



COLLEGE OF DENTISTRY

The UNIVERSITY of OKLAHOMA HEALTH SCIENCES CENTER

43rd Annual Scientific Day

April 25, 2024

Champion Convention Center
737 S. Meridian Avenue
Oklahoma City, Oklahoma

Sponsored by:



DELTA DENTAL OF OKLAHOMA
FOUNDATION



43rd Annual Scientific Day

The first Scientific Day was held in 1981 and consisted of table clinics in the hallways of OUCOD and a few dozen donuts in the Commons. The following year, the event became more sophisticated with the addition of orange juice and coffee. We then graduated to bagels and quickly outgrew the confines of our building. As the student research program grew and corporate support became stronger, the event evolved into what it is today – **the 43rd Annual Scientific Day!**

The evolution of Scientific Day to what you will experience today is due to the dedication and support of numerous stakeholders. To the students and their faculty mentors who complete meaningful research projects, to the faculty and staff who help plan and coordinate this event, and to the many sponsors who provide funding and show us how advances in research translate into better products and services for our patients, **We Thank You!** We are particularly grateful to Delta Dental of Oklahoma, the Delta Dental of Oklahoma Foundation, and the J. Dean Robertson Society for their sponsorship of this event and our Student Research Program.

Today's event is particularly momentous because we welcome Jack Ferracane, PhD, an internationally renowned researcher and faculty person as the Keynote Speaker. We are honored that he is present today to support our students and their research projects. His presentation title and biography are presented on the next page.

Please enjoy the outstanding projects, diligently prepared and presented today by our dental students, dental hygiene students, residents, and graduate students. We hope that you will reflect on our humble beginnings, be proud of where we are today, and help us build an even better future.

**Welcome to the University of Oklahoma
College of Dentistry's 43rd Scientific Day!**

Keynote Speaker: Dr. Jack Ferracane

Bioactive Materials: What Are They and What Role Can They Play in Bonded Dental Restorations?

Biography:

Jack Ferracane, Ph.D., is Professor and Chair of Restorative Dentistry, and Division Director of Biomaterials and Biomechanics at Oregon Health & Science University, Portland, Oregon. Dr. Ferracane earned his Ph.D. in Biological Materials from Northwestern University.

He is a founding fellow and past-President of the Academy of Dental Materials. He is a past-President of the American Association for Dental Research. He is the recipient of the Wilmer Souder Award from the Dental Materials Group of the IADR, the Founders Award from the Academy of Dental Materials, and the Hollenback Award from the Academy of Operative Dentistry. He is an honorary member of the American College of Dentists and the Oregon Dental Association.

He has authored or co-authored several textbooks on dental materials and operative dentistry, and has published extensively on biomaterials.

His research is funded by the NIH/NIDCR as well as private industry. He also is actively involved in the establishment and operation of networks designed to conduct dental clinical research in the private practice setting.

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University of Oklahoma College of Dentistry

43rd Annual Scientific Day

Schedule of Events

7:30 – 9:00 a.m.	Poster Presentation Judging <i>Closed session</i>
9:00 – 9:30 a.m.	Registration and Continental Breakfast
9:00 – 10:40 a.m.	Poster Presentations
10:45 a.m. – 12:00 p.m.	Keynote Address – <i>Dr. Ferracane</i>
12:00 – 1:00 p.m.	Lunch (Boxed lunch provided for all attendees)
1:00 – 2:30 p.m.	Ishmael Essay Contest Finals
1:00 p.m.	<i>Kaitlyn Matlock (DH2)</i> <i>Dental and Dental Hygienists Detecting Sleep Apnea</i>
1:15 p.m.	<i>Jamie Millirons (DH2)</i> <i>Perception of Oklahoma Dental Hygiene Employment Retention</i>
1:30 p.m.	<i>Sarah Sullivan (DH2)</i> <i>Culturally Competent Education for Dental Hygienists</i>
1:45 p.m.	<i>Alex Danner (DS2)</i> <i>Incidence of Oral Fungal Infections in Oral Pathology Biopsy Specimen</i>
2:00 p.m.	<i>Landen Keffer (DS2)</i> <i>Properties of Experimental Nanofilled Orthodontic Adhesives</i>
2:15 p.m.	<i>Bailey Wyatt (DS3)</i> <i>Concordance of Clinical and Histopathological Diagnoses</i>
2:30 – 3:00 p.m.	Break
3:00 – 4:10 p.m.	Awards Ceremony – <i>Dean Mullasseril, Dr. Khajotia, Mr. Gladden, Dr. Jacobsen</i>
4:10 p.m.	Student Checkout and non-faculty check out for CE credit

POSTER PRESENTATIONS

Poster #	Presenter Name(s) & Title
#1	ADALI ESQUIVEL (DH2) Effective Clinician Communication for Dental Treatment Acceptance
#2	ALEXI HENDRICKS (DH2) Prevalence of Food Insecurity on the OUHSC Campus
#3	JENNIFER MARTINEZ (DH2) Oral Healthcare Barriers in the Foster Care System
#4	KAITLYN MATLOCK (DH2) Dental and Dental Hygienists Role in Detecting Sleep Apnea
#5	JAMIE ANN MILLIRONS (DH2) Perceptions of Oklahoma Dental Hygiene Employment Retention
#6	CAITLYN SCHULTZ (DH2) Dental Professionals' Knowledge and Perceptions on Vaping
#7	SARAH SULLIVAN (DH2) Culturally Competent Education for Dental Hygienists
#8	CHLOE ARISON (DH2); MADISON BORIS (DH2) Sjogren's Syndrome: New Drugs on the Horizon
#9	DANIELLE ATONDO (DH2); RIANA RAMNARINE (DH2) Obstetricians Role in Systemic Effects of Periodontal Disease in Pregnancy
#10	GRACEE BATES (DH2); KAITLYN GILLISPIE (DH2) The Benefits of Intraoral Cameras in Dentistry
#11	ALLI BATES (DH2); MARIS SUSMAN (DH2) Dental Stem Cells in Regenerative Dentistry
#12	ELIZABETH BREWER (DH2); HARRIBA FLATT (DH2) Preventive Measures for Pediatric Dentistry
#13	KEELY BROCK (DH2); JANNA HOLYFIELD (DH2) Ergonomics: Musculoskeletal Disorders in Dentistry

POSTER PRESENTATIONS

Poster #	Presenter Name(s) & Title
#14	ASHLEY BROWN (DH2); BLAKELYN DANIEL (DH2) The Importance of Masticatory Function in Head and Neck Development
#15	ROSA HILL DEERE (DH2); GABRIELLE SMITH (DH2) Oral Health Literacy: Impact of Maternal Education
#16	JAYDEN FLEWALLEN (DH2); BETHANY GERBER (DH2); ISABELLE TOMLINSON (DH2) Importance of Extraoral Exams in Detecting HPV-related Malignancies
#17	NATALEA HARCROW (DH2); LYDIA PHELPS (DH2) Trauma Informed Care: Understanding the Impact of Trauma
#18	MONTANA HURT (DH2); ANNA WILLEY (DH2) Treating Dental Anxieties in Pediatrics with Dog Therapy
#19	ELIZABETH IBARRA (DH2); SAVANNAH McGUIRE (DH2) Non-thermal Atmospheric Plasma Applications in Dentistry
#20	KELLER KENNEDY (DH2); HALEE PIATT (DH2) Scope of Forensic Odontology
#21	HADLEY KREWALL (DH2); LANEY WARDROP (DH2) Oral Health of Nursing Home Residents
#22	WHISPER McKINLEY (DH2); KENZIE HENDRICKS (DH2) Management of Sleep Bruxism
#23	SHEILA NGUYEN (DH2); MADISON WARD (DH2) Access to Dental Care in Rural Areas Through Mobile Dental Clinics
#24	LAUREN PALESANO (DH2); MARISA STIFFLER (DH2) Behavioral Management in Patients with Autism Spectrum Disorder
#25	CHANTAL SCHOFIELD (DH2); SHELBY WOOLARD (DH2) Dental Hygienists Role in Early Detection of Thyroid Abnormalities
#26	BRITTANY THOMPSON (DH2); RASHEL MARTIN (DH2) Guided Biofilm Therapy

