



  

Guru Nanak Institute of Dental
Sciences and Research
Presents

SPEAK 2024

Scientific Platform for Exchange of Advanced Knowledge
International Dental Conference
as part of Continuing Dental Education Programme

18
CDE Points

Dates : 24th - 26th June

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Organized By: GURU NANAK INSTITUTE OF DENTAL SCIENCES AND RESEARCH
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J C D R

About Guru Nanak Institute of Dental Sciences and Research



Guru Nanak Institute of Dental Science and Research (GNIDSR) is a prominent institution in Kolkata, West Bengal, India that epitomizes excellence in dental education. As the first and oldest private dental college in West Bengal, India, GNIDSR integrates a wide array of advantages to foster holistic learning and growth. It is the first Dental College in West Bengal to have achieved the prestigious NAAC "A" Accreditation and the only College in West Bengal to have secured a NIRF Ranking in 2022. Central to its success is an advanced ICT-enabled infrastructure, highlighted by a Smart Learning Centre that seamlessly blends traditional teaching methodologies with cutting-edge technology. This dynamic setup enables interactive learning through multimedia presentations, virtual simulations, and real-time demonstrations, offering students a comprehensive educational experience. Emphasizing the "Learning by Doing" philosophy, GNIDSR leverages its rich patient resource and high OPD turnover to provide students with hands-on experiences. This practical approach bridges the gap between theory and practice, enhancing students' clinical skills and problem-solving abilities. The institution's legacy of excellence is bolstered by a distinguished faculty pool whose extensive experience and academic prowess ensure consistent, high-quality education. Furthermore, GNIDSR benefits from the visionary leadership of the JIS Group, Eastern India's largest educational conglomerate, which fosters a culture of innovation and excellence. Beyond the traditional curriculum, GNIDSR offers eight meticulously designed Value Added Courses that enrich students' skill sets, covering areas such as BLS, medico legal awareness, e-learning, infection control and research paper writing. This multidisciplinary approach prepares graduates to excel in various professional and societal roles, embodying the institution's commitment to producing competent and compassionate dental professionals. GNIDSR's enduring legacy of excellence continues to shape the future of dental education, ensuring its relevance and impact in an ever-evolving world.

About the Conference

We are thrilled to announce the first ever International Dental Conference, SPEAK 2024, which stands for Scientific Platform for Exchange of Advanced Knowledge, organized by the esteemed Guru Nanak Institute of Dental Sciences and Research. This international conference will serve as a premier forum for dental professionals, researchers and academics to converge and share ground-breaking insights on the theme of Dentofacial Esthetics. Join us in this exciting journey to explore the latest innovations, research findings and practical applications aimed at advancing the art and science of Dentofacial esthetics.

Highlights of the Conference

- **Eminent International Speaker:** Dr. Pravinkumar Patil,

Associate Dean (Postgraduate, Continuing Education and Research)
Associate Professor, Prosthodontist, and Implantologist
School of Dentistry, IMU University, Kuala Lumpur Malaysia



Topic: Implant Prosthetic Rehabilitation in the Anterior Esthetic Zone

Dr. Pravinkumar, an eminent figure in the field of dental implantology, serves as Associate Dean at IMU School of Dentistry, Kuala Lumpur, and holds pivotal roles including Implant Research Cluster Head and Implant Clinic Lead. An esteemed examiner and ITI Research Committee Member, he has secured numerous research grants and published extensively. With a profound focus on implant overdentures, abutments, prosthetic designs, and complications. Dr. Pravinkumar is an award-winning innovator and sought-after speaker.

- **5 Eminent National Speakers :**

- **Dr. Thiyaneswaran Nesppan** - Vice-Principal, Saveetha Dental College, Professor and Head of Implantology, Saveetha Dental College and Hospital



Topic: Navigating the challenges of the Anterior Esthetic Zone: Advanced Diagnosis, Surgical Strategies

- **Dr. Neelam Andrade** - Dean, Nair Hospital & Dental College, Professor and Head of Dept. of Oral and Maxillofacial Surgery, Nair Hospital and Dental College, Director (Major Hospitals and Medical Education), BMC



Topic: Achieving Dentofacial esthetics with Distraction and Orthognathic Surgery

- **Dr. M. Shiva Shankar** - CTO, Dantech Digital Solutions Pvt. Ltd.



Topic: Digital Technology in Dentofacial Esthetics

- **Dr. R.S. Mohan Kumar** - Professor, Priyadarshini Dental College and Hospital



Topic: Micro Esthetics in Anterior Restorations

- **Dr. Reena Kumar** - Academic Director, ICanCaRe,
Academic Director, Igesia Academy,
Academic Director, Indian Academy of Sports Dentistry



Topic: Transform lives, One Smile at a Time: The impact of Airway Health on Facial Esthetics.

- **Two Panel Discussions :**

- **PANEL DISCUSSION 1 : DENTOFACIAL RECONSTRUCTION**

- **Panelists:**

- Dr. Asif Ahmed
- Dr. Rajdeep Guha
- Dr. Rajarshi Banerjee
- Dr. Abdus Salam
- Dr. Adhish Basu

- **PANEL DISCUSSION 2 : DENTOFACIAL ESTHETICS ACROSS ALL AGE GROUPS**

- **Panelists:**

- Dr. Tapan Kumar Giri
- Dr. Chi Koy Wang
- Dr. Anindita Banerjee
- Dr. Shubhabrata Pal
- Dr. Angshuman Bhattacharya

A Cephalometric Analysis of Pharyngeal Airway Dimensions, Mandibular Position and its Relation with Respiratory Diseases in Bengali Children

Abstract-01

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Introduction: Common chronic respiratory diseases like asthma and allergic rhinitis are responsible for altered pharyngeal airway dimensions in the growing children which also affects the normal craniofacial development. The standard values of airway dimensions also have been seen to differ in various ethnic groups. Since the study is being conducted in West Bengal, a state located in the eastern part of India, it is considered important to obtain the standard pharyngeal airway dimensions in Bengali children.

Aim: To estimate and compare the pharyngeal airway dimensions and mandibular position in Bengali children of age 9-13 years, either sexes, with or without asthma and allergic rhinitis utilising lateral cephalogram.

Materials and Methods: A cephalometric analysis was conducted in Department of Pediatric and Preventive Dentistry, GNIDSR, Kolkata, Department of Pediatrics (SWAS CLINIC), Ramkrishna Mission Seva Pratisthan, Kolkata during the period of one and half year. This study consisted of a total of 110 subjects were divided equally into control (55 children without any known symptoms or history of chronic bronchial asthma or allergic rhinitis) and study group (55 children with history of asthma /allergic rhinitis). Lateral cephalometric X-rays were advised to all the children, McNamara's airway analysis was done to determine the

dimensions of the upper and lower pharyngeal airways. The mandibular position was determined by calculating angle between Sella, Nasion and subspinale point A (SNA), angle between Sella, Nasion and Supramentale point B (SNB) and angle between the maxilla and the mandible (ANB) angles in Steiner's analysis. The Statistical software IBM Statistical Package for the Social Sciences (SPSS) statistics 20.0 was used for the analyses of the data.

Results: The mean value of Upper Pharyngeal Airway (UPA) among the children of the control group was seen to be 12.464 mm while that in the children of the study group was 7.118 mm. The mean value of Lower Pharyngeal Airway (LPA) among the children of the control group was seen to be 10.282 mm and that among the children of the study group was 7.073 mm. A total of 36.40% children in the control group had class II mandibular position while in the study group 54.50% children had class II mandible.

Conclusion: Markedly reduced airway dimensions and retrusive mandible was seen among the children suffering from allergic rhinitis and asthma.

Keywords: Allergic rhinitis, Asthma, Cephalometry.

Oral Health Perception Regarding First Dental Visit of In-vitro Fertilised Children: Exploring New Horizons

Abstract-02

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 JIS University⁶, Department of Gynaecology and Obstetrics⁷, Malda Medical College and Hospital⁷, Malda, West Bengal, India.

Introduction: Difficulty in conceiving is a widespread problem. World Health Organisation (WHO) classifies infertility as a disease which deserves treatment as like any other medical condition. In-vitro Fertilisation-Embryo Transfer (IVF-ET) is the fertilisation of an ovum outside the body and the transfer of the fertilised ovum to the uterus of a woman, is one of the popular treatment modalities of infertility.

Aim: To evaluate the relationship between oral health behaviour of IVF children and spontaneously conceived children.

Materials and Methods: A random sample of 107 IVF children were and 169 spontaneously conceived children were included in this cross sectional observational study conducted at The Institute of Reproductive Medicine (IRM) Kolkata, West Bengal, India; Guru Nanak Institute of Dental Sciences & Research (GNIDSR), Kolkata, West Bengal, India and various educational institutions which are situated in West Bengal during June 2018 to 2020. Oral health behaviour of both groups was analysed with suitable statistical analysis i.e. Chi-square test. Statistical software Statistical Package

for the Social Sciences (SPSS) version 20.0 (SPSS Inc, Chicago, IL, USA) was used for the analysis. The statistical significance level for all applied tests was set to be 0.05.

Results: Statistically significant oral health behaviour pattern was observed between oral health behaviour of the IVF and spontaneously conceived children. The result was found to be significant at $p < 0.05$.

Conclusion: This study may invite further scope for more cross sectional and longitudinal study for the researcher. Hopefully this kind of study will bring positive assurance to numerous parents of IVF children.

Keywords: Dental, IVF children, Spontaneous conceived children.

Abstract-03

Assessing Dental Caries Prevalence in Relation to Obesity and Sugar Intake among Children Aged 3-13 years: A Comprehensive Study

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Introduction: Dental caries, a common oral health issue globally, and childhood obesity shared common risk factors. However, their relationship and the impact of obesity, sugar intake, socio-economic status and dental caries remained understudied in North 24 Parganas, West Bengal, India. By investigating these factors, the study aimed to enhance understanding of dental caries development and contribute valuable insights for oral health promotion and preventive measures among children.

