

TRANSFORMING ORAL HEALTH FOR ALL

The Case for Tobacco

Harm Reduction

Report by International
Oral and Public Health Experts

Integrating Harm
Reduction into Tobacco
Control, for Improved
Prevention and Control
of Smoking-Related Oral
Disease, Disability, Cost
and Premature Death



**ORAL NICOTINE
COMMISSION**

In collaboration with



**SMOKE FREE
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CONTENTS

EXECUTIVE SUMMARY

CHAPTER 1:
The Impact of Tobacco on Oral Health.....05

CHAPTER 2
Current Oral Health Governance.....11

CHAPTER 3:
Benefits for Oral Health by Integrating
Harm Reduction into Tobacco Control.....13

CHAPTER 4:
Global Case Studies.....17

CHAPTER 5:
Role of Smoke-Free Nicotine Alternatives.....21

CHAPTER 6:
Role of Oral Health Professionals.....23

CHAPTER 7:
Call to Action: Transforming Oral Health
Through Harm Reduction.....27

EXECUTIVE SUMMARY

ORAL DISEASES AFFECT 3.5 BILLION PEOPLE GLOBALLY, SIGNIFICANTLY IMPACTING QUALITY OF LIFE AND CREATING SUBSTANTIAL ECONOMIC BURDENS. SMOKING, WITH 1.27 BILLION USERS WORLDWIDE, REMAINS THE MOST PREVENTABLE CAUSE OF DEATH AND A MAJOR CONTRIBUTOR TO ORAL DISEASES AND CANCER.

THE WHO emphasises that many oral diseases are preventable through cost-effective measures, but disparities in access to oral healthcare persist, especially in low- and middle-income countries.

Tobacco Harm Reduction (THR) policies offer a promising approach to reduce tobacco-related oral diseases by providing safer alternatives to harmful tobacco products.

Oral Health is essential to overall well-being. Smoking significantly impacts oral health, causing diseases, disability, and premature death. The harmful effects of tobacco are primarily due to combustion, which releases toxic substances damaging the oral cavity.

While standard tobacco control measures focus on cessation, smoke-free nicotine alternatives provide a safer option for those unable or unwilling to quit smoking.

Nicotine Misconceptions: Nicotine is often wrongly blamed for smoking-related diseases. Evidence shows that nicotine itself is not a cause of cancer, but public and professional misperceptions persist. Addressing these misconceptions is crucial for effective THR strategies.

Current Oral Health Governance: Effective governance structures are needed to promote oral health and integrate it into broader health systems. Key frameworks include the WHO's 2021 Resolution on Oral Health and the Global Strategy and Action Plan on Oral Health (2023–2030).

These frameworks emphasise the importance of preventative models, healthy lifestyles, and integrating oral health into national policies. *However, they lack explicit references to harm reduction.*

Tobacco Harm Reduction (THR): THR provides a practical solution to reduce tobacco-related harm, particularly in preventing oral cancers, reducing dental disability, and improving overall oral hygiene. For those unable or unwilling to quit smoking, THR offers an alternative pathway to better health by reducing exposure to harmful carcinogens found in combustible tobacco products.

COUNTRY CASE STUDIES

Sweden: The use of snus and oral nicotine pouches has contributed to low oral cancer rates and reduced smoking-related diseases.

Japan: The adoption of heated tobacco products (HTPs) has significantly reduced cigarette smoking and tobacco-related diseases.

UK and New Zealand: E-cigarettes have played a crucial role in reducing smoking rates and improving public health.

Integrating THR into tobacco control strategies can significantly improve oral health outcomes, particularly in regions heavily affected by smoking-related diseases. By offering safer alternatives to combustible tobacco products, THR can reduce the incidence of oral diseases and enhance the overall quality of life for millions worldwide. These case studies demonstrate the potential benefits of harm reduction strategies in reducing smoking rates and improving public health.

Effectiveness of Nicotine Alternatives: Smoke-free nicotine alternatives are less harmful than traditional cigarettes. Electronic Nicotine Delivery Systems (ENDS), for example, are about 95% less harmful than cigarettes. Studies, such as one by The New England Journal of Medicine, show that ENDS significantly aid in smoking cessation, with higher abstinence rates compared to control groups.

Oral Health Benefits of Switching to Smoke-free Nicotine Alternatives: Switching from cigarettes to non-combustible tobacco alternatives significantly improves oral health. Studies document reduced bone resorption, improved mucosal health, and better vascular structure in those who switch. While complete cessation is ideal, smoke-free nicotine alternatives offer a much less harmful option for those who cannot or will not quit smoking. THR aims to reduce smoking-related premature deaths and improve quality of life, particularly in oral health. Integrating THR into public health strategies can significantly reduce the global burden of smoking-related diseases.

Roles of Oral Health Professionals (OHPs): OHPs have unique opportunities to combat the tobacco

epidemic. By leveraging their roles as clinicians, educators, scientists, leaders, and alliance builders, they can significantly contribute to tobacco cessation and harm reduction. Empowering OHPs with the necessary knowledge, training, and support is crucial for improving oral and general health outcomes worldwide.

Recommended Actions for Integrating Harm Reduction into Tobacco Control

1. Encouraging Risk-Proportionate Regulation:

Governments should revise regulations to improve access to less harmful smoke-free nicotine products. Cigarettes should be more heavily regulated and taxed than reduced-risk products, making it easier for consumers to quit smoking or switch to safer alternatives, thereby improving general and oral health.

2. Activating Oral Health Professionals: Oral health professionals, especially dentists and dental hygienists, should communicate the benefits of THR to patients, counter disinformation about nicotine, and develop reports like those by the Royal College of Physicians of the role of THR. Health professionals are trusted sources of information and can play a crucial role in reducing smoking-related diseases by promoting THR.

3. Strengthening Alliances and Consumer Representation: Creating and strengthening independent, science-based consumer groups can advocate for oral health needs based on sound science. Building alliances among diverse sectors and stakeholders, including health professional associations, non-profits, civil society groups, and the private sector, can enhance oral health advocacy and programme implementation.

4. Investment in Research and Local Science: Governments should invest in national science and research to advance Tobacco Harm Reduction (THR). This should be supported by continuous communication programmes that engage healthcare leaders and tobacco product users. Regulations must balance consumer access with public health concerns, focusing on preventing youth uptake while allowing adult smokers access to THR alternatives.

Embracing THR, cessation, and improved preventive care offers a significant opportunity to enhance oral health globally. By integrating harm reduction into tobacco control strategies, governments and health professionals can reduce the incidence of smoking-related oral diseases, improve overall health outcomes, and ensure a better quality of life for individuals and populations.



IMPACT OF TOBACCO ON ORAL HEALTH

1.1 ORAL HEALTH: A WINDOW TO YOUR OVERALL HEALTH

What is 'oral health'?

TRADITIONALLY, oral health has been characterised by the absence of disease. The World Health Organization (WHO) states that 3.5 billion in the world are living with oral disease, making it the most prevalent form of non-communicable disease (NCD)¹. Whilst oral health has been recognised for millennia as an integral component to overall well-being, a consensus definition was established in 2016 by the FDI World Dental Federation that acknowledges its multi-faceted nature (Figure 1).²

“Oral health is multi-faceted and includes the ability to speak, smile, smell, taste, touch, chew, swallow and convey a range of emotions through facial expressions with confidence and without pain, discomfort and disease of the craniofacial complex.”

The above definition accommodates the positive trend towards a holistic approach (in keeping with the 'biopsychosocial model') to improving oral health that considers: i) psychosocial determinants of health as well as physical factors, and ii) how the mouth acts as a window to your overall health.³



Figure 1: The FDI World Dental Federation's poster to illustrate the multi-faceted nature of oral health.⁵

It also aspires towards a person-centred evaluation of oral health that looks beyond mere rates of death and disease, but also seeks to assess and monitor 'oral health related quality of life' (OHRQoL). It is now widely accepted that oral health can contribute to social, economic, and psychological consequences. In other words, it can impact an individual's quality of life.⁴

The oral cavity plays an important role in the body's management. Being the first segment of the digestive system, it is also the first to be exposed to different ingredients from food, liquids, drugs, and tobacco. Like all other organs in our body, the oral cavity is part of a complex interactive system, closely associated with systematic health and/or disease. David Koubi, in 'Le Dents c'est la Vie' explains how a suffering oral cavity may affect over time different organs and systems.⁶ The results are symptoms that might include diabetes mellitus, rheumatic disease, neuralgia, obesity, heart condition, rino- and eye conditions, cutaneous and digestive issues, nervousity, tumors, allergy, lack of respiratory efficiency, kidney problems.

MECHANISMS OF TOBACCO-RELATED HARM TO ORAL HEALTH

In people who smoke, often with poor oral hygiene, teeth full of calculus, cavities and constant irritation of periodontal tissues will inevitably lead to general disorders transmitted via lymphatic vessels. The connection between the oral cavity stimulus and the reaction of various organs is conducted through the direct effect of bacteria or indirect effect via inflammation pathways. When a person stops smoking, the oral inflammation will decrease, and the destructive reflexes triggered by tobacco toxicants are discontinued, thereby leading to improved oral and general health.⁷

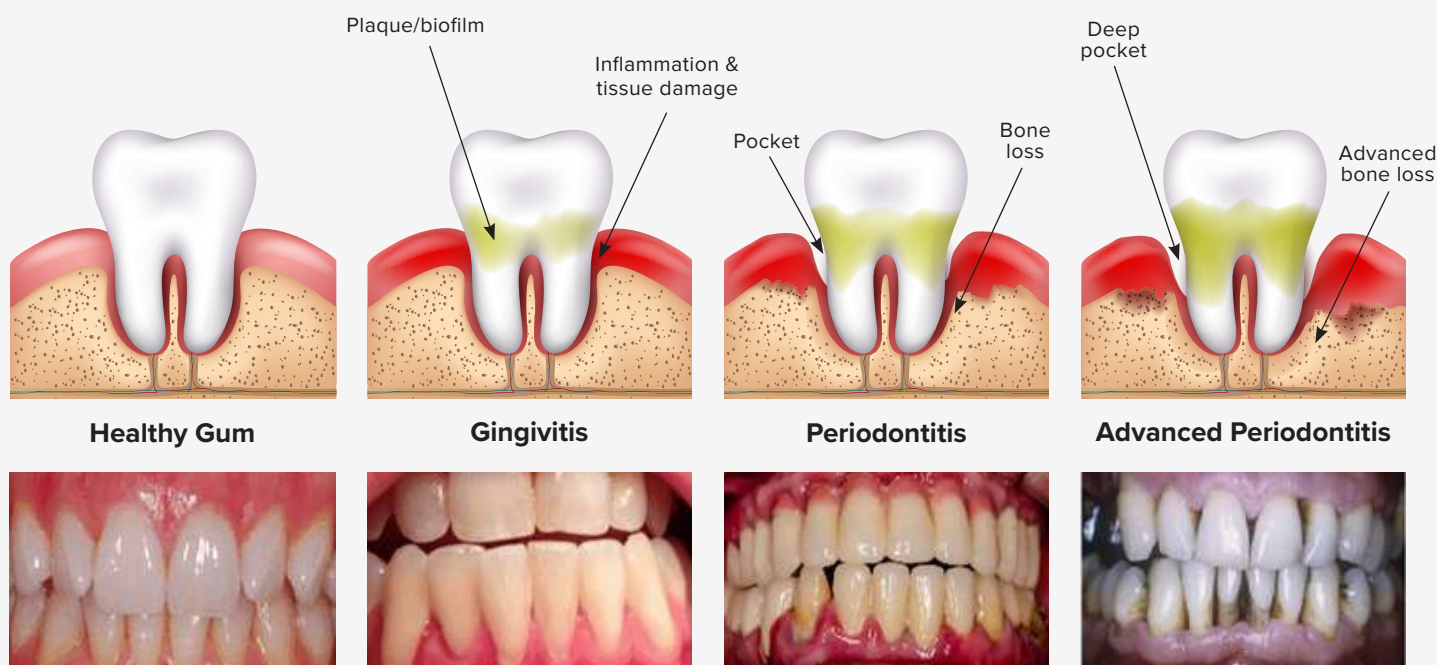


Figure 2: Diagram depicting the progression of disease from healthy gums to advanced periodontitis; smoking is the biggest risk factor for periodontitis¹⁰ development and progression.

Tobacco-related pathologies

This list is not exhaustive, but cites several of the most prevalent tobacco-related oral diseases:

Periodontitis and gingivitis (gum disease): The sixth most prevalent health condition in the world, and a leading cause for tooth loss in adults.⁸ The eventual consequences of periodontitis progress from gum bleeding and swelling to bone loss and tooth mobility, to eventual tooth loss (Figure 2). Smoking is one of the biggest risk factors for periodontitis development and progression, and smokers have poorer responses to periodontal treatment. In fact, such is the impact of smoking on treatment, that it has been suggested that dental professionals should prioritise smoking cessation as the primary treatment goal, rather than conventional therapies.⁹

Oropharyngeal cancer: The causative association between tobacco and cancer¹¹ is well-established. Smoking is estimated to be responsible for 75% of oropharyngeal cancers. Notably, quitting smoking has been demonstrated to reduce oral cancer risk to levels like never smokers after 20 years.¹²

Dental caries: Tobacco smoke engenders changes within the oral microbiome - and causes hyposalivation and inflammation - that render it more susceptible to dental caries and associated halitosis.¹³

The compounded challenge of non-communicable diseases (NCDs) co-morbidities: Oral disease and other NCDs (e.g. diabetes, ischaemic heart disease) share modifiable risk factors (such as tobacco use), and in some instances there is a direct link between

Combustion: the driving force of harm

As Michael Russell (inventor of the nicotine patch) noted back in 1974: "People smoke for the nicotine but they die from the tar."¹⁵ There is robustly evidenced and reputable support for the fact that the most harmful effects of tobacco stem from its combustion.¹⁶ By removing combustion from the equation, the majority of tobacco-related harm can be avoided, as shown in Figure 4.

Unrefined smokeless tobacco is not the same as regulated non-combustible nicotine alternatives

From the outset, a distinction must be made between unrefined forms of oral smokeless tobacco (e.g. paan and gutka), and regulated non-combustible nicotine alternatives (e.g. nicotine pouches, Electronic Nicotine Delivery Systems (ENDS) a.k.a e-cigs/vapes).

