Public–Private Partnership: The Need of the Hour to Improve Community Oral Health among Under-Fives, School-Aged Children, and Adolescents in India

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Abstract

Background:

Oral diseases are among the most prevalent non-communicable conditions particularly in the pediatric and adolescent population in India. Early childhood caries, untreated dental caries, and gingival diseases, besides improper practices of oral hygiene, are highly prevalent in the age groups of under-fives, school-going children, and adolescents, mostly in the socioeconomically weaker sections of the Indian society. The public dental healthcare system is constrained, besides the infrastructural, personnel, and financial limitations, while the private dental healthcare system in the country is not accessible to the majority of the population (Petersen, 2005; Kassebaum et al., 2015).

Objective:

To analyze the demand for public-private partnership (PPPs) models for a proper strategic approach to improve community oral health among under-five children, school-going children, and adolescents in India, and to review existing models, opportunities, and challenges.

Methods:

A narrative review of policies and programs was conducted through the use of peer-reviewed literature and government documents on the oral health initiatives in India published between 2000 and 2025. The review focused on oral health needs of children and adolescents, gaps in public-sector delivery, and the potential role of PPP models could undertake in the prevention and delivery of services.

Results:

Evidence indicates a high burden of preventable oral diseases among children and adolescents, alongside limited utilization of public dental facilities. PPPs—through collaboration between government health systems, private dental colleges, private practitioners, non-governmental organizations, and industry partners—can strengthen access to care, improve preventive practices, strengthen school-based programs, and reduce out-of-pocket expenditure. Successful

PPP models leverage private-sector capacity while maintaining public oversight and equity goals.

Conclusions:

Public–private partnerships are a relevant and necessary strategy to enhancing oral health services for the under-five group, school-going children, and adolescents in India. The properly structured and regulated framework of Public Private Partnerships can ensure better accessibility and oral health outcomes.

Keyword:

public–private partnership, oral health, under-five children, school-age children, adolescents, India, community dentistry

Introduction

Oral health is an essential part of overall health, and it becomes even more significant during childhood and adolescent stages when biological, psycho-social, and health-attitudinal habits are established and ingrained. The early years of life offer a critical period during which health intervention programs, if implemented, have major dividends not only for oral health services but also for overall development, as adverse experiences related to the oral health environment during these childhood years have a trickle-down effect, not merely staying within the realm of oral health but also spreading into the realm of nutrition, development, education, and overall quality of life. It, therefore, becomes an important area to ensure equality and accessibility to fundamental oral health care services to the "under five," "school-going," and "adolescent" populations (Fisher-Owens et al., 2007; Petersen & Kwan, 2011).

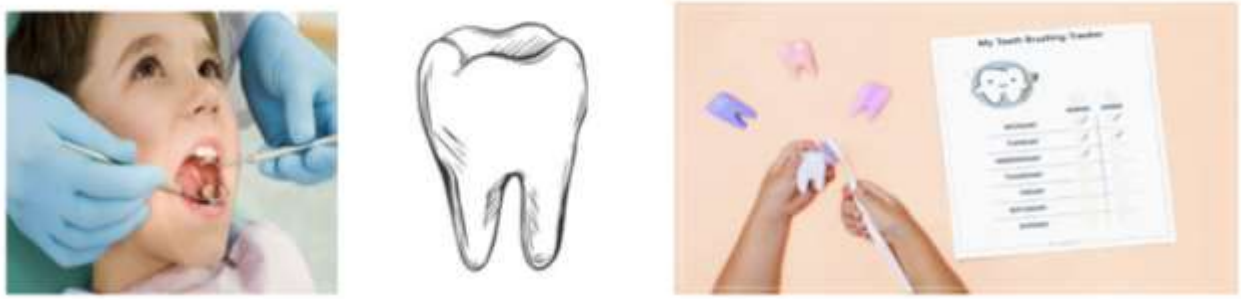


Figure 1. Preventive and clinical oral health practices in children

Figure 1. Illustrative representation of paediatric oral health care, combining clinical examination, anatomical understanding of primary dentition, and reinforcement of preventive home-based oral hygiene practices such as supervised toothbrushing. The figure highlights the continuum of care required to promote and maintain oral health among children through early detection, education, and preventive interventions.

