Identification of indicators for a WHO monitoring framework of the global oral health action plan

Yassaman Karimi Jashni

Faculty of Dental Medicine and Oral Health Sciences

McGill University, Montreal

June 2022

A thesis submitted to McGill University in partial fulfillment of the requirements of the degree of Master of Dental Sciences

Table of contents:

Abstract.

Introduction: The World Health Organization (WHO) is developing a *Global Oral Health Action Plan* (GOHAP) which requires the integration of oral health care services into *Universal Health Coverage* (UHC). To track the progress of this GOHAP, a monitoring framework is required. Oral health and oral health care indicators play a critical role in this monitoring framework. This study was therefore conducted to identify oral health and oral health care indicators that can be used in a range of low-, middle- and high-income countries within the aforementioned framework.

Methods: A scoping review of the scientific literature was conducted as a primary step to identify existing indicators that have the potential to be used in the oral health monitoring framework. Then, a "long list of indicators "was created by integrating the results of this review with additional indicators identified through a parallel search of the grey literature and WHO databanks. Subsequently, a two-round Delphi process was carried out to reduce this "long list " to a "short list of indicators". A group of international experts participated in the survey and reached a consensus on the "short list of indicators". The survey results were then reported to the WHO for further consultations.

Results: The scoping review of the scientific literature identified 54 indicators among 83 articles covering a wide range (n=32) of countries and published between 1995 to 2021. The review of the grey literature and WHO databanks identified additional indicators. The combined list was reduced to 45 indicators, when entered in the Delphi process. The latter reduced the list to 40 indicators classified under five categories: oral health status, risk factors for oral health, UHC for oral health, governance, and evidence-informed policy.

Conclusion: This study has identified a list of indicators that could be potentially used to measure the integration of oral health care within UHC and general health care across a range of low-, middle- and high-income countries as a part of the WHO GOHAP.

Résumé.

Titre : Identification d'indicateurs pour un cadre de surveillance d'un plan d'action mondial de santé bucco-dentaire pour l'OMS

Introduction : L'Organisation Mondiale de la Santé (OMS) est en train de développer un Plan d'Action Mondial de Santé Bucco-Dentaire (PAMSBD) qui nécessite l'intégration des services de santé bucco-dentaire dans la Couverture Santé Universelle (CSU). Pour suivre les progrès de ce PAMSBD, un cadre de surveillance est nécessaire. Les indicateurs de santé bucco-dentaire et de soins bucco-dentaires jouent un rôle essentiel dans ce cadre de surveillance. Cette étude a donc été menée pour identifier les indicateurs de la santé bucco-dentaire et les indicateurs de soins bucco-dentaires qui peuvent être utilisés dans le cadre susmentionné, pour une rangée de pays à revenu faible, intermédiaire et élevé.

Méthodes : Une revue de la littérature scientifique a été effectué comme première étape pour identifier les indicateurs existants qui ont le potentiel d'être utilisés dans le cadre de surveillance de la santé bucco-dentaire. Ensuite, une « longue liste d'indicateurs » a été créée en intégrant les résultats de cette revue avec des indicateurs supplémentaires identifiés par une recherche parallèle dans la littérature grise et les banques de données de l'OMS. Ensuite, un processus Delphi en deux tours a été effectué pour réduire cette « longue liste » à une « courte liste d'indicateurs ». Un groupe d'experts internationaux a participé à l'enquête et est parvenu à un consensus sur la "courte liste d'indicateurs". Les résultats de l'enquête ont ensuite été communiqués à l'OMS pour des consultations ultérieures.

Résultats : L'examen exploratoire de la littérature scientifique a identifié 54 indicateurs dans 83 articles couvrant un grand nombre (n = 32) de pays et publiés entre 1995 et 2021. L'examen de la littérature grise et des banques de données de l'OMS a identifié des indicateurs supplémentaires. La liste combinée a été réduite à 45 indicateurs lors de son entrée dans le processus Delphi. Ce dernier a réduit la liste à 40 indicateurs classés en cinq catégories : état de santé bucco-dentaire, facteurs de risque pour la santé bucco-dentaire, CSU pour la santé bucco-dentaire, gouvernance, et politique fondée sur des données probantes.

Conclusion : Cette étude a identifié une liste d'indicateurs qui pourraient être potentiellement utilisés pour mesurer l'intégration des soins bucco-dentaires á la CSU et les soins de santé généraux dans une rangée de pays à revenu faible, intermédiaire et élevé, dans le cadre du PAMSBD de l'OMS.

Acknowledgements.

I would like to express my sincere thanks of gratitude to my teacher, mentor, and supervisor, Dr. Paul Allison, for his valuable advice and guidance throughout this work. I am truly grateful for his continued support, patience, and encouragement during my studies as an MSc student. It has been an honour to be your student.

I must also thank Fatemeh Emari for their assistance with reviewing the manuscript articles in the scoping review process. I am also very grateful to Martin Morris for their help with developing the search strategy for the manuscript. I should also appreciate the assistance of Lucy Kiester in the process of searching the articles for the manuscript.

Alongside the manuscript which was prepared with the help of the aforementioned people, my thesis is reporting parts of a more complex project carried out by the WHO, which are currently ongoing. I would like to express my gratitude to the WHO for giving me the opportunity to participate in the phases of their project that are stated in this thesis. I would also like to thank the WHO team, the International Health Policy Programme Foundation (IHPP) team and the Global Informal Experts Group (GIEG) for their collaboration in the project phases stated in this thesis. I should also appreciate the assistance of Kimia Rohani with organizing the surveys in the "Lime Survey" online platform and analysing the results of the surveys.

I would like to pay my special regards to Louis Mattar for his help with revising the French abstract.

I would like to extend my deepest gratitude to my loving family and dear husband for their generous and continuing support and love. They are to be credited for where I am today.

May the Brotherhood of Humanity Encircle the Earth, and Bring "Health" to All Nations.

Preface.

The student's contribution to this work:

The Manuscript "Evaluating the integration of oral health care within universal health coverage in low-, middle-, and high-income countries: a scoping review" is a review article (to be submitted to a peer-reviewed journal) included in this thesis. Its preliminary work and original preparation were done by Yassaman Karimi Jashni (the student). The role of the co-author Fatemeh Emari was to assist with reviewing the manuscript articles as the second reviewer and extracting data. The role of the co-author Martin Morris was to develop the search strategy for the review. The role of the co-author Dr. Paul Allison was recommending the original concept of the review, advising on study selection as the third reviewer, and revising and modifying the text of the draft manuscript.

This thesis reports the work that includes parts of a larger project directly linked with the WHO development of a Global Strategy on Oral Health, including a Global Oral Health Action Plan (GOHAP). The student's contribution to this work included the performance of the scoping review that contributed to an initial "long list" of approximately 120 indicators to be included in the GOHAP monitoring framework. The student then participated in a process to reduce that list to a list of 45 indicators to be included in the Delphi process. The student then participated in the development and testing of questionnaires for the two rounds of the Delphi process and analyses of the results of both rounds. The analyses included those reported in this thesis, plus qualitative analyses of open-ended questions in both rounds of the Delphi process. These qualitative analyses are not included in this thesis.

List of figures and tables.

List of abbreviations.

WHO: World Health Organization

UHC: Universal Health Coverage

MDGs: Millennium Development Goals

SDGs: Sustainable Development Goals

GNI: Gross National Income

LMICs: Low- and middle-income countries

NCD: Non-communicable disease

FDI: Federation Dentaire Internationale

WHA: World Health Assembly

GOHAP: Global Oral Health Action Plan

GOHS: Global Oral Health Strategy

IHPP: International Health Policy Programme Foundation

GIEG: Global Informal Experts Group

1. General introduction.

1.1. Introduction.

Universal health coverage (UHC) is a health care program have been highlighted recently by the *United Nations* and *the World Health Organization* and is recognized as a principal component of the *Sustainable Development Goals* (1-3). These global schemes are designed to offer well-being and equity to populations to whom they are applied as one of their main objectives (2, 4). UHC was exclusively designed to concentrate on improving health and welfare. UHC has been defined as a program offering good quality health services globally to the population who need care without causing them financial hardship (1, 3, 5). The UHC benefits include health promotion, disease prevention, treatment, rehabilitation, and palliative care services and cover a broad scope of health issues (1, 3).

Recommendations have been put forward to integrate oral health into UHC and the general health care system to improve the oral health of the populations. Reports stated that in 2017, 3.5 billion people were suffering from oral diseases, mostly dental caries (6). Poor access to services that offer oral health care is one of the primary reasons the prevalence of oral diseases is increasing among the population in low- and middle-income countries (7). To promote the importance of enhancing oral health in communities, *The Lancet* published a series of papers in 2019 calling for the reform of oral health care services and the revision the related policies (8, 9).

Following this, in 2021, the World Health Organization (WHO) proposed a resolution on oral health that promoted the delivery of oral health care services and the development of monitoring systems (10). This resolution also declared the goal of oral health care being delivered as a part of UHC services (10). To achieve this aim, this declaration called for drafting a global strategy. The global strategy is expected to effectively translate into an *Oral Health Action Plan* in addition to a framework to track the improvements in controlling oral diseases (1, 11).

In the context of general health, monitoring frameworks exist in countries to oversee UHC implementation in their health care systems (12). These frameworks measure the UHC progress using a range of indicators that could vary among countries based on their socioeconomic status (12). For instance, indicators exist to measure the health care progress in two important UHC contexts: access to health services and financial risk protection (1, 3). Additional indicators

exist that measure UHC improvements in the prevention and treatment of infectious diseases, non-communicable diseases, and reproductive health scopes (3, 13).

1.2. Rationale.

To put the aforementioned *Oral Health Action Plan* into effect, the integration of oral health care services into UHC needs to be accelerated. Establishing a monitoring framework is also crucial to assess the progress of integrating oral health care into UHC and general health care. Furthermore, oral health and oral health care-related indicators are required as part of such a framework. Among existing oral health and oral health care indicators, some may be relevant for such a framework. Therefore, specific and detailed oral health and oral health care indicators must be identified as a preliminary step towards setting up the framework to monitor the integration of oral health care into general medical care and UHC. Furthermore, these indicators should be applicable in a wide range of low-, middle- and high-income countries and need to apply to different states of integration into UHC and general medical care.

Given this context, the study reported in this thesis, we reviewed the literature to identify existing oral health and oral health care indicators that have the potential to be used as principal measures in the oral health care monitoring framework. This review was conducted as an initial step in outlining the future *Global Oral Health Action Plan*. The results of the review were then used as the basis of a process to achieve consensus on a list of principal indicators among a group of international experts.

1.3. Aim.

The aim of the work reported in this thesis was to identify oral health care measures that indicate the extent to which oral health care is integrated within UHC and general health care across a range of low-, middle- and high-income countries.

1.4. Objectives.

1. To perform a scoping review to identify indicators that can be used to illustrate the degree to which oral health care is integrated within general health care and UHC across a broad range of low-, middle-and high-income countries.

2. To use the results of the scoping review as the list of potential indicators to develop a questionnaire and conduct a survey using the Delphi technique to reach a consensus on the list of leading indicators among a group of international experts.

2. Literature review.

In this section, the literature was extensively reviewed, and the information was reported according to its relevance to the topic and aims of this thesis.

2.1. The United Nations Millennium Development Goals.

In September 2000, the *United Nations Millennium Declaration* was signed by the *United Nations Member States* and targeted to set 8 strategic goals that were expected to be achieved by 2015 (14, 15). These goals were mainly relevant to health. The *United Nations Millennium Development Goals* (MDGs) were adopted from this declaration (4, 15).

The health-related goals were to eradicate extreme poverty and hunger (goal 1); reduce child mortality (goal 4); improve maternal health (goal 5); combat HIV/AIDS, malaria, and other diseases (goal 6); ensure environmental sustainability (goal 7); and develop a global partnership for development (goal 8) (14). These goals concentrated on enhancing immunization coverage, child and maternal mortality, treatment of communicable diseases, access to safe drinking water, and access to medicine and chronic disease treatments (4). MDGs were replaced with *Sustainable Development Goals* in 2015.

2.2. Sustainable Development Goals.

Sustainable Development Goals (SDGs) were developed from MDGs and were introduced in 2015 (2). SDGs included a set of 17 fundamental goals and 169 targets, which were related to health either directly or implicitly (16). SDGs were to be applicable in low- and middle-income countries (LMICs) to enhance welfare and equity in all population groups (17).

The World Bank divides economies into low-, lower-middle-, upper-middle-, and high-income countries according to their gross national income (GNI) per capita in US dollars (18). In 2021, low-income countries were defined as economies with a GNI per capita of $1,085 or less (19). Middle-Income Countries comprise a diverse group of economies by size, population, and income level (20). Lower middle-income countries were defined as those with a GNI per capita between $1,086 and $4,255. The upper-middle-income countries had a GNI per capita between $4,256 and $13,205. High-income countries were those with a GNI per capita of $13,205 or more (19).

Goal 3 mainly concentrated on health, with 13 targets, and was defined as “ensure healthy lives and promote well-being for all at all ages” (17).

Target 3.8 was defined as “achieve universal health coverage, including financial risk protection, access to quality essential health-care services and access to safe, effective, quality and affordable essential medicines and vaccines for all” (17). The two indicators of target 3.8 were “coverage of essential health services” and “proportion of population with large household expenditures on health” (21, 22).

The World Health Organization (WHO) resolution on SDGs in 2016 called for action and urged member states to formulate policies to expedite achieving the SDGs. This resolution also restated that Universal Health Coverage was one of the SDG targets (2). Drafting this resolution resulted in developing the policies to achieve Universal Health Coverage in countries.

2.3. Universal Health Coverage.

Universal Health Coverage (UHC) is a form of health care in which “all individuals and communities receive the health services they need without suffering financial hardship. It includes the full spectrum of essential, quality health services, from health promotion to [disease] prevention, treatment, rehabilitation, and palliative care across the life course” (3). The principal components of UHC are “the full spectrum of good-quality, essential health services according to need” and “protection from financial hardship, including possible impoverishment due to out-of-pocket payments for health services”, which offers benefit to the entire community (12). Countries will ease access to health services based on their population needs and available resources (5). Given these definitions, one could readily state that oral health care services should be defined as essential services in the UHC system.

2.4. Oral health.

2.4.1. Oral health definition.

Using existing definitions (23, 24), oral health could be defined as “being multidimensional in nature, including physical, psychological, emotional, and social domains that are integral to overall health and wellbeing. Oral health is subjective and dynamic, enabling eating, speaking, smiling, and socialising, without discomfort, pain, or embarrassment” (9). Oral health is a valuable index that is correlated to general health and welfare, as well as the quality of life (25).

Even though oral diseases are primarily preventable, they are highly prevalent throughout the lifespan.

2.4.2. Epidemiology of oral disease.

Oral health diseases are highly prevalent, effecting 3.5 billion people globally (6). Oral health diseases include conditions such as dental caries, periodontal diseases, oral cancers, oro-dental trauma, orofacial clefts, and Noma (7). Within those, permanent teeth caries is the most common non-communicable disease (NCD), affected 2.4 billion people globally (35% of the world population) in 2010 (26).

The lifetime prevalence of dental caries decreased among 12-years-old children over the past forty years in high-income countries (27). However, there was no change in the overall global burden of caries in both primary and permanent teeth between 1990 and 2010 (26, 28, 29). Similarly, the age-standardized prevalence of periodontal disease remained unchanged between 1990 to 2010 (30). Nonetheless, the prevalence of severe tooth loss decreased between 1990 to 2010 (31). Besides these very common oral health problems, oral cancers are among the 15 most common cancers globally, and have the highest incidence among all cancers in some countries in South Asia (32). Furthermore, oral diseases and other major NCDs have common risk factors, including tobacco and alcohol use and a high-sugar diet (7).

Looking beyond the risk factors of oral and other NCDs towards their determinants, many studies document a strong association between socioeconomic status within populations and the prevalence and severity of oral diseases (25). For instance, low educational background is associated with experiencing caries (33) and lower socioeconomic position is associated with dental caries (33, 34). Further studies have identified associations between poor socioeconomic status and poor periodontal health and oral cancer (35, 36) and between poverty in early life and having unsound teeth (37).

Moreover, the burden of oral diseases has a significant impact on the individual's quality of life, causing them to suffer orofacial pain as well as reducing their productivity at school and work. Children experience persistent and severe pain inflicted by untreated caries (38-40). Several studies have shown dental pain to be a lifelong problem for most children from low- and middle-income countries (41-44). Also, school performance can be negatively impacted by dental problems, which can cause students to miss class time (45-47). Besides, orofacial pain is common in adults and is one of the leading causes of decreased quality of life and

satisfaction globally (48). Studies show that dental conditions negatively affect employment status and productivity in adults. It was estimated that the social cost of dental problems resulted in losing productivity costs of CAN$1 billion in Canada and AUS$660 million in Australia annually (49, 50). In older age, oral diseases could lead to experiencing pain, problems with eating, poor nutrition, and issues with using dentures (51-53).

2.4.3. Oral health care.

Oral health care-related expenses have a significant role in catastrophic health costs and out-of-pocket payments (54). Expenses are one of the main access barriers to receiving oral healthcare (54). The economic burden of oral diseases comprises direct, indirect, and intangible costs, including treatment costs and productivity loss (55). This situation may increase the risk of poverty and financial hardship for people in low-, middle- or high-income countries

Taking Canada as an example, in 2009, the *Canadian Health Measures Survey* reported that dental care costs were the reason why 17.3% of the population avoided visiting a dental professional in Canada (56). In addition, dental care expenditure led 16.5% of the population to decline the recommended dental care (56, 57). Costs were the reason that in 2016, approximately 28% of Canadians skipped dental care in a one-year period, as reported in the *Commonwealth Fund International Health Policy Survey* (58). High-income families or those with private insurance received more care compared low-income families and those without insurance (56). In Canada, most of the population relies on private insurance or out-of-pocket payments to afford dental care access (59). *Denticare*, *Denticaid*, and the *Federal Care Program* are insurance coverage programs that have been proposed to increase the affordability of dental care in Canada (60, 61). Recent reports noted that 64.6% of Canadians had dental care insurance in 2018, which was less than the 68% coverage rate in 2009 (56, 62).

2.4.4. Oral diseases and health policy.

Despite being highly prevalent and their impact in terms of cost, symptoms and functional problems, oral diseases remain a neglected scope of health care and are rarely given priority in health policy (63). As a result, oral health has been isolated from health policy mainstream evolutions. Currently, the westernised dental care delivery model and clinical preventive policies fail to tackle the global burden of oral diseases, as they aim at high technologies and treatments which are not affordable in low- and middle-income countries (64). Therefore, as dental care does not address the needs of most of the population, an alternative approach is

required to respond to the radical challenge of oral diseases (65). There is a need to shift the focus from the current clinical approaches towards developing policies that aim at social determinants of health and oral disease risk factors (66).

Therefore, in recent years much attention has been devoted to adding oral healthcare into healthcare policy systems such as UHC, with the aim of offering accessible and affordable services worldwide. In this regard, strategies have been mapped by different organizations targeting the integration of oral healthcare into general healthcare systems.

2.5. The Lancet Commission.

In 2019, *The Lancet* series on oral health called for a revision of dental health care services and policies to provide services that are more accessible for a broader number of people especially targeting low- and middle-income countries but also including many high-income countries (8). One of the recommendations to enhance current dental care is the reform of oral healthcare systems.

Following this article, in 2020, a *Lancet Commission* was created to develop different plans for this purpose, such as delivering high-quality, evidence-based treatment, responding to the diverse needs of local populations, and promoting oral health equity (67).

2.6. World Dental Federation report.

The World Dental Federation (Federation Dentaire Internationale; FDI) published the "FDI Vision 2030" report in 2021 to provide dental professionals with insight into optimal oral health delivery by the year 2030. It highlighted the importance of integrating oral services into general healthcare in every country, which will result in more efficient prevention and management of oral diseases. This report also emphasized that the active collaboration between oral health professionals and other health workers will be the key element to facilitate delivering sustainable and person-centred healthcare services (68). In addition to the *Lancet series*, this report also highlighted the importance of providing accessible and affordable oral health care by making progressive changes in oral health care services.

2.7. World Health Organization (WHO) Collaboration.

In 2021, WHO published a report on the oral health resolutions proposed at the 74th *World Health Assembly (WHA74 resolution series)* (10, 69). The *WHA74.5* resolution mentioned

topics such as the global burden of oral diseases; the effect of oral health on quality of life and general health condition; and the existing inequalities among countries. It urges member states to address the main risk factors for oral disease, integrate oral health into the countries' national policies, reinforce oral health service delivery, and facilitate the advancement in monitoring systems (69).

According to this resolution, oral health needs to be fully integrated into the NCD agenda and oral health services should be delivered as part of the UHC. This resolution also requests the *WHO director-general* to develop "a draft global strategy, in consultation with the Member States, on tackling oral diseases, aligned with the Global action plan for the prevention and control of non-communicable diseases 2013–2030" by 2022 and "to translate this global strategy, by 2023, into an action plan for public oral health, including a framework for tracking progress with clear measurable targets to be achieved by 2030" (69). To take action on the abovementioned requests, a collaboration was set up by the WHO to contribute to developing the monitoring framework of the *Global Oral Health Action Plan*.

2.8. Health monitoring frameworks.

WHO aims to meet the target of the *Thirteenth General Programme of Work 2025* to provide one billion more people with UHC services and reach the ultimate goal of the "right to the highest attainable standard of health" (3, 70). Therefore, it is essential to monitor health service financial protection and coverage within and between countries in this context of UHC. The monitoring framework would provide WHO with the data required to measure the achievement of UHC-related goals by 2030, which include providing more than 80% of essential service coverage for the global population; and offering complete financial protection from catastrophic health expenditure for the global population (12, 71). Monitoring progress in the implementation of UHC in countries should be part of their routine health progress evaluations. This implementation can be monitored by establishing a framework that includes various social, economic, and coverage elements (12).

Based on SDG targets, the implementation of UHC should be monitored using two key indicators: (21, 22)

- SDG 3.8.1: "Coverage of essential health services (defined as the average coverage of essential services based on tracer interventions that include reproductive, maternal, new-born and child health, infectious diseases, non-

communicable diseases and service capacity and access, among the general and the most disadvantaged population)"

- SDG 3.8.2: "Proportion of population with large household expenditures on health as a share of total household expenditure or income".

These two indicators were used by WHO and the *World Bank* to develop a framework for monitoring progress in implementing UHC (*WHO/WB monitoring framework*) (72). This framework included four main categories as key indicators to measure the coverage of 14 critical health services in different countries. These categories and services were: (72)

- Reproductive, maternal, new-born, and child health
  - family planning
  - antenatal and delivery care
  - full child immunization
  - health-seeking behaviour for pneumonia
- Infectious diseases
  - tuberculosis treatment
  - HIV antiretroviral treatment
  - use of insecticide-treated bed nets for malaria prevention
  - adequate sanitation
- Non-communicable diseases
  - prevention and treatment of raised blood pressure
  - prevention and treatment of raised blood glucose
  - tobacco (non-)smoking
- Service capacity and access
  - basic hospital access
  - health worker density
  - health security: compliance with the International Health Regulations

The *WHO/WB monitoring framework* is used as the basic framework to measure the progress of UHC implementation among health systems in different countries. Countries provide healthcare services based on the needs of their populations. These services could differ from one country to another depending on their geographic or socioeconomic status. Therefore, most countries slightly adjusted this framework to limit measuring the progress within the desired scopes of their healthcare systems (73-77).

A number of countries have made these adjustments to their monitoring frameworks to assess their progress towards UHC, or lack thereof. As a middle-income country, South Africa used the aforementioned coverage indicators to monitor its progress towards UHC. The indexes of some of these indicators were adjusted based on the availability of data in their country (76). Similarly, as a low-income country, Ethiopia modified these indicators in order to use its data sources and information (77).

As another example, based on their national health context and the availability of data, Iraq included indicators related to "maternal and child health" and "environment" in its monitoring framework to assess the country's progress towards UHC (73). Another example is the monitoring framework in Bangladesh, which estimated the trends in "prevention", "treatment", and "financial risk protection" indicators to measure the health system's progress towards UHC (74). In these examples, the countries selected some indicators and did not use all of them, which is a noteworthy observation.

Other frameworks have been established based on the health-related SDGs to monitor the progress of UHC implementation in a range of countries (75, 78, 79). These frameworks classify the indicators according to the results chain of UHC, including the health system's input, output, outcome, and impact domains (79). *The Western Pacific Health System Performance Framework* is an example of these frameworks. It covers indicators in various fields of health systems (Figure1. *The Western Pacific Health System Performance Framework*) (75).

Inputs and processes	Outputs	Outcomes	Impacts
Health sector ▪ Governance ▪ Health financing ▪ Health workforce ▪ Service delivery ▪ Medicines and technologies ▪ Health information and surveillance systems ***Other sectors*** ▪ Governance and policies ▪ Financing ▪ Infrastructure and technologies	***Health financing*** ▪ Out-of-pocket spending ▪ Government spending in health ***Health service delivery*** ▪ Availability and readiness ▪ Effectiveness and safety ▪ Accessibility ▪ System efficiency ▪ People-centeredness and integrated services ***Health-related interventions and social determinants*** ▪ Education	***Household health-related expenditure*** ▪ Catastrophic expenditure ***Health service coverage*** ▪ Promotive ▪ Preventive ▪ Curative ▪ Rehabilitative ▪ Palliative ***Lifestyle factors and practices*** ▪ Health literacy ▪ Substance use ▪ Physical activity ▪ Nutrition ▪ Safe practices	***Household and societal impact*** ▪ Poverty impact ▪ Well-being ▪ Health security ***Population health*** ▪ Life expectancy ▪ Mortality ▪ Morbidity ▪ Disability ***Health system*** ▪ Quality ▪ Efficiency ▪ Equity ▪ Accountability ▪ Resilience

	▪ Housing ▪ Employment ▪ Food and nutrition ▪ Infrastructure and environmental interventions		

Figure 1. *The Western Pacific Health System Performance Framework* [Adapted from a figure in: Regional Office for the Western P. Monitoring universal health coverage in the Western Pacific: framework, indicators, and dashboard: Mandaluyong City : Asian Development Bank; 2016]

In 2014, a collection of articles in PLOS ONE compared UHC status in various countries using the *WHO/WB monitoring framework* (12). The collection of papers used "health services coverage" and "financial protection coverage" as key indicators of the UHC monitoring framework and raised issues about "the measurement of financial protection, service coverage, effective coverage, equity and UHC" (80-83). The importance of this series of articles was demonstrating the comparison of such indicators across different countries (12).

In 2020, the *GBD 2019 Universal Health Coverage Collaborators* published an article in which the types of health service (promotion, prevention, treatment, rehabilitation, palliation) in the *WHO/WB framework* was modified. This framework was named the "UHC effective coverage measurement framework" (13). This framework was developed based on 23 coverage indicators used in 204 countries between the years 1990-2019, and mapped those indicators to measure the effective coverage of various types of health services among different age groups (13).

While the existing frameworks have been providing researchers with comprehensive data on monitoring the progress of UHC implementation in a range of countries, there are no frameworks available to monitor the implementation of oral health care in health systems. However, there are oral health care indicators that exist in the literature which could be used as part of an oral health monitoring framework. These indicators vary from oral health care utilization to financial coverage and oral health status measures, and could be used to design the oral health framework.

2.9. Project outline.

It was within this context that the WHO undertook to develop a GOHAP, including an oral health monitoring framework and related indicators of oral health and oral health care integration into general medical care and UHC. The work included the following steps:

1. conducting a scoping review to identify relevant indicators
2. integration of indicators identified in the scoping review with those identified through a parallel search of the grey literature as well as WHO databanks
3. creation of a “long list” of potential indicators
4. shortlisting of the potential indicators in Step 3 to a list ready to be used as part of a Delphi process, whose goal is to reach consensus on a “short list of indicators”
5. identification of a group of experts to participate in the Delphi process
6. performance of the two-round Delphi process
7. creation of a “short list” of indicators
8. informal consultation with WHO regions concerning the framework and indicators
9. formal consultation with WHO members states concerning the Global Oral Health strategy (GOHS) and the GOHAP, incorporating the monitoring framework and the indicators
10. formal vote on the GOHS and GOHAP by WHO member states in spring 2023

My contribution to this overall work plan included performance of step 1 and active participation in steps 2-7. The work in this thesis is reporting parts of a more complex project which is ongoing at this point. My thesis will report on step 1, which is the subject on an article to be submitted to a peer-reviewed journal and then on steps 2-7. The rest of my thesis will include a chapter on the article followed by the standard structure of the methods, results, discussion, and conclusion sections. The methods and results sections will be reflected in two parts: the scoping review and the Delphi process.

3. Manuscript.

Title: Evaluating the integration of oral health care within universal health coverage in low-, middle-, and high-income countries: a scoping review

Yassaman Karimi Jashni[1], Fatemeh Emari[1], Martin Morris[2], Paul Allison[1]

[1]*Faculty of Dental Medicine and Oral Health Sciences, McGill University, Montréal*

[2] *Schulich Library, McGill University, Montréal*

Abstract.

Background: The World Health Organization (WHO) has recently devoted special attention to oral health and oral health care. WHO promoted oral health care becoming part of Universal Health Coverage (UHC) to improve oral health and reduce inequalities across the globe. In this context, it is essential to develop a monitoring framework to measure the progress of integrating oral health/health care into UHC. This study aimed to identify the existing measures in the literature that indicate the level of oral health/health care integration into UHC across a range of low-, middle- and high-income countries.

Methods and Findings: A scope of the review was conducted by searching MEDLINE, CINAHL, and Ovid Global Health databases. There were no quality or publication date restrictions in the search strategy. An initial search by a university librarian was followed by the independent reviewing of all identified articles by two authors for inclusion. Articles that did not receive agreement from the original reviewers were reviewed by a third author, and an agreement was reached on which articles were to be included. Subsequent to compiling relevant indicators from the 83 included articles, the results were descriptively mapped using a simple frequency count of the indicators. The included articles presented a wide range of 32 countries and were published between 1995 and 2021. This review identified 54 indicators and categorised them into 15 categories. The most frequently reported indicators were in the following categories: dental service utilization, oral health status, cost/service/population coverage, finances, health facility access, and workforce and human resources. This study was limited as a few databases were searched, and English-language publications were included only.

Conclusion: This scoping review identified a variety of indicators that had the potential to be used to evaluate the integration of oral health/health care into UHC.

Introduction.

In 2015, the Member States of the United Nations (UN) set Universal Health Coverage (UHC) as one of the targets to be achieved by 2030 as a part of the Sustainable Development Goals (SDGs) agreement (Target 3.8) (1). This target was reasserted in the United Nations General Assembly High-Level Meeting on UHC in 2019 (2). UHC has been defined as "the desired outcome of health system performance, whereby all people who need the full spectrum of health services (that is, promotion, prevention, treatment, rehabilitation, and palliation) receive them according to need, without resulting in hardship (including possible impoverishment caused by out-of-pocket payments) because of any associated health care costs" (3).

Countries are making progress towards UHC, and governments have set different strategies to move towards this goal (3). These strategies follow the main elements of UHC: access, coverage, service quality, and financial protection (3). Moreover, a direct correlation exists between achieving progress towards UHC and progressing in additional health goals (2). This is because sustainable improvements in UHC enhance populations' health and economic well-being (1, 2). UHC is a system providing health services for a wide range of health problems, including oral health problems. Therefore, oral health care services could, and indeed should, also be defined as part of UHC systems to provide accessible and affordable services to a community.

The 2017 Global Burden of Disease (GBD) study reports indicated that around 3.5 billion people are affected by oral diseases globally, including untreated caries in permanent teeth as the most common non-communicable disease (NCD) (4). Severe periodontal diseases and oral cancer are also oral health conditions that raise the incidence rate of populations' oral disease levels in different parts of the world (4). Furthermore, treatment costs, out-of-pocket payments, and lack of access to oral health care services additionally affect populations' oral health (5). Therefore, in 2019, oral health was included in the WHO Political Declaration on UHC, with the aim of promoting accessible and affordable oral health care services throughout the world (2).

Along the same lines of the UHC strategies, in 2020, a *The Lancet* Commission on Global Oral Health (6) was established to reflect on different plans and policies for the improvement of oral health and the revision of dental health care services globally to make oral health and oral health care more accessible for all people, particularly those with the highest burden of disease and the poorest access to care.

In 2021, the WHO published specific resolutions on oral health during their 148th session, and in the World Health Assembly resolution WHA74.5, explicitly mentioned repositioning oral health as part of the global health agenda in the context of the UHC (7, 8). The resolution addressed delivering oral health services as part of UHC and drafting a global strategy for implementing the most efficient and effective interventions in public oral health systems across the world. Accompanying this, the WHO engaged to develop a global oral health strategy, setting a framework to assess the progress of oral health care integration into UHC (7, 8). Accordingly, the WHO committed to develop this global oral health action plan by the year 2023.

Around the same time but as a separate initiative, the World Dental Federation (Federation Dentaire Internationale; FDI) published the "FDI Vision 2030" report addressing the assimilation of good quality, essential oral health services into the general medical health care system in every country by the year 2030 (9). This vision stated that the combination of oral and general person-centred health care results in more effective prevention and management of oral diseases (9).

Taken together, these separate initiatives of a *The Lancet* Commission, the WHO and the FDI indicate that there is a strong world view to integrate oral health care into general health care and into UHC.

To evaluate UHC implementation in a country, recommendations have been made on setting up a monitoring framework based on various elements (3). The suggested elements may differ from one country to another because the economic, social, health care system, and other factors differ (3).

The two main indicators being used to measure the progress of UHC as SDG target 3.8 are essential health services coverage and financial risk protection against service costs (financial hardship) (10, 11). Based on these two indicators, The World Bank and WHO built a framework to monitor the implementation and progress of UHC in the health system (12). This framework is mentioned as the *WHO/WB monitoring framework* in the rest of this article.

A selection of fourteen key indicators classified in four main categories are being used by the WHO and World Bank to track the coverage index of essential health services in this *WHO/WB monitoring framework*. These four categories are: reproductive, maternal, new-born, and child health; infectious diseases; non-communicable diseases; and service capacity and access (13).

Many of the 14 key indicators in these categories assess factors that are recognized to be common across many countries (13).

However, among the suggested indicators, there are no measures that involve or are specific to oral health and/or dental care. If progress is to be made in the aforementioned vision of integrating oral health care into general health care and UHC, it is not possible to evaluate progress within and across nations without clear, agreed-upon indicators. Setting up a monitoring framework including such indicators is crucial to evaluate the progress towards these goals in any community, whether national or global. Furthermore, given the global outlook of the aforementioned organizations, it is crucial to identify indicators of the integration of oral health care into general health care and UHC for a broad range of countries. If we are to address this issue from a global perspective, consideration needs to be given to low-, middle- and high-income countries, as well as those that already have UHC or not and multiple other factors that will differ across countries.

In this context, the aim of this project was to identify indicators that that have the potential to demonstrate the extent to which oral health care is integrated within general health care and UHC across a broad range of low-, middle-, and high-income countries.

Methods.

A scoping review "provides a preliminary assessment of the potential size and scope of available research literature. It aims to identify the nature and extent of research evidence (usually including ongoing research)" (14). This scoping review aimed to find oral health care indicators relevant to integrating oral health care into UHC and general health care. It was conducted based on Arksey and O'Malley's methodological framework for scoping reviews (15).

Based on the research question, a medical librarian developed a search strategy for exploring related literature in MEDLINE (Ovid) database. The search strategy was converted for CINAHL and Ovid Global Health databases in advance (Table 1). The databases were searched using Medical Subject Headings (MeSH) and equivalent terms, Keyword Heading Words, Text Words, adjacency, and Boolean operators. Universal health coverage, universal health insurance, oral health, and dental health services were defined as key concepts of the search strategy. The searches were carried out on September 16, 2021, without any language, publication date, geographic limit, or quality restrictions (including primary study articles,

reviews, meeting abstracts, conference proceedings, book chapter reviews/articles, and commentaries).

Six hundred and eleven (611) document records were identified through searching the above-mentioned databases. The exclusion of the duplicates resulted in 415 records. Two team members screened the 415 articles' titles and abstracts independently to explore the documents potentially relevant to the aim of the study and the research question. Following this primary title/abstract screening, 114 articles were removed from the search list as they were either unrelated to the primary concept of the study or in languages other than English. The result was that 301 articles were fully reviewed by two team members independently. The inclusion criteria comprised articles addressing any indicator to measure a health care system's progress towards UHC, such as oral health and health insurance. See the search strategy (Table 1) for the precise terms used to apply as the inclusion keywords. Articles that had no suggestions on indicators were excluded. Eighty-three articles were retained after the application of these inclusion and exclusion criteria. Articles that the two reviewers disagreed on were reviewed by a third author, and agreement with the original reviewers reached on articles to be included. The article assessment process is displayed in a Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) flowchart (Figure 1) (16, 17).

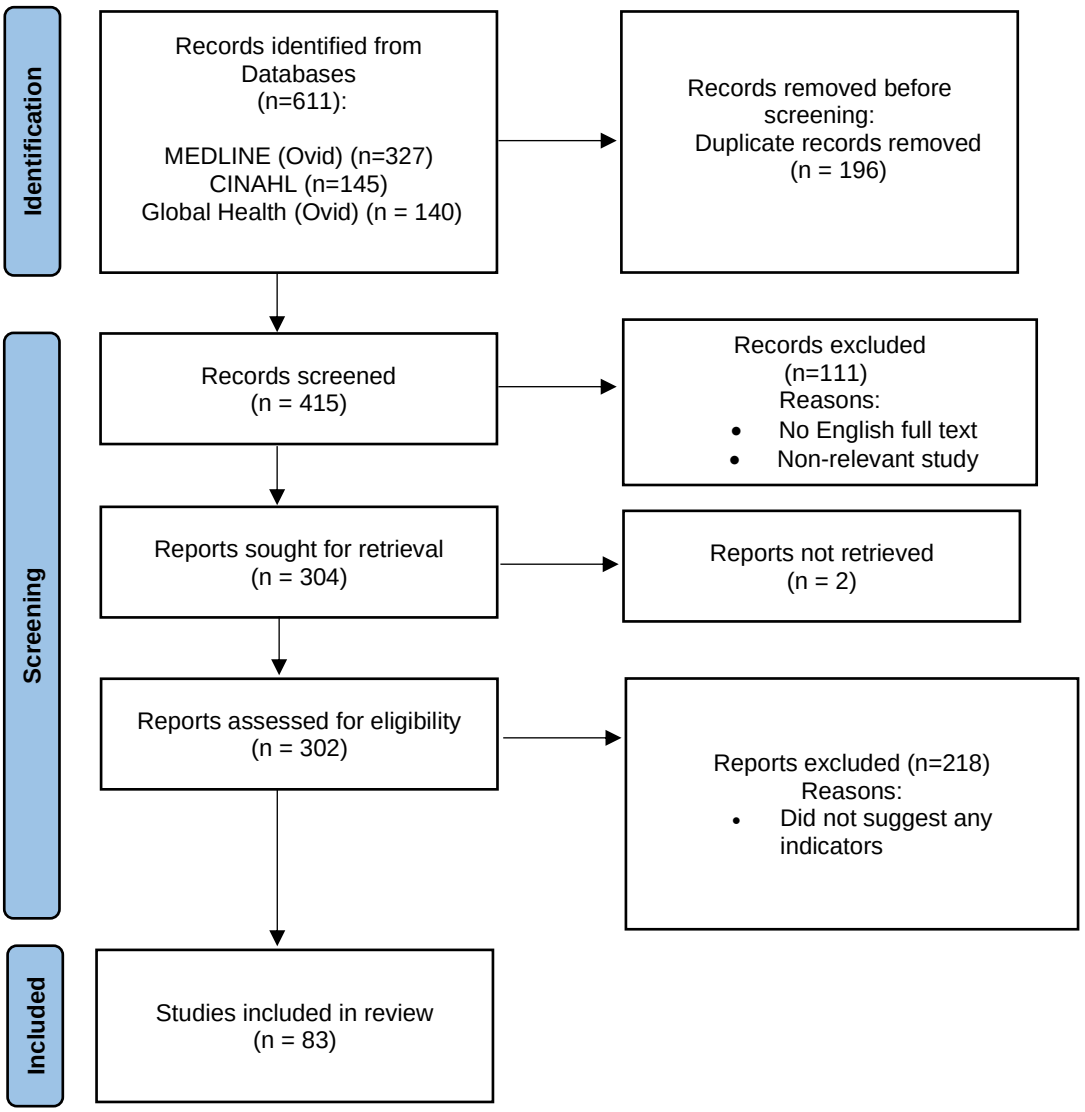
The two reviewers appraised ten articles and evaluated their results to ensure the process's reliability by spotting the differences and settling on an agreement to report these differences through the process. The data extracted from each article were: the articles' DOI/web address, publication year, country of origin, and a detailed description of the indicator(s). This process was performed independently by two reviewers. Relevant indicators were then extracted from included articles. Ultimately, the data were collected and descriptively mapped based on a simple frequency count of the indicators.

No specific ethical approval was needed as this study was based on the published data.

Table 1. Search strategy (developed for searching Medline)

```
1. exp universal health care/
2. ((universal adj2 (health or coverage or insurance)) or (social* adj2
(coverage or insurance))).tw,kf.
3. (essential adj2 (healthcare or health care)).tw,kf.
4. exp Universal Health Insurance/
5. (essential adj2 (healthcare or health care)).tw,kf.
6. or/1-5
7. exp Dentistry/
8. exp Oral Health/
9. exp Stomatognathic Diseases/
10. exp Dental Health Services/
11. (dentist* or denturist* or ((dental or oral) adj3 (health or care or
surgeon? or office? or clinic? or assistant? or nurse? or hygien* or
practitioner? or professional? or auxiliar*))).tw,kf.
12. (dentist* or endodont* or orthodonti* or periodont* or prosthodont*
or oropharyng* or jaw or jaws or mandibular or maxillofacial or mandible*
or maxilla* or tooth or teeth or odontolog* or tongue* or glossal or
buccal or palatal or palate or palates or labial or lip or lips or
gingiva* or gingiviti* or halitosis or bad breath or DMF).tw,kf.
13. or/7-12
14.6 and 13
```

Figure 1. Article selection procedure for the scoping review PRISMA 2020 version



Results.

Reviewing the 83 included articles resulted in distinct categories of indicators relevant to the topic of interest. Included articles were published in English and covered a wide range of 32 low-, middle- and high-income countries. The publication dates spanned 1995 to 2021.

This scoping review identified a total of 54 different indicators. In particular, 34 indicators were classified under 14 main categories, describing indicator definitions, specific terms used to represent indictors, and variations by which indicators were measured in the studies. Six indicators were not assigned to any categories, and 14 indicators did not have specific definitions or clear examples. Different potential sources of data collection have been suggested in the table of results. These sources were: individuals in the population, dental professionals and government staff including public health officials.

Among the 14 defined categories, "dental service utilization" and "oral health status" were the categories with the highest numbers of potential indicators and/or the categories with indicators repeated most often. In the selected articles, "dental service utilization" included two indicators that were mentioned a total of 65 times in various formats among a wide range of high- to low-income countries. In the category "oral health status", eight indicators were stated 58 times in various countries.

"Coverage" was a category with three indicators: "cost coverage", "service coverage", and "population coverage". These indicators were reported 26 times in various formats among countries with diverse socioeconomic statuses. Another three indicators that were classified as the "finances" category were: "costs for the provider", "costs/expenses for the patient", and "funding sources", which were stated 22 times in several countries. "Health facility access" included three indicators named "geographic access", "health facility access", and "home care". These indicators were mentioned 21 times in different countries.

