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## FUTURE OF DENTISTRY

# KNOWLEDGE, INNOVATION & INSIGHT

A comprehensive, science-led and future-focused newsletter for the modern dental professional.

## INTRODUCTION

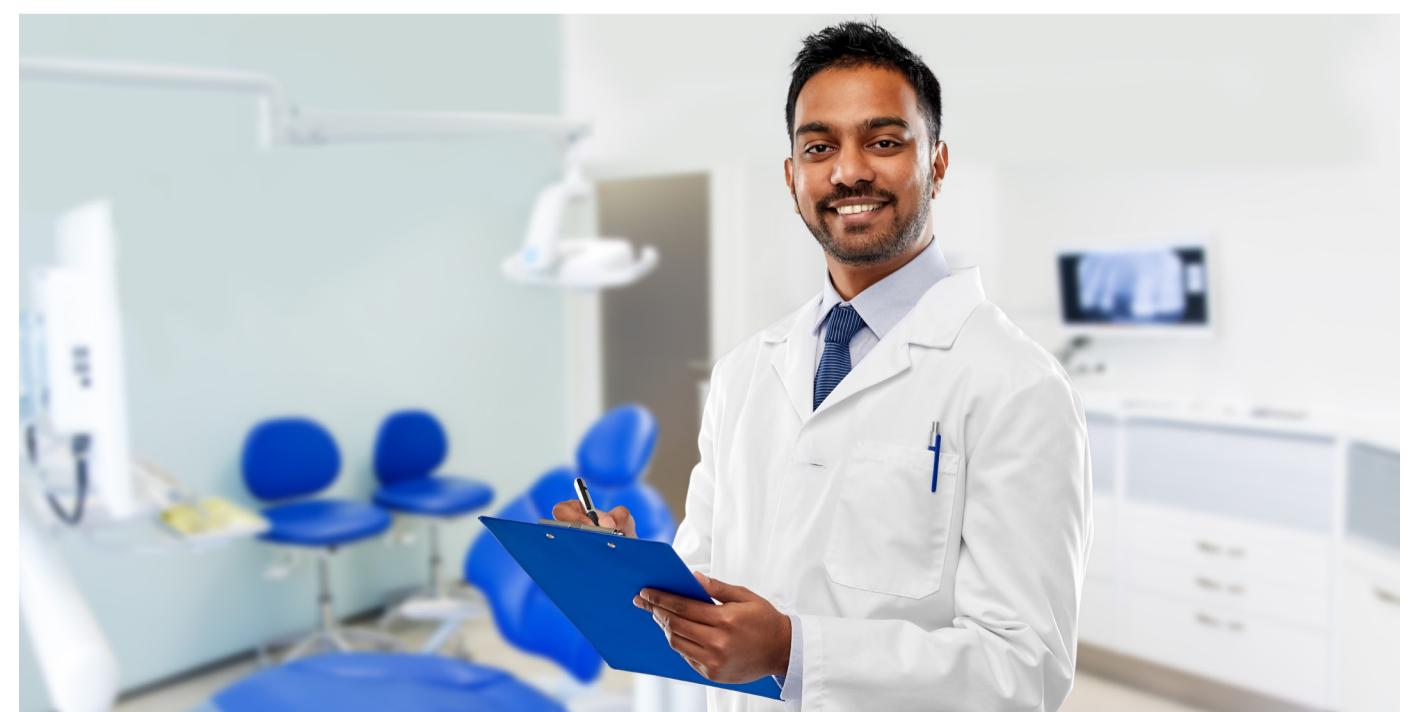
Dentistry is undergoing one of the most transformative periods in its history. Rapid advances in science, digital technologies, biomaterials, artificial intelligence, and patient-centered care models are reshaping how dentistry is practiced, taught, and experienced.

This newsletter is designed as an authoritative annual reference for clinicians, academicians, researchers, industry leaders, and dental students. It bridges current clinical realities with future innovations, offering curated insights that are globally informed and locally relevant, especially for the Indian dental ecosystem.



## THE FUTURE OF DENTISTRY

will not be defined by how advanced our tools are, but by how wisely we preserve biology while embracing innovation. Prevention, precision, and personalization will define clinical excellence in the years ahead.



