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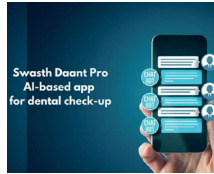
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Vol. 1, No. 9



SLEEP APNEA

Sleep apnea and role of dentists



SWASTH DAANT PRO

Dental camp organized using AI-based app 'Swasth Daant Pro'



ITI 2024

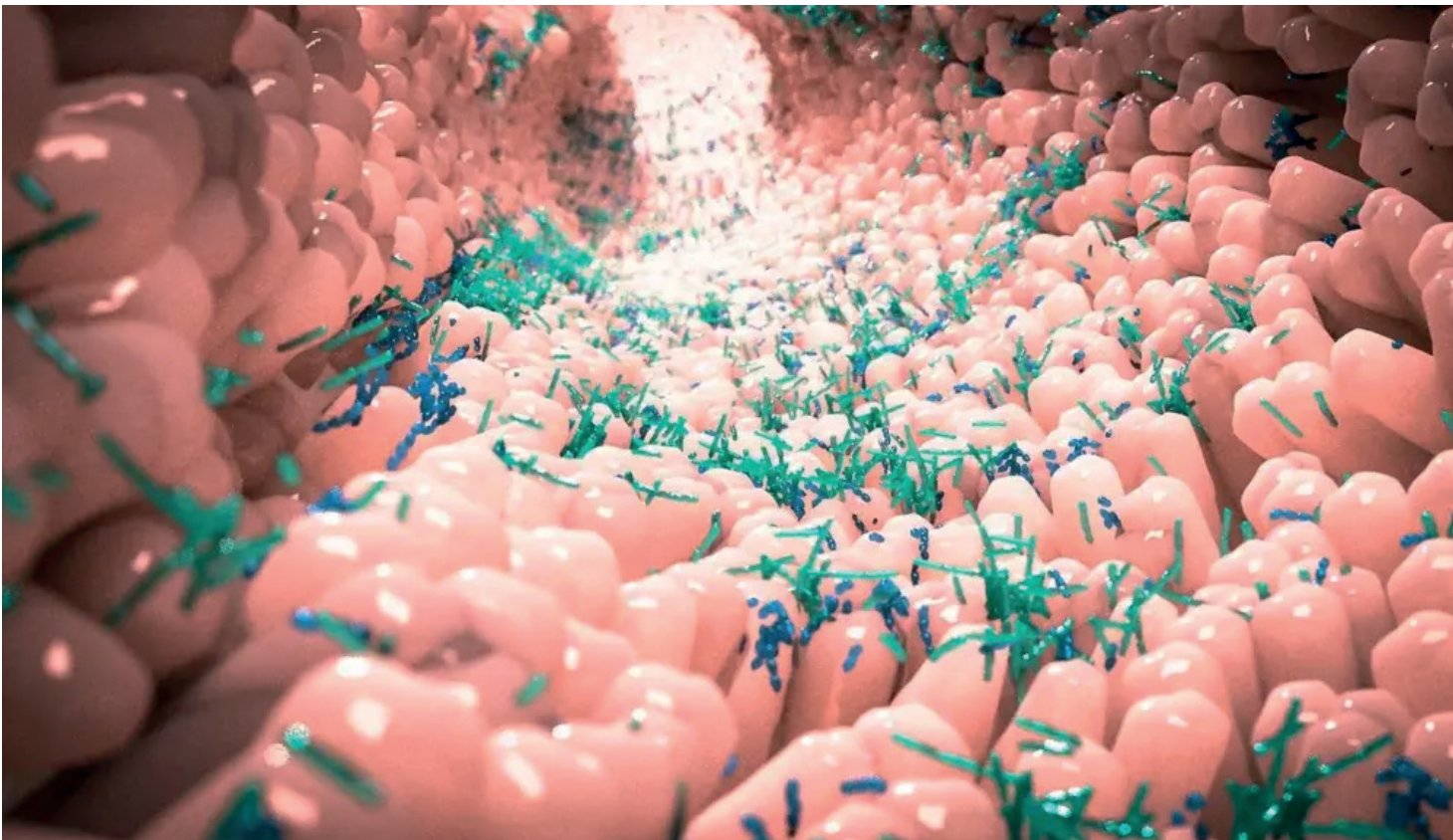
ITI World Symposium 2024: More than 50 speakers, exclusive clinical case footage and real patient stories

Page 03

Page 05

Page 07

The oral-gut microbiota axis: the harbinger of autoimmune diseases



Microbiome in human gastrointestinal tract. (Image: Canva)

For example, mouth-to-gut transmission was higher in rheumatoid arthritis patients.