Aim: To assess the point prevalence of dental caries in relation to obesity, daily sugar intake, socio-economic status among children of the North 24 Parganas District of West Bengal.

Materials and Methods: A comprehensive study was conducted in the Department of Paediatric and Preventive Dentistry, Guru Nanak Institute of Dental Sciences and Research, Kolkata, West Bengal, India, for a period of six months that is from January 2023 to June

2023 on a group of 231 children, aged 3 to 13 years. The examination focused on assessing dental caries using Decay-missing-filled Teeth (DMFT) and Decay-missing-filled Surfaces (DMFS) index, a detailed record of each child's dietary intake over single day was documented, along with the collection of physical measurements.

Results: The point prevalence of dental caries was higher in children with low weight when compared to those with normal weight and overweight-obese children, and the difference was statistically significant.

Conclusion: With the exception of height for age and obesity for age, all physical measurements of person's form and functional capacities showed a positive correlation with dental caries. The measurements of height for age and Body Mass Index (BMI) for age showed an inverse graded association with dental caries.

Keywords: Body mass index, Dietary intake, Point prevalence.

Abstract-04

Soft Tissue Pattern in Mewari and Marwari Children: A Cephalometric Study

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Introduction: Orthodontic treatment plays an important role in improving facial aesthetics. One of the important components of orthodontic diagnosis are the evaluation of soft tissue profile. There have been many attempts to quantify the soft tissue profile based on the lateral cephalogram. Populations differ in character, size, growth and shape. These differences are due to complicated

interaction of genetic and environmental factors. Indian children differ from western population in physical growth, maturation, dentition etc, due to factors like morphogenetic pattern and nutritional status. Therefore, the cephalometric standards for one ethnic and racial group or sub-group do not necessarily apply to other ethnic or racial groups.

Aim: To determine and compare Cephalometric norms for Mewari and Marwari children of Rajasthan between the age group of 11-13 years using Holdaway and Arnett analysis and to compare values obtained for Mewari and Marwari children using Holdaway and Arnett analysis with the values/norms given by Holdaway and Arnett for Caucasian population.

Materials and Methods: A cephalometric study was conducted in the Department of Paediatric and Preventive Dentistry, Guru Nanak Institute of Dental Sciences and Research, Kolkata, West Bengal. Lateral Cephalogram radiographs of 200 consenting children, 100 belonging to Mewari community and 100 belonging to Marwari community of Rajasthan with equal male and female ratio, between the age group of 11-13 years who met the inclusion criteria were included in the study. The radiographs were collected over a period of 6 months, in collaboration with Department of Pedodontics, Darshan Dental College and Hospital, Udaipur and Government

Dental College, Jaipur. The radiographs were analysed using Arnett's and Holdaway's Soft tissue analysis method. The obtained data was then statistically analysed.

Results: The present study showed a significant difference when Mewari and Marwari children were compared with values given by Arnett and Holdaway. The soft tissue profile of Marwari and Mewari children was found to be convex.

Conclusion: The study establishes that soft tissue features and craniofacial structures which may influence the size, shape, form, morphology of face and dental arches are predetermined genetically. The view that a single standard of facial aesthetics should not be applied to all racial and ethnic groups, as the soft tissue pattern is peculiar to its ethnic or racial group is validated from the present study.

Keywords: Arnett analysis, Cephalometric norms, Holdaway analysis, Soft tissue morphology.

Evaluation of Root Canal Diameters and Radicular Wall Thickness of Human Primary Molars by using Multi-detector Computed Tomography

Abstract-05

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Introduction: Human primary molars has numerous functions in the growth and development of facial structures of a child. In spite of different newer preventive measures to combat with the dental caries progression, still untreated dental caries can cause considerable pain and discomfort, and, if it spreads to the dental pulp, it can also cause periapical infection and tooth loss. In this regard, Paediatric endodontics may be necessary to preserve the tooth structure, although it may affect the child's quality of life.

Aim: To determine the thorough in-vitro anatomical evaluation of root canal diameters and radicular wall thickness of Human Primary Molars by using Multi-detector Computed Tomography (CT).

Materials and Methods: An in-vitro study was conducted in Department of Pediatric and Preventive Dentistry, Guru Nanak Institute of Dental Sciences and Research, Kolkata, West Bengal, India and EKO X-ray and Imaging Institute, 54, Jawaharlal Nehru Road, Kolkata, West Bengal, India for a period of six months in which 64 human primary maxillary and mandibular molars without any external and internal root resorption were selected. The selected teeth were arranged in wax block, and the scanning was done on the

CT scanner (GE light speed 16 slice CT). The scanned raw images were grabbed by the computer and reformatted in a GE Advantage workstation version 4.2 (GE Healthcare) with the help of Denta Scan (GE Healthcare) software. Student's t-test was performed to calculate the means with corresponding standard deviations.

Results: The maximum mean diameter of the canal was found in the palatal root canal of both primary maxillary first molars (1.24 ± 0.14 mm at cervical third) and second molars (1.43 ± 0.24 mm at cervical third). The minimum mean diameter was found in distobuccal root canal of primary maxillary first molars (0.83 ± 0.13 mm at cervical third) and mesiobuccal root canal of primary maxillary second molars (1.14 ± 0.23 mm at cervical third). The mean radicular wall thickness was gradually increases from apical third to cervical third of the roots of both primary maxillary and mandibular molars.

Conclusion: The knowledge of the anatomy of human primary molars is utmost essential to reduce possible complications in Paediatric patients from instrumentation during pulpectomy.

Keywords: Dentinal wall thickness, Endodontics, Pulpectomy.

The Influence of Childhood Sleeping Disorders on Traumatic Dental Injuries and Body Mass Index among School Children

Abstract-06

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Introduction: Sufficient sleep plays a crucial role in the well-being and behaviours of children. Observable indications of insufficient sleep among youngsters include increased daytime drowsiness, under-eye circles, lack of focus, and frequent lateness or absence from school. Furthermore, potential consequences encompass overeating, weight gain, and increased vulnerability to accidental injuries. Research suggests that reduced sleep duration corresponds with elevated Body Mass Index (BMI) levels and an elevated risk of Traumatic Dental Injuries (TDIs) in obese children.

Aim: To determine any association between childhood sleeping disorders with Traumatic Dental Injuries and Body Mass Index (BMI) among school children.

Materials and Methods: In this cross-sectional study a total of 600 children without health concerns were chosen from the Department of Paediatric and Preventive Dentistry, Guru Nanak Institute of Dental Sciences and Research, Kolkata, West Bengal, India and local schools using a simple random sampling method was conducted for a period of one year. The children's BMI was calculated using the Centers for Disease Control and Prevention (CDC) BMI calculator for child and adolescent, and a visual inspection for signs of TDI

was conducted following the International Association of Dental Traumatology (IADT) (2020) guidelines. Parents were provided with Sleep Behaviour Questionnaires (SBQ) and guidance for completion. Subsequently, the collected data was compiled and analysed statistically.

Results: The study identified a TDI prevalence of 25.5% among 600 participants. Significant correlation ($p = 0.033$) was observed between TDI and SBQ scores. Mean SBQ scores reflected a BMI-related trend (Obesity > overweight > healthy), indicating that overweight or obese children experience more sleep issues. The link between TDI and BMI was notably strong ($p < 0.001$), with individuals having high BMI being 2.436 times more likely to exhibit TDI.

Conclusion: The present study provides a positive correlation among childhood sleeping disorders, TDIs and BMI among school children. Data on sleep behaviours, acquired when collecting the patient's history prior to a dental appointment, may be useful for a better orientation to parents/caregivers regarding the prevention of traumatic dental injuries.

Keywords: Health, Overweight, Sleep behaviour.

Evaluation of Etching Times to Determine the Penetration Depth of Resin Infiltration on Artificially Demineralised Teeth

Abstract-07

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Introduction: The evolution of caries management has shifted towards minimally invasive approaches, with resin infiltration emerging as a promising treatment for non cavitated carious lesions.

Aim: To evaluate the effectiveness of resin infiltration by varying etching times and assessing the material's penetration depth in enamel.

Materials and Methods: An in-vitro study was conducted in the Department of Paediatric and Preventive Dentistry, Guru Nanak Institute of Dental Sciences and Research, Kolkata, West Bengal, India during September 2018 to May 2019, on 40 extracted teeth were divided into four groups. The control group was etched for 2 minutes as this is the optimum etching time as suggested by the manufacturer, while the other groups were etched for 1, 3, and 4

minutes, respectively. Artificial lesions were induced using a caries demineralisation solution. The resin infiltration process was initiated by etching the teeth using Hydrochloric Acid (HCl) gel (ICON Etch), followed by drying of the lesions with ICON Dry (ethanol) and then ICON Infiltrant was applied on the surface with resin infiltration. Samples were sectioned and dipped in Sodium Fluorescein dye and analysed by using a fluorescent microscope. The results were tabulated and subjected to suitable statistical analysis.

Results: Etching the teeth for 4 minutes prior to resin infiltration

resulted in the deepest penetration of the material thus being more efficacious in arresting the progression of caries in comparison to 3 min, 2 min and 1 min etching times. It also showed 4 min etching time to have greater penetration of the material into the lesion.

Conclusion: This finding highlights the importance of optimising the etching time for improved resin infiltration outcomes in the management of non cavitated carious lesions.

Keywords: Carious lesion, Etch time, Penetrating.

Effect of Implantations of Coated and Uncoated Implants in Rabbit Bone Tissue Regeneration: An In-vivo Study

Abstract-08

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Introduction: The goal of present day dentistry is to rehabilitate the functional stomatognathic system, of a patient to a normal contour, function, comfort and aesthetics regardless of the atrophy, injury or disease of the functional system. A novel dental implant system provides ideal functional and aesthetic rehabilitation of the edentulous jaw. Prior to the design and use of a newly developed implant in humans, it is necessary to evaluate the performance of two varieties each of the uncoated implants and the implants coated with bio-ceramic Hydroxyapatite (HAP), and bio-active glass in terms of their capability to enhance the tissue regeneration at the implanted sites in animal model. In this presentation, two sets of studies were done on rabbits, to determine the osseous regeneration capability in relation to the in-vivo situation.