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# SPOTLIGHT ON ENAMEL CARE & SENSITIVITY



## Preserving Dentistry's First Line of Defense

Dental enamel is the hardest substance in the human body, yet it is biologically irreplaceable once lost. With changing diets, increased acidic challenges, parafunctional habits, and aesthetic demands, enamel preservation has become central to modern preventive and restorative dentistry.

## Tooth Sensitivity

Tooth sensitivity often arises when enamel erosion exposes the underlying dentin, resulting in discomfort to thermal, tactile, or chemical stimuli. This common condition

affects patients' daily comfort and may influence treatment decisions. Managing sensitivity involves a combination of preventive measures, remineralization strategies, and desensitizing agents to strengthen the enamel-dentin interface and reduce nerve irritation, thereby enhancing both comfort and long-term tooth preservation.

Bioactive glass-based desensitizers like NovaMin are effective at reducing hypersensitivity pain vs baseline or placebo. NovaMin works by forming a mineralized protective layer that fills and seals dentinal tubules, helping to block pain signals from sensitive teeth.

NovaMin reduces dentin hypersensitivity by physically repairing and protecting exposed dentin rather than just numbing the nerve. When activated by saliva, it releases calcium and phosphate ions that form a tooth-like hydroxyapatite layer, which seals open dentinal tubules and reduces fluid movement that triggers pain. Clinical and laboratory studies support its effectiveness, showing consistent sensitivity relief with regular use, making NovaMin a scientifically validated, biomimetic approach to managing tooth sensitivity.<sup>4,6</sup>

**HALEON**  
Makers of  
**SENSODYNE**  **PRONAMEL**  **parodontax**  
THE GUM EXPERTS

## 1 Current Scientific Understanding<sup>1,3</sup>

**Recent research has significantly advanced our understanding of enamel at both microstructural and molecular levels:**

Enamel is a highly organized bio-crystalline structure composed primarily of hydroxyapatite rods with limited organic content.

Demineralization is no longer viewed as a linear process but as a dynamic balance between mineral loss and gain, influenced by saliva, biofilm, diet, and host factors.

Early enamel erosion often occurs at the nanoscale before becoming clinically visible, emphasizing the importance of early detection.

Long-term enamel preservation depends on controlling acid challenges, enhancing remineralization, and minimizing unnecessary mechanical or chemical wear.

## 2

## Preventive Dentistry for Indian Clinical Practice

**Preventive strategies must be adapted to India's unique clinical and socio-cultural context:**

High carbohydrate diets, frequent snacking, and increased consumption of acidic beverages raise erosion and caries risk.<sup>7,8</sup>

### 1. Fluoride – What It Is<sup>7,8</sup>

Fluoride is a natural mineral found in water, soil, foods, and dental products. It helps prevent dental caries (tooth decay) by strengthening enamel and enhancing remineralization.

### 2. How Fluoride Prevents Caries?

Fluoride makes enamel more resistant to acid attack from bacterial plaque.

It inhibits demineralization and promotes remineralization of early carious lesions.

This action is primarily topical (local) rather than systemic.

### 3. What is Dental Fluorosis?

Dental fluorosis is a change in enamel appearance that occurs when too much fluoride is ingested while teeth are developing (birth to ~8 yrs).

Mild fluorosis → white lines/spots

Moderate/severe → brown staining or pitting

Only young children can develop fluorosis because enamel calcification ends around age 8.

### 4. Role of Fluoride Toothpaste

#### WHO recommendations:

Fluoride toothpaste (1000–1500 ppm) prevents and slows caries progression in all age groups.

Twice daily brushing is universally recommended starting as soon as teeth erupt.

Toothpaste with <1000 ppm fluoride is less effective and not recommended.

#### CDC guidance:

Fluoride toothpaste is the most commonly used fluoride product in the U.S. and is safe and effective when used as directed.

Parents should supervise young children to limit ingestion (use rice-grain/pea-sized amounts).



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### 5. Myths vs Reality:

#### Fluoride toothpaste causes fluorosis

Fluorosis only occurs when excessive fluoride is ingested systemically during enamel formation. Proper toothpaste use does not cause harmful fluorosis.

