

# Oral Health: A Review through Eyes of Sri Lanka

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**Abstract-** The burden of oral diseases is particularly high for the disadvantaged and poor population groups in both developing and developed countries. Evidence exists to reduced healthcare costs and improved efficiency due to quality primary health care which is also the key to affordable and accessible oral health care which is often neglected in many countries.

The public sector in Sri Lanka commenced oral health services in 1925 that expanded greatly up to date and visited by 3.4 million people annually for routine outpatient dental care. Currently, the public sector provides oral health services from primary care to tertiary care free of charge at the point of delivery. There is a dynamic preventive oral health care delivery model catering to children, adolescents and pregnant mothers with oral diseases.

The last National Oral Health Survey conducted in 2015/2016 revealed steady improvements in oral health status among all age categories assessed especially among 12-year-old school children which were achieved with 1.67% of the GNP. Ranked by cases the most prevalent (14.8%) cancer among the male population in Sri Lanka is oral cancer.

Many interventions have been implemented by Sri Lanka to improve oral health care among which integration of oral health care services into the public health care delivery model, establishing school dental clinics and screening for population subgroups for oral premalignant disorders/ oral cancer are noteworthy. The challenges still faced include lack of an established referral system, lack of designated oral diseases preventive staff at the grass-roots level and inadequate continuous education programs for primary health care staff and dental surgeons to update their knowledge. Inadequate funding sources and lack of policy dialogues in controlling oral diseases underlies these challenges that require further attention.

## I. GLOBAL BURDEN OF POOR ORAL HEALTH

Disadvantaged and poor population groups in both the developing and developed countries share a substantial burden of oral diseases. Major public oral health problems around the world pertaining to oral diseases such as dental caries, periodontal diseases, oropharyngeal cancers, orodental trauma and HIV-associated oral diseases [1]. Poor oral health has a profound effect on general health and quality of life. The challenges of improving oral health are particularly great in developing countries due to factors such as high expenses for treatment and the scarce number of dental professionals as well as its irregular distribution. Standards and norms of health evolve over time. In the past, an edentulous person may be accepted by society but

today edentulousness is understood as a preventable malady and is socially unacceptable. Edentulousness could also be considered as an indicator of poor socioeconomic conditions which signifies inequality of access to oral health care services.

Approximately 3.5 billion people are affected by oral diseases, which is half of the world's population. According to the Global Burden of Disease 2017 study, the commonest oral disease condition was untreated dental caries in permanent teeth which accounted for 2.3 billion people and 530 million children or more suffered from dental caries of primary teeth. Almost 10% of the global population suffers from a severe periodontal disease which may lead to tooth loss. Among the most prevalent cancers in the countries of Asia and the Pacific oral cancer takes a significant place [2]. Most treatment for oral diseases is costly which makes it hard for low- and middle-income countries to provide services to prevent and treat oral health conditions. Poor access to oral health care services in the community contributes to further darken the scene. Marketing campaigns that promote food and beverages high in sugar, tobacco, and alcohol have led to an increase in its consumption that has contributed to worsening oral disease conditions and other non-communicable diseases [3]. The good news is that oral health conditions are mostly preventable and can be treated in their early stages by an array of evidence-based, cost-effective strategies.

Lack of appropriate health facilities and the maldistribution of oral health professionals impedes access to oral health services. According to a survey conducted among adults on the access to oral health services, a range of accessibility from 35% in low-income countries to 60% in lower-middle-income countries, 75% in upper-middle-income countries, and 82% in high-income countries have been observed [3]. Dental treatment is found to be costly even in high-income settings, averaging 5% of total health expenditure and 20% of out-of-pocket health expenditure [3]. Therefore policy implementations that support Universal Health Coverage can help strengthen weak primary oral health care services and address substantial out-of-pocket expenses for oral health care in many countries.

