

ICOHIRP

international centre for
oral health inequalities
research & policy

a global network committed to promoting oral health equity

Social inequalities in oral health: from evidence to action

Edited by Richard G Watt, Stefan Listl,
Marco Peres and Anja Heilmann



EDITORS

Prof Richard G Watt
Dr Stefan Listl
Prof Marco Peres
Dr Anja Heilmann

CONTRIBUTORS

Dr Jun Aida, Tohoku University
Prof Paul Allison, McGill University
Dr Saeed Alzahrani, Imam Muhammad ibn Saud Islamic University
Prof Lekan Ayo-Yusuf, Sefako Makgatho Health Sciences University
Dr Habib Benzian, Health Bureau
Prof Ivor Chestnutt, Cardiff University
Dr David Conway, University of Glasgow
Dr Blanaid Daly, King's College London
Dr Loc Do, University of Adelaide
Dr Jenny Godson, Public Health England
Prof Magnus Hakeberg, University of Gothenburg
Dr Anja Heilmann, University College London
Dr Stefan Listl, University of Heidelberg
Prof Lorna Macpherson, University of Glasgow
Dr Manu Mathur, Public Health Foundation of India
Prof Samuel Moysés, Pontifical Catholic University of Paraná
Prof Simone Moysés, Pontifical Catholic University of Paraná
Prof Tim Newton, King's College London
Prof Marco Peres, University of Adelaide
Dr Sasha Scambler, King's College London
Prof Lone Schou, University of Copenhagen
Prof Harold Sgan-Cohen, Hebrew University of Jerusalem
Prof Aubrey Sheiham, University College London
Prof Jimmy Steele, Newcastle University
Prof Elizabeth Treasure, Cardiff University
Dr Georgios Tsakos, University College London
Prof Richard Watt, University College London
Prof Robert Weyant, University of Pittsburgh
Dr Sandra White, Public Health England
Prof John Wildman, Newcastle University
Prof David Williams, Queen Mary University of London
Dr Sebastian Ziller, German Dental Association

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DESIGNER

Mr Andrew Lathwell
www.lathwell.com

PROOFREADER

Matt Rance
www.proofprofessor.com

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ORAL DISEASES really matter. Globally, billions of people suffer from untreated dental decay. Worldwide, untreated decay in permanent teeth is the most prevalent disease, and severe gum disease is the sixth most common disease. Oral and dental diseases afflict almost everyone. They begin in the very young and lead to substantial dental morbidity and functional problems among older people. Throughout the lifespan, dental diseases negatively impact on quality of life and social functioning. Pain, infection, and difficulties eating and speaking are all common impacts of oral conditions. Dental treatment is costly to both individuals and healthcare systems. Dental diseases are, however, largely preventable and now disproportionately affect more disadvantaged populations.

We warmly welcome the formation of the International Centre for Oral Health Inequalities Research and Policy (ICOHIRP).

As with other chronic diseases, dental diseases exhibit a substantial social gradient, creating unacceptable inequities. It is unjust and unfair that people from disadvantaged backgrounds experience high levels of dental diseases. The negative consequences of oral diseases such as poorer school performance and consequent reduced employment opportunities, low self-esteem and social isolation all contribute to wider health inequalities in society. Urgent action is therefore needed to tackle oral health inequalities.

Dental treatment costs are high because of the dominance of a treatment approach that requires expensive technology, materials and

highly trained clinical personnel. Therefore, treatment is often beyond the resources of many. Dental treatment alone, however, will have a small effect on reducing oral health inequalities. Public health action is needed to address the underlying causes: the social determinants of oral health inequalities. The social patterning of oral disease is similar to other chronic non-communicable diseases as they share causes. Joint integrated action on the common risks for chronic diseases is therefore essential.

We warmly welcome the formation of the International Centre for Oral Health Inequalities Research and Policy (ICOHIRP). This much-needed initiative brings together leading researchers and policymakers from many countries; it is an excellent example of global collaborative working. ICOHIRP should provide an ideal platform for developing new approaches to tackle health and oral health inequalities, both within and between countries.

Professor Sir Michael Marmot,
UCL.

Professor Kevin Fenton,
Public Health England.

Introduction

DENTAL DISEASES, despite being largely preventable, remain a major public health problem across the world. Dental caries, periodontal diseases and oral cancers, the main oral diseases, are highly prevalent chronic conditions that have a significant negative impact on quality of life.

Oral diseases are expensive to treat and the costs of dental treatment are considerable to both the individuals affected and the wider healthcare system. In recent decades significant overall improvements have occurred in rates of dental caries and periodontal diseases in both high- and middle-income countries. In many low-income countries caries levels appear to be increasing linked to economic development and the consequent higher consumption of free sugars. However, a major concern in many parts of the world is the emergence of oral health inequalities.

Increasingly oral diseases disproportionately affect socially disadvantaged members of society. Oral health inequalities are therefore considered as differences in levels of oral health that are avoidable, and deemed both unfair and unjust in modern society. Oral health inequalities are not merely the differences in oral health status between the rich and poor. As is the case in general health, a consistent stepwise relationship exists across the entire social spectrum, with oral health being worse at each point as one descends, down the social hierarchy. Known as the social gradient, this consistent relationship between oral health and social status has profound implications for policy. The social gradient in oral health is a universal phenomenon found at all points in the lifecourse and in different population groups across the world. Public health research has highlighted that health inequalities are caused by the broad conditions in which people are born, grow, live, work and age, the so-called social determinants. These underlying causes

equally apply to oral health inequalities as oral diseases share common determinants with other non-communicable conditions.

Dental treatment and clinical prevention alone will not reduce oral health inequalities, and indeed may even widen inequalities. An urgent reappraisal is needed on future action to reduce oral health inequalities. A radical public health agenda is required to tackle the underlying social, economic and political causes of oral health inequalities. Collaborative efforts between researchers, policymakers, public health practitioners, clinical teams and the public are urgently needed.

The International Centre for Oral Health Inequalities Research and Policy (ICOHIRP) was formed in 2013. Committed to tackling oral health inequalities both within and between countries, academics and policymakers from 15 countries have formed a global network to explore the nature of oral health inequalities and to inform policy recommendations. The aim of this monograph is to present an overview of the state of knowledge on global oral health inequalities and the actions needed to address this major public health problem. The first section reviews the nature, pattern and impact of oral health inequalities. The second section outlines the evidence of the social determinants, the underlying causes of oral health inequalities in society. Finally, consideration focuses on the policy and research agenda. We hope this publication will stimulate further debate and discussion on oral health inequalities, but most importantly will also inform future evidence-based action to tackle this major public health issue.

Professor Richard G Watt.

UCL.

Section 1: Patterns of oral health inequalities and social gradients

1.1 Impact of oral diseases and oral health inequalities

Aubrey Sheiham, David Conway and Ivor Chestnutt

OVER 200 YEARS ago the Scottish poet Robert Burns described toothache as “thou hell o’ a’ diseases”. As a strong egalitarian Burns would have appreciated the injustice of the burden of the disease falling mainly on the poorest in society - what is now known as health inequalities (“Address To The Toothache” – Burns 1795). These lines still resonate today in the burden and impact of oral diseases.

Oral health is integral and essential to general health, wellbeing and quality of life. Moreover, oral health and general health are interlinked; oral diseases and other non-communicable chronic diseases share “common risk factors” (Sheiham and Watt 2000). This wider view highlights the importance of the major oral diseases (Conway et al. 2013).

The impacts of oral diseases

Oral disease has adverse consequences for both individuals and society. The social gradient in disease means that people from the most disadvantaged backgrounds suffer disproportionately. Oral health problems can have negative impacts on the quality of life of people. Throughout life, dental diseases negatively impact on quality of life and social functioning. The impacts affect their ability to eat, speak and interact

socially (Figure 1). For example, dental caries may cause impaired chewing, decreased appetite, sleep problems, and poor school and work performance. Beyond individual level suffering caused by dental disease, the high prevalence and recurrent, cumulative nature of dental caries and periodontal diseases, societies incur substantial treatment costs.

There is a social gradient in the impacts on quality of life related to oral health. Children in the lower-income groups and countries have the highest decay rates. Consequently, they often endure the chronic pain of dental decay, leaving them at a substantial disadvantage compared to their healthier peers. For example, children with poor oral health are almost three times more likely to miss days from school as a result of dental pain and have poorer school performance (Jackson et al. 2011). There is considerable psychological trauma associated with tooth extraction under general anaesthesia. Children from disadvantaged backgrounds are disproportionately more likely to be admitted to hospital to have teeth extracted. In England, almost one-fifth of such admissions were for children from the most deprived tenth of the population. In contrast, the least deprived 10% accounted for just 4% of admissions with a primary diagnosis of dental caries (HSCIC 2013). Tooth loss and periodontal disease affect older adults through their negative impact on diet and systemic health.

Worldwide, the treatment of oral diseases is a significant financial drain on healthcare resources, whether paid for directly or by the state. Such costs are a barrier to care for those with limited financial means. Inequalities in oral health are increased by the inability of the poor to afford good quality dental treatment and prevention.

Oral disease – inequalities and social gradients

Socio-economic inequalities and social gradients exist in oral health in most countries (Figure 2). (Sanders et al. 2006). A large systematic review of associations between socio-economic (SES) characteristics and dental caries in adults, showed that the evidence for social gradients was consistent across various indicators, including level of education, income, occupation, social class and measures of area-level socio-economic status (Costa et al. 2012). There are disturbingly high levels of oral health inequality in and between Low and Middle Income Countries (Do 2012). Employing a lifecourse perspective,

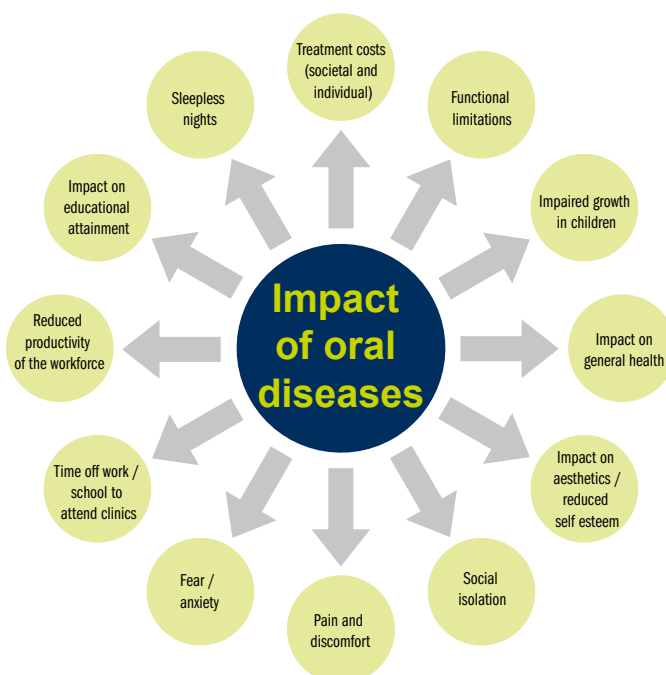


Figure 1. Impact of oral diseases.

POLICY IMPLICATIONS

- Reducing health inequalities is a matter of fairness and social justice.
- Current approaches to control dental diseases are both relatively ineffective and unaffordable.
- There is an urgent need to integrate oral health approaches with those for other NCDs and not to continue to treat oral disease in the dental silo.
- An ‘Oral Health in All Policies’ (OHAP) framework should be adopted and applied on the basis of ‘proportional universalism’.
- “Focusing solely on the most disadvantaged will not reduce health inequalities sufficiently. To reduce the steepness of the social gradient in health, actions must be universal, but with a scale and intensity that is proportionate to the level of disadvantage. That is proportionate universalism.” (Fair Society, Healthy Lives 2010).

Thomson et al. (2000) showed that childhood SES influences lifelong trajectories of oral health, which tend to diverge over the lifecourse. Absolute levels of oral disease are also influenced by the extent of income inequality within a region or country. There is also an inverse relationship between Gini coefficient and number of filled teeth, DMFT, care index and restorative index in rich countries (Bernabé et al. 2009).

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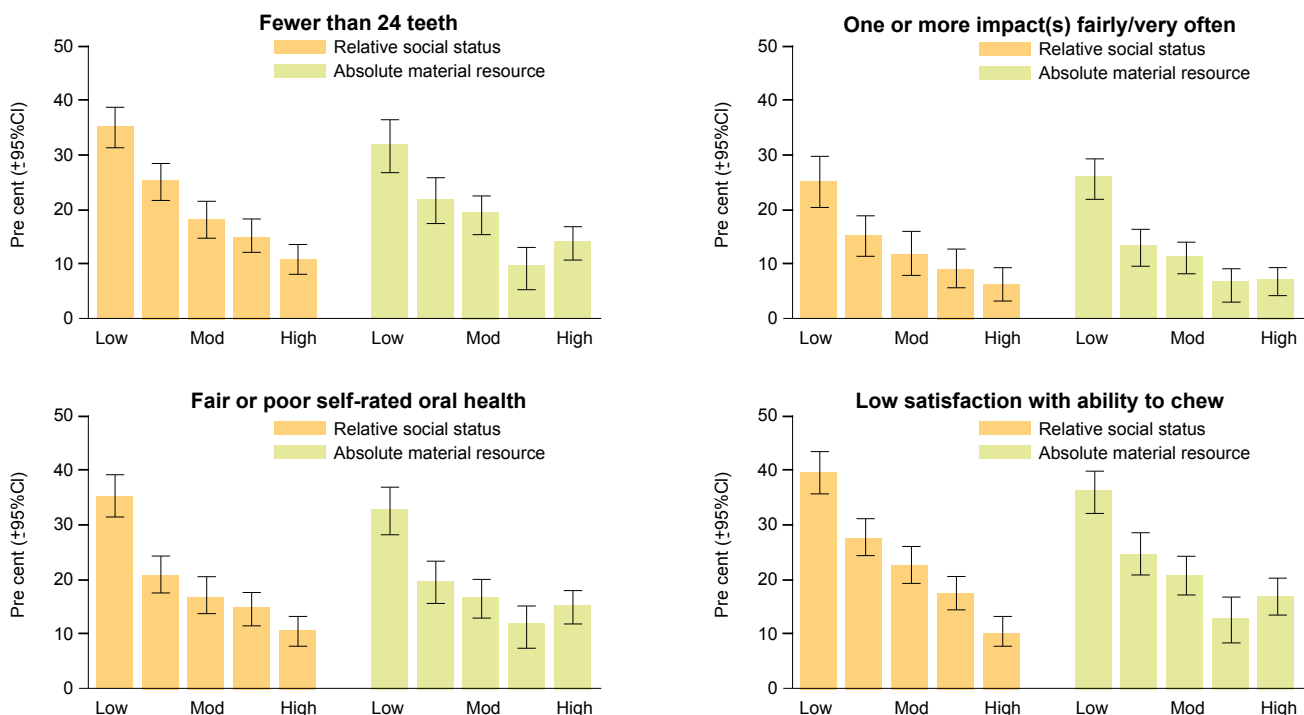


Figure 2. Oral morbidity according to relative social status and absolute material resources among Australian adults (Sanders et al. 2006).

