Disparities in delivering paediatric dental care in Europe: comparisons between Belgium and other EU countries

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Summary. The delivery of oral health care has to be dynamic, responding to the changes in population demographics and the patterns of oral diseases. In a European perspective, this report presents a qualitative approach of the oral health care system in Belgium, mainly with respect to children. According to the characteristics of any oral health care delivery system, the following questions need to be dealt with: what are the objectives, who should provide what service to whom, with what resources and with what effects? There are no clear nationally articulated oral health care objectives in Belgium as oral health care objectives are considered as part of general health care objectives. Basically in Belgium health promotion, education and research is decentralised and the responsibility of the different federal regions. Health care is a national matter. The most frequently used structures for delivery of oral health care are independent dental practices and there is no oral health care provided at a community level. The population is targeted as a whole. This could result in a limited access to oral health care for those groups who are most in need.

At the time of this analysis, in 1998, the number of active dentists in Belgium was 8,095 of whom approximately 85% were self-employed in private practices. The dentist-population ratio was 1:1,266 that is comparable with the neighbouring countries of France (1:1,504) and Germany (1:1,300). The Netherlands (1:2,240) and United Kingdom (1:2,260) and the Central European countries have remarkable higher ratios. The Nordic countries, such as Sweden (1:980), Denmark (1:1,032) and Norway (1:1,089) have the lowest ratios. In Belgium only a minority of dental practices employs dental assistants and dental hygienists do not exist at all.

Private fee-for-service payment is the traditional form for payment and reimbursement for dental services in Belgium. The National Health Insurance is responsible for the reimbursement of the patient. In 1998 the cost of dental care amounted to 0.18% of the GNP. In a European context, the cost of oral health care in Belgium is rather low. Although efforts to promote preventive care have already occurred to some extent, there is still a clear over-reliance in the Belgian oral health care system on treatment of oral disease rather than prevention of oral disease.

Key words. Health policy, Paediatric dental care, Health care systems, Social inequalities.

Introduction

Oral health care systems throughout different European countries have various historic roots, influenced by social, political or economic structures and societal norms [Andersen et al., 1995]. However, they all try to improve the quality of life of the population through research, education, provision of services and health promoting preventive strategies. In many countries oral health care is an integral part of the general health care system.

The delivery of oral health care has to be dynamic, responding to any changes in population demographics and the patterns of oral diseases. Many epidemiological studies and reports have demonstrated a dramatic decline in the prevalence of dental caries over the past three decades, especially in children and adolescents in the Western world [Glass, 1982; Marthaler, 1990; Axelsson et al., 1993; Truin et al., 1994; Marthaler et al., 1996; Petersson and Brathall, 1996; Vanobbergen et al., 2001]. These changes in caries prevalence have influenced its distribution,
resulting in a polarisation of disease towards the extremes. It can no longer be assumed that a mean caries prevalence is representative for different groups within a population. A large amount of disease will be found in a small group of subjects for example in primary schoolchildren about 10 to 15% bear 50% of all caries lesions [Marthaler, 1990; Marthaler et al., 1996; Petersson and Brathall, 1996].

The actual reduction in caries prevalence in younger age groups will lead to an increase in the number of dentate adults in the coming decades. As teeth are retained longer, periodontal disease and root caries will become more important health problems and challenges for the future [Pilot and Miyazaki, 1991].

Besides ageing, deprivation and immigration become increasingly more important. They often act as a barrier to the maintenance of good oral health in both children and adults. Well-motivated dental patients who attend regularly, often making up the majority of a general dental practitioner’s patients, have different needs than those in the high disease tail, attending infrequently [Pine, 1997].

The objectives and organisation of oral health care systems should be to adapt to these changes. Delivery of oral health care should be well balanced between basic preventive strategies, high risk approaches and treatment provision, directed by identified needs, demands and based on the principle of equity.

This report presents a qualitative approach of the oral health care system in Belgium, in a European perspective, mainly with respect to children. According to the characteristics of an oral health care delivering system, the following questions will be dealt with: what are the objectives, who provide what service to whom, with what resources and with what effects?