Aim: The first study was done to study the effects of the following in bony tissue regeneration: a) Ti (screw) implant macro design vis-à-vis b) Ti (smooth) implant and also c) HAP powder as a filler material. In the second study, four coated implant systems, specifically HAP or bio-active glass coated, Ti (smooth) and Ti (screw) implants have been considered and their relationship with surrounding hard tissues have been observed.

Materials and Methods: An in-vivo study was conducted in the Department of Periodontics, Guru Nanak Institute of Dental Sciences and Research, Kolkata, West Bengal, India in 2015. For the implantation studies on rabbits, the implants were placed into the drilled hole socket of the mid-metaphyseal region of their hind legs. After 3 months, the rabbits were sacrificed and the implanted sites were investigated with Scanning Electron Microscopy (SEM) with Energy Dispersive X-ray Analysis (EDX), histopathological tests and push-out tests to obtain some conclusive analysis of the bony tissue regeneration using the implant design modification, without or with the two proposed coatings.

Results: Results showed that the effectiveness of the bio-active coatings, are more in the case of Ti (screw) implant design, as compared to the Ti (smooth) implants.

Conclusion: The observations also established that, the HAP coated Ti (screw) implant is more effective than the bio-active glass coated Ti (screw) implant, specifically in terms of bone to implant contact and interfacial strength.

Keywords: Animal study, Coated and uncoated dental implants, Comparative osteointegration.

Peripheral Giant Cell Granuloma in Children: A Case Report

Abstract-09

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Peripheral Giant Cell Granuloma (PGCG) is the most common benign and reactive hyperplastic giant cell lesion of the oral cavity originating either from the periodontal ligament or the periosteum of the adjacent tooth. The lesion has high recurrence rate, fast growing and sometimes cortical plates of the adjoining interdental bones are involved. Proper diagnosis is essential to differentiate it from other giant cell lesions of the oral cavity which is based on clinical,

radiological and histopathological findings. Surgical excision along with curettage and peripheral osteotomy is the choice of treatment to prevent recurrence. The present paper reports a case of PGCG in the maxillary anterior region of an 8-year-old male child along with its diagnosis and management.

Keywords: Cortical plates, Giant cell lesions, Surgical excision.

The Role of Bio-corrosion and Presence of Titanium Particles in Peri-implantitis and its Treatment Strategies: A Review

Abstract-10

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Dental implants are a popular option for tooth replacement due to their biocompatibility, strength, and durability. However, bio-corrosion and the release of titanium particles from these implants have raised concerns, as they may contribute to peri-implantitis, a common inflammatory disease. Studies show that peri-implantitis sites exhibit more particles than healthy sites, with these particles found around implants and within epithelial cells, connective tissue, macrophages, and bone. Bio-corrosion, a complex process leading to implant failure, releases metallic particles into surrounding tissues, causing inflammation and tissue damage. Peri-implantitis, a bacterial infection, affects tissues around the implant, resulting in bone loss and potential implant failure. Factors influencing these complications include implant design, material properties, patient

health, and oral hygiene. Titanium hypersensitivity is linked to innate immune responses, particularly the pro-inflammatory reactions of macrophages to nanoparticles, rather than adaptive immunity. Understanding the mechanisms behind bio-corrosion and peri-implantitis is crucial for developing preventive and treatment strategies to enhance the long-term success of dental implants. The present article reviewed the current knowledge on bio-corrosion, titanium particles and their role in peri-implantitis and discussed treatment and prevention strategies, emphasising early detection and intervention.

Keywords: Chemical corrosion, Implant corrosion, Implant degradation, Implant wear, Surface wear, Surface modification, Titanium implant.

To Assess and Compare the Influence of Lifestyle Factors on Oral Health Status among 7-15 Years Visually Impaired and Sighted School Children of Bengaluru City

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Introduction: Lifestyle effects not only the general health of the population but also specially challenged population who are at increased risk of developing diseases due to various social challenges. The deep understanding of the lifestyle requires studying a person's attitude, values, practices and cultural and social environment.

Aim: To assess and evaluate the association between lifestyle factors and oral health status among 7-15 years visually impaired and sighted school children of Bengaluru city.

Materials and Methods: This cross sectional study was conducted at KLE Society's Institute of Dental Sciences Dental school in Bengaluru, Karnataka for a period of one year. The study was started with self-administering questionnaire consisting of 29 close-ended questions leading to understand lifestyle domains. Also, a combined proforma of World Health Organisation (WHO) oral health assessment form 2013 for children as well as Simplified Oral Hygiene Index (OHI-S) was used to record the clinical findings.

Results: The result showed a significant difference between normal and visually impaired children in mean lifestyle values with 6.85 and 5.64 respectively. There was also a significant difference between debris index simplified scores between normal and visually impaired children, with 70.6% of normal children had good debris scores compared to 56.5% of visually impaired children.

Conclusion: The study reflected poor oral hygiene, gingival scores and pain scores among visually impaired children. These children cannot visualise the plaque on their tooth and proper brushing demonstration was inadequate among them compared to non-visually challenged. Also, the fear of unknown was more among the visually impaired than the normal children which again reflected on the dental visits. The study helped us understand that more amount of awareness program and guidance is required for a supportive environment for the visually impaired children.

Keywords: Lifestyle, Oral hygiene, Visual impairment.

Self-assessment of Ergonomics among Undergraduate Dental Students: An Interventional Study

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Introduction: Occupational health hazards are common in many sectors and are on a continuous rise. The goal of ergonomics is to establish a safe, healthy and comfortable working environment. When applied to dentistry, a sound knowledge on ergonomics seeks to reduce cognitive and physical stress, prevent occupational diseases and improve productivity.

Aim: To evaluate self-assessment of ergonomics among undergraduate students using photographs.

Materials and Methods: A single blinded, parallel-arm randomised Control Trial was conducted in the VS Dental College and Hospital,

Bengaluru, Karnataka, India. Among 120 undergraduate students who fulfilled prespecified inclusion and exclusion criteria. Data was collected using validated questionnaire with four domains: Socio-demographic details, knowledge, attitude, practice and Modified Dental Operator Posture Assessment Instrument (MDOPA) scale to assess self-evaluation. Data were analysed using descriptive statistics, Pearson's correlation coefficient and were considered statistically significant at $p \leq 0.05$.

Results: The mean knowledge scores of controls and intervention group before intervention was 2.33 ± 1.09 and 2.58 ± 1.19 respectively, while after training it was significantly increased in intervention group

to 4.2 ± 0.89 . Percentage of subjects with positive attitude among control group and intervention group was 30% and 45%, while after intervention was 58.3% and 78.3%, respectively. Among intervention group self-assessment scale, MDOPAI scores were significantly improved from baseline to intervention i.e. 1.6% to 26.6%.

Conclusion: The study concluded that the knowledge, attitude

and practice scores of ergonomics in dentistry was significantly improved after intervention. Perception of study subjects revealed that majority of them had good knowledge, positive attitude of ergonomics but their working posture was not satisfactory.

Keywords: Knowledge, Musculoskeletal disorders, Self-evaluation.

Evaluation of Psychological Morbidities (Depression, Anxiety and Stress) as Risk Predictors of Periodontitis using a Risk Assessment Model

Abstract-13

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Introduction: Sedentary lifestyles along with the impact of Coronavirus Disease 2019 (COVID-19) has increased negative life experience events like depression, anxiety and stress among people. This often leads to an increased susceptibility to periodontal disease.

Aim: To assess psychological morbidities as risk predictors of periodontitis using a Periodontal Risk Assessment Model (Lang and Tonetti).

Materials and Methods: A cross-sectional study was conducted on a sample of 340 individuals visiting the Outpatient Department in the Department of Public Health Dentistry, KLE College of Dental Sciences, Bengaluru, Karnataka, India during July, 2021 to June 2022 for a period of 11 months. Demographic details of those subjects were obtained through a questionnaire. Depression, Anxiety and Stress was calculated using the Depression, Anxiety and Stress Scale (DASS-21) scale and the participants were divided into two

groups based on the DASS Score. Periodontal Risk Assessment was done using the Lang and Tonetti model in which risk factors like number of bleeding on probing sites, number of sites with Periodontal Probing Depth (PPD), number of missing teeth, percentage alveolar bone loss, systemic diseases and smoking history were taken into consideration. Association between psychological morbidities and periodontal risk was done using Chi-square test and logistic regression analysis.

Results: A total of 171 (50.29%) of the total subjects were suffering from psychological morbidities. Out of them, 70.6% of the individuals had a high risk towards development of periodontal disease.

Conclusion: Psychological morbidities act as risk predictors of periodontitis when sufficiently controlled for confounders, hence bridging the gap between mental and oral health to some extent.

Keywords: Oral health, Periodontal disease, Probing sites.

Comparison of Oral Health-related Quality of Life with the Actual Oral Health Status of the Elderly Population of Kolkata: A Cross-sectional Study

Abstract-14

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Introduction: It is a well-established fact that oral health-related quality of life is a multidimensional concept that is obviously influenced by patient psychology. Thus, it is important to know how much actual oral health status and treatment need to influence oral health-related quality of life.

Aim: To assess the Oral Health-related Quality of Life (OHRQoL)

and actual oral health status of the elderly population and to find an association between actual oral health status and patient-reported oral health-related quality of life.

Materials and Methods: An observational cross-sectional study on the elderly population of West Bengal belonging to the middle socio-economic group in the Department of Prosthodontics and

Crown and Bridge, Guru Nanak Institute of Dental Sciences and Research, Kolkata, West Bengal, India. The study was conducted in between November 2023 to April 2024. Random sampling was done to select the study population and the required sample size was calculated at 120. Demographic and socio-economic data were obtained from the study population after obtaining ethical clearance from the Institutional Review Board (IRB) and consent from the study population. The clinical intra-oral examination was done to evaluate the actual oral health status. Oral health-related quality of life was assessed by the Geriatric Oral Health Assessment Index (GOHAI) and compared with oral health status and unmet treatment needs.