#### Fluoride is unsafe/poisonous

At optimal levels, fluoride is a safe, evidence-based measure for preventing caries.

#### Kids shouldn't use fluoride toothpaste

WHO and CDC recommend use in children with appropriate amounts and supervision.

#### Natural toothpaste is better

Non-fluoride toothpaste is less effective for caries prevention. Fluoride's benefit is backed by global public health evidence.

### 6. Practical Usage Tips (Evidence-Based)

#### Toothpaste Amount

<3 years: rice-grain size (very small).

3–6 years: pea-sized.

≥6 years & adults: regular pea-sized.

#### Supervision

Children should be watched while brushing and taught to spit, not swallow.

#### Brushing Frequency

Twice daily with fluoride toothpaste to maximize protection.

## 7. Authoritative Guidelines

WHO (World Health Organization)

Fluoride toothpaste is a core preventive intervention against caries globally.

Included in WHO Model List of Essential Medicines for its public health importance.

CDC (Centers for Disease Control and Prevention)

Fluoride toothpaste is safe and effective when used appropriately.

Clear guidance on minimizing fluorosis risk by controlling toothpaste ingestion in children.

**Chairside protocols should emphasize risk-based prevention, salivary diagnostics, and patient education.**

**Community-level programs must integrate oral health awareness, school-based prevention, and minimally invasive interventions.**

## 3 Expert Commentary

Insights from leading clinicians, academicians, and researchers highlight a unified direction for enamel care:

### ENAMEL

should be treated as a non-renewable biological asset. Every clinical decision—be it prophylaxis, bleaching, or restoration—must begin with the question: how much enamel are we preserving?

- *Senior Prosthodontist & Academic Leader*

### MODERN

preventive dentistry is no longer about generic protocols. Risk-based, patient-specific strategies are essential, especially in diverse populations like India."

- *Preventive Dentistry Researcher*

**Experts consistently emphasize:**

*Early diagnosis over aggressive treatment*

*Enamel preservation as a core clinical philosophy*

*Translating laboratory science into simple, effective chairside protocols*

*Educating patients to become active partners in enamel protection*

## KEY DENTAL TRENDS SHAPING 2025

Editorial Insight

### 2025

marks the transition from 'digital adoption' to 'digital maturity' in dentistry. The focus is shifting from owning technology to integrating it meaningfully into clinical decision-making.

- *Digital Dentistry Thought Leader*

## Redefining Dentistry Through Technology and Expectations

### 1 AI-Assisted Diagnostics & Clinical Workflows<sup>10,11</sup>

#### Artificial Intelligence is rapidly becoming a clinical co-pilot:

AI-driven radiographic interpretation enhances early caries, periodontal, and periapical diagnosis.

Predictive analytics assist in treatment planning and outcome forecasting.

Automated documentation, scheduling, and patient communication improve practice efficiency.



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### 2 Rise of Minimally Invasive Dentistry<sup>12</sup>

#### Modern dentistry increasingly prioritizes conservation:

Micro-dentistry and magnification-driven workflows

Adhesive dentistry replacing extensive mechanical preparations

Preventive-first treatment philosophies

Emphasis on repair rather than replacement of restorations

### 3 Innovations in Restorative & Cosmetic Dentistry<sup>13</sup>

#### Aesthetic dentistry continues to evolve with greater precision:

Ultra-thin veneers and no-prep concepts

Digital Smile Design (DSD) enhancing predictability and communication

High-strength, highly polishable composites

Integration of digital workflows for superior aesthetic outcomes

### 4 Patient Experience & Digital Practice Management<sup>14</sup>

#### Patient expectations are reshaping practice models:

Tele dentistry and virtual consultations improving access

Digital engagement platforms enhancing trust and compliance

Data-driven insights supporting practice growth and personalization<sup>16</sup>



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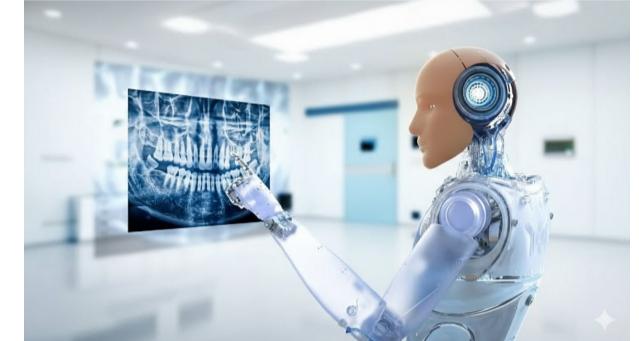
The most successful dental practices of the future will feel less like clinics and more like healthcare experiences—transparent, data-driven, and patient-empowered

