

SmileTimes.Pedo

The Official Newsletter of

Indian Society of Pedodontics and Preventive Dentistry

January-March 2022

Dear ISPPD Members,

It gives me immense pleasure to present to you the January- March Issue of the ISPPD Newsletter SmileTimes.Pedo. We are rapidly moving towards the pre covid life style. The patients have returned to our OPDs, physical events are back, travels have started, children no longer in virtual class rooms and the summer vacation plans are getting formulated again. It's the resilience of life and its forms that we tend to forget and walk ahead with positives. Though there might be some scepticism about another wave, the Covid-19 has enriched this society with the never say die attitude.

ISPPD has witnessed some remarkable feats from the members in past two years and has acknowledged their contributions in the national crises. The president Dr Mousumi Goswami, General Secretary Dr Nikhil Srivastava and the entire executive committee have strived hard to motivationally engage the student and faculty members across India. It has given platform for academic learning, conducted research workshops and started research grants as well. ISPPD has been proactive in celebrating the small occasions with big heart and creating avenues for its members to compete and win awards. The wider dissemination of the oral health care protocols has been recognised at national level. This issue of the newsletter highlights the special celebration of womanhood with a showcase of the ISPPD's women power along with the institute's & member's achievements, award winner, upcoming events and some essential information about our society. We look forward to your continued support. Happy reading.

Dr Nitesh Tewari



The ISPPD EC at CDER, AIIMS, New Delhi



ISPPD EC Meeting was held on 13th April 2022. The event was hosted by the Department of Pediatric and Preventive Dentistry, Centre for Dental Education and Research, AllMS, New Delhi







Indian Society of Pedodontics and Preventive Dentistry

firmly believes that ...

The World Will Be a Better Place to Live the Day
When a Girl Child Is As Happy as the Other Gender.
Let Us Work in Synergy to Make This Dream Come True.

Happy National Girl Child Day- 2022



Dr Mousumi Goswami President

24th January

Dr Nikhil Srivastava Secretary General

ISPPD Celebrated the National Girl Child Day, Dentist's Day, World Oral Health Day and National festivals

Indian Society of Pedodontics and Peventive Dentistry

wishes



DENTIST is a combination of ...

A Doctor

An ENgineer &

An ArTIST

Dr Mousumi Goswami President



Dr Nikhil Srivastava Secretary General

ISPPD recognized the distinguished women in the field of Pediatric Dentistry to mark the international Women's Day



















Dr. Deepa Gurunathan



Dr. Kalpna Chaudhary



Dr. Kavita Dhinsa



Dr. Kirthiga M

























Dr. Urvashi Sharma

Distinguished women in the field of Pediatric Dentistry

On The Occasion of International Women's Day

Presents Webinar on

Women's Nutrition; Health & Fitness

Date & Time: Tuesday, March 8th, 2022, 1500 hrs.

Platform: Zoom



Guest Speaker

Dr. Vasundhara Singh
Asst. Dietician
AIIMS, New Delhi



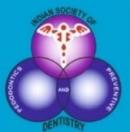
Dr. Mousumi Goswami President



Dr. Nikhil Srivastava Secretary General



Dr. Radhika Muppa President Elect



ISPPD World Oral Health Day Celebration Contest

20th March 2022

Be proud of your mouth.

Indian Society of Pedodontics & Preventive Dentistry invites pediatric dentists and departments of Pediatric Dentistry of all dental college of India to celebrate "World Oral Health Day" between 20^{th} – 27^{th} March 2022, with the objective To raise public awareness about dental & oral health in children and teenagers.

The celebration contest should include the following:

- 1. Awareness radio talks on AM/FM/Vividh Bharti etc.
- 2. Awareness talks/Debate/Interview etc. on TV/Local channels.
- 3. News papers articles.
- 4. Pamphlet distribution.
- 5. Displaying banners/Posters etc. at public places.
- 6. Any other awareness activities.



Note

- After programme, the participating college/Clinics should submit their report with photos only in pdf format, audio clippings of radio talk & link for TV programmes to the head office at <u>secretary@isppd.org.in</u> latest by 15.04.2022.
- 2. FIVE awards for overall best activities (1st, 2nd, 3rd & 2 consolation prizes) shall be given to the winners during the forthcoming physical national event of the society.
- 3. For further information, please visit our web site www.isppd.org.in

INDIAN SOCIETY OF PEDODONTICS AND PREVENTIVE DENTISTRY

President

Prof. (Dr.) Mousumi Goswami

MDS (KGMC)

Head, Dept. of Pediatric & Preventive Dentistry ITS Dental College, Hospital & Research Centre Greater Noida U.P. presidentisppd21@gmail.com



Secretary General

Prof. (Dr.) Nikhil Srivastava

MDS (KGMC), FDS-RCS(Edinburgh), FDS-RCP (Glasgow), FICD

Subharti Dental College & Hospital, Subharti University, Meerut U.P. secretaryisppd21@gmail.com

RESULT

ISPPD Children's Day (Week) Celebration Contest (202

Overall Best Activities

- I.T.S. Centre for Dental Studies & Research, Gha aba Ist Prize

- Sibar Institute of Dental Sciences, Guptur, Andhra Pradesh. Hnd Prize

Sardar Patel Post Graduate Institute of Jene & Jedical IIIrd Prize

Sciences, Lucknow.

Subharti Dental College, Ment. Ist Consolation -

Vinayaka Missions unkar char er Dental College, Salem. IInd Consolation -

Theme of the year- Subharti Dental Colleg & Pital, Meerut (U.P)

"Brush 20, daily 2 times Vy for inutes two Theme: Have a healthy outh in enty (wenty - two"

Short Awareness Video-

my Tolles Dental Sciences, Secunderabad, Telangana Ist Prize

http://div.coogle.com/file/d/11Oeiwc6gLQDkjOhUvGCZqg DjZi_wa0L_k/view?usp=drvesdk Link:

IInd Prize IDS Jental College, Kadrabad, Modinagar, UP

https://drive.google.com/file/d/1WNpEVWNt6kCea_fx pk6G

7em63VI6cC/view?usp=sharing

Srinivas Institute of Dental Sciences, Mangalore, Karnataka

https://drive.google.com/file/d/1VpvdoSWzOWuraP

27wi318K4AG_s6y5W 6/view?usp=sharing

Dr Nikhil Srivastava General Secretary

C.c. to: Dr. Mousumi Goswami, President, ISPPD

HEAD OFFICE:

Institute's Achievements

SIBAR INSTITUTE OF DENTAL SCIENCES, GUNTUR ANDHRA PRADESH





On the eve of International Women's day (8th March 2022) the department recognized the women power by striking a pose "Break the Bias". In the afternoon session the female faculty members were felicitated and a motivational lecture was organized highlighting the importance of Periodic Breast Screening and cervical cancer vaccination by a senior physician Dr P. Vijaya MD,DM.