The remaining categories of the identified indicators were "workforce", "knowledge of oral health", "fluoride", "oral hygiene", "availability and acceptability of services", "need and demand for dental care", "diet", "policies" and "infection control". The indicators classified under these categories were reported fewer times and in a limited number of countries compared to the aforementioned indicators. The results have been comprehensively demonstrated in Table 2.

Table 2. Table of results.

Factor	Indicator	Source of data	Specific terms*	Variation**	Countries or regions used	Number of times used	References
Dental service utilization	Consultation /visit (professional/ dental care facility) over certain period	Individuals +/or government sources	Visit in last 3 months (3) Visit over last 6 months (1) Visit in last 12 months (23) Visit last 2 years (1) Visit in last 5 years (1) Visit in 5+ years (1) Home visit (dentist/dental hygienist) (1) Last dental appointment/visit (3) Preventive dental visit (1) Visit specialist (1) Receive care in last 2 years (1) Number of dental treatments annually (1) First visit (1) Visit dentist /Dental care visit (6) Dental/oral health check-ups (2) Visit only for emergency (1) Foregone dental care in last 12 months (1) Never seen a dentist in life (1) Having a regular dentist (1) Days spent on dental care in a year (1) Dentalcare/dental services utilization in last 12 months (2)	As an access indicator By number of visits By age By frequency By Time since last visit By purpose of visit (need only, check-up, treatment) By reason (costs, waiting lists, travel difficulties) By service type By number of days	Low-income: Burkina Faso Middle-income: Brazil, China, Colombia, Malaysia, Mauritius, Nigeria, Peru, Thailand, Turkey High-income: Australia, Canada, Chile, Denmark, Estonia, Europe, Finland, Israel, Ireland, Japan, Spain, Sweden, Taiwan, UK, US	65	(18-69)

			Utilization of primary oral health service (1)				
	Type of treatment obtained	Individuals +/or government sources	Extraction (3)	By type			
			Type of treatment obtained (4)				
			Fillings (2)				
			Prescription of medication (1)				
Coverage	Cost coverage	Individuals +/or public health or government sources	Insurance coverage (3)	By type (e.g., public/private/mutual oral care coverage)	Middle-income: Brazil, China, Colombia, Nigeria, Senegal, Thailand, Turkey High-income: Europe, Israel, Japan, US	26	(26, 34, 41, 42, 45, 48, 66, 70-79)
			Health Insurance system (1)				
			Insurance scheme (1)				
			Healthcare Coverage type (1)				
			Social health insurance (1)				
			Cost coverage package (2)				
	Service coverage	Individuals +/or public health or government sources	Service coverage (2)				
			Dental coverage (4)				
			Oral health coverage (2)				
			Comprehensive services (1)				
			Major services (1)				
			Basic services (1)				
			Preventive services (1)				
			Adoption of prevention and oral health promotion (1)				
			The extent of oral health services in the UHC benefit packages (1)				
	Population coverage	Individuals +/or public health or government sources	Population coverage (3)				
Finances	Costs for provider	Provider representative	Cost of material/equipment (1)	By payment type (out of the pocket) By ability to pay	Middle-income: Brazil, Colombia,	22	(26, 34, 47, 48, 53, 56, 66, 67, 70,
	Costs/expenses for patient	Individuals +/or public	Cost of treatment/oral health care (3)				

		health or government sources	Oral Health/dental care expenditures (4)	Costs prevented receiving treatment	Nigeria, Senegal, Thailand, Turkey High-income: Australia, Israel, Japan, Taiwan		71, 73, 77-82)
			Ability to pay (4)				
			Out of pocket payment (6)				
			Affordability of services (1)				
	Funding sources	public health or government representative	Government (2)				
			Donors (1)				
Health facility access	Geographic access	public health or government sources	Health facility geographic location (3)	By geographic location of facility/distance By physical availability of the facility By travel time By service access rate By availability By accessibility	Middle-income: Nigeria, Thailand, Turkey High-income: Australia, Europe, Japan, Taiwan	21	(21, 34, 47, 53, 56, 66, 67, 71, 75, 77, 78, 80-83)
		Individuals	Travel time (2)				
			Outreach to rural/underserved populations (1)				
	Health facility access	Individuals +/or public health or government sources	Health centre number/dental facility (3)				
			Availability of service (2)				
			Type of facility utilized (3)				
			Access to dental care service (4)				
			Person's ability to obtain necessary care (1)				
	Home care	Individuals +/or public health or government sources	Home oral rehabilitation services (1)				
			Dental Home Care Management (1)				
Oral health status	DMFT	Profession +/or public health or government sources	DMFT/dmft (9)	By score	Low-income: Burkina Faso Middle-income: Brazil, China, Colombia, Nigeria,	58	(19, 21, 24, 25, 27, 39, 40, 42, 45, 56, 61, 66, 67, 70, 71, 73, 77, 84-93)
			dmfs (1)				
	Missing teeth	Profession +/or public health or	Missing teeth (6)	By number			
			Tooth loss (4)				
			Edentulism (2)				

		government sources	Number of natural teeth in adults (2)		Serbia, Thailand High-income: Australia, Canada, Denmark, England, Finland, Germany, Israel, Japan, Korea, Netherlands, US		
			Survival of permanent teeth (1)				
	Pain in teeth	Individual or profession or public health	Pain/toothache (2)	By severity			
	Periodontal condition	Profession +/or public health or government sources	Periodontal condition/disease (6)	-			
			Attachment loss >=4mm (1)				
	Caries	Profession +/or public health or government sources	Untreated caries/caries lesion (4)	By age (in children)			
			Dental caries (4)				
			Fillings with secondary caries (1)				
			Caries free teeth (1)				
			Untreated tooth decay (1)				
	Oral mucosa disease	Profession +/or public health or government sources	Oral mucosa disease (1)	-			
	Craniomandibular dysfunction	Profession +/or public health or government sources	Craniomandibular dysfunction (1)	-			
	Oral health condition	Individual or profession or public health	Dental fluorosis (1)	-			
			Use of dentures/denture wearing (2)				
			Chewing ability (2)				
			Poor oral health (condition) (1)				
			Tetracycline-stained teeth (1)				
			Oral health assessment (1)				

			Self-reported oral health (2)				
			Disability caused by severe tooth loss (1)				
Workforce	Dental workforce	Profession +/or public health or government sources	Dental workforce/Human resource number (4)	By availability By number in population (between urban and rural areas) By ratio	Middle-income: China, Nigeria, Senegal High-income: Australia, Europe, Ireland, Japan, Taiwan	11	(26, 42, 50, 56, 66, 71, 75, 77, 79, 81, 94)
			Human resource availability (1)				
			Shortage of trained dental personnel (1)				
			Qualified dentalcare staff (1)				
			Dentist/population ratio (2)				
			Geographic distribution of health providers (1)				
	Attitude of health provider	Profession	Attitude of health provider (1)				
Knowledge	Awareness of oral health	Individual or profession or public health	Awareness/knowledge of oral health (4)	By rate (improved) By education status (socioeconomic factor)	Middle-income: Nigeria, Senegal, Thailand, Turkey High-income: Germany, Japan	9	(22, 34, 46, 66, 77, 79, 81, 92)
			Population education (2)				
			Health education and information (1)				
			Information on oral health care (1)				
			Oral health literacy (1)				
Fluoride	Water fluoridation	Public health or government	Fluoridated water exposure (1)	By exposure As collective prophylaxis	Low-income: Burkina Faso Middle-income: Brazil, China High-income: Canada, Germany, Israel, Japan	7	(25, 61, 70, 77, 90-92)
			Fluoridation of the water supply (2)				
			Fluoride intake (1)				
	Fluoride prophylaxis	Individual or profession or public health	Fluoridated table salt (1)				
			Topical fluoride (1)				
			Fluoride toothpaste (1)				

Oral hygiene	Oral hygiene	Individual	Practicing interproximal cleaning (1) Hygiene habit (6)	By habit type (cleaning, chewing sticks, brushing, flossing) By frequency	Low-income: Burkina Faso Middle-income: China, Thailand High-income: Canada, Finland, Germany, Japan, US	7	(18, 22, 25, 39, 61, 77, 91)
Availability and acceptability of service	Waiting time	Individual or profession or public health	Waiting time for appointment (2) Waiting room time (1) Satisfaction with last treatment period (1) Speed of services and referral system (1)	By waiting time By speed	Middle-income: Colombia, Thailand High-income: Australia, Finland, US	6	(39, 48, 56, 78, 80, 95)
	Acceptability/satisfaction	Individual	Acceptability of service (1)				
Need and demand for dental care	Unmet needs	Individual or public health	No unmet need for oral health services in the prior 12 months (1) Reasons for unmet needs (1) Annual incidence of unmet oral health needs (1)	By unmet needs and oral condition	Middle-income: China, Ghana, India High-income: Australia	5	(26, 56, 80, 96)
	Perceived need	Individual	Perceived need for treatment (1)				
	Demand	Individual or profession	Health demands (1)				
Diet	Sugar consumption	Individual or public health	Sugar consumption (1) Drink sugar-sweetened beverage (1)	-	Low-income: Burkina Faso	5	(22, 25, 77, 91, 92)
	Diet		Eating healthy food (1)				

		Individual or public health	Dietary habits (2)		Middle-income: China, Thailand High-income: Germany, Japan		
Policies	Government policies	Public health or government	Government policies for oral health (1)	-	Middle-income: Nigeria	2	(66, 81)
			Policies for oral health (1)				
Infection control	Infection control resources	Profession or public health	Infection control resources (1)	-	Middle-income: Nigeria	1	(81)
Other	Other		Health status (1)	-	Middle-income: China, Colombia, Thailand	6	(22, 26, 42, 48, 71)
			Contact oral health services with the broader health system (1)				
			Transport and appropriate technologies (1)				
			Effective dental education system (1)				
			The proportion of primary care, services, promotion, and prevention (1)				
			Social support about oral health (towards periodontal status) (1)				

*Numbers in parentheses represent the frequency of each indicator.

****** The 'variation' column describes how were the indicators been measured in the studies:

Dental service utilization: Visiting/consulting a health professional is considered a health care access indicator. Visiting/consulting a health professional during a specific time was studied by the number of visits in that period, age of the visitors, frequency of visits in that period, the time passed since their last/first visit, the purpose of visit (need only, check-up/preventive dental visit, receiving treatment), and the reasons for foregone dental care (costs, waiting lists, travel difficulties). The health care services utilization was studied by type of the service that was utilized (e.g., dental care in the last 12 months), and the number of days needed to use a health care service such as dental care. The treatment that individuals obtained using oral health care services was studied by investigating the treatment type (e.g., filling or extraction).

Coverage: The insurance coverage of the population was studied considering the type of coverage they have (e.g., public, private, or mutual oral care coverage).

Finances: Costs/expenses imposed on the patients were studied by how they pay the costs using their financial sources (e.g., out-of-pocket payment), the financial ability of the consumers to pay the costs of services, if the costs prevented them from receiving treatments, and if the dental care access was avoided/delayed due to costs. The funding for health services could be offered by governments or donors.

Health facility access: The geographic access to health facilities varies by the geographic location of/distance to the health facility itself, the physical availability of the facility, and the time needed to travel to the facility. Availability of the health facility differs in physical availability and the range of the population that access care (broad range). Accessing the health facility varies by the rate of access to services (increased dental care), access problems, geographic inequalities, and transportation access rate (better transportation).

Oral health status: The variations in the DMFT/dmft score were investigated in studies as an oral health condition. Missing teeth status differs in the number of missing teeth. Experiencing teeth pain varies by the severity of pain. The prevalence of untreated caries varies by the age of the population/individual (e.g., children).

Workforce: The availability of dental workforce, their distribution number in the population (between urban and rural areas), the ratio of the workforce over the number of the population, and their geographic distribution were reflected in the studies mentioned dental workforce.

Knowledge: The population's lack of awareness or improved awareness of oral health was studied as to their knowledge of oral health. Assessing oral health awareness was also studied by the population's education status (a socioeconomic factor). Oral health Literacy was studied as skills toward health information and services, knowledge and understanding of health information, Communication, Self-management, Media literacy, and Decision-making.

Fluoride: Using a fluoridated water supply or using fluoride as prophylaxis was considered fluoride exposure in several studies.

Oral hygiene: The population's oral hygiene varies by their oral hygiene practice habits (e.g., cleaning, traditional chewing sticks, brushing, or flossing) and its frequency.

Availability and acceptability of service: The availability of service was studied through the waiting time for appointment (e.g., more than 6 months), and the speed of receiving the services and referral system.

Need and demand for dental care: Health demands were studied based on unmet oral health care needs and poor oral condition.

Possible indicators which do not have clear examples of indicators: (numbers in parenthesis are reference numbers)

- "Engaging the local population in integrating oral health into universal health coverage." (97)
- "Educating the society on oral care delivery model. " (98)
- "Oral health team should acquire a thorough understanding of the importance that social determinants play in oral as well as general health." (99)
- "Dentists and the oral health team should engage in partnership with communities to help them better understand and tackle the social, economic, and environmental factors that determine oral health and increase inequalities." (99)

- “Dentists and the oral health team should engage with colleagues such as primary health care professionals (cross-sectoral partnerships).” (99)
- “Dentists should become advocates for health, particularly oral health, with their patients and the wider community.” (99)
- “Advancement of the population’s knowledge, attitudes, and skills towards oral health.” (100)
- “Expansion of support, and development of cohesiveness and partnerships in achieving oral health.” (100)
- “Organizational change such as policy, regulatory, and strategic directions.” (100)
- “Workforce development such as integrating dental public health discipline in professional learning programs.” (100)
- “Resource allocation to achieve new/reorient available resources for health promotion and prevention.” (100)
- “Impowering leadership skills for advocacy, lobbying, and awareness raising.” (100)
- “Developing partnership, shared goals, and planning oral health integrated programs with the community and between different organizations for capacity building.” (100)

Discussion.

In recent years, special attention has been directed by a range of international organizations and groups to oral health care and its integration into UHC. To ensure progress is made in this integration process, it is important to have a monitoring framework incorporating relevant indicators. This framework should be adaptable to monitor progress in a range of low-, middle- and high-income countries. It should also be simple, practical, and comprehensive to cover all relevant oral health care domains. Currently, there is no such framework available to monitor the implementation of oral health care into the UHC, although this is being developed as part of the preparation of a global oral health action plan by the WHO. This framework and the aforementioned WHO plan need to use relevant indicators to track how the integration process is progressing. This scoping review has identified oral health care indicators that could be used as part of a global monitoring framework for oral health care integration into UHC and general health care.

Different frameworks are being used to monitor UHC development in a range of countries and health systems. For instance, the WHO/WB monitoring framework was used as the main framework in most countries. Countries adjusted this framework to measure the progress of UHC in the desired health care scopes, based on the needs of their populations. These frameworks have many similarities but also have some differences in accordance with the different regions of the world in which they are being used (101, 102).

Another alternative is the framework developed by incorporating the WHO/WB monitoring framework into the results chain framework (the results chain framework) (103). This framework classifies indicators to measure the UHC development based on input, output, outcome, and impact domains in the health system (103). Therefore, when we look at the wide range of indicators that were found in this study, we can see how most of the findings fit into these existing frameworks developed for a broad range of health services beyond oral health care.

“Visit an oral health care facility or an oral health professional” was the most frequently reported indicator in this scoping review. This is similar to indicators such as the “number of antenatal and postnatal visits”, which were used in the WHO/WB monitoring framework and its adjusted version used in a range of countries such as Bangladesh, Iraq, South Africa, and India (13, 101, 102, 104, 105). Another comparable indicator was “outpatient service utilization”, which was categorized as an output indicator in the results chain framework (106).

Accordingly, these service utilization indicators reasonably seem practical for measuring oral health care access.

"Oral health status" indicators were the second most frequent set of indicators found in the literature. They cover a wide range of indicators from "DMFT" to "craniomandibular dysfunction" and "oral health condition". The WHO/WB monitoring framework focuses on NCD health status indicators such as "blood pressure", "blood glucose", and "cervical cancer prevalence" to monitor the general health status of the population (13, 107). Similar to that, other frameworks used various health status indicators either as impact or as treatment indicators (102, 108-110). Therefore, oral health status indicators could fit into the existing frameworks with the same aim.

"Cost-, service-, and population coverage" were the coverage indicators reported numerously in the oral health care literature. "Coverage of the health services" and "financial protection" were the two main components used to outline the WHO/WB monitoring framework (12). Furthermore, "service coverage" was the key index for developing the WHO/WB monitoring framework to follow UHC implementation in health systems (3, 13). These three coverage indicators are the three main components of UHC that could be used as leading indicators for monitoring progress in integrating dental care in UHC (111). They enable us to understand the progress towards the target of achieving UHC in different health systems. These three indicators are comparable with various general health care indicators that fit into the "intervention coverage" category in the results chain framework, which are assessed as an outcome indicator in the health care system (103, 106). "Population coverage" was another similar indicator that was applied in the monitoring framework designed to measure UHC implementation in Pan-American countries (112).

In terms of "cost-coverage", various indicators have been used in different monitoring frameworks as UHC development and provision indicators, to evaluate governments' and the private sectors' health care financing and populations' financial risk protection against catastrophic health expenditure (102, 105, 109, 110, 112-114). "Costs for health providers", "expenses for patients", and "funding sources" were finance indicators reported in our study's results. The main concept of UHC is offering health services without causing financial hardship. Costs are a determinant factor in terms of populations' successful utilization of health care and the reason why many people do not consult dental professionals even if they needed to (115).

Providing the population with access to health care services is the main idea of UHC (2). The presence of accessible services is an asset in the health care system. “Service capacity and access” is among the four main categories of the WHO/WB monitoring framework and is identified as a system output (13, 109). “Health facility access”, “geographic access”, and “homecare” were the access indicators found in the oral health care literature. The “number of health facilities (hospitals)”, “service availability”, and “access barriers” were the indicators used in monitoring frameworks of India, Kenya, and Pan-American countries (105, 110, 112).

“Health care worker density” is another indicator classified under the “service capacity and access” category in WHO/WB monitoring framework (13). The results of the current review found “dental workforce” and “attitude of health providers” as indicators related to this category. The “workforce” indicator was measured as an input indicator in the monitoring framework for UHC in Bangladesh (109). “Meeting the workforce threshold” is one indicator that shows that countries’ health systems are performing well towards achieving UHC (116).

Improving health literacy among the population is one of the key characteristics of essential health information (117). Our review found “awareness of oral health” as an indicator of the population's knowledge and oral health literacy. “Health information” was stated as an input indicator in the Bangladesh monitoring framework for UHC (109). Improving oral health knowledge in the population may encourage people to look after their oral health.

The results of this review also found “waiting time” and “acceptability of service” as two indicators in the health service availability and acceptability category. “Waiting time” and “patient referral” were measured as “service capacity and access” indicators with the former being measured as input and the latter as output indicators in the monitoring framework designed for India (105). These indicators are essential in providing improved oral health care access to populations.

Other indicators identified in our review, such as “fluoride exposure” and “oral hygiene” were oral health-related indicators that could not be found in the existing monitoring frameworks, such as the WHO/WB monitoring framework, and the aforementioned regional and country modified frameworks. Other indicators related to the “need and demand for dental care”, “policies”, and “infection control” domains were also found in the oral health care literature. Among other suggested indicators, these indicators might be used as future measures to assess the UHC progress, although some could not be measured as system variables (such as “diet”).

This scoping review was conducted to identify potential oral health care-related indicators for monitoring the implementation of oral health care into UHC. The results of this study were limited as we only searched a few databases, and in particular, we did not search the so-called "grey literature" of government survey reports on oral health and oral health care, which contain many examples of the types of indicators we were searching for. Another limitation was that we included only publications written in English. Although the results covered a broad range of oral health care categories, some areas could be missing. Consulting professional experts in the field could help transcend this limitation.

Conclusion.

There is a need for a monitoring framework to evaluate the progress of oral health care integration into UHC and general health care. This scoping review identified indicators in a wide range of oral health care domains relevant to the integration of oral health care into UHC and general health care. Many of these indicators were relevant to all forms of health care, including oral health care, whereas some were more specific for developing the oral health care monitoring framework. While it is possible that we missed some oral health care indicators in our review, when comparing our results with those of the *WHO/WB monitoring framework*, it seems we have included all the categories of indicators. Further studies, as well as interviews with experts, could be conducted with the aim of finding more indicators and choosing the most relevant ones to achieve a consensus on creating a practical and comprehensive monitoring framework for oral health care integration into UHC and general health care.

References.

1. UN General Assembly, Transforming our world : the 2030 Agenda for Sustainable Development, 21 October 2015. A/RES/70/1, available at: https://www.refworld.org/docid/57b6e3e44.html [accessed 12 May 2022].

2. UN General Assembly, Political declaration of the high-level meeting on universal health coverage. 18 October 2019. A/RES/74/2, available at: https://undocs.org/en/A/RES/74/2 [accessed 12 May 2022].

3. Boerma T, Eozenou P, Evans D, Evans T, Kieny MP, Wagstaff A. Monitoring progress towards universal health coverage at country and global levels. PLoS Med. 2014;11(9):e1001731.

4. Global, regional, and national incidence, prevalence, and years lived with disability for 354 diseases and injuries for 195 countries and territories, 1990-2017: a systematic analysis for the Global Burden of Disease Study 2017. Lancet. 2018;392(10159):1789-858.

5. Thomson S, Cylus J, Evetovits T. Can people afford to pay for heatlh care? New evidence on financial protection in Europe. Kopenhagen: WHO Regional Office for Europe (WHO EURO); 2019.

6. University College London. The Lancet Commission on Oral Health 2020. [cited 17 May 2022]. Available from: https://www.ucl.ac.uk/epidemiology-health-care/research/epidemiology-and-public-health/research/dental-public-health/lancet-commission-oral-health

7. World Health Organization, EXECUTIVE BOARD. Oral health. Draft resolution proposed by Bangladesh, Bhutan, Botswana, Eswatini, Indonesia, Israel, Japan, Jamaica, Kenya, Peru, Qatar, Sri Lanka, Thailand and Member States of the European Union. 148th session, Agenda item 6 ed: World Health Organization; 2021. p. 5.

8. WHO SEVENTY-FOURTH WORLD HEALTH ASSEMBLY. Oral health. Agenda item 132. WHA74.5 ed: World Health Organization; 2021. p. 5.

9. Glick M, Williams DM, Ben Yahya I, et al. Vision 2030: Delivering Optimal Oral Health for All. Geneva: FDI World Dental Federation; 2021.

10. World Health Organization THE GLOBAL HEALTH OBSERVATORY. UHC service coverage index (3.8.1). 2022 [cited 2022 February 21]. Available from: https://www.who.int/data/gho/indicator-metadata-registry/imr-details/4834

11. World Health Organization THE GLOBAL HEALTH OBSERVATORY. Population with household expenditures on health greater than 10% of total household expenditure or income (SDG 3.8.2). 2022 [cited 2022 February 21]. Available from: https://www.who.int/data/gho/indicator-metadata-registry/imr-details/4844

12. World Health Organization, World Bank. Monitoring progress towards universal health coverage at country and global levels: framework, measures and targets. Geneva: World Health Organization; 2014. WHO/HIS/HIA/14.1.

13. World Health Organization; World Bank. 2021. Tracking Universal Health Coverage: 2021 Global Monitoring Report. World Health Organization and World Bank. © World Bank. https://openknowledge.worldbank.org/handle/10986/36724. License: CC BY-NC-SA 3.0 IGO.

14. Grant MJ, Booth A. A typology of reviews: an analysis of 14 review types and associated methodologies. Health Information & Libraries Journal. 2009;26(2):91-108.

15. Arksey H, O'Malley L. Scoping studies: towards a methodological framework. International Journal of Social Research Methodology. 2005;8(1):19-32.

16. Page MJ, McKenzie JE, Bossuyt PM, Boutron I, Hoffmann TC, Mulrow CD, et al. The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. BMJ. 2021;372:n71.

17. Moher D, Liberati A, Tetzlaff J, Altman DG, The PG. Preferred Reporting Items for Systematic Reviews and Meta-Analyses: The PRISMA Statement. PLOS Medicine. 2009;6(7):e1000097.

18. Yuqing Z, Leveille SG, Ling S, Camhi SM, Zhang Y, Shi L. Disparities in Preventive Oral Health Care and Periodontal Health Among Adults With Diabetes. Prev Chronic Dis. 2021;18:1-9.

19. Petersen PE, Davidsen M, Rosendahl Jensen H, Ekholm O, Illemann Christensen A. Trends in dentate status and preventive dental visits of the adult population in Denmark over 30 years (1987-2017). Eur J Oral Sci. 2021:e12809.

20. Paurobally N, Kruger E, Tennant M. Are diabetes and dental care providers in the Republic of Mauritius advising patients about the importance of oral health in diabetes management? International Journal of Dental Hygiene. 2021;19(2):184-92.

21. Okamoto E. Japan's Dental Care Facing Population Aging: How Universal Coverage Responds to the Changing Needs of the Elderly. Int J Environ Res Public Health. 2021;18(17):04.

22. Khamrin P, Boonyathee S, Bootsikeaw S, Ong-Artborirak P, Seangpraw K. Factors Associated with Health Literacy, Self-Efficacy, Social Support, and Oral Health Care Behaviors Among Elderly in Northern Border Community Thailand. Clin Interv Aging. 2021;16:1427-37.

23. Galvao TF, Tiguman GMB, Pereira Nunes B, Correia da Silva AT, Tolentino Silva M. Continuity of Primary Care in the Brazilian Amazon: A Cross-Sectional Population-Based Study. Int J Prev Med. 2021;12:57.

24. Galvao MHR, Medeiros AA, Roncalli AG. Contextual and individual factors associated with public dental services utilisation in Brazil: A multilevel analysis. PLoS ONE. 2021;16(7):e0254310.

25. Clauss A, Sie A, Zabre P, Schmoll J, Sauerborn R, Listl S. Population-Based Prevalence of Oral Conditions as a Basis for Planning Community-Based Interventions: An Epidemiological Study From Rural Burkina Faso. Front. 2021;9:697498.

26. Agrasuta V, Thumbuntu T, Karawekpanyawong R, Panichkriangkrai W, Viriyathorn S, Reeponmaha T, et al. Progressive realisation of universal access to oral health services: what evidence is needed? BMJ glob. 2021;6(7):07.

27. Zivkovic N, Aldossri M, Gomaa N, Farmer JW, Singhal S, Quinonez C, et al. Providing dental insurance can positively impact oral health outcomes in Ontario. BMC Health Serv Res. 2020;20(1):124.

28. Cooray U, Aida J, Watt RG, Tsakos G, Heilmann A, Kato H, et al. Effect of Copayment on Dental Visits: A Regression Discontinuity Analysis. J Dent Res. 2020;99(12):1356-62.

29. Pilotto LM, Celeste RK. The relationship between private health plans and use of medical and dental health services in the Brazilian health system. Cienc. 2019;24(7):2727-36.

30. Kino S, Bernabe E, Sabbah W. Social Inequalities in Use of Preventive Dental and Medical Services among Adults in European Countries. Int J Environ Res Public Health. 2019;16(23):22.

31. Hernandez-Vasquez A, Bendezu-Quispe G, Azanedo D, Santero M. Use of oral health care services in Peru: trends of socio-economic inequalities before and after the implementation of Universal Health Assurance. BMC Oral Health. 2019;19(1):39.

32. Bakar NSA, Manual A, Hamid JA. Socioeconomic Status Affecting Inequity of Healthcare Utilisation in Malaysia. Malays. 2019;26(4):79-85.

33. Dehmoobadsharifabadi A, Singhal S, Quinonez CR. Impact of public dental care spending and insurance coverage on utilization disparities among Canadian jurisdictions. J Public Health Dent. 2018;78(4):346-51.

34. Caner A, Karaoglan D, Yasar G. Utilization of health-care services by young children: The aftermath of the Turkish Health Transformation Program. Int J Health Plann Manage. 2018;12:12.

35. Wen PC, Lee CB, Chang YH, Ku LE, Li CY. Demographic and rural-urban variations in dental service utilization in Taiwan. Rural Remote Health. 2017;17(3):4161.

36. Nishide A, Fujita M, Sato Y, Nagashima K, Takahashi S, Hata A. Income-Related Inequalities in Access to Dental Care Services in Japan. Int J Environ Res Public Health. 2017;14(5):12.

37. Kiil A, Arendt JN. The effect of complementary private health insurance on the use of health care services. Int J Health Econ Manag. 2017;17(1):1-27.

38. Elstad JI. Dental care coverage and income-related inequalities in foregone dental care in Europe during the great recession. Community Dent Oral Epidemiol. 2017;45(4):296-302.

39. Raittio E, Aromaa A, Kiiskinen U, Helminen S, Suominen AL. Income-related inequality in perceived oral health among adult Finns before and after a major dental subsidization reform. Acta Odontol Scand. 2016;74(5):348-54.

40. Murakami K, Hashimoto H. Wealth-related versus income-related inequalities in dental care use under universal public coverage: a panel data analysis of the Japanese Study of Aging and Retirement. BMC Public Health. 2016;16:24.

41. Manski R, Moeller J, Chen H, Widstrom E, Listl S. Disparity in dental attendance among older adult populations: a comparative analysis across selected European countries and the USA. Int Dent J. 2016;66(1):36-48.

42. Liu J, Zhang SS, Zheng SG, Xu T, Si Y. Oral Health Status and Oral Health Care Model in China. Chin J Dent Res. 2016;19(4):207-15.

43. Listl S. Countries With Public Dental Care Coverage Have Lower Social Inequalities in the Use of Dental Services Than Countries Without Such Coverage. Journal of Evidence-Based Dental Practice. 2015;15(1):41-2.

44. Boccolini CS, de Souza Junior PR. Inequities in Healthcare utilization: results of the Brazilian National Health Survey, 2013. Intern. 2016;15(1):150.

45. Sgan-Cohen H, Livny A, Listl S. Dental health among older Israeli adults: is this a reflection of a medical care model inadequately addressing oral health? Int Dent J. 2015;65(1):49-56.

46. Adeleke CA, Eke JH. FACTORS AFFECTING UTILIZATION OF PRIMARY ORAL HEALTH CARE SERVICES: A STUDY OF SELECTED POPULATION IN IBADAN. West African Journal of Nursing. 2014;25(2):75-88.

47. Somkotra T. Experience of socioeconomic-related inequality in dental care utilization among Thai elderly under universal coverage. Geriatr Gerontol Int. 2013;13(2):298-306.

48. Ruiz Gomez F, Zapata Jaramillo T, Garavito Beltran L. Colombian health care system: results on equity for five health dimensions, 2003-2008. Rev Panam Salud Publica. 2013;33(2):107-15, 6 p preceding

49. Palència L, Espelt A, Rodríguez-Sanz M, B Rocha K, Isabel Pasarín M, Borrell C, et al. Trends in social class inequalities in the use of health care services within the Spanish National Health System, 1993-2006. Eur J Health Econ. 2013;14(2):211-9.

50. Guiney H, Felicia P, Whelton H, Woods N. Analysis of a payments database reveals trends in dental treatment provision. J Dent Res. 2013;92(7 Suppl):63S-9S.

51. Lebrun LA. Effects of length of stay and language proficiency on health care experiences among immigrants in Canada and the United States. Soc Sci Med. 2012;74(7):1062-72.

52. Garrido-Cumbrera M, Borrell C, Palencia L, Espelt A, Rodriguez-Sanz M, Pasarin MI, et al. Social class inequalities in the utilization of health care and preventive services in Spain, a country with a national health system. Int J Health Serv. 2010;40(3):525-42.

53. Somkotra T, Vachirarojpisan T. Inequality in dental care utilisation among Thai children: evidence from Thailand where universal coverage has been achieved. Int Dent J. 2009;59(6):349-57.

54. Sabates R, Feinstein L. Do income effects mask social and behavioural factors when looking at universal health care provision? Int J Public Health. 2008;53(1):23-30.

55. Allin S. Does Equity in Healthcare Use Vary across Canadian Provinces? Healthc Policy. 2008;3(4):83-99.

56. Schwarz E. Access to oral health care - an Australian perspective. Community Dent Oral Epidemiol. 2006;34(3):225-31.

57. Lasser KE, Himmelstein DU, Woolhandler S. Access to care, health status, and health disparities in the United States and Canada: results of a cross-national population-based survey. Am J Public Health. 2006;96(7):1300-7.

58. Jones JA. Financing and reimbursement of elders' oral health care: lessons from the present, opportunities for the future. J Dent Educ. 2005;69(9):1022-31.

59. Habicht J, Kunst AE. Social inequalities in health care services utilisation after eight years of health care reforms: a cross-sectional study of Estonia, 1999. Soc Sci Med. 2005;60(4):777-87.

60. Graham MA, Tomar SL, Logan HL. Trends. Perceived social status, language and identified dental home among Hispanics in Florida. Journal of the American Dental Association (JADA) (American Dental Association). 2005;136(11):1572-82.

61. Ismail AI, Sohn W. The impact of universal access to dental care on disparities in caries experience in children. J Am Dent Assoc. 2001;132(3):295-303.

62. Suominen-Taipale AL, Widstrom E. A longitudinal study of young Finnish adults' use of subsidized, private sector dental care, 1986-1997. Community Dent Oral Epidemiol. 2000;28(5):365-72.

63. Rajmil L, Borrell C, Starfield B, Fernandez E, Serra V, Schiaffino A, et al. The quality of care and influence of double health care coverage in Catalonia (Spain). Arch Dis Child. 2000;83(3):211-4.

64. Zimmerman M, Bornstein R, Martinsson T. Utilization of dental services in refugees in Sweden 1975-1985. Community Dent Oral Epidemiol. 1995;23(2):95-9.

65. Roberts-Thomson K, Brennan DS, Spencer AJ. Social inequality in the use and comprehensiveness of dental services. Aust J Public Health. 1995;19(1):80-5.

66. Uguru N, Onwujekwe O, Uguru CC, Ogu UU. Achieving universal health coverage in Nigeria: the dilemma of accessing dental care in Enugu state, Nigeria, a mixed methods study. Heliyon. 2021;7(1):e05977.

67. Somkotra T, Detsomboonrat P. Is there equity in oral healthcare utilization: experience after achieving Universal Coverage. Community Dent Oral Epidemiol. 2009;37(1):85-96.

68. Cornejo-Ovalle M, Paraje G, Vasquez-Lavin F, Perez G, Palencia L, Borrell C. Changes in socioeconomic inequalities in the use of dental care following major healthcare reform in Chile, 2004-2009. Int J Environ Res Public Health. 2015;12(3):2823-36.

69. Pulok MH, Gool Kv, Hall J. Horizontal inequity in the utilisation of healthcare services in Australia. Health Policy. 2020;124(11):1263-71.

70. Rosen B, Waitzberg R, Merkur S. Israel: health system review: Health Systems in Transition (European Observatory on Health Systems and Policies); 2015. 17(6):xxv + 212 pp. many ref.; 2015.

71. Mathur MR, Williams DM, Reddy KS, Watt RG. Universal health coverage: a unique policy opportunity for oral health. J Dent Res. 2015;94(3 Suppl):3S-5S.

72. Kreider B, Manski RJ, Moeller J, Pepper J. The effect of dental insurance on the use of dental care for older adults: a partial identification analysis. Health Econ. 2015;24(7):840-58.

73. Nascimento AC, Moyses ST, Werneck RI, Moyses SJ. Oral health in the context of primary care in Brazil. Int Dent J. 2013;63(5):237-43.

74. Srinarupat J, Oshiro A, Zaitsu T, Prasertsom P, Niyomsilp K, Kawaguchi Y, et al. Inequalities in Periodontal Disease According to Insurance Schemes in Thailand. Int J Environ Res Public Health. 2021;18(11):01.

75. Palm W, Webb E, Hernandez-Quevedo C, Scarpetti G, Lessof S, Siciliani L, et al. Gaps in coverage and access in the European Union. Health Policy. 2021;125(3):341-50.

76. Allin S, Farmer J, Quinonez C, Peckham A, Marchildon G, Panteli D, et al. Do health systems cover the mouth? Comparing dental care coverage for older adults in eight jurisdictions. Health Policy. 2020;124(9):998-1007.

77. Zaitsu T, Saito T, Kawaguchi Y. The Oral Healthcare System in Japan. Healthcare (Basel). 2018;6(3):10.

78. Kerdpon D, Jantharapattana K, Sriplung H. Factors related to diagnostic delay of oral squamous cell carcinoma in southern Thailand: Revisited. Oral Dis. 2018;24(3):347-54.

79. Diop M, Kanoute A, Diouf M, Ndiaye AD, Lo CMM, Faye D, et al. The role of health insurance in the coverage of oral health care in Senegal. Journal of Public Health in Africa. 2018;9(3):174-8.

80. Ghanbarzadegan A, Balasubramanian M, Luzzi L, Brennan D, Bastani P. Inequality in dental services: a scoping review on the role of access toward achieving universal health coverage in oral health. BMC Oral Health. 2021;21(1):404.

81. Uguru N, Onwujekwe O, Ogu UU, Uguru C. Access to Oral health care: a focus on dental caries treatment provision in Enugu Nigeria. BMC Oral Health. 2020;20(1):145.

82. Wang F, Wang J, Hung Y. Universal health insurance, health inequality and oral cancer in Taiwan. PLoS ONE. 2018;13(10).

83. Jean G, Kruger E, Tennant M. Universal access to oral health care for Australian children: comparison of travel times to public dental services at consecutive census dates as an indicator of progressive realisation. Aust J Prim Health. 2020;26(2):109-16.

84. Kim N, Kawachi I. Did the expansion of insurance coverage for oral health reduce self-reported oral health inequalities in Korea? Results of repeated cross-sectional analysis, 2007-2015. J Epidemiol. 2020;30(12):537-41.

85. Ito K, Cable N, Yamamoto T, Suzuki K, Kondo K, Osaka K, et al. Wider Dental Care Coverage Associated with Lower Oral Health Inequalities: A Comparison Study between Japan and England. Int J Environ Res Public Health. 2020;17(15):31.

86. Bernabe E, Marcenes W, Hernandez CR, Bailey J, Abreu LG, Alipour V, et al. Global, Regional, and National Levels and Trends in Burden of Oral Conditions from 1990 to 2017: A Systematic Analysis for the Global Burden of Disease 2017 Study. J Dent Res. 2020;99(4):362-73.

87. Verlinden DA, Reijneveld SA, Lanting CI, Wouwe JPv, Schuller AA. Socio-economic inequality in oral health in childhood to young adulthood, despite full dental coverage. Eur J Oral Sci. 2019;127(3):248-53.

88. Markovic D, Soldatovic I, Vukovic R, Peric T, Campus GG, Vukovic A. How Much Country Economy Influences ECC Profile in Serbian Children-A Macro-Level Factor Analysis. Front. 2019;7:285.

89. Guarnizo-Herreno CC, Watt RG, Garzon-Orjuela N, Suarez-Zuniga E, Tsakos G. Health insurance and education: major contributors to oral health inequalities in Colombia. J Epidemiol Community Health. 2019;73(8):737-44.

90. Pucca GA, Jr., Gabriel M, Araujo MEd, Almeida FCSd. Ten years of a national oral health policy in Brazil innovation, boldness, and numerous challenges. J Dent Res. 2015;94(10):1333-7.

91. Saekel R. China's oral care system in transition: lessons to be learned from Germany. Int J Oral Sci. 2010;2(3):158-76.

92. Ziller S, Micheelis W, Oesterreich D, Reich E. Goals for oral health in Germany 2020. Int Dent J. 2006;56(1):29-32.

93. Hyman JJ, Reid BC, Mongeau SW, York AK. The military oral health care system as a model for eliminating disparities in oral health. Journal of the American Dental Association (JADA) (American Dental Association). 2006;137(3):372-8.

94. Yang CH, Huang YT, Hsueh YS. Redistributive effects of the National Health Insurance on physicians in Taiwan: a natural experiment time series study. Intern. 2013;12:13.

95. Kashner TM. Research issues related to oral health expenditures and financing oral health care for the aging veteran. Med Care. 1995;33(11 Suppl):NS90-105.

96. Kailembo A, Preet R, Stewart Williams J. Socioeconomic inequality in self-reported unmet need for oral health services in adults aged 50 years and over in China, Ghana, and India. Intern. 2018;17(1):99.

97. Wang TT, Mathur MR, Schmidt H. Universal health coverage, oral health, equity and personal responsibility. Bull World Health Organ. 2020;98(10):719-21.

98. Shamim T. My experience as an educator, motivational, and collaborative dental professional in India. J. 2020;9(2):456-8.

99. Williams DM, Mossey PA, Mathur MR. Leadership in global oral health. J Dent. 2019;87:49-54.

100. Mumghamba EG, Joury E, Fatusi O, Ober-Oluoch J, Onigbanjo RJ, Honkala S. Capacity Building and Financing Oral Health in the African and Middle East Region. Adv Dent Res. 2015;27(1):32-42.

101. Taniguchi H, Rahman MM, Swe KT, Hussain A, Shibuya K, Hashizume M. Trends and projections of universal health coverage indicators in Iraq, 2000-2030: A national and subnational study. Soc Sci Med. 2021;270:113630.

102. Rahman MS, Rahman MM, Gilmour S, Swe KT, Krull Abe S, Shibuya K. Trends in, and projections of, indicators of universal health coverage in Bangladesh, 1995-2030: a Bayesian analysis of population-based household data. The Lancet Global Health. 2018;6(1):e84-e94.

103. World Health Organization. Research for universal health coverage: World health report 2013. Geneva: WHO; 2013. ISBN: 9789240690837.

104. Day C, Gray A, Cois A, Ndlovu N, Massyn N, Boerma T. Is South Africa closing the health gaps between districts? Monitoring progress towards universal health service coverage with routine facility data. BMC Health Serv Res. 2021;21(1):194.

105. Nambiar D, Sankar D H, Negi J, Nair A, Sadanandan R. Monitoring Universal Health Coverage reforms in primary health care facilities: Creating a framework, selecting and field-testing indicators in Kerala, India. PLoS ONE. 2020;15(8):e0236169.

106. 2018 Global Reference List of 100 Core Health Indicators (plus health-related SDGs). Geneva:World Health Organization; 2018. Licence: CC BY-NC-SA 3.0 IGO.

107. Tracking universal health coverage: 2017 global monitoring report. World Health Organization and International Bank for Reconstruction and Development / The World Bank; 2017. Licence: CC BY-NC-SA 3.0 IGO.

108. Lozano R, Fullman N, Mumford JE, Knight M, Barthelemy CM, Abbafati C, et al. Measuring universal health coverage based on an index of effective coverage of health services in 204 countries and territories, 1990-2019: a systematic analysis for the Global Burden of Disease Study 2019. The Lancet. 2020;396(10258):1250-84.

109. Gupta RD, Shahabuddin A. Measuring Progress Toward Universal Health Coverage: Does the Monitoring Framework of Bangladesh Need Further Improvement? Cureus. 2018;10(1):e2041.

110. Obare V, Brolan CE, Hill PS. Indicators for Universal Health Coverage: can Kenya comply with the proposed post-2015 monitoring recommendations? Intern. 2014;13(1):123.

111. Busse R, Schreyögg J, Gericke C. Analyzing Changes in Health Financing Arrangements in High-Income Countries A Comprehensive Framework Approach. Articles in other Journals and Books. 2007;1.

112. Monitoring Framework for Universal Health in the Americas. Washington, D.C.: Pan American Health Organization; 2021. Licence: CC BY-NC-SA 3.0 IGO.

