

In collaboration with the American Dental Association,  
Colgate-Palmolive Company and Henry Schein



# The Economic Rationale for a Global Commitment to Invest in Oral Health

WHITE PAPER

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# Contents

Foreword	3
Executive summary	4
Introduction	6
1 Oral health: Critical for overall health and well-being	7
2 Better oral health lowers overall healthcare costs	9
3 Oral health is a key driver of economic well-being	10
4 The global burden of oral disease is growing	12
5 When it comes to unmet healthcare needs, oral health stands out	13
6 The cost of oral disease to the global economy is substantial	15
7 The high level of unmet oral healthcare needs is rooted in health policy choices	16
8 Moving forward: The need for a global commitment to investing in oral health	19
Conclusion	21
Contributors	22
Endnotes	24

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# Foreword



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More than 80 years ago, the World Health Organization (WHO) asserted that “the enjoyment of the highest attainable standard of health is one of the fundamental rights of every human being.” At that time, and even today, too few clinicians outside of the dental profession would include oral health in any definition of a “standard of health,” reflecting an age-old separation of oral health from medicine and general health that has compromised efforts to stem the tide of oral disease and keep people healthy.

As this white paper reports, almost half the world’s population is impacted by oral diseases that interfere with daily function and put them at higher risk of and from other systemic illnesses such as diabetes, stroke, heart and respiratory diseases, and even some cancers. The cost of oral diseases is staggering, with estimates putting the direct treatment costs plus productivity losses at more than \$710 billion each year. Investing in oral health pays dividends in the form of better oral health and well-being, improved overall health and economic growth. Yet oral health has remained a neglected global health challenge – until now.

A global consensus is gaining ground that oral health is integral to overall health, and critical to our ability to live healthy and productive lives. A tipping point came in 2022 with the adoption of the WHO’s landmark global strategy on oral health, with the nations of the world formally recognizing that: “The personal consequences of untreated oral diseases and conditions – including physical symptoms, functional limitations, stigmatization and detrimental impacts on emotional, economic and social well-being – are severe and can affect families, communities and the wider healthcare system.”

Despite heightened global recognition of its critical importance, access to oral care continues to be significantly constrained by individual unaffordability as well as community-level lack of sufficient resources to invest in dental care infrastructure. This is further compounded by shortage of dental workforce, which plagues many countries and communities. Addressing these gaps in global oral health will, therefore, require innovative policy, investment and delivery solutions from all sectors, and for stakeholders to work in tandem via public-private partnerships.

In recognition of these complex challenges, the World Economic Forum launched the Oral Health Affinity Group (OHAG) in 2023 under its Global Health Equity Network, which is a group of more than 50 companies committed to advancing health equity to create stronger and more productive societies. Within this network, OHAG, which is composed of committed leaders from across sectors and industries, is shining a bright light on the impact of poor oral health on health outcomes and on the global economy, and, most importantly, on the actions that governments and private sector companies can take to advance global oral health.

In this white paper, the first in a planned series, we present **the economic rationale for a global commitment to invest in oral health** and explore the role of various sectors in improving oral health. Through this and future white papers that will dive deeper into other dimensions of this issue, we hope to inspire international health leaders, policy-makers and private sector partners to reconnect the mouth to the body in pursuit of a healthier future for all.

# Executive summary

Oral health is critical for overall health and well-being. It is tied to many health conditions, including diabetes, stroke, dementia, heart disease and mental health, and affects pregnancy outcomes.

Yet, billions of people worldwide suffer from the negative effects of untreated oral diseases. According to the latest data from the World Health Organization (WHO), the estimated number of cases of oral diseases globally is about 1 billion higher than cases of mental disorders, cardiovascular disease, diabetes, chronic respiratory diseases and all cancers combined. Oral diseases affect an estimated 3.5 billion people each year, with the number of cases growing faster than the population. Even after adjusting for the relative impact of various diseases on mortality and morbidity, oral health conditions still rank within the top 10 of all diseases globally.

Poor oral health has a negative impact on the global economy. The economic burden of oral diseases across 194 countries was \$710 billion in 2019. This includes \$387 billion in expenditure for treating oral diseases and \$323 billion in productivity losses. Poor oral health leads to missed school days, limited academic achievement and hindered employment prospects. For context, productivity losses stemming from dental diseases exceed those of hypertensive heart disease, asthma and certain cancers, and fall within the range for diseases that account for the top 10 global causes of death. Simply put, unmet oral health needs exact a substantial economic penalty across the globe. Most importantly, the most vulnerable populations are disproportionately paying this economic penalty.

Unmet oral health needs stem, in part, from policy choices. Health policy often does not treat dental care as an essential healthcare service. As a result, dental care ranks at the top when it comes to affordability challenges for accessing any kind of healthcare, especially for vulnerable populations. Within most healthcare systems, including those where healthcare is mainly publicly funded, dental care is seen more as a discretionary, privately financed healthcare service. It is often delivered in separate, stand-alone facilities rather than as part of integrated primary care settings. This creates further challenges to leveraging the mouth-body connection in driving overall health and well-being.

There is a strong economic rationale to improve oral health globally. To achieve this requires bold action among key stakeholders.

**Governments** should pursue policies that promote affordability of dental care services, ensure sufficient oral health workforce capacity, integrate oral health within health systems and engage in public service campaigns to improve oral health literacy. A range of policy options can promote these goals:

- Implement the provisions of the WHO Global Oral Health Action Plan to improve oral health equity, contributing to the health-related Sustainable Development Goals.
- Integrate oral health within public health insurance programmes and benefit packages as part of universal health coverage policies.
- Regulate private health insurance markets in ways that promote comprehensive inclusion and coverage of oral health in equitable and affordable ways.
- Strengthen primary healthcare through full integration of essential oral healthcare.
- Align incentives, including provider payment models, to promote upstream prevention rather than downstream treatment of disease.
- Adopt evidence-based guidelines on oral hygiene practices, fluoride use, as well as advertising, labelling and taxation of sugary foods and beverages.
- Pursue strategic partnerships with academic institutions, foundations, professional organizations, corporations and advocacy groups to strengthen oral health.

In several areas of oral health policy, there is a need to generate and synthesize evidence on various policy approaches in ways that are understandable and actionable for policy-makers.

**The private sector** plays a critical role in the “commercial determinants of oral health” – corporate activities that affect people’s oral health, both positively and negatively. These include the manufacture and promotion of products that are detrimental to oral health (e.g. tobacco, alcohol, vapes, and foods and drinks that are high in sugar content) as well as those that are beneficial. The private sector plays a key role in ensuring affordable access to fluoride toothpaste, oral hygiene products and other products beneficial to oral health.

The private sector should:

- Promote research and development in products that promote oral health and work to create healthy alternatives to help phase out products that cause oral diseases.
- Accelerate efforts to provide affordable self-oral care solutions that are universally available and affordable, particularly for people living in deprived socio-economic contexts. For example, toothpaste containing fluoride is often unaffordable, especially in lower-middle-income and low-income countries.
- Expand coverage for oral healthcare services in employer-provided health insurance programmes and promote oral health as a core element of workplace health and wellness programmes.
- Support and align with the private sector actions outlined in the WHO Global Oral Health Action Plan.

**Multilateral organizations**, such as the World Health Organization, the World Economic Forum, the World Bank and the Global Fund, should:

- Include oral health in policy dialogues for strengthening health systems. Investing in oral health will help advance broader health outcomes and help achieve the Sustainable Development Goals.
- Include oral diseases within the WHO's non-communicable diseases framework. This is especially relevant as health systems rapidly transition to address the growing non-communicable disease burden.
- Support and align with the international partner and multilateral organization actions outlined in the WHO Global Oral Health Action Plan.

