2.2.3. Oral and dental health

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Oral diseases and the relation between oral health and general health

Oral health is an integral part of general health, it is determined by the same risk factors, and is essential for the wellbeing of the person and for a good quality of life. The orofacial complex is involved in many functions: speaking, smiling, chewing, swallowing, breathing, feeling, tasting, complex functions, essential for nutrition / digestion and communication and social relationships, thus the quality of life, good or bad, depends to a large degree on oral health, which is intended here to mean absence of pain and the ability to carry out essential functions.

There are well demonstrated correlations between general health and oral health, such as that between diabetes and periodontal disease: indeed diabetes is considered to be the sixth complication of such diseases[1].

The fact that many oral diseases are linked to other pathologies, mainly noncommunicable chronic diseases, is probably because of common risk factors. Diet, stress, oral hygiene and smoking are common proximal determinants of chronic degenerative and oral pathologies, as has been highlighted by the *Common Risk Factor Approach*[2].

Lastly, it should be considered that diverse pathologies may be localised in the mouth and that, at the same time, these oral diseases are risk factors for a variety of general diseases.

Dental caries and periodontal disease are the most common, widespread oral diseases in the world. Dental caries usually emerges in childhood, while periodontal diseases appear in adulthood; but if one compares burden, severity and the clinical consequences of the disease, dental caries is undoubtedly more severe than periodontal diseases, both in its acute stage and in chronic form.

Dental caries depends on a combination of many, diverse factors: consumption of sugars, oral hygiene, and the degree of mineralisation of the teeth, which latter depends on the degree of exposure to fluoride. Dental caries is highly prevalent in Asia and the Americas, while it is relatively less prevalent in Africa. The DMFT (*Decayed, Missing, Filled Teeth*) is an indicator used to measure the prevalence of dental caries. It shows the average number of decayed teeth (D), teeth lost through caries (M) and fillings (F) in a sample population.

Tooth loss through tooth decay and/or periodontal diseases, which culminates in the lack of dentition among the elderly, is considered an inevitable process, linked with ageing. This is because the rate of edentulousness is globally very high, but this need not happen: indeed, today there is a marked diminution in the rate of edentu-

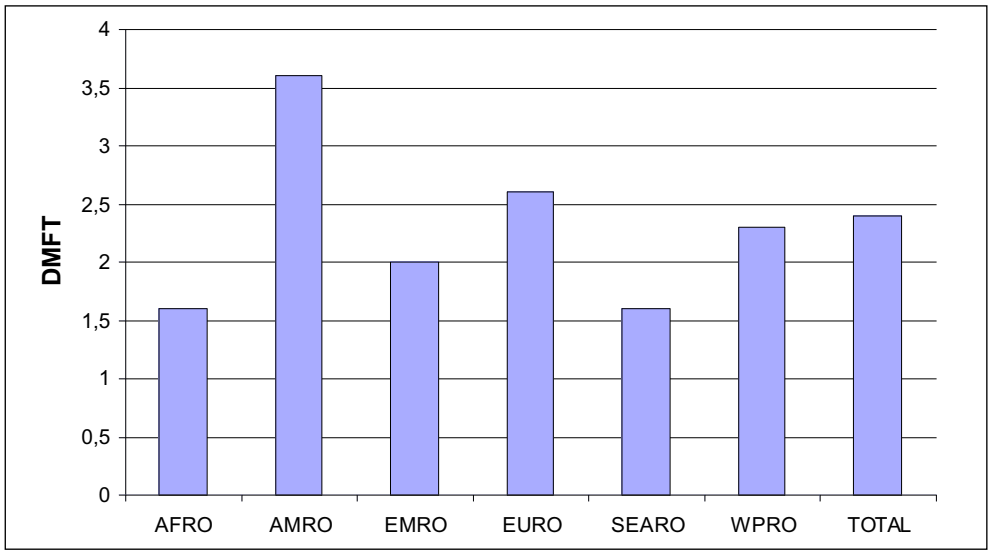

Figure 1. Dental caries experience (DMFT) of 12-year-old children according to WHO region.

