SPRING 2025
Coimbra, PORTUGAL

EDSA *Magazine*

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European Dental
Students' Association

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EDSA Magazine

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FROM THE EDITOR TEAM

Dear EDSA Family,

I can't describe my feelings with words for this issue you are reading. For the past two years, I was also a co-editor and this year as the Vice President of Public Relations of EDSA I'm so grateful to be here. It has always been an honor to represent European Dental Students Association'. First, I want to thank all of the authors for their excellent work and interest to be a part of it. And of course to my Co-Leads, I want to thank the three of them for their hard work and passion to edit this wonderful issue. Hope you enjoy it and gain new knowledge about dentistry. I wish you all a wonderful meeting. See you in Coimbra!

Buse Saraç,TR
EDSA Vice President of Public Relations

Dear EDSA Readers,

It is a great honor to present to you the Spring 2025 edition of the EDSA Magazine. I would like to sincerely thank our esteemed writers and dear fellow editors for their dedication and hard work in bringing this issue to life. I hope you will enjoy reading the informative and engaging articles about our profession on every page of this magazine. This issue holds a special place in my heart, as it marks my first step into the EDSA family. Lastly, I would like to extend my heartfelt gratitude to our chief editor, Buse, for her invaluable support and mentorship. I am eagerly looking forward to meeting you all in Portugal.
As the famous philosopher once said: SIU.

Best Regards,
Enes Istanbul.TR
Co-Editor

Dear Readers,

The creation of this magazine has been a rewarding collaborative effort, drawing on the expertise of our distinguished contributors and the dedication of our editorial team. Each article has been carefully selected to reflect the latest advancements, challenges, and innovations in dentistry, ensuring that our readers stay informed and inspired in an ever-evolving field. This particular edition serves as a platform for collaboration and shared learning. Dive in, explore new perspectives, and stay engaged with the latest advancements in dentistry.

Kind Regards,
Darja Gostilo,LV
Co-Editor

Dear Readers,

Here is the Edsa 2025 spring edition in all of its glory. You can find interesting articles, up-to-date information on dentistry, and a lot more interesting educational content. We as the editorial team worked hard to ensure piece in the magazine is both fun and educational. The reason why this 2025 spring edition is so special to me is that this is my first edition as a co-editor. Also i am very grateful to have such experienced and humble mentors. Can't wait to meet you guys in person at the next EDSA meeting.

Kind Regards,
Furkan Sarp Tavukçuoğlu,TR
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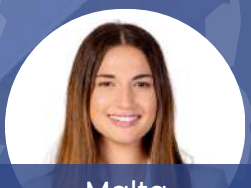

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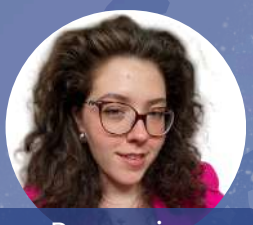

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PRESIDENT OF EDSA

My Dearest EDSA Family,

First, I would like to welcome everyone currently reading these lines in Coimbra, where tradition meets Saudade. If you are reading this online, I hope we will see each other at our next meeting in Dublin!

EDSA has been a big part of my life for many years, and now, as President, it is a great honor to contribute to this association that has given me so much.
As we reach halfway through our term, I want to express my deepest gratitude to my hardworking, dedicated, and fun teammates who make everything possible. I am incredibly excited about the projects we will bring to life together in the coming months. It is always a pleasure to work alongside such an inspiring team.

I am also immensely proud of our delegates and members, the true foundation of EDSA. Your active participation in our projects is what keeps this association growing and evolving. Having been part of EDSA since 2020, it brings me so much joy to see our community expanding each year. Your enthusiasm and involvement motivate us to push forward and achieve even greater things.
A special thank you goes to the local organizing committee, whose dedication and endless energy have made this meeting possible. Organizing an event of this scale is never easy, but through their hard work, passion, and commitment, we are all gathered here today. I have no doubt—this will be an unforgettable meeting!

Let's continue this journey together, making EDSA a place where every member can thrive, shine, and make a difference. I look forward to working with each and every one of you, and I can't wait for all the incredible things we will accomplish in the months ahead!

With all my heart,

Ezgi Yeşiltan,TR
EDSA PRESIDENT

ONLAY & OVERLAY RESTORATIONS OR SINGLE CROWNS : HOW TO DECIDE?

Christos Kordatzis
European University of Cyprus, Cyprus
3rd Grade

Patients and dental practitioners seem to favor a minimally invasive approach to dentistry. This is particularly relevant within the field of restorative dentistry. Dental professionals often choose a conservative partial coverage restoration, such as an onlay or overlay, and a traditional full-coverage crown. This article aims to describe the use of each type of restoration and provide clinical guidelines to help dentists and dental students in their decision-making process.

According to the Glossary of Prosthodontic Terms, a full coverage restoration, like a full crown, is a restoration that covers the entire clinical crown of the tooth. A partial coverage restoration restores the missing part of the tooth while covering only a portion of the clinical crown of the tooth [1]Partial coverage restorations can be further classified into inlay, onlay, or overlay depending on if they cover no cusps, one or more cusps, and all cusps respectively. Preparation of a tooth for full coverage is more invasive, requiring the removal of more sound enamel and dentin, compared to the preparation needed for a partial coverage restoration, which is more conservative, allowing for the preservation of more natural tissue.
A variety of factors are involved in determining the appropriate type of restoration. No single factor is sufficient to specify the optimal treatment choice. The most clinically relevant factors are the extent of tooth loss, the vitality of the tooth, the occlusal load it receives, the patient's parafunctional habits, and others, along with the clinician's judgment and skill. In the following paragraphs, the effect of these factors on the choice of restoration will be discussed.

REMAINING TISSUE

The amount of tooth loss is one of the most crucial factors in determining the extent of the restoration. After the removal of caries and unsupported enamel, the amount of remaining tooth structure needs to be assessed. The volume of interaxial dentin (around and above the pulp chamber) has been proven to be the most important factor in posterior tooth fracture resistance. The depth of the central cavity determines the amount of interaxial dentin in conjunction with the thickness of the remaining walls. The remaining walls become more prone to stresses and fracture as more interaxial dentin is lost.[2]The restoration needs to cover the cusps When the cavity depth exceeds a certain threshold and/ or whenthe walls do not have a certain minimum thickness. It is essential that these measurements are examined in unison and not individually. For example, when a cavity is more profound than 4mm, even if the walls have adequate thickness, the cusps must be covered by the restoration.[3]Likewise, when some of the remaining walls are less than 2mm thick, some or all of the tooth's cusps need to be covered by the restoration. If the cavity is shallower than 4mm and the walls exceed the minimum thickness of 2 mm, a restoration without cuspal coverage like an inlay or more commonly, a direct composite, can be clinically acceptable.
Furthermore, determination of the axial extension of the restoration is necessary. Although there are no specific guidelines for this, a good indicator is the vertical height of the remaining walls.

When a wall is compromised vertically, less enamel is present, leading to a less predictable bond for partial adhesive restoration. The clinician needs to assess how many of the remaining walls are higher than half of the height of the clinical crown. A practical rule is "the rule of thirds." A full coverage crown is necessary when less than 1/3 of the walls have adequate height. For cases when 1/3 – 2/3 of the walls have sufficient height, an onlay/overlay with axial extension may be used. When more than 2/3 of the walls fit these criteria, restoration is unnecessary to cover the axial walls. [4]

OCCLUSAL LOAD

Although tooth structure loss is a key factor, the occlusal load should also be taken into consideration. The occlusal scheme or malocclusion problems may severely impact the forces that the teeth are subjected to.[5] Some of the most common clinical case scenarios are the lack of anterior guidance or premature occlusal contacts, which may cause the tooth to receive increased occlusal load. When a tooth receives larger occlusal loads than normal, a restoration with more coverage might be indicated.

INDIVIDUAL FACTORS

Nowadays, patients present with a variety of parafunctional behaviors and oral habits that affect our restorative treatment plan. For example, a restoration placed in a bruxist's mouth will be subjected to excessive forces and/or forces in an unfavorable direction.6 Also, a patient with erosion may be directed towards full coverage restoration, even if tooth loss is not very extensive.

ENDODONTIC STATUS

Clinicians often face the challenge of restoring an endodontically treated tooth. Traditionally, endodontically treated teeth are considered weaker than vital teeth and are restored with full crowns to provide aesthetics and protect the tooth from fractures. Although long-term clinical data on this topic is limited, a systematic review from 2024 highlighted that both full-coverage crowns and partial indirect restorations could achieve similar clinical outcomes, provided that the remaining tooth structure can support a partial coverage restoration based on the guidelines mentioned above. This article attempts to aid in the process of clinical decision-making by providing a decision tree. The guidelines presented are not definite. The decision tree is meant to guide the clinician's thought process. It is based mainly on structural loss of teeth and covers common clinical scenarios. The remaining wall thickness, the central cavity depth, the number of walls with adequate height as well as the presence of subgingival caries are taken into account. In cases where other factors are present, it is up to the clinician to use their own judgment and choose a restoration that offers more coverage than the one suggested.
In conclusion, choosing between an onlay / overlay or a full crown is not simple. A variety of clinical factors affect the decision-making process. It is critical that a dentist can co-evaluate every factor and use critical thinking to make effective choices and meet the functional and aesthetic demands of the patient.

For References

THE EVOLUTION OF DIGITAL DENTISTRY : CAD/CAM TECHNOLOGY IN MODERN PRACTICE

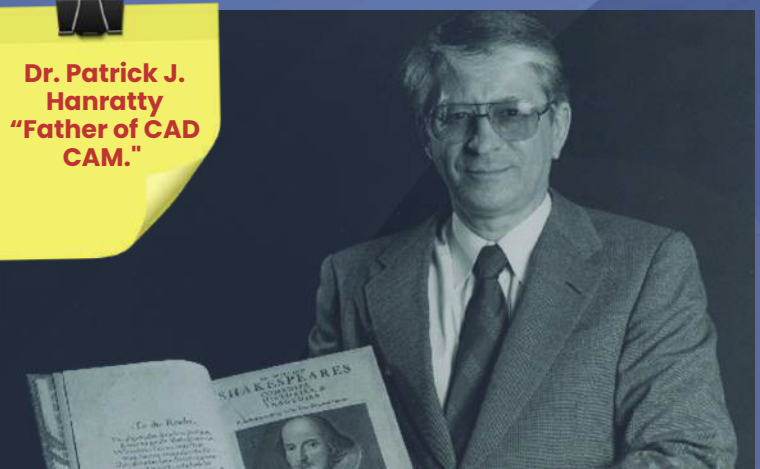
Dimitrios Raptopoulos
European University Cyprus, Cyprus
4th Grade

The history of dentistry is as old as human civilization in ancient times. Hippocrates and Aristotle have written extensively on tooth problems and their cures. In the so-called eastern world, there is old Chinese literature on silver pastes (primitive amalgam). As civilization advanced, discoveries became part of dentistry. Samuel Stockton's commercial manufacturing of porcelain teeth, Crawcours' introduction of amalgam, and Robert Arthur's invention of the cohesive gold foil process all contributed to a revolution in dentistry. As a result, revolutionization has become the norm in dentistry.

FROM PAST TO PRESENT

Cad Cam itself has a long history. Evidence from ancient Egypt, Greece, and Rome suggests that cad cam was also practiced there. Leonardo di Vinci's works demonstrate the application of current graphic conventions. However, Euclid of Alexandria, the great mathematician, can be considered the creator of current CAD software because it is built on Euclid's axioms and postulates, which established the groundwork for Euclidian geometry. The modern idea of CAD/CAM software was first invented by Iven Sutherland, who created the CAD program (sketchpad) in the early 1960s. However, Dr. Patrick J. Hanratty had previously constructed the first numerically controlled CAM, Pronto. So, Dr. Patrick is known as the "Father of CAD CAM."

Without a doubt, dentistry is rapidly upgrading and moving toward digital technology. Previously, taking dental impressions, creating dental models, and assembling dental laboratory prostheses took a long time. However, introducing the intraoral scanner, digital radiography, and computer-aided design (CAD/CAM) made a massive step towards improved precision and accuracy, the two significant advantages of digital dentistry. The efficacy and speed with which dental restorations may be created is another crucial advantage of digital dentistry. CAD/CAM technology allows dental restorations to be planned and manufactured in a single session, eliminating the need for additional visits and interim restorations. Lastly, they also eliminate the need for traditional impression materials, which some patients may find unpleasant, and their environmental “footprint” has started to be questionable.



Dr. Patrick J. Hanratty “Father of CAD CAM."

In our era, computer-aided design (CAD)/computer-aided manufacturing (CAM) has gained popularity in dentistry over the last two decades. This procedure suits inlays, onlays, veneers, crowns, fixed partial dentures, implant abutments, and even full-mouth reconstruction. It is utilized in dentistry clinics and laboratories[2]. Orthodontics also uses CAD/CAM technology.

Three challenges drove the evolution of CAD/CAM technology. The initial problem was ensuring the fix was strong enough, particularly for posterior teeth. The second problem is creating restorations that appear natural. The final task entailed making tooth repair easier, faster, and more accurate. Patients may have restorations on the same day due to CAD/CAM technology. Dentists and laboratories can use the new technology in a variety of ways. Dentists can either do their own internal CAD and milling or create a digital image and send it to a lab for restorative material production. When laboratories get a digital impression, they can use the information to generate a stone model, which can be used in traditional production or rescanned for milling [4]. Alternatively, the lab can finish all of the design work online using the photographs received from the patient.

There are numerous methods for collecting CAD data :

INTRAORAL SCANNERS

Several intraoral scanners are available on the market, including CEREC® by Sirona Dental System GMBH (DE), Lava™ C.O.S. by 3M ESPE (US), iTero by C A D E N T LT D (I L), and E 4 D by D 4 DTECHNOLOGIES, LLC (US). These technologies take a 3-D digital model of the prepared tooth/teeth and the nearby structures directly into the patient'smouth. Later on, these photos are transferred to CAD for prosthesis design. However, despite the benefits of digital impression techniques, there are several factors to consider when obtaining digital impressions. Moisture management must be ensured by the dentist when taking intraoral photographs. Soft tissue retractions and hemostasis should also be assessed.

CONTACT & NON-CONTACT DIGITIZATION

This process involves capturing a traditional impression and transferring that data into CAD via probe digitization (contact) or laser light (non-contact). In contact digitization or scanning, a contact probe reads the model's anatomy by following the contour of the physical structure. Non-contact scanning uses optics and charged-coupled devices in addition to laser light. This technique does not require any personal touch with the model, but accuracy in documenting the features is required. It is assumed that this technology gathers data more quickly than contact scanning.

CT SCAN OR MRI

Computed Tomography (CT) and Magnetic Resonance Imaging (MRI) are emerging data-collecting techniques for CAD/CAM. Individual images can be captured using this method and then transferred to CAD. CT scans need radiation for data gathering, but MRIs do not. MRI data is appropriate for soft tissue modeling, whereas CT data can be used for hard tissue (bone) modeling.

CAD CAM is being used in almost every field of dentistry these days. Following are some of the uses in different specialties of dentistry.

IN PROSTHODONTICS

Whether it is removable or fixed prosthodontics, practically almost every dentist chooses to fabricate them using CAD CAM.

REMOVABLE COMPLETE DENTURES

In 1994, a Japanese researchers named Maeda et al. presented a study proposing that detachable complete dentures might be created using CAD Cam technology.15 Since then, various studies have been proposed on manufacturing removable complete dentures using CAD CAM, but no clinical findings or trials have been published. Only two of the manufacturers claim to build RCD using CAD CAM.

REMOVABLE PARTIAL DENTURES

Partial denture frameworks may be created utilizing CAD CAM and additive prototyping techniques.

CROWNS/BRIDGES

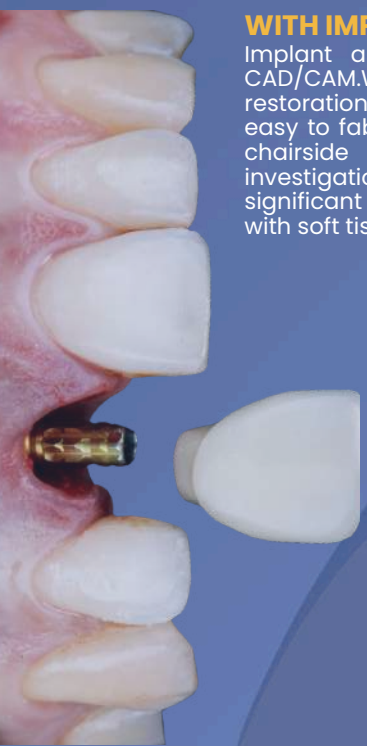
Zirconia is a popular material for creating crowns and bridges using CAD/CAM, but metal and porcelain crowns and bridges may also be made using CAD/CAM.