Oral diseases have been observed to pose a large, albeit understated, burden in children and young people in India. Early childhood caries, unattended dental caries in primary as well as permanent dentition, conditions of the gingivae, and malocclusions have been observed to have high prevalence levels in different age groups. Despite their preventability through proper preventive efforts, early health education, and interventions at optimal times, oral diseases have been observed to be at high levels, specifically in young people from socioeconomically challenged backgrounds (Petersen, 2005; Narayan et al., 2011). The observed high levels of preventable oral diseases have been observed to raise concerns concerning systemic challenges related to health agendas.

The ramifications of compromised oral health in child and adolescent years are far-reaching. For one, dental pain or infection can lead to a compromise in nutritional intake for the child. Oral health can influence sleep as well as physiological growth. Another aspect of how a child's oral health affects them pertains to their speech as well as the development of their face. For school-going children, a host of studies have declared a link between poor oral health and a child's inability to attend as well as perform well in their schooling. In the realm of adolescents, another serious consequence of poor oral health occurs when it affects their esteem as well as their mental well-being (Fisher-Owens et al., 2007; Petersen & Kwan, 2011).

Despite the magnitude and implications of oral disease burden, oral healthcare has long maintained its peripheral status in the health infrastructure in India. Public-sector health programs have traditionally focused on communicable diseases, maternal and child mortality, and selected non-communicable diseases, often leaving oral health underfunded and insufficiently integrated into mainstream health services (Ministry of Health and Family Welfare, 2017; Watt et al., 2019). Though dental facilities are provided in the public healthcare system in India, they are often limited in reach, in personnel numbers, and in their focus on curative approaches to oral diseases. The oral healthcare infrastructure is also predominantly urban in its composition resulting in limited accessibility for rural populations, tribal communities, where disease burden is often greatest (Narayan et al., 2011).

In India, on the other hand, the private dental sector has been growing rapidly in the last few decades. A greater number of the dental workforce, dental infrastructure, and dental technology in the country exist in the private dental clinics, hospitals, and dental education institutions. The private dental colleges, in more ways than one, are playing a significant role in the training of dental personnel as well as the provision of dental care. At the same time, the private dental care in India is in many ways inaccessible to many children, mainly because dental care is a cost-prohibitive factor for children from low-income households. This public–private divide has contributed to persistent inequities in oral health outcomes among children and adolescents (Reddy et al., 2011; Singh et al., 2015).

A situation where there is a constrained public sector and an under-served private sector simultaneously can be considered both an opportunity and a challenge for improving India's oral health system. A critical situation that needs to be met with innovation and out-of-the-box thinking and designing regarding service delivery strategies for children and adolescents with unmet needs for oral health care can be well met with public-private-partnership collaborative efforts. PPPs are a collaborative and structured mechanism brought into practice for allowing

public sector and private sector stakeholders to deliver public services in a way that can make use of both sectors (Reich, 2000; Buse & Walt, 2000).

In the health industry, PPPs have been utilized in a number of services, such as infrastructure development, diagnosis, and certain forms of clinical treatments. The relevance of PPPs to the dental field is specifically evident, given the number of dental manpower and facilities found within the private sector. Through the inclusion of private dental professionals, dental colleges, NGOs, and industry, PPPs provide an avenue through which preventive and basic curative services for the undeserved child and adolescent population may be expanded. Most significant, perhaps, is the ability to synchronize private resources and public aims, ensuring services are made within the context of public perspective and accessibility.

In the case of children under the age of five, early preventive interventions are critical to break the cycle of oral disease progression. The early childhood stage is marked by a completely dependent category, namely caregivers. The integration of oral health promotion and preventive care into existing maternal and child health platforms provides a strategic entry point to manage early childhood caries and related conditions' models can help achieve the integration of these efforts to leverage the private sector's expertise to facilitate early screening, counseling, and referral actions to improve the quality of care without overburdening the public system.

