National Board of Examinations - Journal of Medical Sciences
Volume 2, Issue 9, Pages 888–895, September 2024
DOI 10.61770/NBEJMS.2024.v02.i09.005

ORIGINAL ARTICLE

Oral Health Surveillance System in India: Need and Proposal

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Accepted: 15-July-2024 / Published Online: 08-September-2024

Abstract

Public health surveillance is described as the ongoing systematic collection, analyzing, and interpreting of the data, closely integrated with the transmission of these data to public health practitioners, doctors, and policymakers responsible to prevent and manage disease as well as injury. Both developed and developing nations are becoming aware of the significance of information from efficient surveillance systems for allocating resources and evaluating programs. Over the past few decades, there was a significant change in oral health profiles around the world. Indicators of oral health have improved in many countries, but not in India. An organized system for providing, monitoring, and evaluating oral health care services is needed in India. Draft National oral health policy 2021 has mentioned specific objectives: (a) by 2025, establish baseline data on the burden of oral diseases in the nation, (b) by 2030, the mortality and morbidity from dental and oro-facial diseases reduce to 15%, (c) By 2025, community-based awareness initiatives and practices for oral health will be covered by the healthcare system by a factor of 50%, and by 2030, by a factor of 70%, (d) the creation of an electronic database at district-level on components of the health system by 2025. A well-defined oral health surveillance system in India will serve the purposes (a) to provide standardized recording procedures, standards, and techniques to collect, analyze and interpret the oral health data at the state and central levels (b) to prioritize oral diseases or conditions that will be the focus of oral health surveillance or disease elimination, (c) to digitally monitor and evaluate the progress of nation's oral health care programs.

Keywords: Disease surveillance systems, Oral health, Screenings, Surveillance, Monitoring

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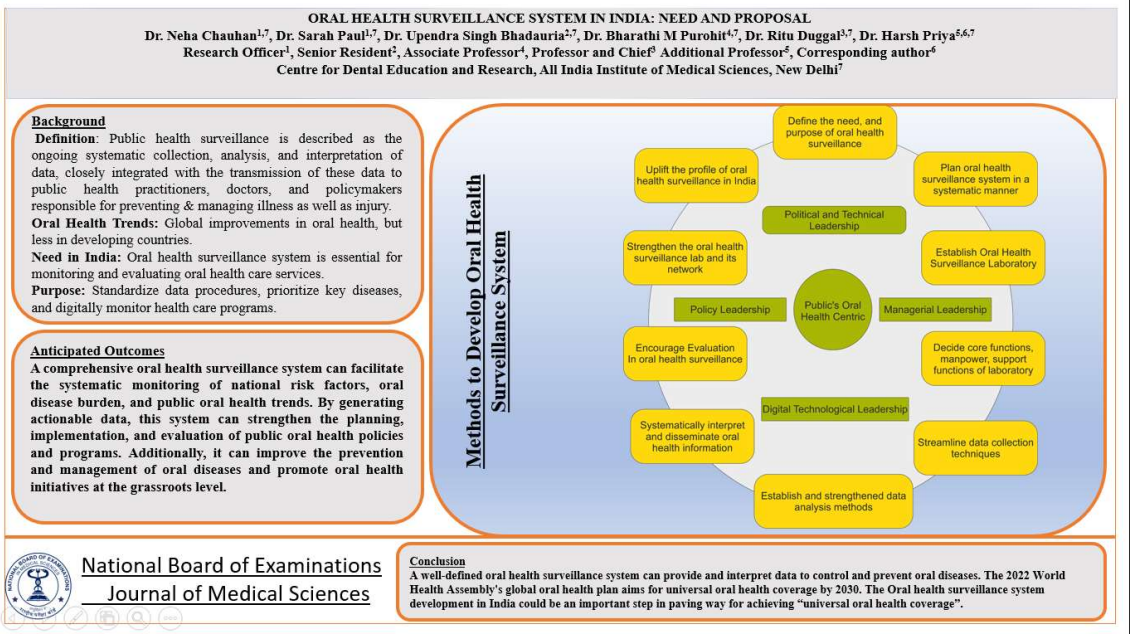
Graphical Abstract



Introduction

Public health surveillance is described as the ongoing systematic collection, analyzing, and interpreting of data, closely integrated with the transmission of these data to public health practitioners, doctors, and policymakers responsible to prevent & manage illness as well as injury [1]. Public health surveillance provides estimates of the health state and behavior of people that are serviced by "ministries of health, finance, and donors". Public health surveillance aims to give organizations a factual foundation to define priorities, design programs, and policies, and take measures to improve and protect public health [2].

