

How preventive dentistry research can reshape clinical care

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India's oral health crisis is the world's largest silent epidemic. Dental caries affects 52% of children between the ages of 3 and 18, with early childhood caries alone reaching a pooled prevalence of 46.9% in children under six. In some Indian cities, post-pandemic surveillance has recorded caries in nearly 64% of children aged 3–5. Pit and fissure caries — the most preventable form — accounts for 80 to 90% of all cavities in permanent posterior teeth. The total economic burden: Rs 613 billion annually, in lost productivity, treatment costs, and missed school days. And yet India's Ministry of Health allocated no funds specifically earmarked for oral health in its 2023 budget.

Prevention is not failing India because the evidence is weak. It is failing because the evidence never reaches the chair.

What Research Is Telling Us

Pit and fissure sealants remain the most evidence-backed preventive tool in pediatric dentistry — capable of reducing occlusal caries by up to 86% when retained properly. The problem has always been retention failure, particularly in newly

erupting teeth with high organic content: the precise clinical context that dominates Indian pediatric practice.

A randomised controlled in-vivo study published in *SVOA Dentistry* (2021) tested a practical answer to this problem. Fifty permanent mandibular first molars in children aged 6–8 years were divided into two groups. The first received conventional acid etching before sealant placement. The second received enamel deproteinisation — a 60-second application of 5.2% sodium hypochlorite to remove the organic pellicle that standard etching cannot dissolve — followed by acid etching, an intermediate bonding agent, and then sealant. At six months, both groups held at 100% retention. At twelve months, the conventional group had lost 16% of sealants partially. The deproteinisation group held at 100% a statistically significant difference ($p < 0.05$).

The protocol modification requires no specialized equipment, no new materials beyond what most dental clinics already stock, and adds under two minutes to the procedure. Sodium hypochlorite costs almost nothing. The barrier is not resources — it is awareness, training, and the absence of any formal mechanism that moves findings like this from a published journal into an updated national clinical guideline.

What the Government Must Do

The National Dental Commission Act of 2023 — India's most significant dental legislation in 75 years — explicitly mandates the promotion of preventive care and calls for dental professionals to integrate current evidence into practice. The National Oral Health Programme targets 2.2 crore beneficiaries in FY 2025–26. The WHO's Global Oral Health Action Plan 2023–2030 calls for a fundamental shift from curative to preventive care. The legislative intent is there. The global mandate is clear. What is missing is execution.

Three things must happen. The National Dental Commission must establish a standing technical committee empowered to review emerging clinical evidence and issue binding protocol updates on a defined timeline — not as aspirational guidelines, but as requirements. School-based sealant programmes must be formally embedded in the Ayushman Bharat Health and Wellness Centre framework, with mid-level oral health practitioners authorised to deliver them; the existing RBSK platform already reaches hundreds of millions of children in schools and anganwadis and remains criminally underutilised for oral health.

And continuing dental education must be restructured so that evidence-based protocol updates are mandatory for license renewal — not weekend seminars dentists can ignore.

India produces some of the world's most rigorous dental researchers. It has the infrastructure, the workforce, and the patient population to lead in preventive oral health. What it lacks is the political will to treat a cavity in a seven-year-old's molar as a policy failure — which is exactly what it is. The evidence is ready. The protocols exist. The cost of delivering them is a fraction of the cost of not doing so. The only question left is whether the people responsible for India's health systems are prepared to act like it.

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