Results: The overall mean GOHAI score was 44.99 +/- 8.31. The average decayed missing filled teeth (DMF) score of the partially edentulous patients was 9.91±5.59 [Male 9.26±5.46; Female

10.61±5.70]. Based on the Simplified Oral Hygiene Index (OHI-S) score, the partially edentulous/dentulous group was subdivided into good, fair and poor oral hygiene groups. The mean GOHAI scores of these 3 subgroups were 47.53±6.87, 45.29±7.43 & 43.42±9.03 for good, fair and poor respectively. Out of 120 participants, only 48 had 20 or more natural functional teeth in the mouth. The GOHAI scores of participants with functional dentition group was 45.69±7.77 and without functional dentition group was 42.83±9.77.

Conclusion: Oral health-related quality of life is directly related to the number of functional teeth and oral hygiene status. The overall OHRQoL of the target population needs to be improved.

Keywords: Functional teeth, Geriatric oral health assessment, Oral hygiene.

Retrospective Analysis of Tooth Preparation Done by Postgraduate Trainees for Monolithic Zirconia Restorations

Abstract-15

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Introduction: Computer-aided Design (CAD) and Computer-aided Manufacturing (CAM) technology has revolutionised the practice of restorative dentistry. Zirconia has become a popular choice of restorative material due various advantages of metal free dentistry. Previous literature presents divers nature of tooth preparations submitted for fabrication of zirconia restoration, often deviating much from principle of tooth preparation. Post graduate prosthodontics trainees undergo stringent training for fixed prosthodontics and now with the availability of preparation analysis software and restoration designing software, it's possible to analyse tooth preparation objectively, once data is digitalised.

Need of the Study: Monitoring tooth preparation of post graduate prosthodontic trainees are an important component of audit of dental schools' output and can provide important insights on the efficiency of trainees on executing tooth preparations for different types of restorations, including monolithic zirconia restorations. Understanding the trends, challenges, and outcomes associated with tooth preparation is essential for identifying areas of improvement in prosthodontic curriculum and thereby ensuring improved clinical success and patient safety.

Aim: To analyse tooth preparations submitted by postgraduate students for fabrication of monolithic zirconia restoration.

Materials and Methods: In this retrospective study, data of tooth preparation for zirconia restorations, during last 3 years will be retrieved from "inLab SW 20.0", the designing software for CAD/CAM restorations. Following parameters will be analysed –occlusal clearance, total occlusal clearance, occluso-cervical height, finish line quality and width, presence and absence of undercut and unsupported lip of enamel. Appropriate statistical tests will be performed after assessing nature of data.

Conclusion: Conclusions will be drawn after analysing the results.

Keywords: Biomechanics, Fixed prosthodontics, Occlusal clearance.

An In-vivo Study to Assess the Prevalence of Most Frequent Combinations of Arch Forms, Palatal Vaults and Posterior Palatal Seal in Completely Edentulous Patients

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Introduction: Complete dentures cannot be considered a substitute for natural teeth; they have been and remain the staple treatment for edentulous patients. Over the course of the past one hundred years, there have been significant advances made in the art and science of complete denture prosthodontics. The success of complete dentures depends largely on the relation between the denture and the anatomic structures that support and limit them. Failure to have accurately adapted denture bases, correct thickness, shape and extension of denture flanges, adequate posterior palatal seal, polished and occlusal surfaces located in the neutral zone and/or balanced occlusal surfaces may result in loss of retention. In a maxillary denture, border seal in the posterior region is created by developing a posterior palatal seal. Hundreds of dentures have failed due to improper establishment of the distal palatal length and to lack of a posterior palatal seal.

Aim: To evaluate a particular combination of the various arch forms, palatal vault forms and posterior palatal seal forms through this study, this may predict the success rate of the maxillary complete dentures in the population of West Bengal.

Materials and Methods: An In-vivo Study to Assess the Prevalence of Most Frequent Combinations of Arch Forms, Palatal Vaults and Posterior Palatal Seal in Completely Edentulous Patients was conducted on a

total of 32 patients were selected fulfilling the inclusion criteria from the Outpatient Department (OPD) of the Department of Prosthodontics and Crown and Bridge, Guru Nanak Institute of Dental Sciences and Research, Panihati, Kolkata, India during 2016-2018, in order to assess the different combinations of arch forms, palatal vault forms and the posterior palatal seal forms in maxillary completely edentulous patients with elastomeric impression material and comparing these with electronic scanning and other reliable methods.

Results: The most prevalent combination found was combination 14 (tapered arch form, medium U-shaped palatal vault form and class III posterior palatal seal form). A Chi-squared test (χ^2 test) was performed with statistical hypothesis test wherein the sampling distribution of the test statistic data was subjected to a chi-squared distribution. The p-value was found to be <0.5.

Conclusion: The correlation of arch form with the combination types (arch form, palatal vault form and posterior palatal seal form) was found in the particular population. The most prevalent combination found was combination 14 (tapered arch form, medium U-shaped palatal vault form and class III posterior palatal seal form).

Keywords: Denture base, Occlusal surface, Palatal vault form, Posterior palatal seal form, Arch form

Development and Validation of a Questionnaire to Assess Clinicians' Preferences for Flexible Dentures: A Cross-sectional Study

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Introduction: The 1950's saw the introduction of thermoplastic resin dentures, frequently referred to as flexible dentures. Nevertheless, up to this point, methyl methacrylate has been the most widely utilized denture base material. A number of denture-base materials made of thermoplastic resin that have higher physical properties and better clinical performance have been available since 2007. In addition to

being more aesthetically pleasing than cast partial dentures, these materials are also more economical. Flexible dentures are becoming more and more popular among dentists and dental technicians, despite the fact that thermoplastic resin partial dentures are typically not covered in depth in the dental school undergraduate course curriculum.

Aim: To develop and validate a questionnaire to assess the preferences of clinicians regarding the use of thermoplastic resin made removable dentures over conventional dentures to rehabilitate partially edentulous patients.

Materials and Methods: In this descriptive cross-sectional study, which was conducted in the Department of Prosthodontics and Crown and Bridge, Guru Nanak Institute of Dental Sciences and Research, Kolkata, West Bengal, India, the initial draft questionnaire was constructed from the earlier studies available through literature review. The draft questionnaires were evaluated for three rounds by a committee of eight subject matter experts. The final questionnaire contains 12 items, assigned to one of the three domains. The validity, reliability and repeatability of the questionnaire were assessed thereafter.

Results: Content validity was estimated by Content Validity Index (CVI) and Cronbach's alpha was used to assess internal

consistency. S-CVI/Ave and S-CVI/UA of the final questionnaire was estimated 0.97 and 0.75. Minimum I-CVI of all the items were more than 0.78. To assess reliability, responses from 120 participants (1:10 item-participants ratio) were considered. The calculated Cronbach's alpha was 0.7708. There was no significant difference between average domain scores and overall scores of two sets of responses given by a same cluster of participants at an interval of 30 days.

Conclusion: The developed questionnaire was a validated reliable tool, which can be employed for a larger population. Clinician's preference can be calculated from domain scores [clinician's preference = positive concerns + applicability- negative concerns] and its range is from -20 to +28.

Keywords: Content validity, Reliability, Removable denture, Thermoplastic resin.

Abstract-18

A Comparative Evaluation of the Retention of Maxillary Denture Bases Fabricated using Three Different Border Moulding and Final Impression Materials

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Introduction: The optimum extension of a denture base helps to provide better retention, and stability, which are the two main factors that prevent dislodgement of the dentures. Development of border seal is of utmost importance to maintain the contact of denture border with the adjacent vestibular tissue, achieved by border moulding. Establishing a correlation between the final impression and border moulding materials, and the improvement of denture base retention will help to ameliorate post insertion patient satisfaction.

Aim: To compare the improvement in retention of maxillary complete denture with different types of border moulding and final impression materials

Materials and Methods: An in-vivo study was conducted in the Department of Prosthodontics and Crown and Bridge, Guru Nanak Institute of Dental Sciences and Research, Kolkata, West Bengal, India, for a period of 2 years, on a total of 10 completely edentulous individuals of either sex with a mean age range of 50-70 years. All the participants received three sets of denture bases, border moulded using green stick, addition silicone putty and polyether materials followed by final impression using zinc oxide eugenol

impression paste and addition silicone light body in the first two cases respectively. The assessment of retention was done using retention measuring device. The statistical analysis of the collected data was done using version 24.0 of Statistical Package for the Social Sciences (SPSS) and 5th version of GraphPad Prism. Analysis of Variance (ANOVA) and Student's t-test was used for statistical analysis.

Results: Errors were maximum in the group border moulded using polyether and decreased subsequently, with the least amount of errors in the ones moulded using greenstick followed by final impression made using zinc oxide eugenol impression paste. A statistically significant positive correlation (p-value <0.05) was found.

Conclusion: Any material chosen, or any method followed should ultimately meet the criteria of a prosthesis which has an acceptable stability, support, retention, aesthetics to improve the overall psychological well-being of the patients.

Keywords: Green stick, Heat cure denture base, Polyether, Single-stage border moulding.

Evaluation of Use of Digital Image Analysis on Colour Stability of Commercially Available Porcelain

Abstract-19

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Introduction: Comparative evaluation in terms of colour stability of glazed and polished porcelains, has been discussed in literatures, but still controversies are present regarding superiority in terms of aesthetics, especially after toothbrushing.

Aim: To evaluate the colour stability of three brands of porcelains in glazed and polished state after performing regular brushing and immersing into different staining solutions.

Materials and Methods: An in-vitro study was conducted with a total of 30 specimens of glazed porcelain discs comprising of IPS E.max Computer-aided Design (CAD), Zenoster, and Jyodent were fabricated by CAD/Computer-aided Manufacturing (CAM) milling during April, 2018 to March, 2019. Samples were subjected to power tooth brushing and immersed into solutions of coffee, tea, and pan masala, respectively. For colour measurement, digital image analysis was performed using CIELAB colour space. After

stipulated time period, glaze layer was removed, chairside polishing was done, and similar procedures were repeated.