**Civil society** has numerous roles in advancing oral health globally. The research community – agencies that fund research and organizations that carry out research – and private foundations that support the strengthening of health systems should:

- Improve the evidence base for oral health policy. This includes synthesizing best practices on oral health financing and delivery based on comprehensive, data-driven and cross-country comparisons. Research on oral health systems in low- and middle-income countries is particularly needed.
- Fund research exploring the return on investment for employers for investing in oral health for their employees.
- Invest in oral health activities as part of philanthropic support for health-systems strengthening in partner countries.
- Support and align with civil society actions outlined in the WHO Global Oral Health Action Plan, such as fostering community involvement and co-creation of appropriate policies and services, improving impact and accountability of programmes and policies, and supporting advocacy for better prioritization of communities' oral health needs.

Addressing the global oral health crisis will require bold action. The World Economic Forum is ideally placed to facilitate the partnerships needed across various stakeholder groups. Going forward, the newly established Oral Health Affinity Group, launched in 2023 under the Forum's Global Health Equity Network, will be an ideal platform to facilitate this continued dialogue – and action.



# Introduction

Oral health is critical for overall health and well-being. Not only does oral health promote people's ability to eat, speak, breathe, express emotion and live a full life, it is also linked with health conditions that extend well beyond the mouth. For example, oral diseases are linked with diabetes, stroke, dementia, heart disease and mental health, and affect pregnancy outcomes. Oral health also shares common risk factors with many non-communicable diseases. Being healthy entails having a healthy mouth.

Improved oral health has important economic benefits. Better oral health leads to healthcare cost savings among populations with various non-communicable diseases as well as lower emergency-room spending. However, the economic impact of oral health extends well beyond the healthcare system. Poor oral health leads to lost school days for children, missed workdays and diminished job prospects for working-age adults and reduced labour productivity. In essence, neglecting oral health exacts an economic penalty. This economic penalty is most pronounced for low-income, vulnerable populations. Thus, prioritizing oral health can help close gaps in global health equity and, more broadly, can narrow economic disparities.

Thankfully, some important developments in recent years have recognized the importance of oral health. In 2021, the World Health Organization (WHO) World Health Assembly called for oral health's inclusion in universal health coverage in

member countries, unequivocally declaring oral health an essential health service.<sup>1</sup> The WHO recently developed guiding principles for country action, targeted at various stakeholders, with specific goals and metrics.<sup>2</sup> The United Nations' political declarations on universal health coverage from 2019<sup>3</sup> and 2023<sup>4</sup> included specific mention of oral health.

Meanwhile, the FDI World Dental Federation (FDI, from the French *Fédération Dentaire Internationale*), which represents dental care providers around the world, recently adopted a new vision that calls for dental care to be included in universal health coverage policies, promoting integration of oral health into primary care and building a resilient dental workforce that is responsive to population needs.<sup>5</sup>

While momentum is building, key stakeholders must take bold action to advance oral health globally. This paper summarizes the actions that have the most potential. While presenting a compelling case for just how vital oral health is to overall health and well-being, it summarizes the economic benefits associated with improved oral health. It goes on to show the significant unmet oral health needs across the globe, with excessive equity gaps stemming largely from how oral health is currently addressed within health policy. The paper concludes with a set of proposed actions for governments, the private sector, multilateral organizations and civil society that will advance oral health globally.



**Oral health has long been neglected in the global health agenda. Our biggest challenge now is ensuring that all people, wherever they live and whatever their income, have the knowledge and tools needed to look after their teeth and mouths, and access prevention and care when they need it.<sup>6</sup>**

Tedros Adhanom Ghebreyesus, Director-General, World Health Organization

1

# Oral health: Critical for overall health and well-being

Good oral health – having healthy and pain-free teeth and gums – is a critical part of one’s overall health and physical, emotional and social well-being. A healthy mouth is necessary for eating, smiling, speaking and self-expression. Dental diseases, including tooth decay, gum disease and

oral cancer, influence a host of health outcomes beyond the mouth.<sup>7</sup> In particular, better oral health has been associated with improved outcomes for people living with heart disease, respiratory disease, diabetes, dementia, arthritis, as well as for pregnant people, to name a few.<sup>8</sup>

## BOX 1 What is oral health?



**Oral health is the state of the mouth and teeth. It enables individuals to perform essential functions, such as eating, breathing and speaking, and encompasses psychosocial dimensions, such as self-confidence, well-being and the ability to socialize and work without pain, discomfort and embarrassment. Oral health varies over the life course from early life to old age, is integral to general health, and supports individuals in participating in society and achieving their potential.<sup>9</sup>**

World Health Organization

Gum disease increases the risk of a first heart attack by 28%.<sup>10</sup> The risk of stroke is twice as high among people suffering from poor oral health.<sup>11</sup> Tooth loss has been shown to be a risk factor for dementia<sup>12</sup> and heart disease.<sup>13</sup> Research shows that people living with diabetes have improved health outcomes when their gum disease is managed.<sup>14</sup>

Oral health is also a key driver of social and emotional well-being,<sup>15</sup> healthy ageing<sup>16</sup> and broader mental health.<sup>17</sup> In short, one cannot be healthy without a healthy mouth.