As a part of **GO GREEN** initiative, the department has developed an app to feed the patient data during School dental camps. The app was unveiled by Dr L. Krishna Prasad, Dean of the institute on 18th March 2022. This app (SIBAR CAMPS) can be freely downloaded from **google play store** and can be used offline. We thank the efforts of Dr KTSS Rajajee in developing this app for us.

On 18th February 2022, department of Pediatric dentistry, Sibar institute of dental sciences, Guntur, A.P. in collaboration with ISPPD conducted a Continuing Dental Education and Hands on Program on Digital Cephalometric Analysis by Dr. KTSS Rajajee MDS. A total of 54 Interns, Post Graduates and Faculty attended the program. The participants had a good interactive session and Hands on experience on "EasyCeph" mobile app.







NATIONAL LEVEL PEDIATRIC DENTISTRY PANEL DISCUSSION FOR PEDIATRICIANS

A dedicated pediatric dentistry panel discussion for pediatricians at the national level was a long time overdue. The same was organized at the 59th Annual Conference of the Indian Academy of Pediatrics held at Greater Noida from March 20-23. The panelists included the current President of ISPPD Dr. Mousumi, Dr Radhika Chopra, Dr. Kunal Gupta, and Dr. Deval Arora. The much-appreciated session was moderated by Dr. Sanchit Paul who was part of the organizing team. The session has important takeaway messages for Infant oral health, early childhood decay, dental trauma, deleterious habits, and children with special needs. It also included recommendations for the pediatricians and more sessions like this in future pediatric conferences were suggested by everyone.





KD DENTAL COLLEGE, MATHURA, UTTAR PRADESH

A CDE program on Conscious Sedation was conducted on 2nd and 3rd of march ,2022, under the guidance of Dr. Sonal Gupta, Professor and Head and Dr. Sushma Gojanur, Professor, where renowned Pediatric dentist Dr. Kunal Gupta from Gurugram was invited as a guest speaker to conduct the lecture and hands-on program. At the end of the 2 days CDE program, certificates were distributed to all the delegates.





CHRISTIAN DENTAL COLLEGE, LUDHIANA, PUNJAB

A Post Graduate refresher course, first of its kind in the state of Punjab was organized by Dept of Pediatric and Preventive Dentistry, Christian Dental College, Ludhiana Under the aegis of Baba Farid University of Health Sciences, Faridkot, Punjab from 7th to 12 th March 2022. The idea of master classes in all dental post graduate specialties was conceived by the honorable Vice Chancellor, BFUHS, Prof (Dr.) Raj Bahadur & Dr. Puneet Girdhar, Joint Director- Department of medical education Punjab and executed by Dr. ABI M Thomas, Organizing Chairman and Principal, Christian Dental College, Ludhiana, in the subject of Pediatric Dentistry. The course was attended by a total of 45 second year and third year post graduate students from 8 dental colleges in the region of Punjab. The six-day course had a series of interactive lectures and PG exam-oriented Hands-on training sessions. The notable sessions by subject experts included 6 Guest speakers from outside the university. They included Dr. Abi M. Thomas, Dr. Rohini Dua, Dr. Namita Singh, Dr. Kapil Dua, Dr. K. Gauba, Dr. Neeraj Gugnani, Dr. IK Pandit, Dr. Heena Khurana, Dr. Purushotam, Dr. Joe Mathew Cherian, Dr. Shaila, Dr. Seema Thakur, Dr. Bharat Suneja, Dr. Sunaina Jodka, Dr. Nitesh Tewari, Dr. Meenu Bhola, Dr. Bhavna Kaul, Dr. Nirapjeet Kaur, Dr. Varinder Goyal, Dr. Navneet Grewal, Dr. Vivek Saggar. The winner of inter college quiz programme conducted by Dr. Ruchika Kundra and CDC post graduate students during the course were Dr. Anu and Dr. Winnie, Dasmesh Dental College, Faridkot (First prize) and Dr. Impreet and Dr. Muskan, GDC, Amritsar (second prize). The programme concluded with positive responses from the participants.













DEPARTMENT OF DENTISTRY, GOVERNMENT MEDICAL COLLEGE AND HOSPITAL, SECTOR 32, CHANDIGARH

The team led by Dr Gurvanit Kaur Lehl celebrated international woman's day in Department of dentistry, Government Medical College and Hospital Sec 32 Chandigarh in the Gynaecology Department. They gave oral health awareness talk which included preventive oral care of expectant mothers and prenatal counselling. They also celebrated the world oral health day with public awareness initiatives.







th.

SREE ANJANEYA INSTITUTE OF DENTAL SCIENCES, KERALA

A Continuing Dental Education programme titled "ADVANCES IN DENTAL LOCAL ANESTHESIA – TECHNIQUES AND DEVICES" on 09th March, 2022. The speaker for the programme was Dr. Raju Sunny. The programme started at 09.00 am with an invocation by Dr. Sudheeshna, Post graduate followed by a welcome address by Dr. Sameer Punathil, Vice Principal, Professor and HOD. The programme was officially inaugurated by Dr. P. V. Gopinath, Principal and Dr. Suji Dinesh, Dental Superintendent was the Guest of Honour. Dr. Raju Sunny was felicitated by Dr. Arun Tom, Vice Principal. The speaker was introduced by Dr. Archana Pai and vote of thanks was given by Dr. Jeswin James. Dr. A K Meera and Dr. Arshia Raviraj [Post graduates] were the Master of ceremony of the programme. KDC Observer, Dr. Shabna Moyin monitored the Programme. The CDE programme was very well appreciated by the staff of neighbouring colleges for the topic selected and for the smooth organisation.

GOVERNMENT COLLEGE OF DENTISTRY, INDORE MADHYA PRADESH

A new PG clinic for Department of Pedodontics and Preventive Dentistry was inaugurated in Government College of Dentistry, Indore by the Madhya Pradesh Medical Education Minister Shri Vishvas Kailash Sarang and Dr. Deshraj Jain, Principal, Government College of Dentistry, Indore on 09th February 2022. The Department is equipped with the state of the art facilities and has been designed to cater to children's preferences such as a children's library in the waiting area. An another program on "Research Methodology" was organized by the Department on 15th February 2022. The lecture was given by Dr. Deepika Jain concentrating on the techniques or procedures that are used to identify and analyze information regarding a specific research topic. The program was actively attended by the post graduates of various departments. Further a two days program namely Pedomatics III was organized on 19th and 20th February 2022. Dr. Akash Patodia, Dr. Neetu Gupta and Dr. Kaushal Kabir gave lecture on Pediatric Dentistry and Sedation Concepts. The lecture focused on the usage and importance of Nitrous Oxide in Pediatric Dentistry. Since many children get anxious and are often not found co-operative during the procedure, the nitrous oxide gas or the laughing gas is considered a boon while treating such patients. The lecture was followed by 'hands on' program on the next day where demonstration was given on the usage of the nitrous oxide gas. The program had participation of the post graduate students of other dental colleges.