Generally, dental procedures and periodontitis permit the spread of salivary microbiome, oral bacteria, and periodontal pathogens such as *P. gingivalis*, *F. nucleatum*, and *A. actinomycetemcomitans* into the bloodstream. In the immune cell migration route, intracellular oral bacteria can exist within the immune cells such as dendritic cells and macrophages, thus facilitating easy dissemination from oral to gut mucosa. Additionally, the immune cells acquired from the oral draining lymph nodes can spread to the gut and the other lymphoid tissues. For example, oral pathobiont-reactive T helper 17 (Th17) cells, after activating with gut tropism, migrate to the inflamed gut (Fig. 1).³

By Dr Geetpriya Kaur

In recent decades, we have recognised the vital role of microbiota in health and disease. The human gut and oral microbiota, the body's largest microbial communities, are closely connected due to the mouth's position as the start of the digestive system. Compelling new evidence reveals complex links between these two microbiota. This interaction could significantly impact the development of systemic diseases includ-

ing autoimmune diseases and certain cancers.

Autoimmune diseases occur when the immune system loses the ability to differentiate between its cells as well as foreign invaders and mistakenly attacks healthy cells. So far, more than eighty autoimmune diseases have been identified, affecting various parts of the human body.¹

Furthermore, they are characterised by an immune response to self-antigens such as autoantibody-producing B cells, autoreactive T cells, and proinflammatory cytokines.¹

Recent studies reveal that oral and gut microbiota dysbiosis have a pivotal role in the initiation and progression of a broad spectrum of autoimmune diseases.^{1,2} The microbiota dysbiosis disrupts the homeostasis between the host and commensal, accompanied by ab-

normal immune response leading to autoimmune diseases. The oral cavity is anatomically connected with the gastrointestinal tract (GIT), which harbors the largest and most diverse microbiota. There is approximately 45% similarity between the fecal and oral microbiota suggesting ectopic colonization of oral bacteria in GIT, by escaping the inhibition of gastric acid.¹

The three routes through which oral microbiota affects the gut microbiota are enteral, hematogenous, and immune cell migration routes. Still, there is controversy about whether oral microbiota can colonize the gut through the enteral route.³ Recent research suggested that there was no confirmation of the colonization of oral bacteria in the distal gut of healthy adults. In contrast, some researchers indicated that at least one in three oral microbiotas can sustain in a healthy adult gut.

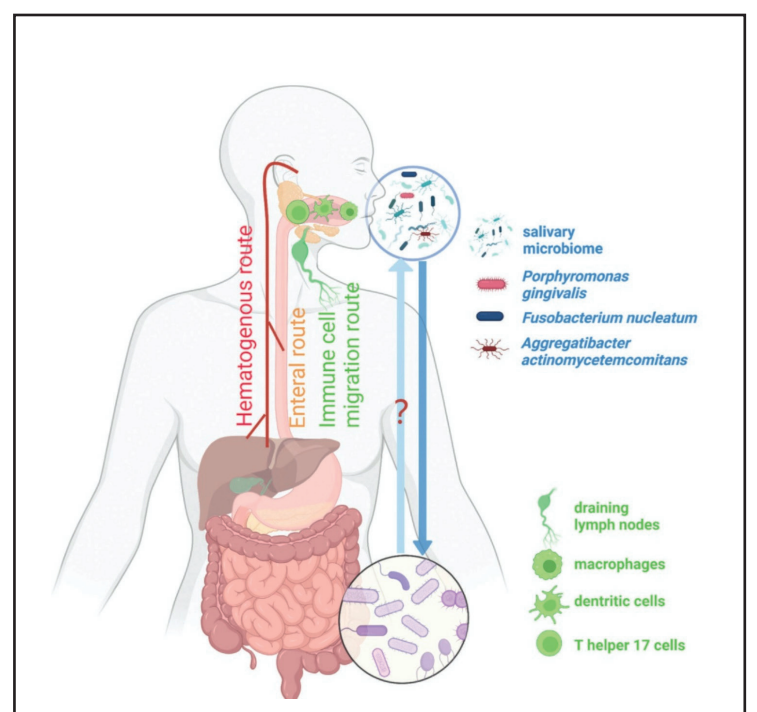


Fig. 1: The three routes through which oral microbial flora influences gut microbiota. [3]



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The interplay between oral-gut axis and autoimmune diseases:

The role of the oral-gut axis has been recently proposed in various autoimmune diseases. The major trigger mechanisms for the occurrence of autoimmune diseases are microbial translocation, molecular mimicry, and autoantigen overproduction.¹

The following autoimmune diseases are caused by oral-gut microbiota dysbiosis:

Rheumatoid arthritis (RA) is a chronic progressive autoimmune disease characterise by synovial inflammation and gradual degradation of articular cartilage and bone. Autoantibodies to citrullinated proteins are one of the diagnostic criteria for RA. Citrullinated proteins are developed from post-translational arginine modification and catalyzed by peptidyl arginine deiminases (PADs). The oral bacterium *P. gingivalis* is responsible for protein citrullination which further increases anti-citrullinated peptide antibodies (ACPAs). In RA patients, Anti-Pg-LPS IgG antibody levels were inversely associated with the patient's disease activity; the serum LPS-binding protein levels were linked with disease biomarker concentrations. Thus, these findings indicated that certain proteins from oral and gut mi-

crobiota can affect disease activity in RA patients.³

Inflammatory bowel disease (IBD) is a group of chronic relapsing inflammatory conditions of the GIT, which comprises two clinical types—ulcerative colitis (UC) and Crohn's disease (CD). The main etiological causes involved in IBD progression are environmental and genetic factors. Oral microbiota contains an abundance of Enterobacteriaceae as compared with other mucosal sites. Klebsiella, an oral Enterobacteriaceae species, can ectopically colonize and sustain in the colon and cecum and thus induce gut inflammation in a genetically susceptible patient. Additionally, they also promote T helper 1 (Th1) cells during gut colonization.³

Type 1 diabetes mellitus (T1DM) is characterized by insufficient secretion of insulin by the pancreas. Recent data stated that oral microbiota can induce gut dysbiosis and gradual insulin resistance. The main mechanisms for increased insulin resistance are gut dysbiosis, increased gut permeability, systemic inflammation, and metabolic derangement. Another study reported that Turibacter, a butyrate-producing bacterial population was reduced in

the gut microbiota after oral gavage of *P.gingivalis*.³

Systemic lupus erythematosus (SLE) is a chronic autoimmune disease of unknown etiology that affects the connective tissue of multiple organs resulting in tissue damage and extensive inflammation. Primary Sjogren Syndrome (pSS) is an autoimmune condition caused by lymphocytic infiltration of lacrimal and salivary glands, resulting in dry eyes and mouth. Moreover, pSS and SLE share common epidemiological, clinical, pathogenic, and etiological features. Lower diversity in gut microbiota composition was observed in pSS and SLE patients while a reduced Firmicutes/Bacteroidetes ratio was present in SLE patients. However, a diversity of microbiota composition was observed in SLE and pSS patients. A study revealed that SLE is linked with increased alpha diversity in both buccal swabs and oral washings than in pSS patients.⁴

Conclusion

Recent evidence suggests that the oral-gut microbiota axis plays a pivotal role in the pathogenesis of several autoimmune diseases such as RA, IBD, T1DM, SLE, and pSS. Moreover, the oral microbiota can influence the gut microbial

population through enteral, hematogenous, and immune cell migration routes. The multifactorial causative pathways utilized by oral-gut microbiota dysbiosis for initiating autoimmune diseases are microbial translocation, molecular mimicry, and autoantigen overproduction. Hence, more research is needed to validate these findings and explore the efficacy of oral and gut microbiota-based targeted therapies for the treatment of autoimmune diseases.

About

Dr Geetpriya Kaur is a successful oral pathologist, running a dental diagnostic center for the past nine years. She taught oral pathology courses as a Professor at the Department of Oral Pathology and Microbiology at the Institute of Dental Studies and Technologies in India. She has also worked as an assistant editor with the *Journal of Clinical and Diagnostic Research* and has many national and international publications to her credit. Additionally, she has peer-reviewed articles in national and international journals.

Her master's thesis looked into "Detection of oral squamous cell carcinoma metastasis with cathepsin D: An immunohistochemical

study" and concluded that patients with lymph node metastasis had higher cathepsin D (CD) expression and that increasing tumor size seemed to correlate with higher CD expression. Thus, based on the active potential of CD in regulating the prognosis of oral squamous cell carcinoma (OSCC), the design and synthesis of specific CD inhibitors can have significant research and therapeutic consequences.

The list of references can be obtained from the publisher upon request.

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Sleep apnea and role of dentists



Dentists are playing an increasingly bigger role in the management of sleep-related disorders. (Image: Canva)

By Dr Satabdi Saha

Dentists' role in sleep disorders has grown, particularly in the collaborative care of individuals experiencing mild to moderate obstructive sleep apnea (OSA). With the scope of dentistry growing beyond treating only oral health conditions, practicing dental professionals are now facing a distinct prospect of engaging with patients across various stages of OSA. Dentists can help in identifying the presence of a sleep-related disorder, timely referral to sleep medicine physicians for a comprehensive evaluation, and take part in its therapeutic management.

Acknowledging this expanding role of dentists in OSA, the American Academy of Sleep Medicine (AASM) and the American Academy of Dental Sleep Medicine (AADSM) ^[1] strongly recommend a team effort by qualified dentists and sleep physicians to treat OSA patients in the best possible way. Despite such a key inclusive role of dentists in this field, we lack enough information and awareness to tackle OSA cases in dental chairs. This article focuses on the disease's pathophysiology, its serious health consequences, and how dentists can act first-hand in its diagnosis and management.