POSTER PRESENTATIONS

Poster #	Presenter Name(s) & Title
#27	BLAKE ADAMS (DS2); TAYLOR TERRELL (DS2) Decreasing Clinic Cancellations Through Patient Communication Technology
#28	HOLLY ALVEY (DS2) Frequency of Parafunctional Habits with Clear Aligner Therapy
#29	ALEXANDER DANNER (DS2) Incidence of Oral Fungal Infections in Oral Pathology Biopsy Specimen
#30	PEYTON EARLE (DS2) A Survey Analysis Study on 3 rd Molar Extraction Recommendations
#31	GHAZALEH ELLIOT (DS3); MANAS KOMMAREDDI (DS3) Impact of No Shows at OUCOD Student Program: Quality Improvement Study
#32	PANIZ SHEIKH HASSANI (DS4) Content-analysis of YouTube™ Videos: Chewing Gums and Orthodontics
#33	EMILY HERNANDEZ (DS2) Nanofilled Adhesives: Color, Mechanical & Antibacterial Properties
#34	AUSTIN HUFFMAN (DS4) Characterization of NuSmile Bioflex Crowns; A Pilot Study
#35	LANDEN KEFFER (DS2) Properties of Experimental Nanofilled Orthodontic Adhesives
#36	CROSBY SHELBY (DS2) Fluoride Supplementation Use in Oklahoma Dental Practices
#37	PETER SOHN (DS2) Multiple Sterilization and Inst. Cycles Reduce Rotary Cutting Efficiency
#38	BAILEY WYATT (DS2) Accuracy of Clinical Dental Differential Diagnoses
#39	JOHN CORBETT (Postgraduate) Autogenous Dentin in Alveolar Ridge Preservation and Implant Placement

POSTER PRESENTATIONS

Poster #	Presenter Name(s) & Title
#40	LILY HARSTOCK (Postgraduate); DOMINQUE ANGIBEAU (Postgraduate) A Comparison of AI Platforms for Caries Diagnosis and Insurance Claims
#41	JOHNATHAN LEONARD (Postgraduate) Dental Implants in Bone-compromised Patients: Quality of Life Outcomes
#42	PRITA DHAIMADE (Postgraduate) Beyond the Surface: Unveiling Tobacco Related Epithelial Dysplasia
#43	SARA FITA (Postgraduate) 3D Printing in Surgical Treatment Planning and Re-evaluation
#44	NATASHA GOKAL (Postgraduate); ELENA DUPALO (Postgraduate) Etiology of Trismus in Head and Neck Cancer Patients – A Literature Review
#45	ANNIE JAMISON (Postgraduate); LAUREN PARKER (Postgraduate) Amalgam Removal: Advantages and Disadvantages in Everyday Practice
#46	MADHUMATI RAMACHANDRAREDDY (Postgraduate) Surgical Management of Peri-Implantitis: A Clinical Case Report
#47	JOSE SILVERIO (Postgraduate) A Case Report of Immediate Implant Placement and Hybrid Prosthesis

#1

Title: Effective Clinician Communication for Dental Treatment Acceptance

Presenter(s): Adali Esquivel, DH2

Advisor(s): Staci Wekenborg, Shelly Short

Abstract:

Purpose: This research aims to examine the clinical experiences of dental hygienists regarding the delivery of oral and total health treatment concerns and barriers resulting in patients delaying dental treatment due to communication skills.

Methods: The cross-sectional survey was distributed to 2,564 registered dental hygienists from the Oklahoma Dental Hygienists' Association. Descriptive statistics were analyzed through OUHSC Qualtrics and counts and frequencies were calculated to conduct data comparisons.

Results: Of the 2,564 individuals who received the survey, 96 registered dental hygienists completed it. 69% of registered dental hygienists strongly disagreed with being fluent in one or more languages and feeling comfortable carrying a conversation with a non-English speaking patient, while only 2% strongly agreed. Analysis of the qualitative responses showed dental hygiene professionals expressed concerns about money being the biggest reason why patients delay dental treatment.

Conclusion: Overall, the results of this research conclude that registered dental hygienists in Oklahoma feel that they have effective clinician communication for dental treatment acceptance. However, future research should investigate the disconnect between language barriers and dental treatment acceptance.

Funding for this project was provided by the J. Dean Robertson Society and the 2023-24 Student Research Program.

#2

Title: Prevalence of Food Insecurity on the OUHSC Campus

Presenter(s): Alexi Hendricks, DH2

Advisor(s): Donna Wood

Abstract:

Purpose: Food insecurity (FI) is a concern amongst college campuses in the United States. The purpose of this study was to gather data on the prevalence of food insecurity amongst students at the University of Oklahoma Health Science Center campus (OUHSC) to provide peers and faculty within professional programs important information regarding the amount of food insecurity on campus, and its impact on student success.

Methods: This study was approved by the Institutional Review Board at OUHSC (IRB #16363) The study is a mixed methods design utilizing information collected by using a Qualtrics survey instrument, distributed through a link embedded in an email message sent to the students at the OUHSC campus. There are 3,563 students on campus that this message had the potential to be distributed to. The survey consisted of 24 multiple-choice, multi-select, Likert-scale and open-response questions to gauge the participant's experience with food insecurity. Additionally, the survey included a six-item questionnaire from the 'USDA Six Item Short Form Food Security Module' to calibrate a measurement of food insecurity amongst participants.

Results: Over a quarter of respondents (26.5%) reported that they have or are currently experiencing food insecurity. Of those students who reported experiencing food insecurity, a majority of 67.57% reported that their first experiences with food insecurity occurred during their young adult years. These student participants experienced complications to their daily life such as losing sleep, skipping meals/eating less, having trouble focusing while studying.

Conclusion: The complications faced by students experiencing FI can negatively impact their academic career and their physical/mental wellbeing. This topic is important for the faculty of a professional program, such as Dentistry, since they are responsible for training and producing the next generation of healthcare clinicians.

Funding for this project was provided by the J. Dean Robertson Society and the 2023-24 Student Research Program.

#3

Title: Oral Healthcare Barriers in the Foster Care System

Presenter(s): Jennifer Martinez, DH2

Advisor(s): Leah Jack

Abstract:

Purpose: Numerous studies have determined that Early Childhood Caries (ECC) is more prevalent in children who are in the care of the foster care system than non-foster care children. The purpose of this study is to determine the correlation between ECC and social workers' awareness of oral hygiene.

Methods: The protocol for this research was approved by the Institutional Review Board at the University of Oklahoma Health Science Center (IRB number 16174). This survey was a mixed method, a non-experimental study administered electronically through Qualtrics. The survey was sent out to 18 social workers currently employed by Oklahoma Indian Tribes. The survey consisted of 20 open-ended, multiple-choice, and Likert type scale questions.

Results: I received six responses. The respondents were 3 female and 3 were male. 100% answered that they had never had educational courses on dental healthcare. 50% felt that continuing education courses for social workers was important the other 50% felt indifferent. 100% felt that it was important for foster parents to receive dental hygiene education. 16.7% felt that it was difficult for foster parents to find a Medicaid provider, 16.7% felt neutral, 16.7% felt it was easy, and 50% were unsure. One of the questions was if social workers felt that the amount of decay in foster care children was related to limited Medicaid providers and 33.3% answered yes, 16.7% no and 50% unsure.

Conclusion: Overall, the results did not yield a correlation between childhood decay in the foster care system and non-foster care children. Typically, a pilot study would be done first, but time constraints limited my ability to conduct a traditional pilot study.

Funding for this project was provided by the Delta Dental of Oklahoma Foundation and the 2023-24 Student Research Program.

#4

Title: Dental and Dental Hygienists' Role in Detecting Sleep Apnea

Presenter(s): Kaitlyn Matlock, DH2

Advisor(s): Sarah Justus

Abstract:

Purpose: The purpose of this study is to measure the knowledge, confidence, and perceived importance of sleep apnea among dental and dental hygiene students at an Oklahoma dental school.

Methods: An anonymous 34-item survey was created electronically through Qualtrics and emailed to 334 dental and dental hygiene students attending an Oklahoma dental school. Descriptive statistics were analyzed through Qualtrics, and Fisher's exact and chi-square tests were utilized to conduct data comparisons.

Results: 59 students completed the online survey, yielding a 17.7% response rate. Of the respondents, 47 (81.03%) felt that performing an EIE is extremely important or very important. 40 (97.6%) respondents in their second, third, or fourth year of school reported assessing for oral cancer during an EIE. However, only seven (17.1%) respondents in their second, third, or fourth year of a program reported assessing for sleep apnea in an EIE. 24 (40.68%) did not receive education about sleep apnea in dental or dental hygiene school, and 34 (58.62%) respondents indicated that they did not feel confident in their ability to manage patients with dental concerns related to sleep apnea. **Conclusion:** Overall, the results of this research confirmed that dental and dental hygiene students do not feel that they received adequate education about sleep apnea in their respective dental and dental hygiene programs. The students also felt they only had some knowledge of sleep apnea and felt a lack of confidence in their abilities to manage dental concerns related to sleep apnea. Although perceived to be important, screening for sleep apnea in an EIE is not occurring. The outcomes of this study reveal the importance of didactic and clinical education about sleep apnea in dental and dental hygiene programs to increase the education, confidence, and perceived importance of sleep apnea in the students.