AECS MAARUTI COLLEGE OF DENTAL SCIENCES & RESEARCH CENTRE, BENGALURU

Department has adopted a holistic approach in patient management and treatment.

- "Arpana" a flagship project, where the government schools in and around the college campus are adopted to ensure good oral health of school children, by using preventive and therapeutic measures.
- "Train the Trainer" is another program, initiated to educate school teachers about oral health. This involves, assessing their knowledge on oral health and educating them after identifying the lacunae. The program also includes oral examination of school children annually. This program has been recognised by ISPPD during the Teachers Day Week.
- Teachers training program has been extended to include parents of the same school. Oral health education and their queries are addressed using the online platform.
- Innovative behaviour management techniques are developed, researched and adopted in the Department. "Thaumaturgy" (use of magic tricks) a novel technique, has proven to be a boon in the management of children with disruptive behaviour.
- "BDSM scale" a 3D facial imaging anxiety scale has been developed in the Department to assess the level of anxiety in children.
- Post graduate students of the Department have always strived hard and have consistently managed to clinch laurels in all participated activities. They have also bagged many University ranks.
- Covid lockdown has seen light to many CDE programs by distinguished speakers.
- To gain transferable skills such as communication, team work, organisation, problem solving and to build confidence among the staff and post graduate students, extracurricular activities are always encouraged.

The Department strives to seal a happy smile on little, adolescent and young faces



HAZARIBAG COLLEGE OF DENTAL SCIENCES AND HOSPITAL, HAZARIBAG, JHARKHAND, INDIA

Dr Vipin R Ahuja (Professor & HOD) and Dr Swati Singh (Senior Lecturer) from the Department of Pediatric and Preventive Dentistry at Hazaribag College of Dental Sciences And Hospital, Hazaribag, Jharkhand has organized a 'Fones Tooth Brushing Technique Demonstration Program' for children in Hazribagh district of Jharkhand state in the last week of Dec 2021. Under this event, children and their parents were taught the right method of tooth brushing for kids, the Fones technique. The day was marked with an offline lecture on tooth brushing in children by Dr. Jaya Verma (Post graduate student) and hands on demonstration technique on live models and self-demonstration of tooth brushing by Dr. Arunima (Post graduate student) in the Department of Pediatric and Preventive Dentistry. After that, all the children brushed their teeth the way it was told to them. The brushing was supervised and many queries regarding the same were addressed. The free samples of toothpaste and toothbrushes were also distributed as a token of gift to all the participants by Dr. Praveen Srinivas (Secretary), Principal (Dr. K. Sri Krishna) and Mr Shekhar Choudhary (CEO) of Hazaribag College of Dental Sciences And Hospital, Hazaribag, Jharkhand. A self-defense program was also organized on Women's Day in the campus ground on 8 March 2022. The demonstrator was Sensei Mukesh Kumar Das, Black Belt, IST Dan, National Gold Medalist, and his team. The program was chaired by Dr. Praveen Srinivas (Secretary), Principal (Dr. K. Sri Krishna) and Dr Sudhanshu (Registrar) and Dr. Annapurna Ahuja (Prof & HOD, Periodontics).









GSL DENTAL COLLEGE AND HOSPITAL, RAJMUNDRY, ANDHRA PRADESH.

On January 5th 2022, NASOALVEOLAR MOULDING workshop was conducted and organised by Department of Pediatric and Preventive Dentistry at GSL Dental College and Hospital under the guidance of Dr.Veena Arali, Professor and Head of the Department. The Guest speaker, Dr. GAJANAN UMESH SHANBHAG, a renowned Orthodontist with 19 years of experience. He is a National and International keynote speaker and expertise in treating patients with cleft lip and cleft palate, well known for his persistent works on fabrication of Pre-Surgical Nasoalveolar Moulds who was trained under Dr. Grayson. He taught us the importance of doing nasoalveolar moulding in cleft lip and palate patients. We have been trained to fabricate the NAM plate on the dummy models. His unique way of teaching paved us a way .We are proud to be certified under his guidance.







DENTISTRY DENTISTRY

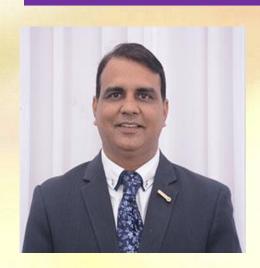
Encourage your friends and students to become members.

Its your society....
www.isppd.org.in

Member Achievements

Dr Nikhil Srivastava, Professor & Head, Pediatric and Preventive Dentistry, Principal, Subharti Dental College & Hospital, Dean, Faculty of Dental Science, Swami Vivekanand Subharti University, Meerut, UP, India, Member, Dental Council of India (DCI), General Secretary, Indian Society of Pedodontics & Preventive Dentistry (ISPPD) was awarded with Siksha Bharati Award 2021-2022 for his outstanding professional achievement and contribution in nation building.





Dr Vijay Prakash Mathur, Professor and Head, Pediatric and Preventive Dentistry, Centre for Dental Education and Research, All India Institute of Medical Sciences, New Delhi delivered the prestigious **Dr M L Soni oration at** the Convocation of International College of Dentists Section VI on 27th February 2022.

Dr Nitesh Tewari and Dr Kalpana Bansal Additional Professors, Pediatric and Preventive Dentistry, Centre for Dental Education and Research, All India Institute of Medical Sciences, New Delhi and Dr Charankamal Kaur, Medical Officer (Dental) Government Multi-specialty Hospital Sector-16, Chandigarh were awarded with the fellowship of the International College of Dentists Section VI on 28th February 2022. Dr Nitesh Tewari's paper on soft tissue healing was selected as the most cited paper in Dental Traumatology Journal in the year 2020-21.









Dr Sanchit Paul, Consultant, Tooth Tales, Greater Noida, was invited as an **International Keynote Speaker** for Annual Conference of **Indonesian Pediatric Dentistry Society**. The conference was dedicated to Craniofacial disorders- Date 12th March 2022





We all need something ahead of us to strive after, to motivate others and ourselves and keep us moving forward, to keep us from becoming bored or complacent. This is what inspired Dr. Rupesh Suresh (Professor, Pedodontics & Preventive Dentistry, Malabar Dental College, Kerala) to participate in and complete the Ironman Dubai 70.3 Triathlon World Championship race, held on March 5th in Dubai this year.