Results: In terms of colour stability of glazed and polished porcelains, Zenoster was found most colour stable in glazed and polished state ($p \leq 0.05$). In terms of staining ability, coffee was found the most discolouring agent among 3 solutions at any time period on glazed samples ($p > 0.05$), as well as on polished samples ($p < 0.05$).

Conclusion: Zenoster zirconia is the most colour stable in glazed and polished state and regular tooth brushing merely have any effect on glaze layer. Chance of staining is maximum in coffee than tea and pan masala for both glazed and polished porcelains.

Keywords: Chairside polishing, CIELAB colour space, Discolouration, Lithium disilicate, Porcelain disks, Power toothbrushing, Staining solutions, Zirconia.

A 3D Finite Element Analysis on Stress Distribution of Two Ceramic Materials used for Fabrication of Laminate Veneers using Two Preparation Designs

Abstract-20

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Introduction: Veneers have been used successfully in cases of aesthetic and cosmetic dentistry. As the thickness of veneers has to be 0.5mm to enable bonding to enamel, the preparation of teeth is very important to ensure longevity. There are numerous incisal preparation designs of veneers, but there is no uniformity of opinion among various investigators relating to the preferred design parameter. Knowledge of the intensity and distribution of stresses may aid in predicting the failure pattern of veneers with different types of preparations.

Aim: To evaluate the maximum principal stresses generated on the model of a maxillary central incisor tooth prepared to receive veneers

made from two different materials: Lithia disilicate and Zirconia and prepared according to two different incisal preparation designs: with butt-joint and with palatal chamfer.

Materials and Methods: This analytical study was conducted on virtual 3D model. Finite Element Analysis was used to evaluate the maximum principal stresses. A virtual 3D model of an extracted maxillary central incisor tooth was obtained by using DICOM images from a microCT scan and assembled using MIMICS software. One model was created for each of the four variable designs and materials. The 3-dimensional objects corresponding to the veneer, underlying cement layer and remaining tooth structure were meshed

in the 3-MATIC software. A single static load consistent with incisal bite force in natural dentition was applied to the tooth in the incisal third on the palatal surface at 135° angulation. Stress distribution in the finite element model were calculated in numerical values and in colour coding.

Results: The Maximum Principal Stress values were calculated for the veneers, underlying cement layer and remaining tooth structure separately and were tabulated. The butt-joint preparation showed less maximum stresses on the veneers, cement layer and remaining tooth

structure than the palatal chamfer preparation. The zirconia-restored veneers imparted less stress than the lithium-disilicate restored veneers on the underlying cement layer and remaining tooth structure.

Conclusion: Butt-joint preparation of the veneers proved to be better than the palatal chamfer and zirconia proved to be better restorative material than the lithium disilicate for veneers.

Keywords: Aesthetic dentistry, Lithium disilicate, Veneer preparation, Zirconia, 3 Dimensional.

Knowledge, Attitude, and Awareness among Non Dental and Non Medical University Students in Kolkata about the Effects of Smoking on Oral Health: A Questionnaire Based Study

Abstract-21

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Introduction: Introduction: Smoking is one of the common recreational drug uses. Tobacco smoking habit has spread across the world, and is a significant cause of mortality and morbidity. Smokers are more likely to develop many deadly diseases such as cancer and other types of respiratory diseases. Tobacco smoking-related diseases have been shown to kill around half of long-term smokers compared with the overall mortality levels faced by non-smokers.

Aim: To investigate and assess the knowledge, attitude and awareness of the effects of smoking on oral health among non dental and non Medical University students in Kolkata

Materials and Methods: A cross-sectional study was conducted by circulating the self-designed questionnaire among 150 college students. The questionnaire was designed to assess the data's on demographics, smoking prevalence, smoking related knowledge

and attitudes and health effects due to smoking habits. The survey was conducted through an online setting through google form.

Results: The responses from the study were analysed and represented in pie charts. The findings were 85% of individuals are aware of the complications of smoking. Around 10% of individuals felt that the habit of smoking is greatly influenced by friends and stress. 87% of individuals felt that smoking in public places is an offence. 81% of individuals strongly impose smoking Cessation Campaigns at their Institutions

Conclusion: The study concludes that students are well aware about smoking habits and its ill effects which cause major complications in their health. In addition, collaborative and more comprehensive anti-tobacco efforts are important to curb the tobacco epidemic.

Keywords: Anti-tobacco, Awareness, Smoking.

Determination of the Prevalence of Oral Potentially Malignant Disorders among Tobacco users in a Subset of Kolkata Population

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Introduction: Tobacco consumption is one of the most serious public health threats globally and is emerging as pandemic. Data from World Health Organisation proves that about 5 million people die prematurely per year around the globe due to tobacco use with India being a leading nation among tobacco users.

Aim: To evaluate the most prevalent tobacco habit and the oral Potentially Malignant Disorders (PMDs) among the tobacco users and assessment of prevalence rate of awareness and change in various habits in relation to similar studies conducted in past in Eastern zone.

Materials and Methods: A cross-sectional study was conducted over a period of six months, wherein all the patients visiting the OPD were assessed and questioned for Tobacco related habits. A detailed history about the duration and frequency of the habit and the type of tobacco and the predominant reason for its consumption among males and females were recorded and evaluated for the evidence of PMDs. Patients below the age of 13 years and with systemic/

metabolic disorder with oral manifestations were excluded from the study.

Results: The results of the study revealed that the tobacco consumption was more prevalent in males than in females. Most prevalent tobacco habit was chewing tobacco with slaked lime followed by smoking then mixed tobacco. Most common age group affected was 20-50 years and tobacco pouch keratosis were most prevalent lesion followed by leukoplakia.

Conclusion: This study imparted us the particulars of association of Oral PMDs in different kinds of tobacco users thus reducing the chances of morbidity and mortality associated with them due to their asymptomatic or mildly symptomatic nature which remains unnoticed till advanced stages due to relative lack of awareness about the harmful effects of tobacco usage even in current times of social media, thus guiding physicians to provide better patient care at an early stage.

Keywords: Gutka, Oral cancer, Smokeless.

Rapp Hodgkin Syndrome- A Rare Case with Classic Clinical Presentation Consisting of Anhydrotic Ectodermal Dysplasia With Cleft Lip and Palate: A Case Report

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Rapp Hodgkin Syndrome (RHS) is rare heterogenous disorder with features of ectodermal abnormalities mainly affecting the skin, teeth, eye, hair, appendages. It is a type of anhydrotic ectodermal dysplasia with cleft of the lip, palate and alveolus. Affected areas include the skin, hair, teeth, mouth, jaws, nails, eye, ear. The authors, hereby, present a case of RHS in a 13 year old boy who complained of deformed teeth, reduced sweating, heat intolerance with clinical finding of sparse, thin hair on scalp and eyebrows, sparse eyelashes, epiphora,

discoloured scaly skin, deformed pinna, microstomia, trismus, cleft lip scar, hyponychia, deficient maxilla. Intraorally showed oligodontia, misshapen teeth, depapillated tongue. Patient had undergone cleft lip, palate surgery, ankyloblephron release, adenoid and ear surgery at a younger age. Radiographically there was evidence of cleft alveolus, retained deciduous teeth, impacted teeth, oligodontia. Although the patient had a normal karyotype, but histopathology examination of skin showed hyperkeratosis, acanthosis, follicular

plugging and increased pigmentation of the basal cell layer. Considering this amalgamation of signs and symptoms a diagnosis of RHS was made which required a multidisciplinary approach for treatment. This patient will require a multidisciplinary approach for addressing his complaints. The authors here are reporting this case

as it is a rare type of ectodermal dysplasia which is of importance for any doctor's knowledge considering its varied type of presentation.

Keywords: Ankyloblephron release, Depapillated tongue, Hay wells syndrome, Oligodontia.

Determination of Gender and Age by Analysis of Mental Foramen using CBCT in a Subset of Population in Kolkata: A Cross-Sectional Retrospective Study

Abstract-24

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Introduction: Out of all the morphological landmarks on the human body, the mental foramen is thought to be one of the most reliable for determining age and gender. It has therefore been utilised in the current investigation to assess age and gender because of its durability.

Aim: To determine sexual dimorphism and to estimate the age in a subset of population in Kolkata, West Bengal by analysing the mental foramen using Cone Beam Computed Tomography (CBCT).

Materials and Methods: A cross-sectional retrospective study was conducted using CBCT of 70 subjects, of which 50 were included in the study as per the inclusion and exclusion criteria. The patient's OPD registration number, gender, date of birth was kept confidential, and a unique study case number was allotted. The required measurements in the CBCT scans, were done on these following parameters in both right and left side: 1. superior border of crest of mandible to superior border of mental foramen (SBM-SBMF), 2. superior border of crest of mandible to inferior border of mandible (SBM-IBMF), 3. superior border of mental foramen to inferior border of mandible (SBMF-IBM), 4. inferior border of mental foramen to inferior border of mandible (IBMF-IBM), 5. superior

border of mental foramen to inferior border of mental foramen. The information gathered was entered into a Microsoft Office Excel sheet, from which it was extracted to produce the desired outcomes using Stata version 13.1 and SPSS version 20 for Windows software (SPSS Inc., Chicago, IL, USA).

Results: The study's findings indicate that there is bilateral dimorphism in the (UM-IM) and (LM-IM) distances for both genders, making it a useful tool for distinguishing gender. Regarding age estimation, the research demonstrates substantial values for each of the four criteria. There were also bilateral differences noted. There is a substantial correlation between the estimated and original ages, according to the age regression model.

Conclusion: The mental foramen, a stable landmark in the mandible, is a useful tool for determining gender and age. As a result, using particular Mental Foramen measurements, one can determine the age of an individual. Additionally, pre-prosthetic surgery, implant placement, and orthognathic treatments use its location and distance from the alveolar crest as a guidance.

Keywords: Age, Cone beam computed tomography, Dimorphism, Gender, Mandible, Mental foramen.