Among school-going children, schools are a vital platform for carrying out population-level oral health initiatives. However, at present, the extent of existing school-based dental services in the public domain is limited. Screening and preventive measures like the application of fluoride and oral health education are not implemented effectively in a planned manner. Partnerships between the government and the private dental colleges and practitioners and mobile dental units will prove to be a game-changer in improving school oral health services. The aim should be to make preventive dental services a normal part of access and to prevent problems requiring costly repairs later in life.

Adolescence is associated with its own challenges in oral health, necessitating interventions suitable to this age group. Behavioral influences, including increased consumption of sugary foods and beverages, smoking, and irregular health-seeking practices increase vulnerability at this age. At the same time, adolescents begin to develop autonomy and decision-making ability, making it important for them to consolidate preventive practices for optimal health outcomes. Bringing oral health programs under existing adolescent health and school health service platforms with PPPs will help enhance service accessibility and health continuity. Collaboration with private-sector partners can also facilitate the use of digital tools, referral networks, and innovative communication strategies customized to adolescent needs (Watt & Sheiham, 2000; Petersen & Kwan, 2011).

Although the gains of PPPs in the area of oral health are numerous in scope and huge in importance, the implementation of PPPs in the aforementioned area also faces various challenges. These challenges may relate to issues of equity, quality assurance, ethical practice, and accountability. In other words, these issues need to be managed with the greatest of cautions in

the following manner so that the PPPs in the area of oral health yield their intended goals for the advancement of public health and not for the sake of profit.

For the successful implementation of PPPs for community oral health from the Indian perspective, there is a need to synchronize the intervention strategy with the existing health priorities of the nation for children and adolescents. The inclusion of oral health care within the overall framework of child and adolescents' health may have the advantage of increased efficiency of health programming. A focus on the preventive-promotive orientation of health care delivery, instead of the tendency to access health care only for curative purposes, is crucial for making appropriate sustained progress. Community acceptability is also important.

In view of this, our paper examines the relevance of Public-Private Partnerships as one of those strategies which are immediately crucial to ensuring better oral health of communities within the age brackets of children below five, school-going children, and youths in India. Through consideration of what is currently needed in dealing with dental diseases in society, what is lacking in government delivery, and what is possible along different lines within age brackets through PPPs, our paper will highlight, therefore, the relevance of collective approaches to what has become a long-standing problem of dental inequalities in society.

Burden of Oral Diseases in Children and Adolescents in India

Oral diseases among children and adolescents in India are a serious concern for community-based health issues and range from mere functional issues to social implications. Throughout life, experiences with oral diseases from early life affect the incidence of the diseases later in life as well as the utilization of dental facilities. In the Indian scenario, the problem of oral diseases in the under-five age group, the school-going age group, and the adolescent group is a result of many factors in the Indian community. Although many cases of oral diseases in young patients are preventable, delayed recognition and inadequate access to preventive services contribute to their persistence and progression (Narayan et al., 2011; Petersen, 2005).

Below Figure 2 illustrates a life-course approach to oral health, demonstrating how early social, economic, and biological exposures during prenatal life, childhood, and adolescence contribute to the cumulative burden of oral diseases and influence oral health–related quality of life across later stages of life (World Health Organization, 2021; Fisher-Owens et al., 2007). The figure emphasizes that oral health outcomes in children and adolescents are shaped not only by immediate behavioral factors, but also by broader socioeconomic conditions and common risk factors operating across critical and sensitive developmental periods. This conceptual framework supports the need for early, preventive, and equity-focused interventions to interrupt the lifelong accumulation of oral health risk.