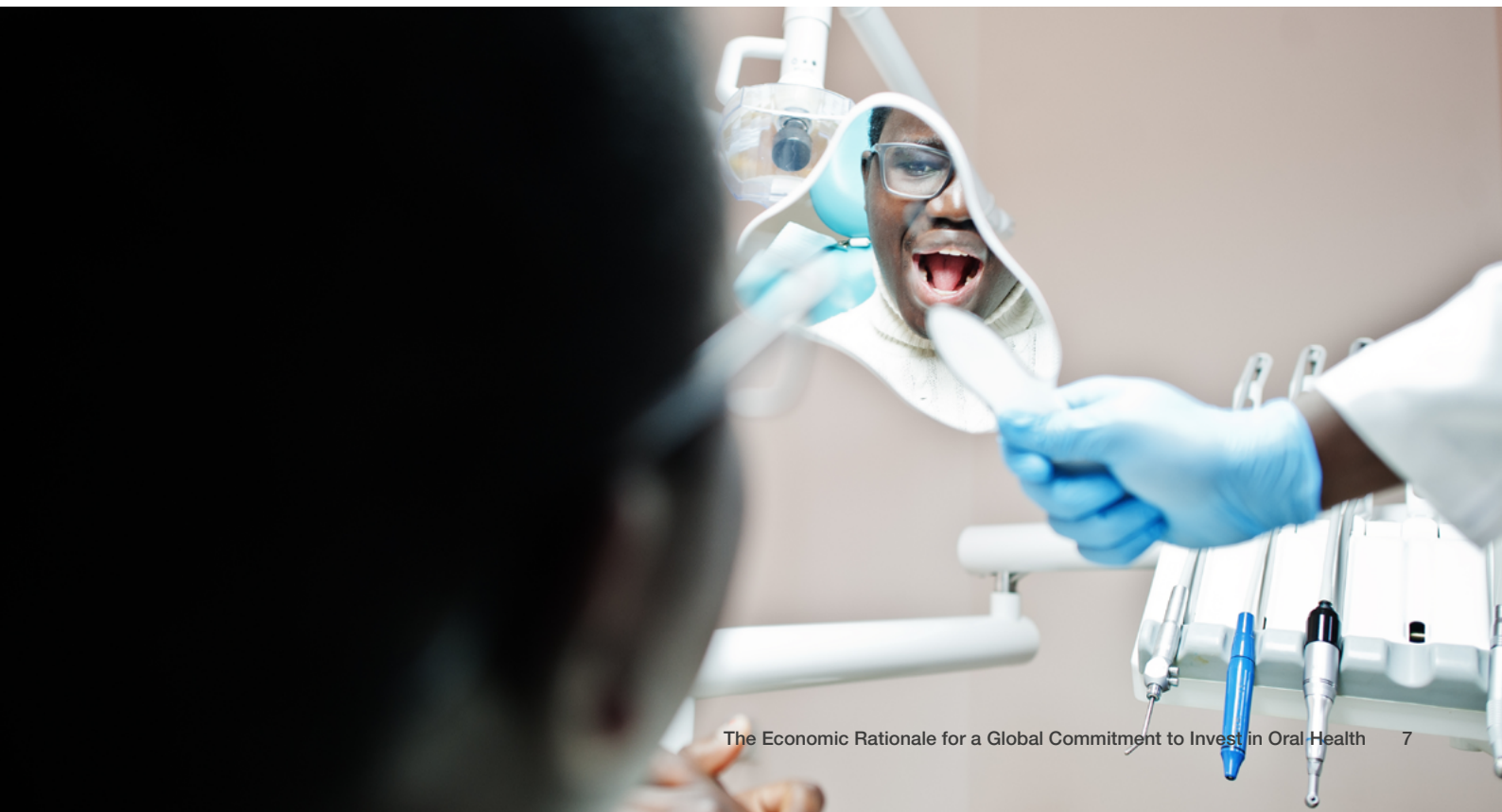
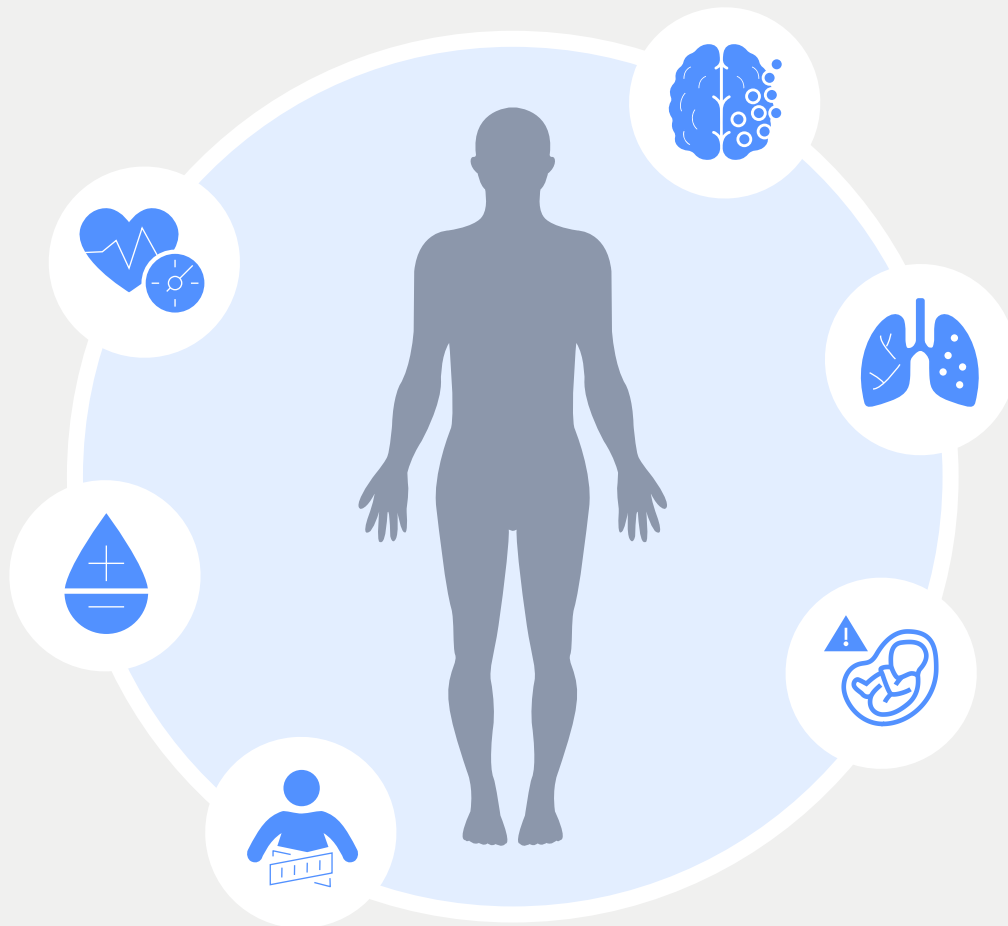


FIGURE 1 | The impact of oral health extends beyond the mouth



Growing evidence connects a healthy mouth with a healthy body. Here are some examples showing why oral health is about much more than a smile:

- 

### High blood pressure

  - Putting off dental care during early adulthood is linked to an increased risk of high blood pressure.
  - Patients with gum disease are less likely to keep their blood pressure under control with medication than are those with good oral health.
- 

### Dementia

  - Having 10 years of chronic gum disease (periodontitis) is associated with a higher risk of developing Alzheimer’s disease.
  - Researchers report that uncontrolled periodontal disease “could trigger or exacerbate” the neuroinflammatory phenomenon seen in Alzheimer’s disease.
- 

### Diabetes

  - Untreated gum disease makes it harder for people with diabetes to manage their blood glucose levels.
  - Diabetes raises the risk of developing gum disease by 86%.
- 

### Respiratory health

  - Research shows that improving oral hygiene among medically fragile seniors can reduce the death rate from aspiration pneumonia.
  - Patients with ventilator-associated pneumonia (VAP) who engage in regular toothbrushing spend significantly less time on mechanical ventilation than other VAP patients.
  - Improving veterans’ oral hygiene is shown to have reduced the incidence of hospital-acquired pneumonia (HAP) by 92%, preventing about 136 HAP cases and saving 24 lives.
- 

### Obesity

  - Brushing teeth no more than once per day was linked with the development of obesity.
  - Frequent consumption of sugar-sweetened drinks raises the risk of both obesity and tooth decay among children and adults.
- 

### Adverse birth outcomes

  - Gum disease among pregnant women is associated with preterm births, low birth weight babies and pre-eclampsia, a pregnancy complication that can cause organ damage and can be fatal.

Source: CareQuest Institute for Oral Health<sup>18</sup>



2

# Better oral health lowers overall healthcare costs

In addition to the health and wellness benefits, improved oral health helps reduce costs in the health system.<sup>19</sup> Medical care costs for conditions such as diabetes, heart disease and pregnancy are lower when oral health issues are addressed.

In the United States (US), individuals with heart disease saved \$548 to \$675 per year of healthcare spending when they went for routine preventive oral healthcare. Among people with diabetes, the savings ranged from \$900<sup>20</sup> to \$2,840,<sup>21</sup> and patients with multiple chronic conditions saved even more. Further, improved oral health reduced medical costs associated with pregnancy by \$1,500 to \$2,400 per pregnancy.