Qualitative assessment

Objectives of oral health care systems. Objectives of oral health care systems range from prevention of future disease, to treatment of existing disease, to management and elimination of emergencies, pain and trauma, or a combination of any of these. They can be expressed by goals, purposes or expected outcomes of care, both oral health status outcomes and intermediate outcomes of oral health behaviours. In the United Kingdom, the Department of Health published in 1994 an oral health strategy, with specific targets such as: by the year 2003, 70% of 5-year-old children should have had no caries experience. In the Nordic countries different Oral Health Acts resulted in a high and equal level of accessibility to dental care with regard to the age groups specified in the different acts [Pine, 1997].

In Belgium there are no clearly articulated oral health objectives. In Flanders (Northern Federal State) oral health goals are dispersed among the five general health promotion priorities, set by the Ministry of Welfare: a 10% lower rate of cigarette smoking, a decrease of fat consumption in favour of fibres, an accurate breast cancer screening for women over 50 years, an improvement of preventive measures related to infectious diseases, a reduction of the rate of fatal traffic accidents by 20% [Aelvoet et al., 1998].

Systematic national screening programs to define the oral health situation in different age groups or population groups, and to evaluate preventive and restorative measures are clearly lacking. Therefore, current policy is entirely based on reports from other European countries. Initiatives to implement self-determined objectives vary by the extent of responsibility taken by Dental Associations, Insurance Companies and Academic Centres, School Health Care Centres or other health care organisations.

Organisation. Any system of oral health care delivery results in a formal organisation, structured for the various components such as research, education and care provision. In Belgium health promotion, education and research are decentralised and part of the responsibilities of the different federal communities (Departments of Education and Departments of Welfare), while health care delivery is a national matter (Ministry of Health and Ministry of Social Affairs).

Research and education are the responsibilities of the universities (three Flemish speaking - Ghent, Leuven, Brussels - and three French speaking - Liège, Louvain, Brussels).

Co-ordination of Oral Health promotion is provided by the Dental Associations and is, in Flanders, partially funded, but not integrated, by the Flemish Institute for Health Promotion. Some organisations such as The Red Cross, Child and Family, Insurance Companies, Industry, may also provide oral health promotion.

School Health Care Centres organise general health examinations in primary and secondary
schools, including an oral examination. The examiners are general physicians and the examination is restricted to two oral health items: caries and orthodontic treatment need. Children are referred for treatment to their general dental practitioner.

Oral health care in Belgium, both preventive and restorative, is almost exclusively delivered in private dental practices, and only to a small extent (<5%) in public and private clinics. There is no oral health care delivery organised at community level.

Mainly, within the different countries in the European Union, dental care is provided in independent dental practices, hospitals and public or community dental services. There is a trend for general dentistry group practices and multi-speciality groups, employing a large number of staff with specific duties. Most of the West European countries have a Community Dental Service (Table 1) [Pine, 1997; Van Tielen, 1999; Bolin, 1997; Cork, 2000] often originally conceived as a School Dental Service at the beginning of the 20th century. They may have a health promotion role and a monitoring task, screening the oral health status and needs in different age groups. In some countries public dental services provide care to special needs groups such as disadvantaged, handicapped and institutionalised elderly people. Usually they are involved in developing and evaluating plans and policies that support individual and community oral health efforts to address oral health needs [Bolin, 1997; Pine, 1997; Van Tielen, 1999].

University hospitals provide mainly secondary and tertiary care as well as caring for patients with special needs. Some primary care is provided within the context of undergraduate training.