In a study conducted in the USA, it was found that among the 17-year-olds five out of six have at least one decayed, missing, or filled tooth surface (DMFS), with a mean of eight DMFS per 17-year-old. Minority children, rural dwellers, those with lesser exposure to fluoride and those from less educated or poorer families tend to have a greater caries experience and edentulism [6]. Forty percent of those age 65 and over were edentulous and only 2 percent had all 28 teeth. An estimated 30,000 new cases and 8,000 deaths were attributed to oral cancer in 1991. One in

700 total births had oral clefts, with Native Americans having the highest incidence [6].

## II. INTEGRATION OF ORAL HEALTH IN PRIMARY HEALTH CARE

Primary Health Care was introduced in the Alma Ata Declaration in 1978 as a cost-effective and efficient strategy to achieve universal health coverage and organize a health system to provide health for all. It facilitates achieving “health” which is a state of physical, psychological, social, and spiritual well-being. WHO defines Primary Health Care under three components,

1. It responds to factors that impact health such as rapid demographic, economic and technological changes. Therefore people and communities are considered as key actors who produce their own health and it is necessary to understand the changes that take place in their world.

2. It addresses the current context that causes poor health as well as future challenges.

3. It is an essential mode to achieve universal health coverage and health-related sustainable development goals. Oral health has significant implications on 9 out of 17 Goals of Sustainable Development Goals [1].

Quality primary health care has shown evidence to reduction of total health care costs and improvement in efficiency by reduction of hospital admissions [1]. Measures such as Rational prescribing, community engagement and education and a core set of essential public health functions, including surveillance necessary to improve health security and prevent health threats such as epidemics and antimicrobial resistance are included in Primary Health Care [1]. The ultimate aim is to meet people’s health needs through total care throughout the life course addressing broader determinants of health such as social, economical, environmental and human characteristics and behaviors through evidence-based public policies and actions across all sectors. Hence, may result in empowerment to advocate for policies that promote the health of individuals, families, and communities.

The key to affordable and accessible oral health care is the integration of oral health into primary health care that is neglected in many countries. The primary oral health care approach strengthens health promotion as well as oral disease prevention facilitating the achievement of health equity. Risk assessment, oral health evaluation, preventive interventions, communication strategies, and education strategies as well as interprofessional collaborative practices are included in this approach [5].

The rationale to integrate oral health care into primary health is,

Common risk factors for many other chronic diseases are shared in determining oral health such as diet, hygiene, smoking, alcohol use, stress, and trauma which enables adopting a more rational collaborative approach rather than one that is disease-specific.

Oral disease conditions share a bidirectional relationship with other diseases and conditions. Example: Diabetes and periodontitis, that’s evident for a strong rationale for a bidirectional relationship between primary health care and oral health care.

Treating oral diseases demands more family time and expenses which could be minimized by prevention strategies that are more feasibly administered in a primary oral health care setting[5].

## III. SUCCESSFUL GLOBAL INTERVENTIONS

Some countries have adopted an efficient “workforce mix” for oral health care. The most recommended oral health “workforce mix” includes specialised dental professionals, general dental surgeons, dental therapists, dental hygienists, dental assistants, dental technologists, and more recently included the Community Dental Health Coordinator (CDHC). The CDHC, who works under the supervision of the dental surgeon is responsible for giving oral health education and prevention, oral health promotion and organizing clinical outreach visits by the dentist [4].

There are innovative care models followed to bring dental services into medical and community settings such as:

- 1) Coordinated referral at the medical visit to an outside dental surgeon for basic preventive oral health services

- 2) Arranging dental hygiene services in the medical practice as a co-location

- 3) Medical care team with an integrated dental hygienist and referral to a dental surgeon for restorative and advanced needs

- 4) Community telehealth supported dental hygiene services [4]