Funding for this project was provided by the J. Dean Robertson Society and the 2023-24 Student Research Program.

Title: Perceptions of Oklahoma Dental Hygiene Employment Retention**Presenter(s):** Jamie Ann Millirons, DH2**Advisor(s):** Donna Wood**Abstract:**

Purpose: Dental hygienists are an invaluable part of a dental team. The purpose of this research is to give insight into reasons hygienists may be leaving their clinical positions in dental offices and if there is a greater need for hygienists in certain regions of Oklahoma.

Methods: This study was a quantitative, non-experimental research study using an electronic and printed survey design. Both dentists and dental hygiene surveys were comprised of 5-point Likert scale and multiple-choice questions with similar questions to measure a comparison between perceptions of both professions. The paper surveys were distributed to attendees of the Oklahoma Dental Hygienists' Association (OKDHA) at the OKDHA conference held on September 15th, 2023. The same 35-item questionnaire was sent via email to the dental hygienists licensed in the state of Oklahoma, while the third group of surveys were sent via email to dentists licensed in the state of Oklahoma.

Results: A comparison question was asked for both the dentist and dental hygienists. Dentists were asked if their hygienists were planning to reduce their time in practice in the next five years in which both mostly responded yes. Responses from dentists of reasons for their hygienists reducing their clinical time in the next 5 years was mainly age and physical burnout, while hygienists reported it being mostly due to physical and mental burnout, as well as age.

Conclusion: According to the findings of this research, it can be determined that there is a need for more hygienists throughout the urban and rural parts of Oklahoma. Many established hygienists have alluded to leaving their clinical positions due to difficult working conditions and mental burnout. There has been some effort from dentists to provide additional monetary and nonwage benefits. Future research should explore what situations qualify as difficult working conditions for a clinical dental hygienist.

Funding for this project was provided by the J. Dean Robertson Society and the 2023-24 Student Research Program.

Title: Dental Professionals' Knowledge and Perceptions on Vaping**Presenter(s):** Caitlyn Schultz, DH2**Advisor(s):** Leah Jack**Abstract:**

Purpose: The purpose of this research is to examine Oklahoma dental professionals' knowledge and perceptions of vaping and oral health. Vaping is very common and most people who vape do not know how it can affect their oral health. It is important for dentists and dental hygienists to be educated on vaping so they can properly educate their patients.

Methods: This study was a non-experimental, simple descriptive research project utilizing an electronic survey design. The survey was sent electronically through OUHSC Qualtrics to registered dental hygienists and licensed dentists in Oklahoma upon approval by the Institutional Review Board (#16179). The survey was sent to 2,500 dental hygienists and 2,409 dentists. The survey consists of multiple choice, Likert type, demographic, and open-ended questions.

Results: One hundred and two dentists and ninety-one dental hygienists answered the survey. When asked if information on vaping was included in their dental education 80.4% responded no and only 13.1% responded yes. The respondents were asked if they have ever taken a continuing education course about vaping and 36.2% responded yes and 63.3% responded no. Respondents had mixed answers when asked if they feel like they are well informed about how vaping affects oral health with 21.6% responding agree, 28.1% responding neutral, and 29.6% responding disagree.

Conclusion: A lack of education among dental professionals regarding the effects of vaping and use of e-cigarettes exists. Consequently, dental professionals are not well informed about vaping which causes the clinician to feel less confident while discussing this topic with their patients. Further research regarding the effects of vaping on oral health is needed. Because vaping is becoming more prevalent in society, it is important for dental professionals to have the knowledge necessary in educating their patients about the harmful effects of vaping.

Funding for this project was provided by the Delta Dental of Oklahoma Foundation and the 2023-24 Student Research Program.

Title: Culturally Competent Education for Dental Hygienists**Presenter:** Sarah Sullivan, DH2**Advisor:** Sarah Justus**Abstract:**

Purpose: The purpose of this research study is to examine the relationship between dental hygiene programs' culturally competent education (CCE) methods and dental hygiene students' preparedness in working with culturally diverse patients.

Methods: An electronic survey was sent to program directors/administrators of approximately 327 accredited, entry-level United States dental hygiene programs who were requested to forward the email to their senior dental hygiene students. The survey consisted of 30 multiple-choice and Likert-scale questions. Counts and frequencies were calculated to summarize respondent demographics and survey questions. Comparisons of demographics and survey responses were conducted using Chi-Square or Fisher's Exact tests.

Results: A total of 80 surveys were completed. Results indicate that many programs implement both didactic and clinical experiences into their curriculum, with lectures/seminars (85.9%) and patient observations (52.6%) being the most used methods. Students who experienced both didactic and clinical methods (70.6%) believed that their program better prepared them for working with diverse patients compared to those students who experienced only didactic (31.3%) or only clinical (36.4%) methods. Outcomes revealed a positive correlation between programs that implemented both didactic and clinical CCE formats and students' confidence and preparedness in working with culturally diverse patients.

Conclusions: This study found that implementing both didactic and clinical CCE in the dental hygiene curriculum is effective preparation for dental hygiene students in working with diverse patient populations. More research is needed to determine the best CCE methods to be implemented as a required standardized CCE system throughout dental hygiene programs in the U.S.

Funding for this project was provided by the J. Dean Robertson Society and the 2023-24 Student Research Program.

Title: Sjögren's Syndrome: New Drugs on the Horizon**Presenter(s):** Chloe Arison, DH2; Madison Boris, DH2**Advisor(s):** Tammie Golden**Abstract:**

Intro: Sjögren's Syndrome (SS) can cause chronic symptoms of dry mouth which can place individuals at risk for oral manifestations such as gingivitis, periodontitis, caries, yeast infections and angular cheilitis to list a few. Treatment plans are geared towards alleviating symptoms, stimulating salivary glands and avoiding certain foods and medications. New research to combat dry mouth from Sjögren's has redirected focus on the cellular level. The purpose of this literature review is to examine the safety and efficacy of two trial drugs Dazodalibep and Ianalumab. These two drugs have shown promise in treating adverse effects of Sjögren's.

Findings: Ianalumab aims to exhaust B-cells and impede BAFF-R in body to stop inflammation. Ianalumab injected at a high dose had the capability of stimulating salivary flow. Dazodalibep limits over activation of CD40-CD40L to reduce the amount of inflammatory molecules. These two drugs reduced the inflammatory process to limit the progression of Sjögren's syndrome. Both drugs demonstrated efficacy and were tolerated among participants.

Conclusion: More longitudinal studies with larger sample sizes are needed to further assess the results in curbing the progression of Sjögren's Syndrome, however both drugs have shown promising results for the future.

#9

Title: Obstetricians Role in Systemic Effects of Periodontal Disease in Pregnancy

Presenter(s): Danielle Atondo, DH2; Riana Ramnarine, DH2

Advisor(s): Julie Schneberger

Abstract:

Purpose: The purpose of this literature review is to identify whether the lack of education in the medical community correlates to the systemic effects of periodontal disease in pregnancy. It is critical for obstetricians to gain knowledge on how to better communicate and collaborate with dental professionals to lower the prevalence of systemic effects of periodontal disease during pregnancy.

Background: The CDC states that 60-70% of women who are pregnant have gingivitis. Science shows that there is a common link between adverse pregnancy outcomes when someone has periodontal disease. Certain disease-causing bacteria can achieve a systemic effect by moving throughout the body including the fetus and placenta from the oral cavity. These systemic effects include pre-term birth, low birth rates, early miscarriage, gestational diabetes, and preeclampsia.

Significance: Nearly all physicians know the correlation of the systemic effects of periodontal disease in pregnancy. Barriers include a lack of time during appointments, feeling like oral hygiene education is out of their scope of practice, and because they feel there are no clear dental guidelines to offer their patients. These limitations result in clinicians not communicating the risk of periodontal disease during pregnancy.

Conclusion: The lack of education on oral hygiene practice in patients and obstetric staff due to the lack of time during obstetric appointments results in a higher risk of periodontal disease. More knowledge on oral health care should be readily available for pregnant women, gynecologists, and other medical professionals. Better inter-professional collaboration yields better oral health outcomes for patients.

