



Pillars of oral health research & its implications

Salaj Rana^{1*}, Shivangi Shukla², Kripalini Patel³, Payal Das¹, Ashoo Grover¹, Rajiv Ahluwalia^{4*}

¹Indian Council of Medical Research, V Ramalingaswami Bhawan, Ansari Nagar, New Delhi

²Department of Orthodontics, Santosh Dental College, Santosh deemed to be University, Ghaziabad, Uttar Pradesh

³Department of Epidemiology, ICMR-Regional Medical Research Centre, Bhubaneswar, Odisha

^{4*}Department of Orthodontics and Dentofacial Orthopaedics, Santosh Dental College, Santosh deemed to be University, Ghaziabad, Uttar Pradesh

Corresponding author:*

Dr. Rajiv Ahluwalia

Professor and Head, Department of Orthodontics and Dentofacial Orthopedics, Santosh deemed to be University, Ghaziabad, Uttar Pradesh – 201009, India.

ABSTRACT

A few countries like Brazil, have achieved progress in integrating dental care within Universal Health Care programs. However, in developing countries like India, dental care is confined to the margins of UHC, hence it is essential to consider the dentist's overall role they could commence apart from the clinical perspective for the improvement of oral health along with overall health conditions. There are many pillars to oral health such as Research, Collaboration, Clinic & Education, Incubation & Funding. Research in dental care could expand the possibilities of scientific studies aimed at putting theories to the test, answering concerns, improving treatment options, and learning more about human health. Similarly, to address the shortfalls and challenges within the Indian health system, there is a need for Inter-ministerial collaborations. Further, strengthening outpatient departments at hospitals provides a wide range of therapeutic options, diagnostic tests, and minor surgical procedures which is an essential component of any hospital or clinic's overall operation. Incubation and funding are vital to start a business with a team on a technology-focused business idea to make this notion a reality. In India, to deliver overall dental healthcare, the role of a dentist should be increasingly recognized apart from clinical healthcare delivery.

KEYWORDS: Oral Health, Research, Universal Health Coverage, India

INTRODUCTION

In recent times we have faced major challenges in terms of medical care which exposed the weaknesses in today's healthcare systems, particularly when advanced care is not accompanied by competent community health, primary and social care systems.¹ Hence, there is a need for the finest possible initiatives and community-level programs for universal health coverage.²

Universal Health Coverage and oral health

Universal health coverage (UHC) is a comprehensive term that refers to all people having equal access to necessary health treatment without facing financial hardship.³ The movement for universal health coverage (UHC) has acquired a lot of traction in the previous decade, and it has now become a top priority for achieving the Sustainable Development Goals (SDGs) by 2030.⁴ The World Health Organization (WHO), along with the World Bank, provided 16 indicators in four

classifications to track progress toward universal health coverage (UHC): reproductive, maternal, and child health; (ii) infectious illnesses; (iii) non-communicable diseases; and (iv) service capacity and access.⁵ Despite being recognized as a non-communicable disease, oral health was left out of the health-related SDG, which directs to enhance overall health outcomes.⁶

Most high-income countries are now implementing universal health coverage with only limited dental coverage, ensuing in disparities and inequities in accessing oral health care. Rather than including dental care in the Universal Health Coverage (UHC), many nations provide coverage to particular groups, focusing on only children and those from low socioeconomic backgrounds.⁷

Furthermore, dental care is confined to the margins of UHC in developing countries that lack UHC initiatives that incorporate oral health universally.⁸ However, a few countries have achieved progress in integrating dental care within UHC programs, for instance, Brazil. The country integrated dentistry and primary medical care in 2004 with the Brasil Sorridente (Smiling Brazil) national strategy.⁹

Clinical Aspect of oral health

The significance of oral illness and disorders has been mentioned in much of the existing literature. The most recent study reveals an undeniable truth: dental health is an essential component of preventive cardiology, a significant adjunct to diabetes treatment, and a critical component of preventing any inflammatory illness. Untreated caries, severe periodontitis, and tooth loss are among the top ten most common diseases, impacting almost 3.5 billion individuals worldwide in 2017.¹⁰ More so, periodontal (gum) disease

is severe in nature and the world's 11th most common disease, leading to tooth loss and negatively impacting one's overall health and well-being.¹¹ The disease has been linked to poor glycemic control in diabetics, and studies have explored that periodontal therapy can lower diabetes-related healthcare expenses.¹²

Oral illness and disorders are significant contributors to out-of-pocket expenditures in developing nations. According to a study in 2015, dental illnesses cost the global economy 356.80 billion dollars in direct expenditures and 187.61 billion dollars in indirect costs.¹³

1. Pillars of oral health:

Being a dentist in low- and middle-income countries like India, apart from the clinical perspective, a dentist should engage in many other activities like generating new knowledge, interdisciplinary approach, advanced clinical skills etc. to improve overall health conditions for the population besides improving oral health wellbeing.