1.2 Patterns of oral health inequalities in high-income countries

Georgios Tsakos, Jimmy Steele and Elizabeth Treasure

HEALTH AND DISEASE are socially patterned, that is, people who are more educated and wealthier live longer and have better health than those who are more disadvantaged (Commission on Social Determinants of Health 2008). In most cases, the association between socio-economic position (SEP) and health is characterised by a linear graded pattern, with people in each lower SEP category having successively worse levels of health and dying earlier than those who are better off, a characteristic known as the social gradient in health. Health inequalities not only are unfair and unjust, but also incur substantial economic costs. In the European Union, inequality-related losses to health account for 15% of the costs of social security systems and for 20% of the costs of healthcare systems (Mackenbach et al. 2011).

Socio-economic inequalities for clinical and subjective oral health outcomes

Socio-economic inequalities in oral health have been consistently demonstrated in high-income countries. For example, there were clear income and education gradients for self-rated oral health and periodontal disease among adults in the USA and these were similar to the respective gradients in general health (Sabbah et al. 2007). Furthermore, income-related inequalities were consistently observed among adults in Canada, with the more deprived groups having more decayed teeth, missing teeth and oral pain and fewer filled teeth than

the more affluent (Ravaghi et al. 2013). And there were also clear gradients among older adults in England for edentulousness, irrespective of the SEP measure used (Tsakos et al. 2011). A recent systematic review on social inequalities in caries showed that low SEP was associated with a higher risk of having caries lesions or experience, an association that was stronger in high-income countries (Schwendicke et al. 2015).

Socio-economic inequalities for oral health-related quality of life

Socio-economic inequalities were also demonstrated for oral health-related quality of life (OHRQoL). Income gradients in OHRQoL were found among adults in the UK, Finland and Australia, but not in Germany (Sanders et al. 2009). Among older adults in England, there were clear and consistent gradients among the dentate with worse self-rated oral health and OHRQoL for each lower SEP group, but no such differences existed among the edentate (Tsakos et al. 2011). Collectively, these studies have used a variety of oral health measures, mostly clinical and disease-related but also subjective measures of oral health and quality of life, and a range of SEP indicators including education level, occupation classifications, wealth, income and area deprivation. Overall, the relevant literature documents the presence of social gradients – rather than simply differences between deprived and non-deprived – in oral health and quality of life. However, these predominantly secondary analyses are partly restricted by data availability and very

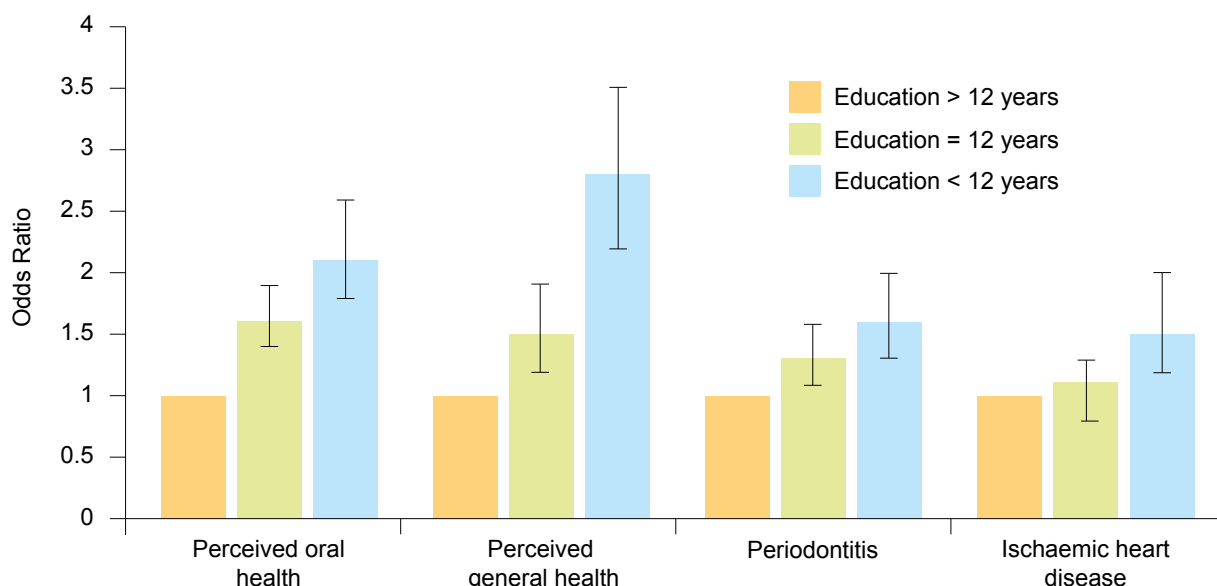


Figure 1: Education gradients in perceived oral/general health, periodontal disease, and ischaemic heart disease (Sabbah et al. 2007).

POLICY IMPLICATIONS

- Public health policy should focus not only on improving oral health but also, more specifically, on reducing social inequalities in oral health. This requires coordinated action across disciplines and organisations on the social determinants of health (Commission on Social Determinants of Health 2008).
- Addressing the oral health disadvantage of the most deprived groups in society will not eliminate inequalities. The overall shape of inequalities (social gradient) implies the need for policies that are universal in their approach but focus proportionately more on the more deprived groups in the society in order to reduce the steepness of the social gradient.
- As the picture of oral health inequalities among adults is complex and varies by different ages and cohorts, more specific approaches and emphasis on different aspects of SEP may be needed to reduce inequalities in specific oral health outcomes at different ages.
- Because oral health and general health gradients have been shown to coexist and have similar characteristics, addressing oral health inequalities should be an integral part of the policies on reducing overall health inequalities.

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few studies allowed for a comprehensive assessment of the relationship between SEP and oral health through looking at various SEP measures and different oral health outcomes in the same national sample.

Oral health inequalities may vary in different age groups

A recent analysis of the Adult Dental Health Survey in England, Wales and Northern Ireland assessed associations between 4 SEP measures with 7 different oral health outcomes (Steele et al. 2015). The results revealed a more complex picture of inequalities with age a critical consideration, rather than a uniform pattern of social gradients across adulthood irrespective of SEP exposures and oral health outcomes. There were significant income inequalities but not a clear gradient in caries in the youngest adults, while significant income gradients existed for number of teeth in older adults, but not for the younger groups. Looking at the different SEP measures, income sometimes had an independent relationship with oral health, but education and area of residence also contributed to inequalities. And the inequalities were also evident for self-rated oral health and OHRQoL (Guarnizo-Herreño et al. 2014), with stronger gradients for those at younger ages. It seems that oral health inequalities manifest themselves in different ways in different age groups.

Research collaboration in socio-economic inequalities in oral health

The literature on oral health inequalities is fast expanding and this has now become the main focus of the dental research community, through the formation of the IADR Global Oral Health Inequalities Research Agenda (IADR-GOHIRA) and the relevant Network (GOHIRN) that aims to promote intersectoral collaborative research on oral health inequalities. Inequalities in oral health within societies are persistent, similar to those for general health, and also complex. The complex nature of inequalities implies that in order to understand and address them, we need to carefully choose SEP markers and oral health outcomes so that they are appropriate for the specific age group. Their persistent nature and similarity with general health highlight the need to shift the emphasis towards the broader upstream social determinants (Commission on Social Determinants of Health 2008). Addressing the unequal distribution of education, wealth and social position lies at the heart of the problem. Therefore, tackling oral health inequalities requires “strategic, concerted, and bold actions at local, national, and global levels” (Lee and Divaris 2014).

1.3 Patterns of oral health inequalities in middle- and low-income countries

Loc G Do, Samuel J Moysés and Manu Mathur

LOW- AND MIDDLE-INCOME countries (LMIC) comprise of two-thirds of the world's population. There have been indications of a recent sharp increase in the prevalence of non-communicable diseases (NCD) in those countries. Oral diseases are ones of highly prevalent NCDs that 'pose a major health burden for many countries' (UN 2011). Oral diseases share common risk factors with many other NCDs. Nevertheless, oral diseases still receive inadequate attention in LMI countries where scarce resources are prioritised for general health conditions.

Oral health inequalities in LMIC

Socio-economic inequalities in oral health have been widely reported in high-income countries. The situation in LMICs is not fully known due to lack of direct evidence. However, poor people in any society are more vulnerable because of increased exposure to risk factors and inadequate access to appropriate health services. The associations between socio-economic inequality and oral health are expected to be aggravated in low-income countries where extreme poverty is more common and dental healthcare systems are under-resourced.

A number of socio-economic indicators have been used to measure oral health inequalities in LMICs, including Human Development Index (HDI), urban/rural status and GDP at the country or regional level, and income, education and occupation at the individual level. Those indicators comprise structural and intermediary determinants of health (Watt and Sheiham 2012) allowing for comparison with other developed populations to investigate both between and within population oral health inequalities. It should be noted that associations between some indicators and oral health may differ between LMICs and high-income countries.

For example, the gap in access to healthcare and essential facilities between urban and rural populations in low-income countries may be significantly larger than that in high-income countries, leading to larger geographical deprivation affecting health in the former.

Inequalities in caries

Dental caries experience, one of the most prevalent chronic conditions, was traditionally low in low-income countries (Do 2012; Moysés 2012). The recent decades have seen a significant improvement in child dental caries experience in countries with high HDI and GDP while those in low quartiles remained almost unchanged (Figure 1). Therefore, dental caries has changed from a disease of affluence to a disease of deprivation in the global scale. Similar changes have also been suggested within LMIC populations. There is a lack of population programmes in dental caries prevention such as water fluoridation and affordable fluoridated toothpaste in many LMICs. The recent increase in consumption of soft drinks and in obesity in many LMICs (Basu et al. 2013) suggests an upward trend in dental caries in those countries. That emphasises the need for more concerted efforts at the global and national levels to improve population oral health while bridging the gaps between and within socio-economic groups.

Inequalities in periodontal diseases

Periodontal diseases share many common risk factors with other prevalent NCDs such as diabetes and cardiovascular diseases. Tobacco smoking is common and on a sharp increase in many low-income countries while national anti-smoking programmes succeed in reducing smoking rate in developed countries. Socio-economic gradients in the rates of periodontal diseases have been reported in low-income countries (Petersen and Ogawa 2012). There was also a gradient in the

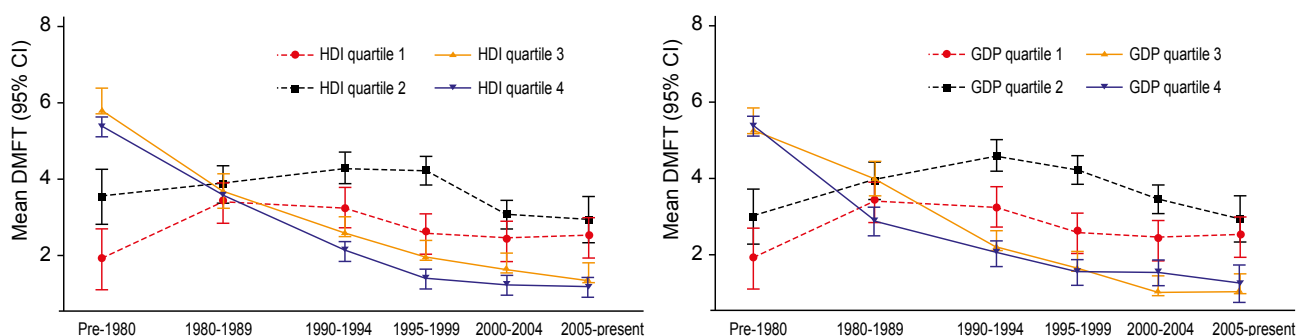


Figure 1: Trends of dental caries severity among 12-year-old children by country profiles (Do 2012).

POLICY IMPLICATIONS

- International research activities should be expanded to identifying determinants of socio-economic inequalities in oral health between and within low-income countries.
- Organisation of oral healthcare programmes should be given priority in low-income countries.
- ICRFA should be implemented to integrate prevention of oral conditions with general health conditions and to drive structural changes at the upstream level.

prevalence of periodontal diseases between urban and rural populations within low-income countries. The absolute socio-economic inequality in the prevalence of periodontal diseases in low-income countries was large (Figure 2).

Other oral conditions such as oral cancer, orofacial deformities and orodental trauma are also common in LMICs. Lack of appropriate healthcare in poor countries, especially for deprived socio-economic groups, leads to sizeable socio-economic gradients in those conditions. There is often a lack of effective national programmes targeting prevention and organisation of care for those conditions in low-income countries.

While scientific evidence on socio-economic inequalities in oral health from LMICs is scarce, there are indicators that such inequalities exist because oral health shares many common risk factors with other NCDs. The determinants of such inequalities in those countries may differ from those in high-income countries. Global and national programmes should focus on the upstream socio-economic determinants to change the slope of the social gradient. The cornerstone of this approach is the Integrated Common Risk Factor Approach (ICRFA) (Watt and Sheiham 2012).

