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Why a radical overhaul of dentistry is needed

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Earlier this year, a group of us met in Colombia to reflect on the future of dentistry worldwide. We wanted to understand why oral health of most populations across the world had not improved, except in a few cases,

despite massive growth in the number of dentists and parodontal cadres trained each year in many countries and despite the employment of increasingly sophisticated technologies in the treatment of dental caries and periodontal diseases. We were concerned, moreover, that in many cases, the situation has worsened. Why is it, for example, that among populations with relatively easy access to dental care, the mortality of the dentition is considerable, with some 25%–30% of adults aged over 65 years being edentulous?^{[1],[2],[3]} And why is it that among populations with little or no access to dental care, and who often have poor oral hygiene, most people retain most of their teeth for most of their lives.^{[4],[5]} Is there something wrong with the way that our profession has been operating?

The conventional approach to dealing with dental caries and periodontal diseases is based on mechanical interventions that take little account of the biological processes that create these conditions.

For dental caries, the conventional approach involves drilling and excavation. In doing so, healthy tissues are removed. The resultant damaged teeth are restored with filling materials of various kinds, all of which have a limited lifespan.^[6] Such procedures begin a cycle of replacement of larger and larger fillings over time, resulting often in injury to the pulp, followed by endodontic treatment which, in many cases, fails. Eventually, in many cases, such affected teeth require extraction. The gates to crowns and bridges are then opened and nowadays, for the more affluent, the offer of implants. Although presented as a “treatment,” drillings and fillings do not address the underlying disease process. Instead, such interventions are mechanical “solutions” to biological problems that fail to arrest or control the disease process, and the evidence suggests that they often do more harm than good.

Similarly, the conventional approach to “treating” periodontal diseases is based, not on dealing with the underlying biological processes, but rather the use of mechanical intervention – scaling, polishing, and in some cases, surgical removal of soft tissues and guided tissue repair. While a few may benefit from such interventions, in practice, the provision of such care on a population-wide basis is not feasible. Manji and Sheiham^[7] estimated, for example, that the treatment needs (excluding follow-up care) according to the Community Periodontal Index of Treatment Needs for the total Kenyan child population aged 5–15 years alone would amount to between 1432 and 4297 working years. Yet we know that, in most populations, periodontal diseases are not a major cause of tooth loss even among populations with poor oral hygiene, so the allocation of the resources necessary to provide equitable treatment for the entire population would seem unreasonable in comparison to the relative importance of periodontitis.

With our current understanding of the biological processes involved, it is possible to control the progression of both caries and periodontal diseases with rather simple measures.^[8] In most cases, this does not require traumatic mechanical invasion of the dental tissues and can be managed by the patient, perhaps with occasional professional guidance.

However, if these most common oral health problems can be controlled relatively easily, why is it that mechanical interventions still predominate in practice? Part of the reason, we believe, lies in the way in which dentists are remunerated, whether in the public sector or in private practice. Payments are based on, or performance is measured by, the number and type of invasive treatments that are performed. Dentists are paid to intervene mechanically rather than for establishing health. Unfortunately, such payment systems potentially create incentives for overtreatment, especially in private practice where there are significant pressures to ensure an adequate return on investment.

This situation is being exacerbated by the entry into the health sector of corporations and insurance companies, or investors who own chains of practices. These ventures set the criteria for when and how to treat caries and periodontal diseases to generate levels of financial returns expected by their shareholders. In other words, the incentive here is to generate income not necessarily to maintain health or control disease.

Restorative treatment – with extensive replacement of fillings – creates the vicious restorative circle referred to above.

In the last several decades, the world has seen growing disparities of wealth internationally, with the wealthiest 1% owning more than half of the global wealth, with just eight individual men, according to OXFAM,^[9] owning the same wealth as half of the world's population. Austerity policies worldwide (commonly referred to as “structural adjustment programs” in the global South) have diverted social and welfare spending away from the public to the private sector in the belief that “the market” can meet social needs, despite evidence to the contrary.^[10] This has led to the creation of a two-tier health service – one for the rich, and the other, limited and often of poorer quality, for the majority.

A depressing example is Colombia which has seen no improvement in oral health for several decades, where there is extensive social inequality and where the oral health needs of the majority of the population are not met: there is nevertheless a ratio of 1 dentist to every 750 people. Many who can afford have cosmetic treatment to supposedly “improve the appearance.” Moreover, with a combination of private and public universities turning out dentists at an extraordinary rate, the situation in Colombia is one where there are growing numbers of dentists who are unemployed.^[11]

In India, caries is expected to increase significantly in spite of a large increase in the number of dentists. The number of dental schools has increased from 95 to around 300 within the past 20 years, and more than 25,000 dentists are graduating each year. Colleges, mostly private business ventures, open and close frequently. Even though India has a population of over 1.3 billion, this workforce is excessive and maldistributed: many are underemployed or seek to emigrate. Most colleges are in urban regions where the dentist-population ratio is as high as 1:4000, while in rural India, it is as low as 1:30,000. The disease burden remains high among the disadvantaged; oral health is not considered integral to general health, and services are not accessible to people in rural regions.^[12]

Commenting on the state of dentistry, Dr. Naseem Shah, former chief of the Centre for Dental Education and Research at the All India Institute of Medical Sciences wrote: “The fact is that the practice of dental profession is the reflection of the degradation of moral and ethical values, generally seen everywhere. The greed for material and personal gain has overtaken any sense of societal obligations and larger public interest. Therefore, we see today less of public health interest as compared to interest in refined, technical and often invasive dental procedures.”^[13]

These are not the only countries where the profession is turning away from its purported role as health provider to providers of cosmetic services predominantly for the affluent. This is a tendency that we are seeing on an international scale.