In the US, 41 states have expanded Medicaid eligibility as part of the Affordable Care Act. The Medicaid programme provides health insurance coverage for low-income Americans, including mandatory dental coverage for children. In several

states, the Medicaid programme also provides dental care coverage for adults, an optional benefit. Medicaid expansion has enhanced access to oral health services for millions of low-income adults, leading to increased visits to the dentist and improvements in oral health.<sup>22</sup> The expansion has also helped reduce medical care spending. For example, states that have provided comprehensive dental coverage to adults and have expanded Medicaid eligibility have seen a 14% reduction in emergency-room visits for oral health issues.<sup>23</sup>

In one state that expanded Medicaid eligibility, Kentucky, individuals who visited a dentist were at lower risk of being diagnosed with diabetes and heart disease, which reduced healthcare costs for the Medicaid programme.<sup>24</sup> In another state, New York, increased utilization of oral health services thanks to Medicaid expansion reduced both emergency-room spending and inpatient healthcare costs.<sup>25</sup>



3

# Oral health is a key driver of economic well-being

Improved oral health and employment outcomes are linked, particularly for low-income adults. For example, more than one in three low-income adults in the US report that the condition of their mouth and teeth affects their ability to interview for a job. This is significantly above the rate reported among high-income adults.<sup>26</sup>

The link between oral health and employment prospects is particularly strong for women. A study from the US found that improved oral health translates to a 4% increase in lifetime earnings for women.<sup>27</sup> Similarly, women in Brazil showed bigger improvement in job prospects with better oral health than men.

Improving oral health can help narrow gender inequality in employment and earnings outcomes.<sup>28</sup>

Investing in oral health is thus vital to promote economic well-being among low-income, vulnerable groups. Improved oral health reduces the number of low-income adults on government social assistance programmes.<sup>29</sup> By enabling better job prospects, investment in oral health promotes economic independence for the most vulnerable and disadvantaged segments of society.<sup>30</sup> As a result, oral health can play a key role in narrowing disparities in economic well-being by gender, race and income.

BOX 2

## Better oral health improves job prospects

In the US, 29% of low-income adults reported that poor oral health affected their ability to interview for a job.<sup>31</sup> Another study estimated that 3% of job-seekers in the US labour market are unable to find employment directly as a result of poor oral health. This translates to over 200,000 people being kept out of viable employment due to dental disease.<sup>32</sup> There is also compelling research showing that low-income adults are most prone to the negative employment effects stemming from poor oral health and that lifetime earnings of women are much more negatively impacted by poor oral health compared to men's.

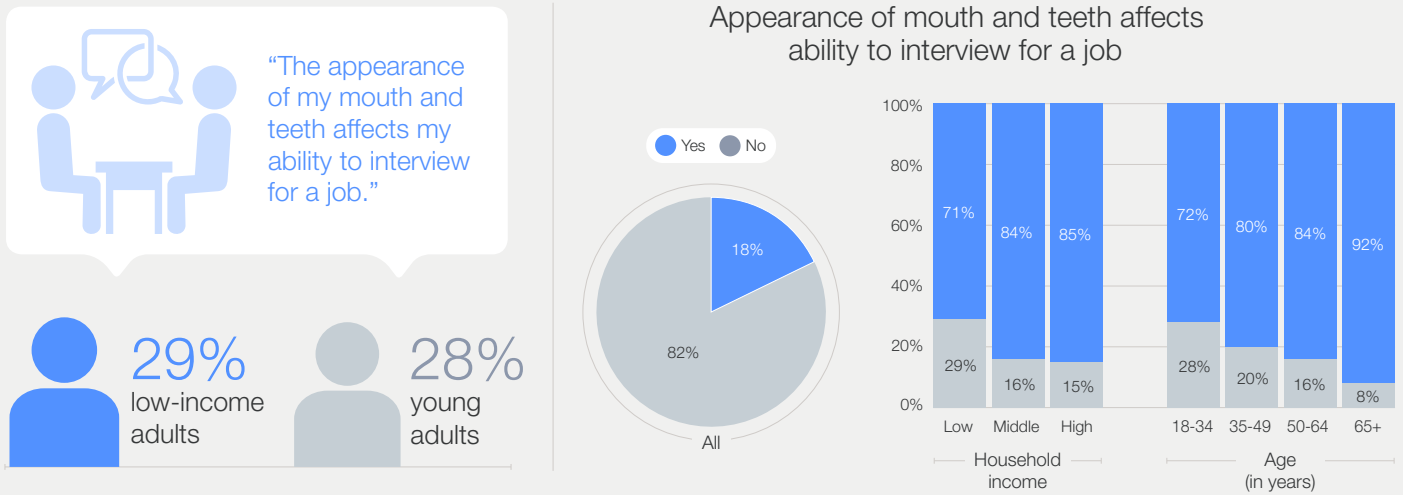
In Denmark, a campaign focusing on oral health among unemployed and socially disadvantaged adults, including regular visits to the dentist, increased job opportunities for recipients. Most importantly, the effects of the campaign were seen very quickly, within one year, demonstrating the potential of quick dividends in terms of economic well-being stemming from better oral health.<sup>33</sup>

Taken together, the evidence shows clearly that improving the oral health of the population contributes to enhanced employment and helps to narrow income, race and gender inequality in earnings.<sup>34</sup>

The relationship between employment and oral health can be bidirectional. Just as poor oral health has a negative effect on employability and job prospects, being unemployed can lead to worse

oral health.<sup>35</sup> This bidirectionality poses an even more significant risk to individual economic well-being, as poor oral health and low employability reinforce each other.

FIGURE 2 | How oral health affects job prospects



Source: American Dental Association Health Policy Institute.  
 Note: Data are for adults.

Oral health issues negatively impact education outcomes, through missed school days and reduced learning capacity, with long-lasting effects into adulthood. The largest effects are seen among low-income children. For example, children with poor oral health are more likely to have lower grades, suffer from self-esteem issues, and are

less likely to complete all required homework.<sup>36</sup> Research from across the world shows that poor oral health among adolescent children negatively impacts feelings of worthiness, confidence and other psychosocial outcomes that affect academic achievement and lifelong success.<sup>37</sup>

**BOX 3 | Poor oral health contributes to impoverishment in low- and middle-income countries**

Oral health services are costly and beyond most people’s means in low- and middle-income countries. Using World Health Survey data from households in 40 low- and middle-income countries (LMICs), researchers analysed the impact of out-of-pocket spending on oral health on household finances. Households with recent out-of-pocket spending were more likely to have used a large portion of their disposable household income and, as a result, fall below the poverty line.<sup>38</sup>

Policy-makers should explore healthcare financing modalities that provide adequate financial protection for oral health-related spending. As most oral diseases are preventable, an investment in preventive strategies, coupled with healthcare financing modalities that provide adequate financial protection for oral health-related spending, could significantly lessen the financial burden of oral diseases in LMICs.

Taken together, there is strong evidence linking oral health, education, employment and earnings. Investing in oral health pays an economic dividend in the form of better job prospects, higher earnings and economic independence.

The linkage is particularly strong for certain subsets of the population. Investments in oral health can help narrow disparities – of race and sex – in employment and earnings.