## IV. THE SRI LANKAN ORAL HEALTH STATUS IN BRIEF

The public sector commenced oral health services in 1925 and the services have expanded greatly up to date. Currently, the public sector provides oral health services from primary care to tertiary care free of charge at the point of delivery from health promotion measures to very advanced treatments such as osteotomies and orthodontic treatment to correct orofacial deformities. The public health sector works tirelessly to ensure accessibility to services and achieve universal health coverage and has ensured emergency oral health services and oral oncological surgical treatment services during the COVID19 pandemic and lockdown scenarios in Sri Lanka. Moreover, there is a dynamic rigorous preventive oral health care delivery model catering high caries risk toddlers, preschool children, primary school children, children with special needs, adolescents and pregnant mothers. The Preventive Oral Health Unit of the premier multispecialty tertiary care public dental hospital provides exclusively child-friendly preventive oral health care services throughout the COVID-19 pandemic and continues to provide ultrasonic scaling, for adolescent/young orthodontic patients. The Maternal and child health care program which takes a life cycle approach has included oral health care services for pregnant mothers who visit the maternal clinics to ensure the importance of oral health from the beginning of life. The Public Health Midwives, the School Dental Therapists as well as the Dental Surgeons and Dental Specialists provide necessary interventions for oral health care at different levels.

The School Dental Program is carried out by both school dental therapists as well as dental surgeons and includes preschool

children as well as children of all school-going ages. The school dental program is well organized so that each school-going child is examined at the age of 6, 10, and 13 years.

The Oral Cancer Prevention Program plays a vital role in the early detection of oral cancers and Oral Potentially Malignant Disorders (OPMD) through awareness and screening programs conducted among identified target groups of communities with risk behaviors.

The Out-Patient Dental clinics are visited by 3.4 Mn people annually excluding the children that have been seen in the schools which has an annual cohort of 325,000 students approximately [10].

The National Oral Health Survey is conducted periodically and the latest survey conducted among 10,000 participants in 2015/2016 revealed the following results.

**Table 1: The distribution of key features among age groups through the years.**

Category	1994/1995	2002/2003	2015/2016
Mean number of teeth present			
5 years	17.7	19.6	21
15 years	27.6	27.8	28
65-74 yeras	11.5	12.2	15.3
Edentulous% (65-74 yrs)	36.9%	21.8%	11.3%
Dental caries (prevalence %)			
5 years	76.4	65.5	63.1
15 years	69.7	52.2	41.5
65-74 years	64.5	71.1	98.3
Percentage of people with healthy periodontal conditions			
5 years	31.8	-	81.7
15 years	12.7	3.2	53.5
65-74 years	0.8	1.9	49.6
Percentage of people using a toothbrush and toothpaste			
5 years	73.8	78.9	96.7
15 years	87.9	89.9	98.4
65-74 years	24.6	35.6	70.4

The above table indicates evidence for steady improvements in oral health status among all age categories assessed especially among 12-year-old school children. The caries prevalence among the 65-74 years display an increasing trend and the edentulous percentage among the 65-74 years still remains substantial. These achievements were obtained with very few funding sources by the public sector health service which is around 1.67% of the GNP [10] and the private sector contribution which is not clearly calculated.

The National Oral Health Survey further revealed that 20% of the participants of the ages 65-74, 15% of 15-year-olds, and 10% of 35-44-year-olds have never visited a dental clinic in their lives. There was no variation among gender in this regard but a variation in ethnicity was evident where a percentage of minor ethnic groups were higher and higher percentages in urban than the rural group. The majority of children (41%) of 15 years have visited the school dental clinic and a majority of adults have visited the public sector dental clinic [7].

Ranked by cases the most prevalent (14.8%) cancer among the male population in Sri Lanka are lip and oral cavity cancers which are 9.1% for both genders [8]. Well-established lifestyle-related risk habits that are associated with developing oral potentially malignant lesions and oral cancers comprise betel quid chewing, chewing tobacco, smoking, snuff dipping, areca nut chewing and consumption of harmful levels of alcohol. Different forms of smokeless tobacco as betel quid, oral snuff, and betel quid substitutes increases the risk of oral precancerous lesions and oral cancer between 2-fold and 15-fold [9]. A combination of risk factors may act as a promoter in the malignant transformation from OPMDs to oral cancer. Among the young South Asians, smokeless tobacco use is increasing facilitated with the marketing of conveniently packaged products made from tobacco which may result in increasing oral precancerous conditions [9]. Since oral cancer fulfills most criteria for screening it is important to carry out the diagnosis in the asymptomatic stage rather than the symptomatic stage to yield better outcomes.