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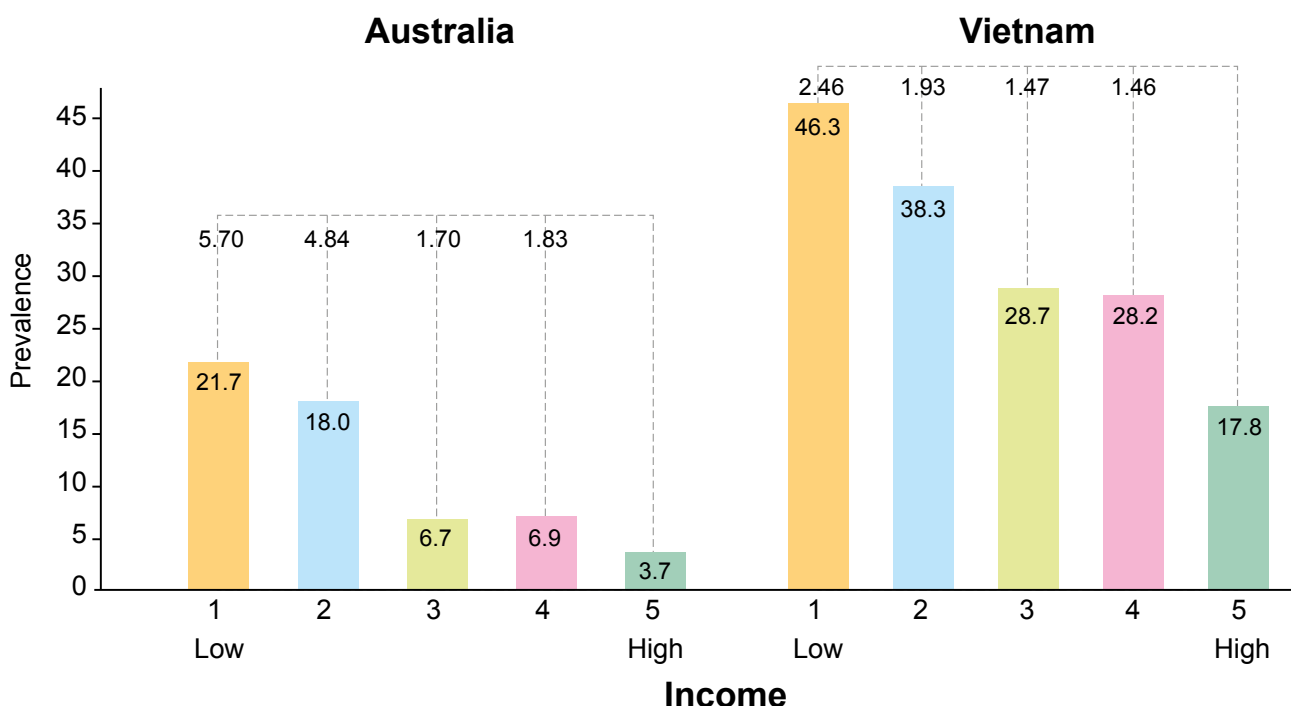


Figure 2: Comparison of income-related gradients in the prevalence of periodontal disease in a developed country, Australia and an LMIC, Vietnam (Thomson et al. 2012).

1.4 Economics of oral health and inequalities

Stefan Listl and John Wildman

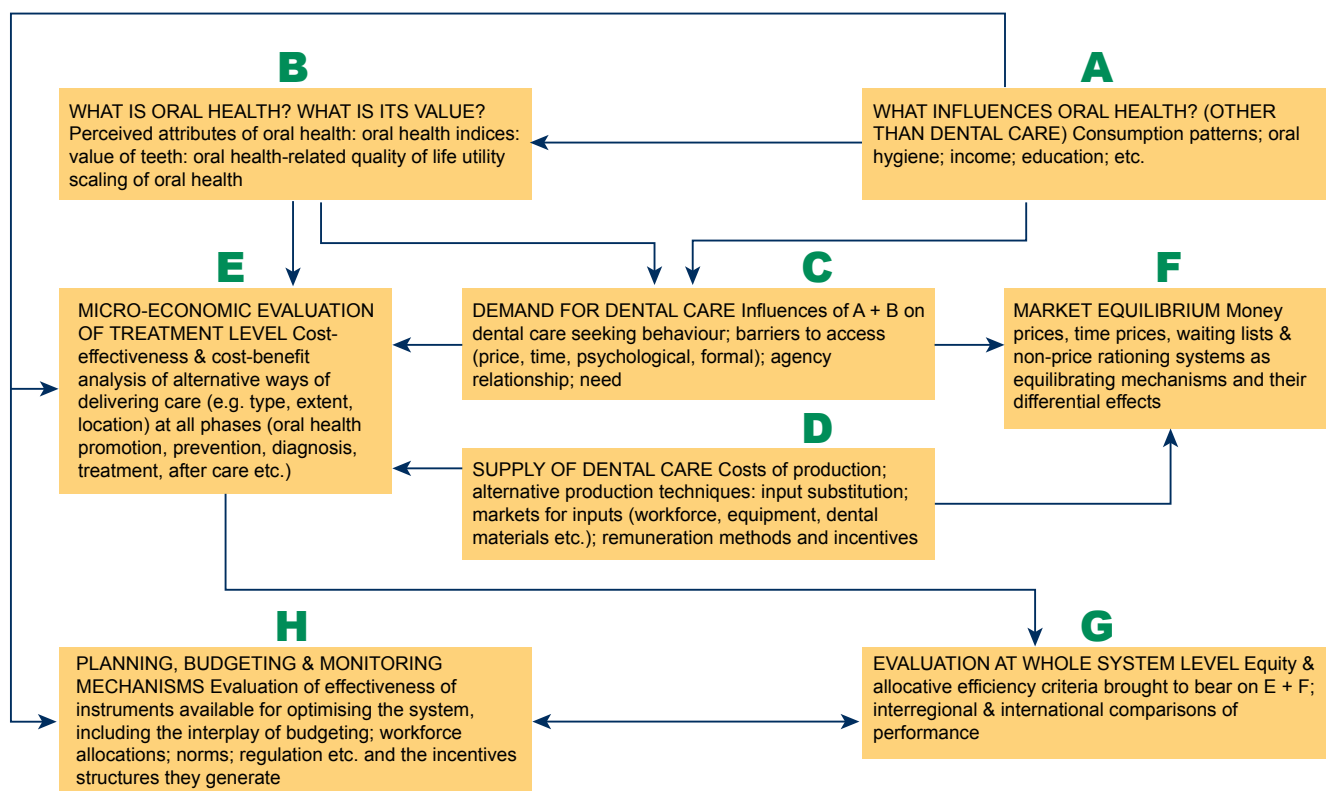


Figure 1: Economic considerations concerning oral health and care (adapted from Williams 1987).

ECONOMICS STUDIES human behaviour in the presence of *scarce* resources that have alternative uses. Individuals demand oral health and suppliers supply oral health, but both are constrained by the resources available to them so *choices* must be made. The basis for making choices is *Opportunity Cost*, the highest valued alternative use of resources. Within this framework are the important, and often competing, concepts of *Efficiency* (both technical: lowest cost for a given outcome, and *allocative*: a reallocation of resources would impose costs on some individuals) and *Equity* (the absence of avoidable or remediable differences among group members) (see Figure). Since available resources are not unlimited, trade-offs exist: achieving higher efficiency can result in less equity (Wagstaff 1991). Within this framework it is possible to investigate the costs of inequality, and the way that demand and supply side factors may affect inequality (and efficiency).

Economics of social inequalities in oral health

From an economic perspective, there are many reasons why reducing social inequalities in oral health may be worthwhile. First, there may be efficiency gains, the direct treatment costs due to the excess morbidity of those socio-economically worse off may be reduced. For example, emergency department visits for preventable dental conditions often imply substantially higher costs than those associated with disease prevention (e.g. California HealthCare Foundation 2009). Second, excess oral health morbidity among the worse off may have detrimental impacts in terms of outcomes on the labour market. Glied and Neidell (2010) present estimates for the labour market value of a marginal tooth as high as US\$720 per year. Using an approach described by the WHO Commission on Macroeconomics and Health (WHO 2001) and valuing disability-adjusted life years lost due to oral diseases (Marcenes et al. 2013) at global average per capita GDP (World Bank 2011), global productivity losses due to oral diseases in 2010 can roughly be estimated at US\$138 billion. Third, compromised physical attractiveness may affect

POLICY IMPLICATIONS

- Tackling health inequalities requires harmonisation of oral health outcome and socio-economic variables as well as the use of standardised inequality measures.
- Incentives for both patient and dentist need to be taken into account when designing health policy programmes to tackle inequalities. It is the combination of provider and patient incentives that is important, not just their individual components.
- The impact of any policy programmes should be assessed in terms of its implications for inequality and for efficiency. Given resource scarcity, the impact of policies to reduce inequalities should be weighed against associated costs.

people's subjective well-being and happiness in terms of finding a partner and getting married (Hamermesh and Biddle 1994). Finally, 'caring externalities' imply that compromised oral health of those worse off may also affect others because of altruistic motives (Culyer 1976). Good oral health entails utility for the person enjoying it herself and is of value to their fellow human beings.

Demand for oral healthcare

The *Demand* for oral health, and oral healthcare, is characterised by uncertainties so insurance markets have developed. Insurance provision and coverage influence oral health inequalities and provide a policy tool for tackling inequalities. Studies demonstrate that the demand for dental care increases with greater insurance coverage (Manning et al. 1985). However, the demand for health and dental care depends not only on the effective prices of (oral) health services (Listl et al. 2014) but also on personal preferences and resource constraints which, in turn, prompt idiosyncrasy in the demand for healthcare and associated health outcomes, as well as affecting oral health behaviours (Grossman 1972).

Provision of services

Supply side factors affecting oral health inequalities focus on the provision of oral health services. Healthcare resources and workforce planning are important for safeguarding equality of access to oral health services (Birch et al. 2009). The reimbursement of health professionals also determines access to care, as well as the extent and quality of health services (Robinson 2001). Recent evidence from Scotland suggests that different provider payment methods affect the utilisation of dental check-ups (Listl and Chalkley 2014).

Tackling health inequalities requires comparisons of inequalities over time and across settings. Economics has a long heritage in measuring and analysing inequalities in health (Kakwani et al. 1997) and these methods are being applied to oral health (Shen et al. 2013). However, harmonised methods are needed so that results can be compared. This applies to defining standardised variables of oral health outcomes (that may be characterised by different inequalities (Steele et al. 2015)), dental care use, socio-economic status and also to employing comparable inequality measures.

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Section 2: The social determinants of oral health inequalities

2.1 A critique of the current oral health preventive paradigm

Richard G Watt, Samuel J Moysés and Harold D Sgan-Cohen

FOR WELL OVER 100 years, dental professionals have followed a ‘clinical’ or ‘biomedical’ approach to prevention, concentrating their preventive efforts on delivering chairside measures such as fluoride applications and fissure sealants, and providing oral health advice to their patients. Why is this downstream approach so dominant? Historically, dentistry was mainly a surgical discipline, meaning the dental profession is used to an interventionist way of working. Preventive activities have followed this treatment approach and are still largely undertaken in clinical settings. The clinical approach also dominates contemporary professional dental training, with new generations of dentists also becoming wedded to this model. Not least, promoting toothpastes and other oral healthcare products is in the interests of powerful international commercial companies, who have significant influence over the preventive methods adopted by clinical dental staff.

The ‘biomedical model’

The philosophical and applied nature of this dominant preventive approach can be characterised in the following manner:

Reductionist approach

As outlined elsewhere in this publication, oral diseases are caused by a complex range of interacting biological, clinical, behavioural, psychosocial, community and environmental factors. However, traditional preventive interventions often focus very narrowly on eliminating specific aetiological factors (such as *Streptococcus mutans*), in the belief that this will prevent dental caries. This ‘reductionist’ approach

focuses on disease – the periodontal pocket, the caries lesion, the white patch – all at the individual patient micro level.

Interventionist in nature

Linked to the surgical and treatment philosophy of clinical dentistry, preventive action often involves some type of professional intervention. Applying fluoride varnishes or fissure sealants is a classic example of this ‘medicalised’ and rather mechanistic approach to prevention. Another example is the research on developing a caries vaccine – a ‘magic bullet’ for caries prevention.

Lacking in theory base

Clinical and behavioural preventive interventions often lack a sound theoretical basis and simply assume that the intervention will achieve long-term success. Evaluations of interventions, if conducted at all, are often poorly designed and provide limited insights to the processes, impacts and outcomes of oral health interventions.

Lifestyle focus

Health behaviours explain a modest proportion of existing oral health inequalities (Sanders et al. 2006; Sabbah et al. 2009). In addition to clinical preventive measures, dentists and their teams have traditionally focused on giving chairside educational advice, or on delivering oral health education programmes in schools and other community settings. This ‘lifestyle’ advice on oral hygiene, dental attendance, fluorides, diet, and to a lesser extent tobacco and alcohol has largely focused on imparting health knowledge in the belief that this will lead to behaviour change and improved oral health.

Prescriptive and paternalistic in style

Health professionals, although well-meaning, often deliver their preventive support in a rather prescriptive and paternalistic style, in which they are the ‘expert’. Sometimes health messages are delivered in threatening ways, by using fear arousal as a tool to shock patients into changing their harmful habits. Posters and leaflets with bloody clinical images are still frequently used in dental surgeries.



POLICY IMPLICATIONS

- The current downstream approach alone will never successfully tackle the unfair, unjust and unacceptable levels of dental disease experienced by the disadvantaged in society.
- A radical shift in the preventive paradigm is urgently needed. More of the same will have minimal effect in promoting oral health equity, and indeed may increase oral health inequalities.
- Improvements in oral health and a reduction in oral health inequalities are more likely to be achieved by working in partnership across sectors and disciplines, through population-based public health measures.

Isolationist in delivery

Oral health preventive measures, whether delivered in clinical or community settings, are very often isolated and separate from preventive activities being delivered by other health professionals. This isolationist approach leads to a duplication of efforts, or worse, conflicting messages being offered to the public, for example, if dentists tell their patients not to eat citrus fruits because of their acidity levels.

Apolitical approach

As outlined elsewhere in this publication, oral health inequalities are caused by a complex array of factors, many of which are linked to political issues in wider society. Vested interest groups from the food, tobacco and alcohol industries wield considerable influence and power. Ignoring the broader social determinants of health and oral health often leads to 'victim blaming', where the responsibility for ill health is placed mainly on the individual, and the social, economic and environmental factors that cause health-compromising behaviours are not acknowledged.

Limitations of downstream approaches to addressing oral health inequalities

Several systematic and narrative reviews have assessed the international literature on the effectiveness of traditional approaches to oral health promotion, and their effect on oral health inequalities (Kay and Locker 1996; Sprod et al 1996; Watt and Marinho 2005; Yevlahova and Satur 2009; Government of Victoria 2010; Public Health England 2014). In summary, clinical measures such as fluoride varnishes and fissure sealants are effective at reducing caries levels, but evidence regarding their impact on oral health inequalities is limited. Interventions based on oral health education have been shown to increase knowledge and change certain oral health behaviours, but these changes are short-term in nature and not sustained over time. Again, the evidence of reducing inequalities is very limited. Indeed, untargeted oral health education programmes have been shown to increase oral health inequalities, as the resourced middle classes are able to benefit more from the interventions than the more disadvantaged (Schou and Wight 1994).