Assessment and Correlation of Serum Folate and Iron Levels in Clinically Diagnosed Oral Leukoplakia against those without Oral Leukoplakia in Bengaluru and Kolkata Patients

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Introduction: Potentially malignant oral mucosal diseases such as oral leukoplakia, oral Erythroplakia and oral submucous fibrosis have a high malignant transformation rate with tobacco, alcohol, chewing of betel quid containing areca nut being etiological agents. Early identification, diagnosis and treatment hinder progression of the disease to severe dysplasia and even carcinoma in-situ and/or squamous cell carcinoma. Therefore, early intervention is highly advocated to attain favourable prognosis as well as treatment outcome.

Aim: To assess, compare and correlate the levels of serum folate and iron in patients with/without any visible Oral leukoplakia.

Materials and Methods: A total of 136 patients (34 Oral leukoplakia patients with habit(s) 34 patients without leukoplakia with habit(s) in Bengaluru and 34 Oral leukoplakia patients with habit(s) and 34 patients without leukoplakia with habit(s) in Kolkata. Serum folate was measured by chemi-luminescent immunoassay and serum iron concentration was measured by photometric method.

Results: There was a definite male predilection with majority of the subjects found in the age group of 20-30 years. The mean folate levels in BOL (34 Individuals with oral leukoplakia and habits in Bangalore), BWOL (34 Individuals without leukoplakia but with habits in Bangalore), KOL (34 Individuals with oral leukoplakia and habits in Kolkata), KWOL (34 Individuals without leukoplakia but with habits in Kolkata) was found to be 5.20, 5.3, 6.4 and 5.6 respectively, whereas the mean iron levels were 91.20, 105.73, 102.12 and 114.53 respectively, which was statistically insignificant.

Conclusion: The mean serum folate and iron levels were found to be high in the Kolkata population in comparison to that of the Bengaluru population. A clear decline in the serum iron and folate levels in patients with clinically diagnosed leukoplakia amongst smokers as well as in tobacco chewers was recorded; however, the folate levels were found to increase amongst smokers.

Keywords: Biochemical, Cancer, Malignancy.

Effectiveness and Safety of Oral Prednisolone vs Tofacitinib in Management of Oral and Mucocutaneous Lichen Planus: Investigator Blind, Active-controlled, Randomised Clinical Trial

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Introduction: As Oral Lichenplanus (OLP) is considered a T cell mediated disease associated with a Th1 imbalance of cytokine production, most of the therapeutic interventions have aimed to target the inflammatory pathway underlying OLP. The most commonly used anti-inflammatory medication is corticosteroids.

Although, the JAK-STAT pathway inhibitor drug Tofacitinib has been postulated to be useful in the management of Lichen Planus.

Aim: To assess the Lichen Planus Activity and Damage Index (LiPADI) and to assess the quality of life of the patients through Oral Health Impact Profile-14 (OHIP 14) and Dermatology Life Quality Index (DLQI).

Materials and Methods: This was an institution based, investigator-blind randomized controlled trial conducted after obtaining clearance from ethics committee and registering in the clinical trial registry (CTRI/2023/07/055368). Patients were screened into either Group A (Receiving oral prednisolone 0.5 mg/kg/day) or Group B (Receiving Tofacitinib 5 mg twice/day) with allocation ratio 1:1 as per the randomization sequence. Participants from both the groups had their oral and dermal health related quality of life evaluated using a questionnaire. (OHIP-14 questionnaire and DLQI). Physician blinding was achieved by Sequentially Numbered Opaque Sealed Envelope (SNOSE) technique. Informed consents, blood, Lipid and Urea profile, Chest x rays were obtained. Follow up visits were conducted in 2 weeks, 6 weeks, 12 weeks and their effectiveness

parameters, side effects, severity index of the disease, quality of life were monitored.

Results: Both the groups were comparable at baseline with regards to number of lesions and its severity. Oral and Dermal lesions improved significantly from 1st follow-up (2nd week) onward in both the groups. OHIP-14 and DLQI was also noted to be improved at 12th week in both the groups.

Conclusion: Tofacitinib significantly improves the cure rate in Lichen Planus with lesser number of side effects as compared to Prednisolone. Though 6 weeks of treatment is not sufficient to achieve complete cure.

Keywords: JAK-STAT, Oral lichen planus, Oral Health Impact Profile-14, T-cell mediated, Oral steroids, Prednisolone, Tofacitinib.

Assessment of Malignant Potentiality in Non-dysplastic and Dysplastic Oral Submucous Fibrosis using Histomorphometry and Molecular Pathology Attributes

Abstract-27

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Introduction: Oral Submucous Fibrosis (OSF) is an oral precancerous condition with highest potential for malignant transformation. When OSF advances to oral cancer, epithelial cells undergo several dysplastic changes that alter the epithelial properties and architecture. Analysis of these features can provide useful diagnostic information to assess malignant potentiality of the disease process to avoid progression to oral cancer.

Aim: To assess the progression of non-dysplastic and dysplastic OSF to malignancy using histomorphometry and molecular pathology attributes.

Materials and Methods: The study included 50 subjects divided into two groups, with 43 individuals suffering from OSF and 7 individuals without disease process. Biopsy was conducted to establish diagnosis of OSF and stained sections were classified into non-dysplastic and dysplastic category. Some sections were also prepared on lysine coated slides for immunohistochemical analysis. Finally, both sections were taken to SMST, IIT, Kharagpur, for staining with E-cadherin molecule and for procurement of photomicrographs

using Inverted Microscope to undergo histomorphometrically analysis in basal-parabasal layers of epithelium and for assessing/ comparing expression of adhesion molecule (E-cadherin) in basal-parabasal and spinous layers of non-dysplastic and dysplastic OSF tissue using Image J software.

Results: Semi-quantitative light Microscopic histomorphometrical parameters like cellular size (Area, Major Axis, Minor axis) and shape (Aspect Ratio) depicted various statistically significant alterations along with membranous loss of E-cadherin molecule with concomitant cytoplasmic accumulation, both in basal-parabasal and spinous layers of the surface epithelium.

Conclusion: The study concluded that various significant alterations in size and shape of the epithelial cells with varied expression of E-cadherin molecule in different layers of epithelium can be regarded as a significant indicator in predicting the disease progression of OSF to malignancy.

Keywords: Basal-parabasal, E-cadherin, Gray scale, Malignant transformation.

Comparative Evaluation of Expressional Alteration of Cytokeratins in Oral Leukoplakia and Oral Leukoplakia Associated Oral Squamous Cell Carcinoma

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Introduction: Oral Squamous Cell Carcinoma (OSCC) has been marked by high morbidity with poor survival rates and which mostly develop from pre-existing Oral Potentially Malignant Disorders (OPMDs) like Oral Leukoplakia (OLKP). Early detection of a premalignant lesion can increase the survival rate. Histopathological evaluation is unable to predict the potentiality for the malignant transformation. This subjectivity has turned the interest toward molecular marker i.e. Cytokeratins which may be important in understanding of the molecular changes during the progression of OLKP to OSCC.

Aim: To study the light microscopic features of Normal Oral Mucosa (NOM), OLKP and OSCC and to compare, corroborate and correlate the expressions of CK-8/18 and CK-5/6, to assess their roles as potential biomarkers in malignant transformation of OPMDs.

Materials and Methods: This was a comparative case-control study conducted on 26 OLKP and OSCC patients and 5 normal individuals. The study subjects were thoroughly interrogated, examined, assessed. Thereafter, incisional biopsies were performed from the representative sites followed by histopathological and immunohistochemical (CK8/18 and CK5/6) evaluation.

Results: The present study showed that the staining intensity of CK-8/18 was significantly decreased from basal to supra-basal and superficial layers in NOM and OLKP. Furthermore, a significant increase of this staining intensity was noted when comparing NOM vs OLKP and NOM vs OSCC.

Keywords: Biomarkers, Cytokeratin, Normal oral mucosa, Oral squamous cell carcinoma, Premalignant lesion.

Effect of Platelet Rich Fibrin on Soft Tissue and Hard Tissue Healing following Mandibular Third Molar Surgery: A Prospective Comparative Study

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Introduction: The surgical removal of mandibular third molars are one of the most frequent clinical tasks conducted by dental surgeons. This surgery is associated with the possibility of delayed and complicated soft tissue and hard tissue healing. Platelet-Rich Fibrin (PRF) is the latest development of the blood-derived products which are widely used to improve healing.

Aim: To estimate the effect of PRF on the soft tissue and hard tissue healing following mandibular third molar surgery.

Materials and Methods: This was a prospective comparative study conducted on 26 patients divided into two groups. Group I getting

PRF after surgical extraction of third molar while Group II did not get any PRF. Soft tissue healing evaluation was performed using two parameters-Healing index by Landry and associates - on post-extraction 3rd, 7th and 14th day by two blind observers and Periodontal pocket depth by William's probe at the distal of lower second molar - on 3 sites distobuccally, distally, and distolingually on preoperatively, 14th day, 28th day and 3 months after surgical procedure. Post-surgical hard tissue healing was evaluated by CBCT in post operatively 1 month (T1) and 3 months (T2). Decrease in Volume of a socket, Bone density unit, surrounding bone type analysis were performed.

Results: Following the landry index on 3rd, 14th and 28th Day - Group I showed improved soft tissue healing which were statistically significant ($p=0.03$, $p=0.013$, $p=0.002$ respectively). However, in periodontal pocket depth no statistically significant association was found. In Cone Beam Computed Tomography (CBCT), socket volume reduction was better for Group I than Group II and was statistically significant ($p<0.0001$). Quality of bone formation (measured by Bone density units) was significantly better for Group

I than Group II ($p=0.043$). However, type of bone formation was similar for both groups.

Conclusion: PRF appears to be beneficial and effective in improving of postoperative soft tissue and hard tissue healing in mandibular third molar surgery. However, this study cannot comment on effectiveness of PRF on post-operative pocket depth.

Keywords: Blood derived products, Tooth extraction, Wound healing.