#### V. BEST BUYS OF ORAL HEALTH CARE IN SRI LANKA

Some of the best buys of interventions adopted by Sri Lanka to improve Oral Health care are listed below.

- Integration of oral health care services into the public health care delivery model.
- Inclusion of oral health care for pregnant mothers in the maternal and child health program with oral health promotion and awareness sessions, screening, and treating oral diseases.
- Establishing School Dental clinics and Adolescent dental clinics to care for preschool and school children to ensure oral hygiene from an early age in life.
- Screening for oral cancer for population subgroups for Oral Pre Malignant Disorders/ oral cancer, performed even by primary health care workers which is cost-effective along with targeted screening for high-risk individuals and opportunistic screening in routine dental or medical clinics. The visual self-screening which is also a more cost effective strategy in a developing high risk country is promoted in Sri Lanka.
- Mobile Dental Clinics that are conducted in most districts by dental surgeons.
- “Save the Molar” project which was initiated in 2016 as a Primary Health Sector Development Project which is currently under the evaluation stage.
- Sri Lanka was the first country in South East Asia and the fourth country in the world to ratify the framework convention on tobacco control of WHO.

The challenges in these processes are lack of an established referral system, difficulty in allocating time for oral cancer screening due to routine activities of primary health care staff, lack of designated oral diseases preventive staff at the grass-root level, inadequate continuous education programs for Primary Health Care staff and Dental Surgeons to update their knowledge, lack of efficient monitoring and evaluation mechanisms of healthcare workers and lack of comprehensive surveillance systems for oral health diseases including oral cancer. Inadequate funding sources and lack of policy dialogues in

controlling oral diseases underlies these challenges that require further attention.

#### REFERENCES

- [1] 1. World Health Organisation. Accessed on line at <https://www.who.int/news-room/fact-sheets/detail/primary-health-care> on 7/12/2020
- [2] 2. The Global Burden of Oral Disease: Research and Public Health Significance. B.A. Dye, J Dent Res. 2017 Apr; 96(4): 361–363. Published online 2017 Feb doi: 10.1177/0022034517693567
- [3] 3. World Health organisation. Accessed on line at <https://www.who.int/news-room/fact-sheets/detail/oral-health> on 7/12/2020
- [4] 4. Integration of oral health into primary health care: A systematic review, Monika Prasad, I C Manjunath, I Archana Krishna Murthy, I Aishwarya Sampath, I Shefali Jaiswal, I and Ankit Mohapatra J Family Med Prim Care. 2019 Jun; 8(6): 1838–1845. doi: 10.4103/jfmpc.jfmpc\_286\_19
- [5] 5. Kssebaum NJ, Smith AGC, Bernabé E, Fleming TD, Reynolds AE, Vos T, Murray CJL, Marcenes W, GBD 2015 Oral Health Collaborators. 2017. Global, regional, and national prevalence, incidence, and disability-adjusted life years for oral conditions for 195 countries, 1990–2015: a systematic analysis for the global burden of diseases, injuries, and risk factors. J Dent Res. 96(4):380–387. [PMC free article] [PubMed] [Google Scholar]
- [6] 6. The oral health burden in the United States: a summary of recent epidemiologic studies. D J Caplan 1, J A Weintraub Accessed on line at <https://pubmed.ncbi.nlm.nih.gov/8263233/> Dent Educ. 1993 Dec; 57(12):853–62. on 7/12/2020
- [7] 7. National Oral Health Survey Sri Lanka, 2015–2016. Ministry of Health, Nutrition and Indigenous Medicine. Accessed on line <http://www.moh.gov.lk> on 4/11/2020
- [8] 8. Globocan 2018. Accessed online <https://gco.iarc.fr/today/data/factsheets/populations/144-sri-lanka-fact-sheets.pdf> on 7/12/2020
- [9] 9. National Guidelines for Management of Oral Potentially Malignant Disorders for Medical and Dental Practitioners National Cancer Control Programme Ministry of Health, Nutrition and Indigenous Medicine. 3rd edition 2019
- [10] 10. Annual Performance report, 2018. Medical Statistics Unit, Ministry of Health Nutrition and Indigenous Medicine.

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