#10

Title: The Benefits of Intraoral Cameras in Dentistry

Presenter(s): Gracee Bates, DH2; Kaitlyn Gillispie, DH2

Advisor(s): Julie Schneberger

Abstract:

Purpose: The purpose of this literature review is to show how beneficial intraoral cameras are to the dental professional in detecting abnormalities and when communicating with the patients.

Background: The limits of conventional dental equipment make it challenging for dental professionals to examine a patient's teeth directly, as they demand a wide opening of the mouth, which is often uncomfortable for the patient. Since most patients learn best by seeing, it can be beneficial to show them an image or video of what's happening in the oral cavity so they can take better care of themselves.

Significance: Patients can learn about a variety of topics prior to, during, and following therapy by using an intraoral camera. Additionally, it improves treatment accuracy, creates more dependable and easily available dental records, and aids in the early detection of oral health issues that could prevent more serious issues down the road.

Discussion: The overall evidence of the research showed how intraoral cameras have many benefits when being used. Each study gave different ways and reasons you could use this type of technology. For example, the survey of dental students and faculty were satisfied with their use of detection, the use on children giving better detection of decay and increasing the effectiveness of care. Intraoral cameras are also a very reliable screening source at schools for children who do not have access to regular dental visits resulting in reduction of examiner bias and repeated assessments. The main take-away from all the studies concluded that intraoral cameras have many benefits in dental offices.

#11

Title: Dental Stem Cells in Regenerative Dentistry

Presenter(s): Alli Bates, DH2; Maris Susman, DH2

Advisor(s): Tammie Golden

Abstract:

The purpose of this literature review is to explore the latest research on dental stem cells and their role in regenerative dentistry, highlighting the progress and challenges in this field.

Background: Dental stem cells are self-renewing and have the ability to differentiate into many types of cells including: odontoblasts, chondrocytes, osteoblasts and adipocytes. They promote tissue repair, regeneration and are isolated from extracted teeth making them promising alternatives to other types of stem cells. One study conducted by Aimetti et al. 2018, analyzed use of dental pulp micro-grafts for regenerative therapy in the treatment of periodontal disease. Eleven patients with a single deep intra-bony defect and need for extraction of one vital tooth participated. Outcomes demonstrated improvement in clinical attachment level, probing depth and stability in the gingival margin. Radiographs confirmed bone regeneration had taken place.

Clinical considerations: Professional extraction is emphasized to minimize the amount of time the tooth spends outside of its normal environment which is vital to preserving pulp tissue containing stem cells. Meticulous handling and storage practices are required and are critical in pulp and stem cell survival.

Limitations: Dental stem cells for clinical treatments are limited over a patient's lifespan. Cryopreservation of the cells (pulp stem cell banking) may offer potential for future use however is limited and not feasible worldwide.

Conclusion: Use of dental stem cells in regenerative dentistry is expanding while more research needs to be conducted as this field of study holds great promise for the future.

#12

Title: Preventive Measures for Pediatric Dentistry

Presenter(s): Elizabeth Brewer, DH2; Harriba Flatt, DH2

Advisor(s): Robin Graham

Abstract:

Purpose: To educate the public on options regarding preventive measures in pediatric dentistry.

Background: Early childhood caries (ECC) is the most prevalent chronic disease for children. Dental sealants and silver diamine fluoride (SDF) offer methods to counteract ECC. Sealants were first developed in the 1960s for prevention of dental caries on the pits and fissures of teeth. Dental sealants provide the means of sealing off deeper grooves, so that carious lesions cannot form. SDF was first developed in the 1960s. In 2016, the FDA supported SDF utilization to arrest severe ECC.

Significance: 37% of children in the U.S. have experienced dental caries and studies have shown that ECC have a negative impact on children's quality of life. In a report by the CDC (2016), the prevalence of dental caries for children from the ages 2-5 years is 21.4%, from ages 6-11 is 50.5%, and from ages 12-19 is 53.8%. In recent years, there has been a decrease in the total number of dental caries which could be attributed to the use of sealants and SDF.

Discussion: An advantage to sealants is that it seals the occlusal surfaces and prevents caries from forming. A disadvantage is that a sealant cannot remineralize a carious lesion. Advantages of SDF include that it is a noninvasive material that can prevent the spread of dental caries due to the remineralizing effect of fluoride and the antibacterial effect of silver. An esthetic drawback utilizing this material is the cavity turns black. Regardless, both treatment modalities provide options for children that are high caries risk.

Conclusion: Although SDF and sealants come with some disadvantages, they are a safe and noninvasive option for children with ECC. Providing dental literacy education for these mechanisms will lead to early administration of dental sealants and SDF. By implementing these preventive measures in pediatric dentistry, the prevalence of this disease can be lowered.

#13

Title: Ergonomics: Musculoskeletal Disorders in Dentistry

Presenter(s): Keely Brock, DH2; Janna Holyfield, DH2

Advisor(s): Tiffany Dougherty

Abstract:

Purpose: The purpose of this literature review is to examine common themes in relation to the prevalence of Musculoskeletal Disorders (MSDs) in the dental profession, specifically concerning ergonomics and prevention methodologies.

Background: MSDs in dental professionals can lead to a lack of productivity, low career satisfaction and early retirement. The overall goal of improving ergonomics is to maximize the safety and efficiency of a clinician and minimize pain. Additionally, literature discussed a multitude of specific contributing factors including lack of education, lack of stretching, improper training, seating positions, static positioning, heavier workloads, different chair options, instrument design and the use of dental loupe magnification. There is extensive research emphasis placed on the education surrounding ergonomics as it pertains to MSDs.

Significance: A recent study done polling dental hygienists revealed that 93% of respondents reported having musculoskeletal pain associated with their wrists, hands, neck and/or upper back (Nye et al., 2021). This research study is not alone in explaining and verifying the vital role proper ergonomics plays in the avoidance of MSDs and ultimately the longevity of dental professionals' careers.

Conclusion: There are multiple factors which can lead to the development of MSDs, therefore making the education of practitioners a priority. Work-related MSDs have been studied more among practicing dental hygienists, rather than dental and dental hygiene students, but this trend is changing as more research and awareness develops. Although more research needs to be done in the causation as well as prevention of MSDs, consensus in the literature shows a need for improved education of ergonomics in the dental field.

#14

Title: The Importance of Masticatory Function in Head and Neck Development

Presenter(s): Ashley Brown, DH2; Blakelyn Daniel, DH2

Advisor(s): Lindsey Hays

Abstract:

Purpose: To educate on the pivotal role of masticatory function in the development of the head and neck.

Introduction: Mastication plays a key role in the development of the mandible, contributing significantly to nutrition, promotes brain activation, strengthens muscles in the head and neck, and assists in speech development.

Clinical Significance: Recognizing the clinical significance of masticatory function in the dental field allows for comprehensive approach to oral care, integrating nutrition, pediatric dentistry, speech pathology, and preventive measures to promote overall oral health and well-being. Healthcare providers need to understand the pivotal role of mastication in human development and develop strategies for patient education.

Conclusion: The role of mastication far extends the ability to chew food and is a crucial component in the development of the head and neck. However, a significant number of caretakers are often unaware or lack the knowledge regarding the important role chewing plays on child development. Reduced mastication can lead to underdevelopment of the head and neck structures resulting in reduced masticatory nerve stimulation in the brain. This lack of stimulation can potentially cause long term cognitive deficits leading to dementia and other cognition complications. It is a leading factor for nutrition, strengthens muscles in the head and neck, and assists in speech development. Dental providers play a vital role in bridging this knowledge gap and educating patients about the critical role of mastication in human development.

#15

Title: Oral Health Literacy: Impact of Maternal Education

Presenter(s): Rosa Hill Deere, DH2; Gabrielle Smith, DH2

Advisor(s): Lydia Snyder

Abstract:

Introduction: Health literacy is defined as the extent to which individuals have the capacity to obtain, process, and understand basic health information as well as the ability to make proper health decisions based on the information given (Baskaradoss, 2018). This literature review investigates the influence of maternal oral health literacy (OHL) on children's oral health status and examines the need for an increase in educational interventions to mitigate future oral health problems.

Background: Menoncin et al. (2023) found that only a small percentage of adults have a suitable oral health literacy level for maintaining good oral health. This could pose an issue regarding a mother's ability to educate their children on how to maintain their oral health. The literature indicates that increased oral health education during pregnancy can significantly reduce the incidence of early childhood caries and promote quality oral health care for children. However, there are numerous challenges regarding OHL and healthy habits such as limited access to routine dental care, financial barriers, cultural barriers, and more. These challenges have a profound negative impact on maternal OHL and compound into oral health disparities. There are gaps present in long-term research for the integration and outcomes of providing preventive oral health educational services. Bridging these gaps will require maternal OHL, community-based interventions and equitable access to oral health resources.