*- Practice Management Consultant*

# TECHNOLOGIES & BREAK-THROUGHS TO WATCH IN 2026

Dentistry is entering an era where machines will enhance—not replace—clinical judgment. The dentist's role will evolve from operator to orchestrator of intelligent systems.

*- Global Health Technology Analyst*



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## A Glimpse into the Near Future

### 1 Robotics-Assisted Procedures<sup>15</sup>

Robotic systems are emerging as precision-enhancing tools:

 Endodontic navigation and access refinement	 Implant placement accuracy	 Surgical guidance with real-time feedback
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### 2 Next-Generation CAD/CAM & 3D Printing

Digital fabrication continues to accelerate:

Faster chairside workflows 	Multi-material and multi-color printing 	Customized prosthetics with enhanced fit and function 	Reduced laboratory turnaround times 
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### 3 Smart Materials, Nanotechnology & Regenerative Dentistry

Future materials will actively interact with the oral environment:

*Self-healing and stress-responsive restoratives<sup>17,18</sup>*

*Nano-coatings for antimicrobial and protective functions*

*Bioactive materials promoting tissue regeneration*

*Advances in pulp-dentin and periodontal regeneration*

### 4 Emerging Global Research<sup>9</sup>

Key global studies are influencing future guidelines:

AI validation in clinical diagnostics	Long-term outcomes of bioactive materials	Regenerative protocols moving from experimental to clinical reality
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# GLOBAL DENTAL NEWS 2025 – KEY UPDATES & TRENDS

## 1 International Dental Bodies & Policy<sup>10</sup>

Increased emphasis on preventive dentistry and digital integration

Global movement toward mercury-free restorative materials

Focus on equitable oral healthcare access and workforce sustainability

## 2 Universities & Research Institutions

*Strong focus on AI, digital imaging, and regenerative dentistry*

*Integration of simulation labs and digital workflows in education*

*Interdisciplinary and technology-driven dental curriculum.*

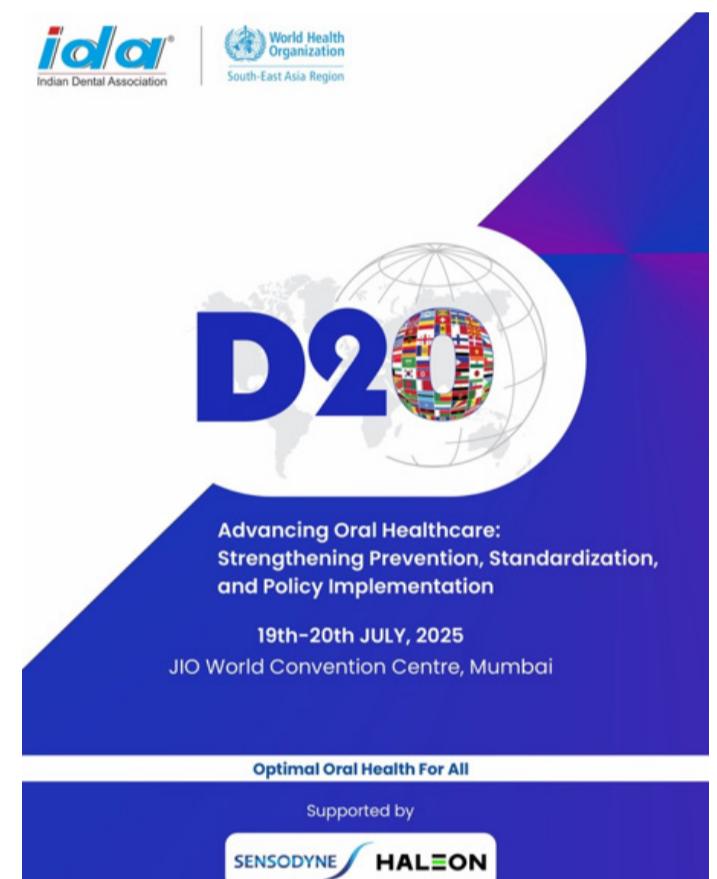


## 3 Major Global Dental Conferences

### The first D20 International Symposium (also called DENTAL 20):

A global oral health summit held in Mumbai, India to advance oral healthcare worldwide.<sup>22</sup>