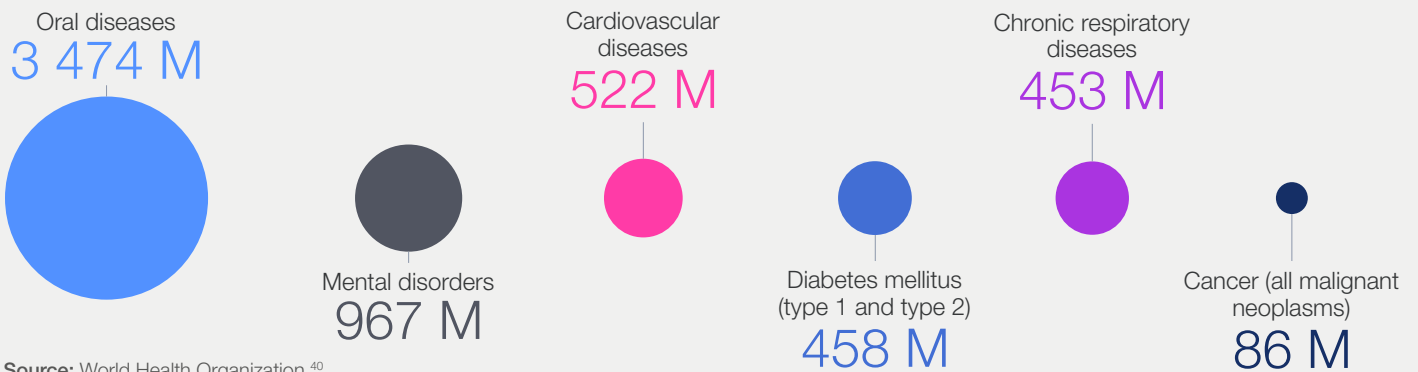
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# The global burden of oral disease is growing

Despite the important role oral health plays in overall health and economic well-being, and despite the preventable nature of most oral diseases, billions of people worldwide suffer from the negative effects of untreated oral diseases. In fact, according to the latest data compiled by the WHO, the estimated number of cases of oral diseases globally is about 1 billion higher than cases of mental disorders, cardiovascular disease, diabetes, chronic respiratory diseases and all cancers combined.<sup>39</sup>

Oral diseases have remained the most dominant conditions globally since data have been available, with an estimated 3.5 billion people affected each year. Over the past 30 years, the number of cases of oral diseases worldwide has grown faster than the population, with low-income countries seeing the largest relative increase. Cases of oral disease are rising, and even after adjusting for the relative impact of various diseases on mortality and morbidity, they still rank within the top 10 of all diseases globally.

FIGURE 3 Estimated number of cases globally for select non-communicable diseases



Source: World Health Organization.<sup>40</sup>

The change in the prevalence of oral diseases as well as the number of cases differs by geographic region as well as by country income level. For example, for both tooth decay and periodontal disease, the number of cases is growing fastest in low-income countries.

Gum disease – affecting roughly one in five people around the world – has important links to non-communicable diseases beyond the mouth. The number of cases of periodontal disease in low-income and lower-middle-income countries more than doubled between 1990 and 2019, compared

to a roughly 50% increase in the number of cases in high-income countries.

Turning to caries in permanent teeth, between 1990 and 2019, the number of cases worldwide increased by 46%, or about 640 million cases. This is mainly due to population growth in low- and lower-middle-income countries. There was actually a very slight decrease in prevalence of caries in permanent teeth, globally over the same period. The WHO African Region showed the highest increase in the number of cases over this period, at 120%.

FIGURE 4 Estimated prevalence and number of cases of severe periodontal disease

World Bank income group	Prevalence (2019)	Cases (2019)	Percentage change in prevalence (1990-2019)	Percentage change in cases (1990-2019)	Percentage change in population (1990-2019)
Low income	19.71%	80,008,079	0.73%	129.75%	117.98%
Lower-middle income	19.80%	436,697,336	17.24%	124.66%	63.25%
Upper-middle income	18.19%	386,443,138	34.98%	96.83%	27.97%
High income	17.65%	176,251,937	18.71%	51.43%	20.63%
Global	18.82%	1,079,927,025	23.96%	99.18%	44.79%

Source: World Health Organization.<sup>41</sup>

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# When it comes to unmet healthcare needs, oral health stands out

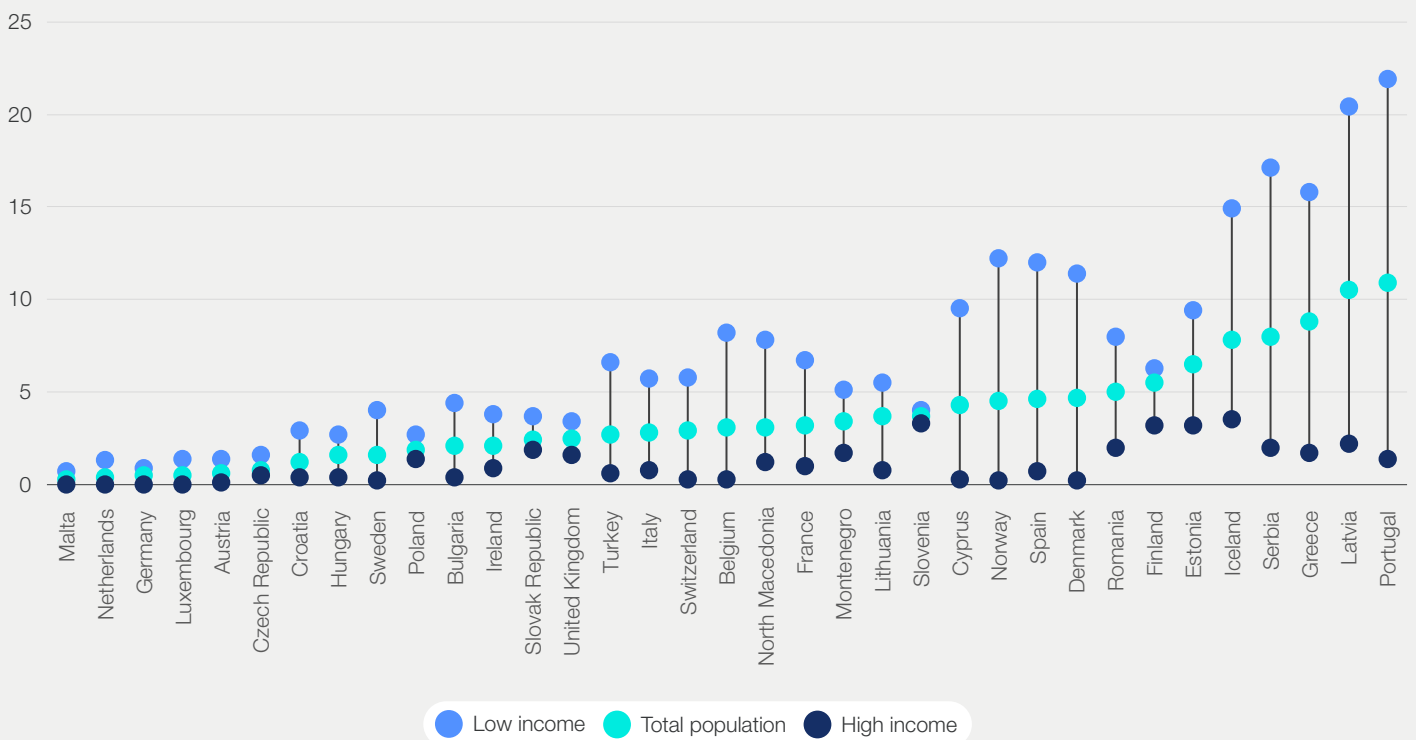
Access to dental care is an important factor in oral health. However, in healthcare systems across the world, dental care is often the healthcare service with the most limited access.<sup>42</sup> This is true in both high-income and low-income countries and is especially true among low-income populations within countries. For example, an analysis combining data for 18 countries from the Organisation for Economic Co-operation and Development (OECD) shows that the likelihood of having unmet dental care needs is, on average, three times higher than for other medical care services.<sup>43</sup>