113. Federal Ministry of Health of Ethiopia. UNIVERSAL HEALTH COVERAGE MONITORING FRAMEWORK INDICATORS AND PROXY INDICATORS. Federal Democratic Republic of Ethiopia Ministry of Health; 2017.

114. World Health Organization. Regional Office for the Western P. Monitoring universal health coverage in the Western Pacific : framework, indicators, and dashboard: Mandaluyong City : Asian Development Bank; 2016.

115. Canadian Institute for Health Information. How Canada Compares: Results From the Commonwealth Fund's 2021 International Health Policy Survey of Older Adults in 11 Countries. Ottawa, ON: CIHI; 2022.

116. Sripathy A, Marti J, Patel H, Sheikh JI, Darzi AW. Health Professional Education And Universal Health Coverage: A Summary Of Challenges And Selected Case Studies. Health Aff (Millwood). 2017;36(11):1928-36.

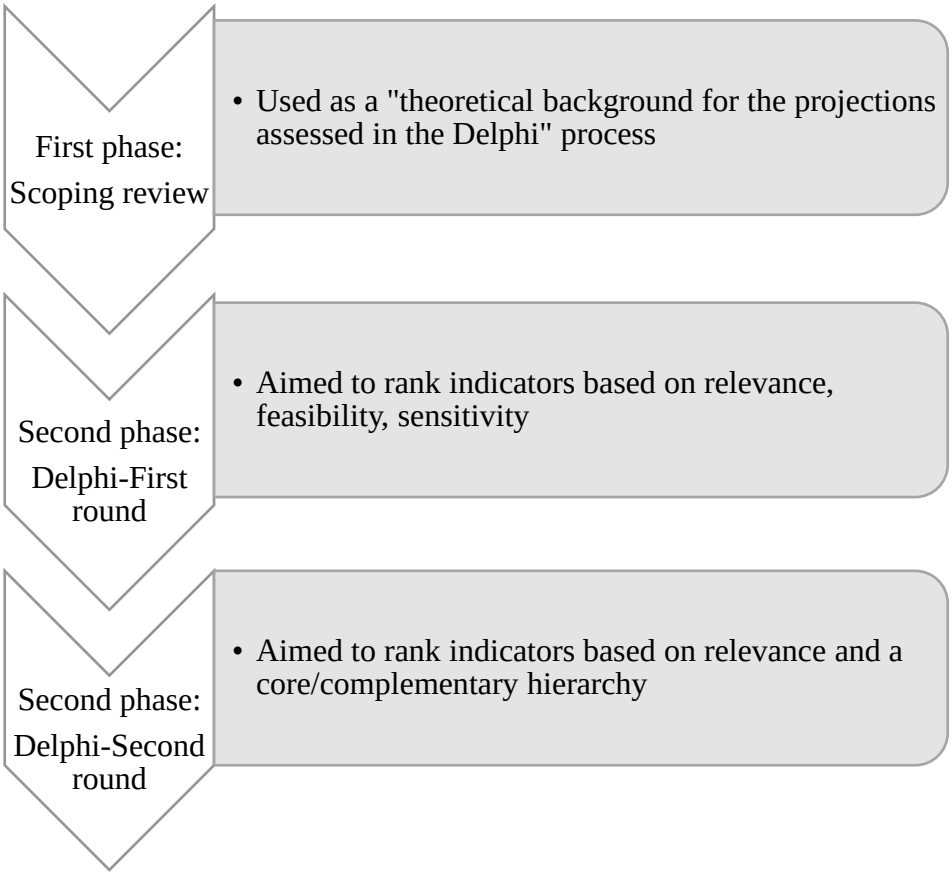
117. Royston G, Pakenham-Walsh N, Zielinski C. Universal access to essential health information: accelerating progress towards universal health coverage and other SDG health targets. BMJ glob. 2020;5(5):e002475.

4. Methods.

4.1. Study design.

This study was conducted to identify oral health and oral health care indicators to be part of a monitoring framework of the global oral health action plan to measure the progress of oral health care delivery and its implementation into UHC across a range of low-, middle- and high-income countries. To reach this aim, this research was done by WHO in collaboration with McGill University and the International Health Policy Programme Foundation (IHPP) of the Ministry of Public Health in Thailand in two phases (Figure2. Study design).

Figure 2. Study design.



4.2. First phase, the scoping review.

In the first phase, a scoping review was conducted from September 2022 to December 2022 by McGill with the aim of identifying oral health and oral health care indicators existing in the literature that have the potential to be used in the monitoring framework. This review is attached to this thesis as a manuscript (see pages 24-50).

4.3. Integration of indicators.

The results of the scoping review identified 54 indicators. Parallel work performed by the IHPP and WHO teams identified 61 indicators searching grey literature and WHO databanks. These two groups of indicators were put together to generate a long list of 115 indicators. There was then a process involving the IHPP, WHO and McGill teams to discuss and vote on the 115 indicators to reduce it to a list of 45 indicators ready for use in the Delphi process.

4.4. Second phase, the Delphi process.

4.4.1. Delphi technique description.

Delphi is a survey technique developed in the 1950s "to obtain the most reliable consensus of opinion of a group of experts [. . .] by a series of intensive questionnaires interspersed with controlled feedback" (84). It is defined as "a widely used and accepted method for achieving convergence of opinion concerning real-world knowledge solicited from experts within certain topic areas" (84). "Anonymity," "iteration," "controlled feedback," and "statistical group response" are the main criteria of the Delphi technique (85).

By combining "subjective group judgment," "analytical techniques," and "the experience of the researcher," the Delphi technique seeks to guide group opinion to an ultimate decision (86). Delphi technique could be used in various research fields, including health sciences. Mainly, it is applied in health sciences when the information available is incomplete or uncertain, and other methods that provide stronger evidence cannot be used (87). "Developing measurement tools and identifying indicators" was the principal aim of its use in this study (87).

Delphi is classified under ten categories: classical, modified, decision, policy, real-time, e-Delphi, technological, online, argument, and disaggregative (88). The modified Delphi method, which was used in this study, could be applied with different aims to the relevant group of experts in the specific field in less than three rounds (88).

As a multistage technique, the first questionnaire of the Delphi is designed based on a literature review, expert interviews, or a workshop (85). Each stage of the Delphi is developed based on the previous stage (86). The next round's questionnaire is built based on the responses of the participants in the previous round. The results of each round should be shared with the

respondents before the start of the next round. The Delphi is completed after the consensus is achieved in the desired round. The level of consensus was reported to be 75% in different studies (89). The Delphi technique is often followed by the "development of scenarios" and "managerial insights" (90).

4.4.2. The Delphi process in the current work.

In the second phase, a Delphi process was used to reduce the list of 45 indicators to a "short list". A panel of 33 consultants called the *Global Informal Experts Group* (GIEG) was consulted to arrive at a consensus view on the "short list" of indicators. The GIEG members included chief dental officers or senior advisors at the Ministry of Health, WHO Collaborating Centre representatives, academics, or researchers, WHO staff, and technical experts from all WHO regions.

This study used a two-round, modified Delphi process (88) with the aim of achieving consensus on the "short list" of indicators (87). The expert participants were selected based on the research aim. The Delphi process was administrated online during March and April 2022 by a team of researchers at McGill University, accompanied by a team at the WHO, using the "Lime Survey" online survey platform. This is an online survey tool used at McGill University whereby data input by survey participants is stored in a password-protected databank at McGill University (91).

4.4.3. Ethical considerations.

Ethical considerations had been taken into account before starting the survey because participants were providing input about themselves and using their own opinions and the data will be used in publications on the process to identify the "short list' of indicators. There was no risk associated with participating in the survey as it did not involve treatment or procedures that could cause harm, injuries, or discomfort. The information gathered during the survey was kept confidential and anonymous. Survey participation was entirely voluntary, and the participants were free to withdraw from it at any time they wanted to. The participants who agreed to take part in the study signed a consent form before enrolling in the Delphi survey. Approval for this project was given by the McGill University Faculty of Medicine and Health Sciences IRB (e/RAPInfo-Ed File Number: 22-01-039; IRB Internal Study Number: A01-E-02-22A). The approval letter is attached to this thesis as an appendix (appendix 1).

4.4.4. First round of the Delphi process.

The 45 indicators used in the Delphi process were classified under five main categories/subcategories:

- Oral health status
- Risk factors for oral health
- UHC for oral health (subcategories: Service and population coverage; Financing/financial protection; Medicines, equipment, devices, digital technology, and other health products; Workforce)
- Governance
- Evidence-informed policy

In the first round of the Delphi process, the long list of 45 indicators was distributed to the GIEG members with the aim of rating the indicators in each category. The participants were asked to rate the indicators based on relevance at national, regional, and global levels; feasibility for regular collection in their country; and sensitivity to detect change over time in their country. All questions used a 5-point Likert scale. The scales ranged from "very relevant" (or very feasible or sensitive) to "completely irrelevant" (or completely unfeasible or completely insensitive) e.g., very relevant, somewhat relevant, neither relevant nor irrelevant, somewhat irrelevant, completely irrelevant, no answer/ I do not know. The "very relevant" (or equivalent) scored 5 and scores descended to 1 for 1 for "completely irrelevant" (or equivalent). The "no answer" option scored 0 (see appendix 2 for a copy of the complete first round survey).

The first-round questionnaire started with the questions gathering sociodemographic data from the participants. The next section of the questionnaire asked participants to rate the indicators of each category. It included the definition of each indicator followed by the preferred source to collect the related data about each indicator and the related links. All survey questions included the "no answer" option for those who did not want to answer the question or did not have a particular opinion.

- **Relevance:** the degree to which the indicator contributes to measuring progress on the implementation of the Global Strategy on Oral Health and upcoming Global Oral Health Action Plan.
- **Feasibility:** the degree to which an indicator would be easily and repeatedly obtained or collected (at regular intervals to 2030) by suggested data sources.

- **Sensitivity:** the degree to which an indicator can detect changes over time (by 2030).

At the end of the questions of each category/subcategory, the participants were requested to answer two optional questions: the first one asked to suggest any indicators that were not included in the relevant category but that the respondents believe they should be (indicator's name and brief rationale for inclusion); and the second question asked for other comments regarding the potential indicators listed in each category that could assist in refining them further (for example, regarding the definitions, data sources, age groups, data disaggregation, etcetera.).

In the next step, the results of the first round of Delphi were descriptively analyzed and shared with the GIEG members. The detail of the analysis is provided in section 4.5.

Accordingly, a few indicators were removed from the list within each category because either they had the lowest mean total score in that category, or they overlapped strongly with the definition of other indicators. The rest of the indicators were included in the second round of Delphi.

4.4.5. Second round of Delphi.

The first round of the Delphi process did not permit clear differentiation between the 45 indicators with many of the indicators being evaluated strongly by the GIEG members. Given this scenario and considering the goal of the process is to enable reduction of the long list to a short list of indicators, for the 2nd round of the Delphi process we used a modified Delphi process. The investigators decided to change the format of the Delphi questionnaire for the second round, asking survey participants to rank indicators based on a core/complementary hierarchy to verify the priorities among indicators (92). We also adjusted questions concerning feasibility and relevance to be more discriminatory so as to differentiate better between indicators.

The second-round questionnaire used the same categories/subcategories of indicators and gathered the participants' sociodemographic data like in the first round. It also included the "no answer" option in all questions for those who did not intend to answer the question or had no opinion about it. It similarly included the definition of each indicator, followed by the preferred source to collect the related data on each indicator and the related links (See appendix 2 and appendix 3 for a copy of both survey questionnaires).

However, these two questionnaires varied as the second-round questionnaire asked different questions. For every indicator, participants were asked if they would be able to collect data on the indicator in their country by the end of 2023 using the source that provides the most valid data nationally (e.g., oral health survey, relevant government ministry sources, health system information, routine surveillance systems, routine administrative data, etcetera.). Year 2023 was chosen as a concrete date to give participants a sense of when to collect the required data. The response options for this question were: "Yes", "no", "I do not know/I am not in a position to answer this". The next question asked the participants to rank each indicator as a *core* or *complementary* one. A *core indicator* will measure the indicator's relevance at the global level and will be collected in all countries. A *complementary indicator* will evaluate the relevance of the indicator at regional and national levels and will be collected in certain countries.

At the end of each category/subcategory, the participants were asked to compulsorily rank the order of indicators in each category/subcategory according to the indicators' relevance in their country (From first to last, with "first" being the most relevant) and provide any optional comments regarding indicators in each category.

The core, complementary, and relevance terms were defined as below:

- **Core (Global) indicators:** used for comparison between countries and assessment of progress at a global level. (NB: We need to have core indicators for each strategic objective of the draft Global Strategy on Oral Health).
- **Complementary (regional/national) indicators:** more specific indicators used for key policy areas within regions or for policy development at a national level. (NB: If there is not a consensus on an indicator, and only relevant at national/regional level, it could be classified as complementary).
- **Relevance:** the degree to which the indicator contributes to measuring progress on the implementation of the draft global strategy on oral health and upcoming draft global oral health action plan.

The results of the second round were analysed and shared with the GIEG members.

4.5. Data analysis.

In the first round, the respondents rated DMFT based on five questions (country relevance, regional relevance, global relevance, feasibility of collecting data for that indicator, and

sensitivity to change over time) using a 5-score Likert scale (Figure 3. Sample of the first round of Delphi questions). The individual's score for each question rated from 0-5. Based on what we collected form respondents, for each question we mapped the data using measures of central tendency (mean, median) and measures of variability (standard deviation). The scores from the respondents for each question were summed to report respondents' total score for the indicator. Mean, median and standard deviation measures of respondents' total scores were calculated.

To illustrate this process, I demonstrate it for DMFT as an example indicator below.

Figure 3. Sample of the first round of Delphi questions.

Indicator name: "Mean DMFT"						
Definition: DMFT is the sum of the number of Decayed, Missing due to caries, and Filled Teeth in the permanent teeth. The mean number of DMFT is the sum of individual DMFT values divided by the sum of the population.						
Preferred data source: At country level: - Population-based surveys (Conducting a National oral health survey) -Routine surveillance systems At global level: - Compiled data by WHO Global Oral Health Data Bank (CAPP)						
Related links: WHO Global Oral Health Data Bank (CAPP): https://capp.mau.se/ Global Health Observatory indicator: https://www.who.int/data/gho/indicator-metadata-registry/imr-details/3812						
Rate "Mean DMFT" in terms of .... (Please choose the appropriate response for each item)						
	Very relevant (5)	Somewhat relevant (4)	Neither relevant nor irrelevant (3)	Somewhat irrelevant (2)	Completely irrelevant (1)	No answer/ I do not know (0)
Relevance to my country						
Relevance to my WHO region						
Relevance globally						
Feasibility in my country						
Sensitivity to change in my country						

The analysis of the second round was different from the first round. The number of the indicators in the second round was reduced to 40 after evaluating the first round's results and removing few indicators. However, while the categories and subcategories were the same, the

questions were different in the second round to help the participants better differentiate between the indicators (Figure 4. Sample of the second round of Delphi questions).

In the second round, we generated a mean rank measure (rather than score) for each indicator in each category. Again, to illustrate the process, I describe it using DMFT as an example. The indicator DMFT was ranked within the oral health status category among other 6 indicators. Twenty-three out of 32 respondents ranked DMFT first, 2 respondents ranked it second, 2 respondents ranked it third, no one ranked it fourth and fifth, 2 respondents ranked it sixth, and 4 respondents ranked it seventh. The score for each rank corresponded to the ranking position, i.e., first rank was scored 1, and 2nd, 3rd, 4th, 5th, 6th, and 7th ranks were scored as 2, 3, 4, 5, 6, and 7 respectively. Then, the number of the respondents in each rank was multiplied by the rank's score. Mean (2.09), median (1.00) and standard deviation (2.13) for the products is determined. The ranking of the indicator was based on the mean values. Indicators with lower mean values are ranked better in the category. The data analysis was carried out applying the table1 package in R software version 4.2.0.

Figure 4. Sample of the second round of Delphi questions.

Indicator name: "Mean DMFT"
Definition: DMFT is the sum of the number of Decayed, Missing due to caries, and Filled Teeth in the permanent teeth. The mean number of DMFT is the sum of individual DMFT values divided by the sum of the population.
Preferred data source: At country level: - Population-based surveys (Conducting a National oral health survey) -Routine surveillance systems At global level: - Compiled data by WHO Global Oral Health Data Bank (CAPP)
Related links: WHO Global Oral Health Data Bank (CAPP): https://capp.mau.se/ Global Health Observatory indicator: https://www.who.int/data/gho/indicator-metadata-registry/imr-details/3812
If we asked for this indicator to be collected in your country by the end of 2023 using the source that provides the most valid data nationally (e.g., oral health survey, relevant government ministry sources, health system information, routine surveillance systems, routine administrative data, etc.), could that be done? • Yes • No • I don't know/I am not in a position to answer this
This indicator should be: • A core indicator (should be collected in all countries) • A complementary indicator (could be collected in certain countries)

• I don’t know
Rank the indicators in the <u>"oral health status"</u> category according to <u>their relevance in your country</u> (1 = the most relevant and the higher the number the less relevant the indicator is).

	First	Second	Third	Fourth	Fifth	Sixth	Seventh
Mean DMFT							

The data from optional open-ended questions at the end of each category were collected as comments. These comments were analysed as qualitative data using the qualitative content analysis method. The aim of the qualitative analysis was to understand the participants’ further recommendations on new useful indicators not presented in the long list and to receive critical comments as well as constructive ones. The qualitative results will not be addressed in this thesis. The results of this study prioritized and refined a proposed set of indicators to draft the monitoring framework of the global oral health action plan.

5. Results.

5.1. Scoping review.

The scoping review results demonstrated a total of 54 different oral health and oral health care indicators found in the literature. The findings were grouped into several categories, which are reported in the manuscript attached to this thesis.

5.2. Delphi process.

A total of 32 of the 33 GIEG members participated in both rounds of the Delphi. The results of the Delphi survey are demonstrated in tables 1-15, and the noticeable findings are highlighted below. However, how these results will be used in developing the monitoring framework will be under the control of the WHO, as this survey was done as a part of a bigger project.

5.2.1. First round of Delphi.

5.2.1.1. Relevance, feasibility, sensitivity.

Using the Likert rating system, results of the first round of Delphi showed little differentiation between indicators in most categories when rating relevance, feasibility, and sensitivity. Generally, among the indicators of all categories, the mean and median scores were high when talking about relevance; and reduced in feasibility and sensitivity measures. Two main criteria were used to remove the indicators for the second round. First, some of the indicators that were rated the lowest were removed. Second, some indicators were removed because they had similarities to other indicators, such as having overlaps in their definitions. Moreover, the final decisions were made by a combination of people in the WHO, IHPP, and McGill teams.

Little discrimination was made between the total scores among the “oral health status” indicators. The indicators with lower total scores were “prevalence of edentulism”, “prevalence of severe periodontal disease”, “number of new cases of oral cancer”, and “self-reported oral health status”. The “prevalence of edentulism” was removed for the second round, as its definition overlapped with the “missing teeth” definition. “Number of new cases of oral cancer” was also removed for the second round even though it was rated the same as “incidence rate of oral cancer”. The “incidence rate” was preferred over the “number of new cases” because the proportion of number will be more helpful than the exact number of new cases, especially in small countries (Table 1).

In the “risk factors for oral health” category, the indicators with lower total scores were “prevalence of current betel quid use”, “prevalence of smokeless tobacco use”, and “per capita total alcohol consumption”. Of which, “prevalence of smokeless tobacco use” was removed from the list of indicators for the second round since its definition overlapped the description of “prevalence of current tobacco use”. Furthermore, the “prevalence of current tobacco use” and the “population using fluoridated toothpaste” were highly rated in this category (Table 2).

“UHC for oral health” is the next category classified under four subcategories. The first subcategory was “service and population coverage”. “Availability of oral health care services” was the highest-rated indicator in this subcategory. The next subcategory is “financing”. “Share of out-of-pocket payments spent on dental care” was the lowest-rated indicator in this subcategory. This indicator was removed for the second round because of its low rate and definition overlap with “out-of-pocket payment for oral health services”. “Government per capita expenditure on oral health” was the highest-rated indicator in this subcategory. The ratings were similar for the indicators of the third subcategory (“medicines, equipment, devices, digital technology, and other health products”). The fourth subcategory was “workforce”. “Oral health personnel” was the highest-rated indicator in the fourth subcategory (Table 3).

The next category comprised the “governance” indicators. Although “Noma” and “water fluoridation” were the lowest-rated indicators in this category, all the indicators remained for the second round. “Existence of a national oral health policy” and “oral health integration into the school health policy” were the highest-rated indicators in this category (Table 4).

The last category covered “evidence-informed policy” indicators. “Translation of research findings into policy and practice” was removed from this category for the second round since it was the lowest-rated indicator. On the contrary, “collection of oral health data” was the highest-rated indicator in this category (Table 5).

5.2.1.2. Regions.

Tables 6-10 show the total scores by region. It is difficult to draw inevitable conclusions as the number of participants from each region was small. The results showed that the same regions generally scored the highest and lowest across most categories of indicators. However, these results may suggest differences in rating approaches by each respondent rather than notable differences in ratings.

Table 1. First round of Delphi results. Relevance, feasibility, and sensitivity for "Oral health status" indicators

Indicator name Mean (SD) Median	Relevance (country level)	Relevance (regional level)	Relevance (global level)	Feasibility	Sensitivity	Total score
Mean DMFT	4.38 (1.26) 5.00	4.44 (1.11) 5.00	4.38 (1.16) 5.00	3.56 (1.63) 4.00	3.75 (1.52) 4.00	20.5 (4.94) 22.5
Prevalence of untreated caries of permanent teeth	4.22 (1.52) 5.00	4.47 (1.05) 5.00	4.28 (1.33) 5.00	3.53 (1.67) 4.00	3.88 (1.50) 4.00	20.4 (5.06) 23.0
Incidence rate of oral cancer (lip and oral cavity cancer) (age-standardized rate per 100,000 population)	4.22 (1.48) 5.00	4.44 (1.27) 5.00	4.38 (1.26) 5.00	3.53 (1.57) 4.00	3.78 (1.54) 4.00	20.3 (5.02) 22.0
Prevalence of untreated caries of deciduous teeth in children	4.16 (1.51) 5.00	4.34 (1.04) 5.00	4.25 (1.05) 4.00	3.47 (1.70) 4.00	3.88 (1.48) 4.00	20.1 (5.02) 22.0
Missing teeth	4.19 (1.47) 5.00	4.34 (1.26) 5.00	4.22 (1.26) 5.00	3.69 (1.55) 4.00	3.59 (1.52) 4.00	20.0 (5.21) 22.0
Number of new cases of oral cancer (lip and oral cavity cancer) (all ages)	4.28 (1.46) 5.00	4.44 (1.27) 5.00	4.41 (1.27) 5.00	3.53 (1.57) 4.00	3.78 (1.52) 4.00	20.4 (4.97) 22.0
Prevalence of edentulism	4.00 (1.55) 5.00	4.13 (1.56) 5.00	4.09 (1.57) 5.00	3.81 (1.51) 4.00	3.53 (1.54) 4.00	19.6 (5.58) 21.5
Self-reported oral health status	4.09 (1.47) 5.00	4.06 (1.48) 5.00	4.00 (1.46) 4.00	3.81 (1.57) 4.00	3.53 (1.50) 4.00	19.5 (5.43) 21.0
Prevalence of severe periodontal disease	4.13 (1.52) 5.00	4.28 (1.30) 5.00	4.13 (1.52) 5.00	3.28 (1.65) 4.00	3.63 (1.60) 4.00	19.4 (5.56) 21.0

Table 2. First round of Delphi results. Relevance, feasibility, and sensitivity for "risk factors for oral health" indicators.

Indicator name Mean (SD) Median	Relevance (country level)	Relevance (regional level)	Relevance (global level)	Feasibility	Sensitivity	Total score
Prevalence of current tobacco use among persons aged 15 years and older	4.25 (1.57) 5.00	4.59 (1.10) 5.00	4.41 (1.36) 5.00	3.72 (1.67) 4.00	3.78 (1.68) 4.00	20.8 (5.21) 23.5
Population using fluoridated toothpaste on a daily basis	4.25 (1.55) 5.00	4.44 (1.32) 5.00	4.50 (1.27) 5.00	3.66 (1.52) 4.00	3.75 (1.44) 4.00	20.6 (5.39) 23.0

Per capita consumption of sugar	3.91 (1.82) 5.00	4.16 (1.53) 5.00	4.09 (1.53) 5.00	3.41 (1.81) 4.00	3.66 (1.79) 4.00	19.2 (7.45) 22.5
Per capita availability of sugar	4.03 (1.69) 5.00	4.13 (1.52) 5.00	4.09 (1.51) 5.00	3.25 (1.76) 4.00	3.53 (1.61) 4.00	19.0 (6.50) 21.0
Per capita total alcohol consumption, 15+ years (liters of pure alcohol per year)	3.72 (1.76) 4.50	3.91 (1.57) 4.50	4.00 (1.52) 5.00	3.22 (1.98) 4.00	3.44 (1.76) 4.00	18.3 (6.99) 20.0
Prevalence of smokeless tobacco use among persons aged 15 years and older	3.59 (1.60) 4.00	3.91 (1.65) 5.00	3.78 (1.74) 4.50	2.97 (1.75) 3.50	3.16 (1.76) 4.00	17.4 (6.32) 17.5
Prevalence of current betel quid use among persons aged 15 years and older	2.84 (1.74) 3.00	3.38 (1.72) 4.00	3.63 (1.72) 4.00	2.38 (1.58) 2.50	2.59 (1.68) 3.00	14.8 (6.36) 15.5

Table 3. First round of Delphi results. Relevance, feasibility, and sensitivity for "UHC for oral health" indicators.

Indicator name Mean (SD) Median	Relevance (country level)	Relevance (regional level)	Relevance (global level)	Feasibility	Sensitivity	Total score
Service and population coverage						
Availability of oral health care services in primary care facilities of the public health sector	4.31 (1.49) 5.00	4.38 (1.48) 5.00	4.38 (1.48) 5.00	4.09 (1.49) 5.00	4.03 (1.51) 5.00	21.2 (4.97) 23.0
Inclusion of oral health interventions in public Health Benefit Packages	4.31 (1.49) 5.00	4.50 (1.27) 5.00	4.31 (1.49) 5.00	3.84 (1.55) 4.00	3.78 (1.50) 4.00	20.8 (4.89) 22.0
Proportion of the population who visited an oral health care professional	4.22 (1.52) 5.00	4.31 (1.33) 5.00	4.28 (1.33) 5.00	3.75 (1.63) 4.00	3.88 (1.50) 4.00	20.4 (5.52) 23.0
Prevalence of unmet oral health needs (and reasons for unmet needs)	4.31 (1.49) 5.00	4.31 (1.47) 5.00	4.31 (1.47) 5.00	3.59 (1.58) 4.00	3.69 (1.62) 4.00	20.2 (5.42) 23.0
Financing/financial protection						
Government per capita expenditure on oral health	4.16 (1.57) 5.00	4.28 (1.33) 5.00	4.25 (1.34) 5.00	3.72 (1.61) 4.00	3.84 (1.53) 4.00	20.3 (5.66) 22.0
Out-of-pocket payment for oral health services, US$ per capita	4.13 (1.48) 5.00	4.50 (0.984) 5.00	4.47 (0.983) 5.00	3.31 (1.64) 3.50	3.63 (1.60) 4.00	20.0 (5.19) 20.5
Per capita expenditure on oral health	3.97 (1.53) 5.00	4.25 (1.34) 5.00	4.22 (1.34) 5.00	3.41 (1.64) 4.00	3.50 (1.57) 4.00	19.3 (5.84) 21.5
Percentage of the population facing financial barriers to oral health care	4.09 (1.49) 5.00	4.19 (1.49) 5.00	4.13 (1.50) 5.00	3.44 (1.63) 4.00	3.50 (1.48) 4.00	19.3 (5.59) 21.5

Share of out-of-pocket payments spent on dental care among people with catastrophic health spending	3.41 (1.74) 4.00	3.78 (1.52) 4.00	3.72 (1.65) 4.00	2.69 (1.64) 3.00	2.94 (1.70) 3.50	16.5 (6.61) 18.0
Medicines, equipment, devices, digital technology, and other health products						
Affordability of fluoride toothpaste	3.69 (1.64) 4.00	4.06 (1.48) 5.00	4.13 (1.43) 5.00	3.28 (1.71) 4.00	3.38 (1.56) 4.00	18.5 (6.02) 19.0
WHO EMLs dental preparations are listed in the national EML	3.66 (1.70) 4.00	3.84 (1.80) 5.00	3.88 (1.77) 5.00	3.72 (1.89) 4.50	3.16 (1.83) 4.00	18.3 (6.78) 20.0
Workforce						
Oral health personnel (per 10,000 population)	4.16 (1.51) 5.00	4.28 (1.28) 5.00	4.19 (1.47) 5.00	4.06 (1.44) 4.00	3.78 (1.48) 4.00	20.5 (5.32) 22.5
Annual graduates of oral health personnel, all cadres (per 10,000 population)	3.88 (1.58) 4.50	4.00 (1.41) 4.50	4.03 (1.51) 5.00	3.91 (1.57) 4.00	3.72 (1.59) 4.00	19.5 (5.79) 21.0
Primary health care workers are trained to perform cost-effective interventions on oral health	3.63 (1.74) 4.00	3.81 (1.62) 4.00	3.88 (1.56) 4.00	3.03 (1.66) 3.00	3.13 (1.72) 3.50	17.5 (6.24) 19.0

Table 4. First round of Delphi results. Relevance, feasibility, and sensitivity for "governance" indicators.

Indicator name Mean (SD) Median	Relevance (country level)	Relevance (regional level)	Relevance (global level)	Feasibility	Sensitivity	Total score
Existence of a national oral health policy, strategy, or action plan	4.28 (1.49) [5.00	4.53 (1.24) 5.00	4.50 (1.27) 5.00	4.09 (1.49) 5.00	3.84 (1.51) 4.00	21.3 (4.75) 23.0
Oral health integration into the school health policy/programme	4.31 (1.53) 5.00	4.50 (1.24) 5.00	4.50 (1.24) 5.00	3.97 (1.43) 4.00	3.91 (1.40) 4.00	21.2 (5.03) 23.0
National policy or legislation to contain all forms of tobacco consumption	4.28 (1.53) 5.00	4.41 (1.32) 5.00	4.28 (1.53) 5.00	4.00 (1.48) 4.00	3.81 (1.49) 4.00	20.8 (5.13) 23.0
Presence of dedicated staff for oral diseases in the NCD Department or other Department of the Ministry of Health	4.06 (1.64) 5.00	4.41 (1.24) 5.00	4.47 (1.24) 5.00	3.91 (1.55) 4.50	3.84 (1.51) 4.00	20.7 (5.09) 23.0
National policies, strategies, or action plans with a specific policy goal or action towards reducing sugars intake	4.16 (1.55) 5.00	4.41 (1.34) 5.00	4.38 (1.34) 5.00	3.84 (1.51) 4.00	3.75 (1.52) 4.00	20.5 (5.09) 23.0
Implementation of tax on sugar-sweetened beverages (SSBs)	3.88 (1.77) 5.00	4.38 (1.13) 5.00	4.25 (1.37) 5.00	3.69 (1.77) 4.50	3.63 (1.72) 4.00	19.8 (5.75) 22.5

Dental amalgam phase down policy	3.94 (1.63) 4.50	4.19 (1.28) 5.00	4.19 (1.49) 5.00	3.75 (1.67) 4.00	3.75 (1.61) 4.00	19.8 (6.04), 21.0
Water fluoridation	3.22 (1.95) 4.00	3.53 (1.67) 4.00	3.69 (1.47) 4.00	3.13 (1.84) 4.00	2.78 (1.83) 3.00	16.3 (6.33) 17.0
Noma recognized as a national public health problem	2.03 (1.49) 2.00	2.81 (1.77) 3.00	3.44 (1.70) 4.00	1.75 (1.76) 1.00	1.88 (1.88) 1.00	11.9 (6.83) 12.0

Table 5. First round of Delphi results. Relevance, feasibility, and sensitivity for "evidence-informed policy" indicators.

Indicator name Mean (SD) Median	Relevance (country level)	Relevance (regional level)	Relevance (global level)	Feasibility	Sensitivity	Total score
Collection of oral health data using WHO NCD survey tools or national oral health survey	4.25 (1.48) 5.00	4.41 (1.27) 5.00	4.41 (1.27) 5.00	3.72 (1.55) 4.00	3.81 (1.51) 4.00	20.6 (4.85) 22.0
Oral health indicators in routine health information systems	4.16 (1.55) 5.00	4.09 (1.71) 5.00	4.13 (1.72) 5.00	3.78 (1.52) 4.00	3.75 (1.48) 4.00	19.9 (5.48) 22.5
National Monitoring Framework to track oral health policy	4.03 (1.64) 5.00	4.22 (1.45) 5.00	4.16 (1.65) 5.00	3.44 (1.64) 4.00	3.31 (1.79) 4.00	19.2 (5.97) 20.5
Setting national oral health research agendas oriented towards public health programmes and population-based interventions	3.84 (1.53) 4.00	3.91 (1.51) 4.00	3.91 (1.63) 4.00	3.34 (1.54) 4.00	3.09 (1.57) 4.00	18.1 (5.15) 19.0
Percentage of government funds for oral health research	3.81 (1.51) 4.00	3.88 (1.36) 4.00	3.88 (1.48) 4.00	3.22 (1.54) 4.00	3.28 (1.57) 4.00	18.1 (5.58) 18.5
Translation of research findings into policy and practice	3.81 (1.55) 4.00	3.72 (1.71) 4.50	3.72 (1.69) 4.00	3.25 (1.52) 3.50	2.97 (1.62) 3.00	17.5 (5.98) 18.0

Table 6. First round of Delphi results. "Oral health status" indicators-total score by region.

Indicator name Mean (SD)* Median*	African region (N=6)**	Eastern Mediterranean Region (N=4)	European Region (N=7)	Region of the Americas (N=6)	South-East Asia Region (N=4)	Western Pacific Region (N=4)	Prefer not to answer (N=1)	Overall (N=32)
Mean DMFT	21.5 (2.26) 22.0	17.8 (5.44) 19.5	20.3 (7.34) 23.0	20.5 (5.54) 23.5	21.0 (4.55) 22.0	20.8 (4.19) 21.5	24.0 (NA) 24.0	20.5 (4.94) 22.5
Prevalence of untreated caries of permanent teeth	20.7 (5.57) 22.5	19.0 (6.06) 21.5	19.7 (5.09) 23.0	20.7 (4.46) 22.0	20.3 (8.18) 24.0	21.0 (3.56) 21.5	25.0 (NA) 25.0	20.4 (5.06) 23.0
Incidence rate of oral cancer (lip and oral cavity cancer) (age-standardized rate per 100,000 population)	21.8 (2.32) 21.5	18.3 (6.18) 20.0	22.1 (5.40) 24.0	20.0 (6.69) 23.5	20.0 (6.88) 22.5	18.8 (2.75) 18.5	17.0 (NA) 17.0	20.3 (5.02) 22.0

Prevalence of untreated caries of deciduous teeth in children	20.7 (5.50) 22.5	17.0 (5.48) 17.5	19.3 (4.72) 20.0	21.8 (4.22) 24.0	19.5 (7.85) 22.5	20.5 (3.87) 20.5	25.0 (NA) 25.0	20.1 (5.02) 22.0
Missing teeth	22.2 (2.56) 23.5	18.3 (6.65) 19.0	18.7 (5.77) 20.0	18.5 (6.47) 18.5	19.8 (6.85) 22.0	22.3 (2.36) 23.0	25.0 (NA) 25.0	20.0 (5.21) 22.0
Number of new cases of oral cancer (lip and oral cavity cancer) (all ages)	21.3 (2.73) 21.5	19.3 (6.50) 21.0	21.7 (5.28) 23.0	19.7 (6.83) 23.0	19.8 (6.85) 22.0	19.0 (2.00) 20.0	24.0 (NA) 24.0	20.4 (4.97) 22.0
Prevalence of edentulism	20.2 (5.34) 21.0	19.0 (6.16) 21.0	19.1 (6.12) 22.0	19.3 (6.35) 21.5	20.3 (6.95) 23.0	22.0 (2.16) 22.5	10.0 (NA) 10.0	19.6 (5.58) 21.5
Self-reported oral health status	22.2 (2.86) 24.0	18.5 (6.03) 20.0	19.1 (6.67) 22.0	18.5 (4.68) 18.5	14.0 (6.48) 14.5	23.0 (2.45) 23.5	24.0 (NA) 24.0	19.5 (5.43) 21.0
Prevalence of severe periodontal disease	20.0 (5.55) 21.5	17.0 (5.29) 18.0	19.7 (4.68) 21.0	18.7 (7.84) 22.0	19.5 (7.85) 22.5	20.5 (3.70) 21.0	24.0 (NA) 24.0	19.4 (5.56) 21.0

*In each cell, the first figure in the top row is the mean amongst the scores from the participants. the second figure in the top row (in brackets) is the standard-deviation (SD) amongst the scores from the participants. In each cell, the figure in the bottom row is the median amongst the scores from the participants. As an example, for "mean DMFT" in African region, the mean score was 21.5, the SD was 2.26, and the median score was 22.0 amongst the participants. ** 'N' refers to the number of participants in each region. The same is true for tables 7-10.

Table 7. First round of Delphi results. "Risk factors for oral health" indicators total score by region.

Indicator name Mean (SD) Median	African region (N=6)	Eastern Mediterranean Region (N=4)	European Region (N=7)	Region of the Americas (N=6)	South-East Asia Region (N=4)	Western Pacific Region (N=4)	Prefer not to answer (N=1)	Overall (N=32)
Prevalence of current tobacco use among persons aged 15 years and older	22.0 (4.05) 23.5	18.3 (6.99) 19.0	22.4 (5.53) 25.0	21.3 (5.32) 24.5	18.8 (7.09) 20.0	20.8 (3.77) 21.0]	16.0 (NA) 16.0	20.8 (5.21) 23.5
Population using fluoridated toothpaste on a daily basis	21.8 (2.32) 23.0	16.0 (6.06) 15.5	21.4 (6.00) 23.0	19.2 (6.88) 21.5 [	20.5 (7.05) 23.5	23.3 (2.06) 23.5	24.0 (NA) 24.0	20.6 (5.39) 23.0
Per capita consumption of sugar	21.2 (4.83) 23.0	20.5 (7.05) 23.5	21.9 (7.03) 25.0	13.5 (11.6) 15.5	19.3 (7.80) 22.0	19.3 (2.75) 19.5	18.0 (NA) 18.0	19.2 (7.45) 22.5
Per capita availability of sugar	20.7 (4.93) 22.0	19.0 (8.83) 22.5	21.6 (5.53) 24.0	17.0 (9.59) 20.0	16.3 (7.68) 16.0	18.3 (2.22) 18.0	18.0 (NA) 18.0	19.0 (6.50) 21.0
Per capita total alcohol consumption, 15+ years (liters of pure alcohol per year)	20.3 (5.05) 21.5	13.0 (5.42) 11.0	22.1 (5.67) 25.0	17.2 (10.0) 20.0	19.3 (7.80) 22.0	17.5 (2.38) 17.5	6.00 (NA) 6.00	18.3 (6.99) 20.0
Prevalence of smokeless tobacco use among persons aged 15 years and older	20.0 (4.94) 21.0	15.8 (7.85) 16.0	18.6 (7.04) 23.0	16.3 (8.36) 18.0	15.0 (7.79) 14.0	17.5 (1.73) 17.0	16.0 (NA) 16.0	17.4 (6.32) 17.5
Prevalence of current betel quid use among persons aged 15 years and older	15.5 (4.85) 14.5	14.5 (8.35) 15.5	14.0 (5.83) 10.0	11.8 (8.98) 10.0	18.0 (6.78) 20.5	18.0 (2.45) 17.5	10.0 (NA) 10.0	14.8 (6.36) 15.5

Table 8. First round of Delphi results. "UHC for oral health" indicators total score by region.

Indicator name Mean (SD) Median	African region (N=6)	Eastern Mediterranean Region (N=4)	European Region (N=7)	Region of the Americas (N=6)	South-East Asia Region (N=4)	Western Pacific Region (N=4)	Prefer not to answer (N=1)	Overall (N=32)
Service and population coverage								
Availability of oral health care services in primary care facilities of the public health sector	23.7 (1.97) 24.5	20.3 (7.09) 23.0	21.6 (5.53) 24.0	20.2 (5.64) 23.0	17.0 (6.06) 17.5	22.8 (1.71) 22.5	24.0 (NA) 24.0	21.2 (4.97) 23.0
Inclusion of oral health interventions in public health benefit package	22.8 (3.06) 24.5	19.5 (6.45) 22.0	22.1 (5.55) 25.0	20.5 (4.85) 22.0	17.8 (5.80) 18.5	22.0 (0.816) 22.0	12.0 (NA) 12.0	20.8 (4.89) 22.0
Proportion of the population who visited an oral health care professional	21.5 (2.59) 21.5	19.5 (7.14) 21.5	21.4 (6.08) 24.0	18.7 (7.06) 19.5	19.3 (7.80) 22.0	21.0 (4.08) 22.5	24.0 (NA) 24.0	20.4 (5.52) 23.0
Prevalence of unmet oral health needs (and reasons for unmet needs)	21.3 (2.80) 22.0	20.3 (6.85) 23.5	22.1 (5.43) 24.0	19.2 (7.28) 22.0	17.5 (7.94) 18.5	18.5 (1.29) 18.5	24.0 (NA) 24.0	20.2 (5.42) 23.0
Financing/financial protection								
Government per capita expenditure on oral health	21.3 (3.56) 22.5	18.3 (7.23) 20.0	22.0 (6.27) 25.0	19.8 (6.82) 23.0	19.5 (6.66) 21.5	18.0 (5.42) 20.0	24.0 (NA) 24.0	20.3 (5.66) 22.0
Out-of-pocket payment for oral health services, US$ per capita	20.8 (4.62) 22.0	17.5 (5.74) 18.0	21.1 (5.34) 23.0	21.2 (7.11) 24.5	19.8 (6.85) 22.0	18.3 (1.26) 18.0	19.0 (NA) 19.0	20.0 (5.19) 20.5
Per capita expenditure on oral health	21.3 (3.27) 22.5	18.0 (6.27) 18.5	21.7 (5.28) 23.0	18.0 (9.01) 22.0	18.3 (6.24) 19.0	15.8 (3.86) 17.5	23.0 (NA) 23.0	19.3 (5.84) 21.5
Percentage of the population facing financial barriers to oral health care	20.7 (4.13) 22.0	18.3 (6.40) 19.0	21.6 (5.22) 23.0	18.7 (7.06) 19.5	20.0 (8.04) 23.5	17.0 (1.41) 16.5	11.0 (NA) 11.0	19.3 (5.59) 21.5
Share of out-of-pocket payments spent on dental care among people with catastrophic health spending	19.8 (4.17) 20.5	16.0 (6.06) 15.0	18.7 (6.87) 21.0	13.7 (8.14) 13.0	17.8 (6.13) 18.0	14.8 (5.12) 15.0	3.00 (NA) 3.00	16.5 (6.61) 18.0
Medicines, equipment, devices, digital technology, and other health products								
Affordability of fluoride toothpaste	21.2 (2.64) 22.0	18.8 (7.50) 20.0	17.0 (7.90) 19.0	17.5 (6.77) 17.5	17.8 (6.13) 18.0	19.0 (6.68) 20.5	20.0 (NA) 20.0	18.5 (6.02) 19.0
WHO EMLs dental preparations are listed in the national EML	22.2 (1.83) 22.5	19.0 (7.35) 20.5	16.1 (7.43) 18.0	19.2 (7.19) 22.5	15.3 (8.26) 14.5	20.8 (3.10) 20.0	3.00 (NA) 3.00	18.3 (6.78) 20.0
Workforce								

Oral health personnel (per 10,000 population)	22.8 (2.32) 23.5	17.0 (6.22) 17.0	20.7 (6.13) 23.0	20.0 (6.69) 23.5	19.3 (7.80) 22.0	21.3 (1.26) 21.0	23.0 (NA) 23.0	20.5 (5.32) 22.5
Annual graduates of oral health personnel, all cadres (per 10,000 population	22.7 (2.25) 23.0	14.8 (7.85) 14.0	21.1 (5.98) 23.0	18.7 (7.34) 20.0	19.0 (6.38) 20.5	18.5 (3.87) 18.5	20.0 (NA) 20.0	19.5 (5.79) 21.0
Primary health care workers are trained to perform cost-effective interventions on oral health	21.3 (3.08) 21.5	20.0 (7.07) 22.5	14.1 (7.34) 12.0	17.0 (7.18) 16.5	16.0 (7.79) 15.0	16.5 (3.32) 17.5	20.0 (NA) 20.0	17.5 (6.24) 19.0

Table 9. First round of Delphi results. "Governance" indicators total score by region.