The D20 Symposium served as a foundation for a global oral health agenda promoting cooperation, prevention, standards, policy support, and innovation intended to improve oral health equity and quality around the world.



**IDS Cologne 2025:**  
Digital dentistry, AI, automation, and sustainability<sup>13,15</sup>

**AEEDC Dubai 2025:**  
Innovation transfer and AEEDC 4.0 technologies

**GNYDM 2025:**  
Practical digital workflows and chairside solutions

## 4 Digital Dentistry & Technology Trends

*AI-powered diagnostics becoming mainstream*  
*Cloud-based practice management systems*  
*Expanded use of 3D printing across specialties*



## 5 Sustainability & Future Outlook<sup>17</sup>

Growth of green dentistry initiatives

Eco-friendly materials and energy-efficient equipment

Alignment of innovation with environmental responsibility



# THE INDIAN DENTAL OUTLOOK — WHAT LIES AHEAD

## India-Focused Editorial

India's strength lies in its scale, clinical talent, and adaptability. With the right alignment of education, innovation, and policy, India can shape global dental solutions rather than merely adopt them.

- *Dental Education Policy Expert*

- *India's Expanding Global Role*
- *Growth Driven by Digital Adoption*
- *Rapid expansion of digital clinics*
- *Increased use of digital diagnostics and imaging*
- *Technology-enabled dental education*
- *Changing Patient Behaviour<sup>7</sup>*
- *Greater awareness of preventive care*
- *Rising demand for aesthetic and minimally invasive treatments*
- *Focus on long-term oral health outcomes*
- *India as a Dental Innovation Hub<sup>17</sup>*
- *Growth of indigenous dental manufacturing*
- *Increasing R&D and export potential*
- *Affordable innovation with global relevance*
- *Opportunities for the Ecosystem*
- *New pathways for clinicians, startups,*

- *brands, and educators*
- *Collaboration between academia, industry, and healthcare systems*
- *India positioned as a key contributor to global dentistry*



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## Why This Newsletter Matters

The purpose of such knowledge platforms is not to predict the future, but to prepare the profession to lead it responsibly.

- *Guest Editor*

*Delivers credible, curated, and clinically relevant insights*

*Bridges science, clinical practice, and future innovation*

**Helps professionals and brands stay ahead of global trends**

**Designed as a trusted annual reference for the dental fraternity**

*Dentistry's future is not just digital or technological it is biological, preventive, patient-centric, and purpose-driven. This newsletter aims to empower the profession to lead that future with clarity, confidence, and conscience.*

# HIGHLIGHTS

## An extra mile in oral health assessment by Sensodyne

Guinness World Record for highest number of screenings in 24 hours at a single location by team Sensodyne India on World Oral Health Day.

27,396 – digital dental checkups in one day at a single location.



**INDIA CREATES  
A WORLD RECORD.**

— In partnership with —  
**SENSODYNE**  
&  
**idai**  
Indian Dental Association

## Dentifrices in Periodontal Care: Parodontax vs Sensodyne (reference Carranza – Latest Edition)

Choosing the right toothpaste plays an important role in managing common oral health problems. Parodontax and Sensodyne are two widely used therapeutic dentifrices, each designed for a specific purpose in daily oral care.

### Parodontax: Supporting Gum Health

Parodontax is beneficial for individuals with gingival inflammation and bleeding gums. It helps with plaque control and reduces gingival bleeding when used regularly, making it a useful adjunct for patients with gingivitis and early periodontal disease.

### Sensodyne: Relief from Tooth Sensitivity

Sensodyne is formulated for dentin hypersensitivity. It provides relief from pain caused by hot, cold, or touch by occluding dentinal tubules or desensitizing nerves, but it does not target gingival inflammation.