Dr. Rupesh Suresh has always been passionate about health, fitness and of course good wholesome food. He has completed numerous marathons (42.2 km runs), ultra-marathons (60 km trail run) and was awarded the Super Randonneur Award in 2021, which is considered to be the golden standard in endurance cycling, by Audax India Parisien for completing a series of 200 km, 300 km, 400 km and 600 km rides in a given season. The completion of the Ironman race in Indonesia in 2019 is another feather in his cap.

So it only seemed logical that he would try to participate in Ironman Triathlon- the World's Toughest Endurance Race. It was the next big thing, and he had made it his goal to compete in it. It starts with a 1.9 km sea swim, followed by a 90 km cycling and ends with a 21.1 km run, all to be done in succession without breaks or external support within a cutoff time of 8 hours 30 minutes. Dr. Rupesh completed the race in 6 hours 50 minutes. His endeavor is a reminder to all of us that we really can do anything we set our mind to. Challenge yourself, figure out what it is you want, and go after it with determination. (Contributed by Dr Anandraj S)



Dr Joby Peter, Head, Pediatric and Preventive Dentistry, Anoor Denta College and Hospital, Kerala, India finished a certification course from University of Michigan on sleep, neurobiology, medicine and society.

Got trained in BUTEYKO method of breathing from Ireland. I am the first dentist and pediatric dentist from India to be an international buteyko trainer. He was also invited as the keynote speaker for world Dental Conference

Dr Sonali Saha, Professor and Head, Sardar Patel Post Graduate Institute of Dental and Medical Sciences, Lucknow, Uttar Pradesh, India was awarded as Outstanding researcher in Pedodontics by the Cynodent International Awards 2021





Dr. Deval Kumar Arora, Assistant Professor and Unit Incharge, Department of Dentistry, Government Medical College, Shahjahanpur (U.P.) successfully published 2 patents in the Official Journal of the Patent Office. He was awarded Certificate of Excellence in Reviewing by Journal of Pharmaceutical Research International, He was also awarded a certificate of appreciation- Reviewer Certificate by International Journal of Clinical Pediatric Dentistry, and participated as panelists in the session on Artificial Intelligence in Dentistry: Opportunities and Challenges by Dr. Lamiaa Al-Fadaly, Global Outreach Research College & Hospital was invited as Guest Speaker and Panel Expert to PEDICON 2022 on 23/3/2022.

Dr Jasmine Nanda, consultant pediatric dentist from New Delhi became a New Record Holder of India for performing extraction of Natal teeth (rare anomaly present at the time of birth) in the YOUNGEST new born of just 9 days. The record has been registered in the INDIA BOOK OF RECORDS



Dear Members,
Please send your feedback and the achievements

you wish to publish in next edition of SmileTimes.Pedo at dr.nitesht@gmail.com

ROHIT MY SPECIAL EDUCATOR

Medical profession teaches us to avoid personal attachment with any patient, as it may affect the doctor's judgement regarding diagnosis and treatment plan. Regarding my patients, I have a mixed baggage of feelings-- joy, relief, tension, contentment, anger, scare, motherly instinct, friendly, bossy mentality etc during different phases of treatment. Though, I always try not to be very personal with my patients. But with Rohit it was different.

Rohit came to my dental clinic with his mother in the year 2009. He was an eight year old boy, tall compared to his age, fair, thin built and appeared very scared like any other children of his age in dental clinic. Yet, I found his behaviour little different from other children. He could say few words; he was never making eye contact with me. His mother told that he has got two retained milk teeth and a permanent tooth has erupted behind them. His mother informed that he has got ASD. At that time I was not aware about Autism Spectrum Disorder (ASD) and thought ASD stands for Aortic Septal Defect. In our post graduation days we never came across any patient with ASD. Our academic curriculum included handicapped children but it had less emphasis on intellectual disability and more attention was given to medical and physical disability. On the second appointment, I planned to extract or take out the milk tooth. At that time, I failed to communicate with Rohit using conventional behaviour management technique, and I was not trained to manage children with ID in dental clinic. I somehow used active physical restraining device (asked his parents to hold him back) and took out the tooth.

I met Rohit again in the year 2019, after a gap of 10 years. By that time I became very aware and passionate towards dealing children with Autism or ID in dental clinic. Rohit turned out to be a very tall, thin built young adult. He and I both could communicate better this time. Rohit had a habit of repeating his sentences. By now, I have accepted his diversity and learnt to modify mode of communication, treatment and planning according to his need. This time we did a very invasive root canal treatment and crown of teeth. Rohit taught me that it's ok to be not so effective (according to social norm) in every aspect of life. I became more accepting with so called flaws of people around me. By being personal with Rohit I learned to accept diversity of human beings sensibly.



Dr. Prof. Shabnam Zahir, MDS (Cal)

Professor & Head, Department of Paediatric and Preventive Dentistry Guru Nanak Institute of Dental Sciences and Researches, Kolkata

Abstract

Dental caries is the most widespread disease affecting the health status of people worldwide and of all ages. Numerous techniques have been described for removal of these caries before restoring the tooth. But it was also seen that on attempting complete caries removal, it led to mass destruction of the non regenerative portions of the tooth structure. Thus, a paradigm shift to this approach is now established that chooses a more conservative and less destructive caries removal techniques using less invasive procedures.

Body of the Essay

History and Evolution

At the turn of the last century, when the original guidelines for operative dentistry were established, the term "caries excavation" was defined as synonymous with "cavity preparation. From this conflation, it seems that caries excavation procedures were viewed as one of the several mandatory steps to prepare a tooth in order to receive and retain a filling material. These filling materials were primarily mechanically retained with no chemical adhesion to dental hard tissues. Moreover, it was prescribed that the carious lesion should be excavated "until a hard pulpal floor was reached" and that "generally, when the cavity has been cut to form, no carious dentin will remain". The basic reasoning was that the infected portion of the dental tissues should be excavated until a satisfactorily sturdy layer of dentin was reached to support condensation of the restorative material ("stability form") and to ensure adequate retention of the filling material ("retention form"), promoting a successful and enduring survival of the restoration. [1]

It is thus clear that when non-adhesive filling materials were the only obtainable choice to directly restore carious teeth, no discrete separation between caries excavation and cavity preparation was made. This would explain the universal misperception still observed today when defining the term "caries excavation". With the advent of newer restorative materials which had the ability to bond to the tooth structure, the integrity and relevance of the erstwhile principles for cavity preparation given by Dr. G.V Black had downgraded. The guidelines for cavity preparation now became about simply removing caries and, if needed, bevelling of the enamel cavity margins. This in turn made the meaning of the term "caries excavation" even more obscure, lacking a universal and objective definition.

