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# Defining The Acceptable Oral and Dental Health and Its Criteria: A Step Towards Universal Health Coverage

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## Abstract

# Background:

The definition of acceptable oral health level for population could be different based on the purpose of its use and practical considerations. The present study aimed to establish a definition of acceptable oral and dental health that reflects socio-economic and cultural context by integrating clinical indicators with psychosocial and functional dimensions.

# Methods:

The study employed a multi-phase methodology including a literature review, expert consultations, and an expert panel. Initially, a comprehensive literature review was conducted to identify existing models and definitions for assessing oral health, particularly focusing on frameworks by the World Health Organization (WHO) and the World Dental Federation (FDI). Based on this review, a primary model was developed, comprising three key domains: physiological function, psychosocial function, and absence of disease. Following this step, a panel of experts from diverse dental specialties was convened to review and refine the model, ensuring that the operational definition of oral health was adapted to the specific socio-economic and cultural conditions in Iran.

# Results:

A refined model of oral health was developed based on existing frameworks, incorporating physiological, psychosocial, and clinical domains, consisted of 5, 4, and 15 subdomains, respectively. Expert input from 20 professionals prioritized treating conditions like oral cancer (95%) and infections (90%). The expert panel's consensus yielded a practical definition of oral health outlined through 23 specific statements to guide assessment and policy development.

# Conclusion:

This study developed a context-specific practical definition of oral and dental health for Iran, integrating clinical indicators with psychosocial and functional dimensions. By addressing socio-economic factors and cultural nuances, this framework can serve as a crucial tool for policymakers and healthcare providers, facilitating targeted resource allocation and informing the creation of effective healthcare packages.

## Introduction

Universal Health Coverage (UHC) is a concept introduced by the World Health Organization (WHO) to uphold the principle that "health is a fundamental human right," ensuring that "everyone has access to

comprehensive, high-quality health services they require, without financial barriers, precisely when and where needed" [1]. Achieving Universal Health Coverage is the third Sustainable Development Goal for countries and requires planning across all health dimensions, including oral and dental health [2].

Oral and dental diseases, including dental caries, periodontal diseases, and tooth loss, despite being preventable, remain among the most common non-communicable diseases worldwide. According to a 2023 report by the World Health Organization, nearly half of the world's population suffers from untreated oral diseases [3]. In Iran, in almost all age groups, more than 50% of individuals required dental treatment, with the majority needing fillings and emergency treatments [4]. Untreated oral and dental diseases not only cause pain, infection, discomfort, and premature tooth loss in individuals, affecting their general health and quality of life, but also impact society through reduced productivity and increased costs. In addition to the high prevalence and burden of disease, oral and dental diseases share common risk factors with many other non-communicable diseases, such as diabetes, and should be considered as part of general health and included in universal health coverage [2, 5, 6].

The Health reform was one of the policies implemented in Iran with the goal of moving towards universal health coverage, which reinforced primary health care system and expanded health insurance services [7]. However, in the field of dentistry, the coverage of basic insurance packages is limited to dental checkups, radiography, fissure sealants, fluoride therapy, tooth extraction, scaling, and non-complex dental restorations and adequate access to oral and dental health services is still not provided for a large segment of society, and the services offered in this framework need to be revised. Moreover, the current oral health insurance packages in Iran suffer from other challenges such as the lack of transparency in prioritizing health services and the unequal distribution of services in basic and supplementary packages, not following evidence-based methods in package development, and the existence of multiple and inconsistent policies [8].

World Health Organization (WHO) provided a framework to address inefficient oral health insurance system and to achieve and achieve UHC in the Eastern Mediterranean region. One of the strategies in this regard is to design and implement evidence-based health service packages, based on priority and in collaboration with all policy-makers and stakeholder. The first step is to have a clear and precise definition of health, its dimensions, and criteria as the foundation for goal-setting and decision-making in the health system [9, 10]. It should be noted that UHC does not mean providing free coverage for all health services, nor does it mean providing a minimal package of services for the community, and a mechanism should be established to gradually cover more services as resources develop. Compiling a complete and prioritized list of all services that ensure access to defined health can be used for this purpose [11].