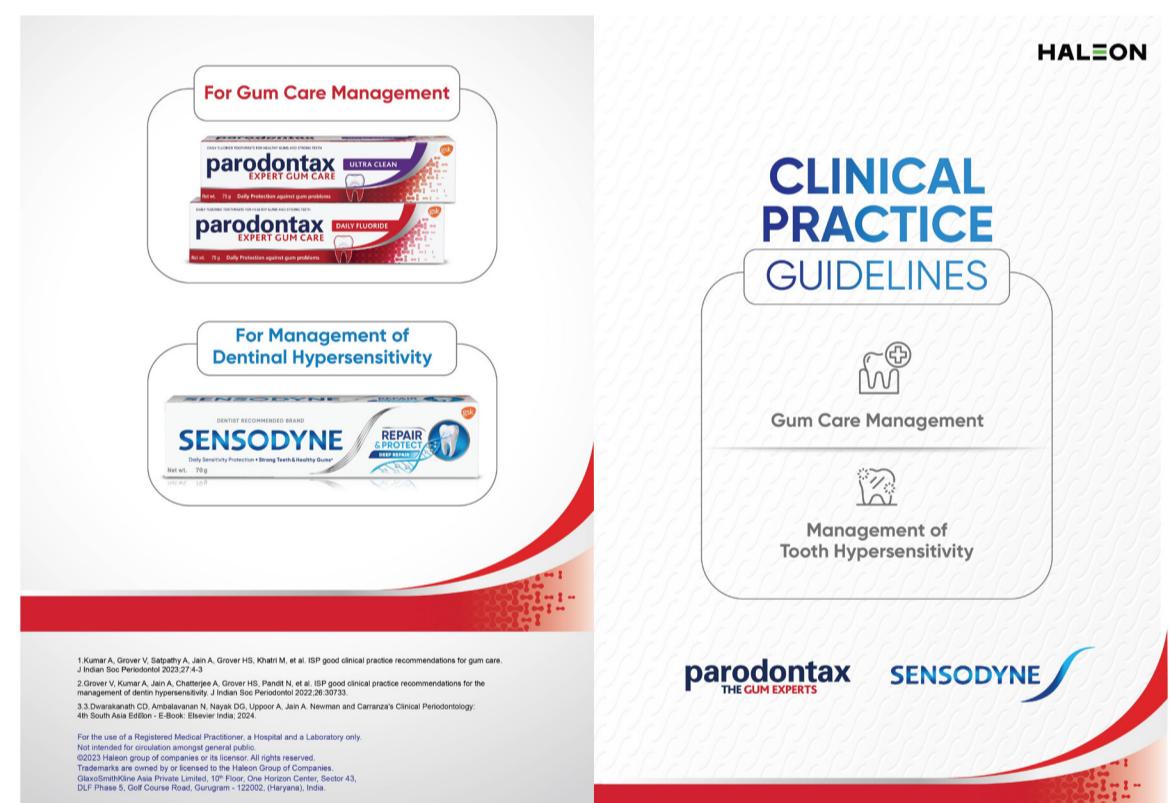
### The Takeaway:

Both Parodontax and Sensodyne support daily oral hygiene but serve different clinical needs. Neither replaces proper brushing, plaque control, or professional periodontal care. The choice of dentifrice should depend on the patient's primary oral health concern.

Healthy gums or sensitive teeth there's a targeted solution for each.

## Sensodyne Pronamel Launch:

Pronamel, a toothpaste line from Sensodyne (Haleon), was recently launched in India to provide advanced enamel protection. The product is formulated to strengthen and shield tooth enamel from everyday acid wear caused by acidic foods and drinks. The launch included a broad consumer awareness campaign across TV, digital, social media, print, and outdoor media. Pronamel comes in variants like Daily Protection and Fresh Breath to suit everyday oral care needs.



## Parodontax Mouthwash Launch:

Parodontax does have a mouthwash range including Active Gum Health formulas designed to help control plaque bacteria and support gum health, generally positioned alongside its toothpaste products. These mouthwashes are alcohol-free and formulated to help prevent gum issues and bad breath..

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