INLAY, ONLAY & VENEERS

These restorations are likewise made using CAD CAM.20 According to a study, inlays and onlays manufactured using CAD-CAM had a greater survival rate (R D Trushkowsky 1998)

IN ORTHODONTICS

Clear aligners have become quite popular in orthodontics due to their aesthetic appeal. Patients no longer have to reveal metallic brackets and cables. Once again, credit goes to CAD/CAM. The lingual bracket system is also in high demand due to its invisibility. The wires and bracket system for the lingual bracket system are manufactured using CAD/CAM. Orthodontic micro-implants can also be placed utilizing CAD/CAM technology.



WITH IMPLANTS

Implant abutments and surgical guides for implant placement are now manufactured using CAD/CAM.When we compare the benefits of CAD CAM restorations to traditional ones, CAD-CAM restorations will undoubtedly come out on top. They deliver high-quality restorations that are rapid and easy to fabricate. Scanning intraoral tissues takes less time than conventional impressions, and if the chairside device is available, patients can have their restorations in one session. Numerous investigations have shown the quality of these restorations. Despite these advantages, cost remains a significant problem. Taking digital impressions is also a difficult task for dentists since they must deal with soft tissue retraction, moisture management, and other issues.

As with all aspects of life, dentistry constantly evolves, shaped by the relentless march of progress. The advent of CAD/CAM systems marks a transformative revolution in this ever-changing field, redefining the boundaries of possibility. These technologies have shortened treatment times and elevated the patient experience, bridging the gap between precision and artistry. By minimizing sources of error and enhancing communication between dentists and technicians, CAD/CAM systems have become the cornerstone of modern dental care. CAD/CAM technology has forever altered the landscape of dentistry, ensuring that this noble profession continues to meet the needs of today while anticipating the challenges of tomorrow. Through its applications, dentistry has entered a bold new chapter, where technology and care intertwine to shape brighter smiles and a better future.

For References

CERAMIC IMPLANTS : THE MODERN MARVEL OF DENTISTRY

Mariam Jincharadze
Tbilisi State Medical University, Georgia
4th Grade

In the ever-evolving field of dentistry, ceramic implants are capturing attention as a transformative innovation. With their exceptional biocompatibility, durability, and aesthetic appeal, these implants present an exciting alternative to traditional titanium. For dental students, understanding ceramic implants is vital to staying ahead in the dynamic world of modern dentistry.

WHY CERAMIC IMPLANTS?

Picture a dental solution that looks and feels like a natural tooth while addressing concerns related to metal materials. Ceramic implants, primarily made of zirconia, offer precisely that. Introduced in the late 20th century, they've evolved to become robust, clinically reliable, and increasingly popular in restorative dentistry. Unlike titanium, their tooth-like appearance enhances aesthetics, and their metal-free composition avoids issues like allergies or sensitivities.

Zirconia, a high-performance ceramic, is the material of choice for these implants. Its superior mechanical strength and bioinert properties are ideal for long-term durability and tissue compatibility applications. But what sets ceramic implants apart isn't just their material properties—their ability to address clinical and patient-centered needs.

WHAT MAKES CERAMIC IMPLANTS UNIQUE?

BIOCOMPATIBILITY WITHOUT COMPROMISE

The biological integration of ceramic implants is a standout feature. A 2022 study highlights zirconia's ability to promote excellent soft-tissue attachment and reduce inflammation compared to titanium【1】. This hypoallergenic property is particularly beneficial for patients prone to metal sensitivities or allergic reactions, offering them a safer and healthier alternative.

AESTHETİC SUPERIORITY

Ceramic implants are unmatched in aesthetics. In thin gingiva or gum recession cases, titanium implants may leave a visible grayish hue, compromising the natural look. Zirconia implants, however, blend seamlessly with soft tissues, mimicking the color of natural teeth. Ceramic implants are the go-to option for patients prioritizing a confident, natural-looking smile.

STRENGHT & DURABILITY

Advancements in zirconia technology have significantly improved the mechanical properties of ceramic implants. Concerns over fragility have been addressed through enhanced manufacturing techniques. Studies now show that ceramic implants boast a survival rate exceeding 95% over five years, matching or even surpassing titanium in some cases【2】【3】.

MINIMIZING PERI-IMPLANTITIS RISKS

Peri-implantitis—an inflammatory condition affecting the tissue surrounding an implant—is common in implantology. Research suggests that ceramic implants exhibit a lower risk of bacterial colonization and inflammation due to their smooth surface and biocompatible nature【4】. This makes them a promising choice for long-term oral health.

CHALLENGES & CONSIDERATIONS

Despite their many benefits, ceramic implants are not without challenges.

Surgical Precision: Zirconia is less forgiving than titanium in terms of flexibility. Placement requires meticulous precision, as the material's brittleness can lead to fractures if mishandled during surgery.

Cost: Ceramic implants tend to be more expensive than titanium alternatives. This can limit their accessibility, although their growing popularity may lead to more affordable options in the future.

Limited Long-Term Data: While ceramic implants have demonstrated success over the past two decades, they lack the extensive clinical history that titanium implants offer.hese factors highlight the need for ongoing education and research in ceramic implantology.

APPLICATIONS & CLINICAL SUCCESS

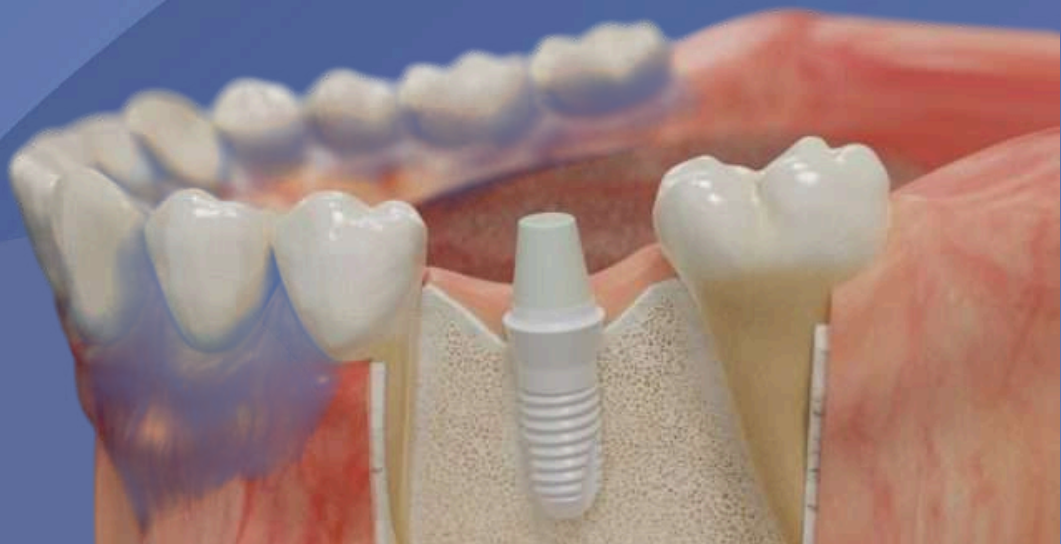
One of the most exciting aspects of ceramic implants is their versatility in clinical applications. From single-tooth replacements to complex full-arch restorations, zirconia implants have shown remarkable adaptability. A 2021 study published in Clinical Oral Implants Research found comparable success rates between ceramic and titanium implants, with patients reporting high satisfaction due to improved aesthetics and reduced post-operative complications [5].Understanding the nuances of ceramic implantology is a valuable addition to dental students' skill sets. As patient demands evolve, practitioners who can offer metal-free solutions will be better equipped to meet diverse needs.

THE FUTURE OF CERAMIC IMPLANTS

Advancements in ceramic implant technology promise to further enhance their performance and accessibility. Innovations such as surface modifications for improved osseointegration and hybrid materials combining zirconia and other ceramics are currently under development. These improvements aim to address current limitations while expanding the clinical possibilities of ceramic implants. Additionally, one-piece implant designs are gaining traction for their simplified workflow and reduced risk of complications. With continuous research and innovation, ceramic implants are poised to play a more significant role in restorative dentistry.

Ceramic implants are more than a modern innovation—they represent a significant shift in restorative dentistry toward patient-focused care. They cater to the growing demand for health-conscious, natural-looking solutions by combining unparalleled biocompatibility, superior aesthetics, and durability. For dental students, understanding ceramic implants isn't just an academic exercise—it's an opportunity to embrace the future of dentistry. As research progresses and technology evolves, ceramic implants are expected to redefine implantology. Their ability to address clinical challenges while prioritizing patient satisfaction makes them an invaluable tool for the next generation of dental professionals. By integrating this knowledge into your practice, you'll be equipped to deliver transformative care and contribute to the ongoing evolution of modern dentistry.

For References



HOW TO DIAGNOSE TEMPOROMANDIBULAR DISFUNCTION?

Elisabetta Lazzari
Università Milano Bicocca, Italy
6th Grade

WHAT IS TMD?

The expression "Temporomandibular Disorder" (TMD) encompasses a range of musculoskeletal and neuromuscular conditions that impact the temporomandibular joint (TMJ), the masticatory muscles, and their associated structures (especially dento-periodontal complex) [1].

It is possible to categorize two main types of pathologies based on where the pain rises:
Myogenous pathology, when the origin of the pain lies in muscular structures.
Arthrogenous pathology, if it originates from articular structures.
Even if this is a didactic classification, it holds clinical relevance since both muscles and joints work improperly in dysfunctional pathology (i.e., system malfunctioning).

WHAT ARE THE MOST COMMON SYMPTOMS?

An otorhinolaryngologist, Dr. James Costen, described TMD for the first time in the 1930s.
He was the first one to describe a series of symptoms recorded on his patient, including ear or preauricular pain, reduced hearing acuity, a sensation of fullness or blockage in the ear, tinnitus, buzzing, and dizziness, accompanied by joint pain and clicking sounds [2].
He hypothesized that the absence of posterior teeth or inadequate dental occlusion might underlie the compression of ear structures and that a stomatognathic alteration caused otological issues.To date, TMD is characterized by a broader and more varied list of symptoms, such as jaw pain or discomfort, headaches, ear symptoms, clicking, popping, or grating sounds, difficulty or limited movement, facial pain, bite irregularities, teeth grinding or clenching (bruxism), neck and shoulder pain, dizziness, and sleep problems [3],[4].

HOW TO DIAGNOSE TMD?

An accurate diagnosis can be critical since the symptoms described in the previous paragraph often overlap with other medical conditions.Diagnosing temporomandibular disorders (TMD) typically involves a combination of patient history, physical examination, and, in some cases, imaging studies or diagnostic injections. Here's an overview of the diagnostic process:

CLINICAL HISTORY

The healthcare provider will take a detailed medical and dental history, asking about symptoms (i.e., jaw pain, headaches, ear pain...) and behaviors (i.e., teeth grinding or jaw clenching) and any history of trauma to the jaw or face.

The medical history is classified into family, personal, social, and pathological (remote and recent) aspects.

Family History: This section identifies any pathologies or predisposing factors that may have affected the patient's relatives, such as allergies, diabetes, or hypertension.

Personal and Social History: This aims to identify factors that may influence the onset or maintenance of a condition or evaluate the patient's response to treatment. It includes evaluating professional factors, lifestyle, habits (such as smoking and alcohol consumption), and personality traits (such as somatization tendencies).

Remote Pathological History: This includes past diseases or traumas and their consequences on the patient's psychophysical condition. This part involves assessing past infectious diseases (from childhood or adulthood), previous hospitalizations, trauma and post-traumatic sequelae, surgeries, allergies, venereal diseases, and evaluating the immune status.

Recent Pathological History: This is the section most relevant to the condition for which the patient seeks treatment. It involves evaluating the reported symptoms, the onset and mode of the current disorder, whether the symptoms are continuous or intermittent, any relationship to physiological activities (eating, swallowing, sleep), and the presence of fever or associated lymphadenopathy.

This structure is essential for a comprehensive approach to diagnosis. It helps to identify the root causes and best treatment paths based on the patient's complete medical history

PHYSICAL EXAMINATION

EXTRAORAL INSPECTION
This allows for assessing the craniofacial tissues, identifying skeletal asymmetries, edema, redness, glandular swellings, or muscle hypertrophy. Regarding facial symmetry, it is essential to distinguish between structural and functional states. Structural asymmetries are bone-based, resulting from para-physiological or pathological cranial growth, while functional asymmetries are related to muscle activity, with hypertrophy of one or more muscles. In this context, the mandibular movement should be analyzed during opening-closure and eccentric movements, evaluating symmetry, ease of execution, and coordination. The presence of incongruent muscle contractions or muscle synkinesis (such as eye movements or facial grimaces during eccentric mandibular movements) indicates difficulties performing the motor gesture.

INTRAORAL INSPECTION
The health status of soft and hard tissues must be assessed, focusing on the integrity of dental elements or supporting structures, considering orthognathodontic, periodontal, or prosthetic evaluations. At this stage, the presence of wear facets or gingival recessions on specific teeth, which may be associated with dysfunction signs observed during extraoral inspection, should be noted.

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AUSCULTATION

PALPATION
Palpation of the TMJ, jaw, neck, and facial muscles to detect tenderness or pain. It can be done through the skin, anterior to the tragus, or via the ear canal. The former detects functional alterations in the cranio-mandibular relationship on a frontal (or lateral-lateral) plane, while the ear canal evaluation assesses the unilateral or bilateral retrusion of the mandibular condyle. The latter can provoke pain at the joint level, not only due to intra-articular inflammation but also iatrogenically from excessive digital pressure during the test. Therefore, it should be performed gently to avoid false positive results. Both methods allow for the assessment of joint sounds, both quantitatively and qualitatively, helping diagnose cranio-mandibular coordination issues.

MUSCULAR PALPATION
This allows the evaluation of the contraction state of various muscle pairs, as well as tenderness or induration of the muscle-fascial structures, revealing conditions of hypertonia, hypotonia, and possible asymmetries in muscle function.

PERCUSSION
Performed on dental elements to assess mobility and pain onset.

AUSCULTATION
Auscultation with a stethoscope: rarely used to detect the quantity and quality of TMJ sounds.

OBSERVATION
Observation of jaw movements to identify deviations or limitations.

LISTENING
Listening for clicks, pops, or grinding sounds when the jaw is moved.

IMAGING STUDIES (IF NEEDED)
X-rays or panoramic radiographs to evaluate the bones of the jaw. MRI to assess soft tissue, such as the disc within the joint, especially if internal derangement is suspected. CT scans for detailed views of bone structures, particularly in cases of trauma or degenerative changes. Ultrasound can be used as a non-invasive alternative for detecting internal joint issues. Radiological imaging is essential for quantifying the degree of alteration in the articular structures.

OPT (PANORAMIC RADIOGRAPHY)
This routine exam is used to identify only significant alterations in the osseous structures of the TMJ, such as flattening, osteophytes, or arthritic phenomena, as well as primary pathologies like tumors, cysts, fractures, osteomyelitis, hyperplasia, hypoplasia, or aplasia. It also helps detect alterations in the lateral and central parts of the condyle. Stratigraphy or Tomography: This technique provides serial images of parallel planes of the anatomical structure and allows for a 3D evaluation. However, soft tissues are not visible here.

OBLIQUE LATERAL TRANSCRANIAL PROJECTION (SCHULLER VIEW)
This view allows for studying the condylar profile and the temporal part of the joint, though soft tissues are not visible.
Arthrography: Involves the use of a contrast medium injected into the joint cavity. Alterations in the disc or degenerative changes can be identified based on the diffusion of the contrast medium. This is a painful and invasive technique.

CT (COMPUTED TOMOGRAPHY)
used for assessing fractures, arthritis, osteoarthritis, ankylosis, and tumors. It is ideal for evaluating bone alterations.