The risk profiles between these products are completely different due to their different methods of preparation and contents. Of course, no nicotine product is risk-free – but there is no evidence to date of nicotine itself being carcinogenic¹⁶, whereas unrefined forms of smokeless tobacco are known to contain up to 30 carcinogens, and used in epidemic proportions (356 million users worldwide); it is a particular public health challenge in Southeast Asia, which accounts for 82% of its users and has correspondingly high rates of oropharyngeal cancer and periodontitis.¹⁹

In a 2014 meta-analysis, Gupta et al found that chewing tobacco increases the odds of oral cancer by 7.5 times.²⁰

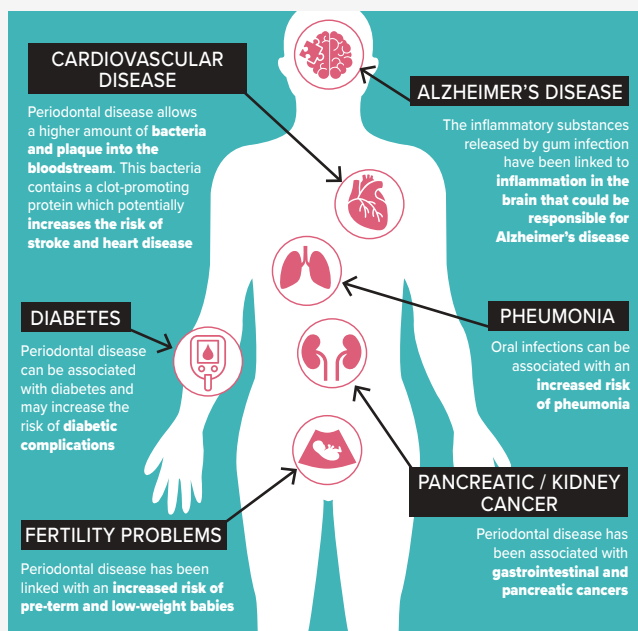


Figure 3: The inextricable association between oral disease and overall health (12). Note that smoking magnifies the risk of and effects of all the above conditions.

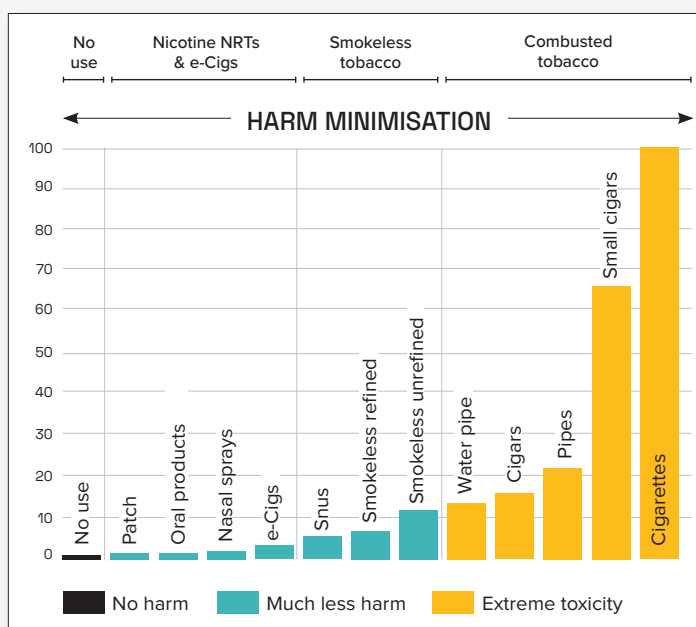


Figure 4: The continuum of harm resulting from different forms of use (or no use) of combustible tobacco vs non combustibles – adapted with permission from Nutt et al.¹⁷

Improved health outcomes in users of combustible vs non-combustible forms of tobacco

Some of the most compelling evidence for the relative safety of regulated non-combustibles comes from biomarker data measuring the toxicants found in the blood, saliva, and/or urine in people switching from cigarettes to safer nicotine alternatives.

Evidence from multiple studies^{21,22,23}, indicate that making this switch dramatically reduces the exposure to hazardous chemicals associated with smoking: “these [biomarkers of exposure] data provide further evidence that ENDS expose users to substantially lower levels of toxicants than combustible cigarettes, confirming their potential for harm reduction”.

The biomarker data is corroborated on a population level in epidemiological data, indicating how countries which have adopted regulated non-combustible nicotine alternatives as part of their tobacco control strategy have yielded population health benefits.

For instance, Sweden is set to become a ‘smoke-free’ country (defined as an adult smoking prevalence <5%) – in part thanks to their adoption of smoke-free alternative products (e.g. snus, nicotine pouches). This has accelerated their rate of smoking decline to the quickest in the whole European Union (EU), and a smoking prevalence five times below the EU average.

As a result, Sweden boasts the lowest rate of tobacco-related disease and death in the EU.²⁴

Nicotine: a misunderstood molecule

Nicotine is commonly mischaracterised as the molecule responsible for the harm from smoking, even amongst health professionals. In 2021, a survey of faculty and students at a US Dental School found that most of them responded “agree” or “strongly agree” that nicotine causes cancer, cardiovascular disease, pulmonary disease.²⁵ Similarly, another recent US study of 1058 doctors reported that the vast majority “strongly agreed” that nicotine directly contributes to these conditions.²⁶

These misperceptions are reflected in the consumer population too. In 2020, Rajkumar et al conducted an international survey of 54,267 adults who smoke, use a THR product, or are previous users of either. 78% of respondents believed nicotine is the primary cause of tobacco-related cancer.²⁸ The truth, as stated by Prof Dr Neal L Benowitz (world-renowned physician and pre-eminent expert on nicotine pharmacology), is that “nicotine plays a minor role, if any, in causing smoking induced diseases”.²⁸

“People smoke for the nicotine but they die from the tar.” There is robustly evidenced support for the fact that the most harmful effects of tobacco stem from its combustion. By removing combustion from the equation, the majority of tobacco-related harm can be avoided

THE INEQUALITY OF TOBACCO-RELATED ORAL DISEASE

Tobacco use (especially smoking) is a major contributor to oral health inequalities. Over 80% of the world's smokers live in low- and middle-income countries (LMICs)²⁹. Compounded by the lack of access to oral health care in these settings, oral diseases and conditions disproportionately affect disadvantaged members of society, such as people who are on low incomes; people living with disabilities; people who are refugees; people living alone or in care homes.

There is a strong and consistent association between socio-economic status and the prevalence and severity of oral disease. The World Health Organization has estimated an annual US\$ 387 billion public and private expenditure on oral health care, with very unequal distribution across regions and countries. Consider the maps below comparing oral health expenditure vs prevalence of severe periodontitis per country, using data from the Global Burden of Disease Study (GBD) by IHME (Figure 5,6).³⁰

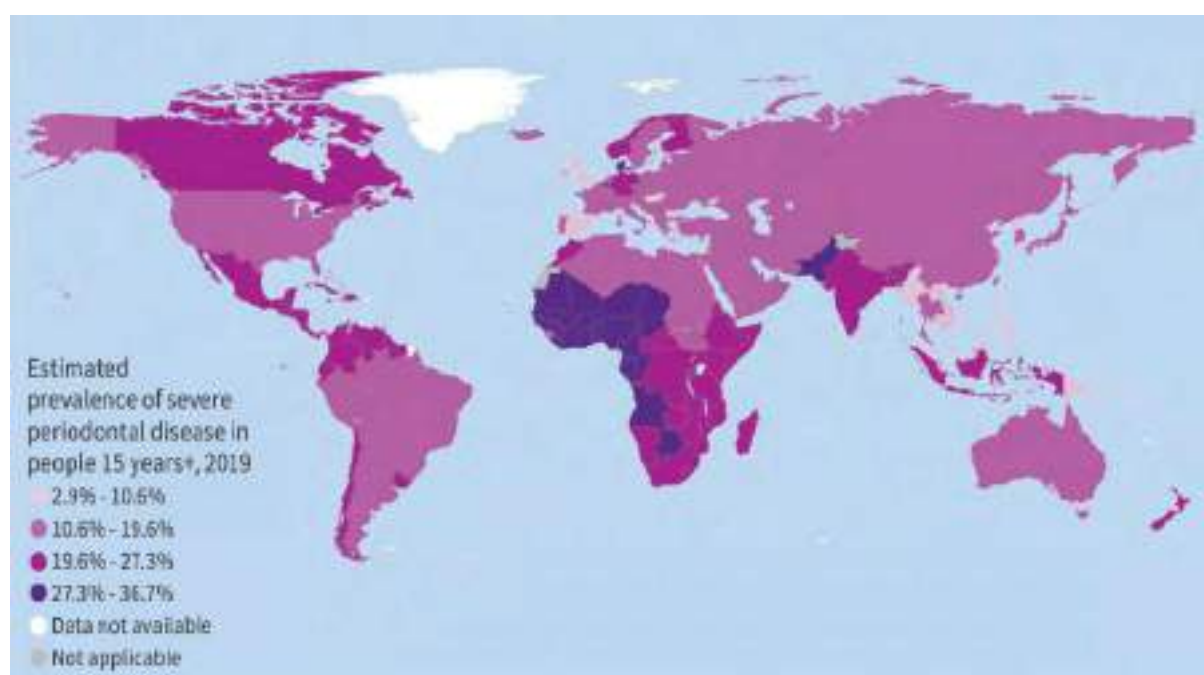


Figure 5: Data from Global Burden of Disease, IHME.²⁸ Map produced by WHO NCD unit³⁰

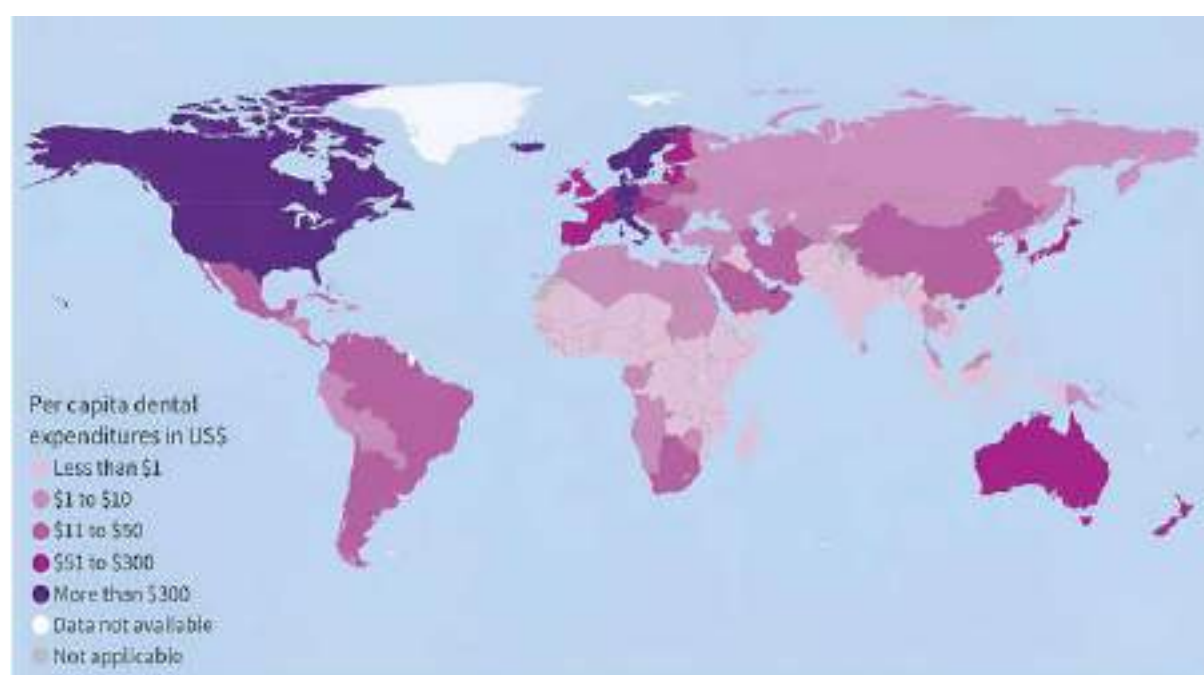


Figure 6: Data from Jevdevic & Listl 2022.³¹ Map produced by WHO NCD unit³²



WORKING TOWARDS SOLUTIONS: COMBINING PRAGMATISM AND INNOVATION

Existing solutions

In 2003, in response to the tobacco epidemic, WHO member states adopted the Framework Convention on Tobacco Control (FCTC). This commitment aimed to stem the alarming rise in tobacco-related deaths worldwide, which at the time was predicted to rise from five million to 10 million³³ deaths annually by 2020 if no action was taken.

By 2021, the annual death toll was eight million. The FCTC continues in its endeavours to align the WHO member states with its **MPOWER** tobacco control strategies:³⁴

- M**onitor tobacco use and prevention policies.
- P**rotect people from tobacco smoke.
- O**ffer help to quit tobacco use.
- W**arn about the dangers of tobacco.
- E**nforce bans on tobacco advertising, promotion and sponsorship.
- R**aise taxes on tobacco.

Innovations to accelerate towards 'smoke-free'

The term 'smoke-free' is defined as an adult smoking prevalence of <5% and upheld by the global health community as a goal worth striving for. However, current trends in smoking and use of unrefined forms of tobacco, particularly in LMICs, do not bode well for achieving this target; there are currently 1.3 billion users of tobacco globally.

The expected deaths associated with this could be drastically reduced by hundreds of millions between now and 2060 through measures that help accelerate towards a 'smoke-free' society.³⁵

Clearly, from the perspective of individual and population oral health, complete tobacco cessation is the best outcome. But even for those with a strong desire to quit, success rates are only between 4-8%.

Alongside support for the strengthening of the implementation of the MPOWER measures, this report aims to advocate for the innovative and pragmatic role of safer, non-combustible nicotine alternatives in curbing tobacco-related harm.