Conclusion: Poor oral health literacy can lead to many issues such as financial strain, pain, emergency dental procedures, and overall health problems. By prioritizing oral health education and preventive care during pregnancy and childhood, the foundation for optimal oral health and potentially overall well-being.

#16

Title: Importance of Extraoral Exams in Detecting HPV-related Malignancies

Presenter(s): Jayden Flewallen, DH2; Bethany Gerber, DH2; Isabelle Tomlinson, DH2

Advisor(s): Sarah Justus

Abstract:

Purpose: The purpose of this literature review is to explore the importance of dental hygienists performing extraoral exams to detect HPV-related malignancies.

Background: It is estimated that nearly every individual will be exposed to HPV at some point in their lives. It has been found that certain HPV types, most commonly HPV16, can cause oropharyngeal cancer. The most common type of HPV-related cancer, oropharyngeal squamous cell carcinoma, can be visible in the beginning stages with an oral cancer screening performed by a dental hygienist. Annual screenings can reduce the likelihood of well-advanced malignancies going undetected.

Significance: Conducting routine head and neck exams is crucial in detecting signs of HPV-related oropharyngeal cancer. Dental professionals are in a key position to detect these cancers in the early stages. The problem is that these head and neck exams are not taking place on every patient at every appointment.

Conclusion: HPV has been linked to oropharyngeal cancer; therefore, dental professionals must be educated on the detection and treatment options for HPV-related malignancies. Understanding the significance of extraoral examinations and implementing these exams in practice will decrease the likelihood of undetected HPV-related malignancies in the future.

#17

Title: Trauma Informed Care: Understanding the Impact of Trauma

Presenter(s): Natalea Harcrow, DH2; Lydia Phelps, DH2

Advisor(s): Lindsey Hays

Abstract:

Purpose: With a high prevalence of complex and acute emotional trauma, dental professionals need to be prepared and equipped to handle a patient with complex histories. Being able to recognize current abuse or neglect also plays an integral role in patient care.

Background: Trauma is prevalent in society. Trauma is common in all economic and social statuses. Trauma Informed Care means treating a patient as a whole, considering past trauma and how this can affect their behaviors, physical body, and even their oral cavity. Trauma can be simple, acute, or complex. When someone experiences a traumatic event or experiences extreme fear, brain chemistry is altered and the brain begins to function differently--this is called the "Fear Circuitry" which is a protective mechanism of the human brain.

Significance: Traumatic exposure can affect all age groups and is not subject to gender, socioeconomic status, race, ethnicity, geography, or sexual orientation. Providers need to know how trauma can affect treatment, engagement, and the outcome of patient care.

Conclusion: Recognizing that the substantial prevalence of traumatic exposure and its impact on health and well-being is dramatically underestimated. Social and health professionals are realizing the value of adopting Trauma Informed Care principles into practices. Given that patients who have multiple traumatic experiences tend to have shorter life-spans, more disease, and more emotional distress, providers need to recognize the full impact of trauma on the whole body. By increasing the awareness of trauma, providers can develop a non-judgmental, compassionate approach and can be ready to respond in a way that the end goal is to address the patients' health needs.

#18

Title: Treating Dental Anxieties in Pediatrics with Dog Therapy

Presenter(s): Montana Hurt, DH2; Anna Willey, DH2

Advisor(s): Sarah Justus

Abstract:

Purpose: The purpose of this literature review is to explore the benefits of dog therapy in reducing anxiety in children in the dental office.

Background: Anxiety is a prevalent disorder in society, especially regarding dentistry. Dog therapy is one method used to lessen the fears of dental treatment. Therapy dogs endure extensive training and become highly qualified animals in limiting dental anxiety. Therapy dogs have shown to provide comfort to both adult and pediatric patients before dental treatment and allow them to trust dental professionals.

Significance: Recent studies have shown that therapy dogs minimize anxiety in pediatric patients. As a dental hygienist, bringing comfort to patients and mitigating dental fears are top priorities. Utilizing a variety of anxiety reducing techniques is necessary and should be used in patient care.

Conclusion: In conclusion, due to the prevalence of dental anxiety in patients, it is vital to understand how to relieve anxious feelings. Based on findings from the literature, dog therapy would be beneficial to incorporate into the dental setting to alleviate dental fears and anxiety.

#19

Title: Non-thermal Atmospheric Plasma Applications in Dentistry

Presenter(s): Elizabeth Ibarra, DH2; Savannah McGuire, DH2

Advisor(s): Lindsey Hays

Abstract:

Purpose: To investigate the applications of cold plasma technology in dentistry and its potential clinical significance.

Introduction: Non-thermal atmospheric plasma (NTP), is a state of matter that has gained attention in various fields, including dentistry. It is generated by applying an electrical field to a gas, resulting in the formation of reactive species. Cold plasma has shown promise in various dental applications due to its antimicrobial properties and ability to promote tissue regeneration.

Clinical Significance: NTP has a wide range of applications and is becoming the laser of choice for dental therapies that require eradication of bacteria. Potential applications include acceleration of osseointegration of implants, increased wound healing for medically compromised patients, adjunctive non-surgical periodontal therapies, elimination of microorganisms in root canals, treatment of *C. Albicans* on dentures, rapid sterilization of dental instruments, and tooth bleaching procedures.

Conclusion: Cold plasma technology holds great promise in dentistry, offering a non-invasive and potentially effective approach for the treatment and prevention of oral diseases. Further research and clinical trials are needed to fully understand its mechanisms of action, optimize treatment protocols, and ensure its safety and efficacy in routine dental practice.

#20

Title: Scope of Forensic Odontology

Presenter(s): Keller Kennedy, DH2; Halee Piatt, DH2

Advisor(s): Tammie Golden

Abstract:

The purpose of this literature review is to provide insight into the current state of forensic odontology, identify challenges and highlight the benefits of integrating new technology in this field.

Background: Methods such as bite mark analysis, lip print analysis and palatal rugae print identification have historically been used for hundreds of years. New methods have reduced inconsistencies in forensic findings with the most current advancement in artificial intelligence or (AI) technology. One example of use of AI is the development of a Wound Suite mobile software. The device was evaluated and implemented by clinicians to determine accuracy and reliability creating the advantage of eliminating human error and/or bias. Other examples of new technology include image perception software, facial reconstruction and genomic DNA in teeth for comparison analysis.

Implications: Precise records are vital to maintaining proper evidence in forensic investigations. Dental professionals can be trained to recognize the applications to forensic and legal situations however not all realize the significance in the roles they play. A recent 2023 study by Giannakopoulos et al. revealed a significant portion of dental students were unaware that forensic odontology is a branch of dentistry, while a smaller percentage were unaware that teeth serve as a source of DNA, demonstrating a need for more education in the field of forensic dentistry. Another study by Kumaran et al. 2022, involved a questionnaire consisting of 10 questions related to forensic dentistry that was distributed to one hundred dental students. Nearly 100% of respondents believed that forensic dentistry was an important topic to include in dental education curriculums.

Conclusion: As technology advances in forensic odontology, the need for more extensive training and education becomes a priority. A more comprehensive understanding of forensic odontology is needed to improve overall awareness in this specialized field.

#21

Title: Oral Health of Nursing Home Residents

Presenter(s): Hadley Krewall, DH2; Laney Wardrop, DH2

Advisor(s): Tina Tuck

Abstract:

Purpose: The purpose of this literature review is to inform dental professionals about the oral health of nursing home residents and the barriers the residents face with receiving oral healthcare.

Background: In the United States, only 15% of nursing home residents have good oral hygiene and only 16% receive oral hygiene. It is estimated that 9 million people use long-term care services currently and by the time it hits 2050, 27 million Americans will be living in nursing homes. There is a lack of research done on this population despite the great need for oral healthcare. Many factors contribute to a lack of proper oral hygiene habits occurring in nursing facilities. This includes a lack of knowledge from care aids on the importance of oral health, the inability of residents to pay for dental services, and the cognitive/physical decline of the residents themselves.

Significance: There was strong evidence that the oral health of these residents is poor/lacking. There was also strong evidence that there is a lack of training of staff members on the benefits of oral health care and a lack of awareness. Unfortunately, there was also a lack of research on this topic in the United States. Most research over this issue is conducted in different countries, and therefore not eligible to generalize those results to the United States.