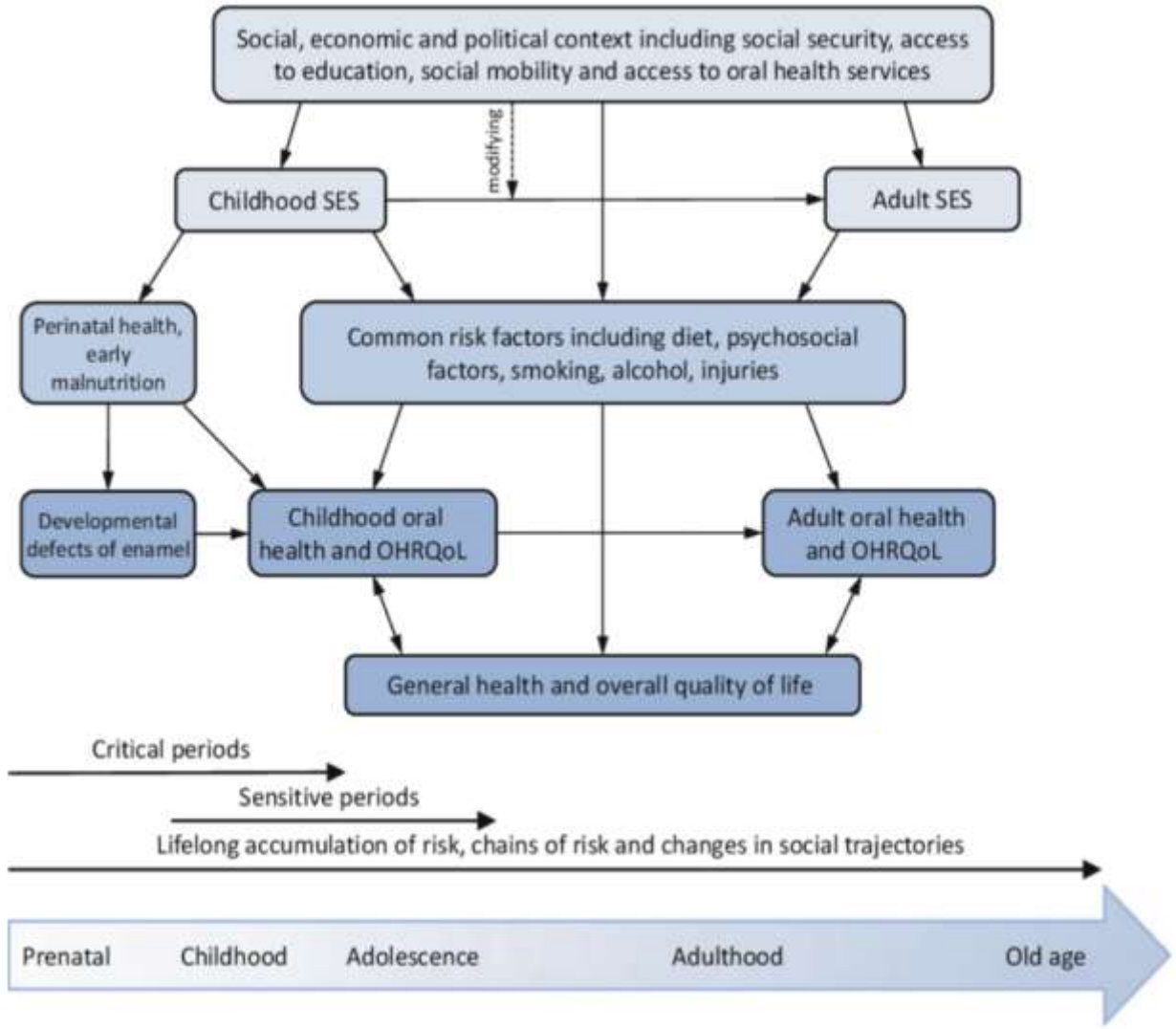


Figure 2. Life-course framework illustrating the accumulation of oral health risk and its impact on oral health–related quality of life (World Health Organization, 2021; Fisher-Owens et al., 2007).

Children Under-Five

Early childhood is especially sensitive to oral health issues, as children rely entirely upon caregivers for oral care and visiting healthcare facilities. Early childhood caries continues to rank high as one of the oldest chronic conditions within children below five years of age within India. Early childhood caries is extensively linked with feeding habits of children, including prolonged bottle feeding, high consumption of sugary drinks, and inappropriate nighttime feeding. Poor awareness within caregivers about starting oral hygiene and timely dental visits contribute to worsening conditions (World Health Organization, 2019; Featherstone, 2004).