Ongoing Public Health Surveillance

Both developed and developing nations are becoming aware of the significance of information from efficient surveillance systems for allocating resources and evaluating programs.

The CDC ("Centres for Disease Control and Prevention"), a global public health surveillance leader, is transforming and modernizing CDC's surveillance systems and methods in collaboration with other public health organizations. Delivering real-time information is being made easier by advancements in fundamental surveillance technologies. The National Violent Death Registration System, "Molecular Surveillance," and "Million Hearts," all projects of the CDC, have strengthened public health surveillance. The outcomes of these projects include the more rapid characterization of infectious disease threats, rapid outbreak detection, efficient investigations for large infectious disease outbreaks, improved state and national coverage, and integration of various data sources by utilizing the already-existing healthcare quality data required for Medicare and other health insurance payments and electronically reported clinical quality measures to improve national health surveillance [3].

The IDSP (Integrated Disease Surveillance Programme) is a national

disease surveillance program in India that involves both the state and central governments. Its goals include early disease identification and long-term disease monitoring to support effective policy decisions. With the help of the World Bank, it began in 2004 [4]. Every state has surveillance units in operation. Data from medical schools, clinics, hospitals, labs, and other locations are used to track and report illnesses. Under this plan, a geographic information system (GIS) is utilized. Data on "P" probable, "S" syndromic, and "L" laboratory formats are being obtained utilizing standard case definitions. Inputs from remote sensing, historical data, and meteorological data are also included in the data collection. Weekly statistics on diseases that are prone to outbreaks are gathered under IDSP (Monday–Sunday). The Rapid Response Teams (RRT) investigate any rising trend of infections to identify and contain the outbreak. In November 2019, the IHIP (Integrated Health Information Platform) was introduced in several states to enhance digital surveillance capabilities [4,5].

Operating oral health surveillance

The governments of nations such as the United States and Japan, give great importance to Oral health surveillance to evaluate the incidence of oral ailments among their population.

The NOHSS ("National Oral Health Surveillance System") was created in cooperation between ASTDD ("Association of State and Territorial Dental Directors") and the CDC's Division of Oral Health. NOHSS aims to monitor oral disease burden, oral health care utilization, and community water fluoridation levels.

In NOHSS, oral health data is collected under Adult, Child, and Water fluoridation indicators. Adult indicators comprise dental visits, complete teeth, teeth cleaning, and loss of 6 or more teeth. Child indicators comprise caries experience, untreated tooth decay, and dental sealants. Water fluoridation indicators include the % of population that uses fluoridated water provided by public water systems. The 2019 oral health surveillance report evaluates trends between 1999-2004, identifies oral health disparities based on certain sociodemographic variables, and gives national estimates for several methods of oral health status for the years 2011 to 2016 [6,7].

Japan has a well-defined system for monitoring oral health, which is followed by development of an oral health strategy and the examining and assessment of outcomes. "Ministry of Health, Labour and Welfare", Japan conducted Japan Survey on Dental Illnesses every six-year, data on the nation's dental health i.e., frequency of edentulism, fillings, dental caries, cavities, the number of missing permanent teeth, implants, prosthetics, temporomandibular disorders, oral hygiene practices, bite quality, and fluoride administration is gathered by oral examination and interviews. The survey done in 2016 was the 11th in the series. Data on national oral health indicate that during the past few decades, the oral health of the people of Japan has improved, addressing regional disparities in oral health, lowering healthcare costs, establishing long-term emergency dental services during disasters, and creating an innovative tele-dental process for remote regions having no approach to dentists are some of the challenges and opportunities that need to work on in the future [8-10].

Trends of oral health diseases in India

Dental caries prevalence varied from 23.0 - 71.5 percent in 12-year-olds and from 48.1 - 86.4 percent in adults aged 35 to 45, based on biannual multi-centric oral health study done by "Ministry of Health and WHO" in India in 2007–2008. However, the frequency of dental caries in elders aged 65-74 varied from 51.6 percent to 95.1 percent. The prevalence of periodontal disorders in adults and the elderly, respectively, ranged from 15.32% to 77.9% and 19.9% to 96.1%.[13]

As per The Global Oral Health Status Report (GOHSR) 2022, India experienced significant oral health challenges. The total number of cases for caries of permanent teeth was 366,858,183, representing 18.1% of the global caseload. Severe periodontal disease affected 221,084,427 individuals, accounting for 20.3% of cases worldwide. Caries of deciduous teeth were prevalent in 98,199,025 cases, or 18.9% of the global total. Edentulism impacted 34,905,533 people, making up 9.9% of the worldwide cases. Additionally, lip and oral cavity cancer affected 327,648 individuals in India, constituting 23.4% of the global caseload.

