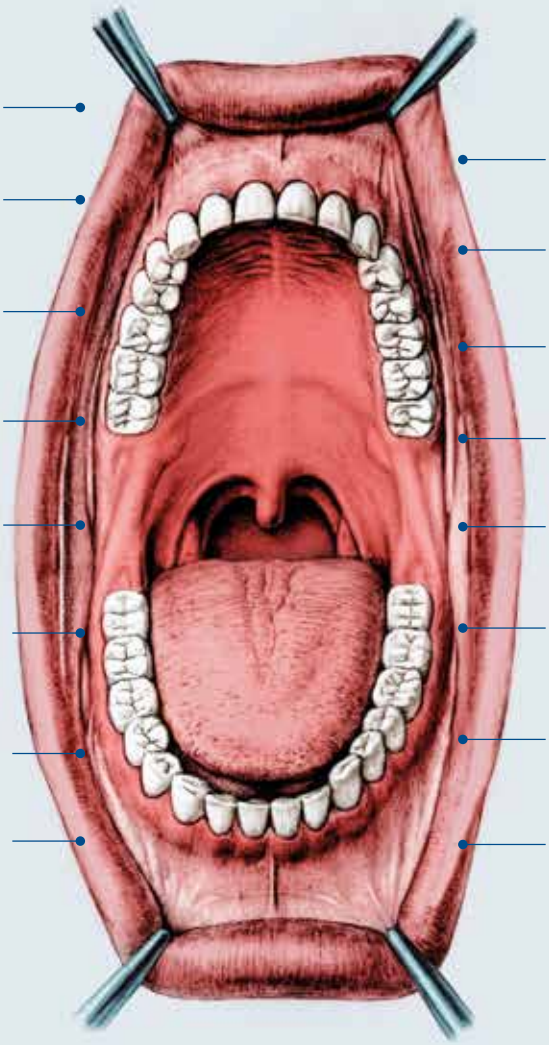


Figure 2:
Impacts of systemic disease on oral health. *[3]*

RISK FACTORS FOR IMPAIRED HEALTH

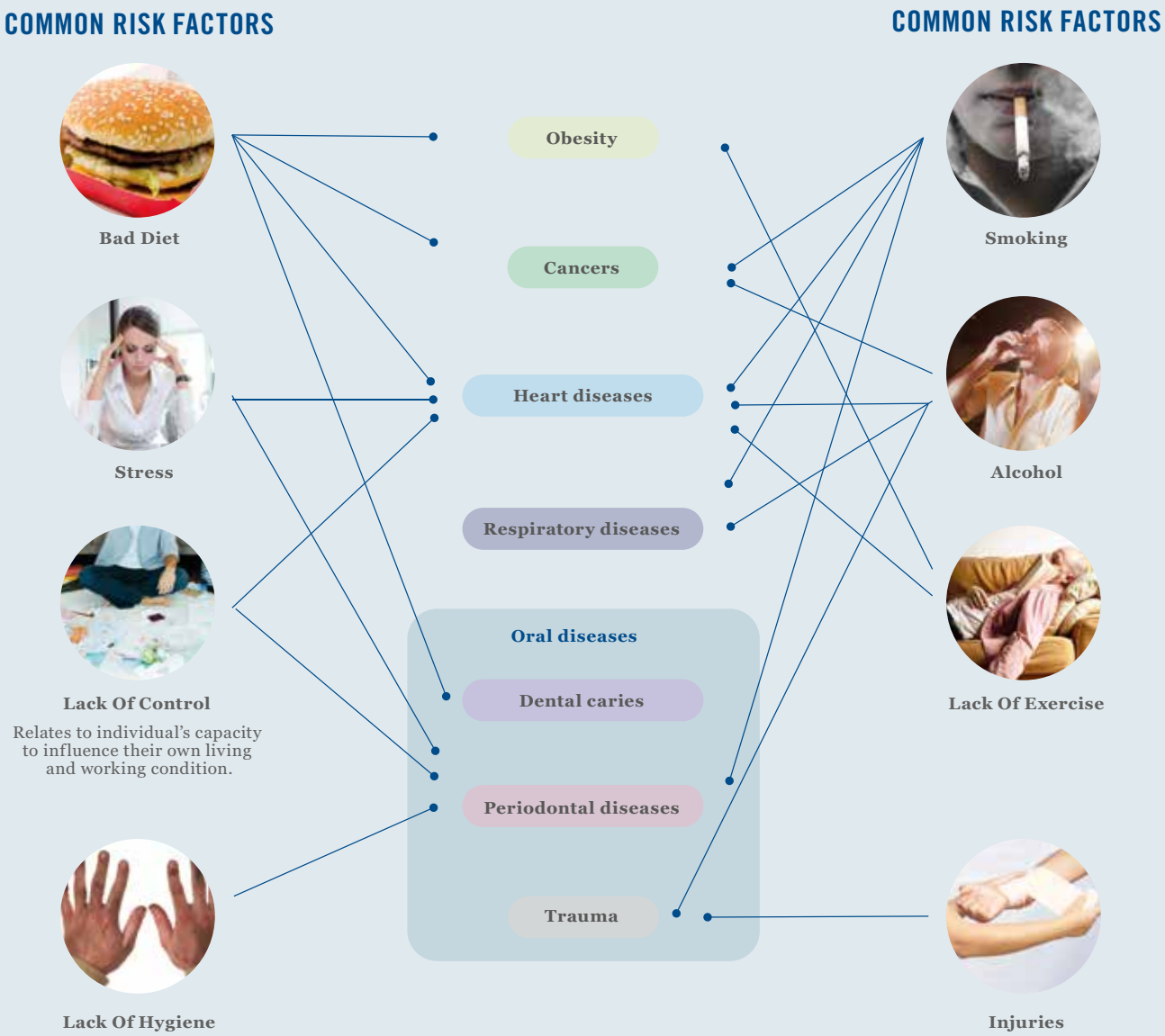


Figure 3. Common risk factor approach to oral health. *[3]*

WHAT ARE THE RISK FACTORS FOR ORAL DISEASES?

Oral diseases are related to a number of risk factors and determinants that are common to many other chronic diseases, particularly cardiovascular diseases, cancer, chronic respiratory diseases and diabetes. Major risk factors include tobacco use, high sugar and alcohol consumption, as well as broader determinants such as socio-economic status which influence oral and general health. Thus, a common approach to reduce and prevent these risks will not only improve oral health but will also have a vast impact on the global burden of NCDs, health systems and general development progress.

Sugar intake

There is a direct link between the quantity and frequency of sugar consumption and increased risk for tooth decay, type 2 diabetes and obesity. Bacteria in the mouth metabolise sugars into lactic acid which causes decay of teeth through demineralization over time.

TOBACCO USE

Tobacco use in all forms - be it smoked, sucked, chewed or snuffed - is dangerous for overall health and a risk factor for oral diseases. It can lead to oral cancers, especially in combination with high alcohol consumption, and periodontal diseases. Smoking during pregnancy can also lead to congenital defects such as cleft lip and palate in children with long-term effects either from treatment or deformation. It affects quality of life in many ways including bad breath (halitosis) and staining, decreased wound-healing, suppressed immune response to oral infection, promotion of gum disease in diabetics and has an adverse affect on the heart and lungs. It is estimated that over half the cases of gum disease in USA are caused by smoking [4] and that 90% of cancers of the oral cavity are caused by tobacco use [5].