Discussion: More research needs to be completed to further expand this topic and bring awareness of this issue. More awareness can bring forth programs and legislation to make significant improvements in this population.

#22

Title: Management of Sleep Bruxism

Presenters: Whisper McKinley, DH2; Kenzie Hendricks, DH2

Advisor: Robin Graham

Abstract:

Purpose: The purpose of this literature review is to compare oral appliances in the management of sleep bruxism.

Background: It has been a frequent discussion amongst dental professionals regarding the effects of sleep bruxism in the detriment of implant failure, tooth wear, and TMJ discomfort.

Significance: Studies show that sleep bruxism in children ranges from 3-46% and 8-31% within adults. Because of this significance, it is important for dental professionals and researchers to collaborate in finding the most effective oral appliance.

Conclusion: Bruxism is an important topic because it can cause damage to natural tooth structure, restoration failures, and even severe facial or jaw pain. Because of these oral complications, it's important for dental professionals to educate patients on the possible risks and importance of compliance when wearing any type of appliance. It is vital that dental professionals understand what type of appliance will work best to combat bruxism and monitor patient use of that appliance, even including OTC appliances. Researchers have recently developed the Standardized Tool for Assessment of Bruxism (STAB) that combines a multidimensional view of bruxism. With this, it will be possible to further the research and understanding of bruxism.

#23

Title: Access to Dental Care in Rural Areas Through Mobile Dental Clinics

Presenter(s): Sheila Nguyen, DH2; Madison Ward, DH2

Advisor(s): Robin Graham

Abstract:

Purpose: This literature review compiles research that identifies rural communities that lack access to dental care. Mobile dental clinics provide underserved communities an option to dental treatment. Studies included in this review cover the perceptions of dentists working in a mobile dental clinic, difficulties with operating a mobile clinic, and the need to provide rural communities a pathway to dental care.

Background: Traditional dental clinics are not always accessible to those residing in rural communities. With the implementation of mobile dental clinics, more individuals can receive the dental care that they need, improving both their oral and systemic health. However, many difficulties are associated with operating a mobile dental clinic. Several of the negative perceptions by dental professionals regarding mobile dental clinics indicate that these clinics are not seen as a necessity.

Significance: The U.S. Department of Health and Human Services recognized 4,230 areas with a shortage of dental services with 49 million people living in them. Mobile dental clinics offer a potential solution to increase accessibility to dental care. Mobile dental clinics provide education on both oral and systemic diseases. The concern of dental professionals when operating a mobile dental clinic include traveling to rural areas, cost of operation, and the amount of time a patient waits for treatment.

Discussion: Finding ways to increase dental care accessibility is crucial to an individual's well-being. Further research should be done regarding a career in mobile dentistry. Spreading awareness of the existence of mobile dental clinics can allow patients to learn about other options to receive dental care within their budget and transportation abilities.

#24

Title: Behavioral Management in Patients with Autism Spectrum Disorder

Presenter(s): Lauren Palesano, DH2; Marisa Stiffler, DH2

Advisor(s): Ashley Clark

Abstract:

Purpose: The purpose of this literature review is to determine the quality of care that is being provided to patients with Autism Spectrum Disorder (ASD).

Background: Roughly 61 million people in the United States are living with some kind of disability. More specifically, ASD is common cognitive disability dental professionals are faced with in practice. With these patients already having a predisposing condition they are more susceptible to poor oral health. Research shows that professionals have great fear and anxiety when caring for patients with disabilities due to lack of knowledge.

Significance: Having good oral health is not only important for having clean teeth but also making sure it does not lead to a decline in overall systemic health. 78% of children with ASD are rewarded with food, most often being chocolate. This increases the need for proper home care like brushing and flossing due to the nutrition of their diets. Research shows a high percent of patients not brushing at the correct time of day such as before breakfast, adds to an increased risk of decay and periodontal disease. Patients also reported that they have a difficult time communicating with their dental provider, leading them to not attend regular recall appointments. Understanding the needs of patients with ASD and being able to help them feel understood can help change their attitudes about dental visits and oral health.

Conclusion: Dental professionals need to be flexible with appointments and providing care to patients with ASD. This can look like adjusting appointment times, being aware of triggers, and using Tell-Show-Do method. Providing these patients with the most effective homecare for their needs will help them maintain their oral health and support overall systemic health. More research could be done on the education that dental professionals are receiving in relation to providing care to patients with ASD.

Title: Dental Hygienists' Role in Early Detection of Thyroid Abnormalities**Presenter(s):** Chantal Schofield, DH2; Shelby Woolard, DH2**Advisor(s):** Sarah Justus**Abstract:**

Purpose: The purpose of this literature review is to explore the effectiveness, knowledge, and frequency of a dental hygienist performing extra-oral and intra-oral examinations in practice and identifying thyroid abnormalities. Studies included in this review cover oral lichen planus, lingual thyroid, hypothyroidism, and hyperthyroidism.

Background: Dental professionals play an important role in detecting early thyroid abnormalities by performing an oral cancer screening. However, studies support that dental hygienists are often uninformed on several key aspects of oral cancer risks and diagnostic abilities. Thyroid abnormalities detectable by dental hygienists include lingual thyroid, goiter, and oral lichen planus associated with hypothyroidism.

Significance: Preliminary studies show the lack of dental hygienists' knowledge and confidence in conducting intra-oral and extra-oral head and neck cancer screenings results in unperformed examinations. A study completed in Texas shows that new graduates are more knowledgeable about head and neck abnormalities and perform the exam more effectively due to recent knowledge. However, the study also shows only 45.8% of practicing dental hygienists perform an oral cancer screening at every appointment. Many hygienists only perform the intra-oral portion, leaving the extra-oral portion unevaluated. Thus, this is one reason for undetected thyroid abnormalities within the dental profession.

Conclusion: Findings from this literature review determined that many dental hygienists do not perform intra-oral and extra-oral cancer screenings due to a lack of confidence in detecting oral abnormalities. Not performing this exam can lead to undetected thyroid abnormalities. It is a moral and ethical obligation to offer the best care possible to patients. Conducting this standard of care could improve patients' quality of life. Early detection could even assist in saving patients' lives.

Title: Guided Biofilm Therapy**Presenter(s):** Brittany Thompson, DH2; Rashel Martin, DH2**Advisor(s):** Robin Graham**Abstract:**

Purpose: This literature review attempts to compile findings to determine if Guided Biofilm Therapy is comparable to a traditional dental cleaning.

Background: In the field of dentistry, a dental prophylaxis is the foundation of dental hygiene. When patients enter the dental office, the provider must provide a comfortable and therapeutic dental maintenance. Donald (2018) mentions that Guided Biofilm Therapy (GBT) is a modern approach to the removal of dental plaque, calculus and stain by using air-polishing. GBT denotes a method of biofilm management inclusive of the use of Airflow, Perio-Flow, and Piezon technologies (Davis 2020).

Significance: The GBT technique combines the use of a disclosing agent, air-polishing and ultrasonic scalers. The air-polisher and the powders are used first before scaling. The removal of plaque by using an air polishing device before using an ultrasonic scaler provides the clinician with a better visible access to calculus deposits. Instead of the using ultrasonic scalers for the entire dentition, the clinician can now use the ultrasonic scalers on the target sites with mineralized deposits (Wong 2017)

Discussion: The purpose of this literature review was to determine if GBT is comparable to a traditional, manual removal of dental plaque, calculus and stain around teeth and implants. The literature highlights both favorable and conflicting findings regarding the efficacy of GBT compared to traditional methods like scaling and root planning (SRP). GBT offers some advantages such as shorter treatment time, improved access to difficult to reach areas, and enhanced patient comfort.

#27

Title: Decreasing Clinic Cancellations Through Patient Communication Technology

Presenter(s): Blake Adams, DS2; Taylor Terrell, DS2

Advisor(s): Staci Wekenborg, Shelly Short, Susan W. Shelden

Abstract:

The University of Oklahoma College of Dentistry (OUCOD) experiences the burden of patient cancellations. The purpose of this study is to evaluate and describe communication platforms and technology that dental schools within the United States are using for patient communication, as well as describe respondent perceptions of patient cancellations and satisfaction with these communication systems. The research was conducted to determine what communication platforms and technology are most effective in contacting patients limiting cancellations. Since the research project is the first of its kind at OUCOD, we wanted to establish a foundational base for further research in this area. By doing this we will be able to cross-reference our foundational data with future analysis throughout the upcoming years. The study provided certain trends in school to patient communication methods highlighting what is effective and non-effective in decreasing patient cancellations.

