

## Oral Health Inequalities

Editorial

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### Introduction

Oral health professionals have nowadays to emphasize prevention, and the promotion of health and preservation of sound teeth rather than counting the number of lesions and/or the extend of the disease. However, social inequalities in oral health are observable regardless of the population, social classification, measures of oral health, and the level of severity of the pathology. Inequalities exist because of socially determined differences in opportunity, behaviours, and exposure to factors which determine oral health (Thomson, 2012). Oral diseases affect some 3.9 billion people (Marcenes et al. 2013). Untreated caries in permanent teeth was the most prevalent condition evaluated for the entire GBD (Global Burden of Disease). Combined oral conditions accounted for 15 million Disabilities, globally Adjusted Life-Years (DALYs) (1.9% of all Years Lived with Disability- YLDs).

DALYs caused by oral conditions were increased by 20.8% between 1990 and 2010. This was mainly related to the population growth and aging. While DALYs associated with severe periodontitis and untreated caries increased, those due to severe tooth loss decreased. Therefore, oral health inequalities arise from a complex web of health determinants, including social, economic, genetic and environmental health system factors. Eliminating these inequalities cannot be accomplished in isolation of oral health, or without recognizing that oral health is influenced by multiple individual, community, and health systems levels.

- ❖ Reducing inequalities in health has become a major focus for government health policy.
- ❖ Widening inequalities in oral health exist between social classes, regions of the country and among certain minority ethnic populations.
- ❖ Oral health inequalities will only be reduced through the implementation of effective and appropriate oral health promotion policy.

Health inequalities Many health education interventions have been influenced by research based upon psychological models. These theories focus at an individual level and seek to explore cognitive and affective processes determining behaviour and lifestyle. Current theories have only a limited value in the development of public health action on altering the underlying social determinants of health. New theoretical approaches have emerged including oral health promotion, and exploration of the relationship between the social environment and health. (Watt, 2002). People of all ages and demographics are concerned.

At least 18.1 percent of American adults experience some forms of mental disorder and 8.4 percent have a substance use disorder. Dental caries is one of the most common chronic diseases, and leads to millions of lost days of schooling for children and absenteeism from work in adults, resulting in both short- and long-term impacts on economic productivity. There are inequalities in caries by social class and deprivation in the primary dentition. For both 12 and 15 year olds, there was an association between social class and the decay. There was an independent association between social class and the number of DMF permanent teeth. Two dental conditions, periodontal disease and dental trauma vary by social class and ethnicity, leading to frailty in elderly people.

### Caries Inequalities

There were significant income inequalities in caries prevalence in the youngest age group, marginal effects of 0.10 to 0.18, representing an increase in the probability of caries. With a number of teeth as an outcome, there were significant income gradients after adjustment in older groups, up to 4.5 teeth between richest and poorest but none for the younger groups. For periodontal disease, income inequalities were mediated by other socio-economic variables, while the relationships were age-dependent. Oral health inequalities manifest in different ways in different age groups, representing age and cohort effects. Income sometimes has an independent relationship, but education and area of residence are

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Received: October 03, 2020

Published: October 08, 2020

Citation: Michel Goldberg. Oral Health Inequalities. *Int J Dentistry Oral Sci.* 2020;7(10e):1-3. doi: <http://dx.doi.org/10.19070/2377-8075-200003e>

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also contributory. (Steele et al., 2014).

In adults, the differences in decay experience is less unequal than in children but there are marked social class inequalities in edentulousness of adults. Periodontal diseases prevalence and severity varies by a number of social conditions. People from higher social classes, those with more education, people living in urban areas and females have less severe periodontal disease than their lower social class counterparts who are less educated. Although oral health has dramatically improved overall in the last 20 years, oral health inequalities have widened. Oral health inequalities are found in dental caries levels amongst preschool children. A reduction in oral health inequalities will only be achieved through the implementation of effective and appropriate health promotion policies which focus action on the underlying social, economic and environmental causes of dental disease (Watt & Sheiham, 1998).

Many studies found at least one measure of caries to be significantly higher in low-socio-economic position (SEP) compared with high-SEP, while only a few studies found the opposite. The

odds of having any caries lesions or caries experience (decayed missing filled teeth [DMFT]/dmft > 0) were significantly greater in those with low parental educational or occupational background or income (Schwendicke et al., 2015). Lower SEP are significantly associated with greater risk of having caries lesions. Despite the included studies were heterogeneous with regard to the study design, the nearly unequivocal direction of reported findings, and the precision of our estimates strongly support the existence of such association.