Low socio-economic status

As with general health, oral health deteriorates with decreasing socio-economic status. The disparities are visible as people along a decreasing social gradient visit the dentist less often, have fewer fillings, more missing teeth, higher tobacco consumption, higher rates of oral cancer, higher rates of caries and untreated decay, and higher rates of gum disease than those with higher socio-economic status. These differences are seen both within and between countries.

EFFECTS OF TOBACCO USE ON ORAL HEALTH. [3]

- *Oral cancer.*
- *Smoker's palate (lesion at roof of mouth).*
- *Periodontal diseases.*
- *Premature tooth loss.*
- *Gingivitis.*
- *Staining.*
- *Bad breath (halitosis).*
- *Loss of taste and smell.*

WHAT IS THE BURDEN OF ORAL DISEASES?

Dental caries is the most common childhood disease and NCD worldwide. Between 60 and 90% of children are affected but the majority of dental decay remains untreated due to inappropriate, unaffordable or unavailable oral health care services. Generally, rates are highest in middle-income countries where sugar consumption is increasing while access to prevention and care is low.

Untreated tooth decay was the most prevalent disease condition among 291 diseases studied in the Global Burden of Disease Study (1990-2010). The burden of oral conditions was found to be comparable to many NCDs, "including maternal conditions, mild hypertensive heart disease, schizophrenia or the totality of haemoglobinopathies and haemolytic anemias" [6].

