

# Dental Caries in India: A Challenge or a Chance?

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The Department of Cariology at Saveetha Dental College, Chennai, conducted an inaugural program on December 16, 2020, on the current concepts of dental caries detection and management. Prof. Dr. Guglielmo Campus from the University of Bern, Switzerland, and Dr. Neeraj Gugnani from DAV Dental College, Yamuna Nagar, Haryana, delivered invited lectures. The webinar was well received by different specialties of dentistry across India with close to 540 registered participants. An essay competition on the topic “Dental Caries in India—A Challenge or a Chance?” was conducted, and over 150 entries were received, including students and faculty members. The best essays are presented below.

Dental caries are a multifactorial microbial infectious disease characterized by demineralization of the inorganic and destruction of the organic substances of the tooth.

Dental caries, commonly known as tooth decay or cavity, are among the most widespread oral diseases. Oral health that is an essential component of overall well-being is often neglected in India. Basic region-wise data in the forms of well-controlled surveys regarding the prevalence of dental caries across India are also not available. This is needed for robust preventive strategies, policies, and manpower allocations suitable for different subgroups of the population.

The effect of untreated caries on the growth and well-being of children often remains ignored. Oral diseases are the commonest chronic diseases and are among the most expensive diseases to treat. In developing countries like India, owing to the westernized diets and consumption of sugar, dental caries increased during the same period.<sup>1</sup> Dental caries are one of the leading causative agents of oral agony and the prime reason for patients to visit dental clinics or hospitals. Unfortunately, the patients report at a stage when some amount of loss of the tooth structure has already taken place. In the early stages, restorations can be done to save the tooth, but in later stages, root canal treatment or extractions are the only resorts.

“LIFE IS BETTER WITH HEALTHY, CARIES FREE TEETH”

Dental health is an integral aspect of general health. Oral diseases and other chronic diseases have “common risk factors.” In order to improve the population’s dental health effectively, a broadly based health promotion strategy should be devised based on a common risk factor approach.<sup>2</sup>

## PROBLEMS IN INDIA IN MANAGING DENTAL CARIES

### Large Population

“WE ALL WORRY ABOUT THE POPULATION EXPLOSION, BUT WE DON’T WORRY ABOUT IT AT THE RIGHT TIME—ART HOPP”

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India is the second-most populous country in the world, and that makes dental caries control challenging in India and does not have access to basic health facilities. Large population: India has a population of 1210.2 million and accounts for 17.5% of the world’s total population.<sup>3</sup> Data collection of such a large population is itself a tedious job. Not only that, though urbanization is happening at a good pace, still 68.84% of the Indian population resides in the villages. The technological and economic growth over the past few decades in India has been phenomenal. However, India ranks low in the Human Development Index (134th among the 182 countries in the year 2009) due to inadequate investment in health and education and poor living standards.

### Different Religious Beliefs and Lifestyles

No “cookbook recipe” can be applied to all subgroups of populations, since they have genetically distinct ancestry and varied lifestyles. India is a vast country with great diversity in eating habits and behavioral practices.

### Different Languages

India is like nations within a nation. To communicate with people with different languages, people native to that area have to be engaged.

### Lack of Data and Well-controlled Studies for Policies and Manpower

#### Development

The first step toward formulating any preventive protocols or strategies is a collection of data as to what is the prevalence of the disease, is it the same all over the country, or is it more prevalent in particular subgroups. This is important because the same preventive protocol may not be applicable to all subgroups. When these data are available, then only strategies that are suitable to population subgroups can be formulated.

Epidemiological or point prevalence studies conducted among the World Health Organization index age-groups

(5, 12, 15, 35–44, and 65–74 years) in various parts of India from January 2000 to April 2016 were retrieved from PubMed Central database using “dental caries” and “India” as MeSH terms, and information from the only National Oral Health Survey and fluoride mapping in India was used.

The mean prevalence of dental caries is almost similar at 5 and 12 years at 49%, while it shows a steady increase from 15 years (60%) to 35 – 44 years (78%) and peaks at 65 – 74 years groups (84%).

Irrespective of age-groups, the prevalence of dental caries was found to be high end varied across India.

“Worldwide, the prevalence of dental caries among adults is high as the disease affects nearly 100% of the population in the majority of countries.”

## PREVENTIVE STRATEGIES

- Oral health needs to be linked with general health.
  - Cooperation and training of medical professionals, Anganwadi, and social workers are required in emphasizing and promoting oral health care. Also, they can be trained to diagnose early carious lesions.
  - It has been reported that the four most prevalent noncommunicable diseases, cardiovascular diseases, diabetes, cancer, and chronic obstructive pulmonary diseases, have the same risk factors as oral diseases and can be controlled by lifestyle changes.<sup>4</sup> Thus, lifestyle changes can be promoted by dental and medical professionals.
  - School teachers can play a crucial role in awareness and implementation of preventive strategies, especially focusing on good dietary and brushing habits, and in promoting the importance of milk teeth.
  - Social workers should be engaged in monitoring oral health, especially in the underprivileged and special children.
  - India has the maximum number of dental colleges in the world; this huge workforce should be engaged to tackle this pandemic disease.
  - Government support would be required in planning and implementing the strategies.
  - Timely surveillance of fluoride levels in water needs to be done.
  - Fluoride toothpaste, gels, and varnishes that have been clearly documented as effective preventive measures toward dental caries should be practiced.<sup>5</sup>
  - Schools should be targeted for water fluoridation or sealant applications.
- When any survey is conducted, one should try to train and educate the mother or at least one family member for the detection of carious lesions or signs of early demineralization.

## FUTURE RESEARCH DIRECTIONS

- Surveys to collect basic interstate data on prevalence through well-controlled studies should be done.
- Future research should be focused on preventive strategies and their effectiveness in the progression or regression of the carious lesions.
- New fluoride-releasing materials or probiotic materials or other ayurvedic agents that have anticariogenic activity should be explored.
- Newer technologies should be employed for easy, early, and confirmative diagnosis of dental caries.
- The use of biotechnology in biofilm or genetic modification can be explored.
- Nanotechnology can be used to invent newer and more effective materials and to restore the affected tooth.
- The role of fluorides and saliva stimulation and the significance of bacteriology can be explored.
- We are moving toward an era of a customized treatment plan. Do dental caries have a genetic susceptibility in different populations? Or can we identify high-risk patients based on their genetic makeup?

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