

Guest Leader**Priorities for research for oral health in the 21st Century – the approach of the WHO Global Oral Health Programme**

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The World Health Organization (WHO) “World Oral Health Report 2003” emphasized that despite great improvements in the oral health status of populations across the world, problems persist. The major challenges of the future will be to translate existing knowledge and sound experiences of disease prevention and health promotion into action programmes, this is particularly the case with developing countries that have not yet benefited from advances in oral health science to the fullest extent possible. The WHO Oral Health programme gives priority to research helping correct the so called 10/90 gap which relates to the fact that only 10% of funding for global health research is allocated to health problems that affect 90% of the world population. As knowledge is a major vehicle for improving the health of the poor in particular, the WHO Oral Health Programme focuses on stimulating oral health research in the developed and developing world to reduce risk factors and the burden of oral disease, and to improve oral health systems and the effectiveness of community oral health programmes. Building and strengthening research capacity in public health are highly recommended by WHO for effective control of disease and the socioeconomic development of any given country.

Introduction

The Global Forum for Health Research is an independent international foundation promoting more health research to combat neglected diseases and conditions that are major sources of ill health in developing countries. Each year there is a major gathering to focus on global health and on how to bridge the gap in research between developed and developing countries. The World Health Organization (WHO) Oral Health Programme gives priority to research helping correct the so-called 10/90 gap, which relates to the fact that only 10% of funding for global health research is allocated to health problems that affect 90% of the world’s population (Global Forum for Health Research, 2004).

WHO recently published a global overview of oral health, a statement which described the WHO Oral Health Programme’s approach to promotion of further improvement in oral health during the 21st Century (WHO, 2003; Petersen, 2003a). The report emphasised that despite great improvements in the oral health status of populations across the world, problems still persist. This is particularly so among underprivileged groups in both developed and developing communities. WHO recognizes oral health as an integral part of general health. Furthermore, oral diseases and conditions, including oral cancer, oral manifestations of HIV/AIDS, dental trauma, craniofacial anomalies, and noma (cancrum oris), all have broad impacts on oral health and well-being. Oral health and general health share common risk factors related to diet, the use of tobacco, and the excessive consumption of alcohol and the solutions to control oral disease are to be found through shared approaches with integrated chronic disease prevention.

The burden of oral disease

Dental caries and periodontal diseases have historically been considered the most important global oral health burdens. At present, the distribution and severity of oral diseases vary in different parts of the world and within the same country or region. The significant role of socio-behavioural and environmental factors in oral disease and health is demonstrated in a large number of epidemiological surveys (WHO, 2003; Petersen, 2003a). Several of these epidemiological surveys have been carried out on the basis of WHO recommendations and guidelines designed for research and public health practice.

The current pattern of dental caries reflects primarily distinct risk profiles across countries (i.e. living conditions, lifestyles and environmental factors) and the outcome of implementation of preventive oral health systems. Dental caries is still a major oral health problem in most industrialised countries, affecting 60–90% of schoolchildren and the vast majority of adults. It is also a most prevalent oral disease in several Asian and Latin American countries, while it appears to be less common and less severe in most African countries. However, it is expected that the incidence of dental caries will increase in the near future in many developing countries of Africa, particularly as a result of growing consumption of sugars and inadequate exposure to fluorides.

While in some industrialized countries there has been a positive trend of reduction in tooth loss among adults in recent years, the proportion of edentulous persons amongst the elderly is still high in some countries. In most developing countries, access to oral health services is limited and teeth are often left untreated or are extracted because of pain or discomfort. Tooth loss and

impaired oral function are therefore expected to grow as a public health problem in many developing countries. Meanwhile, tooth loss in adult life may also be due to poor periodontal health. Severe periodontitis which may result in tooth loss, is found in 5-15% of most populations (WHO, 2003; Petersen, 2003a). In industrialized countries, studies show that tobacco use is a major risk factor for adult periodontal disease. With the growing consumption of tobacco in many developing countries the risk of periodontal disease and tooth loss, therefore, may increase (Petersen, 2003b). Periodontal disease and tooth loss are also related to general chronic diseases such as diabetes mellitus (Taylor, 2001). The growing incidence of diabetes may further impact negatively on oral health of people in several developing countries.

Oral cancer is highly related to use of tobacco and excessive consumption of alcohol. The prevalence of oral cancer is particularly high among men, the eighth most common cancer world-wide (Steward and Weihues, 2003). In south-central Asia, consumption of tobacco in various forms is particularly high and cancer of the oral cavity ranks amongst the three most common types of cancer. The WHO Oral Health Programme has designed epidemiological tools for recording of oral mucosal lesions and oral diseases related to HIV infection (WHO, 1980; Melnick *et al.*, 1993). Meanwhile, it is noteworthy that at the global level few systematic epidemiological studies of oral mucosal diseases have been carried out. As regards oral manifestations of HIV/AIDS also few epidemiological studies have been undertaken in developing countries of Africa and Asia which have the highest prevalence of infection.