Very limited evidence exists on the cost-effectiveness of preventive interventions (NICE 2014). Clinical or behavioural programmes that heavily rely on clinical personnel are likely to be expensive. Lastly, the public is increasingly becoming apathetic and resistant to health messages delivered through the media or by health professionals. In many countries, levels of health literacy among the general population have reached an all-time high, but simplistic or patronising health education programmes risk alienating the public and may reduce professional credibility.

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2.2 Social determinants of oral health inequalities

Richard G Watt, Loc Do and Tim Newton

ACTION TO ADDRESS oral health inequalities will only succeed if the underlying causes of social inequalities in society are tackled. The World Health Organization (WHO) has led a global public health policy on action to reduce health inequalities. In particular the WHO Commission on Social Determinants of Health (CSDH) has been at the forefront of an equity-based policy agenda (CSDH 2008). The social determinants of health inequalities are the ‘structural determinants and conditions of daily life responsible for a major part of health inequities between and within countries’ (WHO 2008). Marmot (2007) has described the social determinants as ‘the fundamental structures of social hierarchy and the socially determined conditions these create in which people grow, live, work, and age’. In short, they are the causes of the causes.

Theoretical approaches to health inequalities

The WHO social determinants framework is highly influenced by social science theories of power and control, and how these affect social, economic and political relationships. Health inequalities are determined by patterns of social stratification arising from the systematic ‘unequal distribution of power, prestige and resources among groups in society’ (Solar and Irwin 2010). The WHO conceptual framework outlines how the major determinants relate to each other and the mechanisms involved in generating inequalities in population health. It highlights the overriding importance of the ‘structural determinants’, the socio-economic and political contexts that generate the social hierarchy in any society, and the resulting socio-economic position of its individuals (Figure 1). The intermediary determinants refer to how socio-economic position then influences health through the circumstances and risks for disease. People from lower socio-economic groups are born, live, work and age in less favourable circumstances than those from higher socio-economic groups. These include material and social circumstances such as housing and working conditions and quality of neighbourhoods; psychosocial

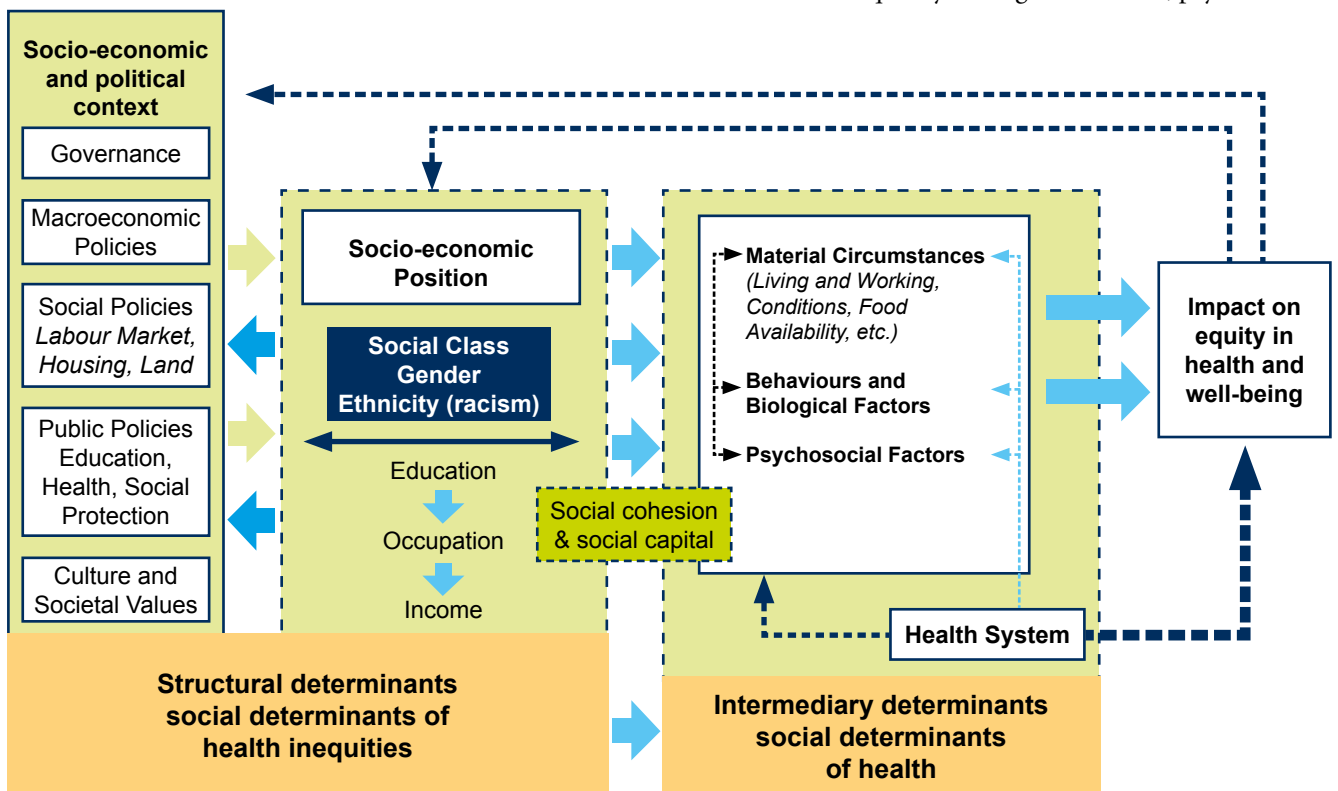


Figure 1: The WHO CSDH conceptual framework (Solar and Irwin 2010).

POLICY IMPLICATIONS

- People live in social, political, and economic systems that shape behaviours and access to resources they need to maintain good health. It is vitally important that policy is informed by contemporary research on both the nature and causes of social gradients in oral health.
- Changing the distribution of power within society requires political processes that empower disadvantaged communities and seek greater accountability and responsibility from those in positions of authority and control.
- Future oral health policy initiatives at a local, national and international level need to be informed by a social determinants approach and address the underlying causes of the unfair and unjust oral health inequalities that exist both within and between countries.

factors such as stress and social support; and behavioural and biological factors. Finally, the model also includes health services and the importance of fair access to good quality care. The unequal distribution of these intermediary factors is associated with differentials in exposure and vulnerability to health-compromising conditions, as well as with different consequences of ill health, and constitutes the fundamental mechanism through which socio-economic position generates health inequalities (Solar and Irwin 2010).

The social determinants are dynamic in nature. Longitudinal research has highlighted how adverse social conditions and events in early life have a particularly significant effect at critical points across the lifecourse and negatively impact upon health later in adult life, and even across subsequent generations (Kuh and Ben Shlomo 2004).

Pathways and processes to oral health inequalities

The social gradients in general and oral health are very similar, indicating a shared set of pathways and influences (Sabbah et al. 2007). Common biological, behavioural, psychosocial, environmental and socio-economic risk factors determine patterns of both general and oral health inequalities. Emerging evidence of the social determinants of oral health inequalities from researchers around the world provides a compelling case for joint action (Newton and Bower 2005; Petersen and Kwan 2011; Tomar 2012; Watt and Sheiham 2012; Lee and Divaris 2014). Indeed, patterns of oral health inequalities in childhood may provide a useful early marker of future health inequalities. Dental researchers and clinicians have traditionally focused their attention on understanding the biological and behavioural risks for oral diseases, in line with the biomedical paradigm of disease aetiology. A social determinants perspective helps to widen the focus on the broader social, community,

environmental and economic distal factors that are the underlying drivers of the more proximal biological and behavioural influences on patterns of oral health inequalities (Figure 2). People do not live their lives in isolation, but are influenced by an array of factors which are often outside their direct personal control. It is therefore essential that future policy decisions to promote oral health equity are based upon a social determinants model, and an understanding of the wide range of factors that interact together to determine and influence patterns of health inequalities.

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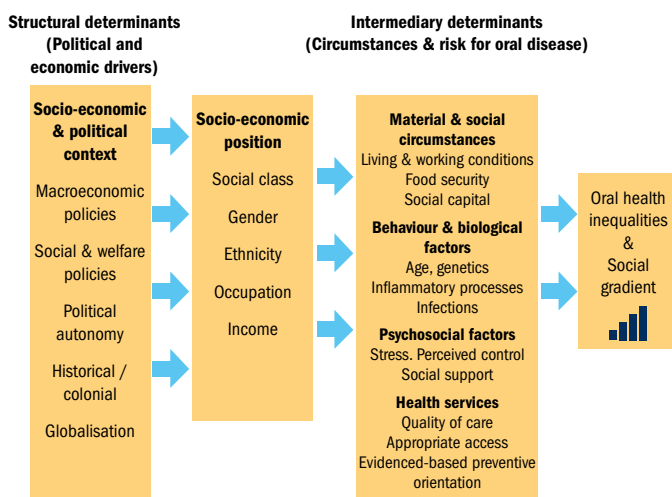


Figure 2: New conceptual model for oral health inequalities (Watt and Sheiham 2012).

2.3 Lifecourse oral health epidemiology

Marco A Peres, Stefan Listl and Anja Heilmann

Lifecourse epidemiology is the study of long-term effects on later health or disease risk of physical or social exposures during gestation, childhood, adolescence, young adulthood and later adult life (Kuh et al. 2003). This approach emphasises that health at any given age is influenced by prior experiences, and aims to understand the material, biological, behavioural and psychosocial processes that are causally related to health and disease across an individual’s entire lifespan. Given that lifecourse research is based on studying the same individuals over long time-frames, the study of lifecourse influences on health depends on the availability of longitudinal data. Multidisciplinary birth cohort studies with a strong focus not only on the biological but also on the social determinants of health have been developed in high- and middle-income countries. These data enable researchers to investigate how the “social” becomes “biological”, or how the experience of socio-economic disadvantage may result in ill health.

Lifecourse theoretical models

Several theoretical models have been proposed to understand and investigate the pathways linking

lifecourse exposures to later health and disease (Kuh et al. 2003). The ‘biological programming’ or critical period model states that exposure during a specific, limited time window can have irreversible effects on later health. The sensitive period model refers to developmental periods of rapid change, when an exposure has a stronger effect than it would have at other times, but where effects are still modifiable or reversible. The critical period with effect modifier model postulates that key early-life exposures interact with later ones to produce health outcomes. The accumulation of risk model proposes that detrimental and beneficial exposures gradually accumulate throughout life. Finally, the chain of risk model suggests that one exposure leads in a fairly linear way to another in a process that affects health later on (Kuh et al. 2003).

Application of lifecourse models to oral diseases

Oral diseases and disorders are moderately or highly prevalent, most are cumulative and chronic, they are recognised as indicators of accumulated past disease experience and are an expression of the complex interaction of biological and social factors. For all these

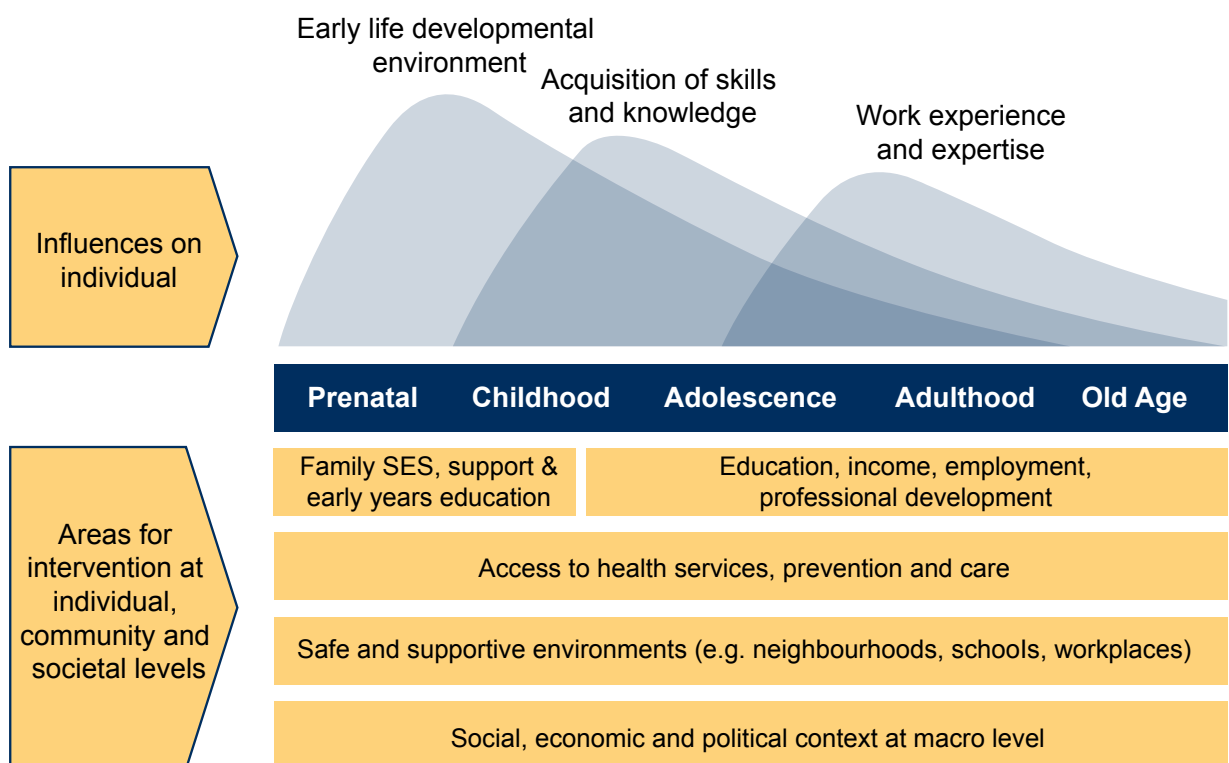


Figure 1: Potential lifecourse influences on general and oral health (adapted from Davies 2012).

POLICY IMPLICATIONS

- Adequate intervention points to tackle inequalities in oral health need to take account of the underlying determinants at different stages throughout the life-course.
- High priority should be given to interventions targeting early life in the intention to prevent oral disease and promote good oral health in the first place.
- Careful choices for policy interventions are still needed for optimisation of oral health among adults.

reasons, there is a strong argument for studying oral diseases within a lifecourse framework. However, there are very few population-based birth cohort studies with dental clinical data. The available evidence rests mainly on five cohort studies: the Newcastle Thousand Families 1947 birth cohort in England, the Dunedin Multidisciplinary Health and Development Study in New Zealand started in 1972-73, and the 1982, 1993 and 2004 Pelotas birth cohorts in Brazil (Heilmann et al. in press). However, along with other well-designed studies they produced a consistent body of evidence that supports the applicability of lifecourse epidemiological models to oral health outcomes, as shown in Table 2.