Indicator name Mean (SD) Median	African region (N=6)	Eastern Mediterranean Region (N=4)	European Region (N=7)	Region of the Americas (N=6)	South-East Asia Region (N=4)	Western Pacific Region (N=4)	Prefer not to answer (N=1)	Overall (N=32)
Existence of a national oral health policy, strategy, or action plan	23.0 (2.10) 23.5	19.5 (6.66) 21.5	21.6 (5.35) 23.0	20.5 (5.96) 23.5	20.5 (7.05) 23.5	21.3 (1.50) 21.0	23.0 (NA) 23.0	21.3 (4.75) 23.0
Oral health integration into the school health policy/programme	22.7 (2.25) 23.0	20.3 (7.09) 23.0	21.0 (6.00) 23.0	20.3 (6.19) 23.5	20.5 (7.05) 23.5	21.8 (2.75) 21.5	23.0 (NA) 23.0	21.2 (5.03) 23.0
National policy or legislation to contain all forms of tobacco consumption	21.5 (4.14) 22.5	18.3 (6.99) 19.0	22.1 (6.28) 25.0	20.7 (4.93) 22.5	20.5 (7.05) 23.5	20.5 (3.32) 21.5	20.0 (NA) 20.0	20.8 (5.13) 23.0
Presence of dedicated staff for oral diseases in the NCD Department or other Department of the Ministry of Health	22.3 (1.97) 23.0	19.0 (6.38) 20.5	21.1 (5.43) 23.0	20.0 (7.04) 24.0	20.8 (7.23) 24.0	19.8 (3.77) 20.0	22.0 (NA) 22.0	20.7 (5.09) 23.0
National policies, strategies, or action plans with a specific policy goal or action towards reducing sugars intake	22.0 (4.05) 23.5	19.5 (7.14) 21.5	22.1 (5.49) 25.0	20.3 (5.43) 22.5	19.8 (6.85) 22.0	18.0 (3.37) 16.5	19.0 (NA) 19.0	20.5 (5.09) 23.0
Implementation of tax on sugar-sweetened beverages (SSBs)	22.0 (4.29) 23.5	16.3 (6.34) 15.0	21.9 (5.55) 25.0	22.0 (4.47) 23.5	19.8 (6.85) 22.0	16.0 (4.97) 17.5	9.00 (NA) 9.00	19.8 (5.75) 22.5
Dental amalgam phase down policy	21.7 (2.42) 21.0	15.5 (4.51) 15.5	20.9 (6.36) 25.0	18.7 (9.93) 23.5	20.5 (7.05) 23.5	20.5 (3.70) 20.5	20.0 (NA) 20.0	19.8 (6.04) 21.0
Water fluoridation	17.8 (3.60) 18.0	11.3 (5.97) 9.00	18.9 (6.67) 20.0	17.7 (5.99) 16.0	14.3 (10.4) 14.5	14.0 (4.97) 14.0	20.0 (NA) 20.0	16.3 (6.33) 17.0
Noma recognized as a national public health problem	18.8 (4.92) 19.0	13.3 (6.75) 12.0	8.86 (4.63) 10.0	10.3 (7.47) 12.0	13.5 (8.27) 13.5	9.25 (2.63) 8.50	0 (NA) 0 [0, 0]	11.9 (6.83) 12.0

Table 10. First round of Delphi results. “Evidence-informed policy” indicators total score by region.

Indicator name Mean (SD) Median	African region (N=6)	Eastern Mediterranean Region (N=4)	European Region (N=7)	Region of the Americas (N=6)	South-East Asia Region (N=4)	Western Pacific Region (N=4)	Prefer not to answer (N=1)	Overall (N=32)
Collection of oral health data using WHO NCD survey tools or national oral health survey	22.0 (3.69) 23.5	19.8 (6.85) 22.0	20.6 (5.22) 22.0	20.5 (6.06) 23.5	19.5 (6.86) 21.5	21.0 (1.83) 21.0	19.0 (NA) 19.0	20.6 (4.85) 22.0
Oral health indicators in routine health information systems	22.5 (2.51) 23.0	17.5 (8.10) 17.5	20.9 (5.24) 23.0	20.5 (5.54) 23.0	16.5 (6.35) 15.5	18.3 (6.24) 19.0	24.0 (NA) 24.0	19.9 (5.48) 22.5
National Monitoring Framework to track oral health policy	22.0 (2.10) 22.5	17.5 (6.45) 17.5	17.3 (9.23) 22.0	20.3 (5.89) 23.0	18.3 (6.24) 19.0	18.3 (4.03) 18.0	22.0 (NA) 22.0	19.2 (5.97) 20.5
Setting national oral health research agendas oriented towards public health programmes and population-based interventions	21.5 (2.35) 23.0	17.5 (6.25) 17.5	17.6 (4.61) 20.0	19.3 (5.57) 19.0	16.5 (8.74) 16.5	14.5 (2.65) 15.0	17.0 (NA) 17.0	18.1 (5.15) 19.0
Percentage of government funds for oral health research	21.0 (2.90) 22.0	16.0 (7.26) 15.5	18.4 (5.00) 19.0	18.2 (7.60) 19.0	17.8 (6.60) 18.0	14.8 (5.12) 15.0	20.0 (NA) 20.0	18.1 (5.58) 18.5
Translation of research findings into policy and practice	20.7 (3.01) 21.0	15.8 (7.23) 14.0	18.6 (5.94) 19.0	18.2 (7.52) 18.5	16.8 (8.50) 17.0	12.8 (2.22) 13.0	15.0 (NA) 15.0	17.5 (5.98) 18.0

5.2.2. Second round of Delphi.

The second-round results suggested which indicators could be the core or complementary elements of the monitoring framework. The results also indicated the respondents' opinions on the ability to collect data for each indicator by 2030. Furthermore, indicators were ranked in each category/subcategory by respondents (Tables 11-15).

In the "oral health status" category, "DMFT" was ranked first with 23 votes out of 32, which was quite extreme. No one ranked it in the middle, and four respondents ranked it seventh. The large majority of respondents believed most "oral health status" indicators to be core, with more of the mixed opinions for "self-reported oral health". Also, around half of the respondents considered data collection to be feasible by 2030 for most indicators in this category, except for "consumption of sugar" (Table 11).

The next category was "risk factors for oral health". "Population using fluoridated toothpaste" was ranked first by 40.6% of the respondents, which was very close to the percentage of respondents who ranked it second (37.5%). No one ranked it to be last. In general, respondents believed most indicators were core, although opinions varied on "per capita total alcohol consumption". However, "prevalence of current betel quid use" was considered a complementary indicator by the majority of the respondents. There was a mixed opinion about the feasibility of data collection for most indicators. Although more than half of the respondents said data collection would be feasible on the "population using fluoridated toothpaste". On the contrary, 56.2% of the respondents believed collecting data on the "prevalence of current betel quid use" will not be feasible by 2030 (Table 12).

The "UHC for oral health" category was classified into four subcategories. The first subcategory was "service and population coverage". In which "inclusion of oral health interventions in public Health Benefit Packages" was ranked first. Most respondents considered most indicators of this subcategory to be core, but the opinions varied on the "proportion of the population who visited an oral health care professional". Moreover, most respondents believed data collection on "inclusion of oral health interventions in public Health Benefit Packages" and "availability of oral health care services in primary care facilities" to be feasible by 2030.

In the "financing" subcategory, "government per capita expenditure on oral health" ranked first, although the ranking scores were close to "per capita expenditure on oral health", which

was ranked second. These two indicators were also considered core indicators by most respondents. Furthermore, collecting data on "government per capita expenditure on oral health" was considered to be feasible by 2030 in this subcategory. "Medicines, equipment, devices, digital technology, and other health products" was the next subcategory that covered two indicators. Between them, "WHO EMLs dental preparations" was ranked first. Respondents believed both indicators were core and collecting data will be feasible for both indicators by 2030. The fourth subcategory was "workforce". The majority of respondents ranked "oral health personnel" first in this category. They also believed "oral health personnel" and "annual graduates of oral health personnel" were core indicators, and they will be able to collect data on them by 2030 (Table 13).

In the "governance" category, "existence of a national oral health policy, strategy, or action plan" was ranked first. No one ranked it to be last. The majority of respondents considered indicators of this category to be core, except for "water fluoridation", "dental amalgam phase down policy", and "Noma", with a greater amount of mixed opinion regarding "dental amalgam phase down policy". Moreover, many survey participants believed data collection on the indicators of this category could be accomplished by 2030, except for "Noma" (Table 14).

The last category comprised "evidence-informed policy" indicators. Among those, "oral health indicators in routine health information systems" was ranked first. Respondents stated three indicators of this category to be core: "oral health indicators in routine health information systems", "collection of oral health data" and "national Monitoring Framework to track oral health policy". They believed data collection on "oral health indicators in routine health information systems" to be feasible by 2030. The participants had a more mixed opinion about the feasibility of gathering data on other indicators in this category (Table 15).

Table 11. Second round of Delphi results. Results for "oral health status" indicators.

Indicator name	Ability to collect by 2023	Core/Complementary	Rank within group	Mean/median rank within group
Mean DMFT	Yes: 18 (56.2%) No: 5 (15.6%) I don't know: 9 (28.1%)	Core: 26 (81.2%) Complementary: 5 (15.6%) I don't know: 1 (3.1%)	First: 23 (71.9%) Second: 2 (6.2%) Third: 2 (6.2%) Fourth: 0 (0%) Fifth: 0 (0%) Sixth: 1 (3.1%) Seventh: 4 (12.5%)	Mean (SD): 2.09 (2.13) Median: 1.00 **Overall rank: 1**
Prevalence of untreated caries of deciduous teeth in children	Yes: 17 (53.1%) No: 4 (12.5%) I don't know: 11 (34.4%)	Core: 25 (78.1%) Complementary: 5 (15.6%) I don't know: 2 (6.2%)	First: 5 (15.6%) Second: 9 (28.1%) Third: 10 (31.2%) Fourth: 3 (9.4%) Fifth: 2 (6.2%) Sixth: 1 (3.1%) Seventh: 2 (6.2%)	Mean (SD): 2.97 (1.62) Median: 3.00 **Overall rank: 2**
Prevalence of untreated caries of permanent teeth	Yes: 17 (53.1%) No: 5 (15.6%) I don't know: 10 (31.2%)	Core: 26 (81.2%) Complementary: 5 (15.6%) I don't know: 1 (3.1%)	First: 6 (18.8%) Second: 9 (28.1%) Third: 7 (21.9%) Fourth: 2 (6.2%) Fifth: 5 (15.6%) Sixth: 3 (9.4%) Seventh: 0 (0%)	Mean (SD): 3.00 (1.63) Median: 3.00 **Overall rank: 3**
Prevalence of severe periodontal disease	Yes: 12 (37.5%) No: 10 (31.2%) I don't know: 10 (31.2%)	Core: 25 (78.1%) Complementary: 7 (21.9%) I don't know: 0 (0%)	First: 4 (12.5%) Second: 6 (18.8%) Third: 8 (25.0%) Fourth: 4 (12.5%) Fifth: 6 (18.8%) Sixth: 2 (6.2%) Seventh: 2 (6.2%)	Mean (SD): 3.50 (1.72) Median: 3.00 **Overall rank: 4**
Missing teeth	Yes: 17 (53.1%) No: 6 (18.8%) I don't know: 9 (28.1%)	Core: 24 (75.0%) Complementary: 7 (21.9%) I don't know: 1 (3.1%)	First: 6 (18.8%) Second: 3 (9.4%) Third: 6 (18.8%) Fourth: 7 (21.9%) Fifth: 4 (12.5%) Sixth: 3 (9.4%) Seventh: 3 (9.4%)	Mean (SD): 3.66 (1.89) Median: 4.00 **Overall rank: 5**

Incidence rate of oral cancer	Yes: 15 (46.9%) No: 5 (15.6%) I don’t know: 12 (37.5%)	Core: 21 (65.6%) Complementary: 10 (31.2%) I don't know: 1 (3.1%)	First: 7 (21.9%) Second: 2 (6.2%) Third: 3 (9.4%) Fourth: 7 (21.9%) Fifth: 3 (9.4%) Sixth: 4 (12.5%) Seventh: 6 (18.8%)	Mean (SD): 4.03 (2.18) Median: 4.00 **Overall rank: 6**
Self-reported oral health	Yes: 17 (53.1%) No: 3 (9.4%) I don’t know: 12 (37.5%)	Core: 18 (56.2%) Complementary: 13 (40.6%) I don't know: 1 (3.1%)	First: 4 (12.5%) Second: 8 (25.0%) Third: 1 (3.1%) Fourth: 2 (6.2%) Fifth: 5 (15.6%) Sixth: 6 (18.8%) Seventh: 6 (18.8%)	Mean (SD): 4.19 (2.21) Median: 5.00 **Overall rank: 7**

Table 12. Second round of Delphi results. Results for “risk factors for oral health” indicators.

Indicator name	Ability to collect by 2023	Core/Complementary	Rank within group	Mean/median rank within group
Population using fluoridated toothpaste on a daily basis	Yes: 17 (53.1%) No: 3 (9.4%) I don’t know: 12 (37.5%)	Core: 24 (75.0%) Complementary: 6 (18.8%) I don't know: 2 (6.2%)	First: 13 (40.6%) Second: 12 (37.5%) Third: 5 (15.6%) Fourth: 2 (6.2%) Fifth: 0 (0%) Sixth: 0 (0%)	Mean (SD): 1.88 (0.907) Median: 2.00 **Overall rank: 1**
Per capita consumption of sugar	Yes: 11 (34.4%) No: 5 (15.6%) I don’t know: 16 (50.0%)	Core: 21 (65.6%) Complementary: 8 (25.0%) I don't know: 3 (9.4%)	First: 15 (46.9%) Second: 7 (21.9%) Third: 5 (15.6%) Fourth: 2 (6.2%) Fifth: 1 (3.1%) Sixth: 2 (6.2%)	Mean (SD): 2.16 (1.48) Median: 2.00 **Overall rank: 2**
Prevalence of current tobacco use among persons aged 15 years and older	Yes: 16 (50.0%) No: 3 (9.4%) I don’t know: 13 (40.6%)	Core: 22 (68.8%) Complementary: 8 (25.0%) I don't know: 2 (6.2%)	First: 13 (40.6%) Second: 5 (15.6%) Third: 3 (9.4%) Fourth: 6 (18.8%) Fifth: 4 (12.5%) Sixth: 1 (3.1%)	Mean (SD): 2.56 (1.63) Median: 2.00 **Overall rank: 3**

Per capita availability of sugar	Yes: 14 (43.8%) No: 4 (12.5%) I don't know: 14 (43.8%)	Core: 19 (59.4%) Complementary: 10 (31.2%) I don't know: 3 (9.4%)	First: 7 (21.9%) Second: 7 (21.9%) Third: 7 (21.9%) Fourth: 1 (3.1%) Fifth: 4 (12.5%) Sixth: 6 (18.8%)	Mean (SD): 3.19 (1.84) Median: 3.00 **Overall rank: 4**
Per capita total alcohol consumption, 15+ years (liters of pure alcohol per year)	Yes: 16 (50.0%) No: 5 (15.6%) I don't know: 11 (34.4%)	Core: 16 (50.0%) Complementary: 14 (43.8%) I don't know: 2 (6.2%)	First: 7 (21.9%) Second: 3 (9.4%) Third: 3 (9.4%) Fourth: 6 (18.8%) Fifth: 9 (28.1%) Sixth: 4 (12.5%)	Mean (SD): 3.59 (1.78) Median: 4.00 **Overall rank: 5**
Prevalence of current betel quid use among persons aged 15 years and older	Yes: 4 (12.5%) No: 18 (56.2%) I don't know: 10 (31.2%)	Core: 3 (9.4%) Complementary: 24 (75.0%) I don't know: 5 (15.6%)	First: 2 (6.2%) Second: 3 (9.4%) Third: 3 (9.4%) Fourth: 2 (6.2%) Fifth: 2 (6.2%) Sixth: 20 (62.5%)	Mean (SD): 4.84 (1.72) Median: 6.00 **Overall rank: 6**

Table 13. Second round of Delphi results. Results for "UHC for oral health" indicators.

Indicator name	Ability to collect by 2023	Core/Complementary	Rank within group	Mean/median rank within subcategory
Service and population coverage				
Inclusion of oral health interventions in public Health Benefit Packages	Yes: 21 (65.6%) No: 3 (9.4%) I don't know: 8 (25.0%)	Core: 25 (78.1%) Complementary: 6 (18.8%) I don't know: 1 (3.1%)	First: 18 (56.2%) Second: 7 (21.9%) Third: 3 (9.4%) Fourth: 4 (12.5%)	Mean (SD): 1.78 (1.07) Median: 1.00 **Overall rank: 1**
Availability of oral health care services in primary care facilities of the public health sector	Yes: 21 (65.6%) No: 2 (6.2%) I don't know: 9 (28.1%)	Core: 23 (71.9%) Complementary: 7 (21.9%) I don't know: 2 (6.2%)	First: 15 (46.9%) Second: 13 (40.6%) Third: 1 (3.1%) Fourth: 3 (9.4%)	Mean (SD): 1.75 (0.916) Median: 2.00 **Overall rank: 2**
Prevalence of unmet oral health needs (and reasons for unmet needs)	Yes: 15 (46.9%) No: 5 (15.6%) I don't know: 12 (37.5%)	Core: 22 (68.8%) Complementary: 10 (31.2%) I don't know: 0 (0%)	First: 7 (21.9%) Second: 9 (28.1%) Third: 6 (18.8%) Fourth: 10 (31.2%)	Mean (SD): 2.59 (1.16) Median: 2.50 **Overall rank: 3**
Proportion of the population who visited an oral health care professional	Yes: 16 (50.0%) No: 5 (15.6%) I don't know: 11 (34.4%)	Core: 18 (56.2%) Complementary: 12 (37.5%) I don't know: 2 (6.2%)	First: 5 (15.6%) Second: 7 (21.9%) Third: 14 (43.8%) Fourth: 6 (18.8%)	Mean (SD): 2.66 (0.971) Median: 3.00 **Overall rank: 4**
Financing/Financial protection				

Government per capita expenditure on oral health	Yes: 17 (53.1%) No: 4 (12.5%) I don't know: 11 (34.4%)	Core: 24 (75.0%) Complementary: 7 (21.9%) I don't know: 1 (3.1%)	First: 15 (46.9%) Second: 8 (25.0%) Third: 6 (18.8%) Fourth: 3 (9.4%)	Mean (SD): 1.91 (1.03) Median: 2.00 **Overall rank: 1**
Per capita expenditure on oral health	Yes: 14 (43.8%) No: 4 (12.5%) I don't know: 14 (43.8%)	Core: 19 (59.4%) Complementary: 11 (34.4%) I don't know: 2 (6.2%)	First: 15 (46.9%) Second: 8 (25.0%) Third: 4 (12.5%) Fourth: 5 (15.6%)	Mean (SD): 1.97 (1.12) Median: 2.00 **Overall rank: 2**
Out-of-pocket payment for oral health services	Yes: 10 (31.2%) No: 8 (25.0%) I don't know: 14 (43.8%)	Core: 13 (40.6%) Complementary: 16 (50.0%) I don't know: 3 (9.4%)	First: 9 (28.1%) Second: 12 (37.5%) Third: 7 (21.9%) Fourth: 4 (12.5%)	**Mean (SD):** 2.19 (0.998) **Median:** 2.00 **Overall rank: 3**
Percentage of the population facing financial barriers to oral health care	Yes: 8 (25.0%) No: 9 (28.1%) I don't know: 15 (46.9%)	Core: 13 (40.6%) Complementary: 18 (56.2%) I don't know: 1 (3.1%)	First: 8 (25.0%) Second: 7 (21.9%) Third: 6 (18.8%) Fourth: 11 (34.4%)	Mean (SD): 2.63 (1.21) Median: 3.00 **Overall rank: 4**
Medicines, equipment, devices, digital technology, and other health products				
WHO EMLs dental preparations are listed in the national EML	Yes: 18 (56.2%) No: 2 (6.2%) I don't know: 12 (37.5%)	Core: 18 (56.2%) Complementary: 12 (37.5%) I don't know: 2 (6.2%)	First: 23 (71.9%) Second: 9 (28.1%)	**Mean (SD):** 1.28 (0.457) **Median:** 1.00 **Overall rank: 1**
Affordability of fluoride toothpaste	Yes: 16 (50.0%) No: 7 (21.9%) I don't know: 9 (28.1%)	Core: 17 (53.1%) Complementary: 13 (40.6%) I don't know: 2 (6.2%)	First: 13 (40.6%) Second: 19 (59.4%)	Mean (SD): 1.59 (0.499) Median: 2.00 **Overall rank: 2**
Workforce				
Oral health personnel (per 10,000 population)	Yes: 22 (68.8%) No: 1 (3.1%) I don't know: 9 (28.1%)	Core: 25 (78.1%) Complementary: 5 (15.6%) I don't know: 2 (6.2%)	First: 25 (78.1%) Second: 5 (15.6%) Third: 2 (6.2%)	Mean (SD): 1.28 (0.581) Median: 1.00 **Overall rank: 1**
Primary health care workers are trained to perform cost-effective interventions on oral health	Yes: 14 (43.8%) No: 7 (21.9%) I don't know: 11 (34.4%)	Core: 14 (43.8%) Complementary: 16 (50.0%) I don't know: 2 (6.2%)	First: 12 (37.5%) Second: 11 (34.4%) Third: 9 (28.1%)	Mean (SD): 1.91 (0.818) Median: 2.00 **Overall rank: 2**
Annual graduates of oral health personnel, all cadres (per 10,000 population)	Yes: 20 (62.5%) No: 3 (9.4%) I don't know: 9 (28.1%)	Core: 18 (56.2%) Complementary: 13 (40.6%) I don't know: 1 (3.1%)	First: 3 (9.4%) Second: 13 (40.6%) Third: 16 (50.0%)	Mean (SD): 2.41 (0.665) Median: 2.50 **Overall rank: 3**

Table 14. Second round of Delphi results. Results for "governance" indicators.

Indicator name	Ability to collect by 2023	core/complementary	Rank within group	**Mean/median rank within group**
Existence of a national oral health policy, strategy, or action plan	Yes: 23 (71.9%) No: 1 (3.1%) I don't know: 8 (25.0%)	Core: 27 (84.4%) Complementary: 3 (9.4%) I don't know: 2 (6.2%)	First: 17 (53.1%) Second: 8 (25.0%) Third: 2 (6.2%) Fourth: 3 (9.4%) Fifth: 1 (3.1%) Sixth: 0 (0%) Seventh: 1 (3.1%) Eighth: 0 (0%) Ninth: 0 (0%)	Mean (SD): 1.97 (1.45) Median: 1.00 **Overall rank: 1**
Presence of dedicated staff for oral diseases in the NCD Department or other Department of the Ministry of Health	Yes: 23 (74.2%) No: 0 (0%) I don't know: 8 (25.8%)	Core: 19 (59.4%) Complementary: 11 (34.4%) I don't know: 2 (6.2%)	First: 16 (50.0%) Second: 5 (15.6%) Third: 3 (9.4%) Fourth: 2 (6.2%) Fifth: 2 (6.2%) Sixth: 1 (3.1%) Seventh: 0 (0%) Eighth: 3 (9.4%) Ninth: 0 (0%)	Mean (SD): 2.59 (2.26) Median: 1.5 **Overall rank: 2**
National policies, strategies, or action plans with a specific policy goal or action towards reducing sugars intake	Yes: 19 (59.4%) No: 5 (15.6%) I don't know: 8 (25.0%)	Core: 20 (62.5%) Complementary: 11 (34.4%) I don't know: 1 (3.1%)	First: 9 (28.1%) Second: 5 (15.6%) Third: 6 (18.8%) Fourth: 3 (9.4%) Fifth: 3 (9.4%) Sixth: 3 (9.4%) Seventh: 2 (6.2%) Eighth: 1 (3.1%) Ninth: 0 (0%)	Mean (SD): 3.25 (2.11) Median: 3.00 **Overall rank: 3**
Oral health integration into the school health policy/programme	Yes: 20 (62.5%) No: 4 (12.5%) I don't know: 8 (25.0%)	Core: 21 (65.6%) Complementary: 9 (28.1%) I don't know: 2 (6.2%)	First: 10 (31.2%) Second: 6 (18.8%) Third: 3 (9.4%) Fourth: 4 (12.5%) Fifth: 2 (6.2%) Sixth: 2 (6.2%) Seventh: 3 (9.4%) Eighth: 2 (6.2%) Ninth: 0 (0%)	Mean (SD): 3.31 (2.35) Median: 2.50 **Overall rank: 4**

National policy or legislation to contain all forms of tobacco consumption	Yes: 20 (62.5%) No: 3 (9.4%) I don’t know: 9 (28.1%)	Core: 20 (62.5%) Complementary: 11 (34.4%) I don't know: 1 (3.1%)	First: 7 (21.9%) Second: 1 (3.1%) Third: 6 (18.8%) Fourth: 3 (9.4%) Fifth: 6 (18.8%) Sixth: 7 (21.9%) Seventh: 0 (0%) Eighth: 2 (6.2%) Ninth: 0 (0%)	Mean (SD): 3.97 (2.12) Median: 4.00 **Overall rank: 5**
Implementation of tax on sugar-sweetened beverages (SSBs)	Yes: 19 (59.4%) No: 3 (9.4%) I don’t know: 10 (31.2%)	Core: 20 (62.5%)) Complementary: 10 (31.2%) I don't know: 2 (6.2%)	First: 6 (18.8%) Second: 4 (12.5%) Third: 5 (15.6%) Fourth: 3 (9.4%) Fifth: 2 (6.2%) Sixth: 2 (6.2%) Seventh: 6 (18.8%) Eighth: 3 (9.4%) Ninth: 1 (3.1%)	Mean (SD): 4.31 (2.60) Median: 4.00 **Overall rank: 6**
Water fluoridation	Yes: 16 (50.0%) No: 7 (21.9%) I don’t know: 9 (28.1%)	Core: 12 (37.5%) Complementary: 18 (56.2%) I don't know: 2 (6.2%)	First: 7 (21.9%) Second: 3 (9.4%) Third: 2 (6.2%) Fourth: 3 (9.4%) Fifth: 4 (12.5%) Sixth: 3 (9.4%) Seventh: 5 (15.6%) Eighth: 4 (12.5%) Ninth: 1 (3.1%)	Mean (SD): 4.53 (2.65 Median: 5.00 **Overall rank: 7**
Dental amalgam phase down policy	Yes: 17 (53.1%) No: 4 (12.5%) I don’t know: 11 (34.4%)	Core: 14 (43.8%) Complementary: 16 (50.0%) I don't know: 2 (6.2%)	First: 4 (12.5%) Second: 3 (9.4%) Third: 3 (9.4%) Fourth: 3 (9.4%) Fifth: 2 (6.2%) Sixth: 6 (18.8%) Seventh: 6 (18.8%) Eighth: 4 (12.5%) Ninth: 1 (3.1%)	Mean (SD): 5.00 (2.46) Median: 6.00 **Overall rank: 8**

Noma recognized as a national public health problem	Yes: 6 (18.8%) No: 17 (53.1%) I don’t know: 9 (28.1%)	Core: 3 (9.4%) Complementary: 26 (81.2%) I don't know: 3 (9.4%)	First: 2 (6.2%) Second: 1 (3.1%) Third: 1 (3.1%) Fourth: 2 (6.2%) Fifth: 1 (3.1%) Sixth: 1 (3.1%) Seventh: 0 (0%) Eighth: 2 (6.2%) Ninth: 22 (68.8%)	Mean (SD): 7.50 (2.65) Median: 9.00 **Overall rank: 9**

Table 15. Second round of Delphi results. Results for “evidence-informed policy” indicators.

Indicator name	Ability to collect by 2023	core/complementary	Rank within group	Mean/median rank within group
Oral health indicators in routine health information systems	Yes: 19 (59.4%) No: 4 (12.5%) I don’t know: 9 (28.1%)	Core: 19 (59.4%) Complementary: 11 (34.4%) I don't know: 2 (6.2%)	First: 21 (65.6%) Second: 8 (25.0%) Third: 2 (6.2%) Fourth: 1 (3.1%) Fifth: 0 (0%)	Mean (SD): 1.47 (0.761) Median: 1.00 **Overall rank: 1**
Collection of oral health data using WHO NCD survey tools or national oral health survey	Yes: 13 (40.6%) No: 6 (18.8%) I don’t know: 13 (40.6%)	Core: 17 (53.1%) Complementary: 13 (40.6%) I don't know: 2 (6.2%)	First: 11 (34.4%) Second: 8 (25.0%) Third: 6 (18.8%) Fourth: 7 (21.9%) Fifth: 0 (0%)	Mean (SD): 2.28 (1.17) Median: 2.00 **Overall rank: 2**
National Monitoring Framework to track oral health policy	Yes: Yes: 16 (50.0%) No: 6 (18.8%) I don’t know: 10 (31.2%)	Core: 17 (53.1%) Complementary: 14 (43.8%) I don't know: 1 (3.1%)	First: 9 (28.1%) Second: 9 (28.1%) Third: 10 (31.2%) Fourth: 1 (3.1%) Fifth: 3 (9.4%)	Mean (SD): 2.38 (1.21) Median: 2.00 **Overall rank: 3**
Percentage of government funds for oral health research	Yes: 16 (50.0%) No: 5 (15.6%) I don’t know: 11 (34.4%)	Core: 12 (37.5%) Complementary: 17 (53.1%) I don't know: 3 (9.4%)	First: 8 (25.0%) Second: 4 (12.5%) Third: 3 (9.4%) Fourth: 9 (28.1%) Fifth: 8 (25.0%)	Mean (SD): 3.16 (1.57) Median: 4.00 **Overall rank: 4**
Setting national oral health research agendas oriented towards public health programmes and population-based interventions	Yes: 15 (46.9%) No: 5 (15.6%) I don’t know: 12 (37.5%)	Core: 11 (34.4%) Complementary: 17 (53.1%) I don't know: 4 (12.5%)	First: 6 (18.8%) Second: 4 (12.5%) Third: 3 (9.4%) Fourth: 5 (15.6%) Fifth: 14 (43.8%)	Mean (SD): 3.53 (1.61) Median: 4.00 **Overall rank: 5**

6. Discussion.

A monitoring framework is required to track the progress of integrating oral health care services into UHC and developing the GOHAP. Therefore, it is essential to think through a list of oral health and oral health care indicators to outline the monitoring framework. These indicators ought to be 'reliable' enough to be used for all times, 'broad' to cover oral health care fundamental domains, and 'feasible' among various low-, middle- and high-income countries. The current work was carried out to identify a set of oral health and oral health care indicators by taking several steps, including a scoping review and a two-round Delphi process.

6.1. Similar studies.

The current study is comparable to studies conducted in the past. For instance, a report was published on refining a set of indicators to monitor the palliative care development in countries (93). The report results indicated that a consensus was reached on a set of proposed indicators via a series of meetings and a two-round Delphi process with a panel of global experts. The indicators were chosen based on their relevance and feasibility by 27 experts who participated in both rounds of Delphi (93).

Another study was done in India to develop a specific UHC monitoring framework responding to health demands in the state of Kerala, India. A consensus was achieved on a set of 23 main indicators after 25 experts participated in a two-round modified Delphi process (94).

In the study reported in this thesis 31 international experts participated in the Delphi process, which comparable to the previous similar studies. The panel of experts for our study included representatives from all WHO regions, representatives from governments, and a group of experts from academia. These leading experts provided different perspectives on choosing the oral health care indicators.

6.2. Other frameworks.

In our study the respondents ranked 45 and then 40 indicators respectively across five categories in the first and second rounds of the Delphi process. Some of these indicators were previously used in the *results chain framework* of UHC as input, output, outcome, and impact domains of the health systems (79). Additionally, some of these indicators have been applied earlier in different countries to identify the existing inequalities in oral health care systems,

which could be related to the rankings or core/complementary selection of the indicators in the second round of the Delphi process.

Most respondents evaluated the "oral health status" category indicators as core indicators. Some of these indicators were previously used in different countries to monitor oral health care systems. For instance, "DMFT", "prevalence of untreated caries and periodontal diseases", and "self-reported oral health status" were used to follow the association between socioeconomic patterns of the population and dental care utilization equity in countries like the Netherlands, Colombia, Thailand, and also globally (95-98). The Delphi respondents in our study ranked "DMFT" first out of seven indicators in the "oral health status" category. This compares with "dmft" which was used as an indicator to measure the country's economic performance in Serbia (99). Furthermore, "Oral health status" indicators are comparable to "general health status" indicators that were considered in the impact domain of the health systems in the *results chain framework* (100).

Within the indicators of "UHC for oral health" category, the "prevalence of unmet oral health needs" was previously used to determine the correlation between socioeconomic inequalities and unmet oral health needs in China, Ghana, and India (101). Besides, "visit an oral health care professional" was formerly used to measure the impact of insurance, income, and geographic inequalities in accessing oral health services (102-105). Financing and workforce indicators such as "out-of-pocket payments", "financial barriers to oral healthcare", and the number of "oral health personnel" were previously used as indicators to measure the effects of existing inequalities in dental care utilization in Nigeria, Australia, and Thailand (95, 106, 107).

Moreover, financing indicators, including "government per capita expenditure on oral health" and "per capita expenditure on oral health", are comparable with the health financing indicators in the input category of the *results chain framework* (79, 100). "Financial risk protection" indicators were also categorized as impact indicators which are similar to the "out-of-pocket payment for oral health" indicator in this study (100). In addition, Health workforce indicators were classified as system input indicators in the *results chain framework* and are similar to the workforce indicators in the current study (79, 100). Furthermore, "service access and availability" was considered a category in the system output domain of the *results chain framework*. The indicators of this category are similar to the indicators of "service and population coverage" in the current study (100).

Among the "governance" indicators in the current study, "water fluoridation" was the only indicator previously used in Nova Scotia, Canada, to determine the association between socioeconomic status and the severity of dental caries in the population (108). "Governance and legislation" indicator was considered as a category with a set of input indicators in the *results chain framework*, which is comparable with the "governance" category in this study (79).

In the "risk factors for oral health status" category, "per capita consumption of sugar" and "using fluoridated toothpaste" were indicators previously used to monitor the implementation of community-based interventions in Burkina Faso (109). "Risk factor" indicators were categorized as outcome indicators in the *results chain framework* and are comparable to the indicators in the "risk factors for oral health status" category (100).
In summary, the indicators identified through the process reported in this thesis are broadly similar to those found in other frameworks monitoring health care systems in relation to other fields or looking at progress towards UHC in general health care.

6.3. Observations and suggestions.

The Delphi survey responses should be carefully reviewed as it is essential to address the prevalence of "non-responses", "no data", and/or "no action" responses for some indicators. Indicators with a high proportion of these responses have the potential to improve significantly, as it is easier to improve an indicator of the desired outcome from 5% to 10% (a 100% increase) but it can be difficult to move it from 90% to 95% (a 5.6% increase).

It is also important to give special consideration to the data collection process. It might be difficult for some countries to gather data on some of the current 40 indicators. In spite of this, collecting such data could be a target that countries aim to achieve. For example, surveys can be sent to chief dental officers (or equivalent) in countries to collect multiple indicators by asking them to give relatively simple yes/no answers or other categorical responses.

It may be possible to facilitate the data collection of multiple indicators across different categories in the monitoring framework by recognizing the commonalities and differences in the methods of collecting the data. For example, complex population data can be gathered through existing databanks and data collection systems.

For example, data on indicators like "self-rated oral health", "daily use of fluoridated toothpaste", "daily consumption of risk factors (sugar, alcohol, tobacco, betel quid)", "unmet

needs", "consulting a dental professional", and "out-of-pocket payment for care estimates" could be gathered using self-completed surveys. Self-completed surveys are designed to be completed by the individuals in population sample surveys. Moreover, self-reported surveys are the most common methods to collect data on the populations' health status and health care service utilization (110).

Various methods could be used to carry out self-completed surveys, including computer-based, mobile phones, and voice phones. Besides, "self-completed" or household surveys are routinely collected by governments across many countries, and oral health-related indicators can be incorporated into these ongoing surveys. Also, self-completed surveys can be conducted in conjunction with or independently of clinical examination surveys. In addition, the data collection system for self-completed indicators can be set up in such a way to be able to collect data at regular intervals (every 2-3 years), as it is likely that the status of these indicators is more sensitive to change than clinical disease indicators.

Both "self-completed" and "clinical disease" indicators are determined by socio-economic, education, and health care system-related factors. Therefore, they are helpful to further explore the changes in the existing inequalities with the implementation of different strategies. However, collecting data on self-completed indicators is less expensive than on clinical disease indicators. Given these observations, it could be a good strategy to monitor change, for example, to develop a self-completion survey, along with technical means for distributing it across multiple countries in order to collect data on the required key indicators.

6.4. Limitations and future steps.

This study has some limitations in the methodology, as it is not purely a research process. It is because Delphi is considered a mixture of research as well as a decision-making process. Also, our work was only a part of a greater process which is ongoing. We have completed steps 1 to 7 of all the steps mentioned earlier in the project outline (section 2.9). The informal consultations are ongoing with WHO regions on the oral health care monitoring framework and indicators (step 8).

In the up-coming months, the 40 indicators will be sent formally to WHO members states, and formal consultations will be arranged regarding the GOHS, GOHAP and oral health care monitoring framework and the indicators (step 9). WHO member states will formally vote on

GOHS and GOHAP in spring 2023 (step 10). The process of collecting baseline data will start in October 2022, along with these steps.

7. Conclusion.

The integration of oral health care services into UHC needs to be accelerated in order to implement the GOHAP properly. It is also essential to develop a framework that monitors the integration process in countries' health systems. It is necessary to identify oral health and oral health care indicators to establish such a monitoring framework. The work reported in this thesis was done as a part of a bigger project to identify relevant oral health and oral health care indicators that could be used in various countries. A scoping review was conducted initially to identify the relevant oral health care indicators existing in the literature that had the potential to be used in the monitoring framework. Following that, a two-round Delphi survey was carried out so as to create a list of leading indicators. Some of these indicators were comparable with the indicators used in the monitoring framework for general health. Besides, many of these indicators were previously used to measure oral health care socio-economically related inequalities in various countries.

Furthermore, different surveys and tools can collect data on a number of the identified indicators. The list of the identified indicators will be finalized after future formal consultations with WHO member states. The data will then be collected using these indicators across a range of low-, middle- and high-income countries.

8. References.

1. UN General Assembly, Political declaration of the high-level meeting on universal health coverage. 18 October 2019. A/RES/74/2, Available at: https://undocs.org/en/A/RES/74/2 [Accessed 12 May 2022].

2. Regional Committee for the Western P. Sustainable development goals (Resolution). Manila: WHO Regional Office for the Western Pacific; 2016. WPR/RC67.R5.

3. World Health Organization. Universal health coverage (UHC) 2021 [updated April1, 2021; cited 2022 February 10]. Available from: https://www.who.int/news-room/fact-sheets/detail/universal-health-coverage-(uhc)

4. World Health Organization. Millennium Development Goals (MDGs): World Health Organization; 2018 [updated 19 February 2018; cited 2022 10 April]. Available from: https://www.who.int/news-room/fact-sheets/detail/millennium-development-goals-(mdgs)#:~:text=The%20United%20Nations%20Millennium%20Declaration,are%20derived%20from%20this%20Declaration

5. World Health Organization. Universal Health Coverage: World Health Organization; 2022 [cited 2022 February 10,]. Available from: https://www.who.int/health-topics/universal-health-coverage#tab=tab_3

6. Global, regional, and national incidence, prevalence, and years lived with disability for 354 diseases and injuries for 195 countries and territories, 1990-2017: a systematic analysis for the Global Burden of Disease Study 2017. Lancet. 2018;392(10159):1789-858.

7. World Health Organization. Oral health 2020 [updated 2020, March 25; cited 2022 February 10,]. Available from: https://www.who.int/news-room/fact-sheets/detail/oral-health

8. Watt RG, Daly B, Allison P, Macpherson LMD, Venturelli R, Listl S, et al. Ending the neglect of global oral health: time for radical action. The Lancet. 2019;394(10194):261-72.

9. Peres MA, Macpherson LMD, Weyant RJ, Daly B, Venturelli R, Mathur MR, et al. Oral diseases: a global public health challenge. The Lancet. 2019;394(10194):249-60.

10. World Health Organization, EXECUTIVE BOARD. Oral health. Draft resolution proposed by Bangladesh, Bhutan, Botswana, Eswatini, Indonesia, Israel, Japan, Jamaica, Kenya, Peru, Qatar, Sri Lanka, Thailand and Member States of the European Union. 148th session, Agenda item 6 ed: World Health Organization; 2021. p. 5.

11. World Health Organization SEVENTY-FIFTH WORLD HEALTH ASSEMBLY. Follow-up to the political declaration of the third high-level meeting of the General Assembly on the prevention and control of non-communicable disease Annex 3 - Draft global strategy on oral health. World Health Organization, Provisional Agenda Item 14.1; 27 April 2022. A75/10 Add.1.

12. Boerma T, Eozenou P, Evans D, Evans T, Kieny MP, Wagstaff A. Monitoring progress towards universal health coverage at country and global levels. PLoS Med. 2014;11(9):e1001731.

13. Lozano R, Fullman N, Mumford JE, Knight M, Barthelemy CM, Abbafati C, et al. Measuring universal health coverage based on an index of effective coverage of health services in 204 countries and territories, 1990–2019: a systematic analysis for the Global Burden of Disease Study 2019. The Lancet. 2020.

14. United Nations Development Programme. Millennium Development Goals: United Nations Development Programme.; [cited 2022 10 April]. Available from: https://www.pa.undp.org/content/undp/en/home/sdgoverview/mdg_goals/?utm_source=EN&utm_medium=GSR&utm_content=US_UNDP_PaidSearch_Brand_English&utm_campaign=CENTRAL&c_src=CENTRAL&c_src2=GSR&gclid=CjwKCAjw9e6SBhB2EiwA5myr9gCo8zvRS3mpZwi5kDRy31XF52t-Ad4Nq-a7AjtQJKWGij4eOXikPBoCpC0QAvD_BwE

15. General Assembly resolution 55/2. United Nations Millennium Declaration 2000 [cited 2022 09 May]. Available from: https://www.ohchr.org/en/instruments-mechanisms/instruments/united-nations-millennium-declaration

16. United Nations Department of Economic and Social Affairs Sustainable Development. THE 17 GOALS [cited 2022 09 May]. Available from: https://sdgs.un.org/goals

17. United Nations Department of Economic and Social Affairs Sustainable Development. Goal 3 Ensure healthy lives and promote well-being for all at all ages 2021 [cited 2022 10 April]. Available from: https://sdgs.un.org/goals/goal3

18. The World Bank. How does the World Bank classify countries? [cited 2022 27 June]. Available from: https://datahelpdesk.worldbank.org/knowledgebase/articles/378834-how-does-the-world-bank-classify-countries.