In recent decades, the definition of health has been continuously changing and evolving. Prominent points of this transformation include the shift in the concept of health from "absence of disease" to "complete physical, mental, and social well-being" [12], and then the emergence of health as "the ability to adapt and self-manage" [13]. According to previous studies, the definition of health varies depending

on the community and the perspective of the individuals under consideration, making it a variable issue crucial for health policies and ensuring alignment between the expectations of health service recipients and providers [14].

Differences in health concepts are also observed in various areas, including oral and dental health [15]. According to the latest definition by the World Health Organization in 2022, oral health is defined as "a state of the mouth, teeth, and orofacial structures that enables essential functions such as eating, breathing, and speaking for the individual, and also encompasses psychological-social dimensions such as self-confidence, well-being, and the ability to function and engage socially without pain, discomfort, and embarrassment" [16]. The definition of oral health by the World Dental Federation (FDI) includes, in addition to the above, functions such as "smelling, tasting, touching, expressing emotions through facial expressions," and also “the absence of diseases of the head, face, and oral cavity” [17]. In most of these definitions, efforts have been made to encompass all dimensions of individual and social life and provide a comprehensive definition of oral health. However, when assessing health, designing service packages, and other policy-making in this area, reliance on more specific definitions that provide clear components to determine oral health is inevitable [18]. Furthermore, the most recent published Global Oral Health Action Plan by WHO emphasizes on provision of essential oral health services for the populations, which requires appropriate definition of oral health [19].

The aim of this study is to determine acceptable oral health and its criteria in target groups in Iran until 2029, in a way that is in line with the treatment needs of our society and is operationally clear and unambiguous from a health decision-making perspective. The outcome of this research will be the basis for selecting oral health services and prioritizing them, as well as developing a basic oral health service package.

# Material and Methods

The present study was conducted through a mixed-method approach, including literature review, questionnaires, focus group discussions, and data analysis based on the principles of concept analysis and content analysis [20, 21]. The Ethics Committee in Biomedical Research of Tehran University of Medical Sciences (IR.TUMS.DENTISTRY.REC.1402.065) approved the study protocol. Then, the steering committee, consisting of two Community Oral Health specialists, an epidemiologist, and two Master's in Dental Public Health dentist was formed.

A comprehensive search was conducted across databases including PubMed, Scopus, Google Scholar, and websites of relevant organizations such as WHO, ADA, and FDI, as well as national sources such as the Ministry of Health and Medical Education website and publications, with the following keywords: "Oral Health," "Dental Care," "Dental Health," "Definition," "Viewpoint," "Meaning," “Guideline," and "Tool." Based on the literature review, age or specific conditions utilized for presenting oral and dental health definitions, concepts, models, and guidelines were identified and the scope of oral and dental health, and clinical assessment criteria were extracted in an excel sheet as well.

Following a thematic analysis of the literature, a primary model encompassing all potential domains and sub-domains of oral and dental health, along with their specific definitions, was developed. This model was presented at the national congress of Oral Health and Community Dentistry (Isfahan, Iran, October 2023). Experts in attendance were invited to provide written feedback on each domain and subdomain, suggesting any additional aspects of oral and dental health that may have been overlooked. Subsequently, the primary categorization of the oral and dental health model was refined based on this feedback.

To determine the acceptable level of each domain and sub-domain and to prioritize these aspects, a questionnaire was devised to gather input from stakeholders, general dentists, and dental specialists (**supplemental file 1**). This questionnaire was designed based on the literature review, and finalized based on the comments of experts in Community Oral Health professionals and clinicians, who assessed its relevance and comprehensiveness. The questionnaire employed a purposive sampling method, distributed to Community Oral Health students, specialists, and key stakeholders via Telegram and email. Informed consent was obtained through invitation letters, ensuring confidentiality, and providing information on the study purpose.