Table 2. Examples from empirical oral health literature for lifecourse theoretical models.

<i>'Programming' or critical period model</i>	Disturbances during the development of enamel can result in irreversible defects, thus becoming embedded in the physical structure of the tooth (Seow 2014).
<i>Sensitive period model*</i>	Childhood SES contributed to adult levels of caries and periodontal disease after adjusting for adult SES (Poulton et al. 2002; Thomson et al. 2004).
<i>Accumulation of risk model*</i>	Cumulative exposure to poverty from birth to age 24 was associated with higher number of unsound teeth (Peres et al. 2011).
<i>Critical period with effect modifier model*</i>	Pacifier use modifies the protective effect of breastfeeding on malocclusion in primary dentition (Peres et al. 2007)
<i>Chain of risk model</i>	Early life malnutrition is associated with enamel hypoplasia, which in turn is linked to a higher risk of dental caries in the primary dentition (Psoter 2005)

*Examples from prospective birth cohort studies.

Lifecourse influences on oral health

These findings highlight that socio-economic background, health-related behaviour patterns in early life years, and previous disease experience play important roles in terms of oral health outcomes up until middle adulthood. Existing birth cohort studies containing oral health information have not yet had sufficient time to follow up individuals into later adulthood. However, recent evidence from various European countries points at enduring impacts of early life conditions, particularly childhood financial hardship, and of adverse life events on oral health in middle and later adulthood (Listl et al. 2014). Figure 1 presents a broad overview of lifecourse

influences on general and oral health and potential areas for policy intervention (adapted from Davies 2012).

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2.4 The role of psychosocial and behavioural factors in shaping oral health inequalities

Georgios Tsakos, Jun Aida and Saeed Alzahrani

IT IS WELL ESTABLISHED that certain health-compromising behaviours play a role in the development of chronic diseases. Plus, the main risk factors for the major chronic diseases frequently cluster in the same individuals. This clustering of multiple behavioural risk factors has been associated with a particularly increased disease risk. For example, four health-compromising behaviours (smoking, alcohol intake, physical inactivity, and low intake of fruits and vegetables) predict a fourfold difference in mortality risk (Myint et al. 2009). Similar to health, there are clear socio-economic gradients also in health behaviours, with adults at each lower education level reporting a higher prevalence of clustering of health-compromising behaviours (Singh et al. 2013). Therefore, it makes sense to examine whether and to what extent behavioural factors (and in particular their clustering) explain social inequalities in health.

Placing behaviours in context

Research from large national studies has shown that behaviours have a relatively limited role towards explaining inequalities in health (Lantz et al. 2001), and oral health (Sabbah et al. 2009). The observed social gradients in health become less steep after taking behaviours into account, but inequalities “would persist even with improved health behaviours among the more disadvantaged (groups in society)” (Lantz et al. 2001). Putting this into perspective, it is important to look at the determinants of risky behaviours and recognise that behaviours are influenced by family, cultural, economic and political contexts, and linked to the conditions in which people grow, learn and work.

Importance of social relationships

Studies in social epidemiology, behavioural economics, and social psychology have demonstrated that health-related behaviours are not necessarily determined by free choice. Instead, they are largely affected by people’s social environments. One important characteristic of the social environment is social relationships. “Social

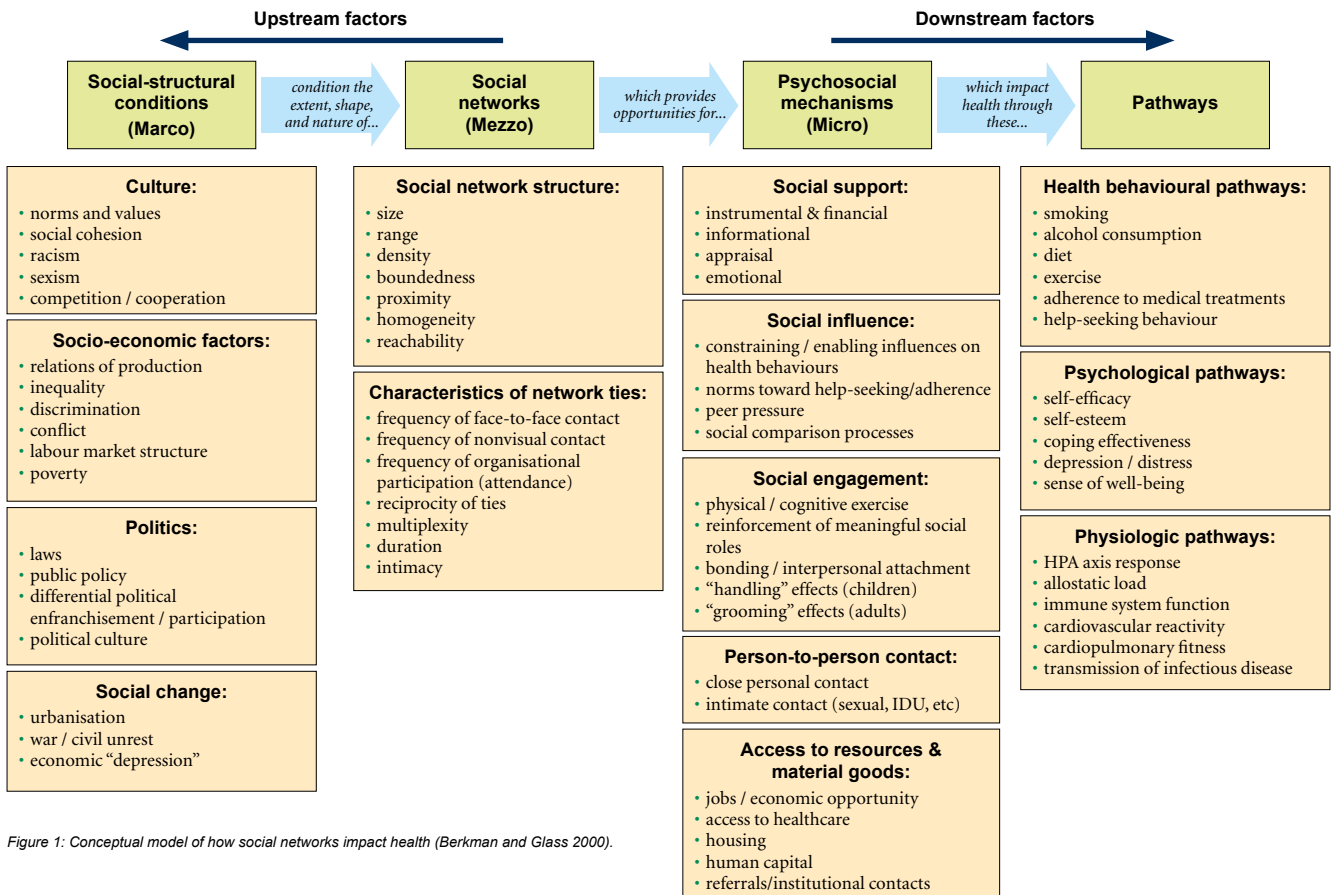


Figure 1: Conceptual model of how social networks impact health (Berkman and Glass 2000).

POLICY IMPLICATIONS

- Public health action should focus on the wider environmental and psychosocial determinants of health-compromising behaviours.
- Interventions that consider social relationships may reduce the harmful effect of lower socio-economic status and improve health among the more deprived segments in the population.
- Differences in oral health between groups in a society are caused not only by differences in relation to individual features, but also by the contextual influences of the neighbourhood and the wider society. Health promotion activities aimed at different levels, encompassing individual and community characteristics, are likely to be more successful in reducing inequalities in oral health.

From a research perspective, most studies of psychosocial and behavioural factors and oral health inequalities have been cross-sectional, looking at the associations at one point in time. Future research should include longitudinal designs to examine how these associations are shaped over the lifecourse, as well as experimental studies to test the effectiveness of potential behavioural and psychosocial interventions in reducing oral health inequalities.

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relationships” is an umbrella term including concepts of social cohesion, social networks and social support. A recent meta-analysis showed that the effect of social relationships on mortality risk was comparable to that of smoking cessation (Holt-Lunstad et al. 2010).

An influential conceptual model of how social relationships affect health has been developed by Berkman and colleagues (Berkman et al. 2000). According to Berkman's model (Figure 1), social cohesion is part of the macro-level (upstream) structural conditions in a society, and influences the extent and nature of individuals' social networks, which in turn provide (downstream) opportunities for social support. Social networks and social support influence health mainly via three pathways: behavioural (e.g. smoking, alcohol, diet, exercise), psychological (self-efficacy, coping, emotional regulation) and physiological (stress response, allostatic load, immune function). The model emphasises that network structures themselves are conditioned by the larger political, socio-economic and cultural context. In line with this, studies of social relationships have shifted from focusing on individual-level social networks only towards the consideration of community-level social factors such as social capital.

A recent review of epidemiological studies has demonstrated the role of individual and community-level social relationships also for oral health (Rouxel et al. 2015). For example, higher community-level social capital was associated with a higher probability of having 20 or more teeth among older Japanese people (Aida et al. 2009).

The potential role of social relationships and social capital on health inequalities has also been the focus of research, though oral health inequalities have not yet been examined in that respect. A systematic review confirmed the association between social capital and socio-economic inequalities in health, and also provided some evidence that social capital buffers the negative health effects of low socio-economic status (Uphoff et al. 2013).

Implications for oral health improvement

These findings have clear implications for public health action towards addressing health inequalities. In the past, various efforts on health promotion were directed at health education with the aim to achieve behaviour change of individuals. However, these were not very successful, because the social and economic environments in which people live and work were left unchanged. Health promotion initiatives need to consider the wider contexts and psychosocial determinants of health behaviours. Initial evidence from community intervention programmes investing in infrastructure to boost social participation has been encouraging for promoting the health of the population (Ichida et al. 2013).

2.5 Disability and oral health

Blanaid Daly, Magnus Hakeberg and Sasha Scambler



THE EXPERIENCE of disability is both diverse and complex, as are perspectives on how disability in different forms and its consequences should be defined. Globally, it is suggested that approximately 18% of the population live with moderate to severe functional problems related to disability (Faulks et al. 2012). The Office for Disability Issues at the Department for Work and Pensions estimates that in Britain over 11 million people live with a limiting long-term illness, impairment or disability. The experience of long-term chronic illness rises with age, with 6% of children, 16% of adults of working age and 45% of adults of pensionable age in Britain affected. Women are slightly more affected than men, and disabled people are more likely to live in

poverty and to have fewer educational qualifications and employment opportunities compared to non-disabled people (Department for Work and Pensions 2014).

Disability and oral health inequalities

Oral health inequality is increased in disabled people, because they and their families experience even greater poverty and fewer opportunities for education, employment, and independence compared to the general population. Disabled people have fewer teeth, more untreated tooth decay and more gum disease compared to the general population (Department of Health 2007; Faulks et al. 2012). This has important consequences for general nutrition, communication, self-confidence and participation in society.

POLICY IMPLICATIONS

Disability exerts an indirect effect on oral health by increasing people's risk for developing dental disease. For example, people who need to take multiple medications may experience a dry mouth that increases risk for tooth decay (Thomson et al. 2006), and others who experience physical impairment may find it hard to clean their teeth or go to the dentist regularly (Department of Health 2007). Oral health issues are often overlooked in health and social care planning for disabled people, because of lack of awareness amongst teams of how to protect oral health or the potential impact on oral health of medications prescribed or dietary advice given. There are numerous reports of unmet need for dental care in disabled people, particularly amongst those with behavioural problems, those living in institutionalised settings and those who become dependent later in life (Faulks et al. 2012). Up to 5% of the population globally are affected by dental fear and phobia; these people not only are not only challenged by poor oral health but also have a greater likelihood of experiencing social and psychological problems (Wide Boman et al. 2013).

Upstream and downstream approaches to prevention

Much of the treatment need of disabled people is preventable. Treatment provision is costly both to healthcare funders and also to the parents and carers of children and adults with disabilities, who may have to fund transport arrangements and take time off work to attend dental appointments. Society needs to take action with regard to disabled people at both upstream and downstream levels. Upstream actions may include policies aimed at social inclusion and better access to education and employment opportunities, as well as better insurance policies for this group including specific national dental insurance criteria and eligibility for free or subsidised dental care. Downstream actions may include design of a regional dental care infrastructure to increase access to dental care for disabled people. There is also a need to develop the skills and competencies of the dental team to meet the needs of people with disabilities, and to improve the evidence base underpinning the care provided.

The way in which a society or a culture perceives disability and disabled people may also exert additional effects such as discrimination, hostility and stigmatisation. Some disabilities are deemed more acceptable to society than others. Conditions such as severe mental illness may incur considerable social disapproval. This may mean that dental care for some groups is not available or that disabled people simply do not disclose full details of a medical condition or diagnosis because of fear of discrimination or stigmatisation (Edwards et al. 2013).

- Attention needs to be focused upstream, to address poverty in disabled people and to widen participation and access to education and employment opportunities.
- Oral health is everybody's business and should be integrated fully into health and social care policy for disabled people at all levels, using a common risk factor approach. Every clinical and social care contact should count.
- Children and adults living with disability in all forms have the same rights to good oral health and oral healthcare as the rest of the population. Specific action must be taken to ensure that oral healthcare is made available for disabled people and is responsive to their particular needs.
- Most people with disabilities could and should have their dental care needs met in primary dental care settings. This means there is a need for better education and training of the dental team to meet the needs of disabled people. There is also a need to improve the evidence base underpinning the care of people with disabilities.

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Section 3: Policy and research agenda – evidence-based action

3.1 Healthy public policy

Simone Moysés, Lekan Ayo-Yusuf and Jenny Godson

The WHO (2008) defines the social determinants of health as

‘the conditions in which people are born, grow, live, work and age, including the health system. These circumstances are shaped by the distribution of money, power and resources at global, national and local levels, which are themselves influenced by policy choices. The social determinants of health are mostly responsible for health inequities – the unfair and avoidable differences in health status seen within and between countries’.