Reliable data on the frequency and severity of oro-dental trauma are still lacking in most countries, particularly in developing countries. A significant proportion of dental trauma relates to sports, unsafe playgrounds or schools, road accidents or violence. Experiences from industrialized countries show that the costs of immediate and follow-up care for dental trauma patients are high.

Oral health information systems and research for oral health

WHO developed oral disease surveillance systems several years ago, particularly in relation to dental caries of children. A global database was established and over a number of years an increasing number of oral epidemiological studies have been conducted applying WHO methodology and criteria (WHO, 1997). Special efforts were made to train oral health investigators worldwide through calibration trials and data analysis tools were developed for statistical analysis at WHO Headquarters or by WHO Collaborating Centres on Oral Health. Over recent years tools have been designed for analysis of data at local/country level, based on intensive training of oral health investigators. Particularly, investigators in developing countries have been trained to provide data for the WHO Oral Health Data Bank on an on-going basis, combined with training in health systems research at country level.

The existing WHO Oral Health Data Bank has been used for analysis of oral disease trends and the outcome

of oral health systems and preventive programmes. Such oral health systems research has been based on time-series data available for indicator countries; particularly such data were available for research in industrialised countries whereas time series analysis is only possible for a few developing countries.

Continuing surveillance of levels and patterns of risk factors is of fundamental importance to planning and evaluating community preventive activities and oral health promotion (Petersen, 2003a; WHO, 2003). WHO has strengthened the work for surveillance of noncommunicable disease (NCD) at global, regional and national levels over recent years and for several reasons. Firstly, surveillance offers a systematic approach to data collection and helps countries monitor and evaluate emerging patterns and trends of disease. Secondly, governments can formulate policies and programmes to prevent disease and to measure progress, impact and efficacy of preventive efforts already in operation. Thirdly, surveillance systems may help strengthening health care for people and provide evidence for care, programmes and policy.

WHO has designed a Global NCD InfoBase which can assist countries in public health practice as well as in research. The programme is a tool for displaying available disease and risk factor data by country, population - level estimates of the prevalence of chronic diseases and their risk factors are provided, and quality data are made easily accessible to researchers as well as health professionals and the general public. The WHO Oral Health Programme has integrated the existing global oral health data (i.e. dental caries, periodontal disease, dentate status, oral cancer) into the NCD InfoBase in order to provide better opportunities for cross analysis of links between oral disease, chronic disease and common risk factors. Such data will provide for important research related to the effective control of oral disease in all but particularly in developing countries.

Millennium Development Goals and Oral Health

The importance of oral health goals was first emphasised in 1981 by WHO as part of the programme Health for All by the year 2000 (Petersen, 2003a; WHO, 2003) and most recently the WHO, jointly with the FDI World Dental Federation and the International Association for Dental Research (IADR), formulated goals for oral health by the year 2020 (Hobdell *et al.*, 2003). These specific goals may assist in the development of effective oral health programmes, targeted at better health of those people most in need of care. At the Millennium Summit in 2000, representatives from 189 countries committed themselves towards a world in which sustaining development and eliminating poverty would have the highest priority (United Nations, 2002). The Millennium Development Goals (MDG) are assuming increasing strategic importance. They are being used to focus and reorient the work of international programmes and as a benchmark against which to assess overall country and organizational performance. The eight MDGs read as follows:

Goal 1: Eradicate extreme poverty and hunger

Goal 2: Achieve universal education

Goal 3: Promote gender equality and empower women

- Goal 4: Reduce child mortality
- Goal 5: Improve maternal health
- Goal 6: Combat HIV/AIDS, malaria and other diseases
- Goal 7: Ensure environmental sustainability
- Goal 8: Develop a global partnership for development

Several MDGs and their specific targets relate directly to health and oral health. There is growing international support to “scale up” health systems, including oral health systems, to improve health outcomes of the poor. This requires improving government capacity not only in financial resources but also on ways to manage the complex process of change of health systems towards prevention and health promotion. Decision-makers need reliable information on the cost, effectiveness and efficiency of interventions, targeting the health of the poor. In order to meet the challenges, decision-makers need the tools, information and capacity to assess health needs, choose intervention strategies, design policy options appropriate to local or national circumstances, monitor performance and manage change.

Without reliable data, it is impossible to effectively assess the impact of policies, programmes or any interventions in the health sector. WHO is therefore developing stronger norms and standards for health information systems at national and subnational levels, with a focus on quality of data, methods for data collection and estimation. Recently, WHO has developed the World Health Survey, an instrument designed to provide information on health systems and performance. The survey currently covers about 70 countries and this survey can generate valuable information for essential MDG indicators. Oral health indicators are also included in the World Health Survey (i.e. dentate status; experience of pain/symptoms from mouth or teeth; use of services and care/treatment received).

The WHO measurement instruments include the capacity to disaggregate achievements and trends by the poor and rich. The World Health Survey will allow mapping the health characteristics of the poor, exposure to risk factors, effective coverage of health services, responsiveness of the health system and the financial consequences of ill health and health expenditure.

