Oral health in the developing world

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Global Oral Health Programme
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Learning objectives

• To outline the burden of oral disease worldwide with a special emphasis on developing countries

• To identify the influence of major socio-behavioural risk factors

• To discuss major challenges and implications for health promotion
But first, some examples of good, and not so good, oral health

• The first slides illustrate a healthy mouth

• The remaining slides show examples of common oral problems related to the global burden of disease
Healthy teeth and mouth: Oral health means more than healthy teeth; the health of the gums, oral soft tissues, chewing muscles, the palate, tongue, lips and salivary glands are also important. Good oral health enables an individual to speak, eat and socialize without active disease, discomfort or embarrassment. It is integral to general health and well-being.
Dental caries or tooth decay of a 6-year-old child
Dental caries of an adult - upper jaw front teeth
Dental caries of an adult - lower jaw
Gingivitis - bleeding gums
Periodontitis - with pocketing
Dental erosion (1)
Dental erosion (2)
Dental abrasion
Cancer of the tongue
Leukoplakia of the tongue
Candidiasis of lips and gums
Human papilloma virus
Aphthous ulcers
Kaposi’s sarcoma
Salivary gland swelling
Girl affected by Noma
The burden of oral diseases and conditions

- Dental caries, periodontal diseases, tooth loss
- Tooth wear (erosion, abrasion)
- Oral cancer/ pre-cancer
- Mucosal infections and diseases
- HIV/AIDS
- Developmental disorders, craniofacial anomalies
- Injury and trauma
- Chronic and disabling conditions
- Noma (Cancrum Oris)

While tooth decay (dental caries) and gum disease (inflammatory periodontal disease), oral diseases that can lead to tooth loss, are among the most prevalent or widespread conditions in human populations, other significant oral health problems include trauma of teeth and jaws, dental erosion (tooth surface loss), developmental enamel defects, oral mucosal lesions, oral cancer HIV/AIDS related oral disease and Noma (a disease caused by malnutrition). Several oral diseases are linked to non-communicable chronic diseases or conditions that share common risk factors, such as diabetes, obesity, cancer, cardiovascular disease. Similarly, general diseases often have oral manifestations (e.g. diabetes and HIV/AIDS).
Despite general improvements in oral health in the past few decades, oral disease remains a global problem, particularly among underprivileged populations in both industrialized and developing countries. Dental decay in children is relatively more prevalent in the Americas and in the European Region, according to the WHO Global Oral Health Databank.
Dental caries experience (DMFT*) of 12-year olds according to WHO regional offices - 2000

The mean numbers of decayed, missing and filled teeth (DMFT) of 12-year-old children according to WHO regions also show similar pattern. (AFRO: African; AMRO: the Americas; EMRO: Eastern Mediterranean; EURO: European; SEARO: Southeast Asian; WPRO: Western Pacific).
In most developing countries, dental caries levels have been low until recent years. However, with the growing consumption of sugar in the developing world as a result of westernization, the levels of dental decay are likely to rise. However, an opposite trend has been observed in industrialized countries where effective public health measures such as appropriate use of fluoride have been implemented.
Among adults, dental decay prevalence is high worldwide, affecting nearly 100% of the population in the majority of countries. Most industrialized countries and some countries of Latin America show high DMFT levels, while dental decay experience is much lower in the developing world.
Symptoms of gum disease are highly prevalent among adults in all regions, while severe periodontitis affects 5% to 20% of most adult population. Furthermore, from a global perspective, most children and adolescents have signs of gingivitis. The Community Periodontal Index (CPI) measures individuals with various gum conditions. (CPI0: healthy gums; CPI1: bleeding gums; CPI2: bleeding gums and calculus; CPI3: shallow periodontal pocketing; CPI4: deep periodontal pocketing)
Percent of edentulous persons aged 65-74 years in selected countries

The proportion of older adults with total tooth loss (edentulous) is still high in some countries.
Comparison of the most common cancers in more and less developed countries in 2000 (Male)

Oral cancer is the eighth most common cancer worldwide.
Incidence of oral cavity cancer
Age-standardized rate (ASR) per 100 000 world standard population
World – Male (all ages)

Oral cancer is more common in developing countries. For example, in South Asia, oral cancer ranks among the three most common cancers with, for example, an incidence rate of 12.6 per 1000 000 population in India. Men are more likely to be affected than women.
The HIV/AIDS pandemic in Africa

"Where have all
the parents gone!"