A Comparative Evaluation of Transbuccal Approach and Standard Intraoral Approach in Fixation of Mandibular Angle Fracture with Miniplate Osteosynthesis

Abstract-30

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Introduction: A surgeon decides about approach to a fracture site depending on his surgical expertise, accessibility and aesthetic demands of the patient. Placing plate in an anatomically unfavourable position, thin, soft tissue coverage with increased exposure of plate, and plate breakage due to excessive plate bending for adapting it to the superior border of the mandible includes some of the disadvantages of standard intraoral. These disadvantages prompted surgeons to search for an alternative approach to MAF, namely the transbuccal approach.

Aim: This study aims to assess the difference in complications between transbuccal approach and standard intraoral approach following fixation of the MAF with miniplate osteosynthesis.

Materials and Methods: This comparative evaluation was conducted on group of 15 patients randomly divided into two groups patients with MAF were randomly divided into two groups (Group A, Intraoral approach; Group B, Trans-buccal approach) who underwent ORIF (Open Reduction and Internal Fixation) using miniplate osteosynthesis (single 2.0 mm 4 holed miniplate with a bar using either of the two approaches). Intra-operatively,

the surgical time and the ease of surgical access for fixation were evaluated. Patients were followed at 1 week, 3 months, and 6 months postoperatively and evaluated clinically for post-operative complications like infection, scarring, postoperative occlusal discrepancy, malunion, and non-union.

Results: Radiographic interpretation of fracture reduction revealed statistical significance for group B as compared to group A. There were no cases of malunion/non-union. Significantly more occlusal discrepancy was noted in group A compared to group B at 1 week postoperatively. Occlusion and mouth opening was achieved in all patients 1 week after surgery. Lateral cortical plate fixation was seen to be more significant in Group B that is trans-buccal approach than Group A.

Conclusion: Lateral cortical plate fixation via trans-buccal approach is the easiest and comparatively better method for the treatment of MAF than intraoral external oblique ridge fixation. Thus, the use of trans-buccal technique is recommended for fixation of the MAF.

Keywords: Mandibular angle fracture, Post-operative complications, Trans buccal approach.

A Comparative Study Between Crestal Bone Loss of Self Threading and Non-self Threading Implants: Clinical and Radiological Evaluation

Abstract-31

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Introduction: Dental implant has brought an evolutionary change in the world of rehabilitation. It can be classified according to size, shape, materials and design. The main difference between self threading and non self threading implants is design and drilling protocol. Here, in this study we have compared crestal bone loss 6 months post loading in patients receiving self threading and non self threading implants.

Aim: To evaluate the crestal bone loss 6 months after loading with the help of IOPAR, and CBCT

Materials and Methods: This was a clinical and radiological evaluation conducted on a total number of 20 patients (patients receiving self threading implants - 8, patients receiving non self threading implants - 12), patients requiring implant placement in both the jaws and were operated under local anaesthesia. The patients underwent a pre-treatment examination in which patient data and medical history were recorded. Prior to surgery, patients were randomized single blindly into one of the two treatment groups. Group A- receives self-threading implant (Type I). Group B- receives

non self-threading implant (Type II). All the implants were placed according to the manufacturer's protocol and a healing period of 3 months was maintained in each case. At the end of 3rd month, gingival former was placed and after 2 weeks the loading was done. The marginal bone level was checked with CBCT and IOPA grid x-ray, right after implant placement and 6 months post loading. Statistical analysis was done to evaluate 6 months post-loading marginal bone loss between group A and B.

Results: The 6 months post loading marginal bone loss measured in CBCT for buccal and lingual/palatal alveolar bone as well as in grid x-ray for mesial and distal bone is statistically insignificant in both the types of implants used.

Conclusion: Thus, fixture design and drilling protocol do not play a significant role in clinical success of standard endosseous implants.

Keywords: Cone beam computed tomography, Intra oral peri-apical radiographs, Marginal bone loss, Rehabilitation

Mandibular Ramus as a Donor Site for Cortical Bone Graft: A CBCT Analysis

Abstract-32

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Introduction: Sufficient volume of bone is of prime importance for successful osseointegration of dental implants. Mandibular ramus acts as a good source of cortical bone graft without much complications, as seen most commonly while harvesting bone graft from mandibular symphysis or body.

Aim: To evaluate maximum extent and different dimensions (length, height, thickness, surface area and volume) of cortical bone graft that can be harvested from ascending ramus of mandible maintaining safe zone from anatomical vital structures by using CBCT.

Materials and Methods: The retrospective CBCT analytical study has been carried out in the Department of Oral and Maxillofacial Surgery, Guru Nanak Institute of Dental Sciences and Research,

Kolkata, West Bengal, India. CBCT of 30 patients have been used to study 55 sites of ascending ramus of mandible. The CBCTs have been collected from Institutional archive. The studies were done in NNT viewer software.

Results: The mean length of cortical bone graft that can be harvested from mandibular ramus was found to be 14.49±2.66 mm, whereas the mean height and thickness was 6.40±2.07 mm and 3.04±0.61 mm respectively. The mean surface area was found to be 308.88±75.37 sq mm, whereas volume was 272.15±92.02 cu mm. Each of the dimensions were compared among genders, sides and different age groups (18-29 years, 30-45 years and 45 years age group). Statistically significant difference was found for surface area and volume among genders, with males having greater dimension than female.

Conclusion: Mandibular ramus can be a great option for harvesting cortical bone graft for alveolar ridge augmentation procedures.

Keywords: Ascending ramus of mandible, Cone beam computed tomography, Dental implants.

Comparison of Crown Root Morphology in Maxillary and Mandibular Anterior Teeth of Different Sagittal Skeletal Patterns in Bengali Population- A CBCT Study

Abstract-33

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Introduction: Individual diversity is the cornerstone of human biology, so is the crown and root morphology of teeth. The maxillary and mandibular anterior teeth can be differentiated on the basis of their crown root morphology, by measuring collum angle, labial surface angle and torque angle.

Aim: To evaluate and correlate the collum angle, labial surface angle and torque angle in maxillary and mandibular anterior teeth in different skeletal patterns in Bengali population.

Materials and Methods: The study was conducted on 90 CBCT scans of young adult patients aged 18-24 years. They were divided into 3 groups based on ANB angle as skeletal Class I ($2^\circ < \text{ANB} < 4$), Class II ($4^\circ < \text{ANB}$) and Class III ($2^\circ > \text{ANB}$) with 30 subjects in each group. All the CBCT scans were selected from the pool of patients reported to the department.

Results: Positive correlation was found between collum angle and labial surface angle in all types of malocclusions. Smallest collum angle is found in lower left central incisor. Maxillary lateral incisor has larger crown root angulation than central incisor. Maxillary canine and mandibular central incisor has smallest of all collum angle in maxillary arch and mandibular arch respectively. On moving from 3.5 mm to 5 mm in calculation of labial surface angle, difference of 3.9° is seen for maxillary incisors and 3.5° for mandibular incisor.

Conclusion: Statistically significant difference has been seen among maxillary and mandibular anterior teeth crown root morphology. By knowing the variations and correlations among collum angle, torque angle and labial surface angle in different sagittal skeletal malocclusions the clinicians can enhance orthodontic treatment.

Keywords: Cone beam computed tomography, Collum angle, Labial surface angle, Skeletal malocclusion, Torque angle.

From Smile to Self-worth: How Malocclusion Affects Quality of Life and Self-esteem

Abstract-34

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Introduction: Oral health-related quality of life is a significant subjective factor that is strongly influenced by how people perceive their own physical, mental, social, and spiritual well-being, as well as by their own values, convictions, and beliefs, as well as by the history and cultural context of their own societies. The present study will evaluate the relationship between facial aesthetics and self-esteem and oral health related quality of life.

Aim: To examine if or not there is a correlation between the dental aesthetic component and patients perceptions of whether or not their malocclusion has any effect on self-esteem and the psychosocial impact it has.

Materials and Methods: This cross-sectional study examined 357 subjects (250 girls and 107 boys between 13 and 27 years old, mean age 19.23 ± 3.45) at Guru Nanak Institute of Dental Sciences and Research in Kolkata, West Bengal, India, from January 2020 to July 2022. The patients were given multiple questionnaires to assess how oral health affects quality of life and self-esteem. Dental aesthetics measured using Dental Aesthetic Index (DAI). Self-esteem measured using Rosenberg Self-Esteem Scale (RSES).

Results: DAI scores is negatively correlated with (RSES) Rosenberg self-esteem score ($r = -0.429$, $p > 0.00$).

Conclusion: All of the participants in the study experienced

a significant psychosocial impact from their malocclusion. In comparison to a group of persons with little or minimal malocclusion, they reported considerably more 'psychological impact' and lower 'dental self-confidence' and resulting in a worse QoL. This study provides evidence to support the theory that individuals' perceptions

of their own psychosocial influence are related to their satisfaction with their smile's appearance.

Keywords: Dental aesthetic index, Oral Health, Patient perceptions, Psychosocial impact.

Correlation Between Body Mass Index Percentile, Age at Menarche with Hand-wrist Radiograph in Bengali Female Population

Abstract-35

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Introduction: Estimation and evaluation of growth of children undergoing orthodontic treatment is of great importance. Body mass index percentile offer quick, non-invasive estimation of development status whereas onset of menarche is an important biologic indicator in assessing the physiologic maturity in girls. Assessment of skeletal maturity with hand-wrist radiograph is also reliable, predictable and popular method.

Aim: To correlate between body mass index percentile, age at menarche with hand wrist radiograph in female population.

Materials and Methods: This cross-sectional study was conducted at Guru Nanak Institute of Dental Sciences and Research, Kolkata, West Bengal, India, from May 2022 to March 2024 with study population of 100 Bengali girl between 9-15 years age whose origin within six months of onset of menarche were selected. BMI was measured individually, and Hand-wrist X-ray was taken for assessment

of skeletal age of every individual. The collected data was tabulated using Microsoft Excel 2019 and then statistical analysis was carried out using the GraphPad Prism for Windows, Version 9.5.

