5.1 The demography of oral diseases, future challenges and the implications for dental education

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This Section considered the immense challenges presented by the changing demography of populations (in particular, cross-boundary flow), changing oral and dental disease trends. It also considered the difficulties of gathering data on such information. It then considered how these challenges may affect the education of the dental team in the future. The Section considered the concept of the 'global village' as a representation of the changing world demography. We were at pains to recognize that our role was in considering both emerging and established market economies. In fact, a major part of the Section’s activities concentrated on the development of the professional ethic of social responsibility – represented at the local, regional, national and international levels. We considered a finite group of oral and dental diseases, namely dental caries, periodontal diseases, oral cancer and cranio-facial disorders. In addition, we chose to comment on systemic diseases influenced by oral diseases, oral diseases influenced by systemic diseases and iatrogenic diseases (including prion disorders and cross-infection control issues). The Section recognized the profound difference between needs and demands in the provision of oral and dental health care. We considered the concept of best practices within our working remit and named these as:

- the gathering of valid data on health trends;
- uniformity in the measurement of disease and diagnostic parameters;
- the identification of a core curriculum which best addresses an increased awareness of changing demography; and
- a multidisciplinary approach to education and research in the context of global collaboration.

The Section recognized the enormous potential for global networking with the explosion of information and communication technology. We investigated the requirements in converging towards higher global standards, while accepting and appreciating important regional and continental differences. To this end, the Section has put forward a number of important recommendations and realistic goals.

Key words: demography; disease and diagnostic parameters; global village; oral health.

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Introduction

We believe that our role is to outline how demographic issues and trends in oral diseases will influence the education of the dental team over the next generation; also, how dental education programmes will need to change to best serve the needs of communities (1–8).

The following factors should be considered at world, regional and local levels.

Demographic factors

These factors included population size, gender, age and groupings and distribution (e.g. rural vs. urban divide).

The ‘global village’ in 2001, if simplified to contain a representative population of 100 people, would be constituted as follows:

- 57 Asians;
- 21 Europeans;
- 14 from the Western hemisphere; and
- eight Africans.

In that global village: 52 would be female, 48 would be male, 70% would be non-white, 30% would be white, six people would possess 59% of the entire world’s wealth (all six would be from the USA), 80 would live in substandard housing, 70 would be unable to read and 50 would suffer from malnutrition.
Disease trends (8–12)

Contributing factors
Factors include, but are not limited to, oral health behaviour, risk factors, availability of health care services, genetics and lifestyle plus socio-economic and political constraints.

Parameters within which the Section has decided to work
The following parameters were defined:

• Definition of oral health: 
  *A state of the oral and related tissues and structures that contributes positively to physical, mental and social well-being, and the enjoyment of life’s possibilities, by allowing the individual to speak, eat and socialise unhindered by pain, discomfort or embarrassment.*
  This is a statement taken from the Canadian Dental Association.

• Education of the dental team is part of primary health care, which is the primary function and main focus of a country’s health system, and of the social and economic development of the community.

• The following are the disorders the group considered:
  – dental caries (1, 5, 8, 9);
  – periodontal diseases (1, 8);
  – oral cancer, primarily, squamous cell carcinoma (11);
  – cranio-facial disorders – including trauma (11);
  – systemic diseases influenced by oral diseases (e.g. cardiovascular);
  – oral diseases influenced by systemic diseases (12);
  – iatrogenic diseases, prion disorders, and cross-infection control.

• The demographic trends evident in these diseases and how these trends may influence the dental curriculum and the education of the dental team for the next generation.

• How the education of the dental team may be influenced by its working environment.

• The role of interdisciplinary activity in the context of disease demography.

• The dental management of special needs groups.

• The Section understands that there is a profound difference between needs and demands in the provision of oral and dental health care, which varies widely between regions and countries.

Best practices and innovations
Best practices are important as a resource for developing the dental practitioner of the 21st century. Best practices should be considered in the following areas and disseminated using modern information technology:

• Gathering of valid world, regional and local data on demographic and oral health trends.

• Development of uniformity in measurement of disease and diagnosis parameters.

• Identification of a core curriculum that best addresses an increased awareness of the demographic and oral health trends:
  – education – academic skills, e.g. learning, critical and analytical thinking and information and communication technology (ICT);
  – training, clinical and technical skills; and
  – professional attitudes, including social responsibility and awareness.

• Multi-disciplinary approach to education and collaboration.

• Research into:
  – the epidemiology of oral health and disease;
  – oral health care delivery systems (including human and physical resources);
  – oral health awareness in the general population; and
  – oral health promotion and prevention.

Impact of information and communication technology
Under this heading it is important to consider the opportunities to facilitate:

• sharing access to knowledge and information;

• rapid exchange of research data to ensure currency of information;

• collaboration on research issues;

• transference of new scientific information;

• broadening of dental curricula with emphasis on behavioural science;

• public health and demographic issues; and

• ready availability of ICT expertise.

There must be awareness of the limitations and pitfalls that accompany modern information technology and the need for responsible management.

How to converge towards higher global standards

• Agreement on an international ethical code for dentistry that places dentistry in a global health care
context, emphasizing the rights and responsibilities of patients and practitioners.

- Agreement on an accepted and valid international disease classification to provide valid data to inform the scientific studies of epidemiology and demography.
- Co-operation with international agencies and organizations is to be encouraged.
- Dissemination of best practice to practitioners, patients and ruling bodies—particularly, the use of the internet is to be encouraged.
- Subject information available on the internet to rigorous scientific validation at an international level.
- Ensure that governmental authorities are provided with the best available research information to inform local, regional and national policy in oral health care.

Governments must make sure that sufficient funds are available to ensure the implementation of appropriate oral health care policy.