Target population. The population of Belgium has now reached 10,211,000 (1998) and the annual rate of population increase during the 1990-2020

<table>
<thead>
<tr>
<th>Country</th>
<th>CDS and (%) *</th>
<th>Dentist/ Population</th>
<th>DMFT values for 12 yr olds (%) caries free</th>
<th>GNP on dental care (%)</th>
<th>Dental Hygienists</th>
</tr>
</thead>
<tbody>
<tr>
<td>Belgium</td>
<td>No</td>
<td>1:1,266</td>
<td>1.9 (35)</td>
<td>0.18</td>
<td>No</td>
</tr>
<tr>
<td>Netherlands</td>
<td>No</td>
<td>1:2,240</td>
<td>0.6 (70)</td>
<td>0.46</td>
<td>Yes</td>
</tr>
<tr>
<td>France</td>
<td>Yes (10)</td>
<td>1:1,504</td>
<td>1.9 (39)</td>
<td>0.50</td>
<td>No</td>
</tr>
<tr>
<td>Germany</td>
<td>Yes (1)</td>
<td>1:1,300</td>
<td>1.7 (42)</td>
<td>0.90</td>
<td>Yes</td>
</tr>
<tr>
<td>UK</td>
<td>Yes (7)</td>
<td>1:2,260</td>
<td>1.4 (48)</td>
<td>0.29</td>
<td>Yes</td>
</tr>
<tr>
<td>Ireland</td>
<td>Yes (30)</td>
<td>1:2,365</td>
<td>1.1 (51)</td>
<td>0.25</td>
<td>Yes</td>
</tr>
<tr>
<td>Sweden</td>
<td>Yes (50)</td>
<td>1:980</td>
<td>1.0 (62)</td>
<td>0.40</td>
<td>Yes</td>
</tr>
<tr>
<td>Denmark</td>
<td>Yes (?)</td>
<td>1:1,032</td>
<td>1.0 (55)</td>
<td>0.56</td>
<td>Yes</td>
</tr>
<tr>
<td>Norway</td>
<td>Yes (30)</td>
<td>1:1,089</td>
<td>1.5 (46)</td>
<td>0.35</td>
<td>Yes</td>
</tr>
<tr>
<td>Finland</td>
<td>Yes (40)</td>
<td>1:1,070</td>
<td>1.1 (35)</td>
<td>0.44</td>
<td>Yes</td>
</tr>
<tr>
<td>Switzerland</td>
<td>Yes (?)</td>
<td>1:2,083</td>
<td>1.1 (?)</td>
<td>?</td>
<td>Yes</td>
</tr>
<tr>
<td>Austria</td>
<td>Yes (9)</td>
<td>1:2,084</td>
<td>1.7 (44)</td>
<td>0.46</td>
<td>No</td>
</tr>
<tr>
<td>Italy</td>
<td>Yes (15)</td>
<td>1:1,282</td>
<td>2.1 (38)</td>
<td>0.39</td>
<td>Yes</td>
</tr>
<tr>
<td>Greece</td>
<td>Yes (10)</td>
<td>1:877</td>
<td>2.7 (27)</td>
<td>0.40</td>
<td>No</td>
</tr>
<tr>
<td>Spain</td>
<td>Yes (6)</td>
<td>1:2,667</td>
<td>1.8 (42)</td>
<td>?</td>
<td>Yes</td>
</tr>
</tbody>
</table>

* = Community dental services and % of dentists in this service, if any.
? = data not available

Table 1 - Oral health care systems: data for dental public service organisations, workforce, costs of dental care and oral health status for different West European countries (1996-1998).
period is estimated around 0.2%. Thus Belgium has one of the lowest growth rates in Europe. In the neighbouring countries estimated percentages are respectively 0.9% for Germany, 0.5% for The Netherlands, 0.4% for France and 0.2% for United Kingdom. Life expectancy at birth increased in Flanders from 74.2 years in 1993 to 75.1 in 1996 for males and from 80.4 in 1993 to 81.3 in 1996 for females. Low birth rates combined with increasing life expectancy have lead to the ageing of the Belgian population [Van Tielen, 1999]. Within this potential of care-seekers one has to distinguish between expressed need (demand) and normative need. The organisation of services influences individual care-seeking behaviour. In open, unstructured systems, such as in Belgium, the population is targeted, as a whole and individual motivation appears to be the predominant reason for dental utilisation. Within this system oral health care, initially, is the responsibility of the parents and later of the individual himself. As a consequence, populations or groups who are most in need of oral health care often have limited access to the system or do not avail themselves of the system. Unmet needs appear to be greater, especially among children [Andersen et al., 1995].