Estimations show that about 5-20% of populations are affected by severe periodontal (gum) diseases [3]. Periodontal diseases are the leading cause for tooth loss.

Oral cancer is among the 8th most common cancers in the world and ranks as the third most common in South Asia. Men show higher incidence and mortality rates than women [7]. About 400,000 new cases of oral cancer were diagnosed in 2002. This number is expected to rise as the main risk factors, tobacco use and alcohol consumption, are increasing.

The WHO estimates about 140,000 people to be affected by noma, concentrating in the geographic regions of Sub-Saharan Africa, Asia and South America. Noma is a disfiguring gangrene that rapidly spreads and destroys facial soft tissue and bone. It is primarily associated with poverty, poor hygiene, malnutrition and compromised immunity. Mainly children up to the age of six years suffer from this disease and if left untreated it is fatal in 80% of cases.

About 50% of HIV-positive people are affected by oral fungal, bacterial or viral infections resulting in a growing burden for fragile oral health care systems. Oral diseases related to HIV/AIDS can include oral lesions such as candidiasis and herpetic ulcers leading to pain, discomfort and a constant source of opportunistic infections. Two-thirds of the world's HIV-positive children and adults live in Sub-Saharan Africa [3], where access to oral health care is severely limited.

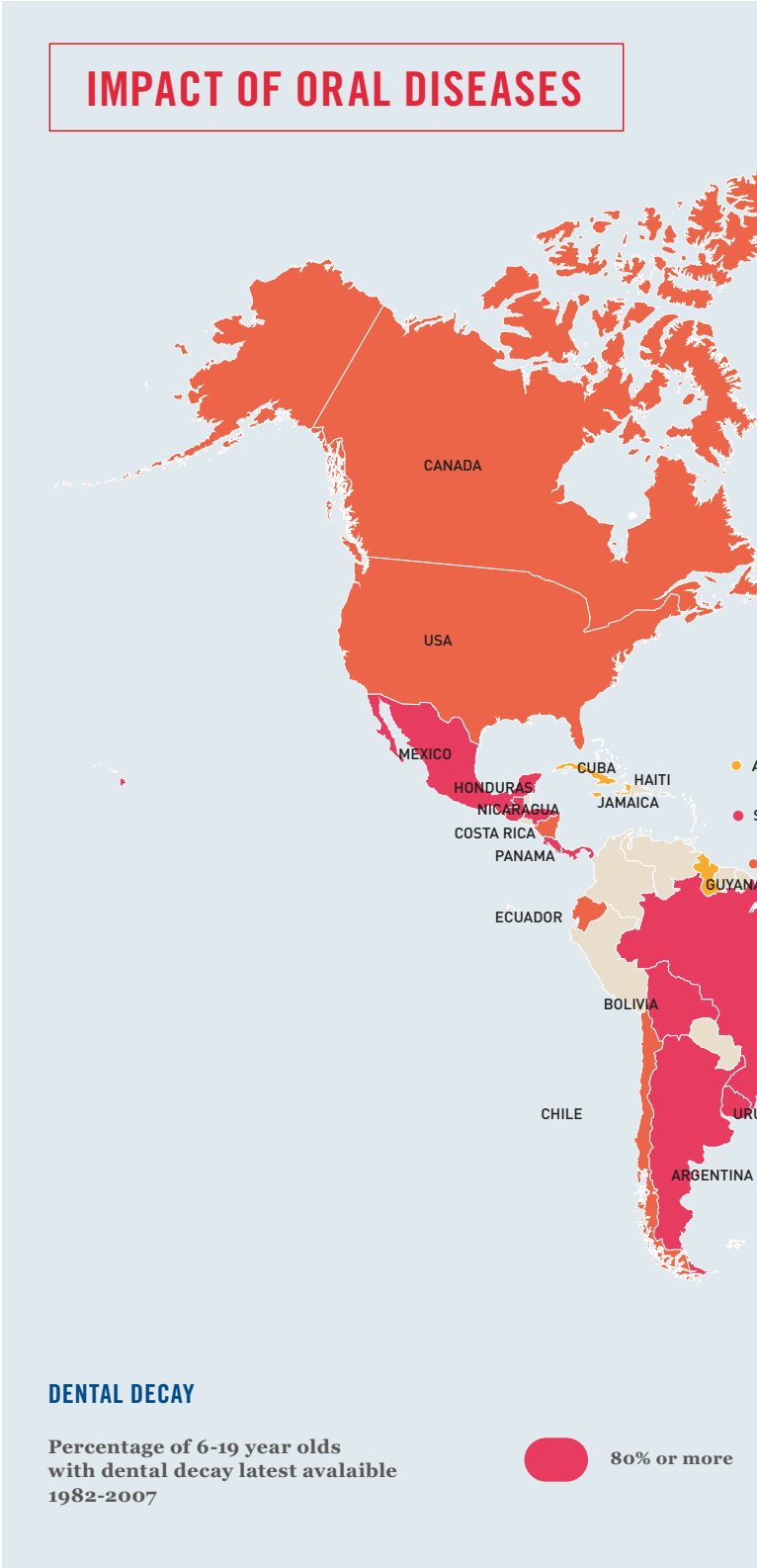
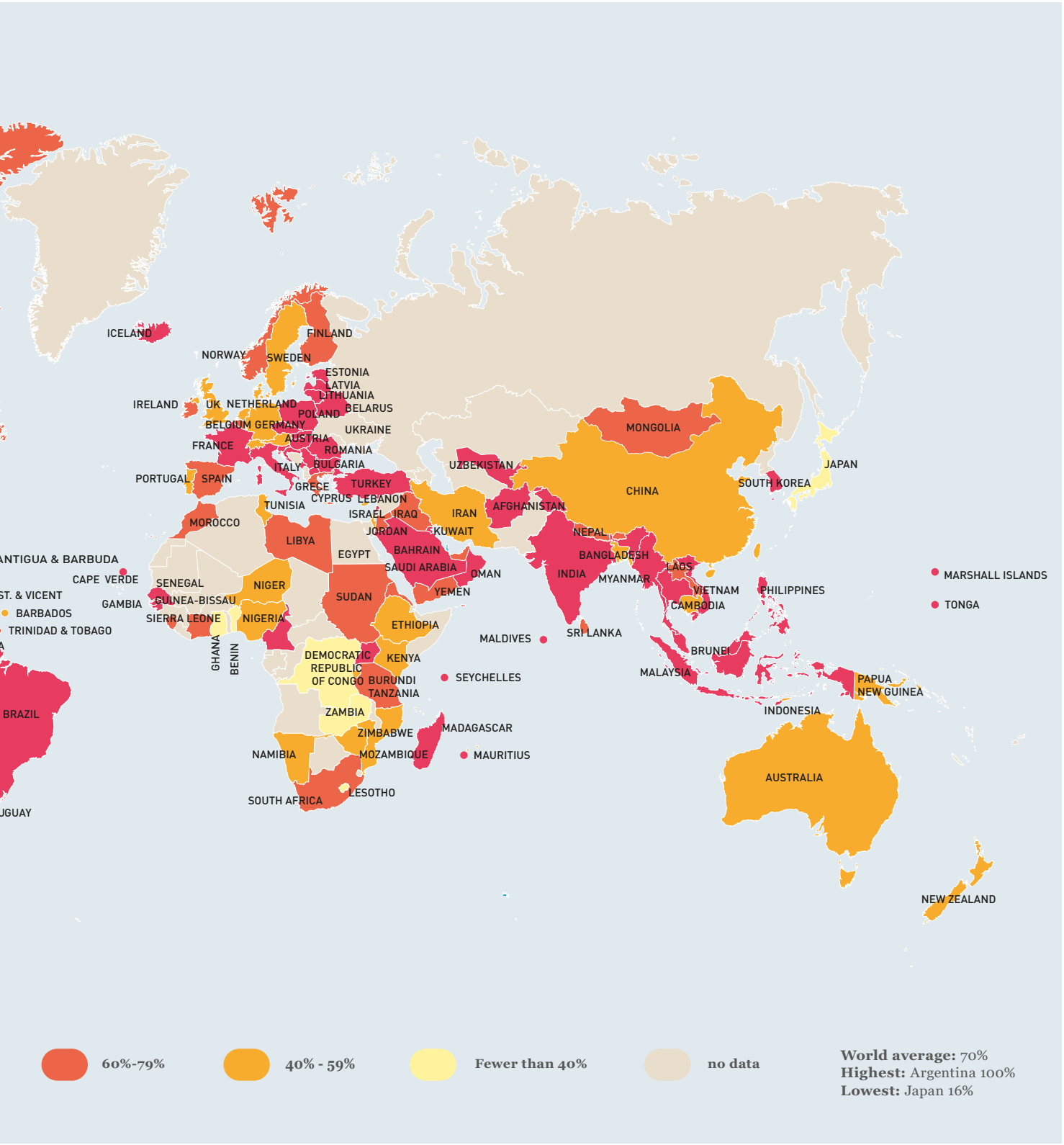


Figure 4: World map of percentage of 6-19-year-olds with dental decay *[3]*



Oral clefts such as cleft lip and palate are among the most widely known and common congenital anomalies and occur in 1 of every about 500 to 700 births globally, varying widely between geographic regions and ethnic groups being more common in Asian countries [8].