Implementation of Harm Reduction Methods in Tobacco Control

Whilst the notion of ‘harm reduction’ is already recognised and included within the WHO’s definition of tobacco control (Article 1(d) of the FCTC)³⁶, its real-world application has been stunted by a reluctance to accept the evidence underpinning regulated THR products. Two Former Directors of the WHO have stated: “WHO’s continuing disregard of the wealth of evidence on the value of these products is condemning millions of smokers to preventable disease and premature death”.^{37,38}

In a similar vein, a recent study in the Journal of Dental Research reported: “In smokers who are using e-cigarettes as an aid to help them quit, the benefits of quitting tobacco smoking may outweigh any negative oral health impacts of e-cigarette use, particularly in the short term.”³⁹

Sweden as living proof

The most compelling proof of concept internationally comes from Sweden, which is set to become smoke-free imminently, well before any other EU nation. Data from Statistics Sweden has shown that since 1980, the use of snus and oral nicotine pouches has progressively substituted smoking.

According to a seven-year follow-up study of former smokers, over 80% of those who had quit smoking had “found snus of great importance to succeed with smoking cessation.”⁴⁰ In figure 7 to the right, note how Sweden’s rate of oral cancer compares to the EU average, as well as Belgium (where nicotine pouches are banned, and smoking prevalence is 21%).

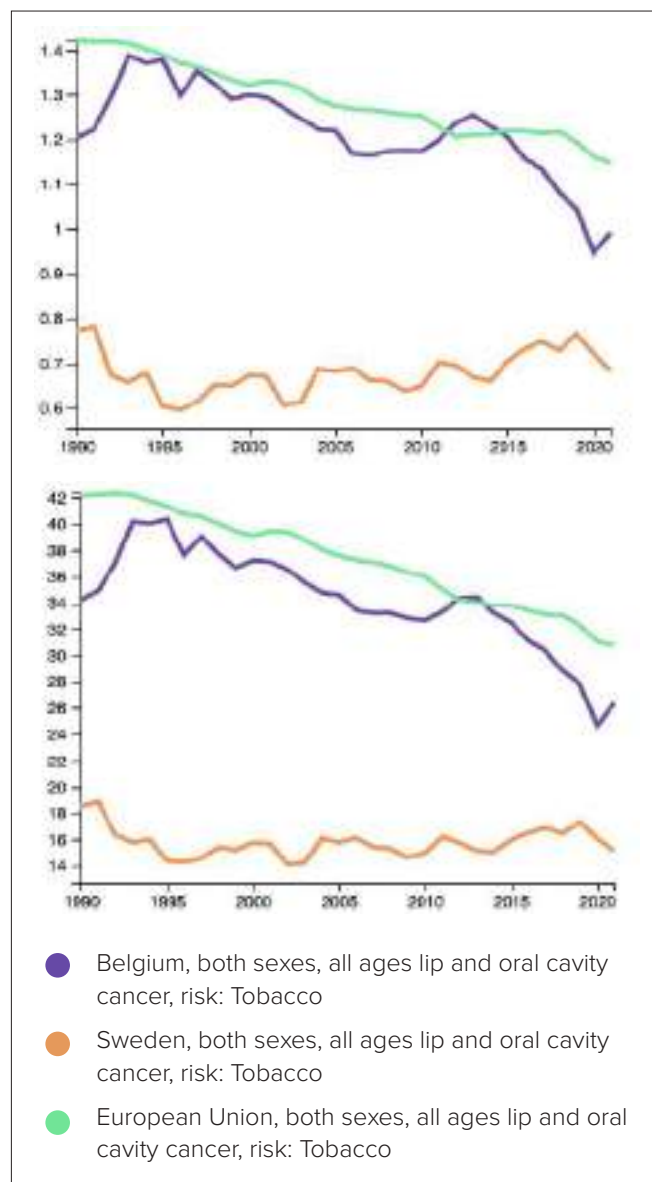


Figure 7: Data from IHME GBD.²⁸ Sweden boasts significantly lower rates of deaths and DALYS due to tobacco-attributable oral cancer.



CURRENT ORAL HEALTH GOVERNANCE

ORAL health governance, that addresses the prevention and management of oral diseases, is a critical component of public health. With the burden of oral diseases continuously on the rise, governance structures that effectively promote oral health and integrate it into broader health systems are essential. The current landscape of oral health governance includes a handful of core documents - few of which mention tobacco and fewer still that refer to tobacco harm reduction.

Most of the key frameworks on oral health governance connect back to the World Health Organization (WHO). These include the 2021 Resolution on Oral Health, the Global Strategy and Action Plan on Oral Health Action Plan (2023–2030) and the Oral Health Survey: Basic Methods.

WHO RESOLUTION ON ORAL HEALTH (2021)

Approved during the seventy-fourth World Health Assembly in 2021, the WHO's resolution on oral health came 14 years after the last such resolution by the same body.⁴¹ Speaking of the economic cost, unequal burden and the “largely preventable”⁴³ nature of many oral conditions, this resolution urged member states to act in several ways. These include moving towards a preventative model, promoting habits and healthy lifestyles, tracking the concentration of fluoride in drinking water, integrating oral health within national policies, and more.

Importantly, the resolution also requested the WHO Director-General to develop a draft global strategy on tackling oral diseases by 2022 and to translate it into an action plan by 2023. In this section, it explicitly asks for the action plan to “encompass control of tobacco use, betel quid and areca nut chewing...” and to have “clear measurable targets to be achieved by 2030.” May 2024 marked the completion of this request with the widespread release of the Global Strategy and Action Plan on Oral Health 2023-2030.⁴³

THE GLOBAL STRATEGY AND ACTION PLAN ON ORAL HEALTH 2023-2030

Boldly stating that “there is no health without oral

health”, this document integrates both a strategy and an action plan on oral health for the years to come. Recognising that many oral diseases are largely preventable, the strategy aims to embed oral health within universal health coverage (UHC) and non-communicable disease (NCD) agendas.

In alignment with the Sustainable Development Goals,⁴⁴ the action plan presents six strategic objectives, 11 global targets and 100 actions that the Member States, WHO secretariat, international partners, civil society organisations or the private sector can take. Within this report, the two overarching global targets consist of (a) oral health services becoming a part of universal health care for 80% of the population and (b) a reduced oral disease burden by 10%.

Dividing the report with a section for each, the six strategic objectives cover oral health from the perspectives of governance, the workforce, prevention and promotion, healthcare, information systems and research agendas. In supplementing what already exists for oral health governance, the first strategic objective focuses on strengthening national policies, frameworks and leadership to prioritise oral health.

The global targets corresponding with this strategic objective centre on national leadership for oral health and environmentally sound oral health care. Within these objectives, the WHO aims that, by 2030, 80% of countries “have an operational national oral health care policy, strategy or action plan” with committed staff under a dedicated governmental health agency.

Proposed actions, also divided by the strategic objective they fall under, include initiatives such as creating a dedicated oral health budget, reducing the marketing, advertising and sale of harmful products, **supporting policies and regulations to reduce tobacco consumption** and betel-quid and areca-nut chewing, and 97 more.

While the action plan does emphasise the need for tailored approaches that consider local contexts, **it does not mention harm reduction.** In fact, under Appendix 2, it suggests that a country's national policy or legislation to restrict all forms of tobacco consumption can serve as a complementary indicator of its oral health promotion and oral disease prevention.

Despite the lack of any explicit reference to tobacco harm reduction, implicit reference may be found in the document's guiding principle number five: tailored oral health interventions across the life course. This principle reads:

“ People are affected by oral diseases and conditions – and the risk factors include social and commercial determinants – from early life to old age. The effects may vary and accumulate over time and have complex consequences in later life, particularly in relation to other noncommunicable diseases.

Tailored, age-appropriate oral health strategies that include essential oral health care need to be integrated in relevant health programmes across the life course, including prenatal, infant, child, adolescent, working adult and older adult programmes. These may include age-appropriate, evidence-based interventions that are focused on promoting healthier eating, tobacco cessation, alcohol reduction and self-care.



The concepts of tailored, evidence-based⁴⁵ health strategies that can vary or accumulate across the life course and are influenced by social determinants resonate strongly with the principles behind and the effects of tobacco harm reduction, as seen in the following chapters.

ORAL HEALTH SURVEYS: BASIC METHODS

While the action plan is the most recent and relevant document on oral health governance, WHO's 2013 Oral Health Surveys: Basic Methods⁴⁶ provides a specific form of governance in its aim to standardise methods for conducting oral health surveys. Through standardisation, this document also encourages national planners and ensures comparability of reliable data across different countries and settings. The sample adult and children's survey provided within this manual include questions to understand the social determinants and behavioural risk factors that significantly influence oral health outcomes. Both these samples also include a question on the frequency of tobacco use, particularly highlighting cigarettes, cigars and pipes as well as chewing tobacco and snuff within this category.

FDI WORLD DENTAL FEDERATION

Influencing governance, the FDI World Dental Federation's 2015 Oral Health Atlas⁴⁷ provides a comprehensive overview of the global state of oral health, highlighting key statistics, trends, and challenges faced by various populations. Interestingly, within its entry for tobacco, it mentions snus under the same category as combustible cigarettes when highlighting the harms of tobacco on oral health. In 2016, the FDI World Dental Federation was also instrumental in creating a new, multifaceted definition⁴⁸ of oral health to be used by all stakeholders.⁴⁹ The base of this definition reads: "Oral health is multifaceted and includes the ability to speak, smile, smell, taste, touch, chew, swallow and convey a range of emotions through facial expressions with confidence and without pain, discomfort and disease of the craniofacial complex (head, face, and oral cavity)."

Although increasing in relevance and frequency, the absence of any mention of harm reduction in oral health governance, despite the mentions of tobacco as a detriment to oral health, is unacceptable. The current approach, of only using standard tobacco control to prevent and control oral disease, has failed to halt the devastating toll of smoking-related oral disease and premature death, particularly oral cancer in Southeast Asia. Integrating harm reduction into tobacco control can transform oral health and provide much improved individual and population oral health.

INTEGRATING TOBACCO HARM REDUCTION INTO TOBACCO CONTROL

TO IMPROVE INDIVIDUAL AND POPULATION ORAL HEALTH

TOBACCO control measures have proven to be effective in improving public health, including significant benefits for oral health, as highlighted in the World Health Organization (WHO) global strategy on oral health.⁵⁰ Policies such as smoking bans, taxation, and public health campaigns have contributed to the reduction of oral diseases like dental caries, periodontal diseases, and oral cancers by decreasing tobacco use.⁵¹ However, tobacco control alone is not sufficient to address the full spectrum of harm caused by tobacco, especially in regions where access to dental care is limited or where alternative tobacco products are widely used.

To maximise the benefits for oral health, it is essential to adopt complementary policies, particularly those focused on Tobacco Harm Reduction (THR). By offering less harmful alternatives to combustible tobacco products, THR can significantly reduce the incidence of oral diseases and help improve the oral health of millions worldwide, especially for those who cannot or will not quit smoking.⁵²



“ By offering less harmful alternatives to combustible tobacco products, THR can significantly reduce the incidence of oral diseases and help improve the oral health of millions worldwide

THE BENEFITS OF TOBACCO HARM REDUCTION (THR) IN ORAL HEALTH

Tobacco Harm Reduction offers a practical and impactful solution to reduce the harm caused by tobacco use, particularly in preventing oral cancers, reducing progression of periodontal disease and dental disability, and improving overall oral hygiene.⁵³ For individuals who are unable or unwilling to quit smoking, THR provides an alternative pathway to better health by reducing their exposure to the harmful carcinogens found in combustible tobacco products.

One of the most significant benefits of THR is its potential to prevent oral cancers. Tobacco products, especially cigarettes and toxic (unregulated) oral tobacco, are major contributors to the development of oral cancers, which account for approximately 177,757 deaths worldwide in 2020.⁵⁴ The carcinogens found in both combustible and unregulated toxic oral tobacco products (examples include Naswar, Gutkha, Zarda, Mawa) significantly increase the risk of developing cancers in the mouth, throat, and gums.⁵⁵ By switching to less harmful alternatives such as nicotine replacement therapies (NRTs), oral nicotine pouches, e-cigarettes, or other non-combustible nicotine delivery systems, users can significantly reduce their exposure to these cancer-causing substances.⁵⁶ This shift could save thousands of lives each year, particularly in regions where oral cancer rates are disproportionately high due to the widespread use of toxic oral tobacco, such as South Asia.⁵⁷

In addition to cancer prevention, THR plays a critical role in reducing the incidence of periodontal disease and dental disability. Smoking and toxic oral tobacco use is a well-documented risk factor for periodontal diseases, which lead to inflammation, infection, and the destruction of the tissues supporting the teeth.⁵⁸ Smokers are more prone to developing severe gum disease, which often results in tooth loss and chronic pain.⁵⁹

Non-combustible nicotine products, such as e-cigarettes, eliminate the harmful chemicals produced by burning tobacco, like tar and other toxins, that are known to contribute to periodontal disease and tooth decay.⁶⁰ By reducing exposure to these toxic substances, individuals can maintain healthier periodontal condition (including gums), reduce their risk of tooth loss, and improve their overall quality of life.⁶¹ THR contributes to improved oral hygiene. Combustible tobacco products stain teeth, contribute to bad breath, and can promote the growth of potentially pathogenic bacteria in the mouth, leading to a higher risk of dental caries, periodontal disease and infections.⁶² Switching to less harmful nicotine products can help reduce these issues, improving oral hygiene and decreasing the need for costly dental treatments. This benefit is particularly important in low- and middle-income countries, where access to preventive and restorative dental care is often limited, and oral health problems frequently go untreated.⁶³



GLOBAL ORAL HEALTH BURDEN

Oral diseases, including dental caries, periodontal diseases and oral cancers, affect approximately 3.5 billion people worldwide - nearly half the global population.⁶⁴ While oral cancers account for a significant number of deaths each year, other oral diseases, although less deadly, profoundly affect individuals' quality of life.⁶⁵ Chronic pain, infections, and social challenges - such as difficulty eating and speaking - are common consequences of untreated oral diseases. These conditions also contribute to significant economic burdens, as the costs of treating dental diseases often exceed those of other chronic diseases, particularly in countries with limited healthcare resources.⁶⁶

The World Health Organization emphasises that many oral diseases are preventable through cost-effective measures.⁶⁷ However, significant disparities in access to oral healthcare exist, particularly in low- and middle-income countries, where most affected individuals live. Tobacco Harm Reduction policies offer a promising approach to alleviate the burden of tobacco-related oral diseases by reducing exposure to harmful unregulated toxic tobacco products and providing safer alternatives to vulnerable populations.⁶⁸

TOBACCO HARM REDUCTION: A COMPLEMENTARY BUT UNDER-UTILISED STRATEGY IN TOBACCO CONTROL

While traditional tobacco control measures - such as smoking bans, taxation, and public health campaigns - have made progress in reducing tobacco use, they are not sufficient to fully address the harm tobacco causes, especially in terms of oral health. Tobacco Harm Reduction provides a critical complementary strategy, offering less harmful alternatives for individuals who cannot or will not quit toxic, unregulated tobacco product use.⁶⁹ Dependency and behavioural changes remain the biggest challenge for people who smoke. These alternatives, such as nicotine pouches, e-cigarettes, and other non-combustible products, allow individuals to reduce their health risks without requiring total abstinence from nicotine.⁷⁰

In regions where smokeless toxic tobacco is prevalent, such as South Asia, THR plays a vital role in reducing the risk of oral cancers.⁷¹ Toxic oral tobacco is a major contributor to high rates of oral cancer in these areas, and traditional tobacco control policies have had limited success in curbing its use.⁷² By offering harm reduction alternatives that deliver nicotine without the harmful carcinogens present in toxic oral tobacco, THR can significantly reduce cancer rates and improve health outcomes in these populations.⁷³

Sweden is an interesting example of a country where snus use is prevalent, however tobacco used in snus is less toxic than the tobacco found in other products due to its unique preparation process, particularly pasteurisation. Unlike many smokeless tobacco products that are fermented, which leads to the production of harmful by-products such as tobacco-specific nitrosamines (TSNAs), snus is pasteurised. This pasteurisation process involves heating the tobacco to high temperatures to kill bacteria without triggering fermentation. As a result, the levels of TSNAs in snus are much lower compared to other forms of tobacco like chewing tobacco or gutkha.