Oral health care personnel. In the different West European countries the dentist is the individual responsible for oral health care delivery, directly or indirectly overseeing or co-ordinating contributions from related personnel. These include oral hygienists, dental assistants or dental nurses and dental technicians. The distribution of personnel within an oral health care system reflects the emphasis of the system [Andersen et al., 1995]. For example, a high proportion of dental hygienists may demonstrate a preventive philosophy or policy at the system level. Furthermore, the distribution of personnel, measured by oral health providers to population ratio, may demonstrate the various levels of availability and access to care, however this supposes an equal distribution between rural and urban areas. Table 1 reports the dentist/population ratio for different West European countries and the availability of dental hygienists [Bolin, 1997; Pine, 1997; Van Tielen, 1999; Cork, 2000].

In Belgium the dentist is the only professional trained and educated in the chair-side provision of oral health care. A vocational and technical education exists in the field of prosthetic dentistry and leads to the profession of dental technician. In 1998 the number of active dentists in Belgium was 8,095 of whom approximately 85% were self-employed in private practices. The remaining 15% were employed in private practices or in dental clinics. As there is no public dental service in Belgium no dentists work at community level.

The dentist-population ratio in Belgium in 1998 was 1:1,266 that compares with the neighbouring countries of France (1:1,504) and Germany (1:1,300). The Netherlands (1:2,240), the United Kingdom (1:2,260) and Ireland (1:2,365) and the Central European (Switzerland and Austria) countries have remarkably higher ratios. By contrast the Nordic countries, such as Sweden (1:980), Denmark (1:1,032) and Norway (1:1,089) have the lowest ratios. Figure 1 shows the evolution of the dentist-population ratio in Belgium from 1970 to 1997, expressed as the number of dentists per 10,000 population [Van Tielen, 1999], showing remarkable increase during the period 1975-1985. However, since 1985 only a modest increase, even a stabilisation, has occurred.

Only a minority of dental practices in Belgium employ chair-side dental nurses and there are no organised programs for training of dental assistants (nurses or hygienists). Auxiliaries are trained on the job by their dentist employers. Dental hygienists are not existing at all nor are there any dental therapists with limited training to care for children as in New Zealand.
Dental technicians provide denture service, including removable and fixed dentures and orthodontic appliances. They provide their services to dentists in independent commercial laboratories. Service provided directly to the patients is illegal [Pine, 1997]. In Europe nowhere technicians are licensed to provide dentures directly to patients.

Financial aspects. Financing reflects how the money gets into the system. The most common approaches being general government revenues or specific taxation, insurance or prepayment premiums paid by individuals and/or employers, and out-of-pocket direct payment by individuals. Reimbursement is the mechanism for payment for services, the most common being fee-for-service, capitation, budget, third-party payment or salary [Andersen et al., 1995]. In most West European countries oral health care systems are financed by a social security system based on solidarity. The reimbursement mechanism varies greatly according to the different countries. In private practice services fee-for-service and capitation are currently most in use. The fee-for-service payment has been the dominating system. Dentists in public health services are mostly reimbursed by salaries.

In Belgium fee-for-service payment is the traditional form for payment of dental care. The patient decides when to visit a dentist, in private or in a hospital, at a primary or secondary health care level, the dentist formulates a treatment proposal and informs the patient of the fee. If the patient chooses to follow the recommendations and receives the services, the patient is then responsible for paying the fee. The National Health Insurance, represented by different “Sick-funds”, supplies a partial reimbursement to the patient. Adults in work, both self-employed, employer and employed, have compulsory deductions from their wages or income to contribute to the health and social services provision in the National Health Insurance. This is illustrated in a structured scheme in Figure 2 [National Health Insurance, 1995]. A convention between National Health Insurance and dental practitioners regulates treatment types and fees.