A similar study across 31 European countries showed that dental care is often the most frequently reported unmet healthcare need.<sup>44</sup> Similarly, in the US, the population reports much more difficulty in affording dental care services compared to any other type of healthcare service, including medical care, hospital care and even prescription drugs. This is true for all age and income groups.<sup>45</sup>

The health equity issues that health systems are grappling with globally are extremely relevant in the oral health arena, particularly when it comes to affordability of care. Even in high-income countries, studies in Norway and the US, for example, show that cost and affordability challenges are much more of a barrier than fear, anxiety, wait times or trouble finding a provider.<sup>46</sup>

Data from a large number of OECD countries shows stark differences in the level of unmet dental care needs according to household income in most countries.<sup>47</sup> But there is also variation across countries, with notable outliers. Countries like Poland, the United Kingdom, Germany, the Netherlands, Finland and Slovenia show relatively narrow inequality in access to dental care. A comparative analysis of dental care financing and delivery arrangements in these countries, for example, might be a helpful next step to identify promising practices for promoting equity in oral health.

FIGURE 5 Percent of population reporting unmet dental care needs by household income level



Source: Authors' analysis of OECD/European Union data.

Evidence also suggests a need to improve oral health literacy globally. For example, in the US, a recent study found a paucity of understanding among the public and healthcare providers on the risks, prevention and treatment of oral disease.<sup>48</sup> Policy-makers responded by passing legislation to develop an oral health literacy strategy to reach underserved communities.<sup>49</sup>

New, innovative tools are emerging that help measure oral health literacy and pinpoint action areas.<sup>50</sup> Investing in oral health literacy through strategic cooperation among governments, corporations, academic institutions, foundations, professional organizations and advocacy groups is important for addressing the global oral health crisis.



6

# The cost of oral disease to the global economy is substantial

Productivity losses due to poor oral health cost the global economy

**\$323 billion**

each year. This is close to the productivity losses from the top 10 diseases accounting for all deaths worldwide.

Globally, the economic burden of oral diseases, based on an analysis of 194 countries, was estimated at \$710 billion in 2019. Of this, the total direct expenditure for treating oral diseases amounted to \$387 billion. On a per capita basis, this translates to a global average of \$50 and represents around 5% of global direct health expenditures.

Direct expenditure for treating oral diseases ranks high compared to other health conditions and is estimated at, for example, about 50% of the global diabetes-related health expenditures.<sup>51</sup> For example, an analysis focused on countries within the European Union shows that total treatment costs for oral diseases ranks third, just behind those for diabetes and heart disease.<sup>52</sup>

In addition, productivity losses stemming from oral diseases were estimated at \$323 billion globally. It is important to note that the economic cost from productivity losses is nearly as large as the cost associated with treating oral diseases. On a global per capita basis, annual productivity losses average out to \$42.

The global productivity losses from oral diseases fall within the range of productivity losses of the top 10 diseases that account for all causes of death worldwide. The productivity losses stemming from poor oral health are similar, for example, to those for Alzheimer's disease and other dementias.<sup>53</sup> The relatively high prevalence of oral diseases across the globe is clearly translating into a relatively high global economic burden of poor oral health in comparison to other health conditions. This strengthens the economic argument for prioritizing interventions to address oral diseases and gives persuasive reasons that may resonate among various stakeholders within the global health community.

The inequalities in the global economic impact of oral diseases are striking. The average per capita dental expenditure in low-income countries is \$0.52, while high-income countries spend an average of \$260 per capita – a 500-fold difference. Similarly, estimates for annual productivity losses per capita stemming from poor oral health are \$1.49 in low-income countries compared to \$185 in high-income countries – more than a 100-fold difference.

FIGURE 6 Estimates of the global economic cost of dental diseases, 2019

	Treatment costs		Productivity losses	
	Total (billion dollars)	Per capita	Total (billion dollars)	Per capita
African region	3.10	2.84	4.58	4.19
Eastern Mediterranean region	6.97	9.78	9.59	13.47
European region	112.51	120.96	104.48	112.32
Region of the Americas	156.76	155.21	105.57	104.53
South-east Asian region	0.76	0.38	13.35	6.67
Western Pacific region	107.00	54.74	85.12	43.55
World Bank low-income countries	0.36	0.52	1.04	1.49
World Bank lower-middle-income countries	2.27	0.72	19.00	6.05
World Bank upper-middle-income countries	80.76	29.99	86.88	32.26
World Bank high-income countries	303.70	259.96	215.76	184.69

Source: Heidelberg Open Research Data (heiDATA), 2022.<sup>54</sup>

7

# The high level of unmet oral healthcare needs is rooted in health policy choices

How oral health is financed explains why its affordability is a challenge in much of the world. Despite its importance to overall health and well-being, dental care is often not treated as an essential healthcare service within health policy.<sup>55</sup> Public and private health insurance programmes do not universally cover oral health. As a result, people pay from their own pockets for oral health services, even in countries where general healthcare is primarily publicly financed. For example, across the OECD, an average of 26% of healthcare spending is financed through private sources compared to an average of 70% of dental care spending. Many countries within the OECD have totally private dental care financing systems, where public funding accounts for a negligible share of overall dental spending.

Many of the oral health financing models observed around the world reflect perceptions that oral health is a private matter rather than a public good. Dental diseases get low policy priority as compared to other health conditions such as cancer, heart diseases and diabetes. As a consequence, dental care financing is often decoupled from financing mechanisms for other types of healthcare, without

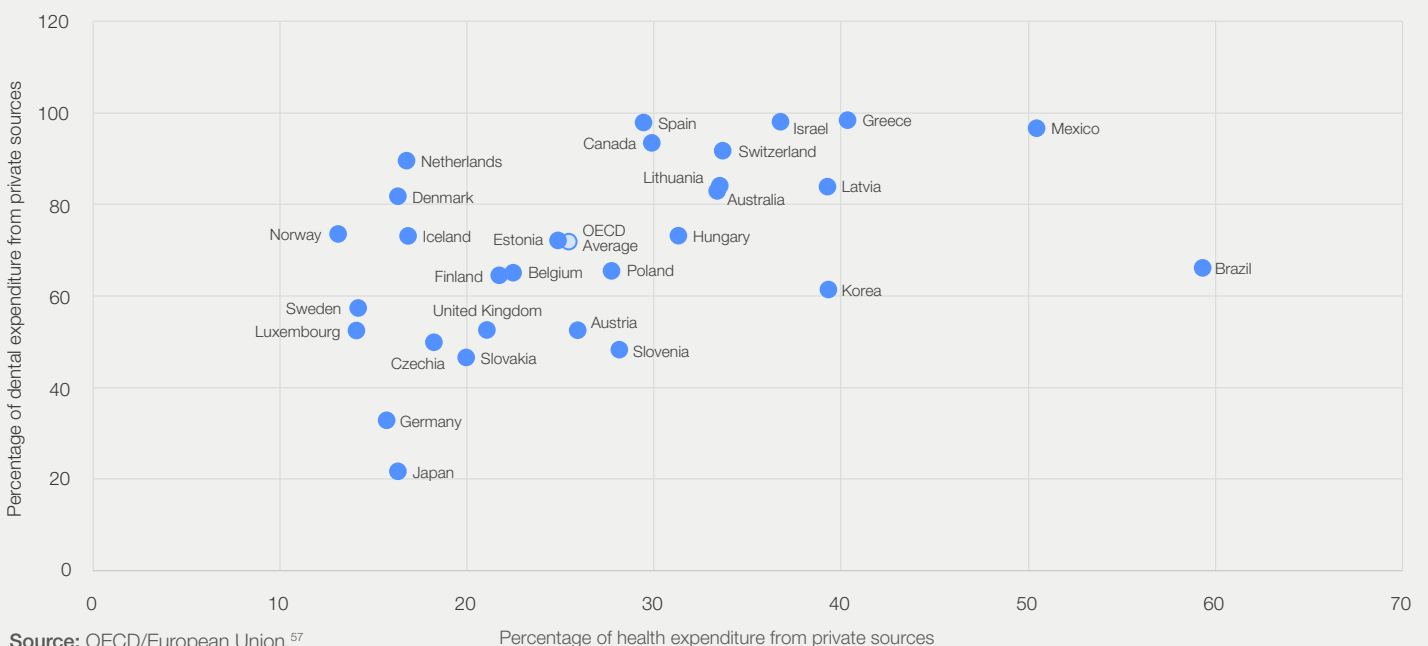
explicit consideration of the societal value of improved oral health among populations.