- Take into account regional differences in health and the need to adhere to the professional ethic of ‘above all do no harm’.
- Continuous evaluation of the above factors.

### Important regional and continental differences

- WHO data bank – broad overview but data not standardized.
- Limited information and evidence.
- More research and data required.
- Within trends, there are clearly differences in the distribution of oral and dental diseases both within and between countries.

The following are our Section’s perceptions of current trends.

- Disease trends (1–3):
  - caries decreasing in established market economies (EMEs);
  - caries increasing in non-EMEs;
  - periodontal diseases not as extensive in EMEs;
  - periodontal diseases potentially serious in non-EMEs;
  - oral cancer increasing in EMEs;
  - oral cancer a major issue in non-EMEs;
  - cranio-facial disorders, developing data in EMEs; and
  - cranio-facial disorders, poor data in non-EMEs;

It is our Section’s perception that there is a paucity of data on the following:

- systemic diseases influenced by oral diseases;
- oral diseases influenced by systemic diseases;
- iatrogenic diseases, prion disorders and cross-infection control.

### Considerations not otherwise covered

- Lack of recognition that many populations do not have access to any oral health care.
- Paucity of research on the best educational methods, strategies and philosophies to facilitate learning of the necessary skills and knowledge.
- Need for awareness that there may be factors (e.g. political crisis, pandemics) out of the control of dental educators that may have significant negative influence. Thus, we must incorporate flexibility in philosophy in order to accomplish our educational goals.
- The unassailable information explosion, for instance, the human genome project offers alternative methods to address demographic challenges of oral diseases and cranio-facial disorders.
- Availability of resources (human, physical and financial).
- Resistance to change within the dental profession, with particular reference to reluctance in acknowledging ever-changing demographic trends.

### Implications and potential for emerging countries

It is difficult to conceive the enormity and the consequences of the challenges facing developing economies,
especially those suffering abject poverty. These countries far exceed the number of countries in which Western concepts of dental education prevail. In order to initiate thoughts on this, the following two simple initiatives were proposed:

- models providing a structure for dental curricula that outline education, skills and attitudes might be adapted to global, regional and local regions adjusted to the circumstances; and
- the potential of non-EMEs rests in responses that develop new and appropriate models of education of health care professionals, other than those that already exist in the EMEs.

Core values applicable to all

Ethical principles, such as beneficence and justice, must be a binding thread of all discussions. The Section values open discussion and healthy debate in order to develop a consensus. The root-stock for considering the topic of ethics might well be the Hippocratic Oath, for it aimed to unify the medically trained and focused on widely shared values which superseded national, religious, ethnic and cultural boundaries. A more recent encapsulation of these principles forms the Declaration of Geneva (1948) and amendments by World Medical Assemblies (1968, 1983). Although generally made on admission to the medical profession, the declaration is appropriate to all health care professionals. This statement of ‘core values’ may form the basis of this Section’s (and others’) consideration of the topic, paying special attention to the demography of dental and oral diseases, and its impact on dental education. In particular, consideration must be given to issues such as the emergence of multiple antimicrobial-resistant bacteria, iatrogenic effects of medications and cross-infection control in dental practice, especially in relation to blood-borne viruses and prions.

Conclusions

- Globalization is a reality and
  - demands collaborative effort between continents; such collaboration is facilitated by information and communication technology;
  - already affects concepts of public health and, therefore, the education of health care professionals; and
  - also affects concepts of dental public health and, therefore, the education of the dental team.
- Demographic changes will continue.
- Changes in oral and dental disease trends will continue.
- Changes in education should emphasize social responsibility and dental public health.
- Therefore, the requirement for continuing changes in the curriculum for the dental team is essential.

Building and growing a thematic network

This Section’s discussions are only preliminary ones. The participants will continue to develop the themes discussed at the regional, national and international levels. We have identified important links with other Sections and would wish to strengthen such links in the development of a thematic network.

Recommendations, realistic goals and a time frame

- Collect all available data on the demography of oral and dental diseases from all available agencies and organizations. We identify that many such agencies and organizations (e.g. WHO and FDI) have already done valuable work in demography and such data should be gathered centrally for ready dissemination. Analysis of these data should then occur to identify current and future information needs. This will inform national and international debate on oral health strategies and the education of the dental team.
- The importance of appropriate health services research must be emphasized.
- In relation to general demographics, we should take advantage of available data from agencies such as OECD and relate such information to oral and dental disease trends.
- Encourage the strong representation of dental public health within dental schools across the globe to allow the dental team to conceive a realistic vision of their global oral health responsibilities. This will encourage the understanding that oral health care is an essential part of general health in the context of primary and secondary health care.
- Increase the global awareness of the part played by the dental team in securing health in general. This will address the essential part played by the dental team in providing care which impinges on the patient’s general health (e.g. the dental management of patients with special needs). Due reference must be made to the emerging research implicating the role of oral diseases in the genesis and/or promulgation of systemic diseases.
- Develop an educational system whereby there is an increasing appreciation of the significance of
social responsibility for the dental team as a core value.
The following are the realistic goals (and timeframe) of the Section.
- To determine the best way forward on data gathering on demographic and oral disease trends on the regional, national and international levels:
  - commence the gathering of what demographic information on disease trends in caries, periodontal diseases and oral cancer is available from WHO, FDI and other national and international agencies; and
  - achieved by March 2002.
- To determine from the representatives of the dental schools in countries represented in this congress (by way of a pilot study) the following information:
  - How is the idea of ‘social responsibility’ addressed in your dental school?
  - How are the changing trends in the demography of oral and dental diseases addressed in your dental school?
  - How important is the education of students in dental public health in your dental school?
  - Achieved by October/November 2001.

References

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