IN RESPONSE TO concerns regarding persistent and increasing inequities in health, the WHO established a Commission on Social Determinants of Health (CSDH) in 2005 in order to advise on how to address this issue. The final report was published in 2008 and has been highly successful at stimulating policy developments around the world. Health inequalities are not inevitable but stem from social inequalities; therefore action on health inequalities requires action across all the social determinants of health. This upstream action includes legislative and regulatory policy at a national or local level aimed at creating a social environment that protects or improves health. Policymakers determine what works in order to achieve short- and long-term health goals, what benefits there are and for whom. The Marmot Review ‘Fair Society, Healthy Lives’ (Marmot 2010) states that reducing health inequalities will require action on six policy objectives:

- Give every child the best start in life
- Enable all children, young people and adults to maximise their capabilities and have control over their lives
- Create fair employment and good work for all
- Ensure healthy standard of living for all
- Create and develop healthy and sustainable places and communities
- Strengthen the role and impact of ill health prevention

Not least, partnership working across key sectors and agencies is suggested to be an essential prerequisite for strategies to effectively improve health and oral health (Marmot 2010).

Placing oral health on the broader policy agenda

Oral health is part of general health and shares a set of common risks; this highlights the need for an

POLICY IMPLICATIONS

- Developing healthy public policies is a key component of health improvement population strategies.
- Healthy public policies can be developed and implemented at local, regional, national or international levels.
- Oral health advocates need to ensure that oral health is incorporated into all relevant policy development.

integrated approach to this broad agenda.

International concern over childhood obesity has put the spotlight on sugar consumption and the urgent need to consider effective policies to reduce its consumption. The World Health Organization (WHO) has revised its guidelines on sugar intake for adults and children, their recommendations including: a strong recommendation that in adults and children the intake of free sugars should not exceed 10% of total energy and a conditional recommendation of a further reduction to below 5% of total energy (WHO 2015). The Scientific Advisory Committee on Nutrition, a committee of independent experts who advise the government on nutrition issues, have also reviewed the evidence on sugars and other carbohydrates in the diet as part of their report 'Carbohydrates and health'. This report evaluated the evidence on oral health as well as other health outcomes; its draft recommendations also consider a downward revision.

Recently, an open letter from the World Obesity Federation, the UK Health Forum, and consumer groups was sent to the heads of the WHO and the Food and Agriculture Organisation. It urged governments to restrict any marketing to children of unhealthy foods and to place limits on the amounts of saturated fat, added sugar, and sodium in food. Other proposed measures included the removal of artificial trans fats, clear labelling on the front of packs, and a requirement that all trade and investment policies be assessed for their potential health effects. The UK Public Health Forum has suggested a number of actions to reduce sugar consumption including reviewing the EU and UK sugar market, manufacturers to reformulate and substitute sugar in processed foods, taxing sugar products, labelling and reducing daily guideline amounts.

Advocacy and the role of oral health organisations

Dental organisations and professional societies have a key role acting as advocates for oral health equity at a

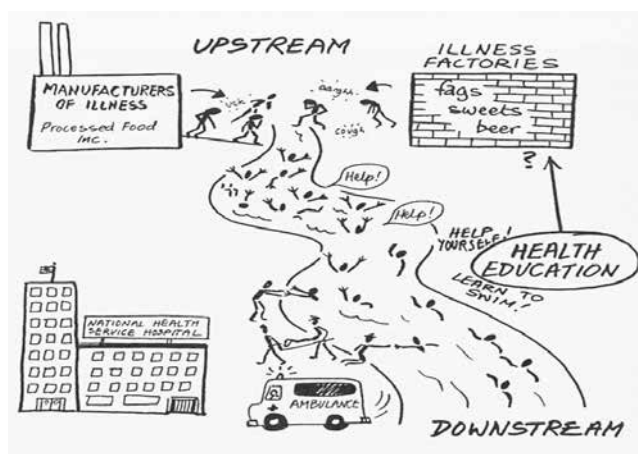
local and a national level. They may advocate policies to reduce sugar consumption to tackle both dental caries and obesity as well as regulatory controls of advertising and food labelling. In the UK the dental profession has joined a powerful coalition of other professional groups committed to tackling health inequalities by supporting the publication 'Working for health equity: the role of health professionals'. Primary care dental teams have a unique position in the promotion of oral health equity for both their patients and the wider community.

Examples of progress relevant to oral health

Although there have been great improvements in oral health, persistent inequalities remain in oral disease such as dental caries, periodontal disease and oral cancers, with a greater prevalence in the poorer sections of society. Upstream action relating to public policy has been successful in improving health including oral health. International examples include improved legislation against smoking, for wearing seat belts, and for water fluoridation; better food labelling and advertising regulations; revised fiscal measures such as tobacco and alcohol taxation; and organisational changes, e.g. health-promoting policies in schools, workplaces, and hospitals. Yet there is an urgent, continuing, and increasing need for partnership joint action.

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Upstream or downstream?

3.2 Creating supportive environments

Lone Schou and Aubrey Sheiham



NEIGHBOURHOODS and communities are important upstream determinants of health. The behavioural decisions made by individuals are rooted in the social, economic and environmental conditions under which people are born, grow, live, work and age (Diez-Roux 1998). The nurturant qualities of the physical and social environments they encounter, expand or constrain their options available for improving health and avoiding disease. Environments perpetuate inequalities. People born at the upper end of the social gradient into more advantageous environments find it easier to adopt healthier lifestyles. Interventions to reduce inequalities in health must therefore tackle the macro environmental factors and the physical and social environment, as well as adverse health behaviours and access to healthcare (WHO 2005). The Institute of Medicine Report (2000) stated that “It is unreasonable to expect that people will change their behavior easily when so many forces in the social, cultural, and physical environment conspire against such change.” Healthy environments enable people to acquire more control over their own health by creating social and physical contexts and social relations favourable to health and human development. Promoting health, therefore, requires that local communities and organisations play a pivotal role in the planning of social environments that

support health-promoting choices, and make explicit the political commitment to sustainable human development and the reduction of social and health inequalities (Moysés, Moysés & Sheiham 2014).

Healthy environments for healthy behaviours

The WHO recognised that “interventions which only tackle adverse health behaviours will have little success: they offer micro environmental solutions to a macro environmental problem” (WHO 2005), a conclusion reinforced by an analysis of dental health education (Watt 2007). To change individual behaviours, the conditions within which individuals live and work, the environments and social structures need to be changed. By modifying the environment, behavioural change is facilitated.

Creating healthy environments affects health by enabling positive behaviours, making healthy choices the easy ones, or by negatively influencing emotional and behavioural states. Access to societal resources such as a good standard of living, social institutions, political and economic structures, and the built environment are key avenues to good health (US Task Force on Community Preventive Services 2003). Therefore, creating healthy supportive environments should have a very high priority in health promotion.

POLICY RECOMMENDATIONS

- Efforts should be directed at making healthy choices the easy ones through the creation of supportive environments.
- Local environments that are focused on promotion of both oral and general health should include nurseries and schools.
- Dental advocates should integrate their activities with the broader public health agenda such as health-promoting nurseries and schools.

Analysing environments will provide a better understanding of the “fundamental social causes” – the elements of environments that influence behaviours (Link & Phelan 1995). Social support and social networks may mediate the relationship between the social and physical environment, and behaviours (Galea, Ahern & Vlahov 2003). Environmental approaches identify factors that negatively influence health. This will inform a policy shift from focusing only on individuals, to one that also seeks to address the social determinants of health.

Due to changes in political and commercial activities, the global health arena has become subject to significant political and commercial interests (Kickbusch 2012). The influence of marketing strategies and business activities, especially that of multinational companies, has led to ‘industrial’ epidemics based on promoting unhealthy patterns of consumption. Thus, a focus on the social and environmental determinants of health needs to be matched with an equivalent focus on addressing the commercial determinants of health, i.e. “factors that influence health which stem from the profit motive” (West & Marteau 2013). We need to explore collective action through local and global mechanisms to counteract the impact of these drivers on how health is created in the context of our everyday lives.

Role of dental professionals in facilitating supportive environments

Dentists should broaden their perspective from merely exploring relationships between exposures as specific risk factors and disease variables, to the analysis of the broader environmental factors that shape individual-level as well as collective behaviours (Diez-Roux 1998; Galea, Ahern & Vlahov 2003). Socio-environmental factors influence oral health (Watt 2007; Moysés, Moysés & Sheiham 2014). Healthy public policy interventions in the fields of sanitation, education, housing, integrated care for pre-school children, and nutrition all affect oral health. Socio-environmental components, measured at the group level and focusing on healthy public policies and social cohesion, explain variations in oral health beyond individual variables. Healthy public interventions can therefore improve oral health. Such policies should be directed to the whole urban population, thereby reducing social inequalities between areas of the same city (Moysés, Moysés & Sheiham 2014).

Oral health advocacy

Most dental practitioners’ involvement in policy development will be as oral health advocates. Health advocacy is the actions of health professionals and others with perceived authority in health to influence decisions and actions of individuals, communities and

governments which influence health. Health advocacy involves educating senior government, community leaders and journalists – decision-makers in general – about specific issues and setting the agenda to obtain political decisions that improve the health of the population. Health advocates place their skills at the disposal of the community – being on tap not on top.

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3.3 Strengthening community action

Samuel J Moysés and Manu Mathur

ACCORDING TO the Ottawa Charter (1986), the means for achieving the goal of Health for All (HFA) include: establishing healthy public policy, creating supporting environments, strengthening community action, developing personal skills, and reorienting health services. Substantial evidence reveals that environmental and community forces are important determinants of health (Syme 2004).

However, community action can easily become a platitude that people use uncritically, without due attention to the ideological and theoretical implications involved in their use. Trivial discussions on this issue tend to be limited to its ideal form of expression rather than exploring the practical and political implications of particular strategies. The attempt to define the community's identity, and other properties such as cohesion (social capital) and membership for any single criterion, such as place, denies the communities to which each individual is always part.

Questions should also be raised about the symbolism of much participation being "induced" by forces external to the community; on the extent to which government officials can work with community groups that may be critical of government actions; and whether the community representatives are truly representative (Wakefield and Poland 2005). Class divisions may oppose collaboration, as may power, ethnic, religious and occupational differences that often serve to divide communities into distinct groups with their own agendas and political goals.

Figure 1 – Community participation in the 14th National Health Conference in Brazil, 2011.



Source: <http://www.teoriaedebate.org.br/materias/nacional/quem-somos-e-para-onde-vamos-3>
 (*) Note: Thousands of delegates representing their communities are elected and participate in municipal, provincial and national stages of the Conference.

On the other hand, some empowered communities have stronger shared identities and common directions in which association occurs, so that class divisions can be overcome. Their needs and desires are shared, circulated and given political visibility. This kind of community action contributes as a factor to ensuring sustainability for public policies, particularly for health actions.

Value of community development in public health

Instead of idealised notions of community, it is more useful to observe complex catalyst forces, which are "invisible" determinants of life opportunities and health status and much less understood than behavioural risk factors. For example, how participatory public policies shape the quality of social relations among citizens, determine the levels of trust people have in each other and in their civic institutions and govern the extent to which people perceive their societies to be fair (Wilkinson and Pickett 2007). This is the case for community development in the formulation and monitoring of public health policies.

Potential links and opportunities for oral health

The oral health action plan, recommended for adoption to the Sixtieth World Health Assembly of the World Health Organization (WHO) in January 2007, included many of the necessary components for community action. Translating research findings into public health action programmes and making the scientific evidence clearly understood and amenable to community members are key points in any action plan (Monajem 2009).

The WHO Commission on Social Determinants of Health issued the 2008 report "Closing the gap within a generation - health equity through action on the social determinants of health", in response to the widening gaps within and between countries. In 2010, the WHO published another important report on "Equity, Social Determinants and Public Health Programmes", with the aim of translating knowledge into concrete, workable actions. Poor oral health was flagged as a severe public health problem (Petersen and Kwan 2011).

POLICY IMPLICATIONS

- There are four main factors to be observed when seeking to support community action in oral health: a) local identity; b) social trust; c) reciprocal help and support; and d) civic engagement. Social relationships affect health either by fostering a sense of meaning or coherence that promotes health, or by facilitating health-promoting activities.
- The community perspective shows that close ties among social services, housing, environment, education and health are important. This combination may improve health and well-being to the extent that this is not only facilitating and co-ordinating service delivery but also encouraging trust and commitment among individuals and strengthening community opportunities for association, civic participation and collaborative problem-solving.

Role of dentists and dental organisations – facilitators

A report published with the support of several medical and dental organisations outlined what the health professions can do to reduce health inequalities (Allen et al. 2013). The main proposals in the report are echoed in other documents with a widespread recognition that dental primary care teams are in a strong position to become actively engaged in promoting equity in oral health, for their own patients and general community (Watt et al. 2014). Oral health practitioners are required to apply their competencies at a range of levels from governmental to small community groups.

If the oral health teams wish to have the capability to help citizens in their struggle to defend the promotion of public health policy, intersectoral collaboration, sustainable development and community participation, then, to be effective, it is important to learn from sociological contemporary approaches on the meanings of the concept of community.

Examples of progress relevant to oral health

Oral health has often been neglected in national health plans and global health strategies. In line with the IADR GOHIRA® agenda, greater emphasis needs to be placed on exploring the determinants of oral health inequalities and turning knowledge into action (Sheiham et al. 2011). Some countries across the world have adopted their own versions of public oral healthcare and strategies to fight against perceived inequalities. For example, Austria, Denmark, Germany, Poland, Spain, Sweden, Mexico, Greece, Turkey, and Finland are providing basic dental care services (Mathur et al. 2015). However, this multicountry effort varies in their level of coverage, and there are various challenges in evaluating these experiences. One of the central questions to evaluate the progress of national and regional oral health policy is to check the degree of community involvement in support of such policies.

The Brazilian primary healthcare system, for example, is based on a political agenda that envisages reorganising the Unified Health System providing universal, public coverage, with the empowerment of civil society and the arising pressure of community action, as the public health system in Brazil includes community participation in conferences and health councils at local, regional and national level (Nascimento et al. 2013).

Experimental, quasi-experimental, and ecologic studies have shown that social isolation, persons with a low quantity and quality of social relationships and low social cohesion are all major risk factors for mortality. Community involvement and action in public affairs might promote health in several ways, thus the role

of social relationships in moderating or buffering potentially deleterious health effects of psychosocial stress or other health hazards must be emphasised. Oral health policies that fail to take into account the issues of community control and participation will not be as effective as they should be.