19. The World Bank. World Bank Country and Lending Groups [cited 2022 27 June]. Available from: https://datahelpdesk.worldbank.org/knowledgebase/articles/906519-world-bank-country-and-lending-groups.

20. The World Bank. The World Bank in Middle Income Countries [cited 2022 27 June]. Available from: https://www.worldbank.org/en/country/mic/overview.

21. World Health Organization THE GLOBAL HEALTH OBSERVATORY. Population with household expenditures on health greater than 10% of total household expenditure or income (SDG 3.8.2). 2022 [cited 2022 February 21]. Available from: https://www.who.int/data/gho/indicator-metadata-registry/imr-details/4844.

22. World Health Organization THE GLOBAL HEALTH OBSERVATORY. UHC service coverage index (3.8.1). 2022 [cited 2022 February 21]. Available from: https://www.who.int/data/gho/indicator-metadata-registry/imr-details/4834.

23. Glick M, Williams DM, Kleinman DV, Vujicic M, Watt RG, Weyant RJ. A new definition for oral health developed by the FDI World Dental Federation opens the door to a universal definition of oral health. J Am Dent Assoc. 2016;147(12):915-7.

24. Petersen PE. The World Oral Health Report 2003: continuous improvement of oral health in the 21st century--the approach of the WHO Global Oral Health Programme. Community Dent Oral Epidemiol. 2003;31 Suppl 1:3-23.

25. World Health Organization. Oral health: World Health Organization; [cited 2022 10 April]. Available from: https://www.who.int/health-topics/oral-health#tab=tab_1.

26. Kassebaum NJ, Bernabé E, Dahiya M, Bhandari B, Murray CJ, Marcenes W. Global burden of untreated caries: a systematic review and metaregression. J Dent Res. 2015;94(5):650-8.

27. Frencken JE, Sharma P, Stenhouse L, Green D, Laverty D, Dietrich T. Global epidemiology of dental caries and severe periodontitis - a comprehensive review. J Clin Periodontol. 2017;44 Suppl 18:S94-s105.

28. Marthaler TM. Changes in dental caries 1953-2003. Caries Res. 2004;38(3):173-81.

29. Marcenes W, Kassebaum NJ, Bernabé E, Flaxman A, Naghavi M, Lopez A, et al. Global burden of oral conditions in 1990-2010: a systematic analysis. J Dent Res. 2013;92(7):592-7.

30. Kassebaum NJ, Bernabé E, Dahiya M, Bhandari B, Murray CJ, Marcenes W. Global burden of severe periodontitis in 1990-2010: a systematic review and meta-regression. J Dent Res. 2014;93(11):1045-53.

31. Kassebaum NJ, Bernabé E, Dahiya M, Bhandari B, Murray CJ, Marcenes W. Global Burden of Severe Tooth Loss: A Systematic Review and Meta-analysis. J Dent Res. 2014;93(7 Suppl):20s-8s.

32. Bray F, Ferlay J, Soerjomataram I, Siegel RL, Torre LA, Jemal A. Global cancer statistics 2018: GLOBOCAN estimates of incidence and mortality worldwide for 36 cancers in 185 countries. CA Cancer J Clin. 2018;68(6):394-424.

33. Schwendicke F, Dörfer CE, Schlattmann P, Foster Page L, Thomson WM, Paris S. Socioeconomic inequality and caries: a systematic review and meta-analysis. J Dent Res. 2015;94(1):10-8.

34. Costa SM, Martins CC, Pinto MQC, Vasconcelos M, Abreu M. Socioeconomic Factors and Caries in People between 19 and 60 Years of Age: An Update of a Systematic Review and Meta-Analysis of Observational Studies. Int J Environ Res Public Health. 2018;15(8).

35. Klinge B, Norlund A. A socio-economic perspective on periodontal diseases: a systematic review. J Clin Periodontol. 2005;32 Suppl 6:314-25.

36. Conway DI, Petticrew M, Marlborough H, Berthiller J, Hashibe M, Macpherson LM. Socioeconomic inequalities and oral cancer risk: a systematic review and meta-analysis of case-control studies. Int J Cancer. 2008;122(12):2811-9.

37. Peres MA, Peres KG, Thomson WM, Broadbent JM, Gigante DP, Horta BL. The influence of family income trajectories from birth to adulthood on adult oral health: findings from the 1982 Pelotas birth cohort. Am J Public Health. 2011;101(4):730-6.

38. Slade GD. Epidemiology of dental pain and dental caries among children and adolescents. Community Dent Health. 2001;18(4):219-27.

39. Bastos JL, Gigante DP, Peres KG. Toothache prevalence and associated factors: a population based study in southern Brazil. Oral Dis. 2008;14(4):320-6.

40. Tickle M, Blinkhorn AS, Milsom KM. The occurrence of dental pain and extractions over a 3-year period in a cohort of children aged 3-6 years. J Public Health Dent. 2008;68(2):63-9.

41. Antunes JL, Peres MA, de Campos Mello TR, Waldman EA. Multilevel assessment of determinants of dental caries experience in Brazil. Community Dent Oral Epidemiol. 2006;34(2):146-52.

42. Ratnayake N, Ekanayake L. Prevalence and impact of oral pain in 8-year-old children in Sri Lanka. Int J Paediatr Dent. 2005;15(2):105-12.

43. Barrêtto EP, Ferreira EF, Pordeus IA. Determinant factors of toothache in 8- and 9-year-old schoolchildren, Belo Horizonte, MG, Brazil. Braz Oral Res. 2009;23(2):124-30.

44. Feitosa S, Colares V, Pinkham J. The psychosocial effects of severe caries in 4-year-old children in Recife, Pernambuco, Brazil. Cad Saude Publica. 2005;21(5):1550-6.

45. Petersen PE, Bourgeois D, Ogawa H, Estupinan-Day S, Ndiaye C. The global burden of oral diseases and risks to oral health. Bull World Health Organ. 2005;83(9):661-9.

46. Blumenshine SL, Vann WF, Jr., Gizlice Z, Lee JY. Children's school performance: impact of general and oral health. J Public Health Dent. 2008;68(2):82-7.

47. Jackson SL, Vann WF, Jr., Kotch JB, Pahel BT, Lee JY. Impact of poor oral health on children's school attendance and performance. Am J Public Health. 2011;101(10):1900-6.

48. Slade GD, Strauss RP, Atchison KA, Kressin NR, Locker D, Reisine ST. Conference summary: assessing oral health outcomes--measuring health status and quality of life. Community Dent Health. 1998;15(1):3-7.

49. Harford J, Chrisopoulos S. Productivity losses from dental problems. Aust Dent J. 2012;57(3):393-7.

50. Hayes A, Azarpazhooh A, Dempster L, Ravaghi V, Quiñonez C. Time loss due to dental problems and treatment in the Canadian population: analysis of a nationwide cross-sectional survey. BMC Oral Health. 2013;13:17.

51. McGrath C, Bedi R. A study of the impact of oral health on the quality of life of older people in the UK--findings from a national survey. Gerodontology. 1998;15(2):93-8.

52. Nowjack-Raymer RE, Sheiham A. Numbers of natural teeth, diet, and nutritional status in US adults. J Dent Res. 2007;86(12):1171-5.

53. Rouxel P, Heilmann A, Demakakos P, Aida J, Tsakos G, Watt RG. Oral health-related quality of life and loneliness among older adults. Eur J Ageing. 2017;14(2):101-9.

54. Bernabé E, Masood M, Vujicic M. The impact of out-of-pocket payments for dental care on household finances in low and middle income countries. BMC Public Health. 2017;17(1):109.

55. Listl S, Galloway J, Mossey PA, Marcenes W. Global Economic Impact of Dental Diseases. J Dent Res. 2015;94(10):1355-61.

56. REPORT ON THE FINDINGS of the ORAL HEALTH COMPONENT of the CANADIAN HEALTH MEASURES SURVEY 2007–2009. Ottawa, Ontario K1A 0K9: Publications Health Canada; 2010. Report No.: 978-1-100-15660-6.

57. Canadian Institute for Health Information. How Canada Compares: Results From the Commonwealth Fund's 2021 International Health Policy Survey of Older Adults in 11 Countries. . Ottawa, ON: CIHI; 2022.

58. Canadian Institute for Health Information. How Canada Compares: Results From The Commonwealth Fund's 2016 International Health Policy Survey of Adults in 11 Countries. Ottawa, ON: CIHI; 2017.

59. Canadian Association of Public Health Dentistry. A roadmap to universal access to dental care in Canada. 2020. Available from: https://www.caphd.ca/advocacy/position-statements.

60. Lange TC. COMPREHENSIVE DENTAL CARE IN CANADA: THE CHOICE BETWEEN DENTICAID AND DENTICARE. The School of Public Policy Publications. 2020; 13:23

61. Sourang DW, Aidan. COST ESTIMATE OF A FEDERAL DENTAL CARE PROGRAM FOR UNINSURED CANADIANS. Office of The Parliamentary Budget Officer 2020.

62. Published by authority of the Minister responsible for Statistics Canada. Health Fact Sheets. Dental Care, 2018. Ottawa: Statistics Canada, Catalogue no.82-625-X.; 2019 [cited 2020 08 June]. Available from: https://www150.statcan.gc.ca/n1/pub/82-625-x/2019001/article/00010-eng.htm.

63. Benzian H, Hobdell M, Holmgren C, Yee R, Monse B, Barnard JT, et al. Political priority of global oral health: an analysis of reasons for international neglect. Int Dent J. 2011;61(3):124-30.

64. Yee R, Sheiham A. The burden of restorative dental treatment for children in Third World countries. Int Dent J. 2002;52(1):1-9.

65. Holden ACL. Consumer-driven and commercialised practice in dentistry: an ethical and professional problem? Med Health Care Philos. 2018;21(4):583-9.

66. Bedos C, Apelian N, Vergnes JN. Time to Develop Social Dentistry. JDR Clin Trans Res. 2018;3(1):109-10.

67. University College London. The Lancet Commission on Oral Health 2020. Available from: https://www.ucl.ac.uk/epidemiology-health-care/research/epidemiology-and-public-health/research/dental-public-health/lancet-commission-oral-health.

68. Glick M WD, Ben Yahya I, et al. Vision 2030: Delivering Optimal Oral Health for All. Geneva: FDI World Dental Federation;. 2021.

69. WHO SEVENTY-FOURTH WORLD HEALTH ASSEMBLY. Oral health. Agenda item 132. WHA74.5 ed: World Health Organization; 2021. p. 5.

70. World Health Organization. THIRTEENTH GENERAL PROGRAMME OF WORK 2019–2023. Switzerland: WHO.; 2019. WHO/PRP/18.1.

71. World Health Organization. (2021). Primary health care on the road to universal health coverage: 2019 global monitoring report. World Health Organization. https://apps.who.int/iris/handle/10665/344057 License: CC BY-NC-SA 3.0 IGO.

72. World Health Organization; World Bank. 2021. Tracking Universal Health Coverage : 2021 Global Monitoring Report. World Health Organization and World Bank. © World Bank. https://openknowledge.worldbank.org/handle/10986/36724 License: CC BY-NC-SA 3.0 IGO.

73. Taniguchi H, Rahman MM, Swe KT, Hussain A, Shibuya K, Hashizume M. Trends and projections of universal health coverage indicators in Iraq, 2000-2030: A national and subnational study. Soc Sci Med. 2021;270:113630.

74. Rahman MS, Rahman MM, Gilmour S, Swe KT, Krull Abe S, Shibuya K. Trends in, and projections of, indicators of universal health coverage in Bangladesh, 1995–2030: a Bayesian analysis of population-based household data. The Lancet Global Health. 2018;6(1):e84-e94.

75. World Health Organization. Regional Office for the Western Pacific. (2016). Monitoring universal health coverage in the Western Pacific : framework, indicators, and dashboard. Mandaluyong City : Asian Development Bank. https://apps.who.int/iris/handle/10665/251006

76. Day C, Gray A, Cois A, Ndlovu N, Massyn N, Boerma T. Is South Africa closing the health gaps between districts? Monitoring progress towards universal health service coverage with routine facility data. BMC Health Serv Res. 2021;21(1):194.

77. Eregata GT, Hailu A, Memirie ST, Norheim OF. Measuring progress towards universal health coverage: national and subnational analysis in Ethiopia. BMJ Glob Health. 2019;4(6):e001843.

78. World Health Organization. (2016). Strategizing national health in the 21st century: a handbook. World Health Organization. https://apps.who.int/iris/handle/10665/250221

79. World Health Organization. (2013). World health report 2013: research for universal health coverage. World Health Organization. ISBN: 9789240690837. https://apps.who.int/iris/handle/10665/85761

80. Saksena P, Hsu J, Evans DB. Financial Risk Protection and Universal Health Coverage: Evidence and Measurement Challenges. PLoS Med. 2014;11(9):e1001701.

81. Boerma T, AbouZahr C, Evans D, Evans T. Monitoring Intervention Coverage in the Context of Universal Health Coverage. PLoS Med. 2014;11(9):e1001728.

82. Ng M, Fullman N, Dieleman JL, Flaxman AD, Murray CJL, Lim SS. Effective Coverage: A Metric for Monitoring Universal Health Coverage. PLoS Med. 2014;11(9):e1001730.

83. Hosseinpoor AR, Bergen N, Koller T, Prasad A, Schlotheuber A, Valentine N, et al. Equity-Oriented Monitoring in the Context of Universal Health Coverage. PLoS Med. 2014;11(9):e1001727.

84. Dalkey N, Helmer O. An Experimental Application of the DELPHI Method to the Use of Experts. Management Science. 1963;9(3):458-67.

85. Schmalz U, Spinler S, Ringbeck J. Lessons Learned from a Two-Round Delphi-based Scenario Study. MethodsX. 2021;8:101179.

86. Cantrill JA, Sibbald B, Buetow S. The Delphi and nominal group techniques in health services research. Int J Pharm Pract. 1996;4(2):67-74.

87. Niederberger M, Spranger J. Delphi Technique in Health Sciences: A Map. Frontiers in Public Health. 2020;8.

88. Hasson F, Keeney S. Enhancing rigour in the Delphi technique research. Technological Forecasting and Social Change. 2011;78(9):1695-704.

89. Keeney S, Hasson F, McKenna H. Consulting the oracle: ten lessons from using the Delphi technique in nursing research. J Adv Nurs. 2006;53(2):205-12.

90. Kluge U, Ringbeck J, Spinler S. Door-to-door travel in 2035 – A Delphi study. Technological Forecasting and Social Change. 2020;157:120096.

91. 2006-2021 LimeSurvey GmbH. LimeSurvey [Available from: https://account.limesurvey.org/.

92. Hsu C-C, Sandford B. The Delphi Technique: Making Sense Of Consensus. Practical Assessment, Research and Evaluation. 2007;12.

93. Assessing the development of palliative care worldwide: a set of actionable indicators. Geneva: World Health Organization. 2021. Licence: CC BY-NC-SA 3.0 IGO.

94. Nambiar D, Sankar D H, Negi J, Nair A, Sadanandan R. Monitoring Universal Health Coverage reforms in primary health care facilities: Creating a framework, selecting and field-testing indicators in Kerala, India. PLoS ONE. 2020;15(8):e0236169.

95. Somkotra T, Detsomboonrat P. Is there equity in oral healthcare utilization: experience after achieving Universal Coverage. Community Dent Oral Epidemiol. 2009;37(1):85-96.

96. Bernabe E, Marcenes W, Hernandez CR, Bailey J, Abreu LG, Alipour V, et al. Global, Regional, and National Levels and Trends in Burden of Oral Conditions from 1990 to 2017: A Systematic Analysis for the Global Burden of Disease 2017 Study. J Dent Res. 2020;99(4):362-73.

97. Guarnizo-Herreno CC, Watt RG, Garzon-Orjuela N, Suarez-Zuniga E, Tsakos G. Health insurance and education: major contributors to oral health inequalities in Colombia. J Epidemiol Community Health. 2019;73(8):737-44.

98. Verlinden DA, Reijneveld SA, Lanting CI, Wouwe JPv, Schuller AA. Socio-economic inequality in oral health in childhood to young adulthood, despite full dental coverage. Eur J Oral Sci. 2019;127(3):248-53.

99. Markovic D, Soldatovic I, Vukovic R, Peric T, Campus GG, Vukovic A. How Much Country Economy Influences ECC Profile in Serbian Children-A Macro-Level Factor Analysis. Front. 2019;7:285.

100. 2018 Global Reference List of 100 Core Health Indicators (plus health-related SDGs). Geneva:World Health Organization; 2018. Licence: CC BY-NC-SA 3.0 IGO.

101. Kailembo A, Preet R, Stewart Williams J. Socioeconomic inequality in self-reported unmet need for oral health services in adults aged 50 years and over in China, Ghana, and India. Int J Equity Health. 2018;17(1):99-.

102. Wen PC, Lee CB, Chang YH, Ku LE, Li CY. Demographic and rural-urban variations in dental service utilization in Taiwan. Rural Remote Health. 2017;17(3):4161.

103. Nishide A, Fujita M, Sato Y, Nagashima K, Takahashi S, Hata A. Income-Related Inequalities in Access to Dental Care Services in Japan. Int J Environ Res Public Health. 2017;14(5):12.

104. Pulok MH, Gool Kv, Hall J. Horizontal inequity in the utilisation of healthcare services in Australia. Health Policy. 2020;124(11):1263-71.

105. Zivkovic N, Aldossri M, Gomaa N, Farmer JW, Singhal S, Quinonez C, et al. Providing dental insurance can positively impact oral health outcomes in Ontario. BMC Health Serv Res. 2020;20(1):124.

106. Uguru N, Onwujekwe O, Uguru CC, Ogu UU. Achieving universal health coverage in Nigeria: the dilemma of accessing dental care in Enugu state, Nigeria, a mixed methods study. Heliyon. 2021;7(1):e05977.

107. Schwarz E. Access to oral health care - an Australian perspective. Community Dent Oral Epidemiol. 2006;34(3):225-31.

108. Ismail AI, Sohn W. The impact of universal access to dental care on disparities in caries experience in children. J Am Dent Assoc. 2001;132(3):295-303.

109. Clauss A, Sie A, Zabre P, Schmoll J, Sauerborn R, Listl S. Population-Based Prevalence of Oral Conditions as a Basis for Planning Community-Based Interventions: An Epidemiological Study From Rural Burkina Faso. Front. 2021;9:697498.

110. Bhandari A, Wagner T. Self-reported utilization of health care services: improving measurement and accuracy. Med Care Res Rev. 2006;63(2):217-35.

9. Copyright.

‘Figure 1. *The Western Pacific Health System Performance Framework*’ has been adapted from [Regional Office for the Western P. Monitoring universal health coverage in the Western Pacific : framework, indicators, and dashboard: Mandaluyong City : Asian Development Bank; 2016].

10. Appendices.

Appendix 1. The ethical approval letter

McGill | Faculty of Medicine and Health Sciences | Faculté de médecine et des sciences de la santé

3655 Promenade Sir William Osler #633
Montreal, QC H3G 1Y6

3655, Promenade Sir William Osler #633
Montréal, QC H3G 1Y6

T: (514) 398-3124

January 21, 2022

Dr. Paul Allison

Faculty of Dental Medicine and OralHealth Sciences

2001 McGill College Avenue – Suite 500Montreal, Quebec H3A 1G1

eRAP/Info-Ed File Number:22-01-039 IRB Internal Study Number: A01-E02-22A

Study Title*:* *Identification of indicators for the monitoring framework of the global oralhealth action plan*

McGill Principal Investigator: Paul Allison

Sponsor: WHO

Dear Dr. Allison,

Thank you for submitting the above-referenced study for an ethics review.

As this study involves no more than minimal risk, and in accordance with Articles 2.9 and 6.12 of the 2nd Edition of the Canadian Tri-Council Policy Statement of Ethical Conduct for Research Involving Humans (TCPS 2 2018) and U.S. Title 45 CFR 46, Section 110 (b), paragraph (1), we are pleased to inform you that an expedited/delegated review was conducted and ethics approval for the study is provided on 21-Jan- 2022, valid until **20-Jan-2023**. The study proposal will be presented for corroborative approval at the next meeting of the Committee.

The following documents were reviewed and approved:

Study protocol and instruments (IRB dated January 10, 2022)

Invitation letter and consent form (IRB dated January 10, 2022)

The Faculty of Medicine and Health Sciences Institutional Review Board (IRB) is a registered University Research Ethics Board working under the published guidelines of the Tri-Council Policy Statement 2, in compliance with the Cadre de référence en recherche avec des participants humains (MSSS, 2020), and the Food and Drugs Act (17 June 2001); and acts in accordance with the U.S. Code of Federal Regulations that govern research on human subjects (**FWA 00004545**). The IRB working procedures are consistent with internationally accepted principles of good clinical practice.

The Principal Investigator is required to immediately notify the Institutional Review Board Office, via amendment or progress report, of:

Any significant changes to the research project and the reason for that change, includingan indication of ethical implications (if any);

Serious Adverse Effects experienced by participants and the action taken to address thoseeffects;

Any other unforeseen events or unanticipated developments that merit notification;

The inability of the Principal Investigator to continue in her/his role, or any other changein research personnel involved in the project;

A delay of more than 12 months in the commencement of the research project, and;

Termination or closure of the research project.

The Principal Investigator is required to submit an annual progress report (continuing reviewapplication) on the anniversary of the date of the initial approval (or see the date of expiration).

The Faculty of Medicine and Health Sciences IRB may conduct an audit of the research project at anytime.

If the research project involves multiple study sites, the Principal Investigator is required to report all IRB approvals and approved study documents to the appropriate Research Ethics Office (REO) or delegated authority for the participating study sites. Appropriate authorization from each study site must beobtained before the study recruitment and/or testing can begin at that site. Research funds linked to thisresearch project may be withheld and/or the study data may be revoked if the Principal Investigator fails to comply with this requirement. A copy of the study site authorization should be submitted the IRB Office.

It is the Principal Investigator's responsibility to ensure that all researchers associated with this projectare aware of the conditions of approval and which documents have been approved.

The McGill IRB wishes you and your colleagues every success in your research.Sincerely,

Roberta Palmour, PhDChair

Institutional Review Board

cc: Svetlana Komarova, PhD, Associate Dean, Research and Graduate Dental EducationSylvain Baillet, PhD, Associate Dean, Medicine Research

A01-E02-22A (22-01-039)

Appendix 2. First round Delphi questionnaire.

Selection of indicators to be included in the monitoring framework of the global oral health action plan

Thank you for taking part in the first round of the Delphi process to contribute to the selection of indicators for the WHO Monitoring Framework of the Global Oral Health Action Plan. The questionnaire will firstly ask you a few questions related to your socio-demographics, work role, and where in the world you work, and secondly ask your opinion on the relevance, feasibility of data collection, and sensitivity to change of a list of potential indicators.

The objective of this survey is to prioritize, using Delphi methodology, oral health indicators for inclusion into the monitoring framework of the global oral health action plan. Your frank assessment is critical for this important undertaking.

It is important to note that you must complete sections of the questionnaire to proceed to the next sections. The questionnaire will take you approximately 60 minutes. Before you start filling the questionnaire, please take time to go through the accompanying documents, including the Long List of Indicators spreadsheet and the briefing document on the key concepts and criteria considered for the monitoring framework. Please submit your responses by Monday 14 March.

Background: The recent World Health Assembly resolution WHA74.5 (2021) on oral health requested the WHO Director-General to develop a draft global strategy on tackling oral diseases by 2022 and to translate this global strategy by 2023 into an action plan for public oral health, including a framework for tracking progress with clear measurable targets to be achieved by 2030. The monitoring framework of the Global Oral Health Action Plan (GOHAP) will require a set of robust indicators covering key areas such as oral health status, risk factors for oral diseases, national response of health systems, and integration of oral health into universal health coverage (UHC) and general healthcare.

To achieve this work, the WHO Oral Health Programme works with the technical support of McGill University in Canada and the International Health Policy Programme Foundation (IHPP) of the Ministry of Public Health in Thailand. In addition to this collaboration, a global informal experts group (GIEG) composed by representing chief dental officers, WHO collaborating centres, and technical experts from all WHO regions has been established to support the consensus-building process to select the proposed menu of indicators to be included in the monitoring framework.

In this context, it is important to identify a collection of indicators of oral health care delivery and its integration into UHC and general health care. Ideally, these indicators, or at least a subset thereof, will be relevant to all countries and WHO regions, whatever their economic status and their dental care delivery system's level of integration into UHC and general health care. These indicators will be key elements of a global plan for oral health care evolution over the coming years.

It is important to note that you must complete sections of the questionnaire to proceed to the next sections. The questionnaire will take you approximately 60 minutes.

Project: Identification of indicators to inform the monitoring framework of the global oral health action plan

Principal investigator: Paul Allison, Faculty of Dental Medicine & Oral Health Sciences, McGill University

Co-investigators: Benoit Varenne, World Health Organization, and Viroj Tangcharoensathien, International Health Policy Program, Ministry of Public Health, Thailand

Project aim: To identify key indicators to inform the monitoring framework of the global oral health action plan, including indicators of oral health care delivery and its integration within UHC and general health care, that are relevant to all countries and regions, whatever their economic status.

Description of the methodology: We will use a Delphi process for this element of the project. A Delphi process is a means to gather input on a topic from a sample of relevant experts using two or more rounds of questionnaires to converge towards agreed solutions, or in this case indicators. Prior to the Delphi process, work has already been performed to identify potential indicators. Under WHO coordination, IHPP, Ministry of Public Health, Thailand has reviewed multiple datasets and McGill University has performed a scoping review of the literature. Additional indicators were also identified through meetings held with the Global Informal Experts Group (GIEG). Indicators identified through these processes have been combined, refined, and prioritized to create a "draft long list" of potential indicators that have been used to create a questionnaire to initiate the Delphi process.

If I participate in this survey, what will be involved? Participating in this survey means that you are willing to complete an online survey (approx. 30-45 mins) concerning a "long list" of potential indicators, and then again concerning a potential "short list" of indicators

Potential harms, discomforts, or inconveniences: There is no risk associated with participating in this survey. It involves no treatment or procedures that can cause harm, injuries, or discomfort.

Potential benefits: The results from the survey will contribute to the development of the monitoring framework of the GOHAP, in alignment with the WHO Global Strategy on Oral Health.

Confidentiality: We assure you that all information gathered during the course of this survey will be kept confidential and anonymous. The invitation to participate in this survey was sent to you by McGill University. When you register and consent to participate and then complete survey questionnaires, all the data are stored on a firewall- and password-protected server at McGill University. All the data will be identified through a code number.

The results of this project will be published in WHO publications and scientific journals in an anonymous form. De-identified data (after removing any identifiable information) may be shared with other researchers upon request.

Participation and withdrawal: Participation in this online survey is entirely voluntary. You are free to withdraw from it at any time you want to. Should you decide to withdraw from this survey, after completing it, you may send a request to paul.allison@mcgill.ca, and we will delete your data immediately.

Further information: If you would like to have more information or have any questions related to this survey, please do not hesitate to contact the project leader, Dr. Allison. For any questions regarding your rights as a survey participant, please contact the Ms. Ilde Lepore (ilde.lepore@mcgill.ca) who is Ethics Officer at the Faculty of Medicine and Health Sciences, McGill University.

Dr. Paul Allison
Faculty of Dental Medicine & Oral Health Sciences

McGill University
2001 McGill College Avenue, Suite 500
Montreal, QC, H3A 1G1
Tel: 514 398 6324
Email: paul.allison@mcgill.ca

Consent: I have carefully read the above and understand this agreement. I consent to participate in this survey, which involves the collection of data through online questionnaires. I do not waive any of my rights by signing this consent.

- ☐ I have read the consent form and agree to participate in this survey.

Section 1: Background Information

1. What is your gender/ how do you currently identify? *Choose one of the following answers

- ☐ Man
- ☐ Woman
- ☐ Prefer not to answer
- ☐ Prefer to self-describe

2. What is your age? *Choose one of the following answers

- ☐ Less than 40 years
- ☐ 40-54 years
- ☐ 55-70 years
- ☐ More than 70 years
- ☐ Prefer not to answer

3. Which country do you work in? Choose one of the following answers

- ☐ Afghanistan
- ☐ Albania
- ☐ Algeria
- ☐ Andorra
- ☐ Angola
- ☐ Antigua and Barbuda
- ☐ Argentina
- ☐ Armenia
- ☐ Australia
- ☐ Austria
- ☐ Azerbaijan
- ☐ Bahamas
- ☐ Bahrain
- ☐ Bangladesh
- ☐ Barbados
- ☐ Belarus
- ☐ Belgium
- ☐ Belize
- ☐ Benin
- ☐ Bhutan
- ☐ Bolivia (Plurinational State of)
- ☐ Bosnia and Herzegovina
- ☐ Botswana
- ☐ Brazil
- ☐ Brunei Darussalam
- ☐ Bulgaria
- ☐ Burkina Faso
- ☐ Burundi
- ☐ Cabo Verde
- ☐ Cambodia
- ☐ Cameroon
- ☐ Canada
- ☐ Central African Republic
- ☐ Chad
- ☐ Chile
- ☐ China
- ☐ Colombia
- ☐ Comoros
- ☐ Congo
- ☐ Cook Islands
- ☐ Costa Rica
- ☐ Côte d'Ivoire
- ☐ Croatia
- ☐ Cuba
- ☐ Cyprus
- ☐ Czechia
- ☐ Democratic People's Republic of Korea
- ☐ Democratic Republic of the Congo
- ☐ Denmark
- ☐ Djibouti
- ☐ Dominica
- ☐ Dominican Republic
- ☐ Ecuador
- ☐ Egypt
- ☐ El Salvador
- ☐ Equatorial Guinea
- ☐ Eritrea
- ☐ Estonia
- ☐ Eswatini
- ☐ Ethiopia
- ☐ Faroe Islands
- ☐ Fiji
- ☐ Finland
- ☐ France
- ☐ Gabon
- ☐ Gambia
- ☐ Georgia
- ☐ Germany
- ☐ Ghana
- ☐ Greece
- ☐ Grenada
- ☐ Guatemala
- ☐ Guinea
- ☐ Guinea-Bissau
- ☐ Guyana
- ☐ Haiti
- ☐ Honduras
- ☐ Hungary
- ☐ Iceland
- ☐ India
- ☐ Indonesia
- ☐ Iran (Islamic Republic of)
- ☐ Iraq
- ☐ Ireland
- ☐ Israel
- ☐ Italy
- ☐ Jamaica
- ☐ Japan
- ☐ Jordan
- ☐ Kazakhstan
- ☐ Kenya
- ☐ Kiribati
- ☐ Kuwait
- ☐ Kyrgyzstan
- ☐ Lao People's Democratic Republic
- ☐ Latvia
- ☐ Lebanon
- ☐ Lesotho
- ☐ Liberia
- ☐ Libya
- ☐ Lithuania
- ☐ Luxembourg
- ☐ Madagascar
- ☐ Malawi
- ☐ Malaysia
- ☐ Maldives
- ☐ Mali
- ☐ Malta
- ☐ Marshall Islands
- ☐ Mauritania
- ☐ Mauritius
- ☐ Mexico
- ☐ Micronesia (Federated States of)
- ☐ Monaco
- ☐ Mongolia
- ☐ Montenegro
- ☐ Morocco
- ☐ Mozambique
- ☐ Myanmar
- ☐ Namibia
- ☐ Nauru
- ☐ Nepal
- ☐ Netherlands
- ☐ New Zealand
- ☐ Nicaragua
- ☐ Niger
- ☐ Nigeria
- ☐ Niue
- ☐ North Macedonia
- ☐ Norway
- ☐ Oman

- ☐ Pakistan
- ☐ Palau
- ☐ Panama
- ☐ Papua New Guinea
- ☐ Paraguay
- ☐ Peru
- ☐ Philippines
- ☐ Poland
- ☐ Portugal
- ☐ Puerto Rico
- ☐ Qatar
- ☐ Republic of Korea
- ☐ Republic of Moldova
- ☐ Romania
- ☐ Russian Federation
- ☐ Rwanda
- ☐ Saint Kitts and Nevis
- ☐ Saint Lucia
- ☐ Saint Vincent and the Grenadines
- ☐ Samoa
- ☐ San Marino
- ☐ Sao Tome and Principe
- ☐ Saudi Arabia
- ☐ Senegal
- ☐ Serbia
- ☐ Seychelles
- ☐ Sierra Leone
- ☐ Singapore
- ☐ Slovakia
- ☐ Slovenia
- ☐ Solomon Islands
- ☐ Somalia
- ☐ South Africa
- ☐ South Sudan
- ☐ Spain
- ☐ Sri Lanka
- ☐ Sudan
- ☐ Suriname
- ☐ Sweden
- ☐ Switzerland
- ☐ Syrian Arab Republic
- ☐ Tajikistan
- ☐ Thailand
- ☐ Timor-Leste
- ☐ Togo
- ☐ Tokelau
- ☐ Tonga
- ☐ Trinidad and Tobago
- ☐ Tunisia
- ☐ Turkey
- ☐ Turkmenistan
- ☐ Tuvalu
- ☐ Uganda
- ☐ Ukraine
- ☐ United Arab Emirates
- ☐ United Kingdom of Great Britain and Northern Ireland
- ☐ United Republic of Tanzania
- ☐ United States of America
- ☐ Uruguay
- ☐ Uzbekistan
- ☐ Vanuatu
- ☐ Venezuela (Bolivarian Republic of)
- ☐ Viet Nam
- ☐ Yemen
- ☐ Zambia
- ☐ Zimbabwe

4. Which WHO region of the world do you work in? *Choose one of the following answers

- ☐ African Region
- ☐ Eastern Mediterranean Region
- ☐ European Region
- ☐ Region of the Americas
- ☐ South-East Asia Region
- ☐ Western Pacific Region
- ☐ Prefer not to answer

5. Which of the following best describes the work role for which you were invited to participate in this project? *Choose one of the following answers

- ☐ Chief Dental Officer or Senior advisor at the Ministry of Health
- ☐ WHO Collaborating Centre representative
- ☐ Academic or researcher
- ☐ WHO Staff
- ☐ Prefer not to answer
- ☐ Other-please state

Section 2: Relevance, Feasibility, and Sensitivity of indicators

In this survey, you will be asked to rate each potential indicator based on three parameters: 1) relevance at national, regional, and global levels; 2) feasibility for regular collection in your country; and 3) sensitivity to detect change over time in your country.

Relevance: the degree to which the indicator contributes to measuring progress on the implementation of the Global Strategy on Oral Health and upcoming Global Oral Health Action Plan.

Feasibility *: the degree to which an indicator would be easily and repeatedly obtained or collected (at regular intervals to 2030) by suggested data sources.

Sensitivity: the degree to which an indicator can detect changes over time (by 2030).

Each potential indicator will be presented with a brief name, definition, and data source specifications.

[*Each country will be responsible for the collection of data according to the suggested data source, under the leadership of Chief Dental Officers. Please carefully consider this when rating the feasibility of each indicator.]

6. Please choose all that apply:

- ☐ proceed with the rest of the survey

Oral health status indicators /DMFT.

Indicator name: "Mean DMFT"
Definition: DMFT is the sum of the number of Decayed, Missing due to caries, and Filled Teeth in the permanent teeth. The mean number of DMFT is the sum of individual DMFT values divided by the sum of the population.
Preferred data source: At country level: - Population-based surveys (Conducting a National oral health survey) -Routine surveillance systems At global level: - Compiled data by WHO Global Oral Health Data Bank (CAPP)
Related links: WHO Global Oral Health Data Bank (CAPP): https://capp.mau.se/ Global Health Observatory indicator: https://www.who.int/data/gho/indicator-metadata-registry/imr-details/3812

7. Relevance: Rate "Mean DMFT" in terms of ..... (*Please choose the appropriate response for each item)

	Very relevant	Somewhat relevant	Neither relevant nor irrelevant	Somewhat irrelevant	Completely irrelevant	No answer/ I do not know
Relevance to my country	○	○	○	○	○	○
Relevance to my WHO region	○	○	○	○	○	○
Relevance globally	○	○	○	○	○	○

8. Feasibility for regular collection: Rate "Mean DMFT" in terms of..... (*Please choose the appropriate response for each item)

	Very feasible	Somewhat feasible	Neither feasible nor unfeasible	Somewhat unfeasible	Completely unfeasible	No answer/ I do not know
Feasibility in my country	○	○	○	○	○	○

9. Sensitivity to detect changes over time (by 2030): Rate "Mean DMFT" in terms of.....(*Please choose the appropriate response for each item)

	Very sensitive	Somewhat sensitive	Neither sensitive nor insensitive	Somewhat insensitive	Completely insensitive	No answer/ I do not know
Sensitivity to change in my country	○	○	○	○	○	○

Oral health status indicators / Caries

Indicator name: "Prevalence of untreated caries of deciduous teeth in children "
Definition: Estimated prevalence of untreated caries of deciduous teeth in children: Rate of children who have caries in one or more deciduous teeth. Untreated caries is defined as a lesion in a pit or fissure, on a smooth tooth surface, has an unmistakable cavity, undermined enamel, or a detectably softened floor or wall (coronal caries), or feel soft or leathery to probing (root caries).
Preferred data source: At country level: - Population-based surveys (Conducting a national oral health survey) - Routine surveillance systems At global level: - Estimations by Global Burden of Disease 2019 database, Institute for Health Metrics and Evaluation
Related links: - Global Burden of Disease 2019 estimation process is based on multiple relevant data sources, such as National Oral Health Surveys. Link to Global Burden of Disease 2019 database: http://ghdx.healthdata.org/gbd-results-tool - The upcoming WHO Global Oral Health Status Report relies on the latest available GBD data from 2019.

10. Relevance: Rate "Prevalence of untreated caries of deciduous teeth in children" in terms of ...(*Please choose the appropriate response for each item)

	Very relevant	Somewhat relevant	Neither relevant nor irrelevant	Somewhat irrelevant	Completely irrelevant	No answer/ I do not know
Relevance to my country	○	○	○	○	○	○
Relevance to my WHO region	○	○	○	○	○	○
Relevance globally	○	○	○	○	○	○

11. Feasibility for regular collection: Rate "Prevalence of untreated caries of deciduous teeth in children" in terms of.....(*Please choose the appropriate response for each item)

	Very feasible	Somewhat feasible	Neither feasible nor unfeasible	Somewhat unfeasible	Completely unfeasible	No answer/ I do not know
Feasibility in my country	○	○	○	○	○	○

12.Sensitivity to detect changes over time (by 2030): Rate "Prevalence of untreated caries of deciduous teeth in children" in terms of.....(*Please choose the appropriate response for each item)

	Very sensitive	Somewhat sensitive	Neither sensitive nor insensitive	Somewhat insensitive	Completely insensitive	No answer/ I do not know
Sensitivity to change in my country	○	○	○	○	○	○

Oral health status indicators / Caries

Indicator name: "Prevalence of untreated caries of permanent teeth"
Definition: Estimated prevalence of untreated caries of permanent teeth in people: Rate of persons with one more carious permanent teeth. Untreated caries is defined as a lesion in a pit or fissure, on a smooth tooth surface, has an unmistakable cavity, undermined enamel, or a detectably softened floor or wall (coronal caries), or feel soft or leathery to probing (root caries).
Preferred data source: At country level: - Population-based surveys (Conducting a national oral health survey) - Routine surveillance systems At global level: - Estimations by Global Burden of Disease 2019 database, Institute for Health Metrics and Evaluation
Related links: Global Burden of Disease 2019 estimation process is based on multiple relevant data sources, such as National Oral Health Surveys. Link to Global Burden of Disease 2019 database: http://ghdx.healthdata.org/gbd-results-tool The upcoming WHO Global Oral Health Status Report relies on the latest available GBD data from 2019.

13. Relevance: Rate "Prevalence of untreated caries of permanent teeth" in terms of .....(*Please choose the appropriate response for each item)

	Very relevant	Somewhat relevant	Neither relevant nor irrelevant	Somewhat irrelevant	Completely irrelevant	No answer/ I do not know
Relevance to my country	○	○	○	○	○	○
Relevance to my WHO region	○	○	○	○	○	○

Relevance globally	○	○	○	○	○	○

14. Feasibility for regular collection: Rate "Prevalence of untreated caries of permanent teeth" in terms of.....(*Please choose the appropriate response for each item)

	Very feasible	Somewhat feasible	Neither feasible nor unfeasible	Somewhat unfeasible	Completely unfeasible	No answer/ I do not know
Feasibility in my country	○	○	○	○	○	○

15. Sensitivity to detect changes over time (by 2030): Rate "Prevalence of untreated caries of permanent teeth" in terms of.....(*Please choose the appropriate response for each item)

	Very sensitive	Somewhat sensitive	Neither sensitive nor insensitive	Somewhat insensitive	Completely insensitive	No answer/ I do not know
Sensitivity to change in my country	○	○	○	○	○	○

Oral health status indicators / Missing teeth/edentulism

Indicator name: "Prevalence of edentulism"
Definition: Estimated prevalence of edentulism in people: Rate of persons with complete loss of natural teeth.
Preferred data source: At country level: - Population-based surveys (Conducting a national oral health survey) - Routine surveillance systems At global level: - Estimations by Global Burden of Disease 2019 database, Institute for Health Metrics and Evaluation
Related links: Global Burden of Disease 2019 estimation process is based on multiple relevant data sources, such as National Oral Health Surveys. Link to Global Burden of Disease 2019 database: http://ghdx.healthdata.org/gbd-results-tool The upcoming WHO Global Oral Health Status Report relies on the latest available GBD data from 2019.