Trauma such as tooth chipping, fracture of the tooth or supporting bone and tooth loss or dislocation is mostly associated with sports and unsafe environments. Trauma to the craniofacial area, including the oral structures, is very common in traffic accidents and violence. These conditions are important public health problems as specialist treatment and rehabilitation are often required.

WHAT ARE THE ECONOMIC IMPACTS OF ORAL DISEASES?

Even though most oral diseases are preventable, almost everyone is likely to be affected during the lifetime. Oral diseases have a significant impact on the quality of life of individuals, their participation in society and economic productivity as well as on health systems, making oral diseases a significant public health concern.

Even though there is no comprehensive data on economic costs of oral diseases globally, the WHO estimates that they are the fourth most expensive condition to treat – if a curative approach is taken, rather than a focus on prevention. The expenditure on dental care as percentage of total health expenditure is often lower than 6% and can go as low as 0.5% in Mongolia compared to 8% in the United States (which spent more than US$ 100 billion on oral health care in 2009).

In addition to direct expenses for curative treatment, indirect costs caused by poor concentration and absence due to oral disease, result in millions of school and work hours to be lost annually across the world with negative long-term economic impact hampering individual and societal progress and development. In 1996, oral diseases resulted in 2.4 million days of work and 1.6 million days of school lost in the United States. In Thailand, 1,900 hours school were lost per 1,000 children in 2008 due to dental problems [3].

WHAT ARE THE INEQUALITIES AND DISPARITIES IN ORAL HEALTH?

In general, almost all functions of a healthy dentition can be restored with modern treatment methods. High-income countries have advanced oral health systems that offer preventive and curative services to patients. A decline in caries has been observed [5] as a result of public health measures including the effective use of fluorides, changing living conditions, lifestyles and improved self-care practices. However, advances in oral health science have not yet benefitted poor and disadvantaged populations worldwide. Widespread inequalities and disparities remain both within and between countries.

In low and middle-income countries, but also in a number of high-income countries, the treatment of oral diseases remains unaffordable or inaccessible for large segments of society.

Countries in economic transition are experiencing the highest rates of dental decay as rising incomes lead to increased risk exposure, such as unhealthy diets and tobacco consumption. At the same time the health system in these countries lacks the necessary infrastructure and population-wide preventive measures.

In low and middle-income countries, but also in a number of high-income countries, the treatment of oral diseases remains unaffordable or inaccessible for large segments of society. Oftentimes, the distribution of dentists is unbalanced with the majority located in urban areas serving more affluent populations, thus leaving rural areas and poor populations without access to oral health care. In many countries in Africa, Asia and Latin America, a shortage of oral health personnel limits the capacity of oral health care systems to provide even simple pain relief or emergency care. For instance in the African region, the dentist-to-population ratio is 1:150,000 or higher, whereas in industrialised countries there is one dentists per 5000 people or more. As a result, the majority of tooth decay is left untreated.

As with chronic diseases, the poor and disadvantaged are affected disproportionately. People in deprived communities, certain ethnic minorities, homeless people, housebound or disabled individuals, children and the elderly are often not sufficiently covered by oral health care. Impaired mobility, inadequate public transport, perceived or real cost of dental treatment and poor attitudes to oral health are further barriers to oral health care for many. Illness and poverty can have a reinforcing effect and lead to a vicious circle where poor populations have a higher risk of being affected by disease with less access to health care.

Increasing privatisation of oral health services in many countries as a result of reduced government spending is likely to decrease the accessibility and universality of oral health care and may increase inequalities.

WHY ARE ORAL DISEASES NEGLECTED INTERNATIONALLY?

Despite the magnitude of oral diseases and their systemic linkages with other illnesses, oral health is commonly neglected in the political development arena. This wide disconnection between the international health discourse and the area of global oral health is related to a set of complex underlying issues. Among these are the lack in defining and establishing the neglect of global oral health as a problem and the limited availability of comprehensive and reliable data on oral diseases on a global scale based on recognised indicators. In addition, insufficient alignment of actors in the field of global oral health is at the core of the problem which is also leading to a lack of concerted action and advocacy in the political arena [9].