Based on data from previous stages, criteria for acceptable oral and dental health in each age group and target population was defined as model cases. These model cases were discussed in a focus group consisting of three Community Oral Health professionals, a Pedodontics, an Endodontist, a Periodontist, an Oral Medicine specialist, an Oral Radiologist, a Restorative dentist. The session lasted two hours and was conducted in a structured format, where each domain and sub-domain was presented for discussion. Participants evaluated the criteria based on their expertise, and any discrepancies were resolved through facilitated dialogue and voting. The refined model was then presented and reviewed in a subsequent meeting of the Steering Committee. The results of the focus group discussion were consolidated, and additional input from the committee members was incorporated to finalize the model.

# Results

### Literature Review

The primary model of oral and dental health was developed based on the World Health Organization (WHO) [19] and the World Dental Federation (FDI)'s definitions of oral health. This model was further refined by reviewing existing models and questionnaires for assessing oral health and oral health-related quality of life [22-29]. The primary model aimed to be as comprehensive as possible and consisted of three main domains: physiological function, psychosocial function, and lack of disease. The physiological function domain encompassed five sub-domains: the ability to chew and eat without any food alterations, the ability to swallow, the ability to speak, and productivity. The psychosocial function domain encompassed four sub-domains: having self-confidence, the ability to smile, social participation, and aesthetic satisfaction. The third domain focused on the more measurable and clinical aspects of oral health, based on the absence of oral and dental diseases. This included oral pain, dry mouth, dental

sensitivity, dental caries, periodontal diseases, tooth loss, oro-dental trauma, Noma, oral cancers, congenital malformations, oral infections, oral ulcers and lesions, and temporomandibular joint diseases. These aspects of oral health were clearly defined, and their assessment criteria were chosen either based on patient-centered outcomes derived from the Adult Oral Health Standard Set (AOHSS) developed by the FDI [30], or based on clinical indices such as caries depth.

### Questionnaire Data

To define the acceptable level of oral health, a total of 20 experts completed the questionnaire, with 60% (12 individuals) holding PhDs in Community Oral Health. **Table 1** presents experts' opinions on the severity levels of various oral health conditions and the minimum level at which these conditions should be treated. Most of the experts believed that patients experiencing early caries or more severe conditions, and any stage of periodontitis should receive treatment.

Table 1: Experts' Assessment of Oral Health Condition Severity and Treatment Thresholds (N=20)

| Conditions | Frequency (%) |
|---|---|
| Decay of one or more teeth | |
| Early caries (clinical lesion with mild demineralization, limited to enamel or shallow depth of cementum and dentin) | 55 |
| Moderate caries (visible signs of enamel breakdown or relatively demineralized dentin) | 25 |
| Advanced caries (completely cavitated enamel with exposed dentin, deep or severe demineralization of dentin) | 20 |
| Periodontal disease in one area or throughout the mouth<br>(CAL: clinical attachment loss) | |
| Gingivitis | 25 |
| Stage 1 periodontitis (1-2 mm CAL, no tooth loss) | 50 |
| Stage 2 (3-4 mm CAL, no loss tooth) | 15 |
| Stage 3 (more than 5 mm CAL, loss of 4 or less teeth) | 5 |
| Stage 4 (more than 5 mm CAL, loss of 5 or more teeth) | 5 |
| Oral or dental injury due to an accident or trauma | |
| Simple crown fracture involving enamel | 20 |
| Crown fracture with dentin damage without pulp involvement | 20 |
| Crown fracture with severe dentin damage involving pulp | 35 |
| Non-vital tooth with or without crown damage | 0 |
| Tooth avulsion | 10 |
| Crown fracture with or without tooth structure loss | 0 |
| tooth mobility without crown or root fracture | 0 |
| Crown fracture at the cervical third of the tooth | 15 |

**Table 2** illustrates experts' opinions on the importance of treating each diagnosed or existing oral health condition. Diagnosis and treatment of oral cancer ranked as the most critical condition, with 95% of experts rating it as a top priority. While, temporomandibular joint (TMJ) problems were considered the least important, with 45% of experts prioritizing their treatment.