16. Relevance: Rate "Prevalence of edentulism" in terms of .....(*Please choose the appropriate response for each item)

	Very relevant	Somewhat relevant	Neither relevant nor irrelevant	Somewhat irrelevant	Completely irrelevant	No answer/ I do not know
Relevance to my country	○	○	○	○	○	○
Relevance to my WHO region	○	○	○	○	○	○
Relevance globally	○	○	○	○	○	○

17. Feasibility for regular collection: Rate "Prevalence of edentulism" in terms of.....(*Please choose the appropriate response for each item)

	Very feasible	Somewhat feasible	Neither feasible nor unfeasible	Somewhat unfeasible	Completely unfeasible	No answer/ I do not know
Feasibility in my country	○	○	○	○	○	○

18. Sensitivity to detect changes over time (by 2030): Rate "Prevalence of edentulism" in terms of.....(*Please choose the appropriate response for each item)

	Very sensitive	Somewhat sensitive	Neither sensitive nor insensitive	Somewhat insensitive	Completely insensitive	No answer/ I do not know
Sensitivity to change in my country	○	○	○	○	○	○

Oral health status indicators / Missing teeth

Indicator name: "Missing teeth"
Definition: Missing teeth status refers to the number of the missing teeth. Normally measured in permanent teeth in adult populations and is related to a fully dentata status of 28 teeth (excluding third molars).
Preferred data source: At country level: - Population-based surveys (Conducting the WHO STEPS Survey using the optional Oral Health Module)
Related links: WHO STEPS survey - Oral Health Module: https://www.who.int/teams/noncommunicable-diseases/surveillance/systems-tools/steps/instrument

19. Relevance: Rate "Missing teeth" in terms of .....(*Please choose the appropriate response for each item)

	Very relevant	Somewhat relevant	Neither relevant nor irrelevant	Somewhat irrelevant	Completely irrelevant	No answer/ I do not know
Relevance to my country	○	○	○	○	○	○
Relevance to my WHO region	○	○	○	○	○	○
Relevance globally	○	○	○	○	○	○

20. Feasibility for regular collection: Rate "Missing teeth" in terms of.....(*Please choose the appropriate response for each item)

	Very feasible	Somewhat feasible	Neither feasible nor unfeasible	Somewhat unfeasible	Completely unfeasible	No answer/ I do not know
Feasibility in my country	○	○	○	○	○	○

21. Sensitivity to detect changes over time (by 2030): Rate "Missing teeth" in terms of.....(*Please choose the appropriate response for each item)

	Very sensitive	Somewhat sensitive	Neither sensitive nor insensitive	Somewhat insensitive	Completely insensitive	No answer/ I do not know
Sensitivity to change in my country	○	○	○	○	○	○

Oral health status indicators / Periodontal disease

Indicator name: "Prevalence of severe periodontal disease"
Definition: Estimated prevalence of severe periodontal disease in people: Rate of persons affected by severe periodontal disease, a chronic inflammation of the soft and hard tissues that support and anchor the teeth.
Preferred data source: At country level: - Population-based surveys (Conducting a national oral health survey) - Routine surveillance systems At global level: - Estimations by Global Burden of Disease 2019 database, Institute for Health Metrics and Evaluation
Related links: Global Burden of Disease 2019 estimates are based on multiple relevant data sources, such as National Oral Health Surveys. Link to Global Burden of Disease 2019 database: http://ghdx.healthdata.org/gbd-results-tool The upcoming WHO Global Oral Health Status Report relies on the latest available GBD data from 2019.

22. Relevance: Rate "Prevalence of severe periodontal disease" in terms of .....(*Please choose the appropriate response for each item)

	Very relevant	Somewhat relevant	Neither relevant nor irrelevant	Somewhat irrelevant	Completely irrelevant	No answer/ I do not know
Relevance to my country	○	○	○	○	○	○
Relevance to my WHO region	○	○	○	○	○	○
Relevance globally	○	○	○	○	○	○

23. Feasibility for regular collection: Rate "Prevalence of severe periodontal disease" in terms of.....(*Please choose the appropriate response for each item)

	Very feasible	Somewhat feasible	Neither feasible nor unfeasible	Somewhat unfeasible	Completely unfeasible	No answer/ I do not know
Feasibility in my country	○	○	○	○	○	○

24. Sensitivity to detect changes over time (by 2030): Rate "Prevalence of severe periodontal disease" in terms of.....(*Please choose the appropriate response for each item)

	Very sensitive	Somewhat sensitive	Neither sensitive nor insensitive	Somewhat insensitive	Completely insensitive	No answer/ I do not know
Sensitivity to change in my country	○	○	○	○	○	○

Oral health status indicators / Lip and oral cavity cancer

Indicator name: "Number of new cases of oral cancer (lip and oral cavity cancer) (all ages)"
Definition: Estimated number of new cases of lip and oral cavity cancer: Estimated number of new cases of lip and oral cavity cancer in females, males, and total, among all ages.
Preferred data source: At country level: - Population-based cancer registries At global level: - Estimations by Globocan 2020 database, International Agency for Research on Oral Cancer
Related links: GLOBOCAN estimates use the available data on cancer incidence from population-based cancer registries. GLOBOCAN 2020 database: Available from: https://gco.iarc.fr/today The upcoming WHO Global Oral Health Status Report relies on data from the International Agency for Research on Cancer (IARC).

25. Relevance: Rate "Number of new cases of oral cancer (lip and oral cavity cancer) (all ages)" in terms of ..... (*Please choose the appropriate response for each item)

	Very relevant	Somewhat relevant	Neither relevant nor irrelevant	Somewhat irrelevant	Completely irrelevant	No answer/ I do not know
Relevance to my country	○	○	○	○	○	○
Relevance to my WHO region	○	○	○	○	○	○
Relevance globally	○	○	○	○	○	○

26. Feasibility for regular collection: Rate "Number of new cases of oral cancer (lip and oral cavity cancer) (all ages)" in terms of.....(*Please choose the appropriate response for each item)

	Very feasible	Somewhat feasible	Neither feasible nor unfeasible	Somewhat unfeasible	Completely unfeasible	No answer/ I do not know
Feasibility in my country	○	○	○	○	○	○

27. Sensitivity to detect changes over time (by 2030): Rate "Number of new cases of oral cancer (lip and oral cavity) (all ages)" in terms of..... (*Please choose the appropriate response for each item)

	Very sensitive	Somewhat sensitive	Neither sensitive nor insensitive	Somewhat insensitive	Completely insensitive	No answer/ I do not know
Sensitivity to change in my country	○	○	○	○	○	○

Oral health status indicators / Lip and oral cavity cancer

Indicator name: "Incidence rate of oral cancer (lip and oral cavity cancer) (age-standardized rate per 100,000 population)"

Definition: Estimated incidence rate of lip and oral cavity cancer (age-standardized per 100,000 population): Incidence rates of lip and oral cavity cancer in females, males, and total, among all ages as age-standardized per 100,000 population.
Preferred data source: At country level: - Population-based cancer registries At global level: - Estimations by Globocan 2020 database, International Agency for Research on Oral Cancer
Related links: GLOBOCAN estimates use the available data on cancer incidence from population-based cancer registries. GLOBOCAN 2020 database: Available from: https://gco.iarc.fr/today The upcoming WHO Global Oral Health Status Report relies on data from the International Agency for Research on Cancer (IARC).

28. Relevance: Rate "Incidence rate of oral cancer (lip and oral cavity cancer) (age-standardized rate per 100,000 population)" in terms of ..... (*Please choose the appropriate response for each item)

	Very relevant	Somewhat relevant	Neither relevant nor irrelevant	Somewhat irrelevant	Completely irrelevant	No answer/ I do not know
Relevance to my country	○	○	○	○	○	○
Relevance to my WHO region	○	○	○	○	○	○
Relevance globally	○	○	○	○	○	○

29. Feasibility for regular collection: Rate "Incidence rate of oral cancer (lip and oral cavity cancer) (age-standardized rate per 100,000 population)" in terms of.....(*Please choose the appropriate response for each item)

	Very feasible	Somewhat feasible	Neither feasible nor unfeasible	Somewhat unfeasible	Completely unfeasible	No answer/ I do not know
Feasibility in my country	○	○	○	○	○	○

30. Sensitivity to detect changes over time (by 2030): Rate "Incidence rate of oral cancer (lip and oral cavity cancer) (age-standardized rate per 100,000 population)" in terms of.....(*Please choose the appropriate response for each item)

	Very sensitive	Somewhat sensitive	Neither sensitive nor insensitive	Somewhat insensitive	Completely insensitive	No answer/ I do not know
Sensitivity to change in my country	○	○	○	○	○	○

Oral health status indicators / self-reported oral health status

Indicator name: "Self-reported oral health status"
Definition: Self-reported oral health status, including pain or discomfort, difficulty in chewing food, days not at work because of teeth or mouth (e.g. question: "During the past 12 months, did your teeth or mouth cause any pain or discomfort?).
Preferred data source: At country level: Population-based surveys (Conducting the WHO STEPS Survey using the optional Oral Health Module)
Related links: WHO STEPS survey - Oral Health Module: https://www.who.int/teams/noncommunicable-diseases/surveillance/systems-tools/steps/instrument

31. Relevance: Rate "Self-reported oral health status" in terms of .....(*Please choose the appropriate response for each item)

	Very relevant	Somewhat relevant	Neither relevant nor irrelevant	Somewhat irrelevant	Completely irrelevant	No answer/ I do not know
Relevance to my country	○	○	○	○	○	○
Relevance to my WHO region	○	○	○	○	○	○
Relevance globally	○	○	○	○	○	○

32. Feasibility for regular collection: Rate "Self-reported oral health status" in terms of.... (*Please choose the appropriate response for each item)

	Very feasible	Somewhat feasible	Neither feasible nor unfeasible	Somewhat unfeasible	Completely unfeasible	No answer/ I do not know
Feasibility in my country	○	○	○	○	○	○

33. Sensitivity to detect changes over time (by 2030): Rate "Self-reported oral health status" in terms of.....(*Please choose the appropriate response for each item)

	Very sensitive	Somewhat sensitive	Neither sensitive nor insensitive	Somewhat insensitive	Completely insensitive	No answer/ I do not know
Sensitivity to change in my country	○	○	○	○	○	○

Oral health status: You have now finished responding to questions concerning indicators of "Oral Health Status".

- Mean DMFT
- Prevalence of untreated caries of deciduous teeth in children
- Prevalence of untreated caries of permanent teeth
- Prevalence of edentulism
- Missing teeth
- Prevalence of severe periodontal disease
- Number of new cases of oral cancer (lip and oral cavity cancer) (all ages)
- Incidence rate of oral cancer (lip and oral cavity cancer) (age-standardized rate per 100,000 population)
- Self-reported oral health status

34. Are there any indicators of "Oral Health Status" that were not included but that you believe should be? Please provide a name and brief rationale for inclusion below. Please write your answer here:

35. Do you have any other comments regarding the potential indicators listed above, that could assist to refine them further? For example, regarding the definitions, data sources, age groups, data disaggregation, etc. Please write your answer here:

Indicator name: "Prevalence of current tobacco use among persons aged 15 years and older (age-standardized rate)"
Definition: The percentage of the population aged 15 years and over who currently use any tobacco product (smoked and/or smokeless tobacco) on a daily or non-daily basis. Tobacco products include cigarettes, pipes, cigars, cigarillos, waterpipes (hookah, shisha), bidis, kretek, heated tobacco products, and all forms of smokeless (oral and nasal) tobacco. Tobacco products exclude e-cigarettes (which do not contain tobacco), "e-cigars", "e-hookahs", JUUL, and "e-pipes".
Preferred data source: At country level: - Population based surveys (Conducting the WHO Global Adult Tobacco Survey or WHO STEPS survey) At global level: WHO Global Health Observatory 2019 database
Related links: WHO Global Adult Tobacco Survey: https://www.who.int/teams/noncommunicable-diseases/surveillance/systems-tools/global-adult-tobacco-survey WHO STEPS survey: https://www.who.int/teams/noncommunicable-diseases/surveillance/systems-tools/steps/instrument WHO Global Health Observatory indicator: https://www.who.int/data/gho/data/indicators/indicator-details/GHO/gho-tobacco-control-monitor-current-tobaccouse-tobaccosmoking-cigarrettesmoking-agestd-tobagestdcurr

36. Relevance: Rate "Prevalence of current tobacco use among persons aged 15 years and older (age-standardized rate)" in terms of ..... (*Please choose the appropriate response for each item)

	Very relevant	Somewhat relevant	Neither relevant nor irrelevant	Somewhat irrelevant	Completely irrelevant	No answer/ I do not know
Relevance to my country	○	○	○	○	○	○
Relevance to my WHO region	○	○	○	○	○	○
Relevance globally	○	○	○	○	○	○

37. Feasibility for regular collection: Rate "Prevalence of current tobacco use among persons aged 15 years and older (age-standardized rate)" in terms of.....
(*Please choose the appropriate response for each item)

	Very feasible	Somewhat feasible	Neither feasible nor unfeasible	Somewhat unfeasible	Completely unfeasible	No answer/ I do not know
Feasibility in my country	○	○	○	○	○	○

38. Sensitivity to detect changes over time (by 2030): Rate "Prevalence of current tobacco use among persons aged 15 years and older (age-standardized rate)" in terms of..... ..... (*Please choose the appropriate response for each item)

	Very sensitive	Somewhat sensitive	Neither sensitive nor insensitive	Somewhat insensitive	Completely insensitive	No answer/ I do not know
Sensitivity to change in my country	○	○	○	○	○	○

Risk factor of oral health/ Smokeless tobacco

Indicator name: "Prevalence of smokeless tobacco use among persons aged 15 years and older"
Definition: Estimated prevalence of smokeless tobacco use among persons aged 15 years and older (%).
Preferred data source: At country level: - Population-based surveys (Conducting the WHO Global Adult Tobacco Survey or WHO STEPS survey) At global level: - Estimations included in WHO global report on trends in prevalence of tobacco use 2000-2025 (Fourth edition)
Related links: WHO Global Adult Tobacco Survey: https://www.who.int/teams/noncommunicable-diseases/surveillance/systems-tools/global-adult-tobacco-survey WHO STEPS survey: https://www.who.int/teams/noncommunicable-diseases/surveillance/systems-tools/steps/instrument WHO global report on trends in prevalence of tobacco use 2000-2025 (fourth edition): https://www.who.int/publications/i/item/9789240039322

39. Relevance: Rate "Prevalence of smokeless tobacco use among persons aged 15 years and older" in terms of ..... (*Please choose the appropriate response for each item)

	Very relevant	Somewhat relevant	Neither relevant nor irrelevant	Somewhat irrelevant	Completely irrelevant	No answer/ I do not know
Relevance to my country	○	○	○	○	○	○
Relevance to my WHO region	○	○	○	○	○	○
Relevance globally	○	○	○	○	○	○

40. Feasibility for regular collection: Rate "Prevalence of smokeless tobacco use among persons aged 15 years and older" in terms of..... ..... (*Please choose the appropriate response for each item)

	Very feasible	Somewhat feasible	Neither feasible nor unfeasible	Somewhat unfeasible	Completely unfeasible	No answer/ I do not know
Feasibility in my country	○	○	○	○	○	○

41. Sensitivity to detect changes over time (by 2030): Rate "Prevalence of smokeless tobacco use among persons aged 15 years and older" in terms of..... .....
(*Please choose the appropriate response for each item)

	Very sensitive	Somewhat sensitive	Neither sensitive nor insensitive	Somewhat insensitive	Completely insensitive	No answer/ I do not know

Sensitivity to change in my country	○	○	○	○	○	○

Risk factor of oral health / Betel quid/areca nut

Indicator name: "Prevalence of current betel quid use among persons aged 15 years and older"
Definition: Prevalence of current betel quid use among persons aged 15 years and older (%): The percentage of the population aged 15 years and over who currently chew BQ at least 3 days a week.
Preferred data source: At country level: Population-based surveys
Related links: A future source of information on the field: https://www.iarc.who.int/news-events/iarc-handbooks-meetings-volume-19-oral-cancer-prevention/

42. Relevance: Rate "Prevalence of current betel quid use among persons aged 15 years and older" in terms of .... (*Please choose the appropriate response for each item)

	Very relevant	Somewhat relevant	Neither relevant nor irrelevant	Somewhat irrelevant	Completely irrelevant	No answer/ I do not know
Relevance to my country	○	○	○	○	○	○
Relevance to my WHO region	○	○	○	○	○	○
Relevance globally	○	○	○	○	○	○

43. Feasibility for regular collection: Rate "Prevalence of current betel quid use among persons aged 15 years and older" in terms of..... ..... (*Please choose the appropriate response for each item)

	Very feasible	Somewhat feasible	Neither feasible nor unfeasible	Somewhat unfeasible	Completely unfeasible	No answer/ I do not know
Feasibility in my country	○	○	○	○	○	○

44. Sensitivity to detect changes over time (by 2030): Rate "Prevalence of current betel quid use among persons aged 15 years and older" in terms of..... .....
(*Please choose the appropriate response for each item)

	Very sensitive	Somewhat sensitive	Neither sensitive nor insensitive	Somewhat insensitive	Completely insensitive	No answer/ I do not know
Sensitivity to change in my country	○	○	○	○	○	○

Risk factor of oral health / Harmful use of alcohol

Indicator name: "Per capita total alcohol consumption, 15+ years (liters of pure alcohol per year)"
Definition: The total alcohol per capita consumption comprises both, the recorded and the unrecorded alcohol per capita consumption.
Preferred data source: At country level: Government statistics At global level: WHO Global Health Observatory 2019 database
Related links: WHO Global Health Observatory: https://www.who.int/data/gho/data/indicators/indicator-details/GHO/total-(recorded-unrecorded)-alcohol-per-capita-(15-)-consumption

45. Relevance: Rate "Per capita total alcohol consumption, 15+ years (litres of pure alcohol per year)" in terms of .... (*Please choose the appropriate response for each item)

	Very relevant	Somewhat relevant	Neither relevant nor irrelevant	Somewhat irrelevant	Completely irrelevant	No answer/ I do not know
Relevance to my country	○	○	○	○	○	○
Relevance to my WHO region	○	○	○	○	○	○
Relevance globally	○	○	○	○	○	○

46. Feasibility for regular collection: Rate "Per capita total alcohol consumption, 15+ years (liters of pure alcohol per year)" in terms of..... ..... (*Please choose the appropriate response for each item)

	Very feasible	Somewhat feasible	Neither feasible nor unfeasible	Somewhat unfeasible	Completely unfeasible	No answer/ I do not know
Feasibility in my country	○	○	○	○	○	○

47. Sensitivity to detect changes over time (by 2030): Rate "Per capita total alcohol consumption, 15+ years (liters of pure alcohol per year)" in terms of..... .....
(*Please choose the appropriate response for each item)

	Very sensitive	Somewhat sensitive	Neither sensitive nor insensitive	Somewhat insensitive	Completely insensitive	No answer/ I do not know
Sensitivity to change in my country	○	○	○	○	○	○

Risk factor of oral health / Diet (including sugar)

Indicator name: "Per capita availability of sugar (grams/day)"
Definition: Availability (i.e., supply) of sugar in grams per capita.
Preferred data source: At global level: Institute of Health Metrics and Evaluation and United Nations Food and Agriculture Organization, 2013.

48. Relevance: Rate "Per capita availability of sugar (grams/day)" in terms of .... (*Please choose the appropriate response for each item)

	Very relevant	Somewhat relevant	Neither relevant nor irrelevant	Somewhat irrelevant	Completely irrelevant	No answer/ I do not know
Relevance to my country	○	○	○	○	○	○
Relevance to my WHO region	○	○	○	○	○	○
Relevance globally	○	○	○	○	○	○

49. Feasibility for regular collection: Rate "Per capita availability of sugar (grams/day)" in terms of..... ..... (*Please choose the appropriate response for each item)

	Very feasible	Somewhat feasible	Neither feasible nor unfeasible	Somewhat unfeasible	Completely unfeasible	No answer/ I do not know
Feasibility in my country	○	○	○	○	○	○

50. Sensitivity to detect changes over time (by 2030): Rate "Per capita availability of sugar (grams/day)" in terms of..... ..... (*Please choose the appropriate response for each item)

	Very sensitive	Somewhat sensitive	Neither sensitive nor insensitive	Somewhat insensitive	Completely insensitive	No answer/ I do not know
Sensitivity to change in my country	○	○	○	○	○	○

Risk factor of oral health / Diet (including sugar)

Indicator name: "Per capita consumption of sugar (kilogram/year)"
Definition: Per capita consumption of sugar (kilogram/year)
Preferred data source: At global level: Organization for Economic Co-operation Development (OECD) and the Food and Agricultural Organization (FAO) of the United Nations.
Related links: The OECD-FAO Agricultural Outlook 2021-2030: https://www.oecd-ilibrary.org/agriculture-and-food/oecd-fao-agricultural-outlook-2021-2030_19428846-en;jsessionid=AP81UPEUSBnElJxPVnLRg2_C.ip-10-240-5-69

51. Relevance: Rate "Per capita consumption of sugar (kilogram/year)" in terms of .... (*Please choose the appropriate response for each item)

	Very relevant	Somewhat relevant	Neither relevant nor irrelevant	Somewhat irrelevant	Completely irrelevant	No answer/ I do not know
Relevance to my country	○	○	○	○	○	○
Relevance to my WHO region	○	○	○	○	○	○
Relevance globally	○	○	○	○	○	○

52. Feasibility for regular collection: Rate "Per capita consumption of sugar (kilogram/year)" in terms of..... ..... (*Please choose the appropriate response for each item)

	Very feasible	Somewhat feasible	Neither feasible nor unfeasible	Somewhat unfeasible	Completely unfeasible	No answer/ I do not know
Feasibility in my country	○	○	○	○	○	○

53. Sensitivity to detect changes over time (by 2030): Rate "Per capita consumption of sugar (kilogram/year)" in terms of..... ..... (*Please choose the appropriate response for each item)

	Very sensitive	Somewhat sensitive	Neither sensitive nor insensitive	Somewhat insensitive	Completely insensitive	No answer/ I do not know
Sensitivity to change in my country	○	○	○	○	○	○

Risk factor of oral health / Oral hygiene and fluoride

Indicator name: "Population using fluoride toothpaste on a daily basis"
Definition: Proportion of the population cleaning or brushing daily with fluoride toothpaste.
Preferred data source: At country level: Population-based surveys (Conducting the WHO STEPS Survey using Oral Health Module & WHO Global School-based Student Health Survey)
Related links: WHO STEPS survey - Oral Health Module: https://www.who.int/teams/noncommunicable-diseases/surveillance/systems-tools/steps/instrument WHO Global School-based Student Health Survey: Questionnaire available from: https://www.who.int/teams/noncommunicable-diseases/surveillance/systems-tools/global-school-based-student-health-survey/questionnaire

54. Relevance: Rate "Population using fluoride toothpaste on a daily basis" in terms of .... (*Please choose the appropriate response for each item)

	Very relevant	Somewhat relevant	Neither relevant nor irrelevant	Somewhat irrelevant	Completely irrelevant	No answer/ I do not know
Relevance to my country	○	○	○	○	○	○
Relevance to my WHO region	○	○	○	○	○	○
Relevance globally	○	○	○	○	○	○

55. Feasibility for regular collection: Rate "Population using fluoride toothpaste on a daily basis" in terms of..... ..... (*Please choose the appropriate response for each item)

	Very feasible	Somewhat feasible	Neither feasible nor unfeasible	Somewhat unfeasible	Completely unfeasible	No answer/ I do not know

Feasibility in my country	○	○	○	○	○	○

56. Sensitivity to detect changes over time (by 2030): Rate "Population using fluoride toothpaste on a daily basis" in terms of..... ..... (*Please choose the appropriate response for each item)

	Very sensitive	Somewhat sensitive	Neither sensitive nor insensitive	Somewhat insensitive	Completely insensitive	No answer/ I do not know
Sensitivity to change in my country	○	○	○	○	○	○

Risk factors of oral health: You have now finished responding to questions concerning indicators of "Risk factors of oral health".

- Prevalence of current tobacco use among persons aged 15 years and older (age-standardized rate)
- Prevalence of smokeless tobacco use among persons aged 15 years and older
- Prevalence of current betel quid use among persons aged 15 years and older
- Per capita total alcohol consumption, 15+ years (litres of pure alcohol per year)
- Per capita availability of sugar (grams/day)
- Per capita consumption of sugar (kilogram/year)
- Population using fluoride toothpaste on a daily basis

57. Are there any indicators of "Risk factors of oral health" that were not included but that you believe should be? Please provide a name and brief rationale for inclusion below. Please write your answer here:

58. Do you have any other comments regarding the potential indicators listed above, that could assist to refine them further? For example, regarding the definitions, data sources, age groups, data disaggregation, etc. Please write your answer here:

UHC for oral health / Service and population coverage

Indicator name: "Inclusion of oral health interventions in public Health Benefit Packages"
Definition: The extent to which oral health interventions are included in the largest government health financing scheme. The term “largest” is defined as having the highest total population eligible to receive services, while the term “government” is defined as including any public sector scheme for health service provision, including coverage for groups such as the general population, public sector employees and/or the military.
Preferred data source: At country level: - Government representative at Ministry of Health (Responding to Health Technology Assessment and Benefit Package Survey conducted by WHO)
Related links: WHO Health Technology Assessment and Health Benefit Package Survey 2021 - Results Dashboard: https://www.who.int/teams/health-systems-governance-and-financing/economic-analysis/health-technology-assessment-and-benefit-package-design/survey-homepage

59. Relevance: Rate "Inclusion of oral health interventions in public Health Benefit Packages" in terms of .... (*Please choose the appropriate response for each item)

	Very relevant	Somewhat relevant	Neither relevant nor irrelevant	Somewhat irrelevant	Completely irrelevant	No answer/ I do not know
Relevance to my country	○	○	○	○	○	○
Relevance to my WHO region	○	○	○	○	○	○
Relevance globally	○	○	○	○	○	○

60. Feasibility for regular collection: Rate "Inclusion of oral health interventions in public Health Benefit Packages" in terms of..... ..... (*Please choose the appropriate response for each item)

	Very feasible	Somewhat feasible	Neither feasible nor unfeasible	Somewhat unfeasible	Completely unfeasible	No answer/ I do not know
Feasibility in my country	○	○	○	○	○	○

61. Sensitivity to detect changes over time (by 2030): Rate "Inclusion of oral health interventions in public Health Benefit Packages" in terms of..... ..... (*Please choose the appropriate response for each item)

	Very sensitive	Somewhat sensitive	Neither sensitive nor insensitive	Somewhat insensitive	Completely insensitive	No answer/ I do not know
Sensitivity to change in my country	○	○	○	○	○	○

UHC for oral health / Service and population coverage

Indicator name: "Availability of oral health care services in primary care facilities of the public health sector"
Definition: Availability of procedures for detecting, managing, and treating oral diseases in primary care facilities of the public health sector: Generally available refers to reaching 50% or more patients in need whereas generally not available refers to reaching less than 50% of patients in need. It includes: - availability of oral health screening for early detection of oral diseases - availability of urgent treatment for providing emergency oral care and pain relief - availability of basic restorative dental procedures to treat existing dental decay
Preferred data source: At country level: Government representative at Ministry of Health (Responding to WHO NCD Country Capacity Survey)
Related links: WHO NCD Country Capacity Survey: https://www.who.int/teams/ncds/surveillance/monitoring-capacity/ncdccs

62. Relevance: Rate "Availability of oral health care services in primary care facilities of the public health sector" in terms of .... (*Please choose the appropriate response for each item)

	Very relevant	Somewhat relevant	Neither relevant nor irrelevant	Somewhat irrelevant	Completely irrelevant	No answer/ I do not know
Relevance to my country	○	○	○	○	○	○
Relevance to my WHO region	○	○	○	○	○	○
Relevance globally	○	○	○	○	○	○

63. Feasibility for regular collection: Rate "Availability of oral health care services in primary care facilities of the public health sector" in terms of..... ..... (*Please choose the appropriate response for each item)

	Very feasible	Somewhat feasible	Neither feasible nor unfeasible	Somewhat unfeasible	Completely unfeasible	No answer/ I do not know
Feasibility in my country	○	○	○	○	○	○

64. Sensitivity to detect changes over time (by 2030): Rate "Availability of oral health care services in primary care facilities of the public health sector" in terms of..... ..... (*Please choose the appropriate response for each item)

	Very sensitive	Somewhat sensitive	Neither sensitive nor insensitive	Somewhat insensitive	Completely insensitive	No answer/ I do not know
Sensitivity to change in my country	○	○	○	○	○	○

UHC for oral health / Service and population coverage

Indicator name: "Proportion of the population who visited an oral health care professional"
Definition: Proportion of the population who visited an oral health care professional within a certain period of time (eg question: "Did you consult with an oral health professional during the past year?").
Preferred data source: At country level: Population-based survey
Related links: The WHO STEPS survey—Oral Health Module: https://www.who.int/teams/noncommunicable-diseases/surveillance/systems-tools/steps/instrument

65. Relevance: Rate "Proportion of the population who visited an oral health care professional" in terms of .... (*Please choose the appropriate response for each item)

	Very relevant	Somewhat relevant	Neither relevant nor irrelevant	Somewhat irrelevant	Completely irrelevant	No answer/ I do not know
Relevance to my country	○	○	○	○	○	○
Relevance to my WHO region	○	○	○	○	○	○
Relevance globally	○	○	○	○	○	○

66. Feasibility for regular collection: Rate "Proportion of the population who visited an oral health care professional" in terms of..... ..... (*Please choose the appropriate response for each item)

	Very feasible	Somewhat feasible	Neither feasible nor unfeasible	Somewhat unfeasible	Completely unfeasible	No answer/ I do not know
Feasibility in my country	○	○	○	○	○	○

67. Sensitivity to detect changes over time (by 2030): Rate "Proportion of the population who visited an oral health care professional" in terms of..... ..... (*Please choose the appropriate response for each item)

	Very sensitive	Somewhat sensitive	Neither sensitive nor insensitive	Somewhat insensitive	Completely insensitive	No answer/ I do not know
Sensitivity to change in my country	○	○	○	○	○	○

UHC for oral health / Service and population coverage

Indicator name: "Prevalence of unmet oral health needs (and reasons for unmet needs)"
Definition: Proportion of the population unable to obtain oral health care when they perceive the need (e.g. question "during the past year, have you had the need for oral health care but not been able to obtain it?"). Reasons for unmet oral health needs would include financial (too expensive), transportation/geographic (too far to travel), or timeliness (long waiting lists) reasons.
Preferred data source: At country level: Population-based survey
Related links: OECD Unmet needs for oral health care: https://www.oecd.org/health/health-systems/Unmet-Needs-for-Health-Care-Brief-2020.pdf

68. Relevance: Rate "Prevalence of unmet oral health needs (and reason for unmet needs)" in terms of .... (*Please choose the appropriate response for each item)

	Very relevant	Somewhat relevant	Neither relevant nor irrelevant	Somewhat irrelevant	Completely irrelevant	No answer/ I do not know
Relevance to my country	○	○	○	○	○	○
Relevance to my WHO region	○	○	○	○	○	○
Relevance globally	○	○	○	○	○	○

69. Feasibility for regular collection: Rate "Prevalence of unmet oral health needs (and reason for unmet needs)" in terms of..... ..... (*Please choose the appropriate response for each item)

	Very feasible	Somewhat feasible	Neither feasible nor unfeasible	Somewhat unfeasible	Completely unfeasible	No answer/ I do not know
Feasibility in my country	○	○	○	○	○	○

70. Sensitivity to detect changes over time (by 2030): Rate "Prevalence of unmet oral health needs (and reason for unmet needs)" in terms of..... ..... (*Please choose the appropriate response for each item)

	Very sensitive	Somewhat sensitive	Neither sensitive nor insensitive	Somewhat insensitive	Completely insensitive	No answer/ I do not know
Sensitivity to change in my country	○	○	○	○	○	○

UHC for oral health / Service and population coverage: You have now finished responding to questions concerning indicators of "UHC for oral health" (Subcategory of "service and population coverage").

- Inclusion of oral health interventions in public Health Benefit Packages
- Availability of oral health care services in primary care facilities of the public health sector
- Proportion of the population who visited an oral health care professional
- Prevalence of unmet oral health needs (and reason for unmet needs)

71. Are there any indicators of "UHC for oral health" (Subcategory of "Service/population coverage") that were not included but that you believe should be? Please provide a name and brief rationale for inclusion below. Please write your answer here:

72. Do you have any other comments regarding the potential indicators listed above, that could assist to refine them further? For example, regarding the definitions, data sources, age groups, data disaggregation, etc. Please write your answer here:

UHC for oral health / Financing/Financial protection

Indicator name: "Per capita expenditure on oral health care (US$)"
Definition: Estimate of the annual national per capita expenditure on oral health care for outpatient oral health care (public and private).
Preferred data source: At country level: National Health Accounts At global level: Global Health Expenditure Database
Related links: WHO Global Health Expenditure Database. Available from: https://apps.who.int/nha/database

73. Relevance: Rate "Per capita expenditure on oral health care (US$)" in terms of .... (*Please choose the appropriate response for each item)

	Very relevant	Somewhat relevant	Neither relevant nor irrelevant	Somewhat irrelevant	Completely irrelevant	No answer/ I do not know
Relevance to my country	○	○	○	○	○	○
Relevance to my WHO region	○	○	○	○	○	○
Relevance globally	○	○	○	○	○	○

74. Feasibility for regular collection: Rate "Per capita expenditure on oral health care (US$)" in terms of..... ..... (*Please choose the appropriate response for each item)

	Very feasible	Somewhat feasible	Neither feasible nor unfeasible	Somewhat unfeasible	Completely unfeasible	No answer/ I do not know
Feasibility in my country	○	○	○	○	○	○

75. Sensitivity to detect changes over time (by 2030): Rate "Per capita expenditure on oral health care (US$)" in terms of..... ..... (*Please choose the appropriate response for each item)

	Very sensitive	Somewhat sensitive	Neither sensitive nor insensitive	Somewhat insensitive	Completely insensitive	No answer/ I do not know
Sensitivity to change in my country	○	○	○	○	○	○

UHC for oral health / Financing/Financial protection

Indicator name: "Government per capita expenditure on oral health, US$ per capita"
Definition: Domestic general government expenditure per capita on oral health care
Preferred data source: At country level: National Health Accounts At global level: Global Health Expenditure Database
Related links: WHO Global Health Expenditure Database. Available from: https://apps.who.int/nha/database

76. Relevance: Rate "Government per capita expenditure on oral health, US$ per capita" in terms of .... (*Please choose the appropriate response for each item)

	Very relevant	Somewhat relevant	Neither relevant nor irrelevant	Somewhat irrelevant	Completely irrelevant	No answer/ I do not know
Relevance to my country	○	○	○	○	○	○
Relevance to my WHO region	○	○	○	○	○	○

Relevance globally	○	○	○	○	○	○

77. Feasibility for regular collection: Rate "Government per capita expenditure on oral health, US$ per capita" in terms of..... ..... (*Please choose the appropriate response for each item)

	Very feasible	Somewhat feasible	Neither feasible nor unfeasible	Somewhat unfeasible	Completely unfeasible	No answer/ I do not know
Feasibility in my country	○	○	○	○	○	○

78. Sensitivity to detect changes over time (by 2030): Rate "Government per capita expenditure on oral health, US$ per capita" in terms of..... ..... (*Please choose the appropriate response for each item)

	Very sensitive	Somewhat sensitive	Neither sensitive nor insensitive	Somewhat insensitive	Completely insensitive	No answer/ I do not know
Sensitivity to change in my country	○	○	○	○	○	○

UHC for oral health / Financing/Financial protection

Indicator name: "Out-of-pocket payment for oral health services, US$ per capita"
Definition: Out of pocket payments for oral health services are any direct payments made by a household at the point of using any oral health service.
Preferred data source: At country level: - Household survey
Related links: WHO Global Health Expenditure Database (private health expenditure). Available from: https://apps.who.int/nha/database OECD.Stat Database: https://stats.oecd.org/

79. Relevance: Rate "Out-of-pocket payment for oral health services, US$ per capita" in terms of .... (*Please choose the appropriate response for each item)

	Very relevant	Somewhat relevant	Neither relevant nor irrelevant	Somewhat irrelevant	Completely irrelevant	No answer/ I do not know
Relevance to my country	○	○	○	○	○	○
Relevance to my WHO region	○	○	○	○	○	○
Relevance globally	○	○	○	○	○	○

80. Feasibility for regular collection: Rate "Out-of-pocket payment for oral health services, US$ per capita" in terms of..... ..... (*Please choose the appropriate response for each item)

	Very feasible	Somewhat feasible	Neither feasible nor unfeasible	Somewhat unfeasible	Completely unfeasible	No answer/ I do not know
Feasibility in my country	○	○	○	○	○	○

81. Sensitivity to detect changes over time (by 2030): Rate "Out-of-pocket payment for oral health services, US$ per capita" in terms of..... ..... (*Please choose the appropriate response for each item)

	Very sensitive	Somewhat sensitive	Neither sensitive nor insensitive	Somewhat insensitive	Completely insensitive	No answer/ I do not know
Sensitivity to change in my country	○	○	○	○	○	○

UHC for oral health / Financing/Financial protection

Indicator name: "Share of out-of-pocket payments spent on dental care among people with catastrophic health spending"
Definition: Average share of out-of-pocket payments dedicated to dental care among people incurring catastrophic health spending.
Preferred data source: At country level: - Household survey
Related links: WHO EURO Universal health coverage: financial protection: https://www.euro.who.int/en/health-topics/Health-systems/health-systems-financing/universal-health-coverage-financial-protection Global monitoring report on financial protection in health 2019: https://apps.who.int/iris/bitstream/handle/10665/331748/9789240003958-eng.pdf Sustainable Development Goals: impact of lack of financial protection in health in Latin American and Caribbean countries: https://iris.paho.org/handle/10665.2/54836

82. Relevance: Rate "Share of out-of-pocket payments spent on dental care among people with catastrophic health spending" in terms of .... (*Please choose the appropriate response for each item)

	Very relevant	Somewhat relevant	Neither relevant nor irrelevant	Somewhat irrelevant	Completely irrelevant	No answer/ I do not know
Relevance to my country	○	○	○	○	○	○
Relevance to my WHO region	○	○	○	○	○	○
Relevance globally	○	○	○	○	○	○

83. Feasibility for regular collection: Rate "Share of out-of-pocket payments spent on dental care among people with catastrophic health spending" in terms of..... ..... (*Please choose the appropriate response for each item)

	Very feasible	Somewhat feasible	Neither feasible nor unfeasible	Somewhat unfeasible	Completely unfeasible	No answer/ I do not know
Feasibility in my country	○	○	○	○	○	○

84. Sensitivity to detect changes over time (by 2030): Rate "Share of out-of-pocket payments spent on dental care among people with catastrophic health spending" in terms of..... ..... (*Please choose the appropriate response for each item)

	Very sensitive	Somewhat sensitive	Neither sensitive nor insensitive	Somewhat insensitive	Completely insensitive	No answer/ I do not know
Sensitivity to change in my country	○	○	○	○	○	○

UHC for oral health / Financing/Financial protection

Indicator name: "Percentage of the population facing financial barriers to oral health care"
Definition: Percentage of the population who do not receive oral health care for financial reasons
Preferred data source: At country level: - Household survey
Related links: OECD Unmet needs for oral health care: https://www.oecd.org/health/health-systems/Unmet-Needs-for-Health-Care-Brief-2020.pdf WHO EURO Universal health coverage: financial protection: https://www.euro.who.int/en/health-topics/Health-systems/health-systems-financing/universal-health-coverage-financial-protection

85. Relevance: Rate "Percentage of the population facing financial barriers to oral health care" in terms of .... (*Please choose the appropriate response for each item)

	Very relevant	Somewhat relevant	Neither relevant nor irrelevant	Somewhat irrelevant	Completely irrelevant	No answer/ I do not know
Relevance to my country	○	○	○	○	○	○
Relevance to my WHO region	○	○	○	○	○	○
Relevance globally	○	○	○	○	○	○

86. Feasibility for regular collection: Rate "Percentage of the population facing financial barriers to oral health care" in terms of..... ..... (*Please choose the appropriate response for each item)

	Very feasible	Somewhat feasible	Neither feasible nor unfeasible	Somewhat unfeasible	Completely unfeasible	No answer/ I do not know
Feasibility in my country	○	○	○	○	○	○

87. Sensitivity to detect changes over time (by 2030): Rate "Percentage of the population facing financial barriers to oral health care" in terms of..... ..... (*Please choose the appropriate response for each item)

	Very sensitive	Somewhat sensitive	Neither sensitive nor insensitive	Somewhat insensitive	Completely insensitive	No answer/ I do not know
Sensitivity to change in my country	○	○	○	○	○	○

UHC for oral health / Financing/Financial protection: You have now finished responding to questions concerning indicators of "UHC for oral health" (Subcategory of "Financing/Financial protection").

- Per capita expenditure on oral health care (US$)
- Government per capita expenditure on oral health, US$ per capita
- Out-of-pocket payment for oral health services, US$ per capita
- Share of out-of-pocket payments spent on dental care among people with catastrophic health spending
- Percentage of the population facing financial barriers to dental care

88. Are there any indicators of "UHC for oral health" (Subcategory of "Financing/Financial protection") that were not included but that you believe should be? Please provide a name and brief rationale for inclusion below. Please write your answer here:

89. Do you have any other comments regarding the potential indicators listed above, that could assist to refine them further? For example, regarding the definitions, data sources, age groups, data disaggregation, etc. Please write your answer here:

UHC for oral health / Medicines, equipment, devices, digital technology, and other health products

Indicator name: "WHO EMLs dental preparations are listed in the national EML (or similar)"
Definition: The extent to which dental preparations on the WHO Essential Medicines List and WHO Essential Medicines List for children are listed in the national Essential Medicines List (or similar). Responses can be disaggregated by dental preparation (fluoride, glass ionomer cement, and silver diamine fluoride) and/or the amount of dental preparations (1,2 or all).
Preferred data source: At country level: - Government representative at Ministry of Health (Chief dental officer/Oral health unit responding to a questionnaire to be conducted by WHO)
Related links: WHO Model List of Essential Medicines – 22nd List, 2021: https://apps.who.int/iris/bitstream/handle/10665/345533/WHO-MHP-HPS-EML-2021.02-eng.pdf

90. Relevance: Rate "WHO EMLs dental preparations are listed in the national EML" in terms of ..... (*Please choose the appropriate response for each item)

	Very relevant	Somewhat relevant	Neither relevant nor irrelevant	Somewhat irrelevant	Completely irrelevant	No answer/ I do not know
Relevance to my country	○	○	○	○	○	○
Relevance to my WHO region	○	○	○	○	○	○
Relevance globally	○	○	○	○	○	○

91. Feasibility for regular collection: Rate "WHO EMLs dental preparations are listed in the national EML" in terms of.....(*Please choose the appropriate response for each item)

	Very feasible	Somewhat feasible	Neither feasible nor unfeasible	Somewhat unfeasible	Completely unfeasible	No answer/ I do not know
Feasibility in my country	○	○	○	○	○	○

92. Sensitivity to detect changes over time (by 2030): Rate "WHO EMLs dental preparations are listed in the national EML" in terms of..... (*Please choose the appropriate response for each item)

	Very sensitive	Somewhat sensitive	Neither sensitive nor insensitive	Somewhat insensitive	Completely insensitive	No answer/ I do not know
Sensitivity to change in my country	○	○	○	○	○	○

UHC for oral health / Medicines, equipment, devices, digital technology, and other health products

Indicator name: "Affordability of fluoride toothpaste"
Definition: Fluoride toothpaste is categorized as "affordable" if less than one day (≤ 1) of labour is needed and as "unaffordable" if more than one day (>1) of labour is needed to buy the annual supply for one individual.
Preferred data source: At country level: - Government representative at Ministry of Health (Chief dental officer/Oral health unit responding to a questionnaire to be conducted by WHO) At global level: - WHO Consultation 2019

93. Relevance: Rate "Affordability of fluoride toothpaste" in terms of ..... (*Please choose the appropriate response for each item)

	Very relevant	Somewhat relevant	Neither relevant nor irrelevant	Somewhat irrelevant	Completely irrelevant	No answer/ I do not know
Relevance to my country	○	○	○	○	○	○
Relevance to my WHO region	○	○	○	○	○	○
Relevance globally	○	○	○	○	○	○

94. Feasibility for regular collection: Rate "Affordability of fluoride toothpaste" in terms of..... ..... (*Please choose the appropriate response for each item)

	Very feasible	Somewhat feasible	Neither feasible nor unfeasible	Somewhat unfeasible	Completely unfeasible	No answer/ I do not know
Feasibility in my country	○	○	○	○	○	○

95. Sensitivity to change over time: Rate "Affordability of fluoride toothpaste" in terms of..... ..... (*Please choose the appropriate response for each item)

	Very sensitive	Somewhat sensitive	Neither sensitive nor insensitive	Somewhat insensitive	Completely insensitive	No answer/ I do not know
Sensitivity to change in my country	○	○	○	○	○	○

UHC for oral health / Medicines, equipment, devices, digital technology, and other health products: You have now finished responding to questions concerning indicators of "UHC for oral health" (Subcategory of "Medicines, equipment, devices, digital technology, and other health products").