Source: WHO Global Oral Health Data Bank and WHO Oral Health Country/Area Profile Programme, 2000.

lousness among the elderly from the more affluent social classes in richer countries.

The incidence of certain pathologies, such as precancerous states and oral cancer, is 25 per 100,000 in Africa[3] and even higher in India. These pathologies are usually associated with tobacco consumption, alcohol and the habit, in some areas of the world, of chewing products such as betel or khat. There are many, often severe, oral manifestations of HIV/AIDS (oral candidiasis, Hairy Leukoplakia, Kaposi's sarcoma) and, it should be remembered, the mouth is also one of the main entrances used by opportunistic infections, especially when there are untreated infectious foci already present.

There is also Noma, known as "*cancrum oris*" (oral cancer), a severe degenerative disease that affects the soft tissues of the oral cavity. It is typically found in children and is the result of malnutrition, immunodepression and poverty: the death rate is high.

One frequently occurring pathology is the abnormal position of wisdom teeth (third molar) which, especially in young people, can cause severe recurrent infections, which may result in death (ligneous phlegmon of the neck may cause suffocation).

However, unfortunately, the epidemiological data on oral diseases at our disposal, especially that from low income countries, is often out of date: no longer updated annually or, in some countries, no longer (if ever) collected. There is an urgent need to gather reliable data to obtain a more accurate picture of the scale of the problem.

In the majority of low income countries the population have limited, or no, access to oral health care either because there are no such dedicated services, and/or because those that exist are mostly in urban areas, where dental services are usually private. Of late there has been an increase in the prevalence of dental caries in these lower income countries; while in the northern hemisphere, there has been a visible overall decrease in its prevalence, except among the more disadvantaged groups of the population.

In low income countries, 90% of dental caries are untreated. When oral diseases are not treated, quite apart from the pain they cause which, in the case of acute involvement of the pulp, is of almost intolerable intensity and proportion, they will lead to recurrent infections, such as abscesses, fistulae and so on, which can result in severe functional incapacity from a very early age, to the extent that alimentation may well be compromised. Other pathologies, e.g. oral cancer and Noma (*cancrum oris*), if they do not lead to death, will leave permanent signs of mutilation or disfigurement and the anti-aesthetic aspects of oral diseases can affect both self-esteem and the ability to develop social relations quite as much as, for example, leprosy does.

There are many reasons why oral diseases have been neglected for so long: they are seen as low priority pathologies; there is no integration within Primary Health Care (PHC) services; no policies aimed at promoting oral health, but rather a curative, as opposed to preventative approach is favoured. Then there is the "Inverse care law", i.e. an unequal distribution of services which, paradoxically, are least present and available where they would most be needed.

The burden of oral diseases is heavy, especially when calculated as the sum not only of treatment costs and direct payments by patients, when health services are present and accessible, but also of the indirect costs borne both by the community and by individuals in terms of work and school days lost. The number of days lost due to poor oral health is little different from the number lost through tuberculosis or malaria.

Despite the fact that more than four billion people worldwide do not have access to dental care, poses a serious problem for global public health, and that there is a clear relationship between oral diseases and the socio-economic position of the individual, there is still a marked lack of oral health programmes: they either do not exist or are, at best, discontinuous. In May 2007, the Assembly of the World Health Organisation (WHO) declared that "the economic burden of oral diseases is expected to rise rapidly globally, above all, among disadvantaged and poor population groups, at least until programmes for the prevention of oral disease are promoted"; there is a need for a general strengthening of programmes for the promotion of oral health at every level. Once again, here, the best strategy would be prevention and basic treatment at the primary level, as adopting a treatment approach would likely prove far too expensive for national health systems and not accessible for disadvantaged sections of the population.

Appropriate technologies for oral health

Today, in the dentistry sector, Aid for Development is based on the efforts of associations and NGOs which may often depend on voluntary services offered by dental professionals. Unfortunately these volunteers, despite their motives and generosity, have rarely had adequate training and often lack the tools required for evaluating priorities in situations where resources are limited. Furthermore, because many of them are clinicians, they often do not have a public health perspective and so are less likely to seek to improve the oral health of the general population and the community but, rather, will tend to focus on individual patients.