Interpreting the global evidence on the disease burden:

Patients undergo disrupted sleep and uneven breathing patterns due to these respiratory episodes. This depletes distinct stages of both non-REM and REM sleep. The effects of OSA extend beyond the sleep cycle. It involves repeated blockages in the upper airway, lowering blood oxygen levels, and increasing carbon dioxide. Research indicates that untreated OSA can cause various issues. These include headaches, worsened epilepsy, asthma exacerbations, hypertension, irregular heartbeats, depression, strokes,

chest pain, atrial fibrillation, increased motor vehicle accidents, and congestive heart failure.²

Healthy individuals spend one-third of their lives sleeping.³ So, disruptions in sleep quality can create havoc in all aspects of our daily lives. Regarded as a global health issue, OSA prevalence has been rising over the last 20 years. Research reveals that the OSA prevalence increases with age and weight gain.⁴

Classification of sleep apnea:

Apnea is a full blockage of airways for at least 10 seconds, accompanied by a 2 to 4% decline in arterial oxygen saturation. Sleep apnea is categorised into central, obstructive, or mixed types, with varying degrees of severity.²

Central sleep apnea (CSA) is linked to a problem in the central nervous system, causing the chest muscles to not function and resulting in reduced lung oxygen intake.

OSA is a partial or total obstruction of the upper airway during non-REM or REM sleep. Considered the most prevalent form of sleep apnea, OSA disrupts regular sleep patterns. When OSA leads to excessive daytime sleepiness, it's referred to as obstructive sleep apnea syndrome (OSAS).

If both central and obstructive apneas are present in a patient, it's termed mixed sleep apnea.

OSA has three categories, based on the apnea-hypopnea index (AHI). The average number of apneas and hypopneas per hour of sleep is taken into account.

- Mild OSA (5 to 15 events per hour)
- Moderate OSA (15 to 30 events per hour)
- Severe OSA (more than 30 events per hour)

Understanding the underlying pathology of OSA:

OSA is a complex sleep disorder with a multifaceted pathophysiology. It revolves around upper airway dynamics, neural

control, and the interplay of anatomical and physiological factors. This results in diverse causes for OSA. Here is a list of the major ones.

1. Anatomical variations: To get a hold of the basic OSA etiology, we need to look into the anatomy of the upper respiratory tract first. Individuals with OSA are more likely to have a constricted or collapsed upper airway. Obesity, which causes greater fat deposits around the neck and throat, or physical traits such as a wide tongue, tonsils, or a sunken jaw (micrognathia) can all contribute to this.
2. Predisposing factors: Retrognathia, high-arched palate, nasal septal deviation, longer anterior facial height, steeper anterior cranial base, inferiorly displaced hyoid bone, long soft palate, tumors, and reduced posterior airway space can all contribute to OSA. Chronic smokers and alcoholics are also at a high risk of suffering from OSA.
3. Dysfunction of neural control: The central nervous system regulates the muscles involved in breathing. Evidence confirms changes in the brain regulatory processes in OSA, resulting in insufficient activation of upper airway dilator muscles during sleep. This malfunction increases the likelihood of airway collapse.
4. Infections: Allergic rhinitis and recurrent asthma lead to an inflamed airway- and raise the risk of airway collapse.
5. Diminished muscle tone: During sleep, there is a physiological reduction in muscle tone across the body. In individuals with OSA, the muscles responsible for opening the upper airway experience an excessive degree of relaxation. This heightened relaxation contributes to the collapse of the airway walls, resulting in airflow obstruction.

6. Heightened sympathetic stimulation: In OSA, there is escalated activity within the sympathetic nervous system. This heightened activation is a consequence of the repetitive occurrences of low oxygen levels (hypoxia) and elevated carbon dioxide levels (hypercapnia) during periods of airway obstruction.

AASM - AADSM clinical practice guidelines for stepwise treatment approach for OSA

- Sleep physicians should consider prescribing oral appliances for adult obstructive sleep apnea patients intolerant of CPAP or preferring alternate therapy.
- When a sleep physician prescribes oral appliance therapy, AASM & AADSM recommend qualified dentists craft custom, titratable appliances, as they outperform non-custom devices by reducing AHI, arousal index, and oxygen desaturation while improving oxygen saturation.
- Qualified dentists must oversee oral appliance therapy, monitoring for dental side effects and occlusal changes to enhance patient experience and treatment outcome.
- Both dentists and sleep physicians should instruct adult patients using oral appliances to schedule regular follow-up visits.
- These 2015 guidelines serve as a roadmap for OSA, elevating professional knowledge, patient outcomes, and healthcare cost-efficiency.

Current approaches for managing the disease in the dental chair:

Treatment options for adult OSA vary based on severity, patient preferences, health status, and the healthcare team's expertise.

1. Lifestyle modifications: For mild cases, lifestyle changes like

weight loss, positional therapy, and avoiding alcohol before sleep can help.