- WHO EMLs dental preparations are listed in the national EML (or similar)
- Affordability of fluoride toothpaste

96. Are there any indicators of "UHC for oral health" (Subcategory of "Medicines, equipment, devices, digital technology, and other health products") that were not included but that you believe should be? Please provide a name and brief rationale for inclusion below. Please write your answer here:

97. Do you have any other comments regarding the potential indicators listed above, that could assist to refine them further? For example, regarding the definitions, data sources, age groups, data disaggregation, etc. Please write your answer here:

UHC for oral health / Workforce

Indicator name: "Oral health personnel (per 10,000 population)"
Definition: Total oral health personnel density, per 10,000 population: 1) dentists; 2) dental assistants and therapists, dental hygienists, and dental nurses; and 3) dental prosthetic technicians.
Preferred data source: At country level - Health workforce registry or database At global level: - The National Health Workforce Accounts data portal
Related links: National Health Workforce Accounts Data Portal: https://apps.who.int/nhwaportal/

98. Relevance: Rate "Oral health personnel (per 10,000 population)" in terms of .... (*Please choose the appropriate response for each item)

	Very relevant	Somewhat relevant	Neither relevant nor irrelevant	Somewhat irrelevant	Completely irrelevant	No answer/ I do not know
Relevance to my country	○	○	○	○	○	○
Relevance to my WHO region	○	○	○	○	○	○
Relevance globally	○	○	○	○	○	○

99. Feasibility for regular collection: Rate "Oral health personnel (per 10,000 population)" in terms of..... ..... (*Please choose the appropriate response for each item)

	Very feasible	Somewhat feasible	Neither feasible nor unfeasible	Somewhat unfeasible	Completely unfeasible	No answer/ I do not know
Feasibility in my country	○	○	○	○	○	○

100. Sensitivity to detect changes over time (by 2030): Rate "Oral health personnel (per 10,000 population)" in terms of..... ..... (*Please choose the appropriate response for each item)

	Very sensitive	Somewhat sensitive	Neither sensitive nor insensitive	Somewhat insensitive	Completely insensitive	No answer/ I do not know
Sensitivity to change in my country	○	○	○	○	○	○

UHC for oral health / Workforce

Indicator name: "Primary healthcare workers (inc. community healthcare workers) are trained to perform cost-effective interventions on oral health"
Definition: Proportion of primary healthcare workers (inc. community healthcare workers) are trained to perform cost-effective interventions on oral health. Primary healthcare workers exclude oral health care personnel (dentists, dental assistants, therapists, dental hygienists, dental nurses, and dental prosthetic technicians). Cost-effective interventions on oral health (Best buys) are currently under development.
Preferred data source: At country level: Non-dental health professional training institutions

101. Relevance: Rate "Primary healthcare workers (inc. community healthcare workers) are trained to perform cost-effective interventions on oral health" in terms of .... (*Please choose the appropriate response for each item)

	Very relevant	Somewhat relevant	Neither relevant nor irrelevant	Somewhat irrelevant	Completely irrelevant	No answer/ I do not know
Relevance to my country	○	○	○	○	○	○
Relevance to my WHO region	○	○	○	○	○	○
Relevance globally	○	○	○	○	○	○

102. Feasibility for regular collection: Rate "Primary healthcare workers (inc. community healthcare workers) are trained to perform cost-effective interventions on oral health" in terms of..... ..... (*Please choose the appropriate response for each item)

	Very feasible	Somewhat feasible	Neither feasible nor unfeasible	Somewhat unfeasible	Completely unfeasible	No answer/ I do not know
Feasibility in my country	○	○	○	○	○	○

103. Sensitivity to detect changes over time (by 2030): Rate "Primary healthcare workers (inc. community healthcare workers) are trained to perform cost-effective interventions on oral health." in terms of..... ..... (*Please choose the appropriate response for each item)

	Very sensitive	Somewhat sensitive	Neither sensitive nor insensitive	Somewhat insensitive	Completely insensitive	No answer/ I do not know
Sensitivity to change in my country	○	○	○	○	○	○

UHC for oral health / Workforce

Indicator name: "Annual graduates of oral health personnel, all cadres (per 10,000 population)"
Definition: Density of annual graduates of oral health personnel during the last year per 10,000 population. Recent graduates for the following professions: 1) dentists; 2) dental assistants and therapists; dental hygienists; and dental nurses; and 3) dental prosthetic technicians.
Preferred data source: At country level: - Routine administrative data from Dental Faculties, training institutes At global level: - National Health Workforce Accounts data platform (Data for dentists)

104. Relevance: Rate "Annual graduates of oral health personnel, all cadres (per 10,000 population)" in terms of .... (*Please choose the appropriate response for each item)

	Very relevant	Somewhat relevant	Neither relevant nor irrelevant	Somewhat irrelevant	Completely irrelevant	No answer/ I do not know
Relevance to my country	○	○	○	○	○	○
Relevance to my WHO region	○	○	○	○	○	○
Relevance globally	○	○	○	○	○	○

105. Feasibility for regular collection: Rate "Annual graduates of oral health personnel, all cadres (per 10,000 population)" in terms of..... ..... (*Please choose the appropriate response for each item)

	Very feasible	Somewhat feasible	Neither feasible nor unfeasible	Somewhat unfeasible	Completely unfeasible	No answer/ I do not know
Feasibility in my country	○	○	○	○	○	○

106. Sensitivity to detect changes over time (by 2030): Rate "Annual graduates of oral health personnel, all cadres (per 10,000 population)" in terms of..... ..... (*Please choose the appropriate response for each item)

	Very sensitive	Somewhat sensitive	Neither sensitive nor insensitive	Somewhat insensitive	Completely insensitive	No answer/ I do not know
Sensitivity to change in my country	○	○	○	○	○	○

UHC for oral health / Workforce: You have now finished responding to questions concerning indicators of "UHC for oral health" (Subcategory of "Workforce").

- Oral health personnel (per 10,000 population)
- Primary healthcare workers (inc. community healthcare workers) are trained to perform cost-effective interventions on oral health.
- Annual graduates of oral health personnel, all cadres (per 10,000 population)

107. Are there any indicators of "UHC for oral health" (Subcategory of "Workforce") that were not included but that you believe should be? Please provide a name and brief rationale for inclusion below. Please write your answer here:

108. Do you have any other comments regarding the potential indicators listed above, that could assist to refine them further? For example, regarding the definitions, data sources, age groups, data disaggregation, etc. Please write your answer here:

Governance

Indicator name: "Presence of dedicated staff for oral diseases in the NCD Department or other Department of the Ministry of Health"
Definition: Presence of a technical/professional staff in the unit/branch/department working on NCDs or another department in the Ministry of Health dedicating a significant portion of their time to oral diseases.
Preferred data source: At country level: Government representative at Ministry of Health (Responding to WHO NCD Country Capacity Survey)
Related links: WHO NCD Country Capacity Survey: https://www.who.int/teams/ncds/surveillance/monitoring-capacity/ncdccs

109. Relevance: Rate "Presence of dedicated staff for oral diseases in the NCD Department or other Department of the Ministry of Health" in terms of .... (*Please choose the appropriate response for each item)

	Very relevant	Somewhat relevant	Neither relevant nor irrelevant	Somewhat irrelevant	Completely irrelevant	No answer/ I do not know
Relevance to my country	○	○	○	○	○	○
Relevance to my WHO region	○	○	○	○	○	○
Relevance globally	○	○	○	○	○	○

110. Feasibility for regular collection: Rate "Presence of dedicated staff for oral diseases in the NCD Department or other Department of the Ministry of Health" in terms of..... ..... (*Please choose the appropriate response for each item)

	Very feasible	Somewhat feasible	Neither feasible nor unfeasible	Somewhat unfeasible	Completely unfeasible	No answer/ I do not know
Feasibility in my country	○	○	○	○	○	○

111. Sensitivity to detect changes over time (by 2030): Rate "Presence of dedicated staff for oral diseases in the NCD Department or other Department of the Ministry of Health" in terms of..... ..... (*Please choose the appropriate response for each item)

	Very sensitive	Somewhat sensitive	Neither sensitive nor insensitive	Somewhat insensitive	Completely insensitive	No answer/ I do not know
Sensitivity to change in my country	○	○	○	○	○	○

Governance

Indicator name: "Existence of a national oral health policy, strategy, or action plan"
Definition: Existence of a policy, strategy, or action plan for oral health available in the respective country.
Preferred data source: At country level: Government representative at Ministry of Health (Responding to WHO NCD Country Capacity Survey)
Related links: WHO NCD Country Capacity Survey: https://www.who.int/teams/ncds/surveillance/monitoring-capacity/ncdccs

112. Relevance: Rate "Existence of a national oral health policy, strategy, or action plan" in terms of .... (*Please choose the appropriate response for each item)

	Very relevant	Somewhat relevant	Neither relevant nor irrelevant	Somewhat irrelevant	Completely irrelevant	No answer/ I do not know
Relevance to my country	○	○	○	○	○	○
Relevance to my WHO region	○	○	○	○	○	○
Relevance globally	○	○	○	○	○	○

113. Feasibility for regular collection: Rate "Existence of a national oral health policy, strategy, or action plan" in terms of..... ..... (*Please choose the appropriate response for each item)

	Very feasible	Somewhat feasible	Neither feasible nor unfeasible	Somewhat unfeasible	Completely unfeasible	No answer/ I do not know
Feasibility in my country	○	○	○	○	○	○

114. Sensitivity to detect changes over time (by 2030): Rate "Existence of a national oral health policy, strategy, or action plan" in terms of..... ..... (*Please choose the appropriate response for each item)

	Very sensitive	Somewhat sensitive	Neither sensitive nor insensitive	Somewhat insensitive	Completely insensitive	No answer/ I do not know
Sensitivity to change in my country	○	○	○	○	○	○

Governance

Indicator name: "Noma recognized as a national public health problem"
Definition: Noma (cancrum oris) is a non-communicable necrotizing disease that starts as a lesion of the gums inside the mouth and destroys the soft and hard tissues of the mouth and face. Countries are part of the Regional Noma Control Programme in the WHO African Region and recognize noma as a national public health problem. Indicator being considered as complementary (at regional level)
Preferred data source: At regional level: Regional Noma Control Programme in WHO African Region

115. Relevance: Rate "Noma recognized as a national public health problem" in terms of .... (*Please choose the appropriate response for each item)

	Very relevant	Somewhat relevant	Neither relevant nor irrelevant	Somewhat irrelevant	Completely irrelevant	No answer/ I do not know
Relevance to my country	○	○	○	○	○	○
Relevance to my WHO region	○	○	○	○	○	○
Relevance globally	○	○	○	○	○	○

116. Feasibility for regular collection: Rate "Noma recognized as a national public health problem" in terms of..... (*Please choose the appropriate response for each item)

	Very feasible	Somewhat feasible	Neither feasible nor unfeasible	Somewhat unfeasible	Completely unfeasible	No answer/ I do not know
Feasibility in my country	○	○	○	○	○	○

117. Sensitivity to detect changes over time (by 2030): Rate "Noma recognized as a national public health problem" in terms of..... (*Please choose the appropriate response for each item)

	Very sensitive	Somewhat sensitive	Neither sensitive nor insensitive	Somewhat insensitive	Completely insensitive	No answer/ I do not know
Sensitivity to change in my country	○	○	○	○	○	○

Governance

Indicator name: "Implementation of tax on sugar-sweetened beverages (SSBs)"
Definition: Country has implemented a tax on sugar-sweetened beverages. "Yes" responses refer to the application of excise taxes and/or special VAT/sales tax rates.
Preferred data source: At country level: Government representative at Ministry of Health (Responding to WHO NCD Country Capacity Survey)
Related links: WHO NCD Country Capacity Survey: https://www.who.int/teams/ncds/surveillance/monitoring-capacity/ncdccs

118. Relevance: Rate "Implementation of tax on sugar-sweetened beverages (SSB)" in terms of .... (*Please choose the appropriate response for each item)

	Very relevant	Somewhat relevant	Neither relevant nor irrelevant	Somewhat irrelevant	Completely irrelevant	No answer/ I do not know
Relevance to my country	○	○	○	○	○	○
Relevance to my WHO region	○	○	○	○	○	○
Relevance globally	○	○	○	○	○	○

119. Feasibility for regular collection: Rate "Implementation of tax on sugar-sweetened beverages (SSB)" in terms of..... ..... (*Please choose the appropriate response for each item)

	Very feasible	Somewhat feasible	Neither feasible nor unfeasible	Somewhat unfeasible	Completely unfeasible	No answer/ I do not know
Feasibility in my country	○	○	○	○	○	○

120. Sensitivity to detect changes over time (by 2030): Rate "Implementation of tax on sugar-sweetened beverages (SSB)" in terms of..... ..... (*Please choose the appropriate response for each item)

	Very sensitive	Somewhat sensitive	Neither sensitive nor insensitive	Somewhat insensitive	Completely insensitive	No answer/ I do not know
Sensitivity to change in my country	○	○	○	○	○	○

Governance

Indicator name: "National policies, strategies, or action plans with a specific policy goal or action towards reducing sugars intake"
Definition: Existence of a national policy, strategy, or action plan with a specific goal or action towards reducing sugars intake. Specific goal or action could refer to measures such as: •Taxes: Sugar-sweetened beverages taxes, taxes on sugars or on foods high in sugars •Nutrition labeling: Front-of-pack or other interpretative labeling/claim to indicate healthier food choices related to sugars

•Reformulation limits or targets to reduce sugars content in foods and beverages •Public food procurement and service policies to reduce the offer of food high in sugars •Restriction of marketing of food and non-alcoholic beverages high in sugars to children
Preferred data source: At country level: Government representative at Ministry of Health (Responding to WHO NCD Country Capacity Survey) At global level: WHO Global database on the implementation of nutrition action (GINA)
Related links: WHO NCD Country Capacity Survey: https://www.who.int/teams/ncds/surveillance/monitoring-capacity/ncdccs

121. Relevance: Rate "National policies, strategies or action plans with a specific policy goal or action towards reducing sugars intake" in terms of .... (*Please choose the appropriate response for each item)

	Very relevant	Somewhat relevant	Neither relevant nor irrelevant	Somewhat irrelevant	Completely irrelevant	No answer/ I do not know
Relevance to my country	○	○	○	○	○	○
Relevance to my WHO region	○	○	○	○	○	○
Relevance globally	○	○	○	○	○	○

122. Feasibility for regular collection: Rate "National policies, strategies or action plans with a specific policy goal or action towards reducing sugars intake" in terms of..... ..... (*Please choose the appropriate response for each item)

	Very feasible	Somewhat feasible	Neither feasible nor unfeasible	Somewhat unfeasible	Completely unfeasible	No answer/ I do not know
Feasibility in my country	○	○	○	○	○	○

123. Sensitivity to detect changes over time (by 2030): Rate "National policies, strategies or action plans with a specific policy goal or action towards reducing sugars intake" in terms of..... ..... (*Please choose the appropriate response for each item)

	Very sensitive	Somewhat sensitive	Neither sensitive nor insensitive	Somewhat insensitive	Completely insensitive	No answer/ I do not know
Sensitivity to change in my country	○	○	○	○	○	○

Governance

Indicator name: "National policy or legislation to contain all forms of tobacco consumption"
Definition: State Parties to WHO Framework Convention on Tobacco Control (FCTC) with a complete policy on all forms of tobacco taxation. Specific measures for smokeless tobacco include 1) tax or report taxing smokeless tobacco products, 2) measure contents of smokeless tobacco products, 3) pictorial health warnings on smokeless tobacco products, 4) ban on smokeless tobacco advertisement, promotion, and sponsorships.
Preferred data source: At country level: Country profile in the MPOWER At global level: FCTC EMPOWER report
Related links: FCTC EMPOWER report: https://apps.who.int/iris/rest/bitstreams/1359088/retrieve

124. Relevance: Rate "National policy or legislation to contain all forms of tobacco consumption" in terms of .... (*Please choose the appropriate response for each item)

	Very relevant	Somewhat relevant	Neither relevant nor irrelevant	Somewhat irrelevant	Completely irrelevant	No answer/ I do not know
Relevance to my country	○	○	○	○	○	○
Relevance to my WHO region	○	○	○	○	○	○
Relevance globally	○	○	○	○	○	○

125. Feasibility for regular collection: Rate "National policy or legislation to contain all forms of tobacco consumption" in terms of..... ..... (*Please choose the appropriate response for each item)

	Very feasible	Somewhat feasible	Neither feasible nor unfeasible	Somewhat unfeasible	Completely unfeasible	No answer/ I do not know
Feasibility in my country	○	○	○	○	○	○

126. Sensitivity to detect changes over time (by 2030): Rate "National policy or legislation to contain all forms of tobacco consumption" in terms of..... ..... (*Please choose the appropriate response for each item)

	Very sensitive	Somewhat sensitive	Neither sensitive nor insensitive	Somewhat insensitive	Completely insensitive	No answer/ I do not know
Sensitivity to change in my country	○	○	○	○	○	○

Governance

Indicator name: "Water fluoridation"
Definition: Proportion of the population exposed to water fluoridation interventions
Preferred data source: At country level: - Government databases - Government representative at Ministry of Health

127. Relevance: Rate "Water fluoridation" in terms of .... (*Please choose the appropriate response for each item)

	Very relevant	Somewhat relevant	Neither relevant nor irrelevant	Somewhat irrelevant	Completely irrelevant	No answer/ I do not know
Relevance to my country	○	○	○	○	○	○
Relevance to my WHO region	○	○	○	○	○	○
Relevance globally	○	○	○	○	○	○

128. Feasibility for regular collection: Rate "Water fluoridation" in terms of..... ..... (*Please choose the appropriate response for each item)

	Very feasible	Somewhat feasible	Neither feasible nor unfeasible	Somewhat unfeasible	Completely unfeasible	No answer/ I do not know
Feasibility in my country	○	○	○	○	○	○

129. Sensitivity to detect changes over time (by 2030): Rate "Water fluoridation" in terms of..... ..... (*Please choose the appropriate response for each item)

	Very sensitive	Somewhat sensitive	Neither sensitive nor insensitive	Somewhat insensitive	Completely insensitive	No answer/ I do not know
Sensitivity to change in my country	○	○	○	○	○	○

Governance

Indicator name: "Dental amalgam phase down policy"
Definition: Existence of a national oral health policy, strategy or action plan to phase down the use of dental amalgam, in compliance with the Minamata Convention on Mercury.
Preferred data source: At country level: - Government representative at MoH (Chief dental officer/Oral health unit)

130. Relevance: Rate "Dental amalgam phase down policy" in terms of .... (*Please choose the appropriate response for each item)

	Very relevant	Somewhat relevant	Neither relevant nor irrelevant	Somewhat irrelevant	Completely irrelevant	No answer/ I do not know
Relevance to my country	○	○	○	○	○	○
Relevance to my WHO region	○	○	○	○	○	○
Relevance globally	○	○	○	○	○	○

131. Feasibility for regular collection: Rate "Dental amalgam phase down policy" in terms of..... ..... (*Please choose the appropriate response for each item)

	Very feasible	Somewhat feasible	Neither feasible nor unfeasible	Somewhat unfeasible	Completely unfeasible	No answer/ I do not know
Feasibility in my country	○	○	○	○	○	○

132. Sensitivity to detect changes over time (by 2030): Rate "Dental amalgam phase down policy" in terms of..... ..... (*Please choose the appropriate response for each item)

	Very sensitive	Somewhat sensitive	Neither sensitive nor insensitive	Somewhat insensitive	Completely insensitive	No answer/ I do not know
Sensitivity to change in my country	○	○	○	○	○	○

Governance

Indicator name: "Oral health integration into the school health policy/programme"
Definition: Oral health interventions are integrated into the school health policy/programme. Type of school health interventions related to oral health include: - Promotion of oral health - Screening of oral health problems, followed by care or referral, as appropriate.
Preferred data source: At country level: - Government representative at MoH (Chief dental officer/Oral health unit) - Ministry of Health routine administrative data
Related links: WHO guideline on school health services: https://www.who.int/publications/i/item/9789240029392 WHO, UNESCO Making every school a health-promoting school: global standards and indicators for health-promoting schools and systems: https://apps.who.int/iris/rest/bitstreams/1352165/retrieve

133. Relevance: Rate "Oral health integration into the school health policy/programme" in terms of .... (*Please choose the appropriate response for each item)

	Very relevant	Somewhat relevant	Neither relevant nor irrelevant	Somewhat irrelevant	Completely irrelevant	No answer/ I do not know
Relevance to my country	○	○	○	○	○	○
Relevance to my WHO region	○	○	○	○	○	○
Relevance globally	○	○	○	○	○	○

134. Feasibility for regular collection: Rate "Oral health integration into the school health policy/programme" in terms of..... ..... (*Please choose the appropriate response for each item)

	Very feasible	Somewhat feasible	Neither feasible nor unfeasible	Somewhat unfeasible	Completely unfeasible	No answer/ I do not know
Feasibility in my country	○	○	○	○	○	○

135. Sensitivity to detect changes over time (by 2030): Rate "Oral health integration into the school health policy/programme" in terms of..... ..... (*Please choose the appropriate response for each item)

	Very sensitive	Somewhat sensitive	Neither sensitive nor insensitive	Somewhat insensitive	Completely insensitive	No answer/ I do not know
Sensitivity to change in my country	○	○	○	○	○	○

Governance: You have now finished responding to questions concerning indicators of "Governance".

- Presence of dedicated staff for oral diseases in the NCD Department or other Department of the Ministry of Health
- Existence of a national oral health policy, strategy, or action plan
- Noma recognized as a national public health problem
- Implementation of tax on sugar-sweetened beverages (SSBs)
- National policies, strategies, or action plans with a specific policy goal or action towards reducing sugars intake
- National policy or legislation to contain all forms of tobacco consumption
- Water fluoridation
- Dental amalgam phase down policy
- Oral health integration into the school health policy/programme

136. Are there any indicators of "Governance" that were not included but that you believe should be? Please provide a name and brief rationale for inclusion below.
Please write your answer here:

137. Do you have any other comments regarding the potential indicators listed above, that could assist to refine them further? For example, regarding the definitions, data sources, age groups, data disaggregation, etc. Please write your answer here:

Evidence-informed policy / Information systems

Indicator name: "Oral health indicators in routine health information systems"
Definition: Integration of oral health indicators into the existing national routine health information system (e.g., Health Management Information System (HMIS), The District Health Information Software (DHIS2), Integrated Disease Surveillance and Responses (IDSR))
Preferred data source: At country level: Routine health information system Government representative at Ministry of Health (Chief dental officer/Oral health unit)

138. Relevance: Rate "oral health indicators in routine health information systems" in terms of .... (*Please choose the appropriate response for each item)

	Very relevant	Somewhat relevant	Neither relevant nor irrelevant	Somewhat irrelevant	Completely irrelevant	No answer/ I do not know
Relevance to my country	○	○	○	○	○	○
Relevance to my WHO region	○	○	○	○	○	○
Relevance globally	○	○	○	○	○	○

139. Feasibility for regular collection: Rate "oral health indicators in routine health information systems" in terms of..... ..... (*Please choose the appropriate response for each item)

	Very feasible	Somewhat feasible	Neither feasible nor unfeasible	Somewhat unfeasible	Completely unfeasible	No answer/ I do not know
Feasibility in my country	○	○	○	○	○	○

140. Sensitivity to detect changes over time (by 2030): Rate "oral health indicators in routine health information systems" in terms of..... ..... (*Please choose the appropriate response for each item)

	Very sensitive	Somewhat sensitive	Neither sensitive nor insensitive	Somewhat insensitive	Completely insensitive	No answer/ I do not know
Sensitivity to change in my country	○	○	○	○	○	○

Evidence-informed policy / Information systems

Indicator name: "Collection of oral health data using WHO NCD survey tools or national oral health survey"
Definition: Collection of oral health data using WHO NCD survey tools (STEPS, NCD Country Capacity Surveys, Global School-based Student Health Survey(GSHS), etc.) or national oral health survey (using or not using digital technology).
Preferred data source: At country level: - Government representative at MoH (Chief dental officer/Oral health unit)

141. Relevance: Rate "Collection of oral health data using WHO NCD survey tools or national oral health survey" in terms of .... (*Please choose the appropriate response for each item)

	Very relevant	Somewhat relevant	Neither relevant nor irrelevant	Somewhat irrelevant	Completely irrelevant	No answer/ I do not know
Relevance to my country	○	○	○	○	○	○
Relevance to my WHO region	○	○	○	○	○	○
Relevance globally	○	○	○	○	○	○

142. Feasibility for regular collection: Rate "Collection of oral health data using WHO NCD survey tools or national oral health survey" in terms of..... .....
(*Please choose the appropriate response for each item)

	Very feasible	Somewhat feasible	Neither feasible nor unfeasible	Somewhat unfeasible	Completely unfeasible	No answer/ I do not know
Feasibility in my country	○	○	○	○	○	○

143. Sensitivity to detect changes over time (by 2030): Rate "Collection of oral health data using WHO NCD survey tools or national oral health survey" in terms of..... ..... (*Please choose the appropriate response for each item)

	Very sensitive	Somewhat sensitive	Neither sensitive nor insensitive	Somewhat insensitive	Completely insensitive	No answer/ I do not know
Sensitivity to change in my country	○	○	○	○	○	○

Evidence-informed policy / Information systems

Indicator name: "National Monitoring Framework to track oral health policy"
Definition: Existence of a National Monitoring Framework to track the progress of implementation of the national oral health policy/strategy/plan (Y/N) (Among those countries that have an oral health policy, strategy, or action plan).
Preferred data source: At country level: - Government representative at the Ministry of Health (Chief dental officer/Oral health unit)

144. Relevance: Rate "National Monitoring Framework to track oral health policy" in terms of .... (*Please choose the appropriate response for each item)

	Very relevant	Somewhat relevant	Neither relevant nor irrelevant	Somewhat irrelevant	Completely irrelevant	No answer/ I do not know
Relevance to my country	○	○	○	○	○	○
Relevance to my WHO region	○	○	○	○	○	○
Relevance globally	○	○	○	○	○	○

145. Feasibility for regular collection: Rate "National Monitoring Framework to track oral health policy" in terms of..... ..... (*Please choose the appropriate response for each item)

	Very feasible	Somewhat feasible	Neither feasible nor unfeasible	Somewhat unfeasible	Completely unfeasible	No answer/ I do not know
Feasibility in my country	○	○	○	○	○	○

146. Sensitivity to detect changes over time (by 2030): Rate "National Monitoring Framework to track oral health policy" in terms of..... ..... (*Please choose the appropriate response for each item)

	Very sensitive	Somewhat sensitive	Neither sensitive nor insensitive	Somewhat insensitive	Completely insensitive	No answer/ I do not know
Sensitivity to change in my country	○	○	○	○	○	○

Evidence-informed policy / Research and knowledge translation

Indicator name: "Percentage of government funds for oral health research"
Definition: Percentage of public funds for research that is allocated for oral health-related projects.
Preferred data source: At country level: - National and sub-national government health research agencies
Related links: Similar indicator in PHC Monitoring Framework (indicator #13): https://apps.who.int/iris/bitstream/handle/10665/352201/9789240044234-eng.pdf?sequence=1&isAllowed=y

147. Relevance: Rate "Percentage of government funds for oral health research" in terms of .... (*Please choose the appropriate response for each item)

	Very relevant	Somewhat relevant	Neither relevant nor irrelevant	Somewhat irrelevant	Completely irrelevant	No answer/ I do not know
Relevance to my country	○	○	○	○	○	○
Relevance to my WHO region	○	○	○	○	○	○
Relevance globally	○	○	○	○	○	○

148. Feasibility for regular collection: Rate "Percentage of government funds for oral health research" in terms of..... ..... (*Please choose the appropriate response for each item)

	Very feasible	Somewhat feasible	Neither feasible nor unfeasible	Somewhat unfeasible	Completely unfeasible	No answer/ I do not know
Feasibility in my country	○	○	○	○	○	○

149. Sensitivity to detect changes over time (by 2030): Rate "Percentage of government funds for oral health research" in terms of..... ..... (*Please choose the appropriate response for each item)

	Very sensitive	Somewhat sensitive	Neither sensitive nor insensitive	Somewhat insensitive	Completely insensitive	No answer/ I do not know
Sensitivity to change in my country	○	○	○	○	○	○

Evidence-informed policy / Research and knowledge translation

Indicator name: "Setting national oral health research agendas oriented towards public health programmes and population-based interventions"
Definition: Number of oral health research projects that have investigated public health programmes and population-based interventions in the last five years
Preferred data source: At country level: - National and sub-national government health research agencies
Related links: WHO SCORE for health data technical package. Available from: https://www.who.int/data/data-collection-tools/score/documents

150. Relevance: Rate "Setting oral health research agendas oriented towards public health programmes and population-based interventions" in terms of .... (*Please choose the appropriate response for each item)

	Very relevant	Somewhat relevant	Neither relevant nor irrelevant	Somewhat irrelevant	Completely irrelevant	No answer/ I do not know
Relevance to my country	○	○	○	○	○	○

Relevance to my WHO region	○	○	○	○	○	○
Relevance globally	○	○	○	○	○	○

151. Feasibility for regular collection: Rate "Setting oral health research agendas oriented towards public health programmes and population-based interventions" in terms of..... ..... (*Please choose the appropriate response for each item)

	Very feasible	Somewhat feasible	Neither feasible nor unfeasible	Somewhat unfeasible	Completely unfeasible	No answer/ I do not know
Feasibility in my country	○	○	○	○	○	○

152. Sensitivity to detect changes over time (by 2030): Rate "Setting oral health research agendas oriented towards public health programmes and population-based interventions" in terms of..... ..... (*Please choose the appropriate response for each item)

	Very sensitive	Somewhat sensitive	Neither sensitive nor insensitive	Somewhat insensitive	Completely insensitive	No answer/ I do not know
Sensitivity to change in my country	○	○	○	○	○	○

Evidence-informed policy / Research and knowledge translation

Indicator name: "Translation of research findings into policy and practice "
Definition: National health research strategy includes guidance on mobilization/translation of oral health research findings into practice (Y/N)
Preferred data source: At country level: - National and sub-national government health research agencies
Related links: WHO SCORE for health data technical package. Available from: https://www.who.int/data/data-collection-tools/score/documents

153. Relevance: Rate "Translation of research findings into policy and practice " in terms of .... (*Please choose the appropriate response for each item)

	Very relevant	Somewhat relevant	Neither relevant nor irrelevant	Somewhat irrelevant	Completely irrelevant	No answer/ I do not know
Relevance to my country	○	○	○	○	○	○
Relevance to my WHO region	○	○	○	○	○	○
Relevance globally	○	○	○	○	○	○

154. Feasibility for regular collection: Rate "Translation of research findings into policy and practice" in terms of..... ..... (*Please choose the appropriate response for each item)

	Very feasible	Somewhat feasible	Neither feasible nor unfeasible	Somewhat unfeasible	Completely unfeasible	No answer/ I do not know
Feasibility in my country	○	○	○	○	○	○

155. Sensitivity to detect changes over time (by 2030): Rate "Translation of research findings into policy and practice" in terms of..... ..... (*Please choose the appropriate response for each item)

	Very sensitive	Somewhat sensitive	Neither sensitive nor insensitive	Somewhat insensitive	Completely insensitive	No answer/ I do not know
Sensitivity to change in my country	○	○	○	○	○	○

Evidence-informed policy: You have now finished responding to questions concerning indicators of "Evidence-informed policy".

- Oral health indicators in routine health information systems
- Collection of oral health data using WHO NCD survey tools or national oral health survey.
- National Monitoring Framework to track national oral health policy.
- Percentage of government funds for oral health research
- Setting national oral health research agendas oriented towards public health programmes and population-based interventions
- Translation of research findings into policy and practice

156. Are there any indicators of "Evidence-informed policy" that were not included but that you believe should be? Please provide a name and brief rationale for inclusion below. Please write your answer here:

157. Do you have any other comments regarding the potential indicators listed above, that could assist to refine them further? For example, regarding the definitions, data sources, age groups, data disaggregation, etc. Please write your answer here:

☐ Submit your survey.

Thank you for completing this survey.

Appendix 3. Second round Delphi questionnaire.

Selection of indicators to be included in the draft monitoring framework of the global oral health action plan

There are 102 questions in this survey.

Background Information

1. What is your gender/ how do you currently identify? *Please choose only one of the following:

- Man
- Woman
- Prefer not to answer
- Prefer to self-describe

2. What is your age? *Please choose only one of the following:

- Less than 40 years
- 40-54 years
- 55-70 years
- More than 70 years
- Prefer not to answer

3. Which country do you work in? *Please choose only one of the following:

- Afghanistan
- Albania
- Algeria
- Andorra
- Angola
- Antigua and
- Barbuda
- Argentina
- Armenia
- Australia
- Austria
- Azerbaijan
- Bahamas
- Bahrain
- Bangladesh
- Barbados
- Belarus
- Belgium
- Belize
- Benin
- Bhutan
- Bolivia (Plurinational State of)
- Bosnia and Herzegovina
- Botswana
- Brazil
- Brunei Darussalam
- Bulgaria
- Burkina Faso
- Burundi
- Cabo Verde
- Cambodia
- Cameroon
- Canada
- Central African Republic
- Chad
- Chile
- China
- Colombia
- Comoros
- Congo
- Cook Islands
- Costa Rica
- Côte d'Ivoire
- Croatia
- Cuba
- Cyprus
- Czechia
- Democratic People's Republic of Korea
- Democratic Republic of the Congo
- Denmark
- Djibouti
- Dominica
- Dominican Republic
- Ecuador
- Egypt
- El Salvador
- Equatorial Guinea
- Eritrea
- Estonia
- Eswatini
- Ethiopia
- Faroe Islands
- Fiji
- Finland
- France
- Gabon
- Gambia
- Georgia
- Germany
- Ghana
- Greece
- Grenada
- Guatemala
- Guinea
- Guinea-Bissau
- Guyana
- Haiti
- Honduras
- Hungary
- Iceland
- India
- Indonesia
- Iran (Islamic Republic of)
- Iraq
- Ireland
- Israel
- Italy
- Jamaica
- Japan
- Jordan
- Kazakhstan
- Kenya
- Kiribati
- Kuwait
- Kyrgyzstan
- Lao People's Democratic Republic
- Latvia
- Lebanon
- Lesotho
- Liberia
- Libya
- Lithuania
- Luxembourg
- Madagascar
- Malawi
- Malaysia
- Maldives
- Mali
- Malta
- Marshall Islands
- Mauritania
- Mauritius
- Mexico

- ☐ Micronesia (Federated States of)
- ☐ Monaco
- ☐ Mongolia
- ☐ Montenegro
- ☐ Morocco
- ☐ Mozambique
- ☐ Myanmar
- ☐ Namibia
- ☐ Nauru
- ☐ Nepal
- ☐ Netherlands
- ☐ New Zealand
- ☐ Nicaragua
- ☐ Niger
- ☐ Nigeria
- ☐ Niue
- ☐ North Macedonia
- ☐ Norway
- ☐ Oman
- ☐ Pakistan
- ☐ Palau
- ☐ Panama
- ☐ Papua New Guinea
- ☐ Paraguay
- ☐ Peru
- ☐ Philippines
- ☐ Poland
- ☐ Portugal
- ☐ Puerto Rico
- ☐ Qatar
- ☐ Republic of Korea
- ☐ Republic of Moldova
- ☐ Romania
- ☐ Russian Federation
- ☐ Rwanda
- ☐ Saint Kitts and Nevis
- ☐ Saint Lucia
- ☐ Saint Vincent and the Grenadines
- ☐ Samoa
- ☐ San Marino
- ☐ Sao Tome and Principe
- ☐ Saudi Arabia
- ☐ Senegal
- ☐ Serbia
- ☐ Seychelles
- ☐ Sierra Leone
- ☐ Singapore
- ☐ Slovakia
- ☐ Slovenia
- ☐ Solomon Islands
- ☐ Somalia
- ☐ South Africa
- ☐ South Sudan
- ☐ Spain
- ☐ Sri Lanka
- ☐ Sudan
- ☐ Suriname
- ☐ Sweden
- ☐ Switzerland
- ☐ Syrian Arab Republic
- ☐ Tajikistan
- ☐ Thailand
- ☐ Timor-Leste
- ☐ Togo
- ☐ Tokelau
- ☐ Tonga
- ☐ Trinidad and Tobago
- ☐ Tunisia
- ☐ Turkey
- ☐ Turkmenistan
- ☐ Tuvalu
- ☐ Uganda
- ☐ Ukraine
- ☐ United Arab Emirates
- ☐ United Kingdom of Great Britain and Northern Ireland
- ☐ United Republic of Tanzania
- ☐ United States of America
- ☐ Uruguay
- ☐ Uzbekistan
- ☐ Vanuatu
- ☐ Venezuela (Bolivarian Republic of)
- ☐ Viet Nam
- ☐ Yemen
- ☐ Zambia
- ☐ Zimbabwe

4. Which WHO region of the world do you work in? *Please choose only one of the following:

- African Region
- Eastern Mediterranean Region
- European Region
- Region of the Americas
- South-East Asia Region
- Western Pacific Region
- Prefer not to answer

5. Which of the following best describes the work role for which you were invited to participate in this project? *Please choose only one of the following:

- Chief Dental Officer or Senior advisor at the Ministry of Health
- WHO Collaborating Centre representative
- Academic or researcher
- WHO Staff
- Prefer not to answer

Other-please state

Key information for completing this survey, the 2nd round of the Delphi process

In the 2nd round of the Delphi process, we are going to ask you questions that are different from those posed in the 1st round. The goal of these new questions is to be as discriminatory as possible. For each indicator, we will ask you:

1. Would you be able to collect data on this indicator in your country by the end of 2023 using the source that provides the most valid data nationally (eg. oral health survey, relevant government ministry sources, health system information, routine surveillance systems, routine administrative data, etc.)?

Response options are: Yes/no/(I don't know/I am not in a position to answer this)

2. This indicator should be:

a) A core indicator (relevance at global level and collected in all countries)

b) A complementary indicator (relevance at regional and national levels and collected in certain countries)

c) I don't know

Then at the end of a category or subcategory of indicators, we will ask you:

1. Rank the order of indicators in this category according to their relevance in your country (From first to last, with "first" being the most relevant)

2. Please provide any other comments regarding indicators in this category

To help you in your responses to these questions, here are definitions of the relevant concepts:

Core (Global) indicators: used for comparison between countries and assessment of progress at a global level. (NB: We need to have core indicators for each strategic objective of the draft Global Strategy on Oral Health).

Complementary (regional/national) indicators: more specific indicators used for key policy areas within regions or for policy development at a national level. (NB: If there is not a consensus on an indicator, and only relevant at national/regional level, it could be classified as complementary).

Relevance: the degree to which the indicator contributes to measuring progress on the implementation of the draft Global Strategy on Oral Health and upcoming draft Global Oral Health Action Plan

6. Please choose all that apply:

- proceed with the rest of the survey

Oral health status indicators / DMFT

Indicator name: "Mean DMFT"

Definition: DMFT is the sum of the number of Decayed, Missing due to caries, and Filled Teeth in the permanent teeth. The mean number of DMFT is the sum of individual DMFT values divided by the sum of the population.
Preferred data source: At country level: - Population-based surveys (Conducting a National oral health survey) -Routine surveillance systems At global level: - Compiled data by WHO Global Oral Health Data Bank (CAPP)
Related links: WHO Global Oral Health Data Bank (CAPP): https://capp.mau.se/ Global Health Observatory indicator: https://www.who.int/data/gho/indicator-metadata-registry/imr-details/3812

7. If we asked for this indicator to be collected in your country by the end of 2023 using the source that provides the most valid data nationally (e.g., oral health survey, relevant government ministry sources, health system information, routine surveillance systems, routine administrative data, etc.), could that be done? *Please choose only one of the following:

- ☐ Yes
- ☐ No
- ☐ I don't know/I am not in a position to answer this

8. This indicator should be: *Please choose only one of the following:

- ☐ A core indicator (should be collected in all countries)
- ☐ A complementary indicator (could be collected in certain countries)
- ☐ I don't know

Oral health status indicators / Caries

Indicator name: "Prevalence of untreated caries of deciduous teeth in children "
Definition: Estimated prevalence of untreated caries of deciduous teeth in children: Rate of children who have caries in one or more deciduous teeth. Untreated caries is defined as a lesion in a pit or fissure, on a smooth tooth surface, has an unmistakable cavity, undermined enamel, or a detectably softened floor or wall (coronal caries), or feel soft or leathery to probing (root caries).
Preferred data source: At country level: - Population-based surveys (Conducting a national oral health survey) - Routine surveillance systems At global level: - Estimations by Global Burden of Disease 2019 database, Institute for Health Metrics and Evaluation
Related links: Global Burden of Disease 2019 estimation process is based on multiple relevant data sources, such as National Oral Health Surveys. Link to Global Burden of Disease 2019 database: http://ghdx.healthdata.org/gbd-results-tool The upcoming WHO Global Oral Health Status Report relies on the latest available GBD data from 2019.

9. If we asked for this indicator to be collected in your country by the end of 2023 using the source that provides the most valid data nationally (eg. oral health survey, relevant government ministry sources, health system information, routine surveillance systems, routine administrative data, etc.), could that be done? *Please choose only one of the following: Yes

- ☐ No
- ☐ I don't know/I am not in a position to answer this

10. This indicator should be: *Please choose only one of the following:

- ☐ A core indicator (should be collected in all countries)
- ☐ A complementary indicator (could be collected in certain countries)
- ☐ I don't know

Oral health status indicators / Caries

Indicator name: "Prevalence of untreated caries of permanent teeth"
Definition: Estimated prevalence of untreated caries of permanent teeth in people: Rate of persons with one more carious permanent teeth. Untreated caries is defined as a lesion in a pit or fissure, on a smooth tooth surface, has an unmistakable cavity, undermined enamel, or a detectably softened floor or wall (coronal caries), or feel soft or leathery to probing (root caries).
Preferred data source: At country level: - Population-based surveys (Conducting a national oral health survey) - Routine surveillance systems At global level: - Estimations by Global Burden of Disease 2019 database, Institute for Health Metrics and Evaluation
Related links: Global Burden of Disease 2019 estimation process is based on multiple relevant data sources, such as National Oral Health Surveys. Link to Global Burden of Disease 2019 database: http://ghdx.healthdata.org/gbd-results-tool The upcoming WHO Global Oral Health Status Report relies on the latest available GBD data from 2019.