Untreated disease among young children carries serious repercussions. Pain and infections can contribute to problems with nourishment and development. This can lead to problems with sleep because pain and irritation can disturb regular sleep cycles. This, in turn, can lead to worries about irritability and development. Of greater concern, severe instances of disease could lead to infections serious enough to require hospitalization. Importantly, oral disease in the primary dentition can influence the eruption, alignment, and health of permanent teeth, causing oral health vulnerability that extends into later childhood and adolescence (Government of India, Ayushman Bharat School Health Programme; Narayan et al., 2011).

Moreover, there are larger implications beyond the immediate result of the oral health condition itself when it happens to children in the early stages of their life. What happens when children experience frequent episodes of oral health problems is the creation of an understanding that this is the normal situation. Therefore, the utilization of preventive health care becomes less likely when the individual has an understanding that oral health problems are what one experiences.

Schematic representation in below Figure 3 of the etiopathogenesis of early childhood caries, illustrating the interaction between environmental risk factors, inappropriate feeding practices, and cariogenic bacterial activity leading to acid production and enamel demineralization. The model highlights the dynamic balance between demineralization and remineralization, the role of fluoride in modifying caries progression, and the importance of early detection, preventive strategies, and multi-level care including community-based, professional, and home-based interventions.

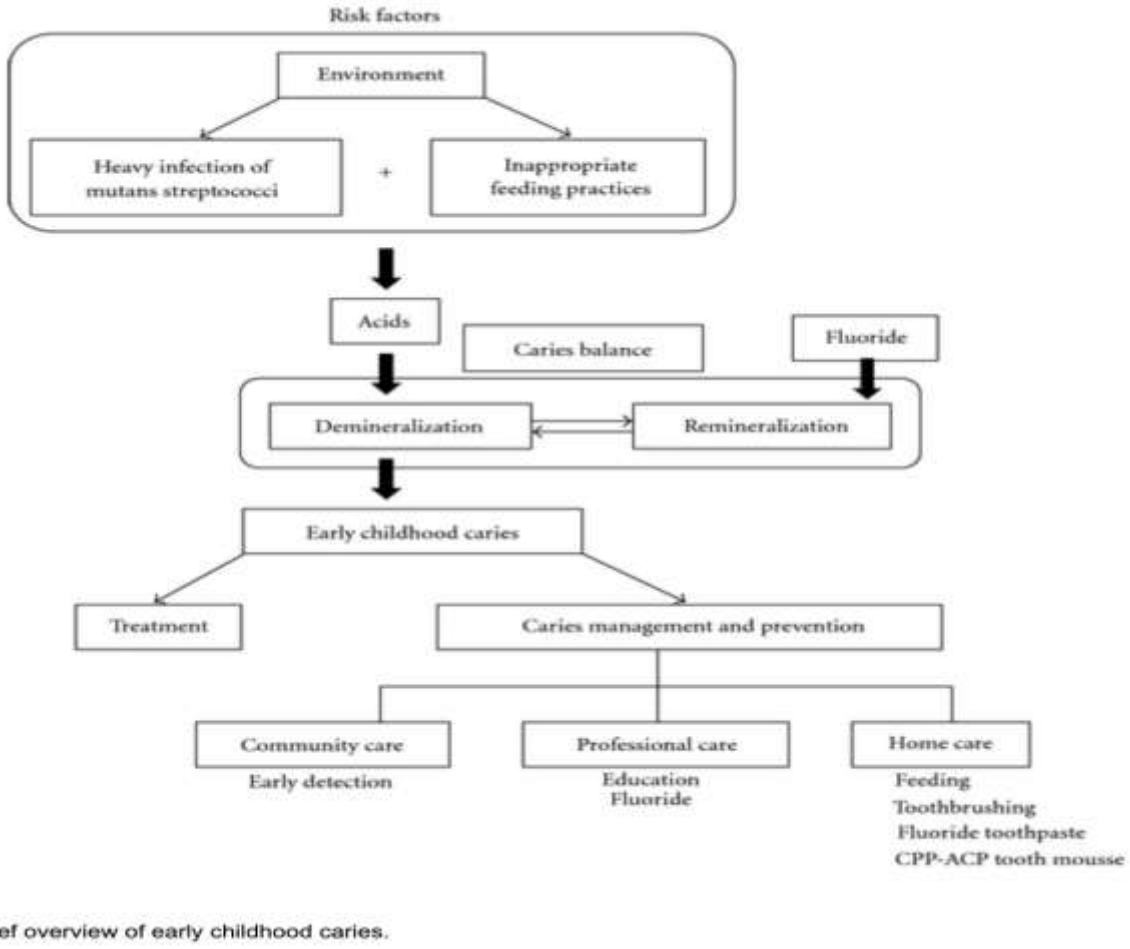


Figure 3. Pathway of early childhood caries development and prevention

School-Age Children

Untreated caries and gingival disease in school-going children in India are a reality, and this is a result of exposure to various risk factors. At this age, a lot is left to the child for personal oral health practice, and lack of supervision and health education is a major cause for concern. Schools, with their vast reach and enormous opportunities for oral health promotion, have yet to be fully utilized.

The functional consequences of oral disease among school-aged children have implications within the context of the classroom. Oral pain is acknowledged to be a contributing factor to absence from school and to poor concentration within class. Even if the child attends the class, poor oral health may impinge upon their ability to eat comfortably, speak clearly, and participate fully in social activities. Over time, these challenges may contribute to diminished self-confidence and social withdrawal.

Oral disease in the context of the mixed dentition stage has long-term implications for a child's future oral health. If untreated, cavities and gingivitis can lead to a more complex situation that will need advanced care in adolescence or adulthood. Children's minor issues related to their oral health can become a chronic condition with long-term implications if treated early. The need to alleviate the situation when a child is of school-going age has both short- and long-term benefits.

Adolescents