Against this backdrop, the recent United Nations Political Declaration on Prevention and Control of Noncommunicable Diseases (NCDs) adopted by heads of state during a High-level Meeting of the UN General Assembly in New York in September 2011 was a big step forward since it recognised oral diseases as significant public health problems for the first time [10]. In article 19 of the Declaration, Member States recognize that "renal, oral and eye diseases pose a major health burden for many countries and that these diseases share common risk factors and can benefit from common responses to noncommunicable diseases" [11]. The Political Declaration thus integrates oral diseases into the international health discourse and underlines the need for governments and the international health community to strengthen their efforts to tackle NCDs including the oral disease burden by integrated and intersectoral approaches together with NCDs. This window of opportunity needs to be utilized to create momentum and constructive dialogue to improve oral health.

Renal, oral and eye diseases pose a major health burden for many countries and [...] these diseases share common risk factors and can benefit from common responses to noncommunicable diseases.

"Political Declaration on Prevention and Control of Noncommunicable Diseases, UN High-level Meeting of the UN General Assembly, Paragraph 19:"

HOW DOES ORAL HEALTH RELATE TO THE MILLENNIUM DEVELOPMENT GOALS?

Oral health and Millennium Development Goals (MDGs) are closely linked. The MDGs provide a conceptual framework for advocacy, funding opportunities and action which cut across sectors and professions. Improving oral health can contribute to achieving the MDGs, which aim at addressing global social and economic conditions by the year 2015:

WHAT IS THE RELATIONSHIP BETWEEN ORAL HEALTH AND…

…extreme poverty and hunger (MDG1)?

Pain and discomfort from cavities, toothlessness and malformation can affect the ability of an individual to chew and to obtain adequate nutrition, which, in turn, affects the immune response and the ability to fight disease. Income lost due to absence from work and reduced educational attainments because of dental problems and other diseases can be significant, and the cost (real or perceived) of dental care is a barrier to access for many.

…primary education (MDG2)?

Tooth decay is the most common childhood disease and the resulting toothache contributes to huge numbers of days missed from school. Children often bear pain resulting in loss of concentration, tiredness and poor performance at school.

…gender equality and the empowerment of women? (MDG3)?

The education of women will support progress in preventing oral diseases and ill-health in children as mothers oral health status is a determinant of child oral health. As women are often primary caretakers mothers can be more productive and have more time for other activities if children are healthy. Also, as women have longer life expectancy, good oral health throughout the entire lifespan becomes more important.

…child mortality (MDG4)?

Dental infection and harmful traditional practices as well as low-quality oral health care can lead to death. The gangrenous orofacial disease noma mainly affects children and is often fatal. The key risk factor for noma is poverty: the disease develops in conditions of malnutrition and growth retardation, unsafe drinking water, poor sanitary practices and infectious diseases such as measles, malaria, diarrhoea, pneumonia, tuberculosis and HIV/AIDS.

…maternal health (MDG5)?

Poor maternal oral health may result in low-birthweight babies and poor oral and general health in children. Improving the oral health of women will impact upon their general health and the health of their families.

…HIV/AIDS, malaria and other diseases (MDG6)?

About 40–50% of people with HIV have oral fungal, bacterial or viral infections which often present early in the course of the disease and these can serve as early indicators of HIV infection. Dry mouth due to decreased saliva production contributes to tooth decay. Cross-infection control is vital to avoid transmission of diseases during dental treatment.

Oral diseases share the same risk factors as many noncommunicable diseases and prevention will save lives.

…environmental sustainability (MDG7)?

Appropriate technology, effective infection control and safe disposal of medical waste all contribute to environmental sustainability. Proper sanitation facilities and clean water enables general health and oral health maintenance.

…a global partnership for development (MDG8)?

Partnerships promoting oral health among key stakeholders are pivotal. Access to essential medicines, basic oral care and prevention through fluoride will improve quality of life and reduce the burden of oral disease, especially in children within disadvantaged populations [12].

HOW CAN ORAL HEALTH BE IMPROVED?

Oral health can be improved with a number of strategies and efforts based on collaborative and intersectoral approaches. Most importantly, oral health needs to be integrated into approaches to improve general health and to prevent and control NCDs.

STRATEGIES FOR IMPROVING ORAL HEALTH ALSO INCLUDE BUT ARE NOT LIMITED TO THE FOLLOWING [13].