1.1. Research

Research involves a variety of scientific studies aimed at putting theories to the test, answering concerns, improving treatment options, and learning more about human health. At first, we need to focus on clinical trials. In recent era, it has become widely accepted that well-conducted clinical trials that follow scientific experimentation standards provide the only valid basis for assessing the efficacy and safety of new medicines.¹⁴ Second, let's look at public health supervision studies. Public health surveillance is "the ongoing, systematic collection, analysis, and interpretation of health-related data essential to planning, implementing, and evaluating public health practice."¹⁵ Academic studies are a major part of this research. These are the result of months or years of effort and can comprise

large-scale data analysis or meticulously carried out experiments.¹⁶ The final part of the research is the Institutional Ethics Committee (IEC) Board, which consists of persons who review the study protocol/proposal and determine whether it is ethically acceptable. Bioethics is the most acceptable and moral manner of dealing with situations that develop in the medical field, especially in today's world of technology.¹⁷

1.2. Collaboration

Collaboration is achieving a goal that cannot be reached by a single individual or organization alone. This necessitates discussion and agreement on the aim and techniques.¹⁸ This also includes four subjects that can be worked upon. Human health problems are multi-factorial and intersectoral. Yet the government is organized into departments and thus ill-equipped to address cross-sectoral problems. Hence there is a need for Inter-ministerial collaborations. The benefits of Inter-ministerial collaboration in implementing government programs are becoming clearer from a growing body of country experience.¹⁹ This also includes Cross-departmental and interdisciplinary collaborations among the individual government department bodies. It's a linkage between the Beneficiaries, officers, researchers & dentists. The main focus of this subject is PPP (Public-Private Partnership). These are cooperation between government organizations and private corporations to finance, construct, and operate projects such as public transit networks, lawns, and convention centers. The last focus area is community collaboration. Its clients and/or families receiving services and other members of the community, agencies, organizations, and businesses, collaborate to share information

and resources to achieve a shared vision and set of goals.²⁰

1.3. Clinic & Education

The main focus in clinical work is always Outpatient Department (OPD) Treatment. OPD is a section of a hospital dedicated to the treatment of outpatients or people with health problems who come to the hospital for diagnosis or treatment but do not require a bed or overnight care at this time. Outpatient departments at today's hospitals provide a wide range of therapeutic options, diagnostic tests, and minor surgical procedures. It is an essential component of any hospital or clinic's overall operation.²¹ The clinic also includes the education of the young and the health professionals. They need to be exposed to Fellowship programs, Webinars & Seminars on various health topics, National conventions & specialty courses to expose them to various aspects of health care and how to further improve upon them. Teaching & moulding the minds of the upcoming generation in the right direction is the need of the hour.

1.4. Incubation & funding

The last stage of this process is Incubation and Funding, and it is primarily done in 3 stages – The pre-incubation stage, Incubation stage, and Accelerator stage. The pre-incubation stage is for businesses that have started working alone or with a team on a technology-focused business idea or project but has not yet been incorporated to make this notion a reality. Entrepreneurs in the pre-incubation process need specific training, mentoring, and consultancy services to understand whether their ideas are viable, commercialized, scalable, etc. Entrepreneurs who finish their business plans and are ready to incorporate begin the incubation phase at the end of the pre-incubation period. Like the pre-incubation phases, entrepreneurs require physical

facilities as well as training, consulting, and mentoring services throughout the incubation period.

It is easier for startups to receive investments from angel investors and venture capital funds now. Acceleration is the process in which the problems of companies that have created their products have started commercialization studies but have difficulties gaining market share and globalization. These problems can be solved with the help of acceleration programs during this phase.²²

In essence, the stages are further sub-categorized as the pre-incubation stage: Ideation; Incubation stage: Research & Development, Proof of concept; Accelerator stage: Transition to scale concept, Scaling, and Sustainable product.