11. If we asked for this indicator to be collected in your country by the end of 2023 using the source that provides the most valid data nationally (eg. oral health survey, relevant government ministry sources, health system information, routine surveillance systems, routine administrative data, etc.), could that be done? *Please choose only one of the following:

- ☐ Yes
- ☐ No
- ☐ I don't know/I am not in a position to answer this

12. This indicator should be: *Please choose only one of the following:

- ☐ A core indicator (should be collected in all countries)
- ☐ A complementary indicator (could be collected in certain countries)
- ☐ I don't know

Oral health status indicators / Missing teeth

Indicator name: "Missing teeth"
Definition: Missing teeth status refers to the number of missing teeth. Normally measured in permanent teeth in adult population and is related to a fully dentate status of 28 teeth (excluding third molars).
Preferred data source: At country level: - Population-based surveys (Conducting the WHO STEPS Survey using the optional Oral Health Module)
Related links: WHO STEPS survey - Oral Health Module: https://www.who.int/teams/noncommunicable-diseases/surveillance/systems-tools/steps/instrument

13. If we asked for this indicator to be collected in your country by the end of 2023 using the source that provides the most valid data nationally (eg. oral health survey, relevant government ministry sources, health system information, routine surveillance systems, routine administrative data, etc.), could that be done? *Please choose only one of the following:

- ☐ Yes
- ☐ No
- ☐ I don't know/I am not in a position to answer this

14. This indicator should be: *Please choose only one of the following:

- ☐ A core indicator (should be collected in all countries)
- ☐ A complementary indicator (could be collected in certain countries)
- ☐ I don't know

Oral health status indicators / Periodontal disease

Indicator name: "Prevalence of severe periodontal disease"
Definition: Estimated prevalence of severe periodontal disease in people: Rate of persons affected by severe periodontal disease, a chronic inflammation of the soft and hard tissues that support and anchor the teeth.
Preferred data source: At country level: - Population-based surveys (Conducting a national oral health survey) - Routine surveillance systems At global level: - Estimations by Global Burden of Disease 2019 database, Institute for Health Metrics and Evaluation
Related links: Global Burden of Disease 2019 estimates are based on multiple relevant data sources, such as National Oral Health Surveys. Link to Global Burden of Disease 2019 database: http://ghdx.healthdata.org/gbd-results-tool The upcoming WHO Global Oral Health Status Report relies on the latest available GBD data from 2019.

15. If we asked for this indicator to be collected in your country by the end of 2023 using the source that provides the most valid data nationally (eg. oral health survey, relevant government ministry sources, health system information, routine surveillance systems, routine administrative data, etc.), could that be done? *Please choose only one of the following:

- ☐ Yes
- ☐ No
- ☐ I don't know/I am not in a position to answer this

16. This indicator should be: *Please choose only one of the following:

- ☐ A core indicator (should be collected in all countries)
- ☐ A complementary indicator (could be collected in certain countries)
- ☐ I don't know

Oral health status indicators / Lip and oral cavity cancer

Indicator name: "Incidence rate of oral cancer (lip and oral cavity cancer) (age-standardized rate per 100,000 population)"
Definition: Estimated incidence rate of lip and oral cavity cancer (age-standardized per 100,000 population): Incidence rates of lip and oral cavity cancer in females, males, and total, among all ages as age-standardized per 100,000 population.
Preferred data source: At country level: - Population-based cancer registries At global level: - Estimations by Globocan 2020 database, International Agency for Research on Oral Cancer
Related links: GLOBOCAN estimates use the available data on cancer incidence from population-based cancer registries. GLOBOCAN 2020 database: Available from: https://gco.iarc.fr/today The upcoming WHO Global Oral Health Status Report relies on data from the International Agency for Research on Cancer (IARC).

17. If we asked for this indicator to be collected in your country by the end of 2023 using the source that provides the most valid data nationally (eg. oral health survey, relevant government ministry sources, health system information, routine surveillance systems, routine administrative data, etc.), could that be done? *Please choose only one of the following:

- ☐ Yes
- ☐ No
- ☐ I don't know/I am not in a position to answer this

18. This indicator should be: *Please choose only one of the following:

- ☐ A core indicator (should be collected in all countries)
- ☐ A complementary indicator (could be collected in certain countries)
- ☐ I don't know

Oral health status indicators / self-reported oral health status

Indicator name: "Self-reported oral health status"
Definition: Self-reported oral health status, including pain or discomfort, difficulty in chewing food, days not at work because of teeth or mouth (e.g. question: "During the past 12 months, did your teeth or mouth cause any pain or discomfort?).
Preferred data source: At country level: Population-based surveys (Conducting the WHO STEPS Survey using the optional Oral Health Module)
Related links: WHO STEPS survey - Oral Health Module: https://www.who.int/teams/noncommunicable-diseases/surveillance/systems-tools/steps/instrument

19. If we asked for this indicator to be collected in your country by the end of 2023 using the source that provides the most valid data nationally (eg. oral health survey, relevant government ministry sources, health system information, routine surveillance systems, routine administrative data, etc.), could that be done? *Please choose only one of the following:

- ☐ Yes
- ☐ No
- ☐ I don't know/I am not in a position to answer this

20. This indicator should be: *Please choose only one of the following:

- ☐ A core indicator (should be collected in all countries)
- ☐ A complementary indicator (could be collected in certain countries)
- ☐ I don't know

Oral health status

21. Rank the indicators in the "oral health status" category according to their relevance in your country (1 = the most relevant and the higher the number the less relevant the indicator is). *Please choose the appropriate response for each item:

	First	Second	Third	Fourth	Fifth	Sixth	Seventh
Mean DMFT							
Prevalence of untreated caries of deciduous teeth in children							
Prevalence of untreated caries of permanent teeth							
Missing teeth							
Prevalence of severe periodontal disease							
Incidence rate of oral cancer (lip and oral cavity cancer) (age-standardized rate per 100,000 population)							
Self-reported oral health status							

22. Do you have any other comments regarding the potential indicators listed above, that could assist to refine them further? For example, regarding the definitions, data sources, age groups, data disaggregation, etc. Please write your answer here:

Risk factor of oral health / Tobacco

Indicator name: "Prevalence of current tobacco use among persons aged 15 years and older (age-standardized rate)"
Definition: The percentage of the population aged 15 years and over who currently use any tobacco product (smoked and/or smokeless tobacco) on a daily or non-daily basis. Tobacco products include cigarettes, pipes, cigars, cigarillos, waterpipes (hookah, shisha), bidis, kretek, heated tobacco products, and all forms of smokeless (oral and nasal) tobacco. Tobacco products exclude e-cigarettes (which do not contain tobacco), "e-cigars", "e-hookahs", JUUL, and "e-pipes".
Preferred data source: At country level: - Population based surveys (Conducting the WHO Global Adult Tobacco Survey or WHO STEPS survey) At global level: WHO Global Health Observatory 2019 database
Related links: WHO Global Adult Tobacco Survey: https://www.who.int/teams/noncommunicable-diseases/surveillance/systems-tools/global-adult-tobacco-survey WHO STEPS survey: https://www.who.int/teams/noncommunicable-diseases/surveillance/systems-tools/steps/instrument WHO Global Health Observatory indicator: https://www.who.int/data/gho/data/indicators/indicator-details/GHO/gho-tobacco-control-monitor-current-tobaccouse-tobaccosmoking-cigarrettesmoking-agestd-tobagestdcurr

23. If we asked for this indicator to be collected in your country by the end of 2023 using the source that provides the most valid data nationally (eg. oral health survey, relevant government ministry sources, health system information, routine surveillance systems, routine administrative data, etc.), could that be done? *Please choose only one of the following:

- ☐ Yes
- ☐ No
- ☐ I don't know/I am not in a position to answer this

24, This indicator should be: *Please choose only one of the following:

- ☐ A core indicator (should be collected in all countries)
- ☐ A complementary indicator (could be collected in certain countries)
- ☐ I don't know

Risk factor of oral health / Betel quid/areca nut

Indicator name: "Prevalence of current betel quid use among persons aged 15 years and older"
Definition: Prevalence of current betel quid use among persons aged 15 years and older (%): The percentage of the population aged 15 years and over who currently chew BQ at least 3 days a week.
Preferred data source: At country level: Population-based surveys
Related links: A future source of information on the field: https://www.iarc.who.int/news-events/iarc-handbooks-meetings-volume-19-oral-cancer-prevention/

25. If we asked for this indicator to be collected in your country by the end of 2023 using the source that provides the most valid data nationally (eg. oral health survey, relevant government ministry sources, health system information, routine surveillance systems, routine administrative data, etc.), could that be done? *Please choose only one of the following:

- ☐ Yes
- ☐ No
- ☐ I don't know/I am not in a position to answer this

26. This indicator should be: *Please choose only one of the following:

- ☐ A core indicator (should be collected in all countries)
- ☐ A complementary indicator (could be collected in certain countries)
- ☐ I don't know

Risk factor of oral health / Harmful use of alcohol

Indicator name: "Per capita total alcohol consumption, 15+ years (liters of pure alcohol per year)"
Definition: The total alcohol per capita consumption comprises both, the recorded and the unrecorded alcohol per capita consumption.
Preferred data source: At country level: Government statistics At global level: WHO Global Health Observatory 2019 database

Related links: WHO Global Health Observatory: https://www.who.int/data/gho/data/indicators/indicator-details/GHO/total-(recorded-unrecorded)-alcohol-per-capita-(15-)-consumption

27. If we asked for this indicator to be collected in your country by the end of 2023 using the source that provides the most valid data nationally (eg. oral health survey, relevant government ministry sources, health system information, routine surveillance systems, routine administrative data, etc.), could that be done? *Please choose only one of the following:

- ☐ Yes
- ☐ No
- ☐ I don't know/I am not in a position to answer this

28. This indicator should be: *Please choose only one of the following:

- ☐ A core indicator (should be collected in all countries)
- ☐ A complementary indicator (could be collected in certain countries)
- ☐ I don't know

Risk factor of oral health / Diet (including sugar)

Indicator name: "Per capita availability of sugar (grams/day)"
Definition: Availability (i.e., supply) of sugar in grams per capita.
Preferred data source: At global level: Institute of Health Metrics and Evaluation and United Nations Food and Agriculture Organization, 2013.

29. If we asked for this indicator to be collected in your country by the end of 2023 using the source that provides the most valid data nationally (eg. oral health survey, relevant government ministry sources, health system information, routine surveillance systems, routine administrative data, etc.), could that be done? *Please choose only one of the following:

- ☐ Yes
- ☐ No
- ☐ I don't know/I am not in a position to answer this

30. This indicator should be: *Please choose only one of the following:

- ☐ A core indicator (should be collected in all countries)
- ☐ A complementary indicator (could be collected in certain countries)
- ☐ I don't know

Risk factor of oral health / Diet (including sugar)

Indicator name: "Per capita consumption of sugar (kilogram/year)"
Definition: Per capita consumption of sugar (kilogram/year)
Preferred data source: At global level: Organization for Economic Co-operation Development (OECD) and the Food and Agricultural Organization (FAO) of the United Nations.
Related links: The OECD-FAO Agricultural Outlook 2021-2030: https://www.oecd-ilibrary.org/agriculture-and-food/oecd-fao-agricultural-outlook-2021-2030_19428846-en;jsessionid=AP81UPEUSBnElJxPVnLRg2_C.ip-10-240-5-69

31. If we asked for this indicator to be collected in your country by the end of 2023 using the source that provides the most valid data nationally (eg. oral health survey, relevant government ministry sources, health system information, routine surveillance systems, routine administrative data, etc.), could that be done? *Please choose only one of the following:

- ☐ Yes
- ☐ No
- ☐ I don't know/I am not in a position to answer this

32. This indicator should be: *Please choose only one of the following:

- ☐ A core indicator (should be collected in all countries)
- ☐ A complementary indicator (could be collected in certain countries)
- ☐ I don't know

Risk factor of oral health / Oral hygiene and fluoride

Indicator name: "Population using fluoride toothpaste on a daily basis"
Definition: Proportion of the population cleaning or brushing daily with fluoride toothpaste.

Preferred data source: At country level: Population-based surveys (Conducting the WHO STEPS Survey using Oral Health Module & WHO Global School-based Student Health Survey)
Related links: WHO STEPS survey - Oral Health Module: https://www.who.int/teams/noncommunicable-diseases/surveillance/systems-tools/steps/instrument WHO Global School-based Student Health Survey: Questionnaire available from: https://www.who.int/teams/noncommunicable-diseases/surveillance/systems-tools/global-school-based-student-health-survey/questionnaire

33. If we asked for this indicator to be collected in your country by the end of 2023 using the source that provides the most valid data nationally (eg. oral health survey, relevant government ministry sources, health system information, routine surveillance systems, routine administrative data, etc.), could that be done? *Please choose only one of the following:

- ☐ Yes
- ☐ No
- ☐ I don't know/I am not in a position to answer this

34. This indicator should be: *Please choose only one of the following:

- ☐ A core indicator (should be collected in all countries)
- ☐ A complementary indicator (could be collected in certain countries)
- ☐ I don't know

Risk factor of oral health

35.Rank the indicators in the "risk factor of oral health" category according to their relevance in your country (1 = the most relevant and the higher the number the less relevant the indicator is). *Please choose the appropriate response for each item:

	First	Second	Third	Fourth	Fifth	Sixth
Prevalence of current tobacco use among persons aged 15 years and older						
Prevalence of current betel quid use among persons aged 15 years and older						
Per capita total alcohol consumption, 15+ years (liters of pure alcohol per year)						
Per capita availability of sugar						
Per capita consumption of sugar						
Population using fluoridated toothpaste on a daily basis						

36. Please provide any other comments regarding indicators in the "risk factor of oral health" category. Please write your answer here:

UHC for oral health / Service and population coverage

Indicator name: "Inclusion of oral health interventions in public Health Benefit Packages"
Definition: The extent to which oral health interventions are included in the largest government health financing scheme. The term "largest" is defined as having the highest total population eligible to receive services, while the term "government" is defined as including any public sector scheme for health service provision, including coverage for groups such as the general population, public sector employees and/or the military.
Preferred data source: At country level: - Government representative at Ministry of Health (Responding to Health Technology Assessment and Benefit Package Survey conducted by WHO)
Related links: WHO Health Technology Assessment and Health Benefit Package Survey 2021 - Results Dashboard: https://www.who.int/teams/health-systems-governance-and-financing/economic-analysis/health-technology-assessment-and-benefit-package-design/survey-homepage

37. If we asked for this indicator to be collected in your country by the end of 2023 using the source that provides the most valid data nationally (eg. oral health survey, relevant government ministry sources, health system information, routine surveillance systems, routine administrative data, etc.), could that be done? *Please choose only one of the following:

- ☐ Yes
- ☐ No
- ☐ I don't know/I am not in a position to answer this

38. This indicator should be: *Please choose only one of the following:

- ☐ A core indicator (should be collected in all countries)
- ☐ A complementary indicator (could be collected in certain countries)
- ☐ I don't know

UHC for oral health / Service and population coverage

Indicator name: "Availability of oral health care services in primary care facilities of the public health sector"
Definition: Availability of procedures for detecting, managing, and treating oral diseases in primary care facilities of the public health sector: Generally available refers to reaching 50% or more patients in need whereas generally not available refers to reaching less than 50% of patients in need. It includes: - availability of oral health screening for early detection of oral diseases - availability of urgent treatment for providing emergency oral care and pain relief - availability of basic restorative dental procedures to treat existing dental decay
Preferred data source: At country level: Government representative at Ministry of Health (Responding to WHO NCD Country Capacity Survey)
Related links: WHO NCD Country Capacity Survey: https://www.who.int/teams/ncds/surveillance/monitoring-capacity/ncdccs

39. If we asked for this indicator to be collected in your country by the end of 2023 using the source that provides the most valid data nationally (eg. oral health survey, relevant government ministry sources, health system information, routine surveillance systems, routine administrative data, etc.), could that be done? *Please choose only one of the following:

- ☐ Yes
- ☐ No
- ☐ I don't know/I am not in a position to answer this

40. This indicator should be: *Please choose only one of the following:

- ☐ A core indicator (should be collected in all countries)
- ☐ A complementary indicator (could be collected in certain countries)
- ☐ I don't know

UHC for oral health / Service and population coverage

Indicator name: "Proportion of the population who visited an oral health care professional"
Definition: Proportion of the population who visited an oral health care professional within a certain period of time (eg question: "Did you consult with an oral health professional during the past year?").
Preferred data source: At country level: Population-based survey
Related links: The WHO STEPS survey-Oral Health Module: https://www.who.int/teams/noncommunicable-diseases/surveillance/systems-tools/steps/instrument

41. If we asked for this indicator to be collected in your country by the end of 2023 using the source that provides the most valid data nationally (eg. oral health survey, relevant government ministry sources, health system information, routine surveillance systems, routine administrative data, etc.), could that be done? *Please choose only one of the following:

- ☐ Yes
- ☐ No
- ☐ I don't know/I am not in a position to answer this

42. This indicator should be: *Please choose only one of the following:

- ☐ A core indicator (should be collected in all countries)
- ☐ A complementary indicator (could be collected in certain countries)
- ☐ I don't know

UHC for oral health / Service and population coverage

Indicator name: "Prevalence of unmet oral health needs (and reasons for unmet needs)"
Definition: Proportion of the population unable to obtain oral health care when they perceive the need (e.g. question "during the past year, have you had the need for oral health care but not been able to obtain it?"). Reasons for unmet oral health needs would include financial (too expensive), transportation/geographic (too far to travel), or timeliness (long waiting lists) reasons.
Preferred data source: At country level: Population-based survey
Related links: OECD Unmet needs for oral health care: https://www.oecd.org/health/health-systems/Unmet-Needs-for-Health-Care-Brief-2020.pdf

43. If we asked for this indicator to be collected in your country by the end of 2023 using the source that provides the most valid data nationally (eg. oral health survey, relevant government ministry sources, health system information, routine surveillance systems, routine administrative data, etc.), could that be done? *Please choose only one of the following:

- ☐ Yes

- ☐ No
- ☐ I don't know/I am not in a position to answer this

44. This indicator should be: *Please choose only one of the following:

- ☐ A core indicator (should be collected in all countries)
- ☐ A complementary indicator (could be collected in certain countries)
- ☐ I don't know

UHC for oral health / Service and population coverage

45. Rank the indicators in the "UHC for oral health" category (subcategory: service and population coverage) according to their relevance in your country (1 = the most relevant and the higher the number the less relevant the indicator is).*Please choose the appropriate response for each item:

	First	Second	Third	Fourth
Inclusion of oral health interventions in public Health Benefit Packages				
Availability of oral health care services in primary care facilities of the public health sector				
Proportion of the population who visited an oral health care professional				
Prevalence of unmet oral health needs (and reasons for unmet needs)				

46. Please provide any other comments regarding indicators in the "UHC for oral health" category (subcategory: Service and population). Please write your answer here:

UHC for oral health / Financing/Financial protection

Indicator name: "Per capita expenditure on oral health care (US$)"
Definition: Estimate of the annual national per capita expenditure on oral health care for outpatient oral health care (public and private).
Preferred data source: At country level: National Health Accounts At global level: Global Health Expenditure Database
Related links: WHO Global Health Expenditure Database. Available from: https://apps.who.int/nha/database

47. If we asked for this indicator to be collected in your country by the end of 2023 using the source that provides the most valid data nationally (eg. oral health survey, relevant government ministry sources, health system information, routine surveillance systems, routine administrative data, etc.), could that be done? *Please choose only one of the following:

- ☐ Yes
- ☐ No
- ☐ I don't know/I am not in a position to answer this

48. This indicator should be: *Please choose only one of the following:

- ☐ A core indicator (should be collected in all countries)
- ☐ A complementary indicator (could be collected in certain countries)
- ☐ I don't know

UHC for oral health / Financing/Financial protection

Indicator name: "Government per capita expenditure on oral health, US$ per capita"
Definition: Domestic general government expenditure per capita on oral health care
Preferred data source: At country level: National Health Accounts At global level: Global Health Expenditure Database
Related links: WHO Global Health Expenditure Database. Available from: https://apps.who.int/nha/database

49. If we asked for this indicator to be collected in your country by the end of 2023 using the source that provides the most valid data nationally (eg. oral health survey, relevant government ministry sources, health system information, routine surveillance systems, routine administrative data, etc.), could that be done? *Please choose only one of the following:

- ☐ Yes
- ☐ No
- ☐ I don't know/I am not in a position to answer this

50. This indicator should be: *Please choose only one of the following:

- ☐ A core indicator (should be collected in all countries)
- ☐ A complementary indicator (could be collected in certain countries)
- ☐ I don't know

UHC for oral health / Financing/Financial protection

Indicator name: "Out-of-pocket payment for oral health services, US$ per capita"
Definition: Out of pocket payments for oral health services are any direct payments made by a household at the point of using any oral health service.
Preferred data source: At country level: - Household survey
Related links: WHO Global Health Expenditure Database (private health expenditure). Available from: https://apps.who.int/nha/database OECD.Stat Database: https://stats.oecd.org/

51. If we asked for this indicator to be collected in your country by the end of 2023 using the source that provides the most valid data nationally (eg. oral health survey, relevant government ministry sources, health system information, routine surveillance systems, routine administrative data, etc.), could that be done? *Please choose only one of the following:

- ☐ Yes
- ☐ No
- ☐ I don't know/I am not in a position to answer this

52. This indicator should be: *Please choose only one of the following:

- ☐ A core indicator (should be collected in all countries)
- ☐ A complementary indicator (could be collected in certain countries)
- ☐ I don't know

UHC for oral health / Financing/Financial protection

Indicator name: "Percentage of the population facing financial barriers to oral health care"
Definition: Percentage of the population who do not receive oral health care for financial reasons
Preferred data source: At country level: - Household survey
Related links: OECD Unmet needs for oral health care: https://www.oecd.org/health/health-systems/Unmet-Needs-for-Health-Care-Brief-2020.pdf WHO EURO Universal health coverage: financial protection: https://www.euro.who.int/en/health-topics/Health-systems/health-systems-financing/universal-health-coverage-financial-protection

53. If we asked for this indicator to be collected in your country by the end of 2023 using the source that provides the most valid data nationally (eg. oral health survey, relevant government ministry sources, health system information, routine surveillance systems, routine administrative data, etc.), could that be done? *Please choose only one of the following:

- ☐ Yes
- ☐ No
- ☐ I don't know/I am not in a position to answer this

54. This indicator should be: *Please choose only one of the following:

- ☐ A core indicator (should be collected in all countries)
- ☐ A complementary indicator (could be collected in certain countries)
- ☐ I don't know

UHC for oral health / Financing/Financial protection

55. Rank the indicators in the "UHC for oral health" category (subcategory: financing/financial protection) according to their relevance in your country (1 = the most relevant and the higher the number the less relevant the indicator is). *Please choose the appropriate response for each item:

	First	Second	Third	Fourth
Per capita expenditure on oral health				
Government per capita expenditure on oral health				
Out-of-pocket payment for oral health services, US$ per capita				
Percentage of the population facing financial barriers to oral health care				

56. Please provide any other comments regarding indicators in the "UHC for oral health" category (subcategory: financing/financial protection). Please write your answer here:

UHC for oral health / Medicines, equipment, devices, digital technology, and other health products

Indicator name: "WHO EMLs dental preparations are listed in the national EML (or similar)"
Definition: The extent to which dental preparations on the WHO Essential Medicines List and WHO Essential Medicines List for children are listed in the national Essential Medicines List (or similar). Responses can be disaggregated by dental preparation (fluoride, glass ionomer cement, and silver diamine fluoride) and/or the amount of dental preparations (1,2 or all).
Preferred data source: At country level: - Government representative at Ministry of Health (Chief dental officer/Oral health unit responding to a questionnaire to be conducted by WHO)
Related links: WHO Model List of Essential Medicines – 22nd List, 2021: https://apps.who.int/iris/bitstream/handle/10665/345533/WHO-MHP-HPS-EML-2021.02-eng.pdf

57. If we asked for this indicator to be collected in your country by the end of 2023 using the source that provides the most valid data nationally (eg. oral health survey, relevant government ministry sources, health system information, routine surveillance systems, routine administrative data, etc.), could that be done? *Please choose only one of the following:

- ☐ Yes
- ☐ No
- ☐ I don't know/I am not in a position to answer this

58. This indicator should be: *Please choose only one of the following:

- ☐ A core indicator (should be collected in all countries)
- ☐ A complementary indicator (could be collected in certain countries)
- ☐ I don't know

UHC for oral health / Medicines, equipment, devices, digital technology, and other health products

Indicator name: "Affordability of fluoride toothpaste"
Definition: Fluoride toothpaste is categorized as "affordable" if less than one day (≤ 1) of labour is needed and as "unaffordable" if more than one day (>1) of labour is needed to buy the annual supply for one individual.
Preferred data source: At country level: - Government representative at Ministry of Health (Chief dental officer/Oral health unit responding to a questionnaire to be conducted by WHO) At global level: - WHO Consultation 2019

59. If we asked for this indicator to be collected in your country by the end of 2023 using the source that provides the most valid data nationally (eg. oral health survey, relevant government ministry sources, health system information, routine surveillance systems, routine administrative data, etc.), could that be done? *Please choose only one of the following:

- ☐ Yes
- ☐ No
- ☐ I don't know/I am not in a position to answer this

60. This indicator should be: *Please choose only one of the following:

- ☐ A core indicator (should be collected in all countries)
- ☐ A complementary indicator (could be collected in certain countries)
- ☐ I don't know

UHC for oral health / Medicines, equipment, devices, digital technology, and other health products

61. Rank the indicators in the "UHC for oral health" category (Subcategory: Medicines, equipment, devices, digital technology, and other health products) according to their relevance in your country (1 = the most relevant and the higher the number the less relevant the indicator is).*Please choose the appropriate response for each item:

	First	Second
WHO EMLs dental preparations are listed in the national EML		
Affordability of fluoride toothpaste		

62. Please provide any other comments regarding indicators in the "UHC for oral health" category (subcategory: medicines, equipment, devices, digital technology, and other health products). Please write your answer here:

UHC for oral health / Workforce

Indicator name: "Oral health personnel (per 10,000 population)"
Definition: Total oral health personnel density, per 10,000 population: 1) dentists; 2) dental assistants and therapists, dental hygienists, and dental nurses; and 3) dental prosthetic technicians.
Preferred data source: At country level - Health workforce registry or database At global level: - The National Health Workforce Accounts data portal
Related links: National Health Workforce Accounts Data Portal:https://apps.who.int/nhwaportal/

63. If we asked for this indicator to be collected in your country by the end of 2023 using the source that provides the most valid data nationally (eg. oral health survey, relevant government ministry sources, health system information, routine surveillance systems, routine administrative data, etc.), could that be done? *Please choose only one of the following:

- ☐ Yes
- ☐ No
- ☐ I don't know/I am not in a position to answer this

64. This indicator should be: *Please choose only one of the following:

- ☐ A core indicator (should be collected in all countries)
- ☐ A complementary indicator (could be collected in certain countries)
- ☐ I don't know

UHC for oral health / Workforce

Indicator name: "Primary healthcare workers (inc. community healthcare workers) are trained to perform cost-effective interventions on oral health"
Definition: Proportion of primary healthcare workers (inc. community healthcare workers) are trained to perform cost-effective interventions on oral health. Primary healthcare workers exclude oral health care personnel (dentists, dental assistants, therapists, dental hygienists, dental nurses, and dental prosthetic technicians). Cost-effective interventions on oral health (Best buys) are currently under development.
Preferred data source: At country level: Non-dental health professional training institutions

65. If we asked for this indicator to be collected in your country by the end of 2023 using the source that provides the most valid data nationally (eg. oral health survey, relevant government ministry sources, health system information, routine surveillance systems, routine administrative data, etc.), could that be done? *Please choose only one of the following:

- ☐ Yes
- ☐ No
- ☐ I don't know/I am not in a position to answer this

66. This indicator should be: *Please choose only one of the following:

- ☐ A core indicator (should be collected in all countries)
- ☐ A complementary indicator (could be collected in certain countries)
- ☐ I don't know

UHC for oral health / Workforce

Indicator name: "Annual graduates of oral health personnel, all cadres (per 10,000 population)"
Definition: Density of annual graduates of oral health personnel during the last year per 10,000 population. Recent graduates for the following professions: 1) dentists; 2) dental assistants and therapists; dental hygienists; and dental nurses; and 3) dental prosthetic technicians.
Preferred data source: At country level: - Routine administrative data from Dental Faculties, training institutes At global level: - National Health Workforce Accounts data platform (Data for dentists)

67. If we asked for this indicator to be collected in your country by the end of 2023 using the source that provides the most valid data nationally (eg. oral health survey, relevant government ministry sources, health system information, routine surveillance systems, routine administrative data, etc.), could that be done? *Please choose only one of the following:

- ☐ Yes
- ☐ No

- ☐ I don't know/I am not in a position to answer this

68. This indicator should be: *Please choose only one of the following:

- ☐ A core indicator (should be collected in all countries)
- ☐ A complementary indicator (could be collected in certain countries)
- ☐ I don't know

UHC for oral health / Workforce

69.Rank the indicators in the "UHC for oral health" category (subcategory: workforce) according to their relevance in your country (1 = the most relevant and the higher the number the less relevant the indicator is).*Please choose the appropriate response for each item:

	First	Second	Third
Oral health personnel (per 10,000 population)			
Primary healthcare workers are trained to perform cost-effective interventions on oral health			
Annual graduates of oral health personnel, all cadres (per 10,000 population			

70. Please provide any other comments regarding indicators in the "UHC for oral health" category (subcategory: Workforce).Please write your answer here:

Governance

Indicator name: "Presence of dedicated staff for oral diseases in the NCD Department or other Department of the Ministry of Health"
Definition: Presence of a technical/professional staff in the unit/branch/department working on NCDs or another department in the Ministry of Health dedicating a significant portion of their time to oral diseases.
Preferred data source: At country level: Government representative at Ministry of Health (Responding to WHO NCD Country Capacity Survey)
Related links: WHO NCD Country Capacity Survey: https://www.who.int/teams/ncds/surveillance/monitoring-capacity/ncdccs

71. If we asked for this indicator to be collected in your country by the end of 2023 using the source that provides the most valid data nationally (eg. oral health survey, relevant government ministry sources, health system information, routine surveillance systems, routine administrative data, etc.), could that be done? *Please choose only one of the following:

- ☐ Yes
- ☐ No
- ☐ I don't know/I am not in a position to answer this

72. This indicator should be: *Please choose only one of the following:

- ☐ A core indicator (should be collected in all countries)
- ☐ A complementary indicator (could be collected in certain countries)
- ☐ I don't know

Governance

Indicator name: "Existence of a national oral health policy, strategy, or action plan"
Definition: Existence of a policy, strategy, or action plan for oral health available in the respective country.
Preferred data source: At country level: Government representative at Ministry of Health (Responding to WHO NCD Country Capacity Survey)
Related links: WHO NCD Country Capacity Survey: https://www.who.int/teams/ncds/surveillance/monitoring-capacity/ncdccs

73. If we asked for this indicator to be collected in your country by the end of 2023 using the source that provides the most valid data nationally (eg. oral health survey, relevant government ministry sources, health system information, routine surveillance systems, routine administrative data, etc.), could that be done? *Please choose only one of the following:

- ☐ Yes
- ☐ No
- ☐ I don't know/I am not in a position to answer this

74. This indicator should be: *Please choose only one of the following:

- ☐ A core indicator (should be collected in all countries)
- ☐ A complementary indicator (could be collected in certain countries)
- ☐ I don't know

Governance

Indicator name: "Noma recognized as a national public health problem"
Definition: Noma (cancrum oris) is a non-communicable necrotizing disease that starts as a lesion of the gums inside the mouth and destroys the soft and hard tissues of the mouth and face. Countries are part of the Regional Noma Control Programme in the WHO African Region and recognize noma as a national public health problem. Indicator being considered as complementary (at regional level)
Preferred data source: At regional level: Regional Noma Control Programme in WHO African Region

75. If we asked for this indicator to be collected in your country by the end of 2023 using the source that provides the most valid data nationally (eg. oral health survey, relevant government ministry sources, health system information, routine surveillance systems, routine administrative data, etc.), could that be done? *Please choose only one of the following:

- ☐ Yes
- ☐ No
- ☐ I don't know/I am not in a position to answer this

76. This indicator should be: *Please choose only one of the following:

- ☐ A core indicator (should be collected in all countries)
- ☐ A complementary indicator (could be collected in certain countries)
- ☐ I don't know

Governance

Indicator name: "Implementation of tax on sugar-sweetened beverages (SSBs)"
Definition: Country has implemented a tax on sugar-sweetened beverages. "Yes" responses refer to the application of excise taxes and/or special VAT/sales tax rates.
Preferred data source: At country level: Government representative at Ministry of Health (Responding to WHO NCD Country Capacity Survey)
Related links: WHO NCD Country Capacity Survey: https://www.who.int/teams/ncds/surveillance/monitoring-capacity/ncdccs

77. If we asked for this indicator to be collected in your country by the end of 2023 using the source that provides the most valid data nationally (eg. oral health survey, relevant government ministry sources, health system information, routine surveillance systems, routine administrative data, etc.), could that be done? *Please choose only one of the following:

- ☐ Yes
- ☐ No
- ☐ I don't know/I am not in a position to answer this

78. This indicator should be: *Please choose only one of the following:

- ☐ A core indicator (should be collected in all countries)
- ☐ A complementary indicator (could be collected in certain countries)
- ☐ I don't know

Governance

Indicator name: "National policies, strategies, or action plans with a specific policy goal or action towards reducing sugars intake"
Definition: Existence of a national policy, strategy, or action plan with a specific goal or action towards reducing sugars intake. Specific goal or action could refer to measures such as: •Taxes: Sugar-sweetened beverages taxes, taxes on sugars or on foods high in sugars •Nutrition labeling: Front-of-pack or other interpretative labeling/claim to indicate healthier food choices related to sugars •Reformulation limits or targets to reduce sugars content in foods and beverages •Public food procurement and service policies to reduce the offer of food high in sugars •Restriction of marketing of food and non-alcoholic beverages high in sugars to children
Preferred data source: At country level: Government representative at Ministry of Health (Responding to WHO NCD Country Capacity Survey) At global level: WHO Global database on the implementation of nutrition action (GINA)
Related links: WHO NCD Country Capacity Survey: https://www.who.int/teams/ncds/surveillance/monitoring-capacity/ncdccs

79. If we asked for this indicator to be collected in your country by the end of 2023 using the source that provides the most valid data nationally (eg. oral health survey, relevant government ministry sources, health system information, routine surveillance systems, routine administrative data, etc.), could that be done? *Please choose only one of the following:

- ☐ Yes
- ☐ No
- ☐ I don't know/I am not in a position to answer this

80. This indicator should be: *Please choose only one of the following:

- ☐ A core indicator (should be collected in all countries)
- ☐ A complementary indicator (could be collected in certain countries)
- ☐ I don't know

Governance

Indicator name: "National policy or legislation to contain all forms of tobacco consumption"
Definition: State Parties to WHO Framework Convention on Tobacco Control (FCTC) with a complete policy on all forms of tobacco taxation. Specific measures for smokeless tobacco include 1) tax or report taxing smokeless tobacco products, 2) measure contents of smokeless tobacco products, 3) pictorial health warnings on smokeless tobacco products, 4) ban on smokeless tobacco advertisement, promotion, and sponsorships.
Preferred data source: At country level: Country profile in the MPOWER At global level: FCTC EMPOWER report
Related links: FCTC EMPOWER report: https://apps.who.int/iris/rest/bitstreams/1359088/retrieve

81. If we asked for this indicator to be collected in your country by the end of 2023 using the source that provides the most valid data nationally (eg. oral health survey, relevant government ministry sources, health system information, routine surveillance systems, routine administrative data, etc.), could that be done? *Please choose only one of the following:

- ☐ Yes
- ☐ No
- ☐ I don't know/I am not in a position to answer this

82. This indicator should be: *Please choose only one of the following:

- ☐ A core indicator (should be collected in all countries)
- ☐ A complementary indicator (could be collected in certain countries)
- ☐ I don't know

Governance

Indicator name: "Water fluoridation"
Definition: Proportion of the population exposed to water fluoridation interventions
Preferred data source: At country level: - Government databases - Government representative at Ministry of Health

83. If we asked for this indicator to be collected in your country by the end of 2023 using the source that provides the most valid data nationally (eg. oral health survey, relevant government ministry sources, health system information, routine surveillance systems, routine administrative data, etc.), could that be done? *Please choose only one of the following:

- ☐ Yes
- ☐ No
- ☐ I don't know/I am not in a position to answer this

84. This indicator should be: *Please choose only one of the following:

- ☐ A core indicator (should be collected in all countries)
- ☐ A complementary indicator (could be collected in certain countries)
- ☐ I don't know

Governance

Indicator name: "Dental amalgam phase down policy"
Definition: Existence of a national oral health policy, strategy or action plan to phase down the use of dental amalgam, in compliance with the Minamata Convention on Mercury.
Preferred data source: At country level: - Government representative at MoH (Chief dental officer/Oral health unit)

85. If we asked for this indicator to be collected in your country by the end of 2023 using the source that provides the most valid data nationally (eg. oral health survey, relevant government ministry sources, health system information, routine surveillance systems, routine administrative data, etc.), could that be done? *Please choose only one of the following:

- ☐ Yes

- No
- I don't know/I am not in a position to answer this

86. This indicator should be: *Please choose only one of the following:

- A core indicator (should be collected in all countries)
- A complementary indicator (could be collected in certain countries)
- I don't know

Governance

Indicator name: "Oral health integration into the school health policy/programme"
Definition: Oral health interventions are integrated into the school health policy/programme. Type of school health interventions related to oral health include: - Promotion of oral health - Screening of oral health problems, followed by care or referral, as appropriate.
Preferred data source: At country level: - Government representative at MoH (Chief dental officer/Oral health unit) - Ministry of Health routine administrative data
Related links: WHO guideline on school health services: https://www.who.int/publications/i/item/9789240029392 WHO, UNESCO Making every school a health-promoting school: global standards and indicators for health-promoting schools and systems: https://apps.who.int/iris/rest/bitstreams/1352165/retrieve

87. If we asked for this indicator to be collected in your country by the end of 2023 using the source that provides the most valid data nationally (eg. oral health survey, relevant government ministry sources, health system information, routine surveillance systems, routine administrative data, etc.), could that be done? *Please choose only one of the following:

- Yes
- No
- I don't know/I am not in a position to answer this

88. This indicator should be: *Please choose only one of the following:

- A core indicator (should be collected in all countries)
- A complementary indicator (could be collected in certain countries)
- I don't know

Governance

89. Rank the indicators in the "governance" category according to their relevance in your country (1 = the most relevant and the higher the number the less relevant the indicator is).*Please choose the appropriate response for each item:

	First	Second	Third	Fourth	Fifth	Sixth	Seventh	Eighth	Ninth
Presence of dedicated staff for oral diseases in the NCD Department or other Department of the Ministry of Health									
Existence of a national oral health policy, strategy, or action plan									
Noma recognized as a national public health problem									
Implementation of tax on sugar-sweetened beverages (SSBs)									
National policies, strategies, or action plans with a specific policy goal or action towards reducing sugars intake									
National policy or legislation to contain all forms of tobacco consumption									
Water fluoridation									
Dental amalgam phase down policy									
Oral health integration into the school health policy/programme									

90. Please provide any other comments regarding indicators in the "governance" category. Please write your answer here:

Evidence-informed policy / Information systems

Indicator name: "Oral health indicators in routine health information systems"

Definition: Integration of oral health indicators into the existing national routine health information system (e.g., Health Management Information System (HMIS), The District Health Information Software (DHIS2), Integrated Disease Surveillance and Responses (IDSR))
Preferred data source: At country level: - Routine health information system - Government representative at Ministry of Health (Chief dental officer/Oral health unit)

91 If we asked for this indicator to be collected in your country by the end of 2023 using the source that provides the most valid data nationally (eg. oral health survey, relevant government ministry sources, health system information, routine surveillance systems, routine administrative data, etc.), could that be done? *Please choose only one of the following:

- Yes
- No
- I don't know/I am not in a position to answer this

92. This indicator should be: *Please choose only one of the following:

- A core indicator (should be collected in all countries)
- A complementary indicator (could be collected in certain countries)
- I don't know

Evidence-informed policy / Information systems

Indicator name: "Collection of oral health data using WHO NCD survey tools or national oral health survey"
Definition: Collection of oral health data using WHO NCD survey tools (STEPS, NCD Country Capacity Surveys, Global School-based Student Health Survey(GSHS), etc.) or national oral health survey (using or not using digital technology).
Preferred data source: At country level: - Government representative at MoH (Chief dental officer/Oral health unit)

93 If we asked for this indicator to be collected in your country by the end of 2023 using the source that provides the most valid data nationally (eg. oral health survey, relevant government ministry sources, health system information, routine surveillance systems, routine administrative data, etc.), could that be done? *Please choose only one of the following:

- Yes
- No
- I don't know/I am not in a position to answer this

94. This indicator should be: *Please choose only one of the following:

- A core indicator (should be collected in all countries)
- A complementary indicator (could be collected in certain countries)
- I don't know

Evidence-informed policy / Information systems

Indicator name: "National Monitoring Framework to track oral health policy"
Definition: Existence of a National Monitoring Framework to track the progress of implementation of the national oral health policy/strategy/plan (Y/N) (Among those countries that have an oral health policy, strategy, or action plan).
Preferred data source: At country level: - Government representative at the Ministry of Health (Chief dental officer/Oral health unit)

95. If we asked for this indicator to be collected in your country by the end of 2023 using the source that provides the most valid data nationally (eg. oral health survey, relevant government ministry sources, health system information, routine surveillance systems, routine administrative data, etc.), could that be done? *Please choose only one of the following:

- Yes
- No
- I don't know/I am not in a position to answer this

96. This indicator should be: *Please choose only one of the following:

- A core indicator (should be collected in all countries)
- A complementary indicator (could be collected in certain countries)
- I don't know

Evidence-informed policy / Research and knowledge translation

Indicator name: "Percentage of government funds for oral health research"

Definition: Percentage of public funds for research that is allocated for oral health-related projects.
Preferred data source: At country level: - National and sub-national government health research agencies
Related links: Similar indicator in PHC Monitoring Framework (indicator #13): https://apps.who.int/iris/bitstream/handle/10665/352201/9789240044234-eng.pdf?sequence=1&isAllowed=y

97. If we asked for this indicator to be collected in your country by the end of 2023 using the source that provides the most valid data nationally (eg. oral health survey, relevant government ministry sources, health system information, routine surveillance systems, routine administrative data, etc.), could that be done? *Please choose only one of the following:

- ☐ Yes
- ☐ No
- ☐ I don't know/I am not in a position to answer this

98. This indicator should be: *Please choose only one of the following:

- ☐ A core indicator (should be collected in all countries)
- ☐ A complementary indicator (could be collected in certain countries)
- ☐ I don't know

Evidence-informed policy / Research and knowledge translation

Indicator name: "Setting national oral health research agendas oriented towards public health programmes and population-based interventions"
Definition: Number of oral health research projects that have investigated public health programmes and population-based interventions in the last five years
Preferred data source: At country level: - National and sub-national government health research agencies Related links: WHO SCORE for health data technical package. Available from: https://www.who.int/data/data-collection-tools/score/documents

99. If we asked for this indicator to be collected in your country by the end of 2023 using the source that provides the most valid data nationally (eg. oral health survey, relevant government ministry sources, health system information, routine surveillance systems, routine administrative data, etc.), could that be done? *Please choose only one of the following:

- ☐ Yes
- ☐ No
- ☐ I don't know/I am not in a position to answer this

100. This indicator should be: *Please choose only one of the following:

- ☐ A core indicator (should be collected in all countries)
- ☐ A complementary indicator (could be collected in certain countries)
- ☐ I don't know

Evidence-informed policy

101. Rank the indicators in the "evidence-informed policy" category according to their relevance in your country (1 = the most relevant and the higher the number the less relevant the indicator is). *Please choose the appropriate response for each item:

	First	Second	Third	Fourth	Fifth
Oral health indicators in routine health information systems					
Collection of oral health data using WHO NCD survey tools or national oral health survey					
National Monitoring Framework to track oral health policy					
Percentage of government funds for oral health research					
Setting national oral health research agendas oriented towards public health programmes and population-based interventions					

102. Please provide any other comments regarding indicators in the "evidence-informed policy" category. Please write your answer here:

- ☐ Submit your survey.

Thank you for completing this survey