MRI (MAGNETIC RESONANCE IMAGING)
This technique visualizes the body's internal parts without ionizing radiation, using magnetic fields to reproduce bone and soft tissue structures. MRI analyzes the behavior of water molecules under magnetic fields. The proton in hydrogen behaves like a magnet, generating a detectable magnetic field. The MRI machine emits radio waves at a specific frequency, causing a 90° rotation of the proton's magnetic field, generating an electrical signal detected by the machine. Each tissue has a different concentration of water and thus different magnetic behaviors, producing images in varying shades of gray: hyperintense (rich in water, like edema or hematomas) or hypointense (poor in water, like bone or teeth).

Sometimes, a local anesthetic may be injected into specific jaw areas to isolate the pain source and confirm a diagnosis. Since TMD symptoms can mimic other conditions, such as ear infections, sinus issues, or neuralgia, these possibilities are typically ruled out during the diagnostic process.

Diagnosing temporomandibular disorders (TMD) demands a rigorous and holistic approach that incorporates an extensive clinical history, thorough physical examination, and when warranted, advanced imaging techniques. The intricate nature of symptoms, overlapping with various medical conditions, highlights the critical need for precise differential diagnosis.A systematic and exhaustive evaluation empowers healthcare providers to uncover the underlying causes, customize treatment strategies effectively, and enhance patient outcomes.

For References

BOTOX : A NEW TREATMENT FOR BRUXISM?

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3rd Grade

Bruxism, the unconscious grinding and clenching of teeth, is a condition that affects millions of people around the world. While stress, anxiety, and misaligned teeth have long been recognized as contributing factors, the impact of bruxism can range from minor tooth wear to severe dental damage, including headaches, jaw pain, and disrupted sleep. Given these effects, treatments have traditionally included mouthguards, medications, and behavioral therapy. However, one treatment has recently been gaining popularity for its ability to target the underlying muscles: Botox (botulinum toxin). While Botox is known for its use in aesthetics, it has also been employed as a therapeutic treatment for bruxism. But is it really effective, and should patients consider it over traditional options?

WHAT IS BRUXISM?

Bruxism refers to a non-functional oral movement disorder that manifests in two main forms: sleep bruxism and awake bruxism. Regardless of gender, it's estimated that between 6-91% of the adult population has suffered from bruxism, with varying severity. The condition can result in serious dental complications, including tooth pain, attrition, tooth mobility, failures in dental restorations, and even headaches. The intensity of the force exerted during bruxism can be surprisingly high, with some studies showing that clenching pressure can be up to 66% of maximal clenching force. These consequences highlight the importance of managing bruxism effectively.

Although the exact cause of bruxism remains unclear, several theories exist. Disruptions in the central nervous system, particularly within the dopaminergic system, and arousals during sleep have been identified as key factors. Psychological stress and personality traits also play significant roles in its development. Despite this, no single treatment has proven to stop bruxing activity completely. Current treatments are aimed at reducing bruxism's harmful effects with therapies such as occlusal splints, medications, and behavioral therapy. However, many of these options have mixed results, leaving patients searching for more effective solutions.

THE RISE OF BOTOX FOR BRUXISM

Botox, also known as botulinum toxin, is a neurotoxin produced by the bacterium Clostridium botulinum. Initially discovered in 1820, botulism, the poisoning caused by the bacteria, was traced to improperly prepared blood sausages. Over time, Botox was found to help treat various neuromuscular conditions. Its ability to block the release of acetylcholine, a neurotransmitter essential for muscle movement, led to its approval in the late 1980s for treating medical conditions like strabismus, blepharospasm, and cervical dystonia. Although Botox has primarily been used for aesthetic purposes, such as smoothing wrinkles, it's also proven effective for various medical issues, including migraines, excessive sweating, and specific muscle spasms. Botox is injected into the masseter and temporalis muscles for bruxism, which are responsible for chewing and grinding movements. By temporarily paralyzing these muscles, Botox reduces the intensity of clenching and grinding, thereby relieving the condition's damaging effects.

HOW BOTOX WORKS IN THE BODY?

Botox's mechanism of action is relatively simple. When injected into muscles, it blocks the release of acetylcholine, preventing the muscle from contracting. This action results in temporary paralysis or weakness of the targeted muscle. Botox is commonly used in neuromuscular disorders because it can inhibit muscle overactivity.

In the case of bruxism, Botox temporarily "freezes" the jaw muscles, helping reduce clenching. This alleviates pain, prevents further tooth wear, and may even relieve headaches associated with grinding.

HOW BOTOX IS PRODUCED?

The bacterium Clostridium botulinum produces botulinum toxin and has seven known types. The most commonly used form for medical and cosmetic purposes is botulinum toxin type A (BTX-A). This form works by preventing the release of acetylcholine at the neuromuscular junction, which inhibits skeletal muscle contraction. Recent studies have shown that this effect can be leveraged to manage bruxism effectively.

SIDE EFFECTS OF BOTOX

Like any treatment, Botox does come with potential side effects. While most side effects are local and temporary, they can still cause discomfort. Common adverse effects of Botox injections in the facial region include dry eyes, mouth droop or ptosis(drooping eyelids), facial muscle weakness, asymmetry of facial expressions, difficulty chewing or swallowing, headache, xerostomia(dry mouth), infection or bruising at the injection site.

In some cases, Botox can diffuse into adjacent muscles, leading to unintended side effects. For example, weakening the masseter muscle (which is targeted for bruxism) can cause compensatory muscle activity in other muscles, potentially leading to additional problems, such as jaw dislocation or difficulty opening the mouth.
However, these side effects are generally short-lived, and patients typically see a return to normal function once the Botox effect wears off.

HOW BOTOX DIFFUSES IN THE BODY?

One of the challenges with Botox treatment is its potential to diffuse into nearby muscles. While Botox is injected locally, studies have shown that it can travel into surrounding tissue, potentially causing unintended weakness in muscles adjacent to the treated area. This diffusion is more common with high doses of Botox, so care must be taken to use an appropriate amount.

Although Botox does not pass through the blood-brain barrier, it can reach the central nervous system through retrograde axonal transport. This means that in rare cases, Botox might influence central nervous system activity, leading to unknown side effects.

EFFECTIVENESS OF BOTOX IN TREATING BRUXISM

Several clinical studies have examined the effectiveness of Botox for bruxism with mixed results. In randomized controlled trials (RCTs), Botox injections have shown significant reductions in bruxism frequency and pain compared to placebo treatments. One such trial by Lee et al. found that patients who received Botox injections showed a greater reduction in bruxism episodes compared to those who received a saline injection. Another study by Guarda-Nardini et al. found that Botox treatment improved both objective (range of mandibular movements) and subjective (pain at rest and during chewing) measures.

However, some concerns remain regarding the reliability of these findings. For instance, some of the studies had small sample sizes and relied on subjective measures, such as questionnaires, to diagnose bruxism. Additionally, clenching and grinding can be difficult to distinguish from other oral activities like swallowing, which could affect the accuracy of results.

Despite these limitations, Botox has been shown to reduce masticatory force and alleviate pain from bruxism. Its effect is temporary, with normal function returning once the toxin wears off, typically after three to six months.

RISKS & CONSIDERATIONS

While Botox is generally considered safe, its use for bruxism should be approached with caution. Injections into all masticatory muscles could lead to an overdose, causing increased risks of side effects like jaw weakness and difficulties in chewing. Furthermore, Botox should not be used as a first-line treatment for mild bruxism. Its primary use seems most appropriate for patients with chronic or debilitating bruxism, particularly those suffering from jaw pain, TMJ disorders, or conditions caused by brain injury.

A key consideration is the long-term effects of Botox on the muscles and bones. Some animal studies have shown that repeated Botox injections could lead to muscle atrophy and changes in bone density, particularly in the molar region and TMJs. While more research is needed, these findings suggest that Botox may not be suitable for younger patients whose bones are still developing.

THE FUTURE OF BOTOX FOR BRUXISM

Botox offers a promising solution for those suffering from severe bruxism, especially when traditional treatments like occlusal splints and behavioral therapy fail. However, while early studies suggest it's an effective option, more high-level research is needed to establish definitive evidence for its use in bruxism. Until then, patients should consult their healthcare providers to determine whether Botox is right for their specific condition.

In conclusion, Botox provides a potential breakthrough in the treatment of bruxism, offering significant relief for patients suffering from chronic, painful bruxing. While it's not a one-size-fits-all solution, it's certainly a treatment worth considering, especially for those with severe cases. As more research is conducted, Botox may become a staple in the management of this common yet often misunderstood condition.

In conclusion, Botox provides a potential breakthrough in the treatment of bruxism, offering significant relief for patients suffering from chronic, painful bruxing. While it's not a one size fits all solution, it's certainly a treatment worth considering, especially for those with severe cases. As more research is conducted, Botox may become a staple in the management of this common yet often misunderstood condition.

For References

HOW TO DECIDE TREATMENT IN PEDIATRIC PATIENTS : WHEN TO EXTRACT TEETH?

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Pediatric dentistry is an extremely challenging field that requires a balance between clinical expertise, decision-making, and the capability to connect with children in order to cooperate with them and address their personalized oral health needs. In terms of treatment planning for pediatric patients, several factors seem to affect the final decision, including the clinician's experience, child behavior and cooperation, parental involvement, and, of course, the medical history of each patient. Caregivers of pediatric dentistry are responsible for utilizing preventive strategies, scheduling regular check-ups, educating on oral hygiene, and giving dietary advice to ensure children's health and normal transition to permanent dentition.

THE IMPORTANCE OF TEETH IN PEDIATRIC DENTISTRY

The 20 primary teeth that erupt in a kid's mouth until the age of two and a half years play a foundational role in a child's oral health and overall development. The often referred to as baby or deciduous teeth are essential for nutritional intake and speech development (1). This initial set of teeth also serves to accommodate the eruption and the proper alignment of the permanent teeth as the jaw bones grow, and keeping them unhealthy might affect the successor teeth (1). A Premature loss can lead to malocclusion and potential orthodontic anomalies, such as crowding or impaction of the erupting permanent teeth, due to lack of space, dental arch length discrepancy, development of midline variances, etc. As a result, despite the temporary presence of primary teeth in the mouth, pediatric dentistry should aim to preserve them for as long as possible until they exfoliate naturally.

ETIOLOGY OF TOOTH LOSS IN KIDS/INDICATIONS FOR EXTRACTION

As mentioned, both treatment planning in pediatric dentistry and the raised awareness of parents and caregivers in general about dental care, which improves oral hygiene, aim to preserve a child's teeth so that the proportion of tooth mortality is decreased in developed countries(2,3). For example, in many cases where we can avoid extractions, alternative interference such as indirect pulp treatment, direct pulp capping, pulpotomy, pulpectomy, or restorative techniques, including the placement of stainless steel crowns, are vital options to maintain the tooth's health and function (9). However, there are many other reasons that make the extraction of a kid's teeth the best choice at the time. Reviewing the literature, it is clear that severe non-restorative dental caries and the resulting pulpal pathology (periapical abscess, irreversible pulpitis, etc.) that cannot be healthy restored with endodontic treatment methods are the most common reasons leading to primary teeth extractions (2,3,4). Consequently, pathological conditions like large dental cysts affecting adjacent teeth and tissues often dictate tooth removal (10). Another reason for extractions, after proper diagnosis and follow-up examinations, is infra occlusion due to teeth ankylosis, which can disrupt normal occlusal development (11).

Then, orthodontic reasons (6), including the prevention or correction of malocclusion, the creation of spaces for permanent teeth, and the facilitation of their proper eruption, are considered as a crucial factor that requires the cooperation between the Orthodontist and the Pedodontist(2). Furthermore, crowding due to impacted or supernumerary permanent teeth is associated with root resorption of the predecessor and sometimes the adjacent deciduous teeth and necessarily forces the clinician to extract the affected teeth. Of course, mobility and over-retention at the time lead to tooth loss since it's time for the permanent ones to acquire their place and role in a child's mouth(2). Moreover, reasons like periodontal disease (periodontal abscess) causing pain and loss of function(4), prophylactic extractions on the grounds of the general medical history of the kid, as well as economic reasons when the parents cannot afford the treatment followed by a restoration in order to save the tooth, resulting in considering the extraction the preferable treatment choice(2). Of course, traumatic dental injury, a very frequent pathology in school and preschool-age children should be confronted with several protocols depending on different injury types and sometimes commandeers tooth extraction (2,3). Last but certainly not least, molar-incisor hypomineralization (MIH), a dental condition resulting in structural compromise of teeth, sensitivity, and bigger susceptibility to decay; in extreme cases where affected teeth are extensively damaged, and restorations fail to provide lasting results, extractions may become a necessary intervention (7).

AGE & TOOTH TYPE IN PEDIATRIC EXTRACTIONS : PATTERNS & CONSIDERATIONS

Even though a kid's gender isn't associated with extractions, age seems to have a significant role. The majority of extractions occur during the mixed dentition stage (6-12 years) and happen to posterior teeth, both primary and permanent (3). A combination of dental fear and the consequences of crowding at this stage in oral hygiene might interpret these findings (3).

When it comes to primary tooth loss, before the appropriate age where ⅔ or ¾ of the successor tooth has been formed, orthodontic misalignment might happen. The primary tooth, in addition to many other roles, serves for space maintenance in the arch that enables the correct eruption of the permanent one. More specifically, it has been proven that each tooth prematurely extracted leads to an 18% increase in the need for orthodontic therapy (8). As a result, either the number of primary teeth extracted should decrease by using other restorative options, or space control is mandatory. Building on this understanding, it is the clinician's responsibility to adjust the passive placement of a space maintenance device, aiming to preserve the dental arch integrity (6).

It is evident from the literature that the extraction of not only deciduous teeth but also permanent teeth can occur prematurely in certain circumstances. Especially first permanent molars (FPM) are susceptible to dental caries due to their early emergence at the age of six and the challenges associated with maintaining effective oral hygiene. The complications that might occur because of dental caries, such as periodontal and endodontic issues, and several other reasons, such as the cost of potential restorations, sometimes result in extraction being considered the best treatment choice (4). Most of these extractions occur due to poor prognosis and the inability to restore those teeth with long-term survival results and clinical health. Due to FPMs' fundamental role in the mouth, it is important to schedule the extraction at a favorable time, when the calcification of the bifurcation of the second permanent molars starts, which is between the ages of 8 and 10 years (4). This way, permanent second and third molars acquire a better positioning in the arch (4). Otherwise, solutions like space maintenance with simultaneous orthodontic treatment, prosthetic rehabilitation with removable partial dentures, or even autotransplantation of third molars in some rare cases can manage this early loss of teeth (12).

In conclusion, treatment decisions in pediatric dentistry are pivotal for the unhampered craniofacial development and the absolute health of children's oral cavities. The awareness of caregivers about oral hygiene, accompanied by current knowledge and techniques of the Pedodonists, has minimized the number of tooth extractions in children compared to the previous decades. While tooth preservation until normal exfoliation age is the ultimate indication, sometimes extraction seems a one-way street to treatment planning owing to pathology, trauma, and all the above-mentioned causes. By extension, the timing of extraction is decisive, as it should align with the child's developmental stage and future occlusion needs. Pediatric dentists are specialized clinicians who ensure long-term oral health for children by emphasizing their special needs according to age and always giving priority to their overall well-being.

For References

GERODONTOLOGY : AGE IS MORE THAN A NUMBER

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4th Grade

As students, we are focused on the latest trends, techniques, and technologies in dentistry. However, one of the most critical areas that really needs to be brought to the fore, with the aging of populations worldwide, is Gerodontology or Geriodontics-the study of oral health in older adults. Whereas we may associate aging with wisdom and experience, it is also accompanied by its unique set of challenges regarding the maintenance of oral health. Knowing these challenges can help us prepare for careers that truly make a difference in our patients' lives.

According to United Nations population projections, the world is aging rapidly. Between 1974 and 2024, the worldwide share of people aged 65 almost doubled – increasing from 5.5 percent to 10.3 percent. Between 2024 and 2074, this number will double again, increasing to 20.7 percent. During the same time, the number of persons aged 80 and above is projected to more than triple. That means we will most probably have more older patients whose needs are different from the younger populations. (1)

Age-related physiologic changes, comorbidities, and polypharmacy make the older person more susceptible to oral disease, regardless of advancements in dentition due to advances in dental care, topical and water fluoridation, and better oral hygiene. This population is vulnerable to issues including disability, cognitive impairment, and access. Given this, it is no surprise that many older adults lack dental insurance, do not visit a dentist annually, and have unmet dental needs.