Prevention of oral disease and promotion of oral health

As curative treatments are neither a realistic nor a sustainable approach to address the burden of oral diseases, prevention of oral diseases and promotion of oral health must be at the core of national policies and programmes. This includes reducing risk factors of oral diseases and their associated determinants as well as strengthening awareness of healthy behaviours and health literacy.

Universal access to affordable and effective fluoride

Exposure to fluoride is the single most cost-effective measure to prevent tooth decay and improve oral health. Regular use of fluoride toothpaste is the most important way to ensure a good preventive effect.

Human resources for oral health and public oral health

The training of the oral health workforce needs to be strengthened and expanded to improve the quality and increase the number of oral health professionals. Emphasis needs to be put on the equal geographical distribution of oral health personnel within countries.

Integration of oral health care into Primary Health Care

Oral health care that relies on a technology-focused curative approach is unrealistic for many low and middle-income countries. To achieve equity in oral health care, essential oral health care measures need to be integrated in Primary Health Care including relief of pain, promotion of oral health and management of oral diseases and conditions.

Oral health information-surveillance, monitoring and evaluation

Global and national surveillance should be strengthened to identify risk factors and oral health needs as a basis for developing appropriate approaches and measures. Monitoring and evaluation are critical for ensuring the effectiveness and sustainability of interventions. Existing efforts should be strengthened and extended.

INTEGRATING ORAL HEALTH IN SCHOOL HEALTH - THE FIT FOR SCHOOL APPROACH

The Philippine Department of Education, supported by the German Development Cooperation (GIZ), the Philippine NGO Fit for School Inc. and other partners initiated the Essential Health Care Program (EHCP) in public elementary schools. The program is based on the Fit for School Approach and integrates three evidence-based prevention measures for the most prevalent childhood diseases: soil-transmitted intestinal worm infections, hygiene-related diseases such as diarrhea and respiratory infections, and rampant tooth decay.

The program implements three school health activities run by teachers:

- *Daily group hand washing with soap*
- *Daily group tooth brushing with fluoride toothpaste*
- *Biannual deworming according to WHO guidelines*

The EHCP is currently reaching about 3 million children in the Philippines, Cambodia, Indonesia and Lao PDR. Material costs average $0.50USD/ child/year. Affordability increases probability that this program can be integrated in the regular government budgets even in resource-poor countries, thus ensuring sustainability beyond initial start-up costs.

For more information:

http://tiny.cc/fitforschoolprogram

Funding and policies based on oral health priorities

Oral health policies and action plans need to be developed and maintained nationally and locally reflecting the particular oral health needs. Based on solid data from functioning surveillance and monitoring systems they need to be integrated in general health approaches and aimed at reducing inequalities and disparities. Basic and essential emergency care should be included in benefit packages of social health insurances to guarantee universal access for all.

School oral health

Schools and pre-schools are ideal settings to promote oral health: they reach children and young people at a receptive age and can help in developing lifelong healthy behaviours. Supportive school policies, the physical environment and skills-based health education are essential in maintaining oral health and the control of risk behaviours. Schools can also provide a platform for the provision of oral health care if resources allow.

Integration of oral health into public health programmes

National public health initiatives for the control and prevention of oral disease need to include oral health promotion and integrated disease-prevention strategies based on common risk-factor approaches [15]. Public health policies and health promotion play an important role to help individuals make healthy informed choices for preventing oral disease. Measures include but are not limited to the following:

IMPROVING AND PROTECTING ORAL HEALTH - KEY MESSAGES FOR PATIENTS. *[3]*

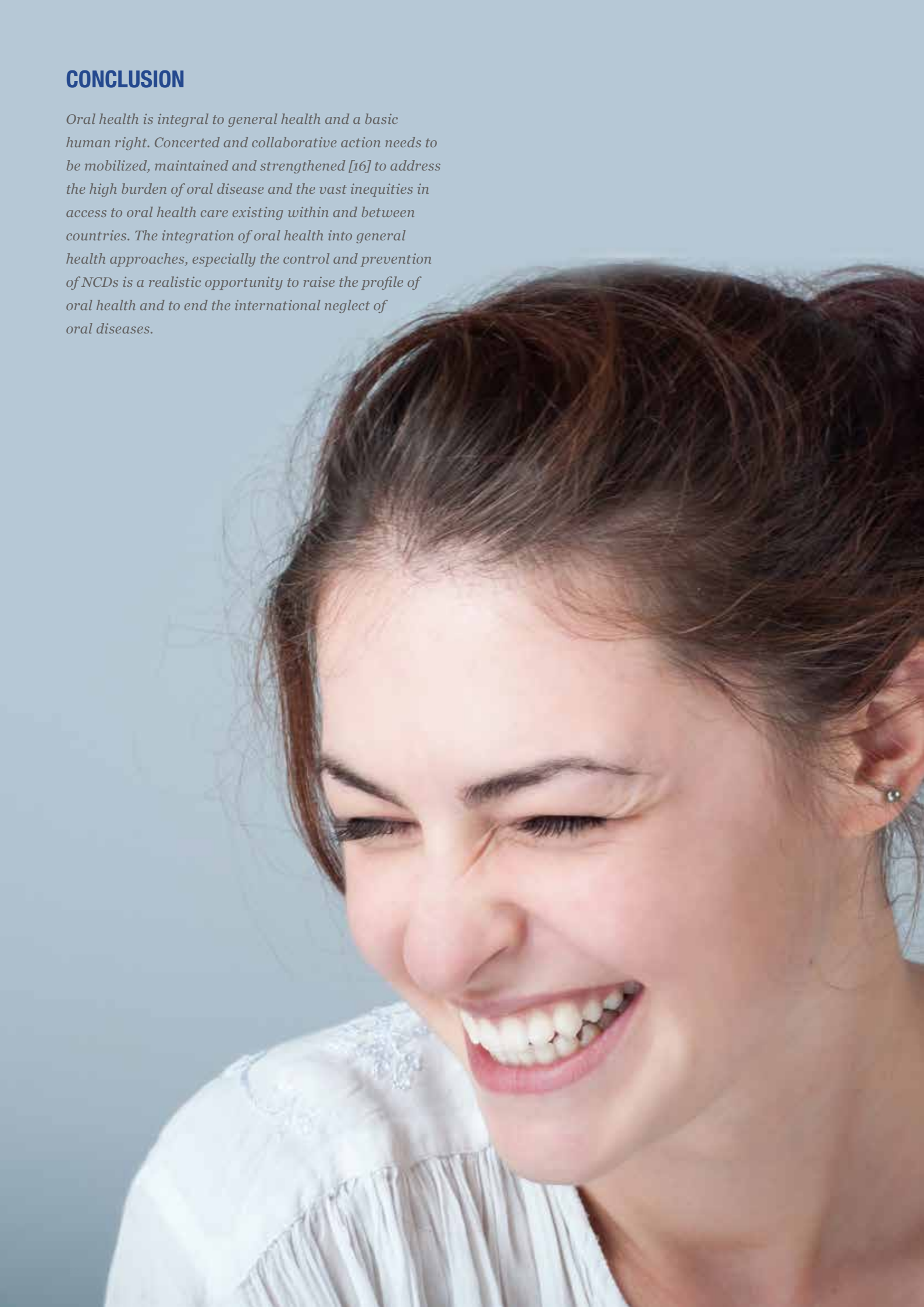
Adults, adolescents and children

- *Improve exposure to fluoride: brush teeth twice daily using fluoride toothpaste and use other sources of fluoride (i.e. from fluoridated salt, mouth rinse or water).*
- *Children should brush their teeth twice a day with a pea-sized amount of fluoride toothpaste.*
- *Enjoy healthy food and beverages and limit consumption and frequency of sugary food and drinks, especially between meals.*
- *Chew sugar-free gum after meals and snacks.*
- *Reduce or quit tobacco and alcohol use.*
- *Protect teeth by wearing a mouth guard and a helmet during contact and accident-prone sports and transportation.*
- *See a dentist or doctor for regular check-ups for oral diseases and signs of impaired general health.*
- *Be vigilant if you have pain, sores, patches or unusual bleeding in your mouth that lasts for two weeks or more – get advice from a dentist.*
- *Use sugar-free medicines where possible.*
- *Support and engage in community activities to promote oral health.*

Children should brush their teeth twice a day with a pea-sized amount of fluoride toothpaste

CONCLUSION

Oral health is integral to general health and a basic human right. Concerted and collaborative action needs to be mobilized, maintained and strengthened [16] to address the high burden of oral disease and the vast inequities in access to oral health care existing within and between countries. The integration of oral health into general health approaches, especially the control and prevention of NCDs is a realistic opportunity to raise the profile of oral health and to end the international neglect of oral diseases.



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