The use of snus in Sweden has played a significant role in the country's low oral cancer rates. Snus is a moist, smokeless tobacco product placed under the upper lip, and while it does contain nicotine, it lacks many of the harmful chemicals produced by the combustion of tobacco, such as tar and other carcinogens. As a result, snus users experience significantly lower exposure to the substances that cause oral cancers. Sweden has one of the lowest rates of smoking and tobacco-related diseases in Europe, and this has been linked to the widespread use of snus as an alternative to smoking.⁷⁴

Beyond cancer prevention, THR helps reduce the risk of periodontal disease and tooth loss, which are common consequences of smoking.⁷⁵ Periodontal

disease, which results from the destruction of gums and bones supporting the teeth, is closely associated with smoking.⁷⁶ Non-combustible nicotine products significantly reduce exposure to the toxic chemicals found in cigarette smoke that contribute to periodontal (gum) disease.⁷⁷ As a result, individuals who switch to less harmful alternatives can better preserve their oral health and avoid the debilitating effects of dental disability.⁷⁸

In countries with limited access to dental care, THR offers an affordable, practical solution to help individuals reduce their risk of developing oral diseases.⁷⁹ For populations in low- and middle-income countries, where oral health services are often inaccessible or unaffordable, THR products can serve as a preventive measure against oral disease, especially those linked to toxic tobacco use.⁸⁰ This approach reduces the need for costly dental interventions and supports overall health in these underserved communities.⁸¹



CONCLUSION

Tobacco Harm Reduction (THR) offers significant benefits for improving oral health and plays a crucial complementary role to traditional tobacco control measures. While tobacco control policies have contributed to better oral health outcomes, they are not enough to fully address the global burden of toxic and unregulated tobacco-related oral diseases.⁸² THR provides a pathway for individuals who cannot or will not quit smoking, allowing them to reduce their exposure to harmful substances and improve their oral health outcomes.⁸³

By preventing oral cancers, reducing the progression of periodontal disease and dental disabilities, and promoting better oral hygiene, THR offers a promising solution to the global oral health crisis, particularly in regions where access to dental care is limited.⁸⁴ As public health strategies evolve, integrating THR into comprehensive tobacco control policies will be essential for achieving lasting improvements in global oral health and reducing the disease burden associated with tobacco use.⁸⁵

JAPAN

**SMOKING DOWN FROM
33% (2000) TO 16.7% (2000)**

By 2019, More than 30% of smokers had
switched to heated tobacco products



UNITED KINGDOM

**SMOKING DOWN TO 13.3%
(2021) - THE LOWEST RATE EVER**

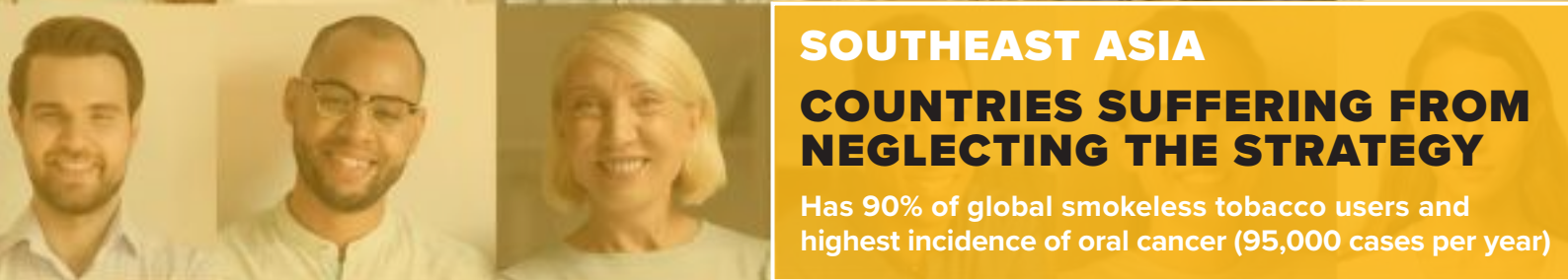
7,7% of population vape and 53%
of those have quit smoking



NEW ZEALAND

**APPROACHING 'SMOKE-FREE'
STATUS - SMOKING RATE 6.8%**

Vaping prevalence in New
Zealand in 2017 was 9,7%



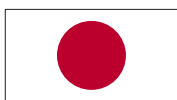
SOUTHEAST ASIA

**COUNTRIES SUFFERING FROM
NEGLECTING THE STRATEGY**

Has 90% of global smokeless tobacco users and
highest incidence of oral cancer (95,000 cases per year)



COUNTRY CASE STUDIES



JAPAN

TRANSFORMATION THROUGH HEATED TOBACCO PRODUCTS (HTP)

At first glance, the frequency of, and health consequences from, smoking in Japan tells a bleak story. In 2021, tobacco was the second most common risk⁸⁶ factor underpinning death, disease and disability in Japan. Moreover, four of the top 10 causes of death⁸⁴ in the same year are strongly related to tobacco. Japan's most recent survey on the topic⁸⁷ found a 24.8% smoking prevalence among males and 6.2% among females

However, one need only to zoom out to see that these numbers are part of a larger tale. While the smoking rates in Japan are still high, they show a steep decline from 33% of adult cigarette smokers in 2000⁸⁸ to 13.1% of adult cigarette smokers in 2019. Similarly, the overall tobacco use prevalence in 2019⁸⁹ "reached an all-time low" at 16.7%. This marked decline coincides with the introduction and growing acceptance of heated tobacco products (HTPs) in Japan.

Entering the Japanese market in 2014, the popularity of HTPs as a harm-reduced alternatives began to rise significantly in just two years. In fact, in 2015 the sales of cigarettes had already begun declining five times faster than in preceding years,⁹⁰ with an average annual decline of 9.5%. Importantly, studies found that, between 2015 and 2018, HTP use dramatically



increased in all subgroups except for never smokers.⁹¹ This indicates that, contrary to concerns about alternative tobacco products being used by non-smokers, HTPs in Japan were providing a safer alternative to cigarette smokers as intended. Contributing to this success are the findings that, in 2019, 30% of current smokers⁹² used HTPs and that over 70% of users who had switched to HTPs were no longer smoking.⁸⁷

The successful introduction of HTPs in Japan has supported the country's stated objective to reduce smoking prevalence to 15.5% by 2025.⁹³ The growing use of HTPs and other alternative products can also contribute positively to public health - including oral health - by removing the harm caused by tobacco combustion. As smoking rates decline due to HTP adoption and other tobacco control measures, it is expected that the incidence of diseases such as lung cancer and cardiovascular diseases will also decrease.

Japan serves as a strong case study and work in progress to show how disrupting the market can disrupt the culture which, in turn, disrupts oral and other forms of harm.

“The successful introduction of HTPs in Japan has supported the country's stated objective to reduce smoking prevalence to 15.5% by 2025. The growing use of HTPs and other alternative products can also contribute positively to public health - including oral health - by removing the harm caused by tobacco combustion.



UNITED KINGDOM & NEW ZEALAND

TRANSFORMATION THROUGH VAPES

With an ambition to be smoke-free by 2030, the United Kingdom celebrated its 13.3% smoking rate in 2021 as the lowest ever.⁹⁴ Part of this success can be attributed to e-cigarettes, also known as vapes, which continues to increase in popularity among local consumers. In 2021, the numbers of adult vapers rose to 7.7% of the population.⁹²

Making the most of this harm-reduced alternative, most e-cigarette users are ex-smokers or current smokers trying to quit, indicating their popularity as a smoking cessation aid.

Public Health England's assessment from 2018 shows that vaping is at least 95% less harmful than smoking. This is consistent with the Royal College of Physicians' findings in 2016, which states that the health risks from long-term e-cigarette use are unlikely to exceed 5% of the harm caused by smoking tobacco.

E-cigarettes are also positively associated with successful smoking cessation. The NHS itself states that e-cigarettes can help stop smoking; "there's evidence that they can be effective"⁹⁵ - a significant statement from a reputable source. Recent data from Action on Smoking and Health (ASH) also finds that e-cigarettes "have been the most popular aid to quitting among those who have successfully stopped smoking in the last five years."⁹⁶ These findings go on to share how nearly three million people in Britain have used vaping to quit smoking.

Moreover, their data shows that, out of the current population of adult vapers, 53% have quit smoking, 39% still smoke and 8% have never smoked. This leaves little room for popular arguments of vaping as a gateway to smoking. In fact, evidence suggests that they function as a gateway out of smoking⁹⁷ and there is **NO** significant evidence indicating that

“Public Health England's assessment from 2018 shows how vaping is at least 95% less harmful than smoking. Nearly 3 million people in Britain have used vaping to quit smoking.



“In New Zealand the smoking rate is currently at a low 6.8%. New Zealand is projected to meet its smoke-free goal by 2030. The decline in smoking increased after 2017, which coincides with the prevalence of adult daily vapers increasing from 2.6% to 9.7%.

non-smokers experiment with e-cigarettes and then transition to smoking.

Alongside the UK, e-cigarette's effectiveness in reducing rates of smoking can also be seen in New Zealand – where the smoking rate is currently at a low 6.8%. New Zealand is projected to meet its smoke-free goal by 2030. This island nation has experienced a steep drop in smoking prevalence, from 16.4% in 2011 to 6.8% in 2023.⁹⁸ Looking more closely at the timeline, the decline increased after 2017, which coincides with the prevalence of adult daily vapers increasing from 2.6% to 9.7%. 78% of daily vapers⁹⁹ are reported to be either ex-smokers, or current smokers.

The UK and New Zealand's experience with e-cigarettes showcases a regulatory and policy environment that prioritises harm reduction, celebrates widespread usage among smokers as a quit-smoking aid, and associates vaping with successful smoking cessation. In both these countries, the increase in vaping has led to a decrease in smoking rates, which will result in a decline of smoking-related disease, oral and otherwise - particularly with the absence of both tobacco and its combustion in e-cigarettes.



SWEDEN

SWEDEN: TRANSFORMATION THROUGH SNUS AND ORAL NICOTINE POUCHES:

While the WHO Framework Convention for Tobacco Control (FCTC) promotes tobacco control as the only way forward, countries like Sweden show the benefits of a diverse, yet collaborative, approach. The Swedish model follows recommendations in the WHO FCTC, including reducing the supply and demand of tobacco and banning smoking in certain places, while adding an important element: accepting smoke-free products as harm-reduced alternatives.

The Swedish government has implemented policies that support harm reduction strategies - such as incentivising smokers to switch to alternatives through the way that harm-reduced products are regulated and taxed. Such policies, alongside public health initiatives highlighting the relative safety of alternatives compared to cigarettes, has contributed to their widespread acceptance and use of harm-reduced products, notably snus, as smokeless tobacco alternatives.

The results of these efforts are plain to see. Sweden has a smoking prevalence of 5.6%¹⁰⁰ - the lowest in the European Union. This marks a drop from 15% in the last 15 years and puts Sweden on track to be smoke-free well ahead of its 2040 target⁹⁸, unlike all the other European Union countries.

Health benefits from the switch to snus are also clear. Sweden has the lowest rate of tobacco-related mortality and male lung cancer incidence in Europe. Sweden has a 41% lower cancer rate than the rest of its European counterparts. By transitioning away from combustible tobacco, snus users reduce their exposure to the harmful toxins and carcinogens found in cigarette smoke. In fact, studies find that snus use is estimated to confer only 5% of the harm of

” Health benefits from the switch to snus are also clear. Sweden has the lowest rate of tobacco-related mortality and male lung cancer incidence in Europe. Sweden has a 41% lower cancer rate than the rest of its European counterparts.



cigarettes⁹⁹ and users have “at least 90-95% less smoking-related mortality, with minimal reduction in life expectancy, if at all.”⁹⁹

Similar to Japan and HTPs, studies found that, 76.3% of men and 71.6% of women¹⁰³ who switched to snus after starting as smokers successfully quit smoking. Within this category, 31.5% of men and 28.6% of women¹⁰¹ also quit all forms of tobacco. Truly acting as a switch and substitute, a study has also found that the ‘use of snus in Sweden is associated with a reduced risk of becoming a daily smoker and an increased likelihood of stopping smoking.’

With its clear and resounding success, the Swedish model proves that tobacco harm reduction can and does go hand in hand with tobacco control and has proven health benefits in doing so.

SOUTHEAST ASIA

THE DISEASE BURDEN IMPOSED BY ORAL TOBACCO PRODUCTS

While countries like Sweden, Japan and United Kingdom show the direct and indirect health benefits of tobacco harm reduction, India, Pakistan and Indonesia are examples that show the detriment of neglecting this strategy.