2. Oral appliances: Recommend oral appliances if conservative measures fail and patients seek further treatment. These devices adjust the jaw and tongue position to maintain the airway, beneficial for mild to moderate cases. Research shows they improve sleep and quality of life.
3. Continuous positive airway pressure (CPAP): CPAP therapy involves wearing a mask that delivers a continuous flow of air to keep the airway open during sleep. This is a commonly prescribed treatment for severe OSA.
4. Surgery: Consider surgery like uvulopalatopharyngoplasty (UPPP), genioglossus advancement (GA), or maxillomandibular advancement (MMA) for major anatomical adjustments or when other treatments are ineffective.

The way ahead:

The scope of oral appliances in OSA is expanding, but specialized dental sleep medicine training is rare. Not all dentists can competently treat OSA or apply evidence-based practices.⁴ The AADSM has addressed this through training programs. More dentists need expertise in managing OSA patients. Thus, making sleep-related disorders a part of the UG curriculum is the need of the hour.⁵ With growing evidence of OSA's complex nature and collaborative treatment, the dental fraternity must step up to fill this long-existing gap.

However, further development and evidence-based clinical validation of haptic VR dental trainers are needed to improve engagement and learning outcomes for more dental students around the world. I am convinced that, as the technology continues to advance, it is likely that dental educators will see even more innovative and exciting dental applications of haptic VR technology in the coming years.

The list of references can be obtained from the publisher upon request.

Dental camp organised using AI-based app Swasth Daant Pro



AI-based apps like Swasth Daant Pro that patients can use on their mobile devices will make the dentists' job easier in dental camps. (Image: Canva)

By Dr Rajeev Chitguppi

An oral health camp was organized by Muskan in collaboration with ASI (Archaeological Survey of India, Chandigarh Circle) and Aadesh Dental College (Bathinda-Bucho-Adesh University) on 12- 13 August in Bathinda, Punjab.

Muskan is a company of enthusiasts, from dentists to engineers, trying to integrate human-centric Artificial Intelligence (AI) in dentistry to bring about significant positive changes in dental care. They have leveraged the latest innovations from MIT, Harvard School of Dental Science, and many others.

Muskan has three cutting-edge products:

AI-driven oral cancer screening: The AI engine leverages clinical and non-clinical data to conduct non-invasive and highly accurate oral cancer screenings. Early detection is crucial, and this product can aid in identifying potential risks, enabling timely intervention, and ensuring the best possible care for your patients.

AI-powered oral health wellness: This AI-powered app can be used by dentists to actively promote oral health among their patients. The platform encourages good oral hygiene practices while fostering a strong patient-dentist relationship, leading to improved patient engagement and satisfaction.

AI-assisted radiograph interpretation: This AI assistant can accurately analyse radiographs (bitewings, periapical, and OPGs), to help dentists make informed decisions promptly, leading to improved patient outcomes.

Muskan organized a free-of-charge oral health camp, "Swasth Muskan, Swasth Bharat," at the historical fort Qila Mubarak, Bathinda on 12-13 August 2023.

A new AI engine-based app called **Swasth Daant Pro** was used to check oral health and generate a digital report. The camp was given wide media coverage on social & print media to provide and create awareness about a digital AI-based oral healthcare diagnosis

and check-up service for patients.

A digital campaign was run a few days before the event to create awareness, which helped 200-300 patients to turn up. Ten dental interns from Aadesh Dental College participated, and the Gurdwara provided food and helped with other logistics.

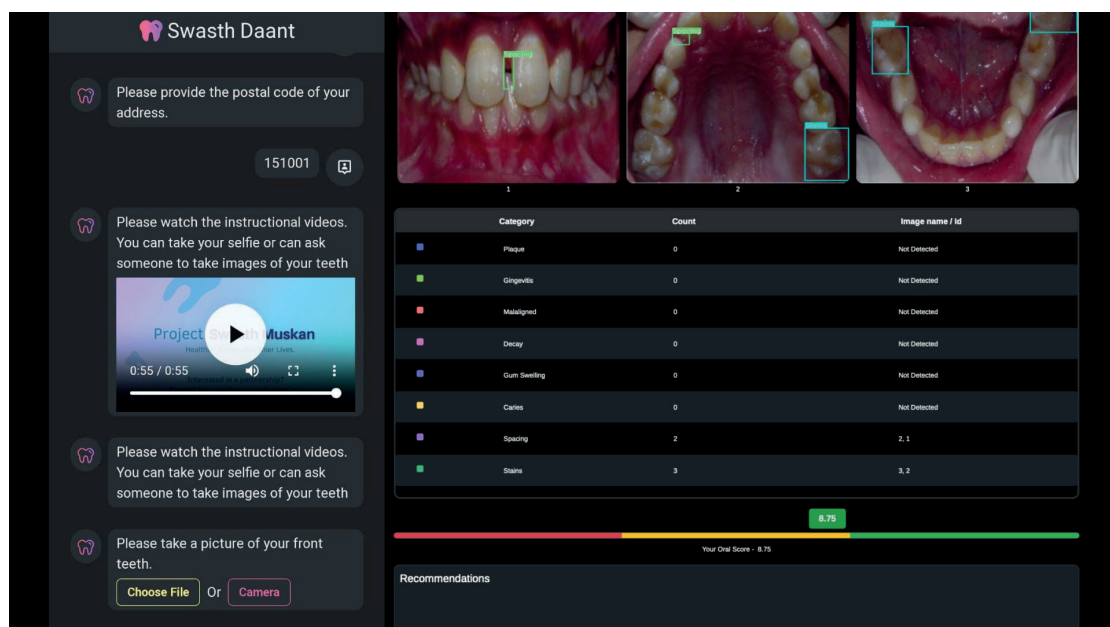
The dental college interns gave the initial briefing to the patients, followed by oral screening done on digital devices like mobiles and tabs. Reports generated were forwarded to the patient's mobile devices.