Adolescence is considered a transition stage that exhibits a degree of autonomy and increasing exposure to risk factors. Challenges to oral wellness at this stage are a reflection of diet patterns that demonstrate increased indulgence of sweets and processed foods, further coupled with experimentation involving smoking materials. At the same time, there is a tendency to neglect preventive health practices, including dental wellness.

However, oral health issues encountered during adolescence can have significant psychosocial implications. Dental aesthetics, oral health, and orthodontic problems can affect an individual's self-esteem and participation with peers. Dental pain or visible oral problems can also lead to embarrassment to attend dental care services, thus perpetuating continued neglect. In addition, practices formed or acquired during this life stage, both detrimental and beneficial, tend to be maintained through adulthood.

Adolescence is, therefore, both a risk opportunity and a risk development stage. This is due to opportunities presented through programs that support and reinforce healthy behaviors and are aimed at risk factors that emerge. Failure to address the disease burden of oral conditions during adolescence will lead to further demand for complex and costly care during adulthood.

Gaps in Public Oral Health Service Delivery

Despite the heavy toll of oral diseases among young people, the public health care system fails to offer adequate oral health care to meet the needs of the people. The position of oral health has conventionally been peripheral to health planning, and as such, there have been gaps associated with its delivery to the people. This affects susceptible groups, such as rural children, slum dwellers, and people living in tribal areas (Ministry of Health and Family Welfare, National Oral Health Programme; World Bank, 2014).

However, a major challenge here is that public sector dentists are not very accessible. Public sector appointments are short in number and do not redistribute evenly; most are concentrated in urban areas. This creates a manpower gap that hinders many people from getting access to treatment and adds to congestion in treatment facilities. Where services are available, high patient loads often limit the time and resources available for preventive counseling and follow-up.

Another important challenge is the fact that curative forms of dental treatment dominate public dental facilities. Preventive or promotive forms of dental treatment, including screening, dental risk assessment, fluoride treatment, and oral health education, receive relatively lower attention. Of course, this curative orientation is because of systemic pressures related to limited financial and infrastructure resources as well as acute health concerns.

Fragmentation of oral health services with programs for mothers, children, and adolescents further hinders the effectiveness of these services. Despite the intimate relationship between oral health, nutrition, and overall health of an individual, the issue of oral health is being dealt with in an isolated manner. Separate platforms for overall health issues are not being utilized for the inclusion of oral health.

Geographic and socioeconomic inequalities are evident. There are large hurdles to overcome for those in rural areas and disadvantaged urban areas. In addition, for some people, even if services are available, the indirect cost and opportunity cost prevent them from seeking the service. This contributes to the lack of coverage for preventive care for children and adolescents.