Known for the popularity of both smoking and smokeless tobacco within the region, Southeast Asia has over 90% of global smokeless tobacco users¹⁰⁵ and, consequently, carries the highest burden of oral cancer at over 95,000 oral cancer cases each year.¹⁰³ Not only is oral cancer the most common cancer to be caused by smokeless tobacco, tobacco itself is also responsible for over half of all oral cancers in Asia.¹⁰³



NEPAL

In Nepal, with its widespread use of both smoked and smokeless tobacco products, oral cancer is the second most common cancer,¹⁰⁶ and the sixth most common when it comes to deaths caused by cancer. Additionally, there is a prevalence of gingival recession, periodontal disease, and tooth loss among tobacco users.¹⁰³



PAKISTAN

With a similar cultural and social acceptance and commonplace use of smokeless tobacco as India, users in Pakistan also face similar oral health consequences. Particular to Pakistan, naswar - a form of smokeless tobacco - has been found to have a ten-fold risk of developing oral cancer¹⁰⁹ amongst its users.

Other Southeast Asian countries, like Indonesia with the largest male smoking prevalence on earth and Bangladesh with its own host of smokeless tobacco products, have similar health profiles amongst tobacco users.

Another commonality among many of these nations is the governments push towards ban and cessations without offering viable alternatives.^{104,105} Instead, and as seen in the other case studies, harm-reduced alternatives such as nicotine pouches for smokeless tobacco can help mitigate the public health burden of tobacco and the economic burden of its associated diseases while still acknowledging and providing for the cultural and ingrained elements of the chewing tobacco experience.



“Southeast Asia has over 90% of global smokeless tobacco users and, often subsequently, carries the highest burden of oral cancer at over 95,000 oral cancer cases each year



INDIA

India faces a significant tobacco epidemic, with approximately 275 million tobacco users, predominantly using smokeless forms or local alternatives like chewing tobacco and bidis (164 million). Chewing tobacco in India has many variations and is known by many names, including gutkha, paan, masher, and others.

Tobacco use in India is linked to over one million deaths annually¹⁰⁵ from related diseases, making it a leading preventable cause of mortality in the country. four out of 10 cancers in India are oral cancers, making it the nation's most common cancer - a cancer that approximately 14 people die from every hour.¹⁰⁸ The use of smokeless tobacco in India also translates to other oral health issues, such as gum disease, leukoplakia, and tooth decay.

ROLE OF SMOKE-FREE NICOTINE ALTERNATIVES

HARM REDUCTION TO IMPROVE ORAL HEALTH

THERE are an estimated 1.27 billion smokers in the world. It remains the most preventable cause of death. Smoking is known to cause oral disease and cancer. However, evidence from a wide variety of countries and numerous studies have shown that smoke-free alternative nicotine products have an overwhelmingly positive effect on oral health and smoking cessation.

In 2024, there are approximately 115 million adult users of smoke-free nicotine alternatives, with vapes the biggest contributor.^{110,111,112} These products include snus, oral nicotine pouches, Electronic Nicotine Delivery Systems (ENDS), and Heated Tobacco Products (HTPs). In the Clearing the Smoke report by the Institute of Medicine¹¹³ (2001), it is stated: “A product is harm reducing if it lowers total tobacco-related mortality and morbidity even though use of that product may involve continued exposure to tobacco-related toxicants.”

It is important to note that no single THR product category will work in all countries and be acceptable for all consumers. For some countries, oral nicotine pouches are leading to lowered cancer rates, for others heated tobacco products are rapidly displacing cigarettes and for a third group, vapes or e-cigarettes

have been associated with profound declines in adult cigarette use. These alternative products can improve health and reduce premature deaths.

Smoke-free nicotine alternatives are a safer alternative to smoking that still provide nicotine but with much less harm. ENDS are about 95% less harmful than cigarettes¹¹⁴ (Figure 8). In New Zealand and the United Kingdom in particular, a tremendous cessation has been noted in smoking with people opting for the safer alternative instead. A study conducted by The New England Journal of Medicine split a sample group of 1246 individuals into an intervention group of 622 and a control of 624.¹¹⁵ The results of smoking cessation over a 6-month period were found to be that 28.9% of people in the intervention group abstained from tobacco entirely for 6 months but only 16.3% did in the control group.¹¹⁰ This study concluded that ENDS have a strong impact on continued smoking cessation.¹¹⁰

Japan has shown the greatest success with the cessation of cigarettes through the implementation of Heated Tobacco Products (HTPs), thereby limiting oral disease incidence. These devices work by heating the tobacco up to a temperature much lower than combustion (hence it is considered smoke-free) but

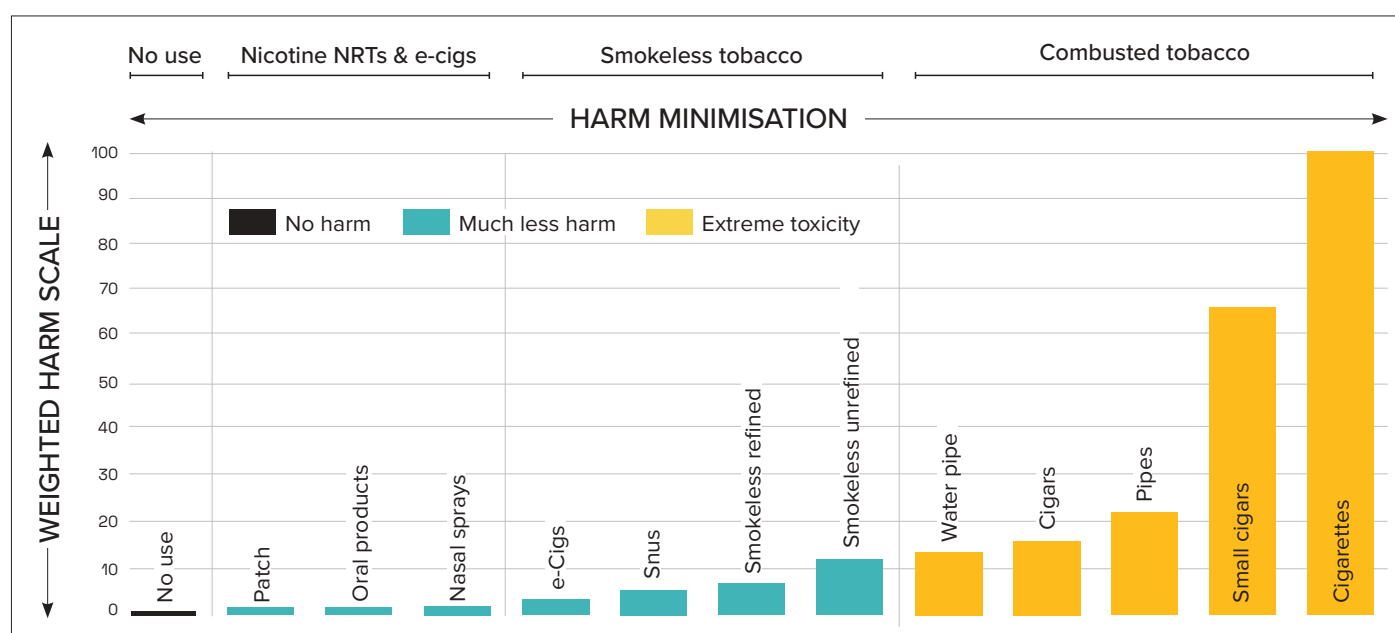


Figure 8: The continuum of harm resulting from different forms of use (or no use) of combustible tobacco vs non combustibles – adapted with permission from Nutt et al.¹⁷

at which the nicotine aerosolizes. The aerosol is fundamentally different to that of tobacco smoke.

More independent research is needed to validate the reduced harm of HTPS, but according to lab-based experiments by BAT Science and Philip Morris International Science, HTP devices or THS (Tobacco Heating Systems) contain 90-95% less harmful and potentially harmful constituents (HPHCs) when compared to a standard reference cigarette.¹¹⁶ The report also shows that the vast majority of HTP users did not use any other tobacco products at all. In fact, as of 2019 76% of Japanese HTP users did not smoke cigarettes at all.

Cummings¹¹⁷ et al reported that between 2011 and 2023, per capita and total cigarette sales have declined in Japan by 52,6% and 52,7% respectively. The authors note: “While many factors may account for the decreased sale of cigarettes in Japan over the last 12 years, the increased sale of HTPs appears to be a factor.”

This rate of decline has never been seen before. The skies should be darkened by aeroplanes filled with public health researchers to study this evolving phenomenon in Japan!

Sweden is set to become one of the first smoke-free countries in the world (smoke-free is categorised as less than 5% incidence of adults smoking). As such it provides the best metric for understanding the global health advantages of switching to smoke-free alternative nicotine products. In Sweden the most used of such products is snus. Oral nicotine products can be considered about 98% less harmful in comparison with a cigarette.¹¹⁸ Often erroneously put in the same bracket as betel leaf and areca nut, oral nicotine pouches are much safer, and not at all considered to be carcinogenic. A report published by Lancet referenced a study from the Scandinavian Journal of Public Health, that looked at 418,369 males who were followed up for oral cancer incidence. It found: “Compared to never-snus use, ever-snus use was not associated with oral cancer.”¹¹⁹ The study then concluded that Swedish snus was not implicated in the development of oral cancer. It must be noted then that a lot of headlines on oral nicotine products do not separate safe from non-safe oral nicotine products.¹¹⁴

A switching study, conducted by Prof. Mihaela Raescu from Titu Maiorescu University in Bucharest, Romania (2018) (REF) explored the impact of switching from cigarettes to non-combustible tobacco alternatives on oral health. The key focus was on how tobacco alternatives represent a shift aimed at improving health outcomes among smokers.

There were case studies and observations made, which included the following:

- **Initial and Follow-Up Visits:** Comparison of smokers’ oral health across different timelines, such as after six and nine months of switching to tobacco alternatives.
- **Oral Health Metrics:** Examination of tissue and bone health, showing significant differences in mucosal health and bone resorption between cigarette smokers and those using alternatives.
- **Vascular Changes:** Velscope Vx images reveal improvements in vascular structure on the tongue among those who switched to alternatives.

Outcomes:

- Smokers who transitioned to non-combustible products demonstrated improvements, including reduced bone resorption and mucosal atrophy.
- Non-smokers maintained healthier buccal epithelial tissue and vascular design.

The study highlights the potential oral health benefits of switching to tobacco alternatives, suggesting reduced harm and improved outcomes in oral tissue health.

The THR approach would affirm the complete cessation of tobacco and nicotine products as the most preferable and beneficial for one’s health. But in cases where individuals who smoke cannot or will not quit, these smoke-free nicotine alternatives are considerably less harmful than smoking cigarettes. Absolute risk will never be zero, as with any consumer product.

Smoking is the most preventable cause of disease, disability and premature death. THR not only wants to end smoking-related premature deaths, but to ensure a better quality of life. This is particularly applicable to individual and population-based oral health.



Sweden is set to become one of the first smoke-free countries in the world, providing the best metric for understanding the global health advantages of switching to smoke-free alternative nicotine products. The most used of such products are snus and oral nicotine pouches



THE ROLE OF ORAL HEALTH PROFESSIONALS



A UNIQUE SET OF ROLES & OPPORTUNITIES

ORAL health professionals (OHPs) e.g. dentists, dental hygienists, prophylaxis assistants, are at the coal face of the tobacco epidemic and encounter its harmful consequences to individuals and society as a whole. This gives them a unique opportunity to provide preventive care. The FDI World Dental Federation describes the several roles that OHPs play in this important effort: “role model, clinician, educator, scientist, leader, opinion builder, and alliance builder”.¹²⁰

A significant role is played by OHPs in the identification of tobacco users. In developed countries, more than 60% of tobacco users see their dentist or dental hygienist annually.¹¹⁶ Often, OHPs will be among the first health professionals to notice the initial sequelae of tobacco use, such as dental staining, halitosis, or periodontal disease. Their patient population spans all age groups – including children (who may be exposed to second-hand smoke) and young adults, providing them with the opportunity for early intervention before further damage takes root.

However, a recent systematic review assessing OHPs’ knowledge and attitudes towards tobacco cessation found that whilst they are all fully aware of their responsibilities in curbing this epidemic, many report barriers to integrating this preventive care in their daily practice. Namely, lack of time, confidence, and training.¹²¹

CLINICIAN & EDUCATOR

Current evidence suggests that brief advice given by oral health professionals in conjunction with oral examination can increase tobacco abstinence rates by 70% (odds ratio 1.71, 95%CI 1.44-2.03) at six months.¹²² With a structured method of providing advice, it is possible for OHPs to incorporate a brief tobacco intervention into their routine care in three to five minutes.¹¹⁶ The method suggested by FDI World Dental Federation and the WHO is the 5As and 5Rs model.^{116,123}