Table 2: Experts' Perspectives on the Importance of Treating Diagnosed Oral Health Conditions (N=20)

| Conditions | Yes (%) | No (%) |
|---|---|---|
| Loss of one or more teeth | 75 | 25 |
| Diagnosis of Noma disease or receiving related treatments | 75 | 25 |
| Diagnosis of one of the types of oral cancer or receiving related treatments | 95 | 5 |
| Diagnosis of one of the types of craniofacial skeletal-muscular disorders (such as cleft palate and lip) at birth or receiving related treatments | 85 | 15 |
| Loss of the crown of the tooth or teeth with remaining roots in the jaw | 70 | 30 |
| Occurrence of swelling, abscess, halitosis and other symptoms related to infection in the mouth and teeth | 90 | 10 |
| Occurrence of ulcerative lesions in the mouth | 85 | 15 |
| Occurrence of non-ulcerative lesions in the mouth | 55 | 45 |
| Pain in TMJ (temporomandibular joint) or facial muscles | 45 | 55 |

### Expert Panel Consensus

The expert panel engaged in a collaborative discussion to review the idealistic definitions of oral health proposed by the research team and the data provided by the questionnaire. They considered the barriers and socio-demographic factors specific to Iran. Recognizing that idealistic definitions often fail to account for the realities faced by individuals in this context, the group collaboratively refined these definitions to better reflect practical considerations. As a result of this consensus, the panel established the following definition:

"An individual is considered to have at least a minimum level of oral health if none of the following conditions are present:

The individual:

1. sometimes experiences difficulty eating or needs to alter their food or drink due to problems with their teeth, gums, or dentures.
2. sometimes experiences difficulty swallowing food because of oral or pharyngeal problems.
3. struggles, even to the slightest extent, to speak clearly due to issues with their teeth, gums, or dentures.
4. often experiences trouble sleeping because of maxillofacial disorders or problems with their teeth, gums, or dentures.

5. often finds it challenging to perform usual duties or tasks due to problems with their teeth, gums, or dentures.
6. often feels embarrassed or self-conscious because of issues with their teeth, gums, or dentures.
7. often encounters difficulty participating in social activities due to problems with their teeth, gums, or dentures.
8. often feels embarrassment when smiling, laughing, or showing their teeth because of problems with their teeth, gums, or dentures.
9. sometimes expresses dissatisfaction with the appearance of their teeth, gums, and dentures.
10. sometimes experiences pain in the mouth.
11. sometimes suffers from a dry mouth.
12. The individual sometimes experiences sensitivity of their teeth to cold, hot, sour, and sweet foods or drinks.
13. sometimes experiences halitosis.
14. experiences early caries or more on any of their teeth, or experiences Amelogenesis/ Dentinogenesis Imperfecta.
15. experiences gingivitis, particularly in certain at-risk groups.
16. has a tooth affected by trauma that causes damage beyond the enamel.
17. experiences orofacial cancer.
18. has fewer than 20 functional teeth.
19. experiences one or more types of craniofacial skeletal-muscular disorders, such as cleft palate or lip.
20. experiences swelling, abscess, bad smell, or other symptoms related to infection in the mouth and teeth.
21. has lost the crown of one or more teeth with remaining roots in the jaw.
22. has mucosal lesions.
23. experiences pain in the TMJ (temporomandibular joint) or facial muscles."

# Discussion

The present study established a practical, operational definition of oral and dental health, tailored to the Iranian context, combining measurable clinical criteria with psychosocial and functional aspects. This approach ensures the framework captures the multidimensional nature of oral health, emphasizing its impact on individuals' quality of life, daily functioning, and social interactions. By considering the socio-economic challenges that individuals may encounter, this definition provides a more realistic basis for assessing oral health status within the population.

These clearly defined criteria are crucial for developing effective healthcare packages and expanding insurance coverage to meet the oral health needs of diverse population groups in Iran. The framework

not only enables better prioritization of services but also ensures resource allocation is evidence-based, helping address disparities among vulnerable populations, where significant oral health inequities exist [31].