Rationale for Public–Private Partnerships in Oral Health

Public–private partnerships provide a strategic way to overcome the shortcomings that exist in the public delivery of oral health care. In the context of the Indian situation, the PPP approach becomes important since the assets of the sector in the form of the concentration of infrastructure, personnel, and technical capacity exist in the private sector. It is important to leverage these assets (Saltman, 2003; Patouillard et al., 2007; Zaidi & Mayhew, 2011) .

Oral health care can be most effectively addressed through PPPs given that such areas as screening, prevention, primary care, and health education can be most effectively carried out through such platforms. The private sector, including private dental colleges and practicing individuals and organizations, have the capacity to effectively undertake outreach, training, and service delivery efforts once these are brought into alignment with public health priorities.

The complementary relationship between the private and the public sector becomes the key for successful PPPs. As the public sector brings in the aspects of legality, regulation, and equity mandates, the private sector brings in flexibility and efficiency. As a result of good governance in PPPs, duplication of efforts is eliminated.

Importantly, PPPs are aligned with overall equity goals in terms of enabling the targeting of disadvantaged groups. It can thus improve the financial contribution requirement as well as the use of the service in areas with high demand, as a result of integrating private capacity into the publicly funded/publicly regulated programs through PPPs (Buse & Walt, 2000; World Health Organization, 2010).

Potential Roles of PPPs Across Age Groups

Children Under Five Years

- Inclusion of private dentists in public maternity and child health centers
- Preventive counseling for parents and caregivers
- Early screening and referral through Anganwadi and primary health centers
- CSR-supported fluoride and preventive care programs

School-Age Children

- School-based dental screening and preventive care provided by private partners
- Adoption of schools in private dental colleges
- Mobile dental units working on PPP models
- Health education programs jointly designed and implemented

Adolescents

- Integration with school health and adolescent health programs
- Preventive and promotive services including tobacco cessation counseling
- Referral networks for public schools with private dental facilities
- Digital oral health records supported by private technology partners

Benefits of PPP Models to the Community Oral Health Care

- Expanded coverage: Reaches underserved populations through private-sector capabilities
- Cost efficiency: Lowering both government spending and direct costs.
- Innovation: facilitates the application of mobile clinics, digital records, and tele-dentistry
- Workforce optimization: leverages private dental workforce and students
- Sustainability: Shared responsibility is the key to ensuring sustainability of programs.