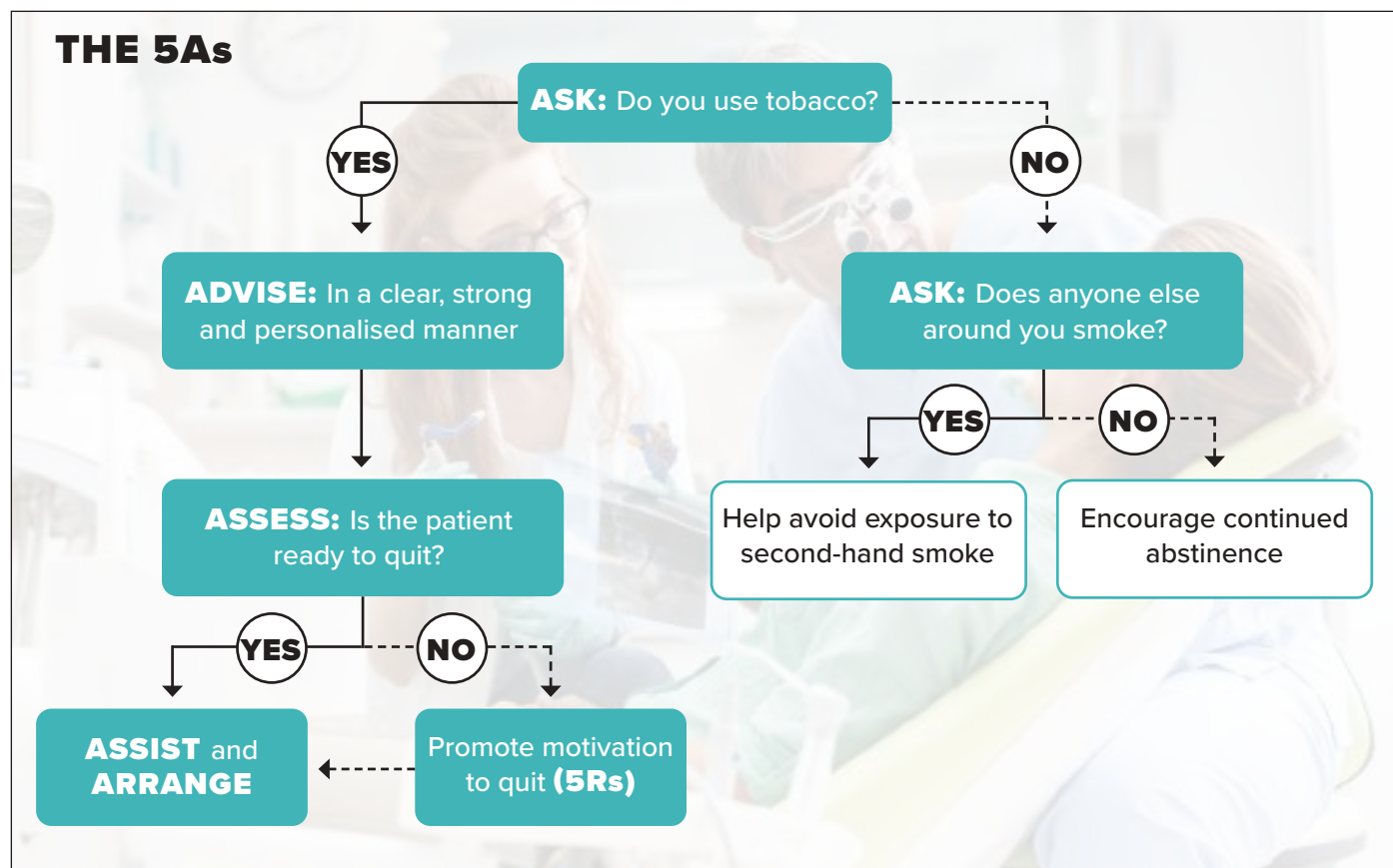


Figure 9: The 5A model for oral health professionals

The 5Rs model – Relevance, Risk, Rewards, Roadblocks, and Repetition - should be employed in the form of a motivational counselling intervention to help those who are not yet ready to quit. There are many reasons for not wanting to quit, so delivering this intervention as a non-judgmental, open-minded conversation increases its chances of success:^{116,124}

Relevance: Encourage the patient to explore how quitting is personally relevant to him or her.

Risks: Discuss the acute and long-term risks of ongoing tobacco use, and the potential benefits of THR concept, to them specifically.

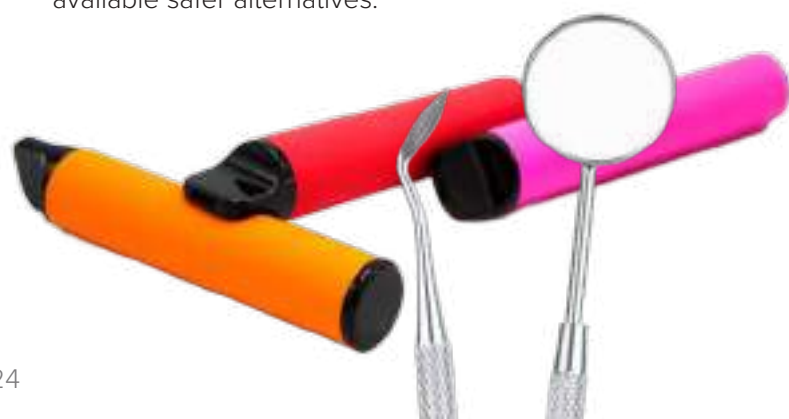
Rewards: Discuss the potential short and long-term benefits of stopping tobacco use.

Roadblocks: Help the patient identify potential barriers to quitting and provide solutions to overcoming those barriers (e.g. ongoing counselling, nicotine replacement therapy).

Repetitions: Repeat assessments of readiness to quit; if the patient is still not ready to quit, repeat the intervention later.

It is important to note that the role of Educator is not limited to only Dentists, but the whole OHP community. Some research suggests that patients tend to have better rapport with Dental Hygienists and pay more attention to their oral health educational messages.¹²⁵

One study found that although the majority of OHPs ask about and document patient tobacco use (Hygienists: 80%; Dentists: 73%), only a minority assisted in tobacco cessation interventions (Hygienists: 27-49%; Dentists: 10-31%).¹²⁶ This shows that all OHPs should be empowered with the knowledge to confidently assist tobacco users to explore ways of quitting or advising on the range of available safer alternatives.





SCIENTIST & OPINION BUILDER

Dr Derek Yach, former Executive Director of the WHO, and a leading voice in the effort to accelerating an end to smoking, has said: “Physicians were, in fact, key to progress in the USA and OECD countries, where smoking rates have dropped steadily over the decades. In these countries, doctors’ smoking rates dropped, and, within a decade, smoking rates fell in the general population. In many major LMICs, physician smoking rates remain extremely high. Correspondingly, doctors’ voices and advocacy are weak. Until this changes, progress will be slow.”¹²⁷

This quote reminds us of the opinion-forming power of health professionals. Trusted not just for the scientific expertise that they have garnered over many years of learning and clinical practice, but also through what health behaviours they model.

As such, it is imperative that all OHPs are kept abreast of evidence-based options available to them in helping tobacco users quit or switch to safer alternatives. A study by Babb et al found that 68% of adult smokers want to stop smoking; 55% of them made a quit attempt in the past year, but only about 7% quit successfully.¹²⁸ Clearly, the desire to quit exists – OHPs must be equipped with the confidence to address and harness this desire to improve cessation rates.

For tobacco users who cannot or will not quit, harm can be minimised by switching to safer, non-combustible

“Physicians were, in fact, key to progress in the USA and OECD countries, where smoking rates have dropped steadily over the decades. In these countries, doctors’ smoking rates dropped, and, within a decade, smoking rates fell in the general population. In many major LMICs, physician smoking rates remain extremely high. Correspondingly, doctors’ voices and advocacy are weak. Until this changes, progress will be slow.”

nicotine alternatives. Evidence for this approach is well-established, as described in earlier chapters of this report. Further reputable repositories of evidence and advice include:

- ‘Delivering better oral health: an evidence-based toolkit for prevention’ by Public Health England.¹²⁹
- ‘Nicotine without smoke’ by the Royal College of Physicians.¹³⁰
- ‘ENHANCE-D: Enhancing Dental Health Advice’: a clinical trial funded by the National Institute for Health and Care Research.¹³¹

Additionally, part of the responsibility of OHPs as Scientists and Opinion Builders is to dispel misinformation. For example, in 2021, a survey of faculty and students at a US Dental School found that most of them responded “agree” or “strongly agree” that nicotine causes cancer, cardiovascular disease, and pulmonary disease.¹³²

When in fact, “nicotine plays a minor role, if any, in causing smoking induced diseases” as stated by Prof Dr Neal L Benowitz (world-renowned physician and pre-eminent expert on nicotine pharmacology).¹³³ Given that 78% of smokers erroneously believe nicotine to be the primary cause of tobacco-related cancer,¹³⁴ it is understandable that many of those wanting to quit do not even consider THR alternatives. By equipping them with the correct evidence (that they are significantly less harmful than smoking), significant improvements can be made to their oral and general health.

LEADER & ALLIANCE BUILDER

According to WHO, the OHP community is comprised of just under four million members world-wide,¹³⁵ each of them with a unique opportunity to take a leading role in curbing the tobacco epidemic. Sadly, as with other health professionals, there is an inverse relationship between a country’s socio-economic status and dentist-population ratio. Approximately 1.4% of dentists work in LMICs, whereas over 80% work in high- or upper-middle-income countries.¹³¹

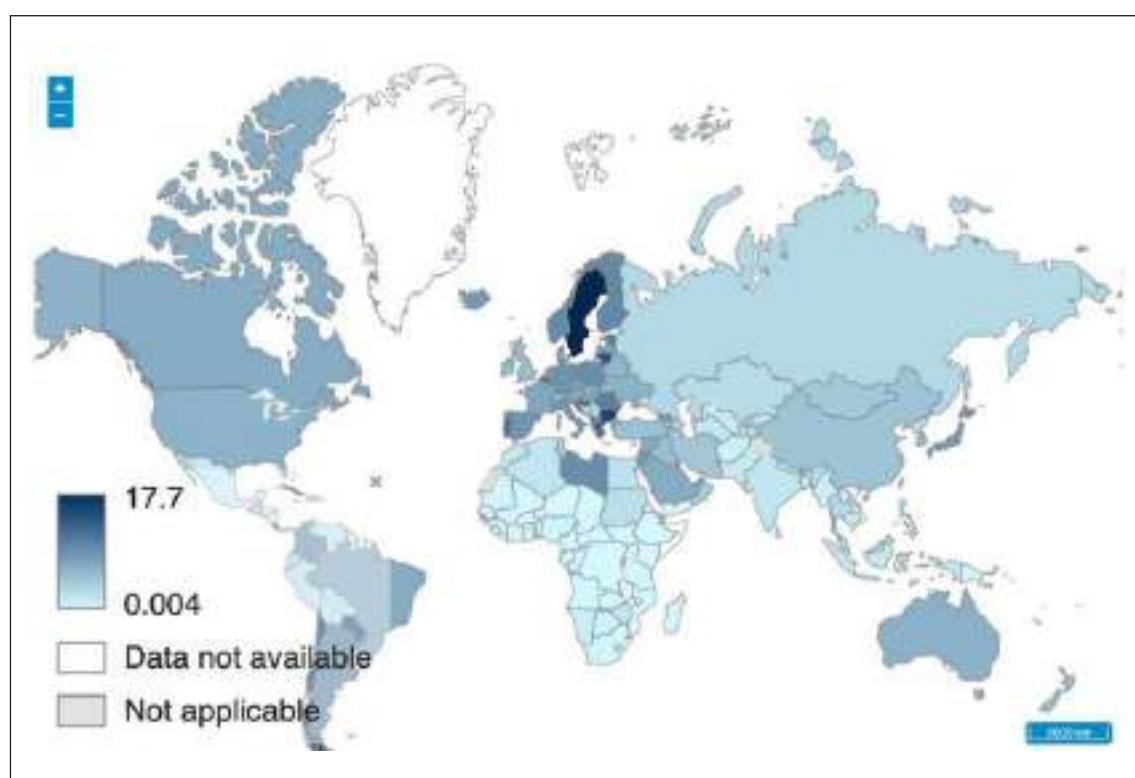


Figure 10: Map from WHO Global Health Observatory¹³⁶, illustrating widely varying dentist-population ratios worldwide.

The above disparities provide further impetus to build upon local, regional, and international OHP alliances to further the goal of minimising tobacco-related harm, which disproportionately affects LMICs. FDI World Dental Federation is one of these alliances and describes itself as the global voice of the dental profession. It represents more than one million dentists and 191 member associations in 134¹³⁷ countries. In its report ‘Accelerating action on oral health and NCDs: achieving an integrated response’,¹³⁸ numerous policy recommendations are made including:

- Strengthen inter-professional collaboration between oral health and other health professionals to improve prevention and management of co-morbidities.
- Integrate dental and medical health records.
- Include oral health in curricula for other health professionals.
- Implement cost-effective, evidence-based health promotion measures.
- Systematically include oral health in epidemiological monitoring of NCDs.

CALL TO ACTION: TRANSFORMING ORAL HEALTH THROUGH HARM REDUCTION

EMBRACING THR, cessation, and improved preventive care represents a major opportunity to dramatically improve the oral health of individuals and populations. WHO has developed a Global strategy and action plan on oral health 2023–2030, with six strategic objectives and 100 recommended actions. The prevention and control of smoking-related oral disease is a key pillar in this strategy.

This report calls for the integration of harm reduction into standard tobacco control, to accelerate improved health outcomes for individual and population-based oral health. The following actions are recommended to complement the WHO Global Strategy on Oral Health:

STRATEGIC OBJECTIVE 1: Encouraging risk-proportionate regulation - Governments should continue to revise regulations to improve access for oral health consumers and patients to less harmful smoke-free nicotine/THR products. Cigarettes should be substantially more heavily regulated and taxed than reduced-risk products. That makes it easier for consumers to either quit smoking or switch to less harmful smoke-free nicotine alternatives – to significantly improve their general and oral health.

STRATEGIC OBJECTIVE 2: Activating oral health professionals (especially dentists) to communicate the benefits of THR to patients in all clinical encounters, to counter disinformation about nicotine and the value of THR, and to develop equivalents for oral health, such as the impactful report by physicians for physicians in the Royal College of Physicians report on the role of THR.

STRATEGIC OBJECTIVE 3: Strengthening alliances and consumer representation - creating and strengthening independent, science-based consumer groups able to advocate for their oral health needs, based on sound science.

STRATEGIC OBJECTIVE 4: Governments need local, high-quality research to fully understand the dynamics of the smoking epidemic in oral health, including why smoking rates remain so high and which interventions are most likely to succeed in reducing them. This should include a new approach into research of the risks and benefits of integrating harm reduction methods into tobacco control.





STRATEGIC OBJECTIVE 1:

Governments should continue to revise and establish risk-proportionate regulation, to improve access to THR products and invest in national science and research to advance THR.

The 194 WHO member states should be encouraged to regulate alternative nicotine products proportionate to the risk they pose to health and in ways that maximise benefits and make healthier choices as easy as possible.

Preferably, the Government's regulatory progress needs to be accompanied by extensive and continuous communications programmes that engage leaders in healthcare and adults who use tobacco products. The regulations should aim to balance consumer access with public health concerns, particularly focusing on preventing youth uptake while allowing adult smokers access to THR alternatives.

Good regulatory practice needs to be studied. For example, the United Kingdom approach aimed at cutting social class gradients in adult smoking through use of THR products.¹³⁹ In this world-first government-sponsored scheme, smokers are given free vapes in a 'Swap to Stop' scheme.

STRATEGIC OBJECTIVE 2:

Activating health professionals (physicians in particular), to counter disinformation about nicotine and the value of THR, to communicate the benefits of THR to patients in all clinical encounters. Drawing on the groundbreaking approaches used 60 years ago by the Royal College of Physicians, oral health professionals could help lead policy development by publishing a major report on the state of smoking and the role of THR in preventing and controlling smoking-related oral disease, disability and premature death.