A number of studies have demonstrated the negative impact on oral health of HIV infection. The prevalence of HIV/AIDS is reaching pandemic in Africa.
Adults and children estimated to be living with HIV/AIDS as of end 2003

Total: 34 – 46 million
Estimated number of adults and children newly infected with HIV during 2003 – A rising incidence

Total: 4.2 – 5.8 million
Notes on Noma

Noma (Cancrum Oris), a gangrenous necrosis of oro-facial tissues, is an extremely painful and devastating condition that affects a large number of children in many developing countries, particularly in Africa and Asia. If untreated, it can be life threatening, with a mortality rate between 70% and 90%. Noma is reaching endemic proportions in Africa, with more than 100,000 young children under the age of 6 years contracting the disease every year, many of whom die before reaching the health service. The disease is strongly linked to poverty and malnutrition.
Oro-dental trauma

• A significant proportion of dental trauma relates to sports, unsafe playgrounds or schools, road accidents and violence
• Prevalence is increasing
• Reliable data on the frequency and severity are still lacking in many countries, particularly in developing world
• Latin America: 15% schoolchildren
• Middle East: 5% - 12%
Dental erosion

• Dental erosion is the progressive, irreversible loss of dental hard tissue caused by dietary or gastric acids

• A growing problem affecting 8% to 13% of adults

• Need for more systematic population-based studies
Global trends in oral health
- Developed countries

• Decline in dental caries of children
• More adults preserve natural, functional teeth
• General health - oral health - quality of life: ageing populations
• Diet related oral disease, e.g., dental erosion - soft drinks
• Tobacco and alcohol: Oral cancer, periodontal disease
• Poor oral health in deprived communities, migrant people
• Underserved, disadvantaged people
Global trends in oral health
- Developing countries

- Dental caries rate is low. *Dental care = tooth extraction*
- Diet and overall nutrition are in transition
- Low exposure to fluorides (to reduce caries)
- Poor access to community care, PHC, and oral health services
- HIV/AIDS pandemic
- Growing use of tobacco
- Oral cancer prevalent (Asia)
- Need for prevention and oral health promotion programmes
- Poor water, sanitation, hygiene
- Poverty, malnutrition and Noma
Economic impact of oral disease

• Traditional treatment of oral disease is extremely costly (one patient, one caregiver, session by session)

• Limited resources in developing countries

• Emergency care, pain relief tend to be only options

In most developing countries, investment in oral health care is low. Resources are primarily allocated to emergency oral care and pain relief. The cost of dental treatment, if available, may exceed the total health care budget for the entire country.
Factors of changing oral disease patterns

Oral disease and health

Population
- Demographic factors
- Migration

Oral health systems
- Delivery models
- Financing of care
- Dental manpower
- Population-directed/high-risk strategies

Society
- Living conditions
- Culture and lifestyles
- Self-care

Environment
- Climate
- Fluoride and water
- Sanitation
Notes: Factors of changing oral disease patterns

The diversity in oral disease patterns and development trends across countries and regions reflect distinct risk profiles, and the implementation of preventive oral health programmes and systems. The influences of socio-behavioural and environmental factors in oral health and disease have been well documented. In addition to poor living conditions, the major risk factors relate to unhealthy lifestyles (i.e. poor diet and nutrition, widespread use of tobacco, excessive consumption of alcohol, and poor oral hygiene, etc), and low availability and accessibility of oral health services.
Causes of chronic diseases

UNDERLYING SOCIOECONOMIC, CULTURAL, POLITICAL AND ENVIRONMENTAL DETERMINANTS
- Globalization
- Urbanization
- Population ageing

COMMON MODIFIABLE RISK FACTORS
- Unhealthy diet
- Physical inactivity
- Tobacco use

NON-MODIFIABLE RISK FACTORS
- Age
- Heredity

INTERMEDIATE RISK FACTORS
- Raised blood pressure
- Raised blood glucose
- Abnormal blood lipids
- Overweight/obesity

MAIN CHRONIC DISEASES
- Heart disease
- Stroke
- Cancer
- Chronic respiratory diseases
- Diabetes
Notes on The Causes of chronic diseases.