Development of Oral health surveillance system in India- Why it is needed?

Globally Approx 3.5 billion people have been impacted by oral diseases and conditions [11]. Over the past few decades, there has been a significant change in the oral health profile around the world. Indicators of oral health have improved in many countries, but not in India [12,13].

In India, oral disorders are one of the leading sources of disability and impact people of all ages, regardless of their socioeconomic status [14]. According to Singh et.al. [15], challenges to accessing dental care in India are: (a) shortage of public awareness of significance of oral health, which is seen by many as unrelated to and secondary to general health (b) geographic distance posed as a hurdle for many people to have access to dental healthcare providers (c) Many people cannot afford dental care.

The biannual multi-centric oral health survey 2007-2008 was the last national oral health survey done in India. There is a significant dearth of valid and reliable data for assessing community oral health needs. An organized system for providing, monitoring, and evaluating oral health care services is needed in India [11,12,16].

Draft National oral health policy 2021 has mentioned specific objectives: (a) by 2025, establish baseline data on the burden of oral diseases in the nation, (b) by 2030, the mortality and morbidity from oro-facial and dental diseases reduce to 15%, (c) by 2025, 50 percent increase in community-based awareness programmes as well as processes for oral health via health care, and 70 % by 2030. (d) by 2025, The construction of an electronic information database on health system components at district level [12].

A well-defined oral health surveillance system in India will serve the purposes (a) to provide standardized recording procedures, standards, and techniques to collect, analyze and interpret the oral health data at the central and state levels (b) to prioritize oral diseases or conditions that will be the focus of oral health surveillance or disease elimination, (c) to digitally monitor and evaluate the progress of nation's oral health care programs.

Proposals for instituting an oral health surveillance system in India (Figure 1)

Assessment of a public's oral health status is one of the main purposes of oral health surveillance. The identification and development of a collection of indicators that assess the key aspects of oral health status is one approach to addressing this issue. To be used at the state, local, and national levels, such a set was created in the United States [17,18].

Methods

Once the necessity and purpose of surveillance system were established, strategies for collecting, analyzing, exchanging, and utilizing the data should be developed and put into operation.

Steps in planning an oral health surveillance system in India [17]

1. Establish objective:

Objectives of the oral health surveillance system can be:

1. Estimate the extent of oral disease in India.
2. Identify which groups of individuals are most susceptible to risk.
3. Analyze the effectiveness of oral health programs and policies that have been implemented.
4. Monitor changes in indicators of oral health.
5. Enhance prevention and management of oral diseases as well as promotion of oral health activities at the grass root level.
6. Enhance the use of new digital technologies for data collection and sharing processes for the surveillance of oral health.
7. Strengthen surveillance laboratory infrastructure, referral networks, and Community-based oral health surveillance.

2. Develop case definitions

Establish oral health surveillance activities to ensure that important indicators of oral health (Dental Caries status & Treatment Need, Oral Cancers, Malocclusion Status, Periodontal Disease status, and other oral mucosal conditions, Dental Fluorosis status, Other conditions: Extra Oral Lesions; TMJ Assessment; Hypoplasia and Enamel Opacities; Prosthetic Need & Status; and Community need for immediate Referrals and Care) are recorded using standardized methods with consideration for national and international comparability.

3. Data collection

Concerned authorities can develop an oral health evaluation and individual questionnaire to evaluate oral health and collect data on etiologic variables associated with individual practices, knowledge, and awareness of oral health. Data can be collected through basic screening annual surveys.

4. Standardization

For each data element, instruments for data collection must use generally accepted and when appropriate, computerized formats to facilitate the ability to analyze and compare the obtained data with that collected by other systems, for example, census and other surveillance data.

5. Field testing

To facilitate the implementation of an efficient oral health surveillance system

and prevent variations during system implementation on a large scale, surveillance systems and processes must be developed, refined, and field-tested.

6. Data analysis

The majority of modern surveillance systems are maintained electronically. An oral health surveillance laboratory can be established at the central level, and the oral health experts' team can be appointed for the laboratory to organize the data collection, coordination, and analysis of these various systems. In an oral health surveillance laboratory, surveillance data may be stored and preserved.