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3.4 Supporting behaviour change

Tim Newton, Jenny Godson and Anja Heilmann

MAINTENANCE of a healthy mouth, including teeth and gums, is critically dependent upon the behaviour of the individual. Key oral health-related behaviours are: consumption (amount and frequency) of free sugars; oral hygiene (tooth brushing with a fluoride-containing toothpaste), as well as tobacco and alcohol use. Importantly, these behaviours not only affect oral health, but are ‘Common Risk Factors’ shared with a number of major chronic diseases (Watt and Sheiham 2012). Therefore behaviour change is relevant for both oral and general health, as well as having social and psychological benefits.

Behavioural determinants of health inequalities

Individual behaviour is a proximal determinant of health, which in turn is strongly influenced by a person’s position and status in the social hierarchy and their social, economic and political environments (see also the section 2.2. on social determinants of health). There is some evidence from epidemiological studies that behaviour explains a proportion of the inequalities in oral health (Sabbah et al 2015). Therefore, effective interventions are needed that enhance the oral health-related behaviours of populations, thereby reducing the existing oral health inequalities.

COM-B model

Approaches to changing behaviour may operate at the individual, familial or societal level. One popular overarching framework is the so-called COM-B model which describes how **C**apability, **O**pportunity, and **M**otivation influence **B**ehaviour (Michie et al 2011, see Figure 1). The basic principle behind this new paradigm is that behaviour change consists of three interrelated components.

These are:

- i) *capability (C)* – defined as the person having the *physical* (e.g. strength) and *psychological* (e.g. knowledge) skills to perform the behaviour.

- ii) *opportunity (O)* – the *physical* (e.g. access) and *social environment* (e.g. exposure to ideas) is such that the person feels able to undertake the new behaviour.
- iii) *motivation (M)* – refers to the person’s *conscious* (e.g. planning and decision-making) and *automatic* (e.g. innate drives, emotional reactions, habits) processes said to underline behaviour.

The COM-B model outlines broad categories of behaviour change methods at the individual and policy levels.

Promoting individual behaviour change

There are many examples for the effectiveness of policy strategies to change individual behaviour. For example, recent changes in the legislation governing smoking in public spaces within the United Kingdom

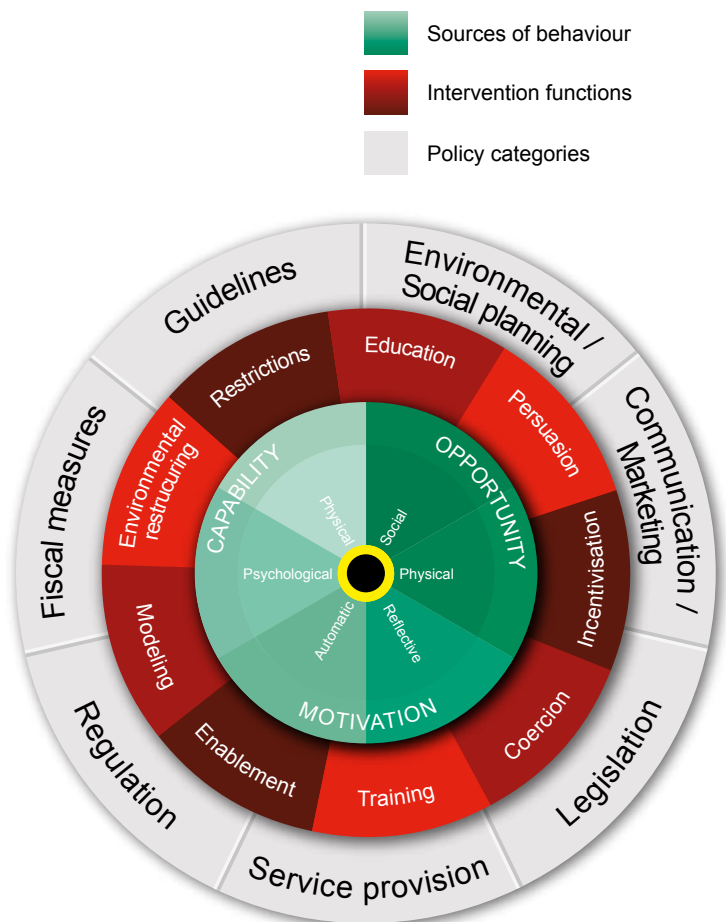


Figure 1: The Behaviour Change Wheel (Michie et al. 2011, p. 12).

POLICY IMPLICATIONS

- Policy-level interventions directed at promoting healthy environments are highly effective and should be advocated by dental professionals.
- Individual level interventions need to be based on the evidence demonstrating the effectiveness of particular psychological interventions to promote behaviour change. This will require both training of dental professionals in such techniques, and devising appropriate referral systems.

have led to marked reductions in smoking, and measurable general health benefits (Sargent et al 2004). Other policy-based interventions designed to direct behaviour change include fiscal strategies (e.g. taxation of tobacco or calorie-dense foodstuffs), environmental management (introduction of seat belts and other car safety features to reduce trauma including damage to the orofacial region; water fluoridation to reduce dental caries) and service provision (organisation of services to reach underserved communities). The influence of policy is covered in more detail in Sections 3.1 and 3.2.

On an individual basis, there is evidence that, despite the clarity of the message, strategies designed to change health behaviours through health education have been largely ineffective (Kay & Locker 1998) and may even lead to increases in oral health inequalities as a result of differential uptake of the information by different social groups (Schou & Wight 1994). Simply providing information on the behaviour would only address the 'Capability' element in the COM-B model – however, it is increasingly apparent that interventions need to incorporate all three components of the model to achieve sustained behaviour change. Recent reviews of interventions to enhance oral health-related behaviour based on psychological models suggest that the effective components of behaviour change include: goal setting, action planning and self-monitoring (Asimakopoulou & Newton 2015). Goal setting comprises the setting of cumulative goals that are realistically achievable within a short space of time and which lead the individual towards the final desired behaviour. Action planning involves collaboration between the individual and a healthcare professional to plan the process of behaviour change, through identifying where, when and how behaviour change will occur (identification of barriers to change and how to overcome them have also been found to be of value). Finally, self-monitoring refers to the use of structured tools to allow the individual to monitor their own progress towards the valued goal. In addition, self-efficacy (the belief in the ability to change one's behaviour) has been found to be a strong predictor of success in behaviour change – thus interventions should aim to enhance self-efficacy beliefs (Bandura 1977). For tobacco cessation interventions there is clear guidance on the effectiveness of structured interventions, and dental teams should be encouraged to make use of such approaches including specialist referral where available (Carr & Ebbert 2012).

Changing professional behaviours

The behaviour of professionals involved in oral healthcare may also be the target of interventions to encourage behaviour change. It is widely acknowledged that the publication of guidelines, while important in establishing clear standards of healthcare delivery, are

not sufficient to create behaviour change and that the use of psychological theory can support such change. NICE have published guidance on how to change professional practice (2007), identifying barriers and evidence of what works to overcome them.

In summary, oral health-related behaviour is a critical proximal determinant of oral health. It is susceptible to effective interventions aimed at the policy level and interventions delivered at the individual level in a variety of settings, including dental practices, schools and other community settings.

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3.5 Reorientation of dental care health systems

Lorna Macpherson, Lekan Ayo-Yusuf and Sandra White

THE World Health Organization and many other international and national agencies have for the last few decades recognised that building healthy populations and communities on a sustainable basis requires a reorientation of health services, from the traditional biomedical model, to one more focused on anticipatory and preventive care (WHO 2010). This is accompanied by the need to understand the causes of the social gradients in health which occur both within and between countries, and to have strategic approaches for tackling these inequalities and promoting equity (WHO 2013). For over a decade, equity has been considered to be one of the key principles of the quality improvement agenda for healthcare services. It is acknowledged that, to reduce social gradients in health, actions will need to be universal within populations, but with the scale and intensity proportionate to the level of disadvantage (Marmot 2010). Countries are at different stages in this shift of policy and it is recognised that healthcare systems need to develop in ways which correspond to the needs of different population groups and the wider political and welfare regimes within countries.

WHO Framework

The WHO (2006) framework for building healthy populations and communities, as applied to oral health, is:

- Reducing oral disease burden and disability, especially in poor and marginalised populations
- Promoting healthy lifestyles and reducing risk factors to oral health that arise from environmental, economic, social and behavioural causes
- Developing oral health systems that equitably improve oral health outcomes, respond to people's legitimate demands, and are financially fair
- Framing policies in oral health, based on integration of oral health into national and community health programmes, and promoting oral health as an effective dimension for development policy of society

Historically, preventive approaches in oral and general health have focused predominantly on the downstream clinical and behavioural perspectives, often involving a paternalistic, “knowledge to change” approach, with an individual risk factor focus. However, reviews have highlighted that such approaches have very limited effectiveness in relation to tackling health inequalities (Yevlahova and Satur 2009). They do not

take cognisance of the social determinants of health and thus fail to tackle the “causes of the causes” in relation to health-related behaviours and, additionally, are often costly in terms of workforce requirements. There is now evidence that there is much to be gained when the traditional biomedical models of health and healthcare are extended to include the more upstream approaches which acknowledge the true root causes of ill health and inequalities, i.e. those associated with social, economic and political environments (WHO 2010).

Many public health policy documents have now been produced at the global and national levels providing frameworks outlining effective policies to reduce inequalities using more upstream approaches (Lorenz et al. 2013).

Barriers blocking change in healthcare systems

There are, however, many barriers to reorienting systems to promote health equity. These will vary globally, but for every country there will be the requirement for an appropriate balance to be achieved between delivering services to meet existing treatment needs and at the same time responding to the new challenges through addressing the upstream determinants of health (WHO 2010).

Evidence would suggest that certain features of healthcare systems can influence health inequalities. These include level of expenditure, coverage, public/private mix, accessibility and extent of intersectoral policies (Mackenbach 2003). Tackling health inequities therefore requires action not only by politicians and others responsible for health services and welfare regimes, but also by many other sectors and the buy-in of the public. Whilst there are undoubtedly entrenched healthcare system factors that make change problematic, there are also likely to be issues of public expectation and values to be considered. There is a general expectation that individuals will be told how to improve their own health and encouraged to do so. Therefore disinvesting in established systems in order to invest in new models provides challenges in terms of public acceptability. Additionally, powerful vested interests may be pulling in other directions.

Upstream action

Watt et al. (2014) have emphasised the fact that the causes of oral health inequalities are the same as those related to general health inequalities and that an

POLICY IMPLICATIONS

- There is an ongoing need for the reorientation of dental health systems towards a greater emphasis on prevention and the promotion of oral health equity.
- A range of individual, organisational and system wide barriers need to be addressed to enable dental teams to effectively engage in preventive care.
- Dental teams need the appropriate skills and resources to deliver effective preventive support to their patients.

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integrated approach is therefore required to promote greater health equity. Recent publications from Public Health England and the National Institute for Health and Care Excellence (NICE) provide examples of how dental services can contribute to guidance development for other agencies, such as local authorities, to facilitate a multi-agency approach to improving the health of children and young people (Public Health England 2013; NICE 2014). Co-ordinated upstream actions in relation to healthy public policy in areas associated with economic, cultural and environmental conditions are also required, as well as in specific areas such as tobacco and alcohol control and sugar policy. Examples relating to these latter topics are the tobacco control agenda and diet and nutrition reports of the WHO which have been translated into action, to varying extents, in some countries.

Role of primary care professionals in promoting equity

At the dental primary care level, increased emphasis on preventive care is also required and this will be influenced by the features of individual dental primary care systems (as described above) and a greater understanding of the barriers and facilitators to the implementation of preventive guidelines and strategies by dental care professionals. The contribution that primary care dental services can make to promoting equity in oral health and tackling health inequalities has been outlined (Watt et al. 2014). This includes developing strategies to ensure that the inverse (preventive) care law is not applicable, with greater uptake of preventive services by individuals least in need. Examples of current initiatives within the UK include building an evidence-based toolkit for prevention (Public Health England 2014) into the new dental primary care contract in England, and the multi-agency oral health improvement programme for children in Scotland (Childsmile) (Macpherson et al. 2010).



3.6 Training next generation of dental professionals to promote equity

David Williams, Paul Allison and Sebastian Ziller

ORAL DISEASES are among the most important global public health problems. Worldwide, oral conditions affect 3.9 billion people, and untreated caries in permanent teeth was the most prevalent condition evaluated in the Global Burden of Disease Study (Marcenes et al 2013). It is estimated that oral diseases are the fourth most expensive disease to treat and curative dental care is a significant economic burden for many developed countries (Petersen et al 2005). As the socio-economic gap between the rich and the poor is widening, social inequality is on the increase and this has an impact both on the oral health status of an individual and on the distribution of the dental workforce as many practitioners practice in more affluent areas. This highlights the importance of training the next generation of dental professionals to promote greater oral health equity.

The mouth is the window to the rest of the body, impacting upon general health and quality of life of an individual. Poor oral health can be an indicator of belonging to a lower socio-economic class, of child neglect or of declining self-care in an aging population. Most oral diseases are, however, preventable, easy and relatively cheap to prevent, and share common risk factors with other NCDs.

Inequalities as a core principle with professional training

With this as background it is necessary to raise the awareness about health inequalities within future generations of oral health professionals and have to give them the tools to promote equity. The education and training of oral health professionals have to address the needs of their local populations and the fair provision of oral health services. Future dental students need to become not only competent technical experts but also socio-culturally competent and sensitive to what can be enhanced in a health-promoting environment (Preet 2013). In addition, the future generation of oral health professionals have to become change agents to reduce oral health inequalities effectively in their communities.

In this context the Sixtieth World Health Assembly urged member states to scale up capacity to produce oral-health personnel, including dental hygienists, nurses and auxiliaries, providing for the equitable distribution of these auxiliaries to the primary-care level, and ensuring proper service backup and support by dentists

through appropriate referral systems (WHO 2007).

Interdisciplinary working in the healthcare sector (GP, dentists, nurses, dieticians, paediatricians, teachers etc) is essential to enhance the quality of care (“Treat a person as a whole”) and to reduce health inequalities for the population.

At a community level it requires the integration of health education and health promotion. At a policy level it requires the integration of oral health policies into health policies. Primary care dental teams are in a distinctive position to become actively engaged in promoting oral health equity, for both their own patients and the wider community (Watt et al. 2014). Because oral diseases and systemic disease share the same risk factors and determinants, a whole systems approach to improving oral health in the context of general health is required, with the proper integration of oral healthcare with healthcare in general. If dental professionals are to engage and function in this environment, it is essential that all members of the oral health team understand the importance of the social determinants of oral health and be able to integrate their activities with other groups. All members of the oral health team will need to understand the importance that social determinants play in oral, as well as general health. They should have a thorough understanding of how the conditions in which people are born, live, work and age can affect their health, and how they can act to tackle these.