The current study represents the first phase of a comprehensive research project aimed at defining a basic oral health service package. This package is designed to address community needs while remaining feasible within the constraints of available resources. Subsequent phases will involve identifying and prioritizing essential dental services, evaluating their cost-effectiveness, drafting a proposed service package, and validating it with input from experts and policymakers. These efforts will collectively lay the foundation for effective policymaking and planning to achieve universal oral health coverage.

One critical challenge in defining oral health standards lies in balancing idealistic aspirations with pragmatic realities. Ideal definitions may not always align with the limited financial and human resources available in many societies, potentially leading to overprovision of services or inefficient resource utilization. In contrast, realistic and pragmatic definitions, such as "oral health means having a comfortable and functional dental system that allows individuals to fulfill their social roles" (19), are more actionable. The clinical criteria for achieving acceptable oral health will inevitably vary across age groups, cultural contexts, and time periods. For instance, while having 20 functional teeth may be acceptable for a senior, the loss of even a single permanent tooth in a young adult may necessitate replacement [32].

The draft action plan proposed by the World Health Organization for achieving global oral health by 2030 offers a broad, fixed definition of oral and dental health. However, it does not provide uniform or context-sensitive goals for all countries. For example, while addressing oral diseases in basic health packages is prioritized in many African nations, this goal is not universally emphasized elsewhere [19]. To the best of our knowledge, the present study is a pioneering effort in defining oral health standards specific to Iran and may serve as a model for other low-income countries facing similar challenges in healthcare delivery. The methodology employed, particularly the use of expert panel discussions and method triangulation, enhances the robustness of the findings and ensures the relevance of the definitions developed. Combining quantitative data from surveys with qualitative insights from expert consensus has yielded a more comprehensive and nuanced understanding of oral health [33].

The inclusion of experts from various dental disciplines in the present study provided a holistic perspective on oral conditions and patient requirements. We aimed to present not only objective, clinician-assessed criteria, but also tangible, patient-centered outcomes. By including indicators that reflect patients' subjective well-being and priorities, the framework aligns with patient-centered healthcare principles [34]. Such an approach ensures that patients experience inform healthcare decisions, bridging the gap between clinical outcomes and individual perceptions. Incorporating patient-reported outcomes into dental practices is crucial for advancing universal oral health coverage and ensuring that care is tailored to meet the diverse needs of various populations [35].

Studies in other medical fields support this integrated approach [36, 37], demonstrating that combining patient-reported outcomes with clinical indicators enhances the accuracy of need assessments and improves goal-setting within healthcare systems. However, this integration can have both positive and negative effects. For example, while addressing a patient's dissatisfaction with their appearance might lead to unnecessary cosmetic procedures, it can also support cost-saving decisions, such as forgoing posterior tooth replacement for an elderly individual without functional impairments [38]. Previous research highlights discrepancies between patient-reported and clinician-assessed treatment needs, with older adults often rating their oral health more positively than dentists [22, 39].

Our study has a number of limitations as well. The reliance on expert consensus introduces the potential for subjective biases in the definitions developed. Future research should include larger, more representative samples of both healthcare providers and patients to enhance the validity and generalizability of the findings. To refine the operational definition further, additional needs assessments across diverse age groups, regions, and social strata are essential.

Moreover, there is an urgent need to prioritize the development of cost-effective dental services. Identifying both basic and supplementary components for oral health care packages will help ensure equitable access to necessary services. Ultimately, these efforts will contribute to achieving acceptable oral health for all individuals.

# Conclusion

In conclusion, this study presents an operational definition of oral and dental health tailored to the Iranian context, integrating clinical, psychosocial, and functional dimensions. By addressing the unique socio-economic and cultural factors influencing oral health in Iran, this framework can serve as a valuable tool for policymakers and healthcare providers to design targeted interventions and allocate resources effectively. Ultimately, this operational definition aims to improve oral health outcomes and enhance the quality of life for individuals across various population groups in Iran.

# Abbreviations

WHO
World Health Organization
FDI
World Dental Federation
UHC
Universal Health Coverage
ADA
American Dental Association
AOHSS
Adult Oral Health Standard Set

TMJ
temporomandibular joint.