Research for oral health

Essentially, the causes of oral diseases are known and the major priority for new research is on prevention policy and programme effectiveness. Clinical and public health research has shown that a number of individual, professional and community preventive measures are effective in preventing most oral diseases (Cohen and Gift, 1995). However, optimal intervention in relation to oral disease is not universally available or affordable because of escalating costs and limited resources in many countries. This, together with insufficient emphasis on primary prevention of oral diseases, poses a considerable challenge for several countries, particularly developing countries and countries with economies and health systems in transition.

The major challenges of the future will be to translate knowledge and experiences of disease prevention into action programmes. Advances in oral health science and knowledge have not yet benefited developing countries

to the fullest extent possible. Clear disparities in economic strength, political will, scientific resources and capabilities, and the ability to access global information networks have, in fact, widened the knowledge gap between rich and poor countries.

The WHO Oral Health Programme contributes to the process of redressing the imbalance in the distribution of knowledge about oral health, so that the results of research will benefit everyone, including the poor, in a sustainable and equitable manner. As knowledge is a major vehicle for improving the health of poor people in particular, the WHO Oral Health Programme focuses on stimulating oral health research in the developed and developing world to reduce risk factors and the burden of oral disease, and to improve oral health systems and the effectiveness of community oral health programmes (Petersen and Kwan, 2004). In particular, more research should be devoted to:

- Modifiable common risk factors to oral health and chronic disease, particularly the role of diet, nutrition and tobacco
- Oral health - general health - interrelationships
- Psychosocial implication of oral health/illness and quality of life
- Inequity in oral health and disease and the impact of socio-behavioural risk factors
- Identification of the most indicative oral manifestations of HIV/AIDS
- Population studies of oral mucosal lesions, including epidemiological surveys of HIV/AIDS related oral disease
- The burden of oro-dental trauma, particularly in developing countries, and related risk factors
- Evidence in oral health care: clinical care and public health practice
- Translation of knowledge into clinical and public health practice and operational research on effectiveness of alternative community oral health programmes
- Health systems research on reorientation of oral health services towards prevention and health promotion. High quality research on oral health systems may be instrumental to adjustment of programmes and services in both developed and developing countries.
- Time-series data for oral health surveillance in developing countries.

Building and strengthening research capacity is one of the more effective, efficient and sustainable strategies for enabling developing countries to benefit from advances in knowledge, in particular through the promotion of regional or inter-country oral health research networks. The WHO Oral Health Programme stimulates oral health research for, with and by developing countries in several ways:

- Supporting initiatives that will strengthen research capability in developing countries so that research is recognised as the foundation of oral health policy.
- Increased involvement of WHO Collaborating Centres on Oral Health in high-priority areas of research within national, regional or interregional centres.
- Encouraging oral health research training programmes at local level or based on interuniversity collaborative “sandwich programmes”.

- Providing universities and research institutes in developing countries with easy access to the scientific literature within oral health and on-line access to scientific articles and reports.
- Facilitating the use of the Cochrane Library which provides systematic reviews about the evidence for public health action. Developing countries do have free access to the Cochrane Library, and the Cochrane systematic reviews are conducted with an international perspective. The fluoride reviews provide useful information on preventive approaches for caries in children for example. (The Cochrane Collaboration; The Cochrane Oral Health Group).

In addition to WHO Collaborating Centres on Oral Health, the WHO Oral Health Programme supports research in developing countries in joint projects with non-governmental organizations such as the International Association for Dental Research (IADR) and the FDI World Dental Federation. Reducing the 10/90 gap in oral health research cannot take place in an isolated way but may effectively take place through work within the framework of the Global Forum for Health Research (Global Forum for Health Research, 2004). This forum provides support to priority-setting methodologies, development of sound measurements, and effective dissemination of results in order to break the vicious circle of “ill health and poverty”.

Most recently, WHO published the World Report on Knowledge for Better Health (WHO, 2004). The report provides a compass to reorient health research so that it

may respond more effectively to public health challenges on a national and global level. This reorientation requires a strengthening of the health research sector, an environment that is more conducive to research-informed policy and practice, and more focus on key priorities for research to improve health systems. The analysis and recommendations of the report apply to oral health systems and oral health research as well.

The report proposes the following recommendations:

1. More investment is needed in relatively under-funded areas of health research, especially for a new, innovative approach to research on health systems.
2. Management of health research should be strengthened if research is to contribute to strengthening health systems and building public confidence and trust in science.
3. Stronger emphasis should be placed on translating knowledge into actions to improve health thereby bridging the gap between what is known and what is actually being done.

These recommendations are at the heart of the report’s action plan. It is now a matter of urgency to make health systems the focus of national and international efforts in order to improve their ability to provide health care in an equitable fashion. The WHO World Report on Knowledge for Better Health (WHO, 2004) reaffirms the view that the generation and application of high-quality knowledge is vital to a high performance health system and the socioeconomic development of any given country.

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