The causes of the main chronic disease epidemics are established and well known. The most important modifiable risk factors are:

- unhealthy diet and excessive energy intake;
- physical inactivity;
- tobacco use.

These causes are expressed through the intermediate risk factors of raised blood pressure, raised glucose levels, abnormal blood lipids (particularly low density lipoprotein – LDL – cholesterol), and overweight (BMI ≥ 25) and obesity (BMI ≥ 30).

The major modifiable risk factors, in conjunction with the non-modifiable risk factors of age and heredity, explain the majority of new events of heart disease, stroke, chronic respiratory diseases and some important cancers.

Risk factors for chronic diseases: social determinants and risk factors are also relevant to oral health.
Oral disease shares a number of risk factors and determinants that are common to many other chronic non-communicable diseases.
Examples

- Dietary habits are significant to the development of chronic diseases and influence the development of dental decay and dental erosion.

- Poor oral hygiene habits lead to dental plaque including bacteria. Oral bacteria are involved in the progression of dental diseases such as dental decay and gum disease.

- Tobacco and alcohol increase the risk of oral cancer.
The risk-factor approach in promotion of oral health

Health system and oral health services

Socio-cultural risk factors

Environmental risk factors

Use of oral health services

Risk behaviour

Oral hygiene

Diet

Tobacco

Alcohol

Outcome

Oral health status

Impairment

Quality of life

Systemic health

Petersen, WHO 2002
Chronic disease burden and common risk factors

- A core group of modifiable risk factors is common to many chronic diseases and injuries

- The greatest burden of all disease is on the disadvantaged and socially marginalized people
National oral health programmes

Community strategies
Professional strategies
Individual strategies

A number of strategies can be considered in promoting good oral health, such as the Common Risk Factor Approach.
The population-wide approach

This also includes population strategies
High risk strategy - High risk group

- High risk group intervention
- Level of disease
Estimated percentage of world population who benefits from use of fluoride for dental health

80% 20%
Fluorides for dental caries prevention

* Fluoridated drinking water
* Salt fluoridation
* Milk fluoridation
* Mouthrinse
* Professionally applied fluorides
* Fluoridated toothpaste
Some examples of the community approach to oral health – experiences from automatic fluoridation (fluoridated salt)

- Switzerland
- Colombia
- Jamaica
- Hungary
Changing DMFT of 12-year-olds in Switzerland after introduction of school-based topical fluoride programmes in the 1960s (Zurich) and of fluoridated salt (250ppm F) in the 1970s (Glarus). Salt fluoridation was introduced in 1983 in the Canton of Zurich and all of Switzerland
Mean dental caries experience (DMFT) in 12-year-olds in Canton Vaud and control communities (Switzerland)
Salt fluoridation: The Colombia Trial (children 6-14 years)

Source: Mejia et al, 1976
Percentage difference in DMFT of 6-14-year-olds between Initial Survey (1964) and Final Survey (1972)

Source: Mejia et al, 1976
Lessons learnt from the Colombia Trial (1)

- Fluoridated salt is compatible with iodized salt and comparable to water fluoridation in dental caries prevention.
- Addition of 200 mg/kg fluoride ion produces effective reduction in caries prevalence.
- Collaboration between health authorities, salt processors and distributors, and the community is necessary for successful implementation.
- Fluoridated salt is well accepted by the community.
- The packaged fluoridated salt should have compatible grain size and low humidity.
Lessons learnt from the Colombia Trial (2)

- Young children do not take in excessive fluoride
- Minimal quantities of fluoride compound are required compared to water fluoridation
- Cost, shipping and regulations together with currency and devaluation are important factors in choice and source of compounds
- Packaging should be clearly labelled
- Need to monitor and evaluate at the processor, in the market and in the individual
Mean dental caries experience (DMFT) of 12- and 15-year-olds in Jamaica after introduction of salt fluoridation in 1987
Dental caries (dmft) trends in children 2-6-year-olds in Denszk and in Dorozsma, Szoreg and Tápé, Hungary 1966-1976
Dental caries (DMFT) trends in children 12-14 year-olds in Denszk and in Dorozsma, Szoreg and Tápé, Hungary, 1966-1976
WHO Global Oral Health Programme strategic directions