There is also a tendency to export a "western" system of dentistry, where the techniques and procedures adopted may prove unsuitable and inefficacious in other contexts, just as they can be in the Northern hemisphere too, where dental care is often inaccessible for the poorer members of the population.

Voluntary work which, for a limited period only, introduces previously unknown techniques into a context of poverty and disadvantage may have the adverse effect of creating dependence and raising expectations among the local population. When the foreign health workers leave, this population becomes dissatisfied and begins not to trust the local workers who have, in their turn, been seduced by all the technology and sophisticated equipment. However, after having been taken to the place at considerable expense of both money and effort, this complex equipment is usually destined to deteriorate, to malfunction, due to lack of maintenance skills[4].

On the other hand, it would be advisable to try to trigger a real process of community level empowerment for this aspect of health.

For some time now, the WHO Collaborating Centre in Nijmegen, in the Netherlands, has promoted a policy document to tackle these perceived needs and develop a suitable, and realistic, community oriented approach to oral health among populations.

After careful analysis and evaluation of both the positive experiences and the mistakes committed, in the field of dental care, throughout the long history of Aid for Development, the Basic Package of Oral Care (BPOC) was drawn up in the attempt to offer a rational approach to the problem[5].

The main needs of the population addressed by the BPOC were: first and foremost emergency treatment (pain, infections, dental trauma), but also access to fluoride (already recognised by the WHO as among the 50 essential drugs and the best means of preventing dental oral diseases and improving the course of the disease) and, minimum primary care, with low cost materials for healing affected dental hard tissues.

This simple technique is based on a handheld set of tools and minimum materials; the tools are easy to disinfect and sterilise using sodium hypochlorite and a pressure cooker.

The three key components of the Basic Package of Oral Care (BPOC) are:

Oral Urgent Treatment (OUT): this is urgent pain treatment, first aid for dentoalveolar trauma, and a service for referring more complex cases to better equipped centres - if they exist. Pain relief is the first and most widespread demand

from people with oral problems, thus OUT should be available and accessible on a large scale.

Affordable Fluoride Toothpaste (AFT): The use of fluoride toothpaste has been shown to be the most effective way of preventing dental caries. To achieve universal access to fluoride toothpaste, governments, industry, doctors and NGOs must work together in synergy to make the product available and affordable, thus exposing people to the correct quantity of fluoride. Unfortunately, the path to this objective is strewn with obstacles, amongst which is the fact that, in many countries, toothpaste is considered to be a cosmetic product and is therefore subject to higher taxes. It should be highlighted, that recent studies have shown that, thanks to the widespread use of fluoride toothpastes since the 1960s, there has been a steep drop in the prevalence of caries in the Western World[6].

Atraumatic Restorative Treatment (ART): is a treatment for dental caries, based on clear scientific evidence, which starts from Minimally Invasive Dentistry. It does not require infrastructures or advanced technology, and can be used even when there is no running water or electricity. It consists of removing caries and cavity preparation using a minimum of hand instruments and filling the tooth with a low-cost affordable restorative material, one able to slowly release fluoride over time and prevent the lesion occurring again (glassionomer cement). Treatment could be done by dentists, but also by trained dental auxiliaries, nurses, dental therapists or other local figures after appropriate training, as it requires a low learning curve[7].

This is considered a preventative measure, as it is based on a biological, rather than a surgical, approach to caries. It offers the only sustainable approach for an enormous number of communities all over the world. The ART technique is easy to do and efficacious, and is able to offer results comparable to those achieved with other materials commonly used in dentistry; it is also well accepted by the population, especially young children, since it neither requires the use of rotating instruments nor, in many cases, of anaesthetic; lastly it is affordable, the average cost of the technique has been assessed at 0.50 dollars per treatment[8].

Given current knowledge it would seem that, at last, it may be possible to achieve better sustainability for dental treatment, just so long as we really want to undertake the effort it will require to reorient services, to promote BPOC and to remove the barriers that impede access to prevention and cure among the more fragile populations at any latitude.

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