### Periodontal Lesions Inequalities

Severe periodontitis affects 5-20% of most adult populations, and it is a major cause of tooth loss in both developed and developing countries. Periodontal diseases constitute one of the major global oral health burdens, and periodontitis remains a major cause of tooth loss in adults. The World Health Organization recently reported that severe periodontitis exists in 5-20% of adult populations, and most children and adolescents exhibit signs of gingivitis. Twelve basic, translational, and applied research areas have been proposed to address the issue of global periodontal health

**Table 1. General and Local Established or Potential Risk Factors of Periodontal Diseases.**

General/ Systemic Factors :	Subject determinants, patient compliance and access to regular dental care, socio-economic status, tobacco smoking, uncontrolled diabetes mellitus, history of periodontitis neutrophil and other acquired immunologic dysfunctions, genetic traits, human immunodeficiency virus infection, medications (e.g. phenytoin, nifedipine, and cyclosporin), stress, hormones, obesity, osteoporosis, excessive alcohol consumption.
Local Factors :	Poor oral hygiene, microbial factors, anatomic plaque-retentive factors, furcation involvements, root abnormalities and open contacts, impacted third molars, overhanging restorations, pulpal involvement and root fracture, external root resorption, trauma from occlusion parafunctional habits, tooth mobility.

**Table 2. The Basic, Translational, and Applied Research Agenda items.**

- Cross-cultural studies to identify socio-economic factors that hinder the development and implementation of intervention strategies to prevent periodontal diseases.
- Development and validation of cost-effective preventive and supportive care schemes suitable for application in underserved populations.
- Multicenter, longitudinal studies on establishing effective oral health care programs for prevention of periodontal diseases.
- Development of a preventive approach for prevention and control of major chronic diseases (including gingivitis and periodontitis) in humans through improving socio-economic situations and promotion of healthy life style.
- Further study on the link of periodontal diseases and systemic disorders as well as the effects of periodontal diseases and care on quality of life.
- Economic impacts of periodontal disease and periodontal care as well as the related health disparities study.
- Comparative effectiveness research in daily periodontal care.
- Clinical study on incorporation of patient or subjective-based outcome measures.
- Identification of genetic variations that underline complex disease traits in vulnerable populations, and determination of how those genetic variations interact with environmental factors to affect the initiation and progression of periodontal diseases.
- Mucosal vaccination research for prevention and control of periodontal diseases.
- Sensitive salivary biomarkers for identification of high-risk individuals, which will facilitate periodontal screening, early diagnosis, and in-time treatment.
- Prospective study on the effectiveness of host modulatory therapy moderately to highly susceptible patients (Jin et al., 2011).

inequality (Jin et al. 2011).

**Oral cancer** is the eighth most common cancer worldwide. Tobacco is a major risk factor for oral cancer. Heavy consumption of alcohol and diets poor in essential minerals and vitamins are important causative factors, and it is now clear that infections with so-called high-risk types of human papilloma viruses make a significant contribution.

**Oral infections** contribute importantly to oral disease. HIV infection, associated to viral, fungal, and bacterial infections, constitutes a major problem. Tuberculosis, Sexually transmitted diseases, and Noma are major causes of oral disease (Challacombe et al., 2011).

**The social determinants** of health. New theoretical approaches have emerged which explore the relationship between the social environment and health (Watt, 2002). Many studies reveal a weak relationship between psychological concepts such as motivations, beliefs, attitudes and opinions with actual behaviour. Evidence arising from many studies have revealed the importance of social or other motivating factors rather than health concerns as driving behaviour change. Life course analysis is based upon an analysis of the complex ways in which biological risk interacts with economic, social and psychological factors in the development of chronic disease throughout the whole life course.

## Conclusion

By shifting the focus of the model from (i) a traditionally curative, mostly pathogenic to a more salutogenic approach, which concentrates on prevention and promotion of good oral health, (ii) from a rather exclusive to a more inclusive approach, which takes into consideration all the stakeholders who can participate in improving the oral health, we can position our profession at the forefront of a global movement towards optimum health through good oral health.

Future areas of research: Five areas of priority have been identified: 1- Meet the increasing need and demand for oral health care. 2- Expand the role of existing oral healthcare professionals. 3- Shape a responsive educational model. 4- Mitigate the impacts of socio-economic dynamics. 5- Foster fundamental and translational research, and technology.

Oral diseases are preventable, They represent the most common

diseases. Poor oral health has a profound impact on quality of life and well-being, as well as significant economic impacts. Causes of oral disease relate to persistent inequities in access to oral healthcare. The challenge is to implement a coherent program of research with the intention of delivering measurable improvements in global oral health. It is crucial to tackle the social determinants of oral health, improve global oral health and reduce inequalities. This is a major challenge that has the potential to bring significant, real health benefits to the world's population. Decisions about healthcare are still be made without a solid research evidence base (Williams, 2011). In dentistry, decisions are predominantly directed toward connective tissue biophysics/mechanics, tissue engineering, biotechnology, including gene therapy and drug delivery, transport dynamics, and molecular engineering (macromolecular structure, protein structure, and molecular therapies). The results of this research effort highlight that treating patients with advanced oral and dental disease should take into account the reduction or disappearance of oral health inequalities, rather than to understand the causes underlying the development of oral pathologies and move to remedy them.

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