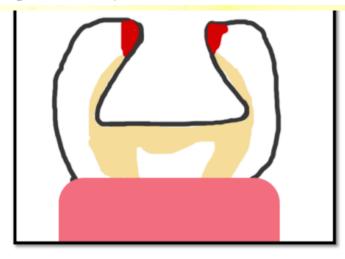


Figure 1. G.V. Black's Retention and Resistance Form for Cavity Preparation

Our comprehension of caries and its mechanism has intensely changed over the ages. Historically, caries was always believed to be an infection caused by one or few specific bacteria like Streptococcus mutans or Lactobacillius. It was expected that the patient was at risk for carious lesions eventually if they were found to contain these bacteria. This supposition is what we now call "specific plaque hypothesis", first announced in 1976 by Walter. J. Loesche. Thus, traditionally, it was simply believed that the only way to "cure" a carious tooth was complete removal of all bacteria from the dental tissues. Complete elimination of the offending organisms, even at the cost of valuable tooth structure, was considered as the optimal way to prevent carious spread in the mouth. Besides, to keep away from transmission of S. mutans and forestall the "spread" of the disease, moms were advised not to have common cutlery with their kids and even to try not to kiss their infants.^[1]

This naturally led to meticulous distinction and evaluation between infected dental hard tissue and healthy tissue. In 1972, Fusayama and Terachima differentiated between "infected" dentin and "affected" dentin based on their histology. "Infected" dentin was said to be that part of dentin which is irreversibly demineralised and consists of irreversibly denatured collagen fibres. On the other hand, "affected" dentin was said to be reversibly demineralised and minimally infected with bacteria. Fusayama advocated complete removal of the "infected" dentin while

Winner of ISPPD Essay Competition 2021



Dr Shraddha Saikia
Post Graduate Student
ITS Dental College,
Muradnagar, Ghaziabad

"affected" dentin could be safely left behind. The treatment of caries hence basically became about removing infected zone and supplanting it with a restorative material (at this point of history, mostly non-adhesive amalgam, cements, or indirect metal restorations).

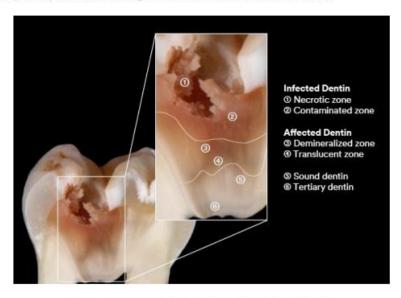


Figure 2. Histological Zones of Caries-Affected Dentin

However, clinically it seemed difficult to distinguish between these histological zones during the actual caries excavation procedure. All things considered, the histology and the possibility that at some characterized dentin level, no dynamic microbes would be available kept on driving caries excavation techniques for quite a long time. Thus, the goal of caries excavation became very clear: bacterial eradication. Based on caries being understood as similar to any other infection: carious excavation was considered to be either "complete" when bacteria was comprehensively eradicated or "incomplete" when some amount of bacteria was left behind. But on further understanding of the disease, it was found that this contamination follows a gradient rather than a clear demarcation and thus, it is very unlikely that carious tissue removal has ever been "complete". Besides, no distinct diagnostic tool is accessible today to clinically portray the caries-excavation endpoint which would permit cautious caries excavation. Some diagnostic tools such as dyes even seem damaging, as they increase the risk of pulp exposure exponentially.

Over time, with deeper clarity of the pathogenesis of caries, its management strategies have also evolved. The disease is now seen, by and large, to be the natural consequence of an ecological mbalance within the biofilm constituents and their activity. The physiological composition of the biofilm in the mouth contains very little cariogenic bacteria. But this natural balance in composition has been usurped by the abundant intake of fermentable carbohydrates. With refined carbohydrates constituting a large part of the daily diet of majority of people nowadays, it leads to fermentation by the few cariogenic species present in the biofilm. This leads to acid release leading to a pH decrease leading to cariogenic species becoming more dominant over other flora in the biofilm. When the biofilm gets a frequent supply of simple sugars and carbohydrates, the mature bacteria are able to create a drastically acidic environment in the oral cavity. This in turn, causes the dental hard tissues to undergo demineralization, especially dentin. This creates a cariogenic homeostasis and the process, if uninterrupted, will continue. Thus, the environmental balance in the mouth goes for a toss leading to a perversion of natural symbiotic relation between man and microbe leading to cavitation in the tooth.

This led to the next logical conclusion that it was not essential to remove allof the bacteria from the mouth to control caries and arrest carious lesions. Thus, the traditional aim of carious tissue removal no longer applies. The goal of caries excavation underwent a paradigm shift from removing all "infected" or better yet, "contaminated" dental hard tissues to instead controlling the composition and activity of the dental biofilm within the cavity. Thus, the modern-day goal of caries excavation is to maximize restoration longevity, without unnecessarily removing sound or remineralizable dentin. This is based on the current perception that caries is a biofilm-based and lifestyle-mediated disorder.

Therefore, carious excavation currently is done as minimally as possible with clinical cues rather than histological zones such as hardness of dentin [2]:

- Hard dentin: It is that part of the dentin which cannot be easily removed. Only an
 instrument with a razor-sharp cutting edge or a high efficiency cutting bur will be able to
 excavate it. It is so hard in its consistency that it makes a tell-tale scratchy sound
 "cridentinaire" when a probe is run across it.
- <u>Firm dentin</u>: It is that part of dentin which is hard enough to be removed with burs but
 not resistant enough that a hand instrument cannot be used, albeit it requires some
 pressure to be lifted with such instruments.
- <u>Leathery dentin</u>: It is that part of dentin that is hard enough to not be deformed under instrumentation but still is soft enough that the instrument does not require much force to remove it, even if it a hand instrument.
- <u>Soft dentin</u>: It is that part of dentin that is so pliable that it can easily be deformed under hard instrumentation. Very small amount of force is to be used to lift off this part of the dentin with even hand instruments.

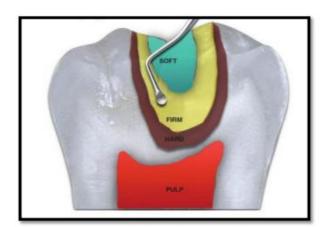


Figure 3. Layers of Dentin According To Hardness

Current Concepts

There are various approaches in the modern era for caries excavation, all with the singular aim of minimal loss of dental tissue. Based on the current knowledge and perspective towards dental caries and its progress, a number of principles have been agreed on by the International Caries Consensus Conference (ICCC) in 2016 [5]:

- (1) "Evade patient anxiety and apprehension regarding dental pain..
- (2) Protect healthy tissue as well as the tissue which have the potential for remineralization.
- (3) Accomplish perfect coronal seal with a restoration placed on healthy dental hard tissue either enamel or dentin, leading to dormancy of the bacteria underneath.
- (4) Preserve vitality of the pulp by removing as little dentin as needed and thus avoiding pulpal exposure and irritation.
- (5) Extend the lifetime of the restoration by removing a small amount of soft dentin even if it is more than what is necessary, so that the restoration can be placed on a stable foundation.