1. Reducing the burden of oral disease and disability, especially in poor and marginalized populations;
2. Promoting healthy lifestyles and reducing risk factors to oral health that arise from environmental, economic, social and behavioural causes;
3. Developing oral health systems that equitably improve oral health outcomes, respond to people's legitimate demands, and are financially fair;
4. Framing policies in oral health, based on integration of oral health into national and community health programmes, and promoting oral health as an effective dimension for development policy of society.
This 46 pp. report, available in pdf and html on the internet, has a wealth of information about oral health problems worldwide, and the recommendations for action

www.who.int/oral_health
Policy basis for the WHO Oral Health Programme

* Oral health is integral and essential to general health
* Oral health is a determinant factor for quality of life
* Several oral diseases and NCD’s are correlated as a result of common risk factors
* Proper oral health care reduces premature mothers mortality
Principles for action for oral health (1)

* Oral disease burden and links with general health
* Risk factors approaches
  - *Common risk factors*
* Settings for health
  - *e.g. physical environment, clean water, sanitation, healthy schools/cities*
* Target groups
  - *Children/youth, older people*
* Orientation of services
  - *Systems development and emphasis on prevention and health promotion*
Principles for action for oral health (2)

* Measuring progress
  - Health information systems
  - Evidence in public health practice

* Research for oral health
  - Bridging gaps between countries
  - Focus on developing countries
Priority action areas for global oral health (1)

* Oral health and fluorides
* Diet, nutrition and oral health
* Tobacco and oral health
* Oral health through Health Promoting Schools
* Oral health improvement amongst the elderly
Priority action areas for global oral health (2)

* Oral health, general health and quality of life
* Oral health systems
* HIV/AIDS and oral health
* Oral health information systems and goals for oral health
* Research for oral health
World Health Assembly May 2007
Oral Health Resolution WHA60.17

Member States
1. Integrated approach
2. Evidence-based
3. Availability of oral health services
4. Optimal exposure to fluoride
5. Prevention of oral cancer
6. Prevention of oral disease associated with HIV/AIDS
7. Health-promoting schools
8. Building capacity
9. Noma
10. Oral health information system and health surveillance
11. Oral health research
12. Workforce planning
13. Increase funding
Primary health care

“essential health care made accessible at a cost the country and community can afford, with methods that are practical, scientifically sound and socially acceptable.”

Global strategy for Health for All by the year 2000 (WHO 1981)
WHO’s Global School Health Initiative

Health-Promoting Schools

A healthy setting for living, learning and working
WHO INFORMATION SERIES ON SCHOOL HEALTH

Oral Health Promotion: An Essential Element of a Health-Promoting School

World Health Organization
Geneva, 2003
Challenges to WHO

• Gaps and differences in health and socio-economic situation between developing and developed countries

• Programmes to meet the needs of Member States

There is a need to translate knowledge and experience into action programmes. In the developing world, one of the most important challenges is to provide essential oral health care within the context of primary health programmes. Such programmes should be responsive to the health needs of the population.
Challenges

- Bridging gaps between developing/developed countries
- Capacity building in low income countries
- Sharing of experiences across regions and countries through global networks
- Matching the needs of countries and transition in health profiles

WHO needs to analyse the changing patterns of oral diseases and their determinants with particular reference to poor or disadvantaged populations, to promote capacity building in developing countries and to reduce the 10/90 gap between countries.
Defining WHO’s particular role in world health

- WHO cannot do everything and is not a source of major programme funding
- Growing need for coordination among development organizations
- WHO can promote collective actions and partnership in its areas of interest and experience

The need to formulate risk prevention policies is evident, including more support for scientific research, improved surveillance systems and better access to global information. Much emphasis is placed on the development of effective and committed policies that tackle significant and modifiable common risk factors such as poor diets and tobacco use.
Structure of work

- Global Office (Geneva)
- Six Regional Offices (Americas, Europe, Middle East, Africa, South East Asia, Western Pacific)
- Country Offices
- WHO Collaborating Centres

WHO needs to coordinate global alliances and international collaboration, through the organizational structure of WHO, from the global office at headquarters and regional offices to country offices and collaborating centres.
Cooperation & Partnerships

• Some non-governmental organizations are in official relationships with WHO

• Other NGOs

There is a need to strengthen existing partnerships with national and international NGOs, as well as local communities and other sectors, in the development and implementation of policies and programmes.
For further information please visit:
The WHO Global Oral Health Programme at

www.who.int/oral_health
Thank you very much for your attention
Credits

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