AGE-RELATED CHANGES IN ORAL HEALTH

Age changes resultsin the oral and dental tissues are seen as a combination of physiological age changes with superimposed pathological, iatrogenic effects and diseases associated with poor oral health. Globally, poor oral health among older people has traditionally been manifest in high levels of tooth loss, dental caries, and periodontal disease, as well as xerostomia and oral precancer/cancer.

BONE HEALTH : Aging is characterized by the progressive loss of bone mass, usually resulting in the development of osteoporosis. The latter factor has a strong influence on the structure of the jaw but mostly on the atrophy of the alveolar bone after tooth loss. In cases of reduction of the height of the alveolar bone, facial height may also be reduced; an upward and forward posture of the mandible may also occur in edentulous cases.

TMJ CHANGES : Structural remodeling of the TMJ can result in disc displacement, often anteriorly. Adaptive changes in the retrodiscal tissues may mimic the function of the articular disc, which, when displaced, can lead to perforation of the disc attachment and subsequent joint deterioration.

NEUROLOGICAL & MUSCULAR CHANGES : There is a universal loss of nerve cells as people age, which further affects motor function and neuromuscular efficiency. In addition, total muscle mass decreases mainly because of a reduction in the number of muscle fibers. This makes oral care more challenging because the patient may have problems with dexterity and muscle coordination.

ORAL MUCOSA CHANGES : While the clinical appearance of the oral mucosa of older adults may appear similar to those of younger patients, the addition of mucosal trauma and disease to a decrease in salivary gland function can alter the clinical characteristics of oral tissue. Thinning of the stratified squamous epithelium that accompanies aging renders the tissue more sensitive to trauma and infection, which are further compromised by declining immune response. In addition, oral cancer is primarily a disease of aging and associated cell dysregulation. It is estimated that more than 90% of all oral cancers in developed countries occur in individuals older than 50 years, with a mean onset during the sixth decade of life. Oral cancer is associated with high morbidity and a particularly poor survival rate of less than 50% after 5 years.

SALIVARY GLAND FUNCTION : Xerostomia and salivary flow reduction are very common in older adults, with the most frequent causes being medications and systemic diseases. About 80% of the most commonly prescribed medications have the potential to induce xerostomia, and this places older adults at risk because of the likelihood of polypharmacy.

PERIODONTIUM CHANGES : Periodontal diseases are more prevalent and severe with increasing age. While gingival recession has been considered a normal aging change, it is a manifestation of periodontitis, which is primarily caused by plaque. Systemic factors and a decline in manual dexterity are some of the confounding factors that contribute to deterioration in geriatric periodontal health.
DENTAL CHANGES : With age, there is physiological wear and tear of teeth as well as pathological changes, including attrition.
ENAMEL : Becomes brittle with age, chipping, less permeable, darkening, and discoloration of teeth.
DENTINO-PULPAL COMPLEX : With aging, there is a continuous deposition of secondary dentine. This can reduce the size of the pulp chamber and alter the configuration of the dentinal canal. Pulp becomes less vascularized and fibrotic and, hence response to injury is reduced.
CEMENTUM FORMATION : Cementum is continuously formed throughout life and thickens in response to tooth wear and trauma, which can reduce the sensitivity of the teeth and improve resistance to painful stimuli.

STRATEGIES FOR COMPREHENSIVE CARE

Treating older adults requires subtlety with regard to the physical, emotional, and systemic health of a patient. These are some strategies that we can make use of for the best caregiving:

COMMUNICATION IS THE KEY

The aged may be apprehensive towards dental treatment or hesitant to ask questions. Always explain procedures clearly in a manner that they will understand. Building trust involves active listening to their concerns and adapting this approach accordingly.

PREVENTIVE CARE MATTERS

Encourage older patients to be preventive-oriented even when they have suffered major tooth loss. Regular cleaning, fluoride applications, and fastidious oral hygiene can preserve the remaining teeth and periodontium.

INDIVIDUALIZED TREATMENT PLANNING

Every older patient is unique. An ex-athlete may want to address bruxism due to grinding through the years, an arthritic patient may need adaptive devices to help with brushing. Consider health, lifestyle, and preferences when creating individualized treatment plans.

DENTURES & PROSTHETICS

Well-fitting dentures or dental implants can make a great difference for patients with missing teeth. Dentures should be checked regularly for fit and comfort, while implant patients may need guidance on how to maintain them to avoid peri-implantitis.

EMPHASIZE NUTRITION

Educate the patient about the sufficiency of adequate nutrition with minerals and vitamins to maintain oral health. Recommend softer foods, but those highly nutritious, to patients who cannot chew well due to loss of teeth or ill-fitting prosthetics.

COLLABORATION WITH OTHER PROFESSIONALS

Older patients have the most complex medical history. It therefore requires coordination with physicians, geriatric specialists, and caregivers for comprehensive care. For example, a medical physician can help in managing active diseases related to oral health, such as diabetes.

ACCESS TECHNOLOGY

As more older adults experience mobility issues, telehealth and mobile dentistry are emerging as game-changers. Providing virtual consultations or making house calls can help close the gap in their care.

EMPOWERING OLDER ADULTS

Education is just as important as treatment. Many older adults grew up in an era when dental health was not considered as important. Teaching them about the connection between oral and systemic health empowers them to take charge of their well-being.

For References

THE ROLE OF THE STUDENTS

As dental students, we are uniquely positioned to contribute fresh perspectives and compassion to the specialty of Gerodontology. We can have an impact on the future of care for this growing population by participating in geriatric dentistry now in our training. Volunteer at nursing homes, participate in outreach programs or take electives related to aging and oral health. The time we invest in developing these skills and learning the special needs of older adults now will be time well spent to become compassionate and capable professionals in the future.

In Gerodontology, age is more than a number; it is decades of experiences, stories, and resilience—and sometimes a unique set of oral health challenges. Knowledge and empathy are the tools that help our older patients maintain healthy, confident smiles at any age. The first thing we can do as students is to study Geriatric Dentistry as a separate subject during our studies, whether made possible by our dental schools or through personal study research, preparing ourselves for our future patients. Let us, as students, seize this opportunity and make a dent that will last. The future of dentistry is in our hands, and it is a future where no patient, young or old, is left behind.

WHAT'S NEW IN ORTHODONTICS? : THE LATEST NEWS FROM INVISALIGN

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LET'S RECAP WHAT WE KNOW ABOUT INVISALIGN

Invisalign is a name that has become almost a synonym for clear braces that changed the way people think about orthodontics. It is a modern orthodontic treatment that uses a series of custom-made, clear plastic aligners to straighten teeth. Unlike traditional braces with brackets and wires, Invisalign aligners are nearly invisible and can be removed when eating, brushing, or flossing. This makes them a popular choice for people looking for a discreet and convenient way to improve their smile. These aligners gently apply pressure to move teeth into the correct positions over time (1). Invisalign has gained a reputation for its innovative approach, and now, it's taking things even further with its latest advancements. If you're a student or just curious about the latest in dental tech, here's a breakdown of how Invisalign is pushing the boundaries to make teeth-straightening easier, more efficient, and more comfortable for everyone.

HOW DOES TECHNOLOGY HELP US?

THE ROLE OF DIGITAL SCANNING

Yet not so futuristic nowadays, but still not exclusively used, digital intraoral scanners significantly made dental treatment easier for dentists and dental technicians. This eliminates the need for traditional molds, which can be uncomfortable and time-consuming. For Invisalign treatment, it is an essential tool to make accurate 3D images of a patient's teeth to ensure that aligners fit perfectly, with the additional advantage of enabling us to show the patient its current state. It is very important for students to acquire (understand and master??) the skill of taking impressions with digital intraoral scanners since traditional analog impressions are slowly left in the history of dentistry... Tools like the iTero scanner provide highly accurate 3D images of a patient's teeth, ensuring a perfect fit for aligners. In combination with the Invisalign Outcome Simulator, it gives the most efficient workflow (2).

AI-DRIVEN TREATMEN PLANNING

Artificial Intelligence (AI) is everywhere, and now it's helping orthodontists too. Their latest AI tools assist orthodontists by giving us great advantage and precision in planning and ensuring that every patient's needs are met (3,4). It's like having a crystal ball for the perfect smile!

By using the new version of Invisalign Virtual Care AI 3.0, orthodontists can monitor progress remotely, and by taking pictures weekly, we can give patients insight into each step of the process as much as responsibility for the progress of their own case (5). For students in the field, this is a great example of how technology is making healthcare more personalized and efficient.

LEARNING TOOLS FOR ORTHODONTICS

Invisalign isn't just upgrading its products, it's also making sure orthodontists are up to speed with new training tools. Continuous education is important in orthodontics, a field going through a very dynamic (set of) innovations in the last 10 years. Invisalign provides virtual reality (VS) simulations and online workshops that help professionals learn more about these types of treatment that are not so thoroughly learned about in our primary university education(3,5). For students, this shows how important it is to keep learning, even after you graduate.

GOING GREEN WITH ALIGNERS

Sustainability is a big deal, and Invisalign is stepping up by prioritizing eco-friendly solutions. The company introduced recyclable materials for their aligners and using eco-friendly packaging (3,8). If you care about the planet, this is a win-win situation—great teeth and a smaller carbon footprint. By aligning with these values, orthodontists can build trust and loyalty with their patients.

COOL UPDATES

SMARTER ALIGNERS WITH PRECISION BITE RAMPS

Correcting deep bites can be a clinical challenge, especially with aligners. To improve deep bite correction, Invisalign specifically introduced Precision Bite Ramps, which are prominences on the lingual surface of upper aligners (customized for each patient), strategically placed to improve jaw positioning and enhance the bite alignment process, therefore overcoming one of the main limitations in aligner type orthodontic treatments (6). SmartForce® features are tailored to help level the curve of Spee by enhancing control over the upward movement of front teeth (anterior intrusion) and the downward movement of premolars (premolar extrusion). Additionally, a new pressure area on the lingual surface of aligners has been designed to redirect the intrusive force through the long axis of the anterior teeth (7). This makes deep bite treatments more predictable and effective. Plus, patients say these ramps make it easier to get used to wearing aligners, which means they're more likely to stick with the treatment plan.

NEW PRODUCT ALERT

CURAPROX ALIGNER GEL : A BREAKTHROUGH IN ORAL HYGIENE

It has been widely known that orthodontic patients come across many challenges in maintaining optimal oral hygiene. Much less than patients with traditional fixed orthodontic appliances, Invisalign patients can also experience demineralization of teeth, commonly known as White Spot Lesions (WSL)(9). White spot lesions are areas of demineralized enamel that usually develop because of prolonged plaque accumulation (10). By wearing aligners for most of the day, it can disturb the normal remineralization process which relies on the free flow of saliva to neutralize acids and repair enamel (11). Recognizing this, Invisalign has introduced Curaprox Aligner Gel as a companion product. This specialized gel not only enhances the cleaning of aligners but also helps prevent plaque buildup and protects and remineralizes teeth with natural minerals. This is the ultimate helper to protect teeth underneath plastic aligners, retainers, or mouth guards (12). For students, this is a reminder of how even small innovations can improve patient care.

INNOVATIONS WE LOOK FORWARD TO

THE INVISALIGN® PALATAL EXPANDER SYSTEM

One of Invisalign's most exciting advancements is the development of the Invisalign® Palatal Expander System. Palatal expanders have been used in orthodontic treatment for decades to correct a narrow upper jaw, which can lead to crossbites, crowding, and other dental conditions (13). Traditional palatal expanders can be stressful and difficult, especially scary for younger children. Designed to address narrow arches (palates) in younger children, this system gives us a non-invasive alternative to traditional expanders using gentle, consistent pressure, gradually expanding the upper arch and creating more room for teeth alignment (14).

This innovation is particularly exciting for younger patients, as it eliminates the struggle of turning screws and the discomfort often associated with traditional expander appliances, instead, the patient just simply swaps it out for a new set. For orthodontists, the Palatal Expander System represents a step forward in providing effective, patient-friendly solutions for complex cases while making the process smoother and less intimidating (14).

While it is still in the approval process in Europe, this innovation is definitely something to look forward to.
(this innovation is definitely something we should all look forward to meet.)

WHY IT MATTERS?

The world of orthodontics is changing fast, and Invisalign is leading the charge. Invisalign's focus on combining technology with patient care shows how important it is to innovate in healthcare. A break in tradition brought to combine orthodontic treatment, esthetics and quicker results, Invisalign transformed orthodontic practice and patient care. For students, understanding these innovations is crucial to staying competitive and prepared for the future. (staying ahead in the field?).

So, keep an eye on this exciting field—there's more to come!

For References

REPRESENTING EDSA ON THE EUROPEAN STAGE : KEY INSIGHTS FROM CED & ADEE MEETINGS

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EMPOWERING EUROPEAN DENTAL STUDENTS : INSIGHTS FROM KEY EUROPEAN EVENTS

Blurb: Student representation in dentistry is more important than ever. How can students influence policies shaping their future?

WHY STUDENTS REPRESENTATION MATTERS?

Student representation is essential in shaping the future of dentistry, ensuring that the next generation of professionals has a voice in key policy and educational decisions. Engaging with influential organizations allows students to contribute to discussions that impact their careers and the profession as a whole. As the Vice President of External Affairs at EDSA, I have had the opportunity during my term (2024-2025) to attend three major events: the CED General Meeting (November 22, 2024) in Brussels, the ADEE General Meeting (September 7-8, 2024) in Leuven, and the ADEE GED Stakeholders Meeting (February 3-4, 2025) in Dublin. These meetings provided key insights into the future of European dentistry, focusing on policy, education, and collaboration.

CED GENERAL MEETING : ADVOCATING FOR FUTURE DENTISTS

The Council of European Dentists (CED) plays a critical role in ensuring high standards of oral healthcare and advocating for dentists across Europe. This year's General Meeting gave EDSA the chance to introduce its new board and discuss student priorities with key decision-makers.

KEY INSIGHTS

Corporate Dentistry Debate: The growing presence of corporate dentistry in Europe is a major discussion point. CED invited EDSA to contribute a student perspective on this topic.
Education & Professional Qualifications: The need for modernized dental education, including updates to the Professional Qualifications Directive (PQD), was emphasized.
Financial Strategies: With limited budgets, CED explored ways to optimize costs, such as using AI-driven translation solutions and reducing operational expenses.
Our involvement in these discussions emphasized the importance of student advocacy in shaping policy decisions that affect future professionals.

ADEE GENERAL MEETING : INNOVATING DENTAL EDUCATION

The ADEE General Meeting in Leuven brought together educators, policymakers, and student representatives to discuss how to enhance dental education across Europe.

KEY DISCUSSIONS

WHO Action Plan: Implementing the WHO Global Oral Health Action Plan in universities remains a challenge, requiring greater collaboration between policymakers and institutions.
AI in Dentistry: The role of artificial intelligence in dental education sparked debate. While AI has the potential to improve diagnostics and streamline patient management, educators are still figuring out how to balance traditional learning with digital advancements.
Student Well-being & Sustainability: Universities are increasingly focusing on student mental health, implementing support systems, and promoting sustainability by reducing waste in dental education.
The meeting was an excellent platform to voice student concerns and contribute to shaping the future of dental training.

ADEE GED STAKEHOLDERS MEETING: STANDARDIZING DENTAL EDUCATION

Held in Dublin, the Graduating European Dentist (GED) Stakeholders Meeting focused on refining the framework for standardizing dental education across Europe.

KEY TAKEAWAYS

Clinical Training: Students need more hands-on experience to be better prepared for practice.
Workforce Challenges: Europe faces a shortage of dental professionals. The discussion centered on policies that support dental graduates in transitioning to the workforce.
Health Strategy: Oral health needs to be integrated into broader healthcare policies to improve patient care.
One of the most valuable aspects of the meeting was learning from the Irish experience in incorporating the GED framework into dental education. Their model serves as a useful example for other European institutions.

THE FUTURE OF STUDENT REPRESENTATION IN DENTISTRY

These events underscored the importance of student engagement in shaping the future of dentistry. The decisions made today will impact our careers for years to come, which is why we must ensure that student voices are heard at the highest levels.
EDSA's participation in these discussions reinforces its role as a vital platform for student advocacy. By working together, we can influence education reforms, professional policies, and ensure that dental students across Europe are well-equipped for the future.