Selective Removal to Firm Dentin

Even if traditional perspective is used where infected caries need to be excavated, there are certain advances from age-old techniques to maintain minimal invasion. In selective removal, differential carious tissue removal norms areused at the periphery and in the pulpal aspects of the cavity. In shallow lesions, carious tissue should be removed as much as possible ideally till hard dentin is felt around the edges of the cavity (to extend the lifetime of the restoration and coverage of the cavity). In central region, hard dentin may not be achieved during excavation, firm dentin is sufficient enough as it has the abilty to remineralize. This approach is recommended for lesions which are not very deep, that is, do not extend into the inner third or quarter of the dentin or those which are approaching pulp. It becomes a different ballgame altogether for lesions which extend into the inner third of dentin, because there is a risk of pulp exposure during excavation in such cases. Thus, this approach is not recommended for such lesions in order to maintain pulp vitality, provided of course that the tooth is free of irreversible pulpitis or pulpal necrosis. The aim should be to avoid pulpal exposure and leaving soft or leathery dentin in areas close to the dental pulp, if necessary, while at the border, carious tissue should be removed until hard tissue is felt, confirming that any enduring bacteria are sealed and inactivated and that the restoration has sufficient mechanical support against masticatory forces. This is applicable in cases of both deciduous as well as permanent teeth. [2]



Figure 4. Caries excavation till firm dentin

The armamentarium for caries excavation has undergone a massive evolution from the beginning of carbon steel burs to the current concepts. The technological advancement has occurred all with one goal in mind: Minimal loss of tooth structure. Some of the notable traditional and current armamentarium are:

Conventional Armentarium

Tungsten-carbide burs in low-speed hand pieces are the most competentway to excavatecarious lesions in terms of time-saving, and are thus still the most extensively used caries-excavation tools. But in this new age where maximum preservation of tooth structure is the goal always, these burs tend to achieve more depth than we desire.



Figure 5. Caries excavation till firm dentin

Current Advancements

Mechanical Excavation

Polymeric burs were developed so that their blade would remove dentin, not by
actually cutting but by locally depressing the carious dentin and pushing it
forward along the surface until it disintegrates and is carried out of the cavity.

This material was chosen because it has inferior mechanical characteristics as compared to healthy dentin. It was in attempt to develop a selective caries-removal instrument which would not remove additional "affected" dentin and thus would prevent the issue of "overexcavation" seen with tungsten carbide burs. But, soon it became clear that if the bur touched sound or affected dentin, it quickly becomes dull and produced undesirable vibration, making further cutting impossible [4]





Figure 2. Polymeric Burs

- <u>Ceramic burs</u> made of alumina-yttria stabilized zirconia were developed to increase cutting efficiency in infected, soft dentin as well as provide tactile sensation. However, further studies establishing the success and efficiency are yet to be substantially authenticated.
- Sono-abrasion caries excavation is the technique of using instruments that use high frequency waves to osscilate in the sonic region (<6.5kHz). Their advantage is that they tend to underexcavate rather than overexcavate as in seen in traditional instruments. However, they are severely lacking in efficiency as compared to traditional diamond or tungsten carbide burs.



Figure. Diamond and Tungsten carbide tips used for sono-abrasion

o Air Abrasion Excavation

Pure alumuina or pure aluminium oxide particles of 27 micron diameter are used conservatively remove carious dentin to create small cavities. However, research has shown that such alumina particles are more effective in removing sound dentin than carious dentin as the softer infected dentin tends to dampen the kinetic velocity of the alumina particles.



Figure. Air abrasion excavation

Flourescence Aided Caries Excavation (FACE).

A slow speed handpiece attached with a fibre optic with a yellow filter is used to create the cavity. It works on the principle that certain cariogenic bacteria are able to create red fluorescence because of the presence of porphyrins. Thus, this technique allows the most accurate and sensitive way to distinguish between affected and infected dentin with minimum destruction of tooth structure.

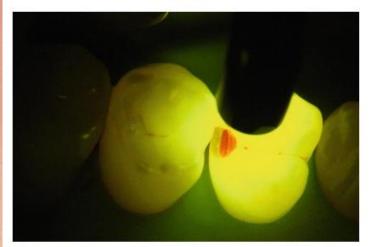


Figure. Red fluorescence of carious dentin seen under yellow light

LASER Excavation

LASERS have a wide range of application in clinical dentistry, one of which is minimally invasive caries excavation. Erbium based LASERS are able to selectively remove only dental hard tissues such as enamel and dentin without any effect of the delicate pulpal tissue. Additionally, they also provide the advantages of anti bacterial effect and decreasing solubility of enamel structure leading to lesser chances of caries recurrence. The main disadvantage is that it creates an irregular cavity surface.



Chemo-Mechanical Excavation

o Sodium Hypochlorite based Agents

Chemical agents containing sodium hypochlorite with an amino acid mixture have the ability to selectively breakdown carious dentin followed by chlorination of the degraded collagen fibres in it. This aids in easier removal of the carious dentin mechanically, even with a blunt non cutting end instrument. A successful variant of this agent is the Carisolv which is available in the gel form. One shortcoming associated with it is that it takes a much longer treatment time than traditional methods

Pepsin Based Caries Excavation

An alternative to sodium hypochlorite based chemo-mechanical agents for caries excavation is a pepsin based agent. It works on the principle that pepsin is able to selectively digest only the denatured collagen which is present in carious dentin as opposed to healthy dentin. But this technology is still in its nascent stage requiring more research.

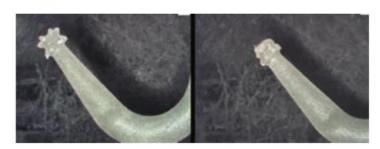


Figure. Plastic instruments used for carious dentin removal after pepsin application

Selective Removal to Soft Dentin

In deep cavities, where pulp exposurecomes into question, selective removal to soft dentin should be performed. Peripherally, only hard dentin and sound enamel are spared (accomplishingacceptable seal and make the most of restoration longevity). In the central areas, the aim remains to avoid pulp exposure. Thus, soft, leathery dentin is left here which reduce the will risk of pulpal exposure compared to the earlier approach of selective removal upto firm dentin. The cavity seal is relied upon to reduce the activity of thebiofilm by depriving the bacteria of nutrients, stopping thecarious lesion progression. This is again applicable for both primary and permanent teeth [5]

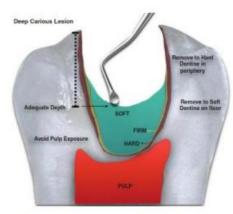


Figure 3. Selective removal to soft dentin

Some of the alternate approaches which will further reduce the loss of dental hard tissues are elaborated below:

• Stepwise Removal or Two Step Excavation:

An alternate approach forvery deep lesions (thoseinvolving the inner quarter of the dentin) is two-step excavation. Stepwise removal is a technique for caries excavation that is done in two steps (visits). In the initial visit, selective removal up to soft dentin is performed and medicament is placed. A temporary restoration is placed over it and patient is kept under observation for a period of 6–12 months. During this period, reactionary dentin develops, remineralization takes place, and bacteria are inactivated. After this period has passed, the temporary restoration is removed and selective removal upto firm dentin is carried out in the central part of the cavity. The reasoning behind this approach is that in the first visit, pulpal exposureis avoided while in the final visit, less "infected" dentin has to be removed (given the developments that are taking place in dental hard tissues between the two steps) than would have to be removed if it was immediately excavated to firm or even soft dentin in the first visit itself. The success of this approach largely depends on the sealing capacity of the temporary restoration. It should be made of a material that provides an excellent seal along with extremely good durability for at least 12 months, such as glass ionomer cement. Premature failure of the

vitality of the pulp. Thus, stepwise removal risks higher chances of pulpal exposure than selective removal to soft dentin approach if not performed accurately and skilfully. Stepwise removal is recommended in cases of both deciduous as well as permanent teeth

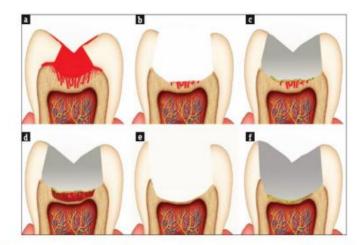


Figure 4. Step Wise Caries Excavation (Initial excavation and placement of provisional restoration followed by remineralization of residual dentin and finally permanent restoration placement)

Partial Excavation

The success of the Stepwise excavation approach led to the question of why is it even necessary to re-enter the cavity after 6-12 months if sufficient evidence had been found that reactionary dentindevelops, remineralization takes place, and bacteria are inactivated. Thus, came the controversial but ultraconservative approach of partial excavation. In this approach, removal of most but not all infected dentin (leaving behind a layer of infected dentin) is carried out and a medicament is placed. A permanent restoration is placed over it in the same visit itself for good coronal seal. The rationale for the technique is that by blocking the source of carbohydrates for the bacteria in the infected dentin with the help of the coronal restoration with a good lifespan, it is possible to inactive this bacteria, thus rendering them harmless to the pulp underneath [7]

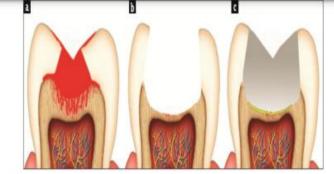


Figure 5. Partial caries excavation (Excavation and permanent restoration carried out in the same dental visit)

. No Removal at All and Sealing-In Lesions

Sealing-in lesions builds on the reasoning of all the approaches described before: lesions can be sealed and, thus, inactivated, as the nutritional source is no longer available to the trapped microorganisms. Most of the cariogenic bacteria are incompetent to endure this long-standing starvation and are inactivated when sealed in. Furthermore, sealing shields the dentin underneath by creating a barrier against diffusion of acids. Speaking strictly from a biological viewpoint, it is probably true that there is no longer any necessity to eliminate carious tissue at all to control a carious lesion - sealing the bacteria should be sufficient. However, there is still uncertainty as to the impact of great amounts of starvation on the biofilm and the effect that dying bacteria and their by-products will have on the dental pulp. To achieve success with this strategy, since no amount of caries is not removed at all, sealing with restorative materials or a full coverage restoration such as stainless steel crowns or with no restoration at all depending on the extent of the caries. But clinical studies only on primary teeth where cavitated lesions were sealed using stainless steel crowns without carious tissue removal have been found to have no effect on the vital pulp below [8]

Still, this technique has been advocated for two conditions:

Non-cavitated lesions: Sealing of fissures over non-cavitated occlusal lesions as
well as initial proximal lesions without any excavationcan be successful although
it is critical that the sealants are maintained in the long-term. Such an

ultraconservative strategy involvingonly plastic sealants, however, is not suitable for cavitated, load-bearing cariouslesions. Here, sealing using more durable materials, like preformed stainless-steel crowns, the Hall Technique, has been suggested.

There are structural considerations when considering these non-cavitated lesions - carious dentin is softer than sound dentin. A plastic sealant placed on top of a large amount of soft dentin may not be adequately durable to resist oral functional forces. Additionally, the bond strengths of modern adhesives and glass ionomers are pointedly lesser when placed over carious than over sound dentin. This would result in marked increase in chances for loss of retention and leakage, This would compromise the hermetic seal and thus defeat the whole purpose of the approach to arrest the lesion progression. As a result, from a restorative viewpoint, some carious tissue removal might be essential prior to placing a restoration. The main purpose of this approach is to create conditions which maximize the permanence of the restoration that is afterward placed. If sealing can inactivate carious lesions, but some carious tissue removal is needed to permit secure placement of an enduring restoration, it should not be compromised. Instead, the clinician should be asking where exactly the dental hard tissue should be removed more and less. For this, the same principles as those in partial excavation and step wise removal technique should be applied regarding the residual soft dentin.

Halls' Technique:

This technique is indicated for primary molars only. It involves placing a crown over a substantial carious lesion without any "infected" tissue removal and also without any tooth preparation. The advantages of this therapy are that it is very well tolerated by children since it doesn't involve any drilling or painful invasion, biologically controls the bacterial progression, and provides an enduring restorative option for the cavity (most other direct restorations have a very limited performance in primary teeth). This technique has been found highly effective in comparison to other conventional invasive approaches [8]

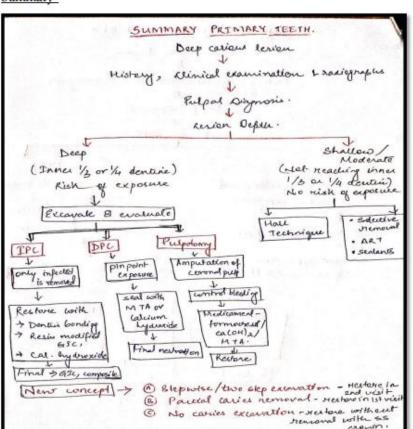


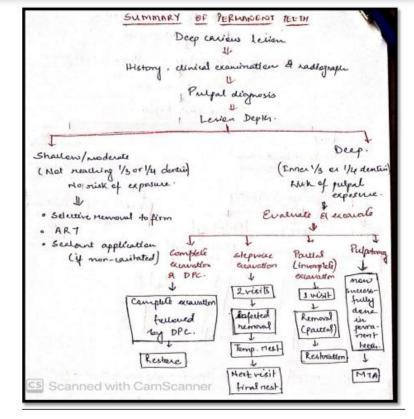
Figure 6. Hall's technique with a stainless steel crown