Learnings from this camp using digital devices and technology:

Patients need to be at ease about cyber security with respect to digital media, especially apps and data privacy. QR Code security needs to be conveyed to patients.

Patients showed enthusiasm about the app and wanted to try it on their own. Language barrier was an issue initially but the local student interns and other health care workers helped communicate.

Further awareness among patients towards oral hygiene needs to be created through social media campaigns. This needs a lot of collective effort from all stakeholders.



AI engine-based app called Swasth Daant Pro was used to check oral health and generate a digital report. (Photo: Muskan)

IMPRINT INTERNATIONAL HEADQUARTERS

PUBLISHER AND CHIEF EXECUTIVE OFFICER: Torsten OEMUS
CHIEF CONTENT OFFICER: Claudia DUSCHEK

Dental Tribune International GmbH
Holbeinstr. 29, 04229 Leipzig, Germany
Tel.: +49 341 4847 4302
Fax: +49 341 4847 4173
General requests: info@dental-tribune.com
Sales requests: mediasales@dental-tribune.com
www.dental-tribune.com

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Precision dentistry and artificial intelligence: A symbiotic revolution



The fusion of precision dentistry and artificial intelligence will create a new era of individualised and technologically sophisticated dental treatments. (Image: Canva)

By Dr Rewant Chauhan & Dr Saumya Tiwari

Since its inception, dentistry has progressed beyond traditional approaches to embrace innovative technologies that improve accuracy, efficiency, and patient results.¹ As the two groundbreaking technologies, precision dentistry and artificial intelligence (AI), merge, they create a new era of individualized and technologically sophisticated dental treatment. It is a combination of data and algorithms that can provide personalized care for oral health. As rightly said by Prof. Judea Pearl: "Data do not understand causes and effects; humans do."

What is precision dentistry?

Precision dentistry, often synonymous with personalized dentistry, represents a paradigm shift from the past one-size-fits-all approach.² It involves tailoring dental treatments to the individual needs of each patient, taking advantage of the unique genetic makeup of the patient, oral health history, and other factors. This approach enables dental professionals to provide highly targeted and effective interventions, minimising unnecessary procedures, and maximizing results.

Predictive diagnostics are essential for precision dentistry. Dentists can identify potential problems before they appear clinically using modern imaging and genetic analysis methods. This method not only minimises disease progression but also allows early intervention, resulting in less

intrusive and more conservative therapies.

The rise of AI in dentistry:

AI has become a transformative force in various industries, including dentistry. When applied in dentistry, AI has the potential to revolutionise the delivery and management of dental care.

AI's applications in dentistry are broad and varied. One of its primary functions is diagnostic. AI-powered imaging analysis based on deep vision can quickly and accurately identify oral health issues from X-rays, computed tomography (CT) scans, and other images.³ These systems can detect caries, periodontal diseases, and oral cancers at an early stage, allowing timely intervention.

Furthermore, AI helps in treatment planning by analyzing enormous amounts of patient data to recommend the most suitable treatment option for a particular individual. This not only reduces the burden on dental professionals but also enhances treatment accuracy and patient satisfaction.

The synergy between precision dentistry and artificial intelligence:

The amalgamation of precision dentistry and AI is where innovation occurs. AI's ability to analyze and interpret huge datasets complements precision dentistry's focus on individualised care. Together, they create a symbiotic relationship that amplifies the potential for improved patient outcomes.

1. Improved diagnostics

AI algorithms excel in pattern recognition, making them ideal for identifying subtle anomalies like dental caries in dental images and radiographs.⁴ that might be missed by the human eye. This aids in the early detection of dental issues, enabling timely intervention and prevention of disease progression.

2. Personalised treatment plans

Precision dentistry is based on the concept of tailoring treatment to each patient's unique characteristics. AI improves this by analysing large databases of patient information to recommend the most effective treatment plans based on factors such as genetics, medical history and lifestyle.