# Declarations

### Ethics approval and consent to participate:

The Ethics Committee in Biomedical Research of Tehran University of Medical Sciences (IR.TUMS.DENTISTRY.REC.1402.065) approved the study protocol. The steering committee, consisting of two community oral health specialists, an epidemiologist, and two dentists with master's degrees in dental public health, was subsequently formed. We confirm that all methods were performed in accordance with the relevant guidelines and regulations, including Helsinki Declarations. Informed consent was obtained from members of the expert panel and all respondents.

### Consent for publication:

Not applicable.

### Availability of data and materials:

The datasets used and/or analysed during the current study are available from the corresponding author on reasonable request.

### Competing interests:

The authors declare that they have no competing interests.


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### Authors' contributions:

MRK and HH participated in the research design. MK and ME participated in writing the first draft. All authors participated in the performance of the research and analytic tools. MJKF participated in data analysis. All authors reviewed and confirmed the final manuscript.


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Not applicable.

# References


1. Universal health coverage [https://www.who.int/news-room/fact-sheets/detail/universal-health-coverage-(uhc)].
2. Improving Access to Oral Healthcare. Adopted by the FDI General Assembly: 27–29 September 2021, Sydney, Australia. Int Dent J. 2022;72(1):2–3.
3. World Health Organization. Global oral health status report: Towards universal health coverage for oral health by 2030 In. Geneva: World Health Organization; 2022.
4. Khoshnevisan M, Ghasemianpour M, Samadzadeh H, Baez R. Oral Health Status and Healthcare System in I.R. Iran. J contemp Med Sci 2018, 4(3).
5. Winkelmann J, Listl S, van Ginneken E, Vassallo P, Benzian H. Universal health coverage cannot be universal without oral health. Lancet Public Health 2022.
6. Balaji SM. Oral health, universal health coverage, and dental research. Indian J Dent Res. 2019;30(4):486.
7. Behzadifar M, Saran M, Behzadifar M, Martini M, Bragazzi NL. The 'Health Transformation Plan' in Iran: A policy to achieve universal health coverage in slums and informal settlement areas. Int J Health Plann Manage. 2021;36(2):267–72.
8. Mohamadi E, Takian A, Olyaeemanesh A, Rashidian A, Hassanzadeh A, Razavi M, Ghazanfari S. Health insurance benefit package in Iran: a qualitative policy process analysis. BMC Health Serv Res. 2020;20(1):722.
9. Framework for action on advancing universal health. coverage (UHC) in the Eastern Mediterranean Region [https://applications.emro.who.int/docs/Technical_Notes_EN_16287.pdf]
10. Khoshnevisan MH. The National Book of Community Oral Health and Dentistry. Tehran: Iranian Students Booking Agency; 2014.
11. Universal Health Coverage. Oral Health for All [https://www.fdiworlddental.org/sites/default/files/2020-11/fact_sheet-2019-universal_health_coverage.pdf]
12. Leonardi F. The Definition of Health: Towards New Perspectives. Int J Health Serv. 2018;48(4):735–48.