Figure 7 shows interesting variation in public spending on oral healthcare among OECD countries. Japan and Germany are notable outliers, where the majority of spending on oral health services is funded through public sources, with a wide range of dental care services covered under major health insurance programmes.<sup>56</sup>

This might explain why Germany ranks low in terms of the overall share of the population reporting barriers to accessing dental care and why the gap between low- and high-income households is relatively narrow. It might also explain why in Greece, where dental care is paid for almost entirely through private sources, barriers to dental care are high and income inequality is a large factor in access.

However, some countries do not fit this hypothesis. For example, the Netherlands has relatively small differences in access to dental care by household income level, yet dental care is almost entirely privately financed.

FIGURE 7 Share of health and dental expenditure from private sources



Source: OECD/European Union.<sup>57</sup>



The mouth has largely been separated from the body when it comes to how people pay for healthcare services. This traditional policy approach is at the core of why financial barriers to dental care are much higher than for other types of healthcare services.

Within high-income countries, there is a high degree of variation in the mix of dental care financing with respect to out-of-pocket payments compared to payments from separate, stand-alone dental insurance.<sup>58</sup> For example, the US, Canada and France have well-developed private dental insurance markets which account for 40% to 50% of total dental spending. Out-of-pocket payments account for 20% to 40% of dental care financing.

In contrast, in countries such as Sweden and the United Kingdom, more than half of dental care spending is paid for out of pocket, with a nearly non-existent private dental insurance market. Whatever the relative contribution of private dental insurance versus out-of-pocket payments to dental care spending, the more salient conclusion from the data is that dental care is preponderantly privately financed even in settings where healthcare services in general are largely publicly financed.

Beyond healthcare financing policy choices, dental care is often delivered in separate, stand-alone facilities rather than as part of integrated primary

care settings. This further creates challenges to integrating dental care into whole body health when the delivery model for dental care becomes siloed. There is evidence showing that various forms of medical-dental integration, including co-location of facilities, embedding dental care services as a department within hospitals and clinics, can facilitate access and improve oral health.

In Malaysia, for example, part of the antenatal care visit protocol in public healthcare facilities involves a dental screening at the dental clinic located within the health centre. This facilitates easy access to oral healthcare services for an important target population: pregnant women. In Brazil and Thailand, integrating oral healthcare services into primary care settings, hospitals and long-term care facilities was an important strategy to expand access to dental care services to the population. In the US, medical-dental integration is increasingly cited as a key reform needed to truly leverage the mouth-body connection in terms of improving health outcomes and reducing healthcare costs among individuals with chronic health conditions.<sup>59</sup>

#### BOX 4

#### Thailand and Brazil make dental care an essential healthcare service

As part of Thailand's universal health coverage (UHC policy) implemented in 2002, a series of public health insurance schemes offer oral health benefits to everyone. While coverage may be more expansive under plans made specifically for civil servants and private sector employees, the general population is covered for preventive and restorative care. The success of Thailand's oral health interventions demonstrates that it is possible to make oral health essential in healthcare insurance programmes.

Brazil also has a universal healthcare system. It was established in 1988, and integrated oral health in 2000. Various policies supported this integration in primary care, reducing fragmentation and expanding access to care and affordability. Government spending on oral healthcare

increased from \$30 million in 2002 to \$322 million in 2009, with nearly universal geographic coverage of oral healthcare services. An estimated 70% of Brazilians access healthcare services in a year, and evaluations of the programme show significant improvements in various oral health indicators, including dramatic reductions in tooth loss due to dental disease.

Still, inequalities persist, with higher dental disease burden in rural, poor and disadvantaged populations. These challenges stem from the complexity of financing healthcare in the context of decentralization, a growing private sector creating consumer demand that places excess pressures on public services, and the need to ensure quality of services.

#### BOX 5

#### Comprehensive coverage and integration improves oral health in Japan

Japan has a universal healthcare insurance programme that covers almost the entire population and offers a wide range of dental treatments, excluding certain restorative procedures. Working-age adults are responsible for 30% of their oral healthcare costs.<sup>60</sup>

As a result of these policies, Japan has one of the lowest levels of out-of-pocket dental care spending within the OECD as well as one of the highest rates of dental care utilization among the population. Reducing co-payment among older people has been shown to further improve affordability of preventive care and increase dental service utilization. In addition, many oral health outcomes in Japan rank above other OECD

countries', including rates of tooth loss, with relatively narrow disparities across income.

Dental care service delivery is also integrated into the broader healthcare delivery model in Japan. In hospitals and other facilities, dentists and other healthcare professionals work together to improve oral care for patients with certain medical conditions. For example, dental providers participate in diabetes and dementia management, helping identify patients with the diseases, and administer appropriate care to prevent disease progression. Medical-dental integration in Japan's healthcare system can serve as a model for other OECD countries.<sup>61</sup>

Looking ahead, the transition towards ageing societies in middle- and high-income countries, and changes in the oral health profile of populations worldwide has considerable implications for the future of healthcare systems.<sup>62</sup> Older adults are retaining more of their natural teeth and are living longer. While an overall positive development for oral health, this has implications for future dental care needs as this generation has received a lifetime of restorative care (i.e. fillings, root canals and crowns). As such, large proportions of older adults will require complex dental treatment just to maintain their teeth due to the effects of higher decay rates in the past.<sup>63</sup>

Similarly, projection for treatment needs for gum disease, for example, point to considerable increases among those aged 50 years and older.<sup>64</sup> As such, ageing populations in middle- and high-income countries present a challenge to the dental care system, both in terms of covering excessive dental treatment needs and maintaining good oral health throughout life. In this context, one consequence of

inaction is that it poses a major risk for the health and well-being of ageing populations.

In addition, expansion of access to dental care services will require investments to expand the oral health workforce, particularly in low-income countries. The number of oral health professionals per capita in high-income countries is 20 times larger than in low-income countries. Accordingly, and especially in the near term, alternative workforce models will need to be explored and are likely to include health professionals who traditionally have not been involved in oral health.