Results: Mean age of the study subjects was found to be 12.41±1.41 years, mean BMI was found to be 18.62±2.7 kg/m². Majority of the study subjects were found to be healthy (66%) at stage VIII of skeletal maturity.

Conclusion: Obese girls had the onset of menarche at an early stage followed by Overweight girls then Normal weight girls whilst the underweight girls had their late menarche. The correlation between SMI method and the onset of menarche was statistically insignificant but significant correlation was found between BMI percentile and SMI staging method.

Keywords: Overweight girls, Normal weight girls, Skeletal Maturity Indicator, X-ray.

Assessment of Reliability and Identification of Craniofacial Landmarks in CBCT Generated 2D Cephalograms Compared to Digital Cephalograms

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Introduction: Lateral cephalograms are widely used in Orthodontics as a vital tool for treatment planning in orthodontics. The reliability of cephalometric analyses depends on projection and identification errors.

Aim: Comparative assessment of reliability and identification of Craniofacial landmarks on CBCT-synthesised cephalograms vs conventional cephalograms, and to check whether the technique used to synthesize CBCT cephalograms has an impact on the reproducibility of the cephalometric measurements.

Materials and Methods: This was a Cross sectional retrospective study was conducted in the Department of Orthodontics and Dentofacial Orthodontics, Guru Nanak Institute of Dental Sciences and Research for six months period of time, where 50 (25 Cone beam computed tomography generated cephalograms and 25

Conventional digital cephalograms) were selected and parameters were studied using Steiners analysis. Seven Linear and nine angular measurements were done. The linear and angular measurement required for different analysis were determined for cephalometric analysis software named Nemoceph (updated version 7).

Results: The values of the two imaging modalities does not show any statistically significant difference. Correlation coefficient/r-value shows that both Digital cephalograms and CBCT cephalograms are highly reliable.

Conclusion: So, the authors can conclude that both conventional digital lateral cephalogram and CBCT generated cephalogram can be readily used for craniofacial landmarks identification.

Keywords: Cone beam computed tomography, Cephalogram, Two Dimensional.

Dentition Status, Treatment Needs and Association with Diet and Oral Hygiene Practices among School going Children Population of West Bengal- An Epidemiological Study

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Introduction: The global burden of disease study 2016 estimated that oral diseases affected 3.58 billion people with dental caries. Severe tooth loss and total edentulous condition has been reported as one of the leading causes of Years Lived with Disability (YLD) in some high-income countries. Oral health inadequacies exist among and between different population groups and social determinants have a strong impact on oral health. WHO defines oral health as "a state of being free from chronic mouth and facial pain, oral infections and sores, periodontal diseases, tooth decay, tooth loss and other disorders and diseases that limit individual capacity in biting, chewing, smiling, speaking and psychosocial well-being".

National Oral Health Survey Report 2004, states that caries prevalence in India was 51.9%, 53.8%, and 63.1% at 5, 12 and 15 years respectively. Literature on - caries research in eastern India is few and reports related to West Bengal are sparse with respect to the dentition status and treatment needs.

Aim: To assess Dentition Status, Treatment Needs and their Association with diet and Oral Hygiene Practices among School going Children Population of West Bengal.

Materials and Methods: The survey was carried out after obtaining institutional ethics clearance. The state of West Bengal was divided

into 3 zones and random sampling method was employed to examine students using WHO questionnaire and achieve the target sample size of based on the formula $N=4pq/L2$ and a sample size of 784 per zone.

Results: Significant Caries Index of 2352 respondents has been found to be 5.57 in this study and mean DMFT is 2.34. Need for one surface filling in 384 (34.3%) children from zone 1, 360 (32.1%) from zone 2 and 377(33.6%) from zone 3. The need for two surface filling was observed as 200 (32.4%) children from zone 1, 223 (36.1%) from

zone 2 and 194 (31.4%) children from zone 3. Association of brushing vs. caries prevalence was not statistically significant ($p=0.0601$).

Conclusion: Caries prevalence was found to be 53.3% in this study. Difference in caries prevalence across the zones is not statistically significant. Toothbrush and paste twice a day is used mostly as oral hygiene aid.

Keywords: Dental Caries, Epidemiology, World health organisation questionnaire.

Evaluation of Composite Resin Cure with Soft Start and Standard Mode of Polymerization: An In-vitro Study

Abstract-38

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Introduction: Polymerization shrinkage, the inherent disadvantage of visible light-activated composite resin can be minimized by pre-gel polymerization at low intensity followed by final cure at high intensity.

Aim: To determine the degree of conversion and effectiveness of composite cure associated with standard mode and soft start polymerization by Fourier transformation infrared spectroscopy (F.T.I.R) and microhardness testing.

Materials and Methods: Uncured composite resin samples were subjected to F.T.I.R and an absorbance peak was obtained. A total of 12 composite resin samples were prepared by placing them into plastic moulds (2 mm×4 mm) and divided into two groups six samples in each. Group I and II samples were light cured for 40 sec with standard mode and soft start mode respectively. Samples after curing pulverized into powder and then KBr disc were prepared with resin powder with 70 mg infrared grade. Then absorbance peak

was obtained, and the degree of conversion was determined. For microhardness testing 12 composite resin sample moulds were prepared and divided into two groups. These two groups were light cured for 40 sec in soft start mode and standard mode respectively and then vicker microhardness testing was obtained. Data obtained was analysed using Student's t-test.

Results: The degree of conversion of group II cured by standard mode was significantly greater and Vicker hardness number of group II was higher than the group I.

Conclusion: Significant difference in microhardness and degree of conversion was seen between standard mode of curing and soft start polymerization. The reduced rate of conversion by soft start polymerization also affects the micromechanical properties of cured composite.

Keywords: Microhardness, Polymerization shrinkage, Soft start curing mode, Standard curing mode, Vicker hardness number.

Morphological Change in Diamond Coated Dental Burs and Tungsten Carbide Burs after Multiple Uses: An In-vitro Scanning Electron Microscopic Study

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Introduction: Dentists in many other countries use dental diamond burs not only for gross tooth reduction but also for a wide variety of intracoronal procedures. With continuing use, however, the cutting capability of the carbide bur tended to decline while that of the diamond point remained quasi-constant. Difference in diamond is its rough surface compared to tungsten carbide bur. Diamond is slow cutting compared to tungsten carbide bur. Literature search revealed that most of the study done to evaluate cutting efficiency of diamond and tungsten carbide bur use on bovine teeth, cast metal and ceramic. Individually there was no comparative study on wear off of both found, and no study on wear off of these cutting tools on human teeth, no study on element present on diamond abrasive point and tungsten carbide bur after use.

Aim: To compare morphological change in diamond abrasive points and tungsten Carbide burs after multiple use.

Materials and Methods: This was an in-vitro Scanning Electron Microscopic study on 160 freshly extracted human mandibular molar teeth. Teeth are cleaned from debris and tissue with ultrasonic. In all teeth Class V cavity prepared in cervical third of crown in dimension of 3 mm occluso cervical height, 4 mm, mesiodistal width 4 mm, 2 mm depth, except in control group using different cutting tool. Total 80 piece of cutting tool were selected for class V cavity preparation in tooth. Among these 40 were abrasive points and 40 were tungsten carbide bur. Abrasive points were considered as Group A. Tungsten Carbide bur were considered as Group B. Group A abrasive points were again divided in to four sub group A1,A2,A3,A4 according to

number of times abrasive points used for cavity preparations. Group B tungsten carbide bur were again divided in to four subgroup B1, B2, B3, B4 according to number of times tungsten carbide bur used for cavity preparations. The samples were analysed under scanning electron microscope.

Results: In group-A, 9(22.5%) diamond abrasive point had score 0, 10(25.0%) diamond abrasive point score 1, 13(32.5%) diamond abrasive point had score 2 and 8(20.0%) diamond abrasive point had score 3. In group-B, 10(25.0%) tungsten carbide bur had score 0, 20(50.0%) tungsten carbide bur had score 1 and 10(25.0%) tungsten carbide bur had score 2. Distribution between score vs. groups was statistically significant ($p=0.0082$). Level of mean score was significantly higher in group-A than group-B. Difference of mean score in two groups was statistically significant ($p=0.0158$).

Conclusion: With multiple use of diamond abrasive points and tungsten carbide bur, they reduce cutting efficiency as number of use increases. Because there is loss of diamond particles after one time use, morphological change after five-time use, and even exposure of partial metal blank after ten time use. In tungsten carbide bur after one time use and five-time use, we found morphological alteration, and after ten time use there was loss of blade integration in few places. Change in cutting tool may lead to inadvertent effect of teeth and pulp.

Keywords: Class V cavity, Cutting efficiency, Diamond abrasive, Grit size.

Non-surgical Management of a Large Periapical Lesion using Calcium Hydroxide Intracanal Medicament with CBCT Analysis: A 2 Years Follow-up Case Report

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It is generally accepted that periapical lesions cannot be differentially diagnosed based on radiographic evidence alone. Large periapical lesions were generally managed by root canal treatment of the involved tooth or teeth and by surgical excision. However, awareness of root canal morphology and a careful interpretation of preoperative radiographs are necessary for adequate access and infection control in endodontic therapy. The authors here present a case of 61 years old male patient, to assess the healing of a large periapical lesion non-surgically using Calcium hydroxide (CH) with the aid of Cone Beam Computed Tomography (CBCT). The patient came to private clinic with history of trauma 10 years back, dull pain, swelling inside lower and discoloured lower central incisors.

Initial radiograph showed diffuse radiolucency involving lower central incisors, left lateral incisor and left canine. Preoperative CBCT image was taken where periapical lesion was demarcated from lower right central incisors to left lateral incisors. Lower left canine shown no pathological involvement. Although perforation of labial cortical plate was evident. Standard root canal treatment was performed with Calcium hydroxide intra canal medicament. Check-ups performed at 6 months, 12 months, 2 years, demonstrated progressive healing of treated large periapical pathology, with total absence of signs or symptoms.

Keywords: Cone beam computer tomography, Clinical protocols, Endodontics, Periapical healing, Root canal therapy.