FINAL THOUGHTS: WHY YOUR VOICE MATTERS

Being active in professional discussions isn't just about networking—it's about shaping the future of the profession. Whether it's advocating for better education, supporting fair workforce policies, or ensuring students' well-being, every contribution matters.
If you're passionate about making a difference, consider getting involved with EDSA or other student organizations. Together, we can help create a future that reflects our needs and aspirations as the next generation of dental professionals.

Want to get involved? Reach out to EDSA to learn more about how you can contribute to student advocacy in dentistry.

HOW TO DIAGNOSE DENTAL CARIES?

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3rd Grade

Explore how cutting-edge technology can reshape dental examinations and diagnostics in the coming years!

CARIOLOGY : A BRIEFING

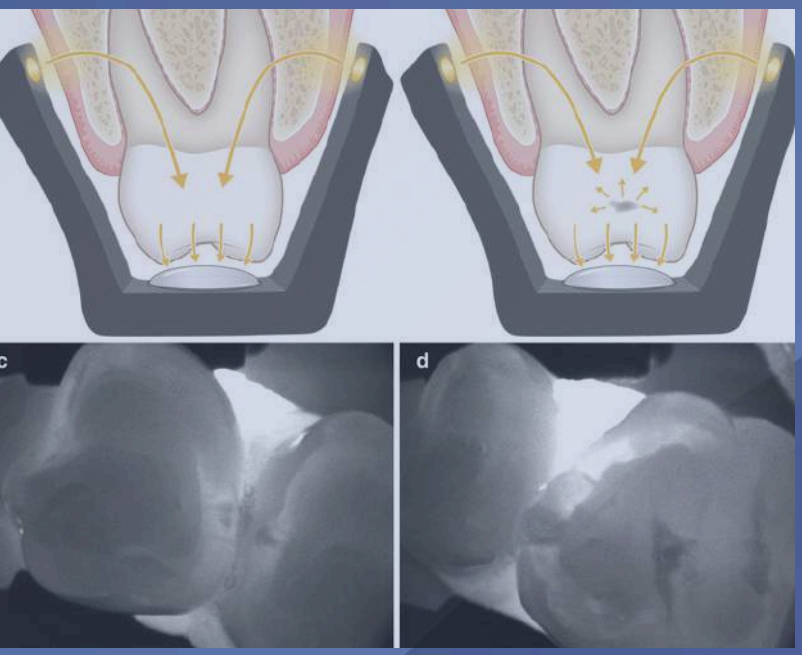
Dental caries and its management are one of the most important factors in oral health management. Therefore, a dental professional must always strive to achieve the most accurate diagnoses possible. While traditional methods of caries detection, visual-tactile examination, and radiography, new diagnostic tools and methods are constantly in development and may soon surpass traditional methods in diagnostic efficacy. These new diagnostic methods mainly focus on early caries diagnosis; producing reliable information concerning carious lesions in the early stages of development makes it possible to stop lesions with improved oral hygiene, i.e., mechanical biofilm disruption. Countries with low caries prevalence are in need of earlier diagnoses so that development in oral health on a nationwide scale can be attained. Earlier diagnoses mean less invasive treatment methods and a higher yield of results for resources in the dental field.

THE NEED FOR ADVANCED DIAGNOSTICS : STRENGHTS & WEAKNESSES IN TRADITIONAL METHODS

Early detection of caries is crucial to preventing caries progression and ensuring minimally invasive treatment. Traditional diagnostic methods, though effective and reliable, may fall short regarding the detection of initial lesions or lesions in challenging areas. This is one of the main reasons for developing advanced diagnostic devices such as Digital imaging fiber optic transillumination (DIFOTI), Quantitative light-induced fluorescence (QLF), and Optical coherence tomography (OCT). These three methods share the idea of using focused visible light to create images for diagnostic purposes. The goal is to achieve a non-invasive yet highly sensitive diagnostic tool to surpass the limitations of conventional methods.

DIFOTI: A CLOSER LOOK

DIFOTI, as the name suggests, utilizes digital imaging and fiber-optic transillumination. The principle is to expose the tooth to high-intensity light and capture in an image the porous demineralized tissue as a darker area, compared to the surrounding whiter and more opaque, healthy tissue. The intensity is adequate for penetration of the dental structure, so assessment of areas difficult to reach without advanced or invasive methods is possible.



ADVANTAGES & DISADVANTAGES

Early detection: DIFOTI can expose noncavitated lesions at an early stage by imaging contrast between healthy tissue and demineralized tissue.

Non-invasive: Its reliance on visible light rather than X-rays ensures patient safety. With fewer contraindications compared to X-rays, widespread clinical use may become the norm.

Real-time feedback: The device provides immediate image results so patients can receive immediate consultation about their oral health. With fewer appointments needed, the clinic can treat more patients in the same amount of time.

Recent developments include switching from white light to near-infrared light oscillating from 700nm to 1500nm. This wavelength is shown to disperse less than regular white light and can offer a good contrast between carious lesions and healthy tissue. DIFOTI cannot differentiate between carious lesions and developmental defects, so interpretation must be careful and balanced with other reliable methods to prevent overdiagnosis, leading to overtreatment.

QLF: INTRODUCTION TO MECHANISMS

Quantitative light-induced fluorescence (QLF) is based on the fluorescent properties of dental tissue and the changes that occur via demineralization. Fluorescence is an occurrence of material emitting visible light after absorbing radiation of low electromagnetic wavelengths. This can be practiced as a diagnostic method by focusing ultraviolet light and examining the fluorescent light from dental tissue. A carious lesion will emit a longer wavelength, and it will be noted by the light's change in color. Various wavelengths other than ultraviolet light (100-400nm) can be used with this method: blue-violet light (400nm-450nm) and near-infrared light (700nm-1500nm) have been tested previously, to name a few. Blue light at a maximum wavelength of 404nm has been noted as a reliable choice.
A specific software reconstructs the natural fluorescent wavelength of a lesion site to accurately measure demineralization levels. This can be done by interpolating the fluorescence of healthy tissue surrounding the lesion. With this data, one can calculate the loss of fluorescence in the lesion, indicating demineralization.

ADVANTAGES & DISADVANTAGES

Quantitative data: QLF can measure the exact level ofmineral loss, offering an opportunity to monitor remineralization levels, for instance.

Minimally invasive: QLF is non-destructive and preserves tissue integrity during examinations. This makes continued and frequent use possible without major risks.

Patient motivation: Visual evidence in addition to a diagnosis and a consultation from a professional may increase patient motivation with oral health.

QLF systems are handheld devices with an intuitive design. Their usage seems simple to learn, but the interpretation must be careful to avoid overdiagnosis. The light can cause fluorescence to occur in other points of interest as well as carious lesions in dental tissue, such as interproximal tartar. QLF can serve as a second opinion or an assisting examination, but diagnosing primarily based on fluorescence results may lead to overdiagnosis.

OCT : AN OLD HAND IN REDEVELOPMENT

Optical coherence tomography (OCT): Used in ophthalmology and other medical fields, OCT creates tomographic images from measurements of light wave interference patterns. By emitting light into the area of interest, it scatters and is absorbed into the tissue. The principles of interferometry allow machines to calculate the patterns and create cross-sectional images without invasive methods.
Although optical coherence tomography is widely used in many fields, it is still in the developmental stage of dental use.

ADVANTAGES & DISADVANTAGES

High sensitivity: In an in vitro- study by Yasushi Shimada et al. OCT was found to be more sensitive to the detection of caries at all stages of advancement.

Familiar technology: OCT is simply being applied to dental use, so it has been studied extensively in the past and is deemed safe for use.

Limited research: Because it is no longer a new subject, the level of research and development for dental use is scarce. OCT has not yet reached a stage where it may be used as a tool in dentistry for clinical settings.

While new technologies may seem promising and even groundbreaking, research and development are both necessary and expensive. New methods carry the risk of the unknown, which is an issue we must overcome and conquer, not avoid and forget. To settle for a risk that cannot be calculated would be contrary to the fundamental idea of medicine. Newly tested and verified methods tend to be expensive due to their recent history in development, even if the results are a success and the technology is completely safe and reliable to use. Traditional methods like visual-tactile examination and bitewing X-rays are old and tested for safety, but above all, they can be performed anywhere, at any clinic. They are inexpensive and will be the primary method of examination most likely for a long time yet. A dental professional should, therefore, strive to excel in what is known today and keep an inquisitive eye out for what may be known

For References

RUBBER DAM ISOLATION IN DENTISTRY : HOW TO CHOOSE THE THICKNESS AND USE IT?

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This article highlights the essential role of rubber dam isolation in dental treatments, particularly in endodontics and restorative dentistry. It emphasizes how rubber dams prevent contamination from oral fluids, improve visibility, and enhance patient safety throughout procedures. It outlines the different rubber dam thickness options —thin (0.15–0.2 mm), medium (0.2–0.25 mm), and heavy (0.25–0.3 mm)— and guides on selecting the appropriate thickness based on the procedure type, patient anatomy, and comfort. The article also highlights the importance of proper rubber dam application and offers instructions for effective use. Additionally, it identifies contraindications such as latex allergies or severe gag reflexes, where rubber dam isolation may not be suitable.

THE IMPORTANCE OF RUBBER DAM ISOLATION

Rubber dam isolation is most commonly used in endodontics, restorative dentistry, and other treatments where a dry, clean field is necessary. By isolating the area of treatment from saliva, blood, and other oral fluids, the rubber dam ensures that materials like bonding agents, composite resins, or root canal filling materials do not get contaminated. It also improves visibility by retracting soft tissues such as the tongue, lips, and cheeks, allowing the dentist to have a clearer view of the working area. [1]
Moreover, rubber dam isolation is crucial for patient safety. It prevents the aspiration or ingestion of dental instruments, debris, or other materials. It also minimizes discomfort by keeping the treatment area isolated from the rest of the mouth and reducing the need for constant saliva control. [2]

UNDERSTANDING THE DIFFERENCE BETWEEN THE THICKNESS OF DAMS

Rubber dams or dental dams, which are usually made of latex or nitrile, are available in various thicknesses, which are typically classified as thin, medium, and heavy. [13] The thickness is usually measured in millimeters, with thin dams being the lightest and most flexible, while heavy dams are more rigid and durable. The choice of thickness depends on the specific dental procedure being performed, the patient's anatomy, and the clinician's preference. If dams are examined according to each thickness category:

THIN RUBBER DAMS (0.15 – 0.2 mm THICKNESS)

Thin rubber dams are the most flexible and are typically used for simpler, less invasive dental procedures. The thickness of thin rubber dams usually ranges from 0.15 to 0.2 millimeters. They offer excellent adaptability and can be stretched over small teeth or areas with minimal tissue retraction. [3]

Ideal Usage: They are often chosen for routine restorative procedures like Class I or II fillings, preventive treatments, or simple sealant applications. They are also useful when working on smaller teeth or when a high level of flexibility is required to adapt the rubber dam to irregular tooth shapes. [4]

Advantages: Thin rubber dams are highly flexible, allowing them to contour effortlessly to the shape of the teeth and surrounding tissues, creating a secure seal around the treatment area.[3] Their flexibility also enhances patient comfort, particularly in procedures requiring minimal isolation.[4]

Limitations: They are highly flexible but more susceptible to tearing or puncturing, especially when significant retraction or force is needed during a procedure. [3] They also offer less durability and resistance to movement compared to thicker alternatives, which may limit their effectiveness in certain treatments. [4].

MEDIUM RUBBER DAMS (0.2 – 0.25 mm THICKNESS)

Medium-thickness rubber dams are the most commonly used option in general dentistry. They range from 0.2 to 0.25 millimeters in thickness and strike a balance between flexibility and durability. This thickness is often preferred for a wide variety of restorative procedures and simple endodontic treatments. [5]

Ideal Usage: Medium rubber dams are suitable for more complex restorative work, such as composite fillings, crowns, or simple endodontic treatments (e.g., single-rooted canals). They provide sufficient isolation while maintaining ease of placement and patient comfort. [6]

Advantages: Medium-thickness rubber dams strike a balance between durability and versatility. [5] They offer greater resistance to tearing and puncturing compared to thin dams, ensuring more reliable isolation throughout the procedure. Additionally, their versatility makes them suitable for a wide range of dental treatments, making them a preferred choice in routine practice. [6]

Limitations: While still flexible, they are slightly less flexible than thin dams, which can make it harder for them to adapt to some difficult tooth shapes or tight spaces. [5]

HEAVY RUBBER DAMS (0.25 – 0.3 mm THICKNESS)

Heavy rubber dams are the thickest option, typically ranging from 0.25 to 0.3 millimeters in thickness. These dams are extremely durable and provide superior isolation, making them ideal for complex endodontic procedures or cases that require significant retraction and tension. [7]

Ideal Usage: They are most commonly used for procedures like root canal therapy (especially multi-rooted teeth), surgical extractions, or cases where maximum isolation is necessary. They are particularly beneficial when working in areas with difficult access, such as the molars or posterior regions. [8]

Advantages: They offer maximum durability, as they are highly resistant to tearing, puncturing, or damage during procedures, ensuring reliable isolation.[7] They also provide superior protection against contamination, making them particularly suitable for treatments that require a completely dry field, such as root canal procedures.[8]

Limitations: Heavy rubber dams, due to their thickness, are less flexible and more rigid, which can pose challenges during application in areas with complex tooth shapes or when precise adaptation is necessary. [7] Additionally, their rigidity may impact patient comfort, particularly during lengthy procedures or when the rubber dam must be stretched over larger teeth. [8]

FACTORS TO CONSIDER WHEN CHOOSING RUBBER DAM THICKNESS

Selecting the right rubber dam thickness depends on the procedure type, patient comfort, tooth size, and clinician experience. Complex treatments like root canal therapy or surgical extractions typically require heavy rubber dams for superior isolation, while simpler procedures, such as fillings or preventive care, can be effectively performed with medium or thin dams. [14]

Thinner rubber dams offer greater flexibility and patient comfort, especially for smaller or irregularly shaped teeth, but may lack the durability of thicker options. Conversely, thicker rubber dams provide better control and durability, making them ideal for larger teeth or challenging cases. [14] Experienced clinicians may prefer thicker dams for added precision, while thinner ones can be more manageable for those less familiar with their application. [15]

HOW TO USE THE RUBBER DAM EFFECTIVELY?

To ensure optimal isolation during a dental procedure, the proper application of a rubber dam is crucial. The process begins with selecting the appropriate rubber dam thickness based on the procedure and the patient's anatomy. Necessary tools, such as clamps, frames, and rubber dam punches, should be prepared in advance. Holes are then carefully punched into the rubber dam to fit snugly around the teeth, creating a secure seal. A clamp is used to anchor the rubber dam around the tooth, ensuring it fits comfortably. The rubber dam is stretched over the teeth and positioned securely around the punched holes with the help of forceps. A frame is then used to hold the rubber dam away from the patient's face, ensuring tight and well-sealed isolation around the treated area. Once the procedure is complete, the rubber dam is carefully removed, ensuring no remnants are left behind. [12]

CONTRAINDICATIONS FOR RUBBER DAM ISOLATION

Despite all the importance and advantages of rubber dams, there are specific cases where the use of a rubber dam may not be appropriate and must not be overlooked. For patients with a severe gag reflex, the placement of a rubber dam can cause discomfort and may disrupt the procedure. Similarly, individuals with a latex allergy should not use rubber dams made from this material; instead, non-latex alternatives are necessary to prevent allergic reactions. Patients experiencing nasal congestion or respiratory issues may find it difficult to breathe comfortably during treatment, making rubber dam application impractical. Furthermore, individuals with claustrophobia or psychological discomfort may experience heightened anxiety when a rubber dam is applied. [8] Lastly, the use of a rubber dam may be challenging in cases where the tooth structure is significantly compromised, as proper anchorage of the dam clamp cannot be achieved without sufficient support. [9]

In conclusion, rubber dam isolation is an essential tool in modern dental practices, offering numerous benefits, including maintaining a dry and clean working field, improving visibility, and enhancing patient safety. The choice of rubber dam thickness depends on the nature of the procedure and patient requirements, with each type offering distinct advantages and limitations. While rubber dams are indispensable for many dental procedures, understanding their proper application and potential contraindications is crucial for achieving the best clinical outcomes. By selecting the right thickness and following effective application techniques, dental professionals can optimize both patient comfort and treatment success. [13]

For References

HOW TO CHOOSE YOUR FIRST DENTAL LOUPES?