Oral health policy must also refocus on promoting and incentivizing prevention rather than treatment of dental diseases. This requires multifaceted reforms, including payment model realignment, population education and outreach, and leveraging of the social determinants of health. A strong economic case exists for investing in prevention, as the evidence demonstrates this leads to cost savings downstream as well as improvements in health equity.<sup>65</sup>

## BOX 6

### Does taxing sugar-sweetened beverages improve oral health?

High consumption of sugar-sweetened beverages (SSBs) is associated with high rates of obesity and oral disease, particularly caries. To meet the WHO's recommendation that free sugars make up no more than 5% of a person's energy intake, some countries are considering higher taxation rates on SSBs. A global review of the impact of SSB taxation indicates that it reduces SSB consumption and rates of caries in both adults and children.<sup>66</sup> While results varied by study, in general, a 10% tax on SSBs tended to correlate with a 10% reduction in SSB consumption.<sup>67</sup>

One of the most rigorous studies exploring the impact of SSB taxes on oral health took place in the US city of Philadelphia. Researchers found that rates of tooth decay declined among low-income children after the implementation of a city-wide SSB tax.<sup>68</sup> A study from England shows that hospital admissions for tooth extractions among children fell by 12% after the introduction of an SSB tax.<sup>69</sup> Research from other countries, including Mexico, France and Saudi Arabia, also demonstrates the potential of taxation to influence sugar consumption and, ultimately, oral health outcomes, particularly for vulnerable populations.<sup>70</sup>



8

# Moving forward:

## The need for a global commitment to investing in oral health

The time has come for a global commitment to oral health among policy-makers, civil society, the private sector and other key stakeholders. Oral health must be an essential healthcare service. This requires:

- Adopting health financing policies that improve coverage, access and affordability of oral healthcare services, particularly for deprived, disadvantaged and vulnerable groups.
- Promoting healthcare service delivery models that integrate oral healthcare services into primary, secondary and tertiary care.
- Developing innovative health and oral health workforce models, including training and remuneration, that allow for flexibility in addressing oral health needs.
- Implementing policies that promote upstream interventions focusing on prevention, health promotion and healthy behaviours, versus costly downstream treatment of oral disease.

BOX 7

### WHO's Global Strategy on Oral Health and Oral Health Action Plan, 2023-2030

The WHO developed a Global Strategy on Oral Health in 2022, and a Global Oral Health Action Plan (2023-2030) in May 2023. The action plan presents a set of 100 tangible actions to improve oral health across six strategic action areas:

1. A public health approach to oral health.
2. Integration of oral health into primary healthcare.
3. Innovative workforce models to respond to population needs for oral health.

Improved oral health benefits the economy in various ways and at multiple levels, calling for a broad coalition of stakeholders to drive an agenda to reform and expand oral healthcare and prevention, both locally and globally. The private sector and civil society, along with policy-makers within government, must play a vital role in advancing oral health globally. The World Economic Forum is an ideal convenor, as it provides a platform to bring together these diverse stakeholders for policy dialogue, evidence-based policy insights and coalition building across the public and private sector and civil society.

To advance global oral health, some important steps to consider are:

4. People-centred oral healthcare.
5. Tailored oral health interventions across the life course.
6. Optimized digital technologies for oral health.

The Global Oral Health Action Plan outlines 11 global targets, supported by a set of indicators, to track the action plan's implementation and progress. It serves as a blueprint for governments, civil society, the private sector and other key stakeholders to follow to advance oral health.

**Governments** should pursue policies that promote affordability of dental care services, ensure sufficient oral health workforce capacity, integrate oral health within health systems and engage in public service campaigns to improve oral health literacy. There are a range of policy options to promote these goals:

- Implement the provisions of the WHO Global Oral Health Action Plan to improve oral health equity, contributing to the health-related Sustainable Development Goals.
- Integrate oral health within public health insurance programmes and benefit packages as part of universal health coverage policies.

- Regulate private health insurance markets in ways that promote comprehensive inclusion and coverage of oral health in equitable and affordable ways.
- Strengthen primary healthcare through full integration of essential oral healthcare.
- Align incentives, including provider payment models, to promote upstream prevention and health promotion rather than downstream treatment of disease.
- Adopt evidence-based guidelines on oral hygiene practices, fluoride use, as well as advertising, labelling and taxation of sugary foods and beverages.
- Pursue strategic partnerships with academic institutions, foundations, professional organizations, corporations and advocacy groups to strengthen oral health.

As noted, in several areas of oral health policy, there is a need to generate and synthesize the evidence on various policy approaches in ways that are understandable and actionable for policy-makers.

**The private sector** plays a critical role in the “commercial determinants of oral health” – corporate activities that affect people’s oral health, both positively and negatively. These include the manufacture and promotion of products that are detrimental to oral health (e.g. tobacco, alcohol, vapes, and foods and drinks that are high in sugar) as well as those that are beneficial. The private sector plays a key role in ensuring affordable access to fluoride toothpaste, oral hygiene products and other products beneficial to oral health.

The private sector should:

- Promote research and development in products that promote oral health and work to create healthy alternatives to help phase out products that cause oral diseases.
- Accelerate efforts to provide affordable self-oral care solutions that are universally available and affordable, particularly for people living in deprived socio-economic contexts. For example, toothpaste containing fluoride is often unaffordable, especially in lower-middle-income and low-income countries.<sup>71</sup>
- Expand coverage for oral healthcare services in employer-provided health insurance programmes and promote oral health as a core element of workplace health and wellness programmes.

- Support and align with the private sector actions outlined in the WHO Global Oral Health Action Plan.

**Multilateral organizations**, such as the World Health Organization, the World Economic Forum, the World Bank and the Global Fund, should:

- Include oral health within broader health system strengthening policy dialogue. Investing in oral health will help advance broader health outcomes and help achieve the Sustainable Development Goals.
- Include oral diseases within the WHO’s non-communicable diseases framework.<sup>72</sup> This is especially relevant as health systems rapidly transition to address the growing non-communicable disease burden.<sup>73</sup>
- Support and align with the international partner and multilateral organization actions outlined in the WHO Global Oral Health Action Plan.

**Civil society** has numerous roles in advancing oral health globally. The research community, agencies that fund research and organizations that carry out research, and private foundations that support health systems strengthening should:

- Improve the evidence base for oral health policy. This includes synthesizing best practices on oral health financing and delivery based on comprehensive, data-driven and cross-country comparisons. There is a major need to research oral health systems in low- and middle-income countries.
- Fund research exploring the return on investment for employers for investing in oral health programmes for their employees.
- Invest in oral health activities as part of philanthropic support for health systems strengthening in partner countries.
- Support and align with civil society actions outlined in the WHO Global Oral Health Action Plan, such as fostering community involvement and co-creation of appropriate policies and services, improving impact and accountability of programmes and policies, and supporting advocacy for better prioritization of community’s oral health needs.

# Conclusion

The spread of oral diseases has reached an all-time high. While oral health is critical to overall health and well-being, it is often neglected and health systems are not able to provide the care needed.

The resulting impacts and costs of poor oral health are felt most acutely by those living in marginalized communities, impacting their health and livelihood.

This white paper has highlighted the impact of poor oral health on the global economy and has outlined key actions that governments, the private sector,

multilateral organizations and civil society can take to elevate oral health within the global health and development agenda.

Tackling the global oral health crisis demands decisive measures. The World Economic Forum is in a prime position to foster the necessary collaborations among diverse stakeholder groups. Moving ahead, the Oral Health Affinity Group, inaugurated in 2023 within the Forum's Global Health Equity Network, will serve as an excellent platform to sustain this dialogue and facilitate action.

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