By means of the National Health Insurance

![Fig. 2 - The Belgian Oral Health Care System (part of General Health Care System).](image-url)
corresponding countries. Besides, one has to acknowledge and emphasise that the oral health status is the result of complex interactions of oral health care delivery systems with social systems, environmental factors, such as fluoridation, income levels of the population, ethnic mix within populations, etc. According to the 1996-1998 data, Belgium has the second highest mean DMFT for 12-year-old children and the second lowest percentage of caries free children within Western Europe [Pine, 1997; Bolin, 1997; Cork, 2000; Vanobbergen et al., 2001].

Other European countries. Due to many socio-political changes during the last decade in Eastern Europe, East European countries were not included in this report. Most of them are in a transitional period: the former centralised, non-market-based oral health care system has been transformed to a more liberalised, decentralised and privatised system. It will be interesting in the near future to evaluate the impact of these two very different oral health care systems.

Discussion and recommendations

In West European countries, oral health care systems have evolved from focusing on removing and replacing teeth to restoring teeth, to preventing oral diseases and conditions, and now, envisioning oral health as part of general health [Andersen et al., 1995]. These changes have not yet been fully recognised in Belgium with respect to oral health care. The delivery of care still has predominantly technical and curative approaches, basically characterised as a fee-for-service private practice system, focussed on restorative treatment. Community based programs, monitoring and targeting specific age or risk groups does not exist and there is no evaluation of the outcome. There are only limited facilities, in local regional health councils, for oral health care workers to integrate with general health care and health promotion in a multidisciplinary approach, involving health and social workers from diverse backgrounds as well as the community at different levels. Besides, the divided governmental responsibilities, national and regional, concerning preventive and curative care, concerning health promotion and health care provision, do not stimulate or advance oral health workers towards a more preventive and integrated attitude, neither in private or community based
On the other hand the nature of organising and financing a system and the mechanisms of reimbursement will interact with individual socio-economic status and influence equity and efficiency of the system. People who have most of the oral disease seem to be the ones not receiving services from the current oral health care delivery system. This assumption leads us to the question: «How can we reach out to where the people are, rather than wait for them to come into the current system [Inglehart, 1993]?». Despite the fact that dental care for children is free of charge or reimbursed at 95% in most European countries, only the Swedish system offers both preventive and restorative treatment irrespective of initiatives from the parents. In the other countries the initiative still relies to a great extent on the parents [Bolin, 1997]. Cost-effective preventive programs, based on caries risk assessment, were introduced in pre-school and school children, especially in those areas with the highest caries prevalence [Axelsson et al., 1993; Holst et al., 1997]. This explains why only in the Nordic countries, with an extensive public dental service system, equity of treatment access was reached for children. In order to fulfil the requirements of a real up-to-date 21st-century oral health care system in Belgium, in accordance with other developed countries [Shalala, 1999], the following measures could be beneficial.

1. A clear and continuing population-based public dental service integrated in a general public health system, responsible for:
   - screening and independent data gathering;
   - defining normative needs of oral health care and priorities;
   - measuring the effects of oral health care;
   - targeting high risk groups;
   - co-ordinating oral health promotion and general preventive and curative measures in oral health.

2. A reevaluation of preventive treatment delivered in private dental practice and hospitals, and a well co-ordinated balance between primary health care and secondary health care.

3. Special attention for dental care in growing minority groups, such as children in low socio-economic groups, handicapped children, medically compromised children, immigrants...

4. Training in the special needs of the older patient.

5. A well-balanced dental educational system, educating dental professionals and auxiliary oral health care personnel, with close attention for preventive care and research.

6. Changes in financing systems with a properly balance between fee-for-service, capitation and budgeting, based on a growing awareness of the need for improved and equal accessibility of dental care.

7. More integrated approach, also at political level (e.g. advertising for sweets, soft drinks, vending machines with soft drinks at schools...).

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