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3rd Grade

One of my professors always used to say, "You can't treat what you can't see." Then he'd go and ramble on about the importance of something else, but that quote will stick with me forever. And to be honest, I've come to the conclusion that in reality the use of magnification plays a crucial role in modern dentistry. Whether you're into endodontics, microsurgery, or just want more predictable margins on your tooth preparations, the more you see, the better you can treat. Given that most of our readers are students, choosing your first dental loupes is a critical decision that can significantly impact your comfort and efficiency in practice. So let's dive into this guide to help you make the right choice.

TYPES OF LOUPES

There are generally two types of loupes: Galilean and Prismatic (Keplerian). The main differences between them are weight, magnification and cost. Weight-wise and cost-wise Galilean loupes are lighter and cheaper than the Prismatic ones, since they are simpler in design, using a series of convex lenses to amplify the image. When it comes to magnification Prismatic loupes do a better job, providing up to 8.0x or more (Galilean loupes range between 2.5x to 3.5x), and are usually preferred by experienced professionals. For students and dentists that are new to working with loupes, it's considered a rule of thumb to start with a smaller magnification and gradually build it up if needed. Starting with 2.5x magnification offers a good balance between field of view and detail visibility.

FIELD OF VIEW (FOV), DEPTH OF FIELD (DOF) & WORKING DISTANCE

Important parameters of dental loupes to have in mind are the field of view(FOV), depth of field(DOF) and your working distance. A larger FOV allows you to see more of the operative area without moving your head. With 2.5x-3.0x magnification you'll have an easier time getting used to working with loupes, since you won't need to adjust your working position as much. Higher magnification generally reduces FOV, so balance magnification with your need for a broader view. Depth of field refers to the range of distance in which objects remain in focus. A deeper DOF means you can move your head slightly and still keep the work area in focus, which is particularly useful during long procedures. Again with the higher magnification the depth of the field decreases, which requires more adjustments to your working position. Both the FOV and DOF have to be considered depending on your working distance. The working distance is the space between your eyes and the patient's mouth, when you are seated comfortably. Opt for loupes with a steep declination angle to reduce neck strain. A good declination angle helps maintain an ergonomic position while allowing you to see the working area clearly.

WHAT FRAMES SHOULD I GET?

Everybody has a different opinion and style when it comes to dental loupes, as they come in all shapes, forms, materials, and sizes. Choose frames made from lightweight materials like titanium, aluminum, or high-quality plastic. Ensure the frame is sturdy and resistant to frequent cleaning and handling. Design-wise, the most common are Through-the-Lens (TTL) loupes, Flip-up loupes and Headband or Helmet-Mounted systems.

Through-the-Lens (TTL) loupes are the ones where the magnification lenses are permanently integrated directly into the eyeglass frame lenses. The magnification lenses are custom-mounted into the eyeglass lenses based on the user's specific measurements, such as interpupillary distance (IPD), working distance, and declination angle. They are very lightweight and ergonomic, but unlike the other types, once manufactured, changes cannot be made. They're not the best option for beginners who are still exploring different magnifications or working distances.

Flip-up loupes are more adjustable, because the loupes are mounted on a hinged mechanism, attached to the eyeglass frame. The lenses can be flipped up or down as needed, making them versatile for tasks that don't require magnification and for easier communication with patients. The positioning of the lenses, including the declination angle and IPD, can be manually adjusted for optimal alignment with the user's line of sight. Due to the additional mounting mechanism, they tend to be heavier than TTL loupes, but are also easier to maintain and more affordable, making them a popular choice for beginners.

Headband or Helmet-Mounted systems are designed for enhanced stability, comfort, and support, particularly for users who need high-magnification loupes or additional accessories like bright LED lights or cameras. They are also very expensive. Considering our topic, it is most likely that you will not get a set of these, but it is a great investment for those that are looking forward to "amplifying" their career.

ILLUMINATION

Selecting the right lighting system is just as important as choosing the loupes themselves, and there are many options: integrated LED lights, clip-on lights, head-mounted lights, fiber-optic lights, and so on. Most importantly, you should ensure that the light system doesn't make the loupes uncomfortable,provides sufficient illumination. 20,000–50,000 lux is typical for dental loupes,has an adjustable beam size to focus on specific areas,has sufficient battery life to last through long procedures,has a robust design that withstands daily cleaning and use.
Is compatible with your loupes and doesn't obstruct your vision,these considerations will help you make a confident decision.

FINAL THOUGHTS & CONSIDERATIONS

Your first pair of loupes will set the foundation for your professional habits and comfort in practice. While high-qualitiy loupes can be expensive, they are a worthwhile investment for your career. Avoid overly cheap options, as they may lack clarity and durability. Take time to research different models and brands. Seek recommendations; consult colleagues, mentors, or online reviews for trusted brands and models.
Best of luck, dear reader!

For References

TEETH WHITENING AND THE WHITE DIET : IS IT NECESSARY?

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Teeth whitening has become a go-to cosmetic dental treatment, providing a brighter smile and enhancing self-esteem. However, keeping that fresh look often comes with a guideline that leaves many confused: the "white diet." This restrictive eating plan recommends against colorful foods and drinks for at least 24 to 48 hours after bleaching. But is this guideline absolutely necessary? Let's examine the reasoning behind the white diet, its importance, and whether it is something you can skip.

WHY DO TEETH BECOME STAIN-SUSCEPTIBLE POST-BLEACHING?

Teeth whitening, whether done by a professional or with at-home kits, uses bleaching agents like hydrogen peroxide or carbamide peroxide. These substances penetrate the enamel to break down chromogens, the compounds that cause discoloration. However, this process also temporarily opens up tiny pores in the enamel, making teeth more porous and susceptible to absorbing pigments.
This heightened sensitivity is temporary but significant. A study published in the *Journal of Dentistry* states that teeth typically regain their natural enamel strength about 48 hours after bleaching [1]. Until then, they act like sponges, ready to absorb colors from foods, drinks, or even dental care products.

WHAT IS THE WHITE DIET?

The white diet consists of foods and drinks that are low in pigments and less likely to stain your teeth. Some common "safe" choices include:
White rice
Chicken or turkey (unseasoned or lightly seasoned)
Cauliflower, potatoes, and other light-colored vegetables
Water, milk, and clear sodas
On the flip side, the "no" list includes staining offenders like coffee, tea, red wine, tomato sauce, berries, soy sauce, and any deeply pigmented foods or drinks.

DOES SCIENCE BACK THE WHITE DIET?

The reasoning behind the white diet is based on the science of enamel porosity after bleaching. However, some experts believe that this advice might be overly cautious. A review published in the *International Journal of Esthetic Dentistry* found no definitive proof that eating pigmented foods at once after whitening has a significant effect on long-term outcomes [2].
That being said, anecdotal evidence and clinical observations indicate that people who avoid staining foods during the crucial 48-hour period often see better initial results. Teeth that pick-up pigments during this time may require extra touch-ups, which can be both costly and inconvenient.

THE ROLE OF SALIVA

Another aspect to consider is saliva. Saliva naturally helps remove food particles and neutralize acids in the mouth, minimizing staining. However, after bleaching, the enamel's increased porosity might exceed saliva's protective abilities. Chewing sugar-free gum or staying hydrated can enhance saliva production, offering extra protection [3].

IS IT WORTH THE SACRIFICE?

For those who love coffee, wine, or colorful meals, the white diet can seem like a tough commitment. But is it really worth it? Here's a balanced perspective:

REASONS TO FOLLOW THE WHITE DIET

Maximize Initial Results: Avoiding pigmented foods ensures the brightest outcome immediately after whitening.
Prevent Uneven Staining: Eating colored foods while enamel pores are open can result in blotchy stains that are harder to fix.

REASONS TO RELAX THE RULES

Short-Term Nature: The enamel's increased sensitivity lasts just a day or two, so accidental stains are likely superficial.
Rinsing and Brushing Help: Rinsing with water or gently brushing after consuming pigmented foods can minimize staining.

TIPS FOR NAVIGATING POST-BLEACHING DIET CHOICES

Moderation Over Elimination: If avoiding all pigmented foods feels too restrictive, opt for moderation. For example, dilute coffee with milk or limit tomato-based sauces.
Use a Straw: Drinking through a straw minimizes contact between pigmented drinks and teeth.
Immediate Rinsing: After eating or drinking something that might stain, rinse your mouth with water right away.
Gentle Oral Hygiene: Avoid abrasive toothpaste or vigorous brushing after bleaching to protect your enamel.

CONCLUSION: TO FOLLOW OR NOT TO FOLLOW?

The white diet isn't strictly necessary, but it serves as a useful guideline for maintaining your freshly whitened teeth. It's a temporary sacrifice that can enhance short-term results, especially for a consistent and radiant smile. However, with mindful habits like rinsing, brushing, and using straws, you can still enjoy some colored foods without major staining.
Ultimately, it's a personal choice. If skipping your favorite cup of coffee feels worth it for a dazzling smile, then the white diet is for you. If not, practice protective habits and enjoy your treats in moderation. Balance is key—because a healthy, confident smile is about more than just color.

For References

EDSA LECTURE COMPETITION : CASE REPORT WINNER

MINIMIZING NEURAL TRAUMA IN IMPLANTOLOGY : A GUIDED APPROACH

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INTRODUCTION
Cone-beam computed tomography (CBCT) has transformed implant planning in dentistry with its low radiation, economical properties and excellent imaging capabilities. In adition, the ability of combining the CBCT files with STL files from intra-oral or extra-oral scanners provides the ability to fabricate implant guides in order the implants to be placed accurately avoiding trauma on anatomical structures, such as the IAN. In case of a neural trauma, neurological pain, numbness and paraestesias may result severely in influencing the patient's quality of life. Hence, a CBCT should be taken prior to an implant placement. Purpose: The aim of this case report is to demonstrate how CBCT and digital planning can be used before the actual surgery to plan a GBR procedure but more importantly how a digitally designed implant guide can be used for the implant placement minimizing the danger of traumatizing the IAN.

MATERIALS & METHODS
A 56-year-old patient was referred for new implant placement at positions 44 and 47 to support a four-unit implant supported bridge, after his old ones had been removed by the referral dentist. Assessment of the initial CBCT scan demonstrated the proximity of IAN. A Guided Bone Regeneration (GBR) was performed to widen the bucco-lingual width of the alveolar ridge using a non-resorbable titanium reenforced membrane which was stabilized with titanium pins. A mix 1:1 ration mix of allograft an xenograft was used as grafting material. Five months later an implant guide was fabricated using the data of a new CBCT and STL files. A 3.75/10mm and a 4.2/10mm Paltop implant were placed placed fully guided in positions #44 and #47, respectivelly, avoiding the IAN. A post surgical low-dose CBCT was taken to verify the proper position of the implants. Patient needs to return for a Free Gingival Graft (FGG) and to complete the prosthesis.

RESULTS
Digital planing of implant placement and implant guide fabrication using CBCT data and STL files enhanced the accuracy of implant placement avoiding IAN. CBCT scans helped determine the exact location of the IAN as well a the success of the GBR procedure. Fully guided implant placement was successfully completed without neural trauma, and no postoperative adverse effects related to IAN trauma. The prosthetic phase is pending.

DISCUSSION
This case underscores the critical role of advanced imaging and guided surgical techniques in dental implantology, particularly in anatomically challenging situations. The integration of CBCT and implant guides facilitates precise implant placement, minimizing the risk of nerve damage and ensuring optimal functional results. The digital tools used in this procedure provided minimized the risk of nerve trauma and reduced the overall surgical time. This case illustrates how modern technology can transform complex and risky procedures into straightforward and safe ones.

CONCLUSION
The use of CBCT and digital technology can help plan GBR procedures and design implants guides in order critical IAN and other anatomical structures to be protected. This approach ensures both safety and effectiveness in implant therapy. It also highlights how digital technology can simplify procedures that were previously considered difficult and risky

KEYWORDS
CBCT, Guided Bone Regeneration, implant guides, inferior alveolar nerve, non-resorbable titanium reenforced membrane

EDSA LECTURE COMPETITION : ORIGINAL RESEARCH CATEGORY WINNER

CHALLENGES IN SPECIAL CARE DENTISTRY REGARDING SUSTAINABILITY

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INTRODUCTION
Sustainability is a current topic in dentistry that encompasses practices and techniques aimed to understand the impact of dental care on the economic, technological, social and environmental systems, while ensuring equal treatment out comes for patients.
Purpose of the study was to analyse data related to the impact of the special care dental treatment in general anesthesia from financial and ecological aspects.

MATERIALS & METHODS
The research was conducted at the Clinic for Pediatric and Preventive Dentistry at the Center for Special Care Dentistry. The sample involved patients who, underwent treatment under general endotracheal anesthesia (GA) due to cooperation difficulties, during a period from January to December 2023. Data were obtained from dental records and interviews with parents. The data base was created in Excel. Descriptive statistical methods were used for statistical analysis.

RESULTS
The study included 117 patients, with a higher frequency of male patients (n=88, 75.2%). The average age was 11.03 years (±3.6 years). On average, patients traveled 177.9 km (min=3.6 km, max=1086.9 km) for tooth treatment under GA. The average travel costs were 4079.1 RSD, and the total carbon emissions produced during this process amounted to 7 t. On average, patients waited 5.4 months (range: from 10 days to 21 months). Only 12.8% (n=15) of patients had follow-up appointments after GA.More than half of the patients (54.7%) have never received preventive advice, and more than half of the patients (53.0%) do not have a dentist caring for their oral health.

CONCLUSION
The results of this study showed significant carbon emissions and travel costs for the treatment of patients under GA in Belgrade.The results indicate the need to improve education and training of dentists to work with individuals with special needs in local and regional centers and to expand knowledge in the field of sustainable dentistry.

KEYWORDS
Special needs; sustainable dentistry; general endotracheal anesthesia; pediatric dentistry.

BEYOND THE SURFACE : SKIN CONDITIONS THAT SHOW UP IN YOUR MOUTH

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Cutaneous diseases are known for their systemic impact, but many also bring specific challenges to oral health. Conditions such as Pemphigus Vulgaris, Lichen Planus, Behçet's Disease, and Lupus can cause painful sores, lesions, and other oral manifestations that significantly affect a person's quality of life. In this article, we dive into how these diseases affect oral health and the treatment strategies that can help manage these conditions effectively.

PEMPHIGUS VULGARIS

Pemphigus vulgaris (PV) is a rare, long-term condition driven by a malfunction in the immune system. PV is not a contagious disease [3]. Most commonly affected area is the mouth and throat. This often leads to painful swallowing, making it a distressing condition for those who experience it.
In a study analysing 150 patient presentations, 26.60% of cases involved PV, this study confirmed that PV is the most prevalent condition associated with oral involvement [1]. It's a combination of genetics and environmental triggers.

SKIN AND ORAL SYMPTOMS

Initially, PV manifests in the mouth with painful erosions of the oral mucosa. For many, these lesions are the first—and sometimes the only—signs of the disease, appearing in about 50-70% of cases before progressing to the skin.
Inside the mouth, the buccal mucosa, soft palate, ventral tongue, lower lip, and gingiva are most commonly affected. Lesions are irregular, with poorly defined borders, and can extend to the lips, forming thick, fissured, hemorrhagic crusts. As PV progresses, the skin develops blisters that peel easily when rubbed, often covering large areas of the body [4].

MANAGING PEMPHIGUS VULGARIS

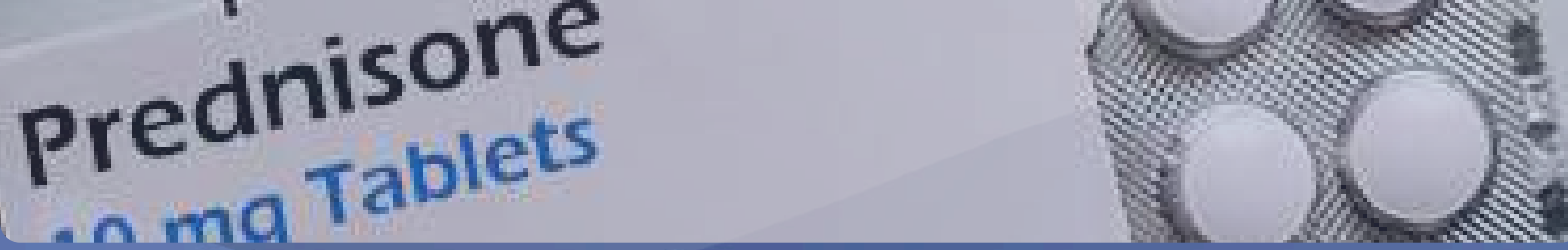
Though PV is a chronic conditions, it is manageable with appropriate care. The cornerstone of treatment is systemic therapy with steroids or immunosuppressive drugs.
For oral care, gentle hygiene practices can make a big difference. Using a soft toothbrush, mint-free toothpaste, and antiseptic mouthwash helps to maintain oral health while minimizing irritation [3].