Oral health professionals should communicate the benefits of THR to patients and counter disinformation.

Physicians led in the early years of tobacco control in the UK and the USA. They were the subjects of the earliest cohorts that showed that smoking kills.¹⁴⁰ They galvanised reports¹⁴¹ that led to the first government actions. Doctors quit smoking in large numbers once they understood the evidence, though this varied by region.¹⁴² They started cessation services for their patients, and they led the development of public health policies to end smoking.

Health professionals remain the most trusted source of information for patients. This is true for physicians, but also dentists. A new 16-country survey on trust and health,¹⁴³ found that physicians remain the most trusted source of information. Oral health professionals can be at the forefront of accelerating the demise of smoking and reducing tobacco-related disease, disability, and death – if encouraged to communicate





harm reduction strategies to their dental patients. Misperceptions and misinformation on THR and nicotine need to be corrected. Amongst physicians, there are still significant misperceptions about THR and nicotine. In a 2022 survey of 15,335 physicians in 11 countries, 77% incorrectly believed that nicotine causes lung cancer.¹⁴⁴ However, on average over 80% of physicians were at least moderately interested in receiving training in cessation and THR.¹⁴⁵

Little information is available specific to the THR perceptions of oral health professionals. More studies to identify the distinctive perceptions and knowledge of oral health professionals are needed.

Oral health professionals should address missed opportunities for secondary prevention among patients who smoke. Millions of people are diagnosed with conditions such as early-stage cancer or other smoking-related diseases. More than 70 percent of people with smoking-related disease smoke at the point of diagnosis.

A year or two after diagnosis, international research suggests that most still smoke. Tobacco cessation is either not attempted or fails. This accelerates clinical decline and substantially adds to the burden of disease and suffering experienced by patients.

Along with physicians, oral health professionals should review national data on this and implement programmes that give high priority to cessation and

access to harm reduction at every clinical encounter. Oral health professionals should be encouraged to develop a national equivalent of the Royal College of Physicians report on the role of THR in oral health.

Over 60 years ago¹⁴⁶ the Royal College of Physicians published the first major report on the harm of smoking. Their voice over the decades has led policy development in the UK and around the world. Earlier this year, they released their latest evidence review on e-cigarettes and harm reduction.¹⁴⁷ It is led by physicians and is meant to aid physicians in “how e-cigarettes can be used to support more people to make quit attempts while discouraging young people and never-smokers from taking up e-cigarette use”.

An equivalent report for oral health is greatly needed. Ideally, this should be a project endorsed and facilitated by the global and national dental associations.

“ Oral health professionals can be at the forefront of accelerating the demise of smoking and reducing tobacco-related disease, disability, and death – if encouraged to communicate harm reduction strategies to their dental patients.

STRATEGIC OBJECTIVE 3:

Strengthening alliances and creating independent science-based consumer groups able to advocate for their needs.

HIV/AIDS patients and advocates rallied for better policies under the banner of “nothing about us, without us”. This led to changes in government policies that included a commitment to harm reduction and led to better access to antiretrovirals. As a result, millions of people are living longer and healthier lives across LMICs. Similar progress could follow if we had effective new nicotine user groups around the world.

Global oral health improvement requires coordinated efforts from diverse sectors and stakeholders. Traditionally, health policy is set by the “state actors”. These include governments and intergovernmental organizations, such as WHO. However, great influence can and should be exerted by “non-state actors”, including health professional associations, non-profit organisations, civil society groups, patient representative groups, philanthropies, and the private sector. They play pivotal roles in advocacy, awareness, and programme implementation.

By building alliances, these actors can enhance functions within oral health promotion, achieve wider reach, and amplify impact. Outlined on the right and on the following pages are proposed actions each of these groups can take to foster effective alliances in advancing oral health.



1. Health Professional Associations

Health professional associations, such as dental and medical associations, have a unique position due to their extensive professional networks, influence over health care policies, and credibility among both the public and policymakers. Leveraging these strengths, they can take several actions to contribute to oral health alliances:

- **Collaborate on Advocacy Campaigns:** These associations can partner with non-profit organisations, civil society, and government health departments to advocate for policies that improve access to preventive dental care, early diagnosis, and affordable treatments.¹⁴⁸ For example, campaigns focusing on community water fluoridation, improved insurance coverage for dental procedures, and tax exemptions on oral health products can benefit from such collaborative advocacy. THR should be prioritised, along with other measures to reduce sugar intake (e.g. the sugar tax in the UK).
- **Standardise Education and Training:** Health professional associations can work together with educational institutions to develop standardised training modules on oral health. This education can encompass the importance of preventive care, including THR, the role of nutrition, and ways to address common oral diseases in clinical practice. Such standardisation can help bridge knowledge gaps among professionals and encourage a consistent approach to oral health management.¹⁴⁹
- **Establish Oral Health Task Forces:** Professional associations can form specialised task forces to monitor developments in oral health science and policy, including THR. These task forces can engage in research and policy analysis to offer evidence-based recommendations to health authorities and collaborate with Non-profits to raise public awareness.¹⁵⁰

Examples

- *American Dental Association (ADA) – The ADA is one of the largest dental associations globally, involved in policy advocacy, education, and public oral health campaigns in the U.S.*
- *British Dental Association (BDA) – In the UK, the BDA plays a critical role in promoting oral health policies and supporting professional standards in dentistry.*
- *World Dental Federation (FDI) – The FDI serves as an international voice for dentists, promoting oral health through collaborations with governments and public health institutions globally.*



2. Non-Profit Organisations

Non-profits are essential in reaching underserved communities and providing resources for oral health education and preventive services. They can facilitate alliance-building by:

- **Building Grassroots Campaigns:** Non-profits can work closely with local communities to organise grassroots campaigns, which can increase awareness of oral health issues, promote healthy behaviours, and empower communities to demand better oral health services,¹⁵¹ including THR.
- **Securing Funding for Community Programmes:** Many non-profits have experience in securing grants and donations, which they can use to fund initiatives in underserved areas. By working with health professional associations and civil society groups, they can design targeted programmes that address the specific needs of these communities, such as mobile dental clinics or preventive education workshops,¹⁵² including THR.

Examples

- *NCD Alliance - Based in Switzerland, the NCD Alliance is a unique civil society network, working to prevent suffering, stigma, disability and death caused by noncommunicable diseases (NCDs), including oral disease.*
- *Oral Health Foundation – Based in the UK, this non-profit focuses on raising awareness about the importance of oral health through public campaigns and educational resources.*
- *Smile Train – A non-profit that provides cleft repair surgeries and comprehensive cleft care, working to improve the oral health and quality of life for affected individuals worldwide.*
- *Project HOPE – This global health non-profit offers resources and support for improving health outcomes, including access to dental services in underserved communities.*

3. Civil Society Groups

Civil society groups play a role in mobilising public support for policy changes and health equity. To enhance their impact, they can:

- **Advocate for Oral Health Policy Reforms:** Civil society groups are in a prime position to push for policy reforms, such as extending healthcare coverage to include basic dental services, mandating school-based dental screenings, and creating public policies that encourage preventive care,¹⁵³ including THR.
- **Strengthen Community Engagement:** These groups can bridge gaps between health professionals and communities by organising forums and discussions on the importance of oral health. By empowering individuals with knowledge and resources, civil society groups can foster community-level demand for oral health services,¹⁵⁴ and access to THR.

Examples

- *Global Health Council (GHC) – GHC is a membership-based organisation that advocates for global health initiatives, including those focused on improving oral health outcomes.*
- *Consumers International – This civil society group represents consumer rights organisations and has advocated for better access to affordable oral health products and services worldwide.*
- *Alliance for a Cavity-Free Future (ACFF) – ACFF is a global coalition working with civil society and health professionals to advocate for policies and practices that prevent dental caries and promote oral health.*

4. Patient Representative Groups

Patient groups provide a critical voice for those directly affected by oral health conditions. These groups can contribute by:

- **Raising Awareness of Patient Needs:** Patient groups can share insights into the real-world experiences of individuals suffering from oral health issues. By working with health professional associations and non-profits, they can advocate for improved service delivery that prioritises patient-centred care.¹⁵⁵
- **Providing a Platform for Testimonies:** First-hand accounts from patients about their experiences with oral health services can be powerful tools in influencing policymakers and funders. By offering a platform for these voices, patient groups can humanise oral health advocacy and make it more relatable to stakeholders,¹⁵⁶ including THR.

Examples

- *National Foundation for Ectodermal Dysplasias (NFED) – In the U.S., NFED represents individuals with ectodermal dysplasias, many of whom have specific oral health needs, advocating for access to appropriate dental care and resources.*
- *Action for Dental Health (American Dental Association Initiative) – This ADA initiative includes patient representation in advocating for dental health equity and access to affordable care in the U.S.*
- *European Federation of Periodontology (EFP) Patient Forum – This forum includes patient groups and individuals across Europe who represent the needs and experiences of people affected by gum disease.*

5. Philanthropies

Philanthropic organisations have the financial resources to fund large-scale oral health initiatives. Their role in alliance building includes:

- **Funding Innovative Programmes:** Philanthropies can support research, pilot programmes, and community outreach efforts. Funding can go towards innovative projects like tele-dentistry, mobile clinics, and oral health education for marginalised populations,¹⁴⁷ in particular tobacco control.
- **Collaborative Grant making:** Philanthropies can collaborate with non-profits and research institutions to fund initiatives that address gaps in oral health care and research. Joint grant-making efforts can help to pool resources and address oral health disparities more effectively.¹⁵⁷

Examples

- *Bill & Melinda Gates Foundation – While not solely focused on oral health, this foundation supports healthcare initiatives globally, including research on healthcare delivery and access that can impact oral health.*
- *Robert Wood Johnson Foundation (RWJF) – RWJF funds projects focused on health equity in the U.S., including initiatives addressing disparities in oral health.*
- *DentaQuest Foundation – This foundation specifically funds projects that improve oral health equity and prevention in the U.S., focusing on underserved populations.*



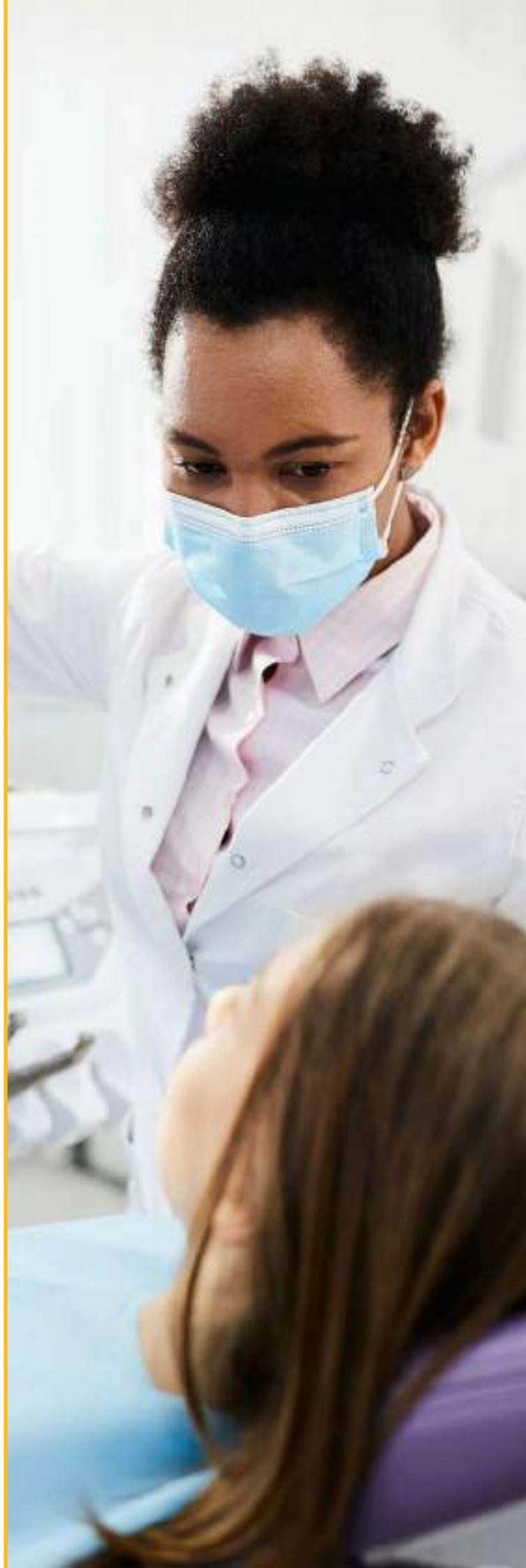
6. Private Sector

The private sector, including companies involved in dental products and services, can also contribute significantly to oral health alliances:

- **Supporting Public Awareness Campaigns:**
Corporations can collaborate with health professional associations and non-profits to create awareness campaigns on oral hygiene practices, the importance of regular check-ups, and the impact of lifestyle on oral health.¹⁵⁰
- **Investing in Affordable Products and Services:**
By offering affordable oral health products, such as toothbrushes, toothpaste, and mouthwash, private sector companies can play a part in reducing barriers to oral hygiene.¹⁴⁰ Additionally, they can develop low-cost dental insurance packages aimed at underserved populations.

Examples

- *Colgate-Palmolive – This global consumer products company is active in promoting oral health through education campaigns, free dental screenings, and community outreach programmes, such as its ‘Bright Smiles, Bright Futures’ initiative.*
- *Procter & Gamble (P&G) – Through its Oral-B brand, P&G is involved in oral health education campaigns, collaborating with dental professionals and organisations to promote good oral hygiene.*
- *Henry Schein, Inc. – A healthcare products distributor that provides support to global oral health programmes, including donating dental supplies and funding community-based oral health initiatives.*
- *Engagement is also important with companies whose policies have an impact on oral health. This includes the tobacco, food and beverage and pharmaceutical industries. Preferably, this engagement should take place in full transparency, with the goal to prevent and control non-communicable disease, with harm reduction as one of the tools.*



STRATEGIC OBJECTIVE 4:

Governments' investment in oral health science and research

Most publicly funded research on THR is carried out in the US and Europe and exported worldwide. Local investment in science and scientists has three effects: it ensures that locally relevant research is developed, it leads to the creation of local expertise and building local expertise in science leads to better informed local policies and policy makers. This has been true in all successful areas of health and science.