7. Interpretation and Dissemination

The results of the oral health surveillance can be shared with concerned programs and decision-makers through published reports, presentations, and briefings.

Reports can include current oral health information and any available trends. All reports are digitally accessible on authorized websites.

8. Evaluation

Evaluation is essential as it encourages the optimum utilization of public health resources. The analysis will identify indicators that may no longer be important for the public's oral health. It can also discover critically important new indicators, increase effectiveness to prevent duplication in data collection, and determine whether oral health surveillance is meeting its objectives.

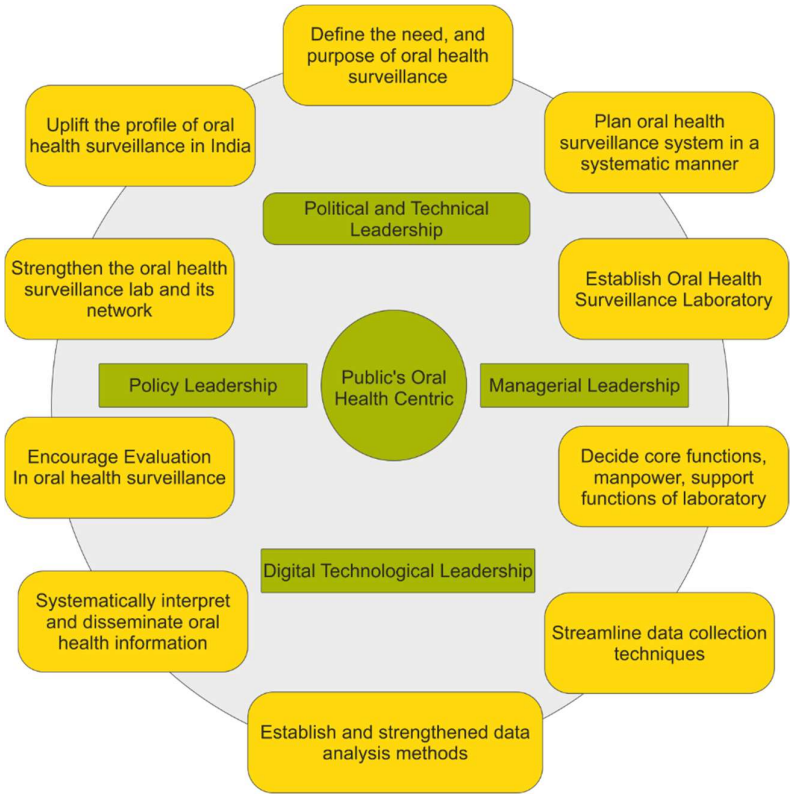


Figure 1. Proposals for instituting an oral health surveillance system in India [19]

Anticipated Outcomes

A well-developed oral health surveillance system will enable systematic tracking of the nation's burden of risk factors, oral disease, and trends in public oral health. Surveillance generates "data for action" and will enhance public oral health policies and programs' planning, implementation, and evaluation. Prevention and management of oral diseases and promotion of oral health activities at the grass root level will also be enhanced.

Building an Optimal Oral Health Surveillance System in India: Challenges Ahead

It has been demonstrated that oral diseases and other NCDs (Non-Communicable Diseases) share behavioral risk factors, such as excessive sugar consumption, alcohol consumption, bad dietary habits, and smoking. Main NCDs like diabetes mellitus and cardiovascular illnesses have been found associated with poor dental health. Non-communicable disease surveillance is not given considerable attention in India. The IDSP has a division for NCDs that focuses on diabetes, cardiovascular disease, and cancers and includes surveillance and other pilot projects. However, there is still work to be done to fully integrate surveillance for NCD risk factors, disease, and mortality rates [20,21].

Conclusion

Oral health is an essential indicator of overall health, well-being, and quality of life. Even though oral diseases are mostly preventable, they still pose a serious health threat to many countries and have a lifelong effect on individuals, resulting in pain, discomfort, disfigurement, and even death. The main burden of oral diseases in India is caused by periodontal disorders, dental caries, and oral malignancies. A well-defined oral health surveillance system can provide and interprets data to facilitate the control and prevention of oral diseases. In 2022, World Health Assembly established the global oral health plan to provide "universal oral health coverage" for all persons and communities by 2030. This strategy comprises a monitoring framework for tracking progress and measurable targets to be achieved by that year. The Oral health surveillance system development in India could be an important step in paving way for achieving "universal oral health coverage".

Statements and Declarations

Conflicts of interest

The authors declares that they do not have conflict of interest.

Funding

No funding was received for conducting this study.

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