LICHEN PLANUS

Lichen planus (LP) is a chronic autoimmune inflammatory disease that affects both the skin and mucosal surfaces, including the mouth. This idiopathic condition is characterised by itchy, purple, flat-topped bumps on the skin and distinctive lesions inside the mouth. Importantly, LP is non-contagious and cannot be spread from person to person.

TWO MAIN TYPES OF ORAL LICHEN

RETICULAR LP : Appears as white, lace-like patches on the inside of the cheeks and tongue. These lesions are often asymptomatic but may be detected during routine oral examinations.
EROSIVE LP : Manifests as red, swollen tissues and open sores. This type is more severe, causing pain and a burning sensation, and requires close monitoring due to its potential to progress to oral cancer [6].



HOW IS LP TREATED?

The mainstay of treatment for LP involves managing inflammation and discomfort. Topical or oral corticosteroids are commonly prescribed to reduce swelling and promote healing. For those with erosive LP, regular follow-ups are critical to monitor for any signs of malignancy [7].

BEHÇET'S DISEASE

Behçet's disease is a rare, chronic condition that causes inflammation in blood vessels throughout the body, leading to various symptoms, including joint pain. While the exact cause remains unknown, it may result from a genetic predisposition or be triggered by autoimmune activity [10].
A hallmark symptom of Behçet's disease is aphthous stomatitis—painful canker sores in the mouth—which is often the first indicator of the condition [5].

COMMON SYMPTOMS

Behçet's disease can cause a range of skin issues, including:
Pustules: Small, pus-filled bumps that may resemble acne.
Erythema Nodosum-like Lesions: Tender, reddish nodules that typically form on the front of the legs. These may resolve spontaneously but sometimes leave behind faint scarring or discoloration.
Pseudofolliculitis: Inflammation resembling infected hair follicles.

ORAL MANIFESTATIONS

A common early sign of Behçet's disease is the appearance of painful canker sores on the mucous membranes of the mouth, known as aphthous stomatitis [8]. These sores:
Are round or oval with red, inflamed borders.
May occur as a single lesion or in clusters of multiple sores.
Can vary in size and depth.

MANAGING BEHÇET'S DISEASE

Treatment focuses on reducing inflammation and suppressing the immune response to prevent flare-ups(9).
Common approaches include:
Corticosteroids (e.g., prednisone)
Colchicine:
Immunosuppressants (e.g., methotrexate, azathioprine)

SYSTEMIC LUPUS ERYTHEMATOSUS (SLE)

Systemic lupus erythematosus (SLE) is a chronic autoimmune condition characterized by widespread inflammation that can affect multiple organs, including the skin, joints, and blood vessels. This systemic disease is also linked to significant immunological abnormalities.
SLE is much more common in women than men, with a striking ratio of nearly 10 to 1. Most frequently appears in women aged 15 to 44. During active phases of the disease, mucous membrane lesions occur in 26% of cases, predominantly on the palate (82%), buccal mucosa, or gums [11].

SYMPTOMS

SLE presents with a variety of symptoms that can vary widely between individuals:
Joint Pain and Swelling
Skin Rash

ORAL MANIFESTATIONS

Oral involvement is frequently observed in SLE, with about 25% of patients experiencing mucous membrane and lip changes. Common oral symptoms include [11]:
Oral ulcers
Xerostomia (dry mouth), increases the risk of dental caries, oral ulcerations.
Raised, keratotic plaques resembling lichen planus.
Lip changes, including slight thickening, roughness, redness, and occasionally superficial ulceration or crusting, with healing sometimes resulting in scarring [5].

MANAGING SLE

While there is currently no cure for SLE, treatment aims to control symptoms and prevent flare-ups. Common treatments include:
Nonsteroidal Anti-Inflammatory Drugs (NSAIDs)
Low-Dose Corticosteroids
For dental students and healthcare professionals, understanding the oral manifestations of cutaneous diseases is crucial. Conditions like Pemphigus Vulgaris, Lichen Planus, Behçet's Disease, and Lupus not only affect the body but also have significant oral health implications. By recognizing the early signs and providing appropriate care, we can help manage these conditions and improve the quality of life for those affected. With proper treatment and monitoring, patients can lead a more comfortable life, even with these chronic conditions.

For References

HIDDEN ALLERGIES IN DENTAL MATERIALS : IT'S RARE BUT ARE YOU AWARE?

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3rd Grade

Although allergic reactions to dental materials are relatively uncommon, they can occur, and dental professionals must be prepared to handle them effectively.

COMPREHENDING THE CONCEPT

Understanding the meaning of an allergy is crucial. An allergy is a reaction triggered by a person's immune system's exaggerated response to substances in the environment that are harmless to most people [1]. This inaccurate response induces a series of inflammatory processes in the body, leading to typical signs and symptoms.

These hypersensitive repercussions can be classified into types I, II, III, and IV. The most prevalent in dentistry is immediate hypersensitivity, known as type I [2], which is IgE-mediated and happens within minutes, along with type IV [2], which is driven by cells and manifests as a delayed effect.

FOUR MAIN DENTAL MATERIALS THAT CAUSE ADVERSE REACTIONS

The materials most often responsible for allergies in dental practice are latex, various metals, local anesthetics, resins, and composites [3].

LATEX

Latex allergies are a significant concern in dentistry due to the widespread use of latex-containing products such as gloves, dental dams, and some dental impression materials [3]. These allergies are caused by proteins found in latex products, which can be absorbed through the skin or inhaled as airborne particles.
The effects caused by an allergy can range from mild skin reactions, such as rashes, redness, itching, and swelling, to respiratory symptoms like sneezing and coughing. Severe cases can involve allergic contact dermatitis, wheezing, or potentially life-threatening anaphylaxis, a condition that can cause intense inflammation, difficulty breathing, low blood pressure, and loss of consciousness [3,4].
There are countless ways to avoid and manage this, including ensuring the dental office is equipped with latex-free alternatives like nitrile or vinyl gloves, screening patients for allergies during medical history intake and having emergency equipment and medications, particularly epinephrine, within reach [5].

METALS

Metal allergies pose a challenge in dentistry, as many dental materials contain metals such as nickel, cobalt, chromium, mercury, and titanium [6]. These metals can form complexes that act as allergens, triggering immune responses.
The immune system produces specific antibodies against the metal or its complex, releasing chemicals like histamine, which provoke inflammation and other allergic reactions in the tissues [6].

Focusing on the metals that are linked with harmful fallouts, there can be:

Nickel, which is frequently found in orthodontic appliances, endodontic files, crowns, and bridges. Due to its diffuse presence, it constitutes one of the most common causes of metal sensitivities in the general population.

Cobalt and chromium, often used in metal alloys for crowns, bridges, dentures, and prosthetics, are favored for their strength, corrosion resistance, and durability, making them ideal for long-lasting dental restorations. However, they can also cause allergies in susceptible individuals.

Mercury, which was regularly used in dental amalgams for fillings, particularly in posterior teeth, on behalf of its durability and cost-effectiveness, has raised concerns because of its potential to cause allergies, despite being considered safe for most people.

Titanium, a key component of dental implants thanks to its capacity to promote osseointegration, along with its excellent biocompatibility and resistance, can also trigger a type IV hypersensitivity response, mediated by macrophages and T lymphocytes.

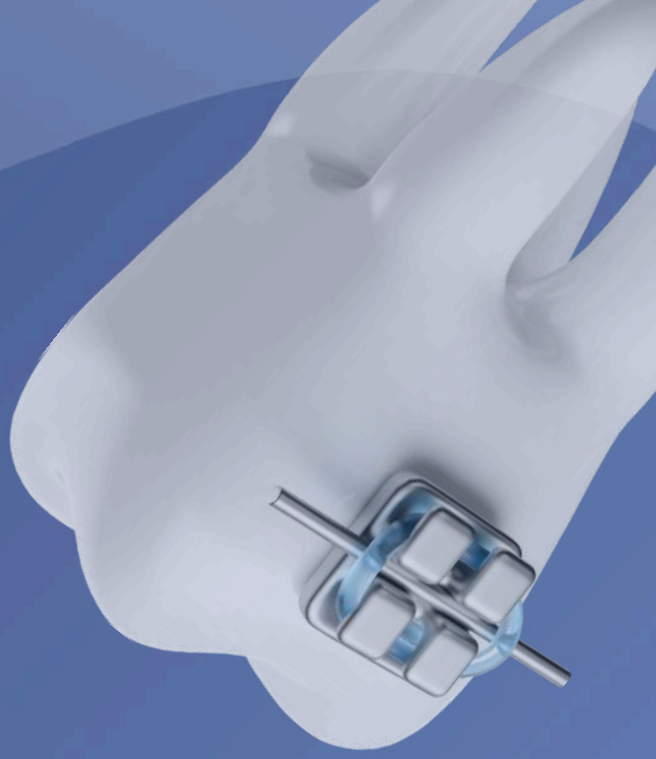
The symptoms can vary slightly depending on the specific metal but generally include redness, swelling, changes in taste, burning sensations or discomfort in the oral tissues, and occasionally systemic reactions like skin dermatitis, respiratory issues, and fatigue or malaise [3].

To prevent metal allergies, several strategies can be employed. These include opting for hypoallergenic materials, reviewing the composition of dental substances, and undergoing pre-treatment tests, such as a patch test to identify potential sensitivities. Additionally, consulting with specialists, such as an allergist or dermatologist, can help determine the safest solutions for individual patients [6].

LOCAL ANESTHETICS

Comprehending hypersensitivities caused by local anesthetics in dentistry requires recognizing that these drugs fall into two main categories [7]. Amides, such as lidocaine, articaine, bupivacaine, and mepivacaine, are associated with extremely rare cases of true allergies. In contrast, esters, including procaine, benzocaine, and tetracaine, have a higher likelihood of inducing allergic reactions due to their metabolite, para-aminobenzoic acid (PABA), which is known to be an allergenic compound [7].

Reactions to local anesthetics may range from mild symptoms—such as redness or swelling at the injection site, localized or generalized itching, or rash—to more severe reactions, including anaphylaxis or angioedema [2,7].



RESINS AND COMPOSITES

In restorative dentistry, resins and composites are commonly chosen for fillings, bonding, and crowns because of their strength and appearance. Nevertheless, certain patients may develop allergic reactions because of their use.

The allergens that typically cause alarming reactions in people include methacrylate compounds, formaldehyde, and additives present in the materials [3].

The symptoms associated with this are usually irritation, sensitivity, or inflammation in the gums and oral tissues. Severe consequences, such as contact dermatitis or even systemic issues, are unlikely [3,8].
Diagnosing these allergies is challenging due to their non-specific symptoms, which may also be influenced by other dental materials or environmental factors.

CHANCES OF FACING HYPERSENSITIVITY REACTIONS DURING DENTAL PROCEDURES

The risk of allergies is influenced by factors like repeated exposure, individual sensitivity, and the chemical composition of the materials used. Patients with a genetic predisposition, including those with a history of allergies, asthma, or sensitivities to certain substances, have a higher chance of experiencing negative outcomes [3].

OUR ROLE AND DUTY IN APPROACHING THESE SITUATIONS

As future dentists it's our responsibility to conduct a detailed medical history and pay close attention to the information gathered [9], so we can identify allergic patients or those at risk of developing hypersensitivity reactions.

Whenever there is suspicion of an allergy to a material, the patient should be asked to undergo a sensitivity test to confirm or rule it out. If such tests are unavailable, adjustments to the treatment protocol, like using hypoallergenic materials [3] or replacing the noxious substance, should be made to prevent medical emergencies in the dental office.

As GV Black once said, "The day will come, and maybe you will all live to see it, where we will practice preventive instead of reparative dentistry.". That day has arrived and so, being aware of the patient's history, identifying potential allergens and carefully selecting materials are essential steps for managing symptoms and ensuring safety in dentistry!

For References

BIOLOGICAL DENTISTRY : THE BATTLE BETWEEN TRADITIONAL & MODERN DENTISTRY

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HOLISTIC DENTISTRY, ALSO KNOWN AS BIOLOGICAL DENTISTRY

At first glance, this topic might seem quite controversial, stirring debates within the medical community. However, holistic dentistry is merely another perspective on dentistry, offering new avenues for research and a different approach to understanding and addressing patient needs.

WHAT IS HOLISTIC DENTISTRY?

Holistic dentistry represents the integration and overlap of multiple medical fields, approached from cultural perspectives across the globe.

In simpler and more current medical terms: This branch of medicine focuses on maintaining the body's homeostasis (the human being functions as a unified whole where body, mind, and spirit are interconnected). Any imbalance within the system triggers pathologies in other areas (even if, upon superficial analysis, no direct connections or evident cause-effect relationships are identified) [1].

HOW DOES THE HUMAN BODY REACT TO IMBALANCES OF HOMEOSTASIS?

Our body responds to external factors through inflammation, which alters the patient's general state. Holistic medicine treats the root cause to restore balance, as prolonged generalized inflammation can lead to severe pathologies, even if no other organ systems are initially affected.

ARE DENTAL MATERIALS EXTERNAL FACTORS THAT CAN CAUSE INFLAMMATION IN THE BODY?

Modern dentistry relies on complex restorations and the treatment of dento-maxillary system pathologies. Research into dental materials has evolved to reduce toxicity and ensure safety. However, some materials can cause long-term toxicity, allergic reactions, and irritation, triggering inflammation. Holistic medicine advocates for identifying the most biocompatible dental materials, though no ideal dental material yet exists on the market.

The most controversial material is mercury amalgam, used in "silver" fillings. It is well-known for its negative effects on the body. Concerns about mercury's harmful effects began in 1926, leading to blood tests to assess the biocompatibility of dental materials (e.g., Clifford Materials Reactivity Test and Biocomp Labs).

These tests showed positive results for mercury because it forms chemical bonds throughout the body, not just at the site of application. According to holistic medicine, energy flow alterations, detected through acupuncture, suggest a high sensitivity to this toxic material. Therefore, patients choosing to replace amalgam fillings with alternative materials must undergo post-procedure therapy to maximize health outcomes. This therapy may include a cocktail of vitamin C, activated charcoal, and chlorella to facilitate mercury chelation and excretion, along with recommendations for diet, hydration, and exercise. These measures maintain blood and lymph filtration, helping eliminate mercury accumulated over time. [2]

WHAT IS AN ESTROGEN MIMICKER?

Another controversial material is composite resin, which contains BPA (Bisphenol A), an estrogen mimicker.
An estrogen mimicker is a chemical substance that acts similarly to the hormone estrogen in the body. These compounds can disrupt normal estrogen functions, either mimicking or opposing natural estrogen effects. These substances, known as xenoestrogens or endocrine disruptors, can have both positive and negative effects. Excessive exposure can lead to hormonal issues, infertility, increased risk of estrogen-dependent cancers (e.g., breast cancer), and metabolic problems.
Over time, new composite resin formulas have been developed to eliminate BPA, enhancing safety. Many dentists have turned to ceramic alternatives for reconstructing dental morphology. [3]

DENTAL IMPLANTS & BIOCOMPATIBILITY

Recent advancements in oral rehabilitation therapy include dental implants, raising questions about material biocompatibility. Early prototypes were made from titanium alloy with aluminum and vanadium. However, studies revealed side effects from titanium alloy prototypes, leading to the use of pure titanium implants (which do not cause adverse reactions) or zirconia implants. Zirconia, a metal-free material, is popular in holistic dentistry due to its enhanced aesthetics, good bone integration, and reduced bacterial plaque adherence. [4]

SLEEP APNEA AND DENTO-ALVEOLAR INCONGRUENCE

In holistic dentistry, the link between sleep apnea, facial skeletal imbalances, and dento-alveolar incongruence (crowding) is discussed.
Sleep apnea occurs when the tongue and soft palate block the upper airways, stopping airflow and reducing oxygen supply to the brain. Along with diet and lifestyle recommendations, Oral Appliance Therapy is used to reposition the mandible, tongue, soft palate, and uvula, increasing muscle tone in these structures.
Other topics include periodontal disease correlated with diabetes and generalized inflammation, malocclusion associated with postural and muscular problems in the head and neck area, and the promotion of extracting teeth with complicated cavities, as even endodontic treatment does not reduce their toxicity.