Challenges and Ethical Considerations

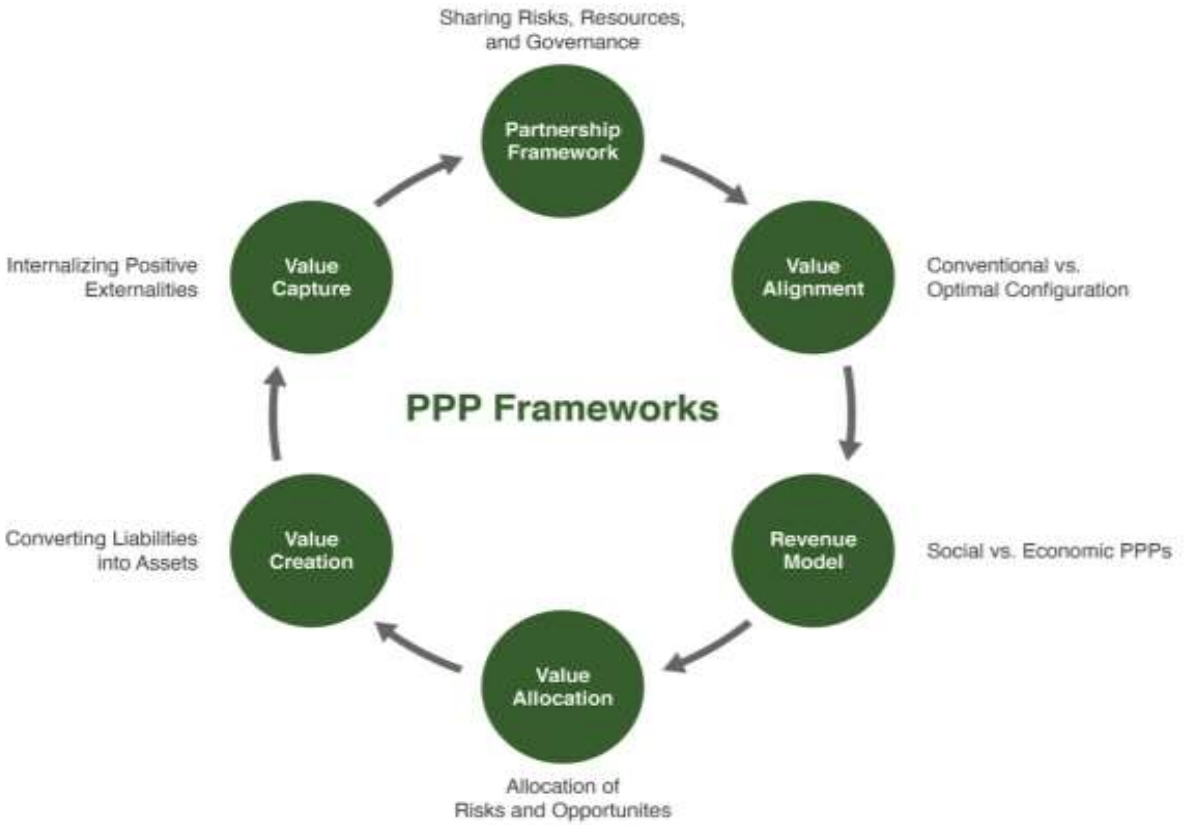


Figure 4. Ethical and governance challenges in public–private partnerships for oral health care

Despite the potential they hold, PPPs face the following challenges:

- Equity and the prevention of exclusion of vulnerable groups
- Maintaining quality standards and infection control
- Accountability and regulation - Public health services not to be commercialized
- Avoiding the commercialization of public health services

Maintaining privacy and integrity of service provision Well-structured governance, transparent contracts, and monitoring systems are very important if PPPs are to work for public health.

Policy and Programmatic Implications

To maximize impact, PPPs in oral health should:

- Integrate with national child and adolescent health programs.
- Emphasize preventive and promotional services.
- Include monitoring and evaluation frameworks.
- Encourage community participation and acceptability.
- Focus on sustainable approaches over short-term solutions (World Health Organization, 2000; Singh et al., 2015).

Conclusion

Oral health care for pre-school children, school-going children, and adolescents represents a critical yet often under-prioritized public health challenge in India. The high prevalence of preventable oral diseases across these age groups, combined with persistent socioeconomic and geographic inequities, underscores the limitations of a predominantly public-sector–driven service delivery model. Inadequate workforce distribution, limited emphasis on preventive care, and fragmented integration of oral health within broader child and adolescent health programs continue to constrain the effectiveness of existing public oral health services.

Public–private partnerships emerge as a pragmatic and contextually appropriate strategy to address these systemic gaps. By leveraging the extensive infrastructure, workforce, and technical expertise available within the private dental sector, PPP models have the potential to expand coverage to underserved populations, enhance the delivery of preventive and promotive services, and reduce out-of-pocket expenditure for vulnerable families. When aligned with public health priorities, PPPs can strengthen school-based oral health programs, early childhood interventions, and adolescent-focused preventive initiatives, thereby supporting a life-course approach to oral health promotion.

However, the success of PPPs in community oral health care depends on the presence of robust governance frameworks, transparent contractual arrangements, and effective monitoring mechanisms to safeguard equity, quality, and ethical practice. Ensuring that public health objectives remain central—rather than commercial interests—is essential to maintaining trust,

accountability, and sustainability. Integrating oral health into existing national child and adolescent health platforms, while emphasizing prevention and community engagement, will further enhance the long-term impact of these partnerships.

In conclusion, well-designed and carefully regulated public–private partnerships offer a viable pathway for strengthening India's oral health system for children and adolescents. By fostering collaboration across sectors and prioritizing early, preventive, and equitable interventions, PPPs can contribute meaningfully to improved oral health outcomes and overall well-being among India's younger population (Petersen & Kwan, 2011; Watt et al., 2019).

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