Importance of local national research in formulating evidence-based policies

The governments needs local, high-quality research to fully understand the dynamics of the smoking epidemic in oral health, including why smoking rates remain so high and which interventions are most likely to succeed in reducing them. This should include a new approach into research of the risks and benefits of integrating harm reduction methods into tobacco control.

At the Coresta 2024 conference (Figure 11) in October 2024, Dr. Derek Yach, former WHO Director, highlighted the changes needed in tobacco control research. He also emphasised the necessity of aligning local efforts with global initiatives to ensure comprehensive and effective tobacco control.¹⁵⁸

Collaborating with local universities ensures that research is grounded in the local context and leverages academic expertise and resources. Without this research, policies risk being ineffective or misaligned with the local context. Localised studies allow governments to assess the real-world impact of current tobacco control policies and guide future initiatives more effectively.

Proposed Priorities for THR Research

Global

- Long term effects on health
- Nicotine – Health impact
- Effectiveness of THR products for cessation
- Improving secondary prevention among high-risk tobacco users
- Strengthening of quality of epidemiological and behavioural science

Region and country specific

- Surveillance – combining questionnaires and biomarkers
- THR product trends by age, sex, amount
- Health professionals use, knowledge and advice about THR
- Youth access trends and intervention impact
- Product ingredient assessment and standards

Research to adapt policies from high income countries with declining smoking rates to LMICs

Figure 11: Proposed priorities for THR research

The type of global and local research needed to grow the evidence base to validate the role of harm reduction in oral health should address:

- **Efficacy in Smoking Cessation and Harm Reduction:** It is crucial to test the effectiveness of smoke-free nicotine alternatives in helping individuals quit smoking or switch to less harmful products. This involves clinical trials and longitudinal studies to assess how well these alternatives support smoking cessation efforts and reduce overall harm compared to traditional tobacco products. Understanding their role in public health strategies can help optimise their use in reducing smoking prevalence and associated health risks.
- **Understanding Oral Health Implications:** It is essential to investigate both the short- and long-term effects of these products on oral health. This includes studying potential oral lesions, periodontal health, dry mouth, soreness, and other mucosal changes.
- **Comparative Analysis:** Comparing the effects of smoke-free nicotine products with traditional tobacco products helps determine if they are indeed safer alternatives. This involves examining the presence of harmful substances like tobacco-specific nitrosamines (TSNAs) and their impact on oral tissues.
- **Regulatory Standards:** Establishing clear guidelines and standards for the composition and pH levels of these products can help mitigate potential risks. Research can inform regulatory bodies to ensure consumer safety. Measurement and determination of pH levels in tobacco and nicotine products and how these impacts oral health is a crucial first step.¹⁵⁹ For example, how the pH levels interact with the natural oral flora and its implications on nicotine release.
- **Behavioural Studies:** Understanding user behaviour, such as frequency and duration of use, can provide insights into how these products affect oral health over time. This includes studying the patterns of use among different demographics.
- **Biological Mechanisms:** Investigating how nicotine and other components in these products interact with oral tissues at the cellular level can reveal mechanisms of potential harm, such as increased inflammation or cellular damage.
- **Public Health Impact:** Assessing the overall public health implications, including the potential for these products to reduce smoking rates and their role in smoking cessation, is vital. This includes evaluating whether the benefits of quitting smoking outweigh any negative oral health impacts of using these alternatives.
- **Long-term studies on products,** such as oral nicotine pouches, a relatively new smoke-free nicotine alternative, but now being used in at least 33 countries worldwide.¹⁶⁰ A key issue is whether the health outcomes demonstrated in shorter studies could appropriately be extrapolated.
- **Nicotine concentration used in oral nicotine pouches,** especially in terms of its safety and efficacy as part of smoking cessation or harm reduction.
- **Ingredients and material to avoid in THR products,** which might potentially be damaging to oral health, e.g. drivers for caries or erosion of enamel. This should include a thorough investigation of flavours.



A person wearing a bright yellow jacket and a red beanie is walking away from the camera on a grassy, slightly hilly path. The background shows a cloudy sky and distant hills.

ORAL HEALTH RESEARCH INITIATIVES

Some oral health research initiatives deserve special mention in this report:

The Centre of Excellence for the Acceleration of Harm Reduction (CoEHAR)

in Indonesia, along with the EATHR Academy, are actively implementing local research projects in oral health, including the SMILE project, to be published during 2025. The SMILE study aims to investigate changes in oral health parameters and dental aesthetics in smokers who switch to combustion-free nicotine delivery systems. The study is an international, randomised controlled trial involves 474 participants in four countries - 153 in Catania (Italy), 45 in Warsaw (Poland), 168 in Chisinau (Moldova) and 108 in Bandung (Indonesia). All four countries have high smoking rates, providing a substantial pool of participants for studying smoking cessation and switching behaviours.

For the study, the SMILE researchers recruited cigarette smokers interested in switching to alternative products. The participants were randomly allocated to receive either standard care, including cessation counseling (i.e., “very brief advice”), or the nicotine product of their choice plus very brief advice. The trial also includes a reference group of individuals who had never smoked. The researchers then recorded participants’ cigarette consumption and combustion-free nicotine delivery system consumption at every visit. The researchers use state-of-the-art technologies, such as spectrophotometers and quantitative light-induced fluorescence scanners, to quantify tooth discoloration and the amount of dental plaque. The SMILE study also provides a unique opportunity to evaluate the impact on oral health and dental aesthetics among individuals who simultaneously smoke conventional cigarettes and use combustion-free nicotine delivery systems.

The study’s results are expected in 2025. The investigators anticipate observing better gingival/gum conditions, improved tooth color and reduced dental plaque accumulation in smokers who stop smoking after switching to alternative combustion-free nicotine delivery systems

Young researchers have also been encouraged to conduct oral health studies. **Associate Professor Cristian Niky Cumpata** from Romania has been conducting a comparative study regarding the health of the oral cavity cell lining (mucosa) in non-smokers, cigarettes smokers and smokers switching from cigarettes to other smoke free nicotine alternatives.

The project has investigated and validated the hypothesis that in smokers who switched to non-combustible tobacco and nicotine products, the vascularisation of oral mucosa and nasopharynx mucosa can be improved, with the effects of ischemia related to smokers and oral risk factors potentially decreased. Using standardised testing¹⁶¹ during oral examinations¹⁶² after three and 10 months, subjects who had switched from combustible cigarettes to non-combustible products showed increased salivary flow, decreased bacterial plaque amount and normal breath without halitosis, compared to cigarettes users.



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Amaliya Amaliya holds a PhD in Dentistry-Periodontology (2011-2014), from the University of Amsterdam, The Netherlands and a Master's in Periodontology (2004-2006) from the same university. She studied for her degree as Doctor of Dental Surgery at the Universitas Padjadjaran, Indonesia 1991-1997).

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Dirk Ziebolz qualified as a dentist in 2003. He worked 5 years as an generally dentist in the German Army (Bundeswehr). He received his doctor degree (2005) and PhD (2012) from the Georg-August-University Goettingen.

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Alice Alberta Cittone, a Dental Hygienist who graduated with honors from the University of Rome “Tor Vergata,” is a highly experienced professional and freelancer since 2002. She has held roles in leadership, academic teaching, corporate consultancy, and the organization of nationally and internationally significant events.

In her professional career, she holds a degree in Dental Hygiene (University of Piemonte Orientale and University of Rome “Tor Vergata” - with honors) and is a University Lecturer on Dental Hygiene at the Faculty of Medicine in Novara, providing training programs for dental hygienists. She is the Regional President of UNID (National Union of Dental Hygienists): Piemonte (2002–2008) and Vice President of the Board of Directors of TSRM-PSTRP in Torino, Asti, Aosta, and Alessandria (since 2020).

In innovation and oral health leadership, Alice has been a founder of selected technology-based networks, including Oralcare Pro Master and Myoralcare, the first digital platforms for patient support and management. She has been involved in strategic consultancy, collaborating with companies in the dental sector on product development and innovation strategies.

Actively involved in the development of alliances and oral health networks, she is the founder of the Expo RDH, a biennial international event at the Pala Alpitour in Turin, bringing together experts and companies to promote innovations in oral care. She co-organizes Dental Hygienist 3.0, an annual event in Rome focusing on the latest technologies and methodologies in dentistry. She also founded Confronto Igienisti Dentali e Aziende, a platform with over 5,000 oral health professionals, for sharing ideas and innovations.

Alice is distinguished by her sensitivity to the challenges posed by combustible smoking. As a freelance professional and a self-aware smoker, she is committed to exploring less harmful alternatives to smoking, promoting practical solutions to enhance both oral and overall health



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A prolific author, Dr. Cumpătă has published over 30 original articles, books, and book chapters. His extensive research portfolio includes numerous projects in dentistry and product development, where he has served as a project manager for both European and private laboratory projects. He is also a sought-after speaker, having presented at more than 70 national and international congresses and conferences.

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IAIN CHAPPLE, UNITED KINGDOM

Dr. Iain Chapple is former Director of Research for the Institute of Clinical Sciences, and former Head of the Dental School (2016-2020) at Birmingham University UK. He has written 13-textbooks and 35-chapters. Iain was President of the Periodontal Research Group President of the International Association for Dental Research (IADR - 2006-7), European Federation of Periodontology (EFP) Treasurer (2007-2013); Workshop co-chair (2008-current); Scientific Advisory Committee Chair (2013-2016); Secretary General (2016-2019) and President of the British Society of Periodontology (2014-2015).

He was awarded: The Royal College of Surgeons Tomes medal (2011); IADR Distinguished Scientist (2018); EFP’s Eminence Award (2022) and was awarded an MBE in the 2022 Queens New Year’s Honour’s. He advises the Office of the Chief Dental Officer as an honorary consultant. He has published >300 papers, and has an H-index of 77 with 33,467 citations. He has a strong interest in risk factors in periodontal diseases and published the first RCT in the use of biofeedback in smoking cessation in dental practice (BMJ 2005; doi: 10.1136/bmj.38621.463900.7C).

He leads a regional periodontal service and national service for adults with Epidermolysis Bullosa. Iain lectures all over the world on a broad range of topics related to periodontal diseases but has a strong interest in mechanisms underpinning periodontal-systemic disease links, risk factors, and in immune-microbial interactions.

MEDICAL AND PUBLIC HEALTH PROFESSIONALS



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DR. ANOOP MISRA, INDIA

Dr. Anoop Misra is an Indian endocrinologist and a former honorary physician to the Prime Minister of India. He is the chairman of Fortis Centre for Diabetes, Obesity and Cholesterol (C-DOC) and heads, National Diabetes Obesity and Cholesterol Foundation (NDOC). A former Fellow of the World Health Organization at the Royal Free Hospital, UK, Misra is a recipient the Dr. B. C. Roy Award (2006), the highest Indian award in the medical category. The Government of India awarded him the fourth highest civilian honour of the Padma Shree, in 2007, for his contributions to Indian medicine.

He has more than 369 published research papers and was rated by Stanford University to be among top 2% Scientist in Diabetes from India ranked Globally. He developed a definition of obesity for the Indian population context and has been cited extensively (Citations: 49139; h-index: 110; and i10-index: 495). He is the Editor-in-Chief of Diabetes & Metabolic Syndrome: Clinical Research & Reviews (Elsevier) and Associate Editor of the Journal of Diabetes (USA). Dr. Misra is a member of Academic Board of British Medical Journal, BMJ's Regional Advisory Board for South Asia, The Lancet Commission on Obesity, 2023-24 and of the Research Honor Society, SigmaX1 (USA). He authored the book "Diabetes with Delight" (available in English and Hindi).



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Dr. Raza is currently a Consultant Endocrinologist at Shaukat Khanum Hospital and Research Center in Pakistan and National Defence Hospital in Lahore, Pakistan. He received his medical degree from Allama Iqbal Medical College, Lahore. He has served as Chief Medical Resident at Atlantic City Medical Center, NJ, USA. He has completed his Fellowship in Diabetes, Endocrinology and Metabolism from University Wisconsin, Madison, USA. Dr Raza is American Board in Internal Medicine, and in Endocrinology, Diabetes and Metabolism.

He has presented extensively on diabetes and endocrinology throughout his career and has received numerous awards in recognition of his contributions to this field. Dr Raza is Past-President of the Pakistan Endocrine Society (PES) and received lifetime achievement award from PES. He has also served Past President of South Asian Federation of Endocrine Societies (SAFES) and Pakistan Chapter of American Association of Clinical Endocrinologist.



PROF. RICCARDO POLOSA, ITALY

Riccardo Polosa is full professor of internal medicine at the University of Catania and founder of the Center of Excellence for the Acceleration of Harm Reduction.

A full professor of internal medicine at the University of Catania with a specialist role as a respiratory physician, clinical immunologist, allergist and rheumatologist, Polosa is also the founder of the Center for Tobacco Research at the University of Catania, where contracted research staff conduct high-profile clinical and behavioural research. The focus of his academic research has been historically centred upon the investigation of mechanisms of inflammation, biomarkers of disease activity, and novel drug target discovery in respiratory medicine (asthma, COPD, rhinitis) and clinical immunology (allergic and autoimmune diseases). This has culminated in the participation of his research group in large EU-funded Pan-European research consortia. Nonetheless, over the last 15 years, his main research interest has progressively shifted in tobacco-related diseases, smoking prevention and cessation, tobacco harm reduction and e-vapor products.

More specifically, he has been involved in the behavioural, clinical, physiological and toxicological evaluation of e-cigarettes for over 10 years. PI of the first RCT in the world about effectiveness and tolerability of e-cigarettes (the ECLAT study), he is the most prolific author in the field of e-cigarettes, according to recent bibliometric research. He designed and conducted dozens of research studies, working with smoking cessation specialists, clinical psychologists, experienced vapers, epidemiologists, biostatisticians, chemists, toxicologists and biologists from all over the world.

He is a member of the Scientific Committee of LIAF (Italian Anti-Smoking League) and of INNCO (International Nicotine Consumer Organization). Already national coordinator for the Italian Working Group on electronic cigarettes and e-liquids, he has been elected convenor for the European Working Group on requirements and test methods for emissions of electronic cigarettes within the European Committee for Standardization (CEN/TC 437).⁶¹



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