A MEDICAL STUDENT'S PERSPECTIVE ON HOLISTIC DENTISTRY

While biological dentistry sits at the border of traditional and modern medicine, its abstract nature reflects the rapid evolution of medical technologies. It represents a different vision of standard protocols, offering clinicians new perspectives on the limitations of current therapies in dentistry. While it generates controversy among practitioners, from a medical student's perspective, it provides deeper insights into alternative therapies, general medical concepts, and patient management.

Holistic dentistry is an evolving approach that promotes better doctor-patient connections and openness to new methods. It does not solely focus on plants, energy fluctuations, or returning to rudimentary methods. Rather, it presents an area that has yet to be fully explored and validated through scientific research, contributing to the ongoing evolution of medicine.

For References

EDSA AT THE 28TH EADPH CONGRESS : A MILESTONE REPRESENTATION

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Post-Graduate

The 28th European Association of Dental Public Health (EADPH) Congress, held from October 3rd to 5th, 2024, in the picturesque setting of Crete, Greece, marked a significant milestone for the European Dental Students' Association (EDSA). This event not only facilitated the exchange of invaluable insights but also positioned EDSA as a pivotal player in influencing future oral health policies.

A PLATFORM FOR ADVOCACY

Angeliki Anna (Angelianna) Gkinosati, our Policy Officer, played a prominent role in representing EDSA at this congress. With the congress theme, "From Plate to Profit: The Commercial Determinants of Health," the sessions focused on critical discussions around how economic factors influence health outcomes. Angelianna's presence was particularly impactful as she was invited to participate in a panel discussion titled "WHO Oral Health Resolution: Steps towards Integrating Oral Health into Health Systems.", as the EDSA representative. This opportunity not only allowed for the representation of student voices but also facilitated discussions that are essential for the future of dental public health. The event was graced by speeches from EADPH board members, and notable figures such as EADPH President, Huda Yusuf, as well as FDI President Elect, Assistant Professor Nikolai Sharkov, who both engaged with our association during the congress, showcasing the collaborative spirit at play. At this point, it would be a great omission to not mention Dr. Aristomenis Syngelakis, acting Congress Organizer & EADPH Co- President, who reached out to our association, invited us to this event and gave us the floor to state our opinions by actively participating in the main roundtable of the event. Dr. Syngelakis, was also a former EDSA President of the Local Organizing Comitte of the first Athens EDSA Meeting.

KEY TAKEAWAYS

The congress was structured with a mix of keynote speakers and panel discussions aimed at tackling the pressing issues in dental public health. Topics presented by experts such as Dr. Gauden Galea and Dr. Bennoit Varenne shed light on the pressing need to address commercial determinants of health, particularly in the realms of nutrition and tobacco use. Angelianna actively engaged with these discussions, representing EDSA's positions and aligning them with the WHO Global Oral Health Action Plan (2020-2030). The isightful disucssions during the lectures demonstrated EDSA's commitment to addressing health disparities, particularly those affecting vulnerable populations, and emphasized the organization's eagerness to influence policy in tangible ways. Participants were particularly inspired by discussions around sugar taxation and restrictions on tobacco advertising, with the general consensus being the importance of public awareness and educational initiatives. By identifying these critical areas, EDSA positions itself as a leader in advocating for healthier public policies.

STRENGTHENING COLLABORATION: SIGNING THE MOU

A significant achievement following this congress was the formal signing of a Memorandum of Understanding (MoU) between EDSA and EADPH, solidifying a framework for future collaboration. This agreement reflects our commitment to enhancing communication and fostering partnerships in dental public health initiatives. The MoU provides clear pathways for joint projects, training, and knowledge-sharing, ensuring that the perspectives of dental students will be incorporated into vital discussions and policy-making processes. Establishing a collaborative relationship with EADPH is not just a win for EDSA, but for the broader community of European dental students who will benefit from unified efforts to advance oral health standards. The conclusion of the 28th EADPH Congress left participants energized and eager to implement the strategies discussed. EDSA's active participation and representation at such a pivotal event served not only to amplify student voices but also to fortify relationships with established professionals in the field.With the formal signing of the MoU with EADPH, the journey towards enhanced collaboration has officially begun. EDSA is poised to be a key advocate in shaping the future of dental public health, ensuring that the voice of European dental students is heard loudly and clearly in discussions that affect their education and practice. As we move forward, we remain committed to embracing new opportunities for growth, learning, and collaboration. Our participation in such impactful events showcases the importance of student engagement in the broader narrative of oral health policy-making—a conversation that must continue to evolve with the changing landscape of public health. Join us as we continue to share our journey and advocate for a stronger future in dental public health!

EDSA & FDI-ERO SCIENTIFIC COMPETITION WINNER

COLLOBORATIVE EFFORT BETWEEN PUBLIC & DENTAL PROFESSIONALS TO PROMOTE SUGARLESS LIFESTYLE

1st Place
Yi Ze Chen
Universidad CEU San Pablo, Spain
5th Grade

Sugar, once considered a luxurious allure, has morphed into a pervasive public health crisis, significantly contributing to obesity and associated health concerns. Attributing this solely to individual dietary decisions, nonetheless, neglects the intricate interplay of historical, social, and economic factors that have shaped our present predicament. For millennia, cravings for sweetness were satisfied with natural sources of sweetness such as honey or maple syrup, which is strongly in contrast to the concentrated sugar prevalent nowadays. It wasn't until the 19th century that sugar consumption escalated, driven by its affordability and the need for readily available energy sources for undernourished industrial laborers and armed forces. Later, sugar seamlessly integrated into our daily dietary habits as our society shifted to be abundant in culinary offerings. Yet, with the advancing understanding of scientific knowledge comes our heightened awareness of the possible consequences of the profound implications of sugar, especially concerning oral hygiene. Emerging amidst the myriad of dietary approaches, a sugarless lifestyle presents a potential option for those seeking overall health improvements notably enhanced dental health. In the context of contemporary public health challenges, advocating a sugarless lifestyle becomes not only relevant but crucial, extending its reach beyond individual oral health to encompass comprehensive public health objectives.

LITERATURE REVIEW

High dietary sugar consumption wreaks havoc on oral health, contributing to detrimental conditions including tooth decay, gum disease, and enamel erosion. Dental caries, the most common non-communicable disease worldwide, exhibits a notably higher prevalence in individuals with frequent sugar consumption. This association is primarily attributed to bacteria in biofilms fermenting sugar into acidic byproducts and, subsequently, inducing the demineralization process of the dental hard tissues. The perturbation of the oral environment, characterized by the decline in pH levels and the elevation in saliva glucose concentrations, cultivates an altered microbial system with proportionally more acidic and carcinogenic biofilm species, consequently adding to demineralizing of dental tissues.(1–5) A study conducted by Kusama T et al. (6) demonstrated a correlation between high ingestion of sugars and increased susceptibility to periodontal disease; meanwhile, raised sugar levels in saliva exacerbate the severity of existing periodontal concerns.(7)

EDSA at FDI Dental Congress, ERO Plennary Session,Istanbul Turkiye 14th September, 2024

Additionally, with the excessive consumption of sugar-sweetened beverages, greater probability of dental erosion are presented, wearing away the protective layer of dental tissues. In regards with these compromises, dentists encounter a myriad of obstacles when providing treatments and managing patients who consume excessive sugar content. These patients experience a greater vulnerability to developing caries, often more susceptible to complicated and invasive dental interventions, while, on the other hand, interfering with current undergoing treatments.(8–10). Moreover, controlling oral infections individuals with sugar□rich diets presents significant challenges due to the compromised immune response and the potential for creating an optimal environment for the flourishment of infections, such as the colonization of Candida species.(11) Furthermore, hyperglycemia is also correlated with the negative progression of periodontal diseases, thereby noticeably influencing the prognosis, and poses difficulties for dentists. Research has shown that individuals who indulge profuse amount of sugar, particularly in the form of sugar-sweetened beverages, suffer an upsurge of gingival bleeding, gingivitis, and risk of periodontitis, as elevated blood glucose levels adversely affect the inflammatory response to dental plaques.(12–14). Additionally, studies reveal impaired wound healing around the apex of teeth can be aggravated by hyperglycemia, and are remarkably observed in cases of chronic infection and inflammation persisting in jawbones.(15) Another systematic review highlights that patients with unstable blood glucose levels endure higher rate of root canal-treated teeth extracted, indicating lower life spans for these teeth.(5) Dentists, therefore, are required to have heightened vigilance and additional considerations when treating such patients, both preoperative and postoperative, to minimize probable complications arising from impaired wound healing or secondary infections.(16) Finally, patients with a habitual pattern of sugar consumption are additionally predisposed to developing chronic and systemic disorders, including diabetes mellitus and obesity. Such conditions potentially escalate complications and challenges associated with dental treatments

CONCLUSION

The pervasive infiltration of sugar into modern diets casts a shadow over oral health, amplifying the risks of dental decay, gum disease, and enamel erosion. This silent threat demands a multi-prolonged offensive, empowering individuals and mobilizing communities towards a sugar-free future. Advocating for a sugarless lifestyle emerges as an imperative mandate can be achieved through upstream, midstream, and along with downstream interventions, with approaches involving educational campaigns, community engagement endeavors, policy adjustments, and technological approaches, to illuminate the profound ramifications of elevated sugar intake on health, and, most importantly, empowering individuals to make enlightened choices. By collaborating with policymakers and stakeholders, systemic reforms can be advocated, favorable environments for healthier dietary habits could be constructed. With dentists assuming a central role in catalyzing this transformative paradigm shift, dentistry's leading edge stands prepared, equipped with knowledge and collaborative tools to guide, dentists can orchestrate community outreach, and champion sugar reduction policies, while serving as the spearhead a healthier, sugar-free tomorrow. This dietary shift would empower individuals to not only protect their smiles but also unlock a cascade of health benefits, paving the way for a transformative future.

For References

PRESS RELEASE

APPLICATIONS ARE OPEN FOR THE "ORAL HEALTH PROFESSIONAL EDUCATORS' AWARDS" 2025

The partnership between ADEE and Henry Schein began in 2023 with the establishment of the Practice Green Awards, aimed at promoting and recognising the efforts of dental schools and organisations in advancing environmental sustainability. In 2025, this initiative will evolve with two categories to drive change: The "Practice Green" category will continue to highlight environmentally sustainable approaches of dental schools and organisations, whilst the new "Social Excellence" category will focus on helping health happen, celebrating efforts to improve equitable healthcare outcomes and access to care.

Dublin/Amsterdam/Langen, 19 March 2025 – The Association of Dental Education in Europe (ADEE), the European Dental Students' Association (EDSA), and Henry Schein are pleased to continue the cooperation to help drive change by granting the 2025 Oral Health Professional Educators' "Practice Green" Awards. This year's awards will continue to highlight progress on environmental initiatives through the first category: 'Practice Green' Award (environmental sustainability) and include the introduction of a new category, the 'Social Excellence' Award, to help health happen by recognising improvements in social health outcomes for communities and patients.

Expanding the parameters of the award to encompass both environmental and social impact reflects the shared values of the partners. By incorporating a social excellence component, the award will better reflect the impactful contributions dental schools and societies are making to drive change towards sustainable practices and meaningful social responsibility.

AWARD CATEGORY DESCRIPTIONS AND SUBMISSION PARAMETERS

Category 1: Oral Health Professional Educators' ; "Practice Green" Awards

This category aims to embed an ethos of sustainability within the education lifecycle for oral health professionals and within the educational and clinical practice settings. Best practice examples will be showcased and recognised through participation in this programme.

Parameters for submission
The Oral Health Professional Educators "Practice Green" Awards recognise two ADEE member institutions that have demonstrated excellence in integrating sustainability across the educational, clinical, and operational practices. This award celebrates institutions that actively contribute to environmental stewardship, with initiatives that encompass sustainable campus management, eco-conscious procurement, and the integration of sustainability principles into their educational programmes.

Institutions are encouraged to showcase comprehensive efforts that reduce environmental impact, such as energy conservation, waste reduction, and the adoption of greener materials and resources. Additionally, the awards highlight the importance of embedding sustainability into the curriculum, preparing future oral health professionals to practice in ways that benefit the environment.

By participating, institutions can share how their innovative strategies have created a positive, lasting impact on the campus, clinical settings, and the broader public. This may include either a clinical or departmental approach.

Category 2 - Oral Health Professional Educators' "Social Excellence" Awards to help health happen

This category aims to embed an ethos of social responsibility within the education lifecycle for oral health professionals and within the educational and clinical practice settings. Best practice examples will be showcased and recognised through participation in this programme.

Parameters for submission:
The Oral Health Professional Educators "Social Excellence" Awards recognise two ADEE member institutions that have demonstrated exemplary dedication to integrating social responsibility across the educational, clinical, and operational practices. These awards celebrate institutions that actively contribute to societal well-being through initiatives that enhance access to care, promote inclusion, and foster a culture of equity and support for underserved populations.

Institutions are encouraged to showcase efforts that positively impact local communities, such as programmes that provide equitable access to dental care and outreach to communities in need. Additionally, the awards emphasise the importance of preparing future oral health professionals to practice in ways that benefit society.

By participating, institutions can highlight how the innovative strategies have fostered meaningful, lasting change within the communities, clinical settings, and the broader public. This can include increased access to care programmes or innovation resulting in improved health care outcomes.

Prof Brian O'Connell, ADEE President, said: "After two successful years of the 'Practice Green' Awards, ADEE is thrilled to continue our partnership with Henry Schein and EDSA on this initiative and to introduce the additional 'Social Excellence' category. Through these awards, we can support ADEE member institutions in raising awareness of both environmental and socially related efforts."

EDSA Vice President of External Affairs, Saulė Skinkytė, stated: "We at EDSA are delighted to again collaborate with ADEE and Henry Schein on this initiative. The award results over the past two years showed how driving sustainability is already on the minds of students and educators. We are pleased to continue this emphasis on sustainability in curriculum as well as introduce the new category recognising social responsibility. It is clear that collaboration in these areas can make a true impact."

The Oral Health Educators' "Practice Green" Award, originally established in 2023, was inspired by Henry Schein's global sustainability initiative, Practice Green™. Through this initiative, Henry Schein seeks to empower the health care sector with ways to reduce their environmental footprint while providing high-quality patient care. Practice Green provides customers and suppliers with products, solutions, and resources that enable health care professionals to create a greener practice. By expanding the award to include a social impact category, it now serves as a more comprehensive tribute to Henry Schein's broader corporate citizenship initiatives.

"It is an honor to again collaborate with ADEE and EDSA, especially with this year's expanded award categories. Together, we aim to promote sustainability and social responsibility to drive change in dental education and across the industry as a whole," said Nicola Loynes, Vice President, EMEA Special Markets, Henry Schein.

Applications are now open to ADEE member institutions and will remain open until 30 June 2025. The awards will be presented at a gala event held as part of ADEE 2025 Annual Meeting in Dublin, Ireland, from 20 to 22 August 2025.

For further information about the application process, please visit the award website or contact administrator@adee.org.

ABOUT ADEE

Founded in 1975, The Association for Dental Education in Europe (ADEE) brings together a broad-based membership across Europe comprised of dental schools, specialist societies and national associations concerned with dental education. ADEE is committed to the advancement of the highest level of health care for all people of Europe through its mission statements and by focusing on the standardisation and advancement of oral health professionals' education. It draws membership from within the WHO Europe Region and beyond.

ABOUT EDSA

The European Dental Students' Association (EDSA) was founded in 1988 and currently represents more than 70,000 dental students from 182 dental schools in 33 different countries. EDSA is a not-for-profit and independent organisation that is open to all local or national dental students' associations in the European region.

ABOUT HENRY SCHEIN, INC.

Henry Schein, Inc. (Nasdaq: HSIC) is a solutions company for health care professionals powered by a network of people and technology. With approximately 25,000 Team Schein Members worldwide, the Company's network of trusted advisors provides more than 1 million customers globally with more than 300 valued solutions that help improve operational success and clinical outcomes. The Company´s Business, Clinical, Technology, and Supply Chain solutions help office-based dental and medical practitioners work more efficiently so they can provide quality care more effectively. These solutions also support dental laboratories, government and institutional health care clinics, as well as other alternate care sites.

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