While the situation may look dire, there are a few exceptions such as the following in two Scandinavian countries. Over the last half century, caries prevalence and incidence have dropped by almost 90%. In Denmark, there have been two demonstration programs, one of which includes cohorts of 18 year olds of whom now almost 60% have never experienced dental cavities or fillings and the remaining 30% have only 1–3 surfaces so affected. This result is obtained because the principles of “caries control” with proper daily oral hygiene using a fluoride-containing toothpaste and sugar restrictions in the public domain are applied. Virtually, no dentists have been involved in the achievement of such dramatic results: it has been almost entirely due to public education and the work of dental auxiliaries who look after children from birth to 18 years of age.^[14]

Even more impressive are the results obtained in a town in Sweden over a period of 40 years. From 1973–2013, four cross-sectional surveys of 1000 randomly selected individuals aged 20–80 years were carried out.

In all age groups, the number of edentulous individuals decreased dramatically over that period and the average number of teeth present increased. There were no full-denture wearers younger than 80 years found in 2013. Among 60 year olds, nearly all had complete dentitions! The proportion of periodontally healthy individuals increased from 8% to 44% of citizens over the 30-year period, whereas the small subgroup of individuals classified as having advanced periodontitis did not change over that period, despite having easy access to treatment by periodontal specialists.^{[15],[16]}

Such observations from around the world call for a thorough rethinking of the future of dental care and of the dental profession – its training, concepts of intervention, and their role in the general health-care delivery system. There needs to be a shift toward more consciously serving the needs of the majority of populations rather than the needs of a privileged minority who may be able to afford to pay for treatment. Time has come to apply the concepts of caries control and good oral hygiene to maintain a healthy periodontium, concepts which are well understood today, and to create a situation where communities can take control of their own health.

In many countries, corporations have been forced to place warning labels on products that contain substances hazardous to health, such as tobacco and alcohol, so there is a case for labeling of products containing sugars and refined carbohydrates as harmful to health. This is justified not only on oral health grounds, but also in relation to the growing epidemic of obesity and diabetes.

Of equal concern is the growing influence of corporations in the funding of health research, which has grown in the hope of promoting their products, and as government investments in education have declined. This restricts independence of research and threatens the integrity of the profession in relation to the kinds of health interventions that researchers might propose.

We should not forget that oral cancer is the sixth most common cancer in the world.^[17] In many countries, tobacco smoking and the chewing of tobacco and areca (betel) nut continue to be widespread. There is a global epidemic of human papillomavirus-related oral cancers, especially oropharyngeal cancer. The Indian subcontinent already accounts for one-third of the global burden of cancers of lip and oral cavity and the problem is growing. Actions need to be taken by the profession to curb those practices that contribute to oral and oropharyngeal cancer.^[18]

Today, our understanding of the science of the most common oral diseases allows us to control the progression of both caries and of periodontal diseases. Ideally, this could be carried out based on both community and individual actions – maintenance of reasonable oral hygiene combined with the use of fluoride toothpastes. To popularize understanding of such knowledge, the focus of oral health should be to enable community health workers to lead on the provision of care in integrated health-care teams.

Dentistry itself should become a specialism of medicine, just as ENT (ear, nose, and throat), ophthalmology, dermatology, etc., are specialisms of medicine. As such, oral health physicians would be responsible for providing leadership of the oral health team, in the management of advanced disease and the provision of emergency care, relief and management of pain, infections and sepsis, management of trauma, diagnosis and management of soft-tissue pathologies and where justifiable from the point of view of the maintenance of health, interventions to re-establish a functional dentition and oro-facial reconstruction. Since the management and control of most common diseases could be undertaken by primary health-care workers, a relatively small number of such oral health physicians would need to be trained. In addition, a relatively small number of public health dentists would be needed to coordinate oral health needs assessments, implement and evaluate community-based oral health improvement strategies, and to act as oral health advocates to ensure closer integration of oral health into wider policies.

We are convinced that it would be possible to show that, with relatively little investment, it would be possible to control caries and periodontal diseases on a population basis. Demonstration projects of this kind should be developed in different societies to document cost-effectiveness while enabling all members of society to maintain a functional dentition for life.

Those interested in the evidence behind our line of thinking should read the La Cascada Declaration and the associated papers.^[19]

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