Funding for this project was provided by the J. Dean Robertson Society and the 2023-24 Student Research Program.

#28

Title: Frequency of Parafunctional Habits with Clear Aligner Therapy

Presenter: Holly Alvey, DS2

Advisor: Onur Kadioglu

Abstract:

Introduction: The purpose of this preliminary study was to identify potential parafunctional habits attributable to clear aligner therapy (CAT). Evaluations were conducted to understand whether the use of CAT can alter the frequency of parafunctional habits via changes in the occlusion. This research was conducted via a survey-based examination of patients involved in the first 8 weeks of CAT.

Methods: A prospective cohort survey was conducted with participants who were receiving clear aligner treatment between December 1, 2022, to May 31, 2023. This study focused only on the first 8 weeks of CAT. Statistical analysis was performed to identify trends in survey results.

Results: This study demonstrated that participants noted a decrease in parafunctional habits in four of the five habits examined.

Discussion: This research project was beneficial in identifying the frequency of parafunctional habits in association with CAT. The demographic surveys did not show an inclination towards an increase parafunctional habit and the results from the initial and final screenings showed a mild improvement for those who were affected with parafunctional habits. Further studies are planned to increase enrollment numbers.

Funding for this project was provided by the Delta Dental of Oklahoma Foundation and the 2023-24 Student Research Program.

#29

Title: Incidence of Oral Fungal Infections in Oral Pathology Biopsy Specimen

Presenter(s): Alexander Danner, DS2

Advisor(s): Kathleen Higgins, Ronald Faram

Abstract:

The goal of this research study was to quantify the number of patients presenting with oral fungal infections at the University of Oklahoma College of Dentistry from 2012-2022 to determine if there has been a significant increase in incidence of oral fungal infections. Data collected was then compared to other populations to assess infection rates and to expand our understanding of fungal infections. This paper will give a general overview of the signs and symptoms of common and uncommon oral fungal infections and how to narrow down a clinical differential diagnosis. One case that demonstrates the need for increased knowledge and efficient diagnosis will be reviewed. This research aims to educate healthcare professionals of all fields about the importance of accurately diagnosing and treating fungal infections. The significance of accurate diagnosis and early treatment of fungal infections and addressing the consequences that arise from inaccurate diagnosis and subsequent treatment is of the utmost importance.

Funding for this project was provided by the J. Dean Roberson Society and the 2023-24 Student Research Program.

#30

Title: A Survey Analysis Study on 3rd Molar Extraction Recommendations

Presenter(s): Peyton Earle, DS2

Advisor(s): Timothy Fagan

Abstract:

Purpose: To determine: (1) which stage of 3rd molar development dental practitioners believe is the best to have third molars extracted; and (2) use this information for possible influence in the development of standardized guidelines for all areas of dentistry to use when making the decision to extract 3rd molars.

Methods: An anonymous cross-sectional survey was sent out to all licensed dental practitioners in Oklahoma. Participants (n equals 391) completed the survey to 90% of completion or greater. The survey included questions using radiographic images, situational decision making, demographics, and individuals practice management to gain an overall consensus of the respondents beliefs on the topic. The data was analyzed using descriptive statistics and chi-square or Fischer's exact when necessary.

Results: 72.75% of the responding dentists believe that third molars should be removed when tooth crown and early variations of root reformation are visible in the pre-eruptive stage under radiographic examination. Thirty four percent of the responding general dentists reported to removing third molars in the office while the remaining refer out to oral surgery for these procedures. It was concluded that general dentists, orthodontists, and oral surgeons should be consulted with extraction of third molars by 70% or more of the survey participants.

Conclusions: The majority of respondents indicated that third molars should be considered for extraction when then molar crown and early variations of root formation are visible in the tooth's pre-eruptive stage.

Funding for this project was provided by the J. Dean Roberson Society and the 2023-24 Student Research Program.

#31

Title: Impact of No Shows at OUCOD Student Program: Quality Improvement Study

Presenter(s): Ghazaleh Elliot, DS3; Manas Kommareddi, DS3

Advisor(s): Susan Shelden, Shelly Short, Staci Wekenborg

Abstract:

The purpose of our non-experimental retrospective study was to explore the financial revenue loss associated with no-show appointments (cancelled/failed) within the student clinic program (student clinic) at The University of Oklahoma College of Dentistry. The background leading to this study involves the financial loss of no-show appointments relating to codes: D1110, D4910, D4346, D4342, and D4341 within our previous study: Economic Impact of No Shows at The OUCOD Student Program⁵. We determined that The University of Oklahoma College of Dentistry (OUCOD) is suffering a significant financial revenue loss per academic year. We focused on 2019 and 2021 and excluded all data within the year 2020 due to the COVID-19 impact on clinic closures. This study uncovered a higher revenue loss in 2022 compared to 2019 and 2021. The results also demonstrated an inaccuracy between the generated report compared to a manual search. Similar to the previous research results, after manually inspecting clinic books, we found a higher number of no-show appointments. We continued to build on our initial guiding expression of production lost today is production lost forever. Reducing patient no-show rates related to these respective codes is not only financially beneficial to the school, it can also help reduce dental costs for patients. Our results highlight the importance that understanding practice management systems is crucial to financial success when running a dental practice. In this study, manual examination of financial loss of no-show appointments relating to procedural codes as well as corresponding sub-types resulted in even more revenue loss in 2022 compared to 2019 and 2021. Our results further confirmed an inaccuracy in initial reporting provided by the software system compared to a manual search. Results from our research can be utilized to identify data inaccuracy, as well as implementation of new systems to prevent inaccuracy in the current reporting system

Funding for this project was provided by the J. Dean Roberson Society and the 2023-24 Student Research Program.

#32

Title: Content-analysis of YouTube™ videos: Chewing Gums and Orthodontics

Presenter(s): Paniz Sheikh Hassani, DS4

Advisor(s): Divesh Sardana, Onur Kadioglu

Abstract:

Aims: Orthodontic treatment, while beneficial, often induces pain and discomfort due to tooth movement, potentially impacting patient compliance. Non-pharmacological approaches such as chewing gum aim to reduce pain by relieving pressure on periodontal ligament fibers. However, the efficacy of chewing gum remains debated. With the rise of social media, platforms like YouTube have become popular sources of health-related information. This study analyzed YouTube videos regarding the use of chewing gum during orthodontic treatment. Methods: To find the most searched phrase on YouTube, 4 different phrases were evaluated on Google Trend. Of a total number of 82 videos screened, 15 videos were included in the study. Analyzed the content based on interaction index, viewing rate, video power index, DISCERN reliability score and global quality score (GQS). Results: Only 3 of the 15 videos were rated moderate/good quality based on DISCERN and 4 based on GQS. The video duration of the moderate/good quality videos was higher compared to the low-quality videos. However, viewing rate and power index were higher in low-quality group. Conclusion: Further research is needed to enhance the quality of online health information and promote informed decision-making among users. Improved content quality on platforms like YouTube can better support patients in managing orthodontic pain and emergencies.

Funding for this project was provided by the J. Dean Roberson Society and the 2023-24 Student Research Program.

#33

Title: Nanofilled Adhesives: Color, Mechanical, & Antibacterial Properties

Presenter(s): Emily Hernandez, DS2

Advisor(s): Rochelle Hiers, Sharukh Khajotia, Fernando Esteban Florez

Abstract:

Secondary caries is a primary reason for dental restoration failure. This study assessed the antibacterial (BIO), color stability (CS), and biaxial flexural strength (BFS) properties of commercial dental adhesives containing fluorine and nitrogen co-doped TiO₂ nanoparticles (NF_TiO₂). Methods included the use of experimental adhesives that were synthesized by adding 20-30% (v/v, 5% increments) NF_TiO₂ to OptiBond Solo Plus (Kerr Corp., OPTB). Unaltered OPTB served as controls for BIO, CS, and BFS. Disk-shaped specimens for testing (diameter=6.0mm, thickness=0.5mm) were fabricated and photopolymerized (40 sec/each; 385-515nm, 1,000mW/cm²; VALO). Antibacterial efficacy was tested by growing *Streptococcus mutans* biofilms (UA159-ldh, 37°C, microaerophilic) for 24 hours on specimen surfaces (n=18/group). Cellular viability was assessed in intact biofilms using a previously reported bioluminescence assay using a Biotek Synergy HT multi-well plate reader. BFS was assessed using a Universal Testing Machine (Instron 68TM-5, crosshead speed=1.27 mm/min, 25°C) after 24-hour water storage (37°C). CS specimens (n=12/group) were tested using color analysis software (Digital Color Meter v5.22) after fabrication as well as after water storage (500, 1000, 1500, 2500 cycles between 4°C and 65°C). Data were analyzed using General Linear Models and SNK post hoc tests ($\alpha=0.05$). In conclusion, adhesives with higher NF_TiO₂ concentrations did not display comparable mechanical properties but were more antibacterial and as color stable compared to OPTB, as hypothesized.