13. Huber M, Knottnerus JA, Green L, van der Horst H, Jadad AR, Kromhout D, Leonard B, Lorig K, Loureiro MI, van der Meer JW et al. How should we define health? *Bmj* 2011, 343:d4163.
14. van Druten VP, Bartels EA, van de Mheen D, de Vries E, Kerckhoffs APM. Nahar-van Venrooij LMW: Concepts of health in different contexts: a scoping review. BMC Health Serv Res. 2022;22(1):389.
15. Locker D, Gibson B. The concept of positive health: a review and commentary on its application in oral health research. Community Dent Oral Epidemiol. 2006;34(3):161–73.
16. world Health Organization. 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. In.; 2022.
17. 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 Public Health Dent. 2017;77(1):3–5.
18. Chen Y, Demnitz N, Yamamoto S, Yaffe K, Lawlor B, Leroi I. Defining brain health: A concept analysis. Int J Geriatr Psychiatry 2021, 37(1).
19. World Health Organization. Draft Global Oral Health Action Plan (2023–2030). 2023.
20. Lindgren BM, Lundman B, Graneheim UH. Abstraction and interpretation during the qualitative content analysis process. Int J Nurs Stud. 2020;108:103632.
21. Walker LO, Avant KC. Strategies for Theory Construction in Nursing. Sixth ed edn: Pearson; 2019.
22. Bots-VantSpijker PC, van der Maarel-Wierink CD, Schols J, Bruers JJM. Assessed and perceived oral health of older people who visit the dental practice, an exploratory cross-sectional study. PLoS ONE. 2021;16(9):e0257561.
23. Mariotti A, Hefti AF. Defining periodontal health. BMC Oral Health. 2015;15(1):S6.
24. George A, Poudel P, Kong A, Villarosa A, Calache H, Arora A, Griffiths R, Wong VW, Gussy M, Martin RE, et al. Developing and pilot testing an oral health screening tool for diabetes care providers. BMC Prim Care. 2022;23(1):202.
25. Crall JJ, Forrest CB. A Life Course Health Development Perspective on Oral Health. In: *Handbook of Life Course Health Development.* edn. Edited by Halfon N, Forrest CB, Lerner RM, Faustman EM. Cham (CH): Springer Copyright 2018, The Author(s). 2018: 299–320.
26. Lee JY, Watt RG, Williams DM, Giannobile WV. A New Definition for Oral Health: Implications for Clinical Practice, Policy, and Research. J Dent Res. 2017;96(2):125–7.
27. Chalmers JM, King PL, Spencer AJ, Wright FA, Carter KD. The oral health assessment tool–validity and reliability. Aust Dent J. 2005;50(3):191–9.
28. Lang NP, Bartold PM. Periodontal health. J Periodontol. 2018;89(Suppl 1):S9–16.
29. Sekulic S, Theis-Mahon N, Rener-Sitar K. A systematic scoping review of oral health models. Qual Life Res. 2019;28(10):2651–68.
30. Riordain RN, Glick M, Mashhadani S, Aravamudhan K, Barrow J, Cole D, Crall JJ, Gallagher JE, Gibson J, Hegde S, et al. Developing a Standard Set of Patient-centred Outcomes for Adult Oral Health - An

International, Cross-disciplinary Consensus. Int Dent J. 2021;71(1):40–52.
31. Khoshnevisan MH, Ghasemianpour M, Samadzadeh H, Baez RJ. Oral Health Status and Healthcare System in I.R. Iran. J Contemp Med Sci 2018, 4(3).
32. Principles of health benefit packages.
33. Carter N, Bryant-Lukosius D, DiCenso A, Blythe J, Neville AJ. The use of triangulation in qualitative research. Oncol Nurs Forum. 2014;41(5):545–7.
34. Dawson J, Doll H, Fitzpatrick R, Jenkinson C, Carr AJ. The routine use of patient reported outcome measures in healthcare settings. BMJ. 2010;340:c186.
35. Nascimento GG, Raittio E, Machado V, Leite FRM, Botelho J. Advancing Universal Oral Health Coverage via Person-Centred Outcomes. Int Dent J. 2023;73(6):793–9.
36. Smith B, Chu LK, Smith TC, Amoroso PJ, Boyko EJ, Hooper TI, Gackstetter GD, Ryan MA. Challenges of self-reported medical conditions and electronic medical records among members of a large military cohort. BMC Med Res Methodol. 2008;8:37.
37. Bourgeois FT, Porter SC, Valim C, Jackson T, Cook EF, Mandl KD. The value of patient self-report for disease surveillance. J Am Med Inf Assoc. 2007;14(6):765–71.
38. Srisilapanan P, Sheiham A. Assessing the difference between sociodental and normative approaches to assessing prosthetic dental treatment needs in dentate older people. Gerodontology. 2001;18(1):25–34.
39. Niesten D, Witter DJ, Bronkhorst EM, Creugers NHJ. Oral health care behavior and frailty-related factors in a care-dependent older population. J Dent. 2017;61:39–47.

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