POLICY IMPLICATIONS

Training needs for the next generation of dental professionals

The new generation of dental professionals will need to be able to engage in partnership with communities to help them better understand and tackle the social, economic and environmental factors that determine oral health and increase inequalities. They should be able to engage with colleagues such as primary healthcare professionals in the development of cross-sectoral partnerships, so that oral health promotion strategies become incorporated into all strategies for health. Dental professionals will also need to learn how to become advocates for health, particularly oral health, with their patients and the wider community. This should include an emphasis on acting as enablers, helping to make healthy choices the easier choices and empowering people to take control of their own lives and health.

Next steps in reforming dental education

Training the next generation of graduating dentists and dental researchers has been recognised as an important element of reducing health and healthcare inequalities and promoting equity across the world (Glick et al. 2012). This agenda involves several elements: Firstly, appropriate recruitment and selection strategies must be used to ensure that candidates selected for dental school and other oral healthcare professional programmes reflect the broad socio-economic, ethnic and other cultural diversities of the populations they will serve once they graduate. This is very important as it has been demonstrated that patients and health professionals are more likely to work with people from similar ethnic and socio-economic backgrounds (Sullivan Commission 2004). Secondly, the curriculum of training programmes must ensure students learn of the existence and causes of health inequalities, including the contribution of poor access to care (Canadian Academy of Health Sciences 2014) but most importantly students must be given opportunities to learn skills that will enable them to contribute to the reduction of inequalities and the promotion of equity. Such skills vary through “cultural competency” training (including all forms of cultural diversity) (Rowland et al. 2006), through appropriate treatment planning, to experience providing care in placements exposing students to diverse groups. For dental research trainees, they need to learn appropriate research methods and approaches such as participatory research that contribute to reduced inequalities and increased equity. For students to successfully learn these skills, as well as curricular content and experience placements, appropriate evaluative and feedback approaches must be used to promote the importance of this work. Thirdly and finally, dental schools and other dental educational institutions must think imaginatively

- Future generations of dental professionals need appropriate training to equip them with the necessary skills, knowledge, and attitudes required to promote oral health equity.
- Interdisciplinary working in the healthcare sector and engaging in partnership with communities is essential to enhance the quality of care and to reduce health inequalities for the population.

of new postgraduate programmes to enhance the skills of those particularly interested in health inequalities and equity. Public health programmes are important but clinical training programmes enhancing the skills of clinicians to work with diverse groups, in diverse settings, using patient-centred care approaches, are equally important (Apelian et al. 2014).

As an example of good practice the US “Dental Pipeline Program” has produced some limited success in terms of recruitment of under-represented minorities to dental school, incorporation of community-based curricula and extramural rotations (Andersen et al. 2009). However, this programme did not change the intentions of senior dental students to provide care for under-served groups.

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3.7 Research agenda on oral health inequalities

Robert J Weyant, Harold Sgan-Cohen and Aubrey Sheiham

THE IADR and other international dental research bodies have adopted the scientific, social, and moral leadership role in eliminating inequalities and reducing the global burden of non-communicable diseases (Sgan-Cohen et al. 2013). The acknowledgement of and commitment to that goal have substantially increased among the dental public health community. Whereas previously, dental academics and practitioners were mainly concerned with reducing the prevalence of dental diseases, the current focus has shifted towards decreasing and even eliminating inequalities between social groups and within and between regions. The challenge is to devise strategies that reduce the overall burden of disease while simultaneously decreasing disease inequalities between social groups. That is a complex challenge that requires a thoughtful approach.

Domains in inequalities research

To aid planning in this regard, the US Institute of Medicine suggests as an overarching approach that inequalities research be considered within three domains: science, policy, and practice (Thomson et al. 2006). Kilbourne et al. (2005) further provide a process for advancing health inequalities research by proposing that this research occurs in three sequential phases:

Phase One: Detection

There is a need for more studies to establish a rigorous underlying scientific foundation towards understanding inequalities and developing effective interventions. Research is required on:

- Definition of vulnerable population groups (racial, ethnic, social, geographic, and economic groups) and appropriate categorisations (Braveman, 2003).
- Effective measurement of inequalities. The CDC monograph, *Methodological Issues in Measuring Health Disparities*, lists significant issues and advocates consistently measuring and expressing the size, direction, and nature of oral health inequalities (Keppel 2005).
- Methodological issues around selection and confounding effects in observational studies. Substantial potential biases need to be carefully addressed.
- Utilisation of existing data resources regarding the presence and extent of inequalities and how they are changing over time.

- Development of strategies to collect new data for monitoring inequalities.

Phase two: Understanding

Research that helps understand what leads to observed inequalities from Phase One, emphasising: individuals, providers, clinical encounters, healthcare system structure and financing, public policy, and economics.

Emerging research areas in this phase include:

- Understanding the role of genomic and molecular influences on the development of disease and disparities. Genetic factors can substantially alter the natural history of disease as well as an individual's response to interventions (Hernandez & Blazer 2006). Optimal utilisation of biological and non-biological factor interactions can result in differential disease liability and response to treatment (Fullerton 2012).
- Social and economic conditions have large and independent effects on health status. Although theories exist on how environmental risks act to degrade health, it is still unclear what their relative contributions are and how these vary between various populations.

An often neglected consideration is the nature of the individuals and groups engaged in the actual research. Thomas et al. (2011) argue that when the majority of researchers are not from the affected communities, there is a tendency to focus research on individual and behavioural factors as the primary causal agent and to ignore structural factors. Dankwa-Mullan et al. (2010) note that bidirectional community engagement is essential towards establishing the trust needed to move forward with acceptable interventions.

Emerging research areas in this phase include:

- How can members of the vulnerable communities be trained and become fully engaged and integrated as contributing members of the research infrastructure?
- Transdisciplinary and inclusive (community engaged) research is needed to identify currently unrecognised problems.
- How can clinical practitioners develop an understanding of the importance of the community?
- What are the structural and financing schemes that lead to health inequalities and what policy changes are needed to alleviate the problem?

POLICY IMPLICATIONS

- Through the support of IADR and other international research organisations, oral health inequalities have become a key research priority in several countries.
- Major gaps remain in our understanding of the causes of oral health inequalities and the interventions needed to reduce the unfair and unjust differences that exist in oral health across our communities.
- Future research on reducing oral health inequalities requires multidisciplinary teams with expertise in biological, clinical, social and public health sciences.

Phase Three: Reducing

This phase is the natural progression from phases one and two. While in phases one and two research was tilted more toward the science of development of inequalities, this phase acknowledges that the inequalities are created and perpetuated by social factors and thus, must focus intervention on *policy* and *practice* issues. The root causes of inequalities need to be targeted. Some areas where more research is needed are:

- Individual level interventions. What are the individual level interventions that are achievable, socially acceptable, scalable, and cost-effective?
- Provider level interventions. What approaches can be used to improve provider practice towards delivery of appropriate care to all patients? There is a need to engage the provider in a fuller understanding of the extent of inequalities in their respective communities.
- Healthcare organisational changes. How can policy changes be implemented that lead to optimal structural and financing approaches that improve population level health and reduce inequalities?
- Community level changes. What strategies (e.g. health promotion policy) are possible that will result in substantial, sustainable and cost-effective changes that move the community structurally toward a health-promoting environment? How can policymakers be made aware and engaged in solving these problems?
- Transdisciplinary and intersectoral opportunities. Where are opportunities to engage in collaborations that leverage the strengths and skills of many individuals and organisations aimed at improving health through a common risk factor model?

Measurement of inequalities

To confront the challenge of oral health inequalities, it is important to establish more research on how inequality is measured. We are far from reaching a uniform “yardstick” of inequality. Very different methods are used, in different settings, and for different pathologies. Inequalities can be measured by empirical examination of values, a moral assessment of values, and a technical understanding of inequality measures (Asada 2010). A standardised, universal and comparable measuring tool for inequalities is clearly called for. We could start with something quite simple, such as the ratio of the prevalence among those above the poverty line compared to those below; or the ratio of levels within minority groups vs. majority population groups. Once this ratio is calculated, the next step would be to establish a goal of reduction or even elimination of differences. For example, a goal could be set to reduce inequalities by 30% within the next decade. This goal could be adapted and modified for different countries.

Surveillance of inequalities should be routinely followed up and monitored. Research should decipher the responsible related variables. Also, a debate about avoidable versus unavoidable inequalities may be helpful to obtain better insights into societal preferences to reduce inequalities.

At a secondary level, the range of gaps in research knowledge on inequalities is vast. We should include not only biological/medical inequalities, but also psychosocial components, cultural, economic, political, quality of life, literacy, pain, decrease in function, discomfort, suffering, the impairment-disability-handicap continuum.

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3.8 Advocacy to reduce inequalities in oral health

Manu Raj Mathur, David M Williams, Habib Benzian and Aubrey Sheiham

Defining public health advocacy

ADVOACACY IS “the effort to influence people, primarily decision-makers, to create change, which results in comprehensive policies and effective programme implementation, through various forms of persuasive communication” (WHO 2008). By blending science, ethics and politics, evidence-based advocacy helps to transform systems and improve the environments and policies which shape people’s behaviours and choices, and ultimately their health (International Council of Nurses 2008). Health advocacy is also defined as “the processes by which the actions of individuals or groups attempt to bring about social and/or organisational change on behalf of a particular health goal, programme, interest, or population” (2000 Joint Committee on Health Education and Promotion Terminology, 2002).

More practically, public health advocacy is often seen as a process of gaining political commitment for a particular goal or programme. The typical target audiences tend to be senior government officials, community leaders, journalists, policymakers, programme managers, and more generally, those that are in a position to influence and decide on actions that affect populations. The ethical foundations for health advocacy are enshrined in numerous codes of practice developed by national and international health professional organisations. National codes specifically call for health professionals to recognise the need to address organisational, social, economic and political factors influencing health and to advocate for appropriate health policies and decision-making procedures that are consistent with current knowledge and practice, for fairness and inclusiveness in health resource allocation, including policies and programmes addressing determinants of health (CNA 2002).

Public health advocacy strategies espouse an upstream approach, recognising that ‘individual’ and ‘personal’ problems often reflect social conditions. An upstream approach involves situating ‘individual’ health issues within the broader context of social determinants external to individuals. It also recognises the societal breadth of many public health problems, and the logistical and resource challenges inherent in approaching these challenges at the individual level. In other words, public health advocacy is an important strategy for creating environments supportive of health.

Advocacy framework

The International Council of Nurses has developed a 10-step advocacy framework to facilitate practical work on advocacy strategies:

1. Taking action and overcoming obstacles to action;
2. Selecting the issue – identifying and drawing attention to an issue;
3. Understanding the political context – identifying the key people and groups that need to be influenced;
4. Building the evidence base – doing the homework on the issue and mapping the potential roles of relevant players;
5. Engaging others – winning the support of key individuals/organisations;
6. Elaborating strategic plans – collectively identifying goals and objectives and best ways to achieve them;
7. Communicating messages and implementing plans – delivering the messages and counteracting the efforts of opposing interest groups;
8. Seizing opportunities – timing interventions and actions for maximum impact;
9. Being accountable – monitoring and evaluating process and impact; and
10. Catalysing health development – building sustainable capacity throughout the process.

(modified from International Council of Nurses 2008).

Oral health advocacy

Advocacy for improved prevention and control of oral diseases is essential to influence policy and to provide decision-makers with options to create an environment conducive to better oral health. Such advocacy is most likely to be successful in a joint and synchronised approach with other non-communicable diseases. Areas for health advocacy include public policy and resource allocation, prioritisation of diseases and solutions, as well as decisions within the wider political, economic, and social systems that directly affect people’s lives.

A starting point for advocacy efforts focusing on oral health inequalities is to highlight critical facts on inequalities in oral health that have been largely ignored or are unknown to decision-makers. Second-level advocacy aims to facilitate the development and implementation of public policies and regulations that support the goal of a just society with equal

POLICY IMPLICATIONS

- Health advocacy is an important strategy for creating environments supportive for good health.
- Dental professional organisations at local, national and international levels have an important role as oral health advocates.
- Oral health advocates need to work in partnership with other groups concerned about NCDs and with the community to address the underlying determinants of health and inequalities.

opportunities for all. Advocacy can take place at the level of both 'cases' and 'causes'. It can be applied at personal/professional, patient and policy change/system levels. The Ottawa Charter states in its first basic principle that "Political, economic, social, cultural, environmental, behavioural and biological factors can all favour health or be harmful to it. Health promotion action aims at making these conditions favourable through advocacy for health" (WHO 1986). This expansion of thinking and acting on issues beyond the traditional clinical setting is a key characteristic of advocacy, and is based on facilitating and enhancing cross-sectoral and interdisciplinary approaches to develop pragmatic options for evidence-based action on different levels of the political, economic and social system.

Advocacy for addressing oral health inequalities

Based on the principle of collaboration and partnering with other sectors to implement policies to improve health, dentists and oral health professionals have the potential to be at the forefront of inter-professional alliances. Using the Common Risk Factor Approach is a further principle that may help to reduce inequalities in chronic non-communicable diseases, such as heart diseases, diabetes and cancer, as well as in oral diseases. Oral health professionals should get involved in tobacco control and dietary guidelines on sugars and other nutrients. However, health professionals working alone will achieve little without the support of decision-makers and other stakeholders in health; thus highlighting the need for effective partnerships (Watt & Rouxel 2012).

Advocacy must include the underlying social determinants of oral health inequalities by bringing the issue to the forefront of the agenda of decision-makers and by increasing public awareness and involvement

in the issue. Oral health advocates should also lobby for universal health coverage and improving access to appropriate oral healthcare services and prevention for all, particularly for the most disadvantaged, deprived and vulnerable groups. Common entry points for advocacy and linking with other sectors are highlighted in Figure 1.

Advocacy is a core function of all health professional organisations. International organisations like the WHO, IADR, FDI and national dental associations have the potential to jointly advocate for better prioritisation of oral health as a neglected global health issue. Serving different constituencies and target audiences, these organisations have access to extensive international and national networks and decision processes; there is thus a huge collective potential for change and improvement. However, consensus, leadership and a shared vision are required to make use of this potential more effectively in the future (Benzian et al 2011).

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International Centre for Oral Health Inequalities Research & Policy

W: www.icohirp.com

E: admin@icohirp.com