3. Predictive maintenance

Incorporating AI into dental practice management systems can lead to more efficient clinical operations. AI algorithms can predict equipment maintenance needs and ensure that dental tools are in optimal working condition. This predictive maintenance prevents unexpected breakdowns and minimises disruptions in patient care.

4. Patient engagement

AI-powered gadgets can provide control over oral health. Mobile apps, such as the Oral-B iO app⁵ and virtual assistants can provide individualised oral hygiene advice, track brushing and flossing habits, and remind patients of impending appointments.⁶ This level of participation develops a sense of ownership and alertness toward oral health.

5. Research and development

AI-driven dentistry research is accelerating the development of new materials, treatments, and technologies. AI accelerates the process of uncovering innovations that can transform the future of dental care by evaluating vast data sets and modeling treatment results.

Challenges ahead:

Several challenges need to be addressed as promising as the fusion of precision dentistry and AI.

1. Data privacy and security

The integration of AI requires access to enormous amounts of patient data. Ensuring the privacy and security of such data is paramount. Striking a balance between data use to improve patient care and safeguarding patient confidentiality is crucial.⁽⁷⁾

2. Compliance with law and regulations

Dental practice must navigate through a maze of regulations when implementing AI systems. These systems must comply with standards set by medical and dental regulatory bodies to ensure patient safety and ethical use following HIPAA laws.⁽⁸⁾

3. Education and training

Dental professionals must be trained to effectively use AI-powered tools and interpret their outputs. Incorporating AI into dental curricula and providing continuous training opportunities will be vital to harnessing its full potential.⁽⁹⁾

4. Cost implications

Integrating AI systems can involve significant upfront costs

from acquiring technology to training staff. Dental practices, especially smaller ones, must carefully evaluate the return on investment to justify these expenses.

The road ahead:

Precision dentistry, powered by AI, promises a paradigm shift in oral healthcare. As AI technologies advance, they become more accessible and sophisticated, boosting their incorporation into dentistry. The future offers AI-powered robotic helpers conducting difficult dental procedures with exceptional precision and efficiency, as well as treatment programs that are not only individualized but also optimized for long-term success.

Dentistry's path into precision and AI-driven care has been nothing short of amazing. It has the potential to reshape oral health outcomes, making dental visits more comfortable, treatment more effective, and smiling brighter than ever before. As these two disciplines continue to combine and communicate, patients and practitioners alike will realise the benefits of this extraordinary symbiotic relationship.

About

Dr Rewant Chauhan is a dental professional with a passion for using technology to improve the practice of dentistry, especially artificial intelligence and machine learning. Dr Rewant is well-versed in a variety of computer platforms, advanced software packages, digital dentistry workflows and CAD/CAM software, which he uses to improve the accuracy and efficiency of dental treatments. Dr Rewant holds a patent for an AI model in dentistry.

Dr Saumya is a dentist and professional content writer with a strong interest in business and marketing.

The list of references can be obtained from the publisher upon request.

ITI World Symposium 2024: More than 50 speakers, exclusive clinical case footage and real patient stories



A large study in children has demonstrated a highly complex microbial interaction in dental plaque. (Image: Evgeniy Kalinovskiy/Shutterstock)

By International Team for Implantology

SINGAPORE: The International Team for Implantology (ITI) World Symposium 2024 will be held in Singapore from 9 to 11 May next

year. The event will feature more than 50 world-renowned speakers, real patient stories and exclusive clinical procedures, and attendees can expect cutting-edge insights into soft tissue management, guided bone regeneration and bone augmentation, immediate

implants, peri-implantitis and digital workflows.

Speakers who will present at the world's largest scientific implant dentistry event include Prof. Daniel Buser, Prof. Giovanni Zucchelli, Dr Istvan Urban, Prof.

Ronald Jung, Prof. Hom-Lay Wang and Prof. Irena Sailer. Attendees can expect an engaging experience with lectures, clinical procedures and discussions.

With a unique, patient-centred programme structure, the ITI

World Symposium 2024 aims to combine practical clinical insights with the latest scientific findings. Over three days, attendees will have the opportunity to follow real patients' stories on stage, with world-class clinicians providing commentary on exclusively recorded clinical procedures.

Besides the main sessions, the ITI World Symposium will offer several parallel sessions on topics such as regeneration, periodontics and primary stability. In addition, attendees can choose from a wide range of limited attendance workshops, which will offer hands-on opportunities to acquire new skills.

All registrations include full lunch and coffee break catering, offering attendees a flavour of Singapore's diverse cuisines. An event app for Apple and Android phones will be available in order for attendees to keep up to date with the fast-paced programme and all other ITI offerings.

Registration for the ITI World Symposium is now open, and ITI members as well as early registrants will benefit from significant discounts. Over 4,000 dental professionals from around the world are expected to attend, making this event an excellent opportunity to network, share and learn.