Funding for this project was provided by the J. Dean Roberson Society and the 2023-24 Student Research Program.

#34

Title: Characterization of NuSmile Bioflex Crowns; A Pilot Study

Presenter(s): Austin Huffman, DS4

Advisor(s): Tim Fagan, Divesh Sardana, Fernando Esteban Florez

Abstract:

The purpose of this study was to assess and compare the color stability and wettability of newly introduced commercially available pediatric NuSmile Bioflex preformed crowns, composed of a hybrid resin material, (NuSmile Ltd., Houston, TX) with already existing preformed Zirconia pediatric crowns (NuSmile Ltd., Houston, TX). The hypothesis of this study is that Zirconia and Bioflex crown materials will be similar in wettability and color stability. The analysis involved specimens created 4mm in width from the mesial or distal surface of preformed Zirconia and Bioflex crowns, with wettability and color stability assessed immediately after 0, 500, 1000, 2500, and 4500 thermocycles. Color stability (delta E) was calculated using CIELAB and CIEDE2000 equations and ran through SAS software (United States). The wettability of ultrapure water was tested at one location per specimen in an OCA15-Plus contact angle goniometer (Future Scientific Digital Corp.) and ran through SAS software (United States). The SAS software revealed no significant differences in color stability (delta E) and wettability between Zirconia and Bioflex preformed crowns. This study's limitations, including size and curvature of the specimens were acknowledged, emphasizing more standardized samples for future studies.

Funding for this project was provided by the J. Dean Roberson Society and the 2023-24 Student Research Program.

#35

Title: Properties of Experimental Nanofilled Orthodontic Adhesives

Presenter(s): Landen Keffer, DS2

Advisor(s): Fernando Esteban Florez

Abstract:

The objective of the present study was to characterize the degree of conversion (DC), biaxial flexural strength (BFS) and antibacterial properties (BIO) of experimental flowable orthodontic adhesives containing nitrogen and fluorine co-doped titanium dioxide nanoparticles (NF_TiO₂). Three experimental flowable orthodontic adhesive resins were formulated using varying ratios of NF_TiO₂ concentrations (20%, 25%, 30% [v/v]). Experimental adhesives without nanoparticles served as control groups. Unpolymerized adhesive resins (n=10/group) were individually placed onto a heated (37°C) attenuated total reflectance monolithic diamond crystal. Spectra of experimental and commercial adhesives were obtained with a Fourier-transform infrared (FTIR) spectrometer before and immediately after polymerization. Disk-shaped specimens (diameter=6.0mm, thickness=0.5mm) for biaxial flexural strength (n=10/group) and for antibacterial testing (n=18/group) were fabricated and photopolymerized. Degree of conversion values (%) were calculated from pre- and post-polymerization spectra using the two-frequency method and tangent-baseline technique. BFS was assessed using a Universal Testing Machine. Antibacterial testing (BIO) was performed by growing *Streptococcus mutans* biofilms on the surfaces of specimens for 24 hours and then measuring Relative Luminescence Units (RLU) with a multi-well plate reader. Experimental data for DC, BFS and BIO were analyzed using two-factor General Linear Models and post hoc Student-Newman-Keuls tests ($\alpha=0.05$, SAS Software). Values of DC ranged from 74.75%±1.31% (20% NF_TiO₂) to 77.60%±1.31% (0% NF_TiO₂). BFS values ranged from 0.065±0.008 kN (25% NF_TiO₂) to 0.092±0.016 kN (0% NF_TiO₂) and BIO values ranged from 25,594.56±8,845.10 RLU (30% NF_TiO₂) to 46,868.44±14,635.23 (0% NF_TiO₂ Control) RLU. Nanofilled experimental materials were demonstrated to have lower degrees of conversion and to display inferior mechanical but superior antibacterial properties.

Funding for this project was provided by the J. Dean Roberson Society and the 2023-24 Student Research Program.

This study was presented at the 2024 AADOCR General Session and Exhibition.

#36

Title: Fluoride Supplementation Use in Oklahoma Dental Practices

Presenter(s): Crosbi Shelby, DS2

Advisor(s): Tim Fagan

Abstract:

This study investigates fluoride supplementation practices among dental practitioners in Oklahoma and assesses awareness of community water fluoridation. A survey was distributed to OK licensed dentists, resulting in a response rate of 7.77%. Analysis of responses from 149 practitioners revealed that approximately one-third to half prescribe supplemental fluoride for high-risk children. Reasons for non-prescription included concerns about sufficient fluoride intake from other sources and parental disinterest. Interestingly, there was no significant difference in prescription practices across dental specialties. However, a notable proportion of respondents were unaware of their practice area's water fluoride status, indicating a need for increased education. Observations of dental fluorosis varied among practitioners. These findings underscore the importance of ongoing education on fluoride supplementation guidelines and community water fluoridation. Addressing these gaps can enhance preventive measures against dental caries and promote oral health in communities with varying fluoride levels.

Funding for this project was provided by the Delta Dental of Oklahoma Foundation and the 2023-24 Student Research Program.

#37

Title: Multiple Sterilization and Inst. Cycles Reduce Rotary Cutting Efficiency

Presenter(s): Peter Sohn, DS2

Advisor(s): Suhair Jambi, David Shadid, Sharukh Khajotia

Abstract:

Objectives: To compare the instrumentation time for rotary endodontic files of sizes S1, S2, F1 and F2 ProTaper Gold (PTG) during the shaping of J-shaped resin canal blocks after three instrumentation and two sterilization cycles.

Methods: Rotary nickel-titanium endodontic files of sizes S1, S2, F1 and F2 [ProTaper Gold (PTG), Dentsply Tulsa Dental Specialties, USA] were used in sequence as a set (n=10/size) to instrument J-shaped canal blocks (Endo Training Bloc, Dentsply Maillefer, Switzerland; n=30 total). Each set of files underwent three instrumentation cycles, and the time of instrumentation was recorded for each instrument size. The instruments were sterilized in an autoclave (SciCan Statim 2000; temperature 270°F, pressure 32PSI) before each instrumentation cycle was performed on an unused block. Instrumentation times were statistically analyzed using one-factor General Linear Models and Student-Newman-Keuls post-hoc test ($\alpha=0.05$; SAS software).

Results: The third cycle had the longest mean time of instrumentation, whereas the first and second cycles were not statistically significantly different from each other but were statistically different from the third cycle ($p=0.0094$). Instrumentation time for PTG sizes S1 and F1 were statistically different from sizes S2 and F2 ($p<0.0001$), where S1 had the highest and F1 the lowest mean times of instrumentation. None of the files fractured during instrumentation.

Conclusions: When instrumenting J-shaped canals in sequence with PTG file sizes S1, S2, F1 and F2 up to three times with prior sterilization, the cutting efficiency was significantly reduced after the second sterilization cycle, but not after the first sterilization cycles.

Funding for this project was provided by the J. Dean Robertson Society and the 2023-24 Student Research Program.

This study was presented at the 2024 AADOCR General Session and Exhibition.

#38

Title: Accuracy of Clinical Dental Differential Diagnoses

Presenter(s): Bailey Wyatt, DS2

Advisor(s): Kathleen Higgins, Ronald Faram

Abstract:

The aim of this research is to assess the accuracy of clinical impressions to the histologic diagnosis of oral soft tissue lesions. It is important to assess the accuracy of the clinical impressions of providers, to identify strengths and weaknesses in their clinical judgment. Only a handful of studies have investigated this topic. This project hopes to contribute more data from an oral pathology service perspective. Studies have shown that anywhere from 16-50% of clinical impressions are incorrect. This is a high margin of error considering the emphasis in education focused on recognizing clinical lesions and developing an accurate clinical impression to best guide treatment and patient management. This study reviewed biopsy cases submitted over a 3-year time frame to the University of Oklahoma's Oral Pathology Lab. There were 3,226 cases reviewed and 2,204 were included in the study. The clinical impression and histologic diagnosis were extracted from the report, and the two diagnoses were classified as benign, malignant or hedged. The concordance between the clinical impression and histologic diagnosis were then analyzed and found over 79% of cases had concordance, 4.59% of cases were discordant, and 17% were hedged in their