· No Removal at All and Managing the Biofilm Non-Restoratively

Cavity control with no restoration or caries excavation is based on the philosophy that the main goal of restoration is to provide a surface over the tooth that can be easily cleaned by the patient himself. Through this approach, cleansability of the affected tooth surface is achieved by chiselling or cutting away the overhanging enamel or dentin and opening up the cavity to make it a self-cleansing area. Consequently, rigorous maintenance of oral hygiene including in-office treatments like fluoride varnish application at the dental clinic is mandatory. So far clinically, this philosophy has been restricted to deciduous teeth and root surface lesions only. Although theoretically, it has potential to be successful, in clinical practice, the limited data available for primary teeth do not show much success. This is believed to be because a large portion of the technique's success is patient dependant - the patient's regularity of follow up visits and, in the case of children, their parents' behaviour to keep the cavity clean. Under certain conditions that include guarantee of optimal supervision, evidence of changes in diet and oral hygiene habit, meticulous selection of cases, and regular, frequent and well-recorded monitoring of lesion status over a long period of time, this approach may serve children who are unable to accept any other treatment modalities. It should be considered only as a last resort approach whenever possible [9]

• Summary-





Conclusions

Historically, the goal of carious excavation preceding placing a restoration was to "exterminate" all bacteria from the enamel and dentin to "cure" the supposed infection. Caries is not seen as a simple infection any longer. Carious dental hard tissue including not only enamel, but also dentin, even those containing great quantities of microorganisms, can be sealed, depriving the cariogenic bacteria from the dietary carbohydrate which is their nutritional source. This achieves the purpose of inactivating them, thus arresting the progression of the lesion. Sealing over non-cavitated lesions can be successful, however, for most cavitated lesions, a simple sealant placed on top of them will be not be able to withstand masticatory forces. This leads to sealant breakage and/or retention loss, and thus lesion reactivation. So, the entire aim of these current approaches for caries excavationprior to placing a restoration to maximize restoration

longevity will be defeated. Especially in deep lesions with vital pulps, carious tissue removalshould be performed in a way that avoids pulp exposure but at the same time, creates a condition where the restoration can be adhered to the remaining dentin for a long duration of time. Peripherally, removal should aim to have hard tissue around the cavity, allowing a tight, effective seal of any bacteria and promoting sufficient mechanical support for the restoration. In shallow or moderately deep lesions, peripherally, the tissue should again be hard after carious tissue removal, while centrally, firm (remineralizable) dentin should remain. Other carious tissue removal strategies include stepwise removal and sealing-in or non-restorative strategies whenever possible based on the extent and depth of the carious lesion.

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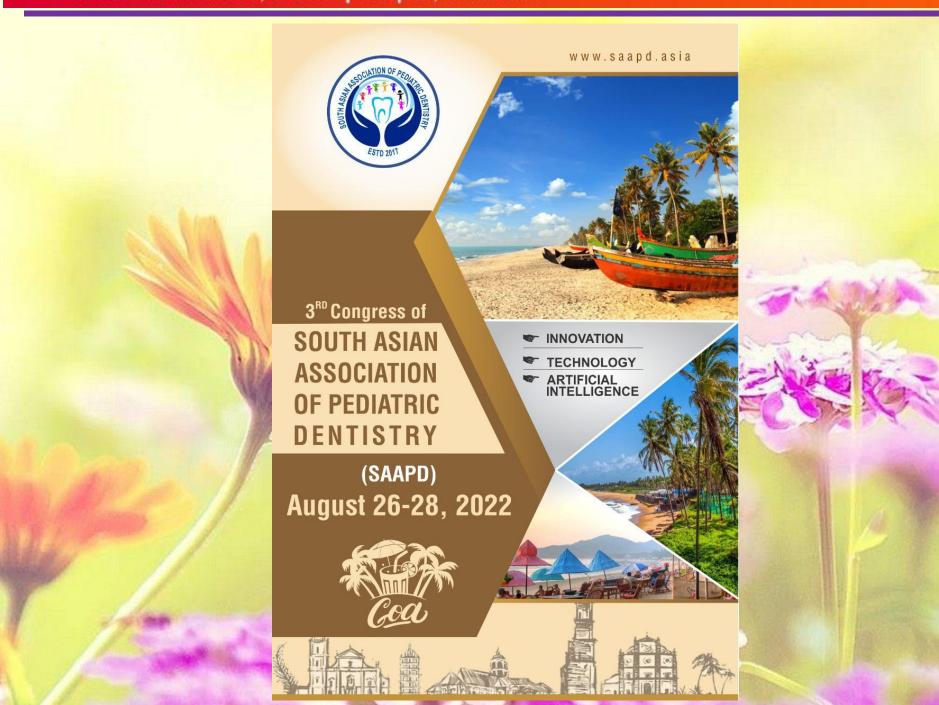




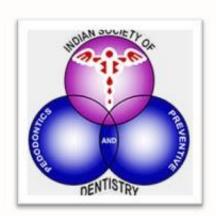
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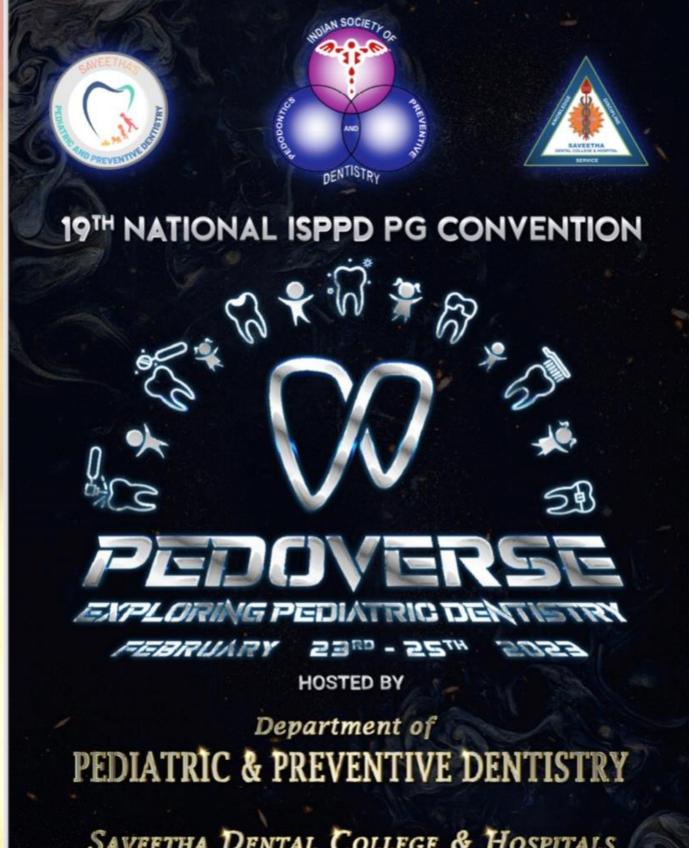
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