The organisers expect more than 4,000 attendees. (Image: ITI)

Most children with special healthcare needs have caries and poor oral hygiene—study



hygiene, and the need for tailored interventions, we can strive for improved oral health outcomes and enhance their overall well-being," the authors concluded.

The study, titled "An assessment of the prevalence of dental caries, oral hygiene status, deft index, and oral hygiene habits among children with special healthcare needs", was published online on 25 July 2023 in the *Cureus Journal of Medical Science*.

Researchers studying the oral health of children with disabilities say that tailored interventions are needed in order to improve oral health outcomes and enhance overall well-being. (Image: Apichatn21/Shutterstock)

By Dental Tribune International

JODHPUR, India: A study of the oral health of children with special healthcare needs in the Jodhpur district in Rajasthan province has found a high incidence of caries and poor levels of oral hygiene. The prevalence of caries among the children was 65%, and the authors say that the findings emphasise the need for targeted preventive measures to improve the oral health of the at-risk group.

Researchers from India, Saudi Arabia and Canada evaluated the oral health and hygiene of 124 children aged 4–15 years enrolled in special schools in the Jodhpur district. All the children in the study required special healthcare support.

Oral examinations showed that 65% of the group had caries, varying in severity from mild (40%) to moderate (20%) and severe (5%). Poor oral hygiene was exhibited by 75% of the children. The group had a mean number of decayed, missing and filled

primary teeth (dmft) score of 2.8, and the incidence of caries was greater among the older pupils. Mean dmft scores were 2.5 in the 4–7 age group, 2.9 in the 8–11 age group and 3.2 in the 12–15 age group.

An assessment of the oral hygiene habits of the group showed that 60% of the children brushed their teeth once daily and 40% brushed their teeth twice daily. The vast majority (70%) reported not using fluoride, and 55% said that they did not regularly use dental floss.

The researchers said: "The findings emphasise the need for early intervention and preventive measures to address dental caries in this population." They explained that the group required comprehensive oral healthcare and educational programmes focusing on proper oral hygiene practices.

"By addressing the unique challenges faced by these children, such as limited access to care, difficulties in maintaining oral



Oral examinations of 124 children enrolled in special schools in Jodhpur District in India showed that 65% of the group had caries. (Image: Shalini S, Sharma S, Anand A, et al., CC BY 4.0, no changes.)



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Educating for Dental Excellence

Indian dental revamp to make graduate test mandatory

By Jeremy Booth,
Dental Tribune International

NEW DELHI, India: New regulations for the dental profession in India will mean that all BDS graduates will have to pass a dental National Exit Test (NExT-Dental) as a prerequisite for licensure to practise dentistry in India and for admission to postgraduate dental programmes. The National Dental Commission Bill 2023 also proposes to replace the Dental Council of India with the National Dental Commission (NDC) as the country's top regulatory body for dental education.

The bill was passed on 8 August in the Rajya Sabha, the upper house of India's parliament. It repeals the Dentists Act of 1948 and aims to make dental education in the country more affordable and to improve access to oral healthcare.

According to The Hindu, the yet to be established NDC will become the top regulator of dental education in India and will begin conducting the NExT-Dental examinations within three years of the bill becoming law. Dr G.C. Rajkumar, head of Vokkaligara Sangha Dental College and Hospital in Bengaluru, told the newspaper: "If you want to maintain quality of dental education, NExT is the best option. However, to avoid last-minute confusion, the government should provide complete information and enough time for students before implementing it."

Holders of dental degrees gained outside India will be required to pass the examination before practising dentistry in the country.

In July, Indian students and their families demanded the postponement of a similar licensure examination for medical students, arguing that the newly introduced test should not be mandatory for graduates who began their studies before the uniformity standard was imposed.

The National Dental Commission Bill 2023 and what it will change

The bill amounts to an overhaul of the way in which dental education is organised and governed in India. Some of the key changes include:

- the establishment of the NDC, which will control fees for 50% of the places in private dental schools, oversee educational quality standards, improve access to dental education and impose uniformity in academic examinations;



The National Dental Commission Bill 2023 cleared India's Rajya Sabha on 8 August and will bring major changes for dental education in the country. (Image: Maneesh Agnihotri/Shutterstock)

- the creation of a state dental council structure and a dental advisory council that will be made up of representatives from all the Indian states;
- the creation of three autonomous boards to oversee dental education (Undergraduate and Postgraduate Dental Education Board, Dental Assessment and Rating Board, and Ethics and Dental Registration Board);
- the creation of an online register of licensed dentists;
- the facilitation of increased collaboration between dental and other Indian healthcare bodies; and
- the facilitation of increased participation between the dental industry and dental education institutes in order to advance dental research and innovation.

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Diameter (Ø)	Length (mm)
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Diameter (Ø)	Length (mm)
3.2/3.5	8.5/10.0/11.5/13.0/15.0
4.0/4.5/5.0/5.5/6.0	8.5/10.0/11.5/13.0/15.0

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