2. Role of a Dentist/Researcher/Academician-

In this regard, the primary responsibility a dentist could perform is to improve the oral health of populations.²³ Conducting research in public health dentistry, increasing the use of preventive dentistry, and disseminating to the students about delivering oral healthcare at the community level are the few enlisted job responsibilities that a dentist could perform apart from the health service delivery. To achieve this, a complete overhaul of the current oral health program could be implemented to achieve so. In this regard, the opinions of a group of dentists must be considered.²⁴

There are two detrimental repercussions of inaction on oral health. First, failing to strike a proper balance between adequate spending in oral health care and investments for other healthcare needs leads to a lower level of overall well-being than is possible with available resources. Second, failure to make the best possible

use of available oral healthcare resources leads to deteriorated oral health and, as a result, lower quality of life, lower educational attainment, lower job prospects, compromised social participation, exacerbation of other non-communicable diseases, and resource waste due to avoidable treatment costs.²⁵

CONCLUSION

Strengthening oral health services through evidence-based decisions is the key to managing oral diseases thereby improving oral health status. It is a known fact that there is suboptimal access to quality oral health care and varies as per various sociodemographic strata like urban-rural divide, racial disparities, different income groups, etc. There is increasing evidence in the literature that oral diseases are linked to systemic conditions and severity level of diseases may vary. Oral diseases and systemic conditions also usually share the common risk factors like tobacco consumption, high sugar intake, poor hygiene etc. Oral health care professionals are facing challenges at various levels to provide the integrated care along with primary health care level due to lack of adequate infrastructure, interdisciplinary approaches, awareness to newer methods of management. Thus, there is need to evolve the systems to build interdisciplinary collaborations, multipronged engagement of oral health clinician in sound scientific research; exposure to high standard academic activities, building sufficient capacity to meet high standards of oral health care. The role of a dentist should be increasingly recognized apart from clinical healthcare delivery. There is need to ensure equitable and improved access to oral health care with a focus on improving population health outcomes.

To achieve optimum oral health through universal health care, health care financing systems and dental insurance schemes that deal with the costs of oral health care are required, with a focus on coordinated disease prevention, health promotion and least invasive therapy options.

REFERENCES

1. Tediosi F, Lönnroth K, Pablos-Méndez A, *et al.* Build back stronger universal health coverage systems after the COVID-19 pandemic: the need for better governance and linkage with universal social protection. *BMJ Global Health* 2020;5:e004020.
2. Balaji SM. Oral health, universal health coverage, and dental research. *Indian J Dent Res.* 2019 Jul-Aug;30(4):486. doi: 10.4103/ijdr.IJDR_825_19. PMID: 31745039.
3. Universal health coverage (UHC). World Health Organization. 2021. Available at [https://www.who.int/news-room/fact-sheets/detail/universal-health-coverage-\(uhc\)](https://www.who.int/news-room/fact-sheets/detail/universal-health-coverage-(uhc)). Accessed on May 20 2022.
4. Odoch WD, Senkubuge F and Hongoro C. How has sustainable development goals declaration influenced health financing reforms for universal health coverage at the country level? A scoping review of literature. *Global Health* 2021;17: 50. <https://doi.org/10.1186/s12992-021-00703-6>
5. Hogan DR, Stevens GA, Hosseinpoor AR, Boerma T. Monitoring universal health coverage within the Sustainable Development Goals: development and baseline data for an index of essential health services. *Lancet Glob Health.* 2018 Feb;6(2):e152-e168. doi: 10.1016/S2214-109X(17)30472-2.
6. Oral health left out of global health goals. *Br Dent J.* 2008;225:913. <https://doi.org/10.1038/sj.bdj.2018.1052>
7. Wang TT, Mathur MR, Schmidt H. Universal health coverage, oral health, equity and personal responsibility. *Bull World Health Organ.* 2020 Oct 1;98(10):719-721. doi: 10.2471/BLT.19.247288. Epub 2020 Sep 3. PMID: 33177761; PMCID: PMC7652557.
8. Purohit BM, Kharbanda OP, Priya H. Universal oral health coverage - Perspectives from a developing country. *Int J Health Plann Manage.* 2022 Mar;37(2):610-618. doi: 10.1002/hpm.3361. Epub 2021 Oct 26. PMID: 34704290.
9. Pucca GA, Gabriel M, De Araujo MED and De Almeida FCS. Ten Years of a National Oral Health Policy in Brazil: Innovation, Boldness, and Numerous Challenges. *Journal of Dental Research* 2015; 94(10):1333–37. DOI: 10.1177/0022034515599979.
10. World Health Assembly Resolution paves the way for better oral health care. World Health Organization. 2021. Available from <https://www.who.int/news/item/27-05-2021-world-health-assembly-resolution-paves-the-way-for-better-oral-health-care> Accessed on May 20 2022.
11. Nazir MA. Prevalence of periodontal disease, its association with systemic diseases and prevention. *Int J Health Sci (Qassim).* 2017;11(2):72-80.
12. Preshaw PM, Alba AL, Herrera D, Jepsen S, Konstantinidis A, Makrilakis K and Taylor R. Periodontitis and

- diabetes: a two-way relationship. *Diabetologia*, 2012;55(1): 21–31. <https://doi.org/10.1007/s00125-011-2342-y>
13. Righolt AJ, Jevdjevic M, Marcenes W, Listl S. Global-, Regional-, and Country-Level Economic Impacts of Dental Diseases in 2015. *J Dent Res*. 2018;97(5):501-507. doi: 10.1177/0022034517750572. Epub 2018 Jan 17. PMID: 29342371.
 14. Umscheid CA, Margolis DJ and Grossman CE. Key concepts of clinical trials: a narrative review. *Postgraduate medicine* 2011;123(5):194–204. <https://doi.org/10.3810/pgm.2011.09.2475>
 15. Soucie JM. Public health surveillance and data collection: general principles and impact on hemophilia care. *Hematology* (Amsterdam, Netherlands) 2020;17(01):S144–S146. <https://doi.org/10.1179/102453312X13336169156537>
 16. Academic Research. Scitable. Available from <https://www.nature.com/scitable/topicpage/academic-research-13997330/> Accessed on May 20 2022
 17. Peyyeti K. Role of Institutional Ethics Committee (IEC) in Clinical Trials. 2011. Available from <https://www.jli.edu.in/blog/role-of-institutional-ethics-committee-iec-in-clinical-trials/> Accessed on May 20 2022.
 18. Community Collaboration. ACT Youth. Available from https://actforyouth.net/youth_development/communities/collaboration.cfm Accessed on May 20 2022.
 19. Interministerial Collaboration Crucial to Human Development Impact and Outcomes: By Kesetebirhan Admasu and Osmar Terra. 2019. Available from <https://ministerialleadership.harvard.edu/2019/07/12/interministerial-collaboration-crucial-to-human-development-impact-and-outcomes-by-kesetebirhan-admasu-and-osmar-terra/> Accessed on May 20 2022.
 20. Public-Private Partnership. The World Bank. 2019. Available from <https://www.worldbank.org/en/topic/publicprivatepartnerships/overview#1> Accessed on May 20 2022.
 21. Dubey N. The main focus in clinical work is always Outpatient Department (OPD) Treatment. 2021. Available from <https://www.livemint.com/money/personal-finance/daycare-vs-opd-decoding-treatments-under-a-health-policy-11620762829850.html> Accessed on May 21 2022.
 22. Sharma A and Vohra N. Incubation in India – A Multilevel Analysis. 2020. Available from <https://web.iima.ac.in/assets/snippets/workingpaperpdf/16280815672020-03-01.pdf> Accessed on May 21 2022.
 23. Gambhir RS. Primary care in dentistry - an untapped potential. *Journal of family medicine and primary care*. 2015;4(1):13–18. <https://doi.org/10.4103/2249-4863.152239>
 24. Gambhir RS, Kaur A, Singh A, Sandhu AR, Dhaliwal AP. Dental public health in India: An insight. *Journal of family medicine and primary care*. 2016;5(4):747–51. <https://doi.org/10.4103/2249-4863.201155>
 25. Northridge ME, Kumar A and Kaur R. Disparities in Access to Oral Health Care. *Annual review of public health* 2020;41:513–535. <https://doi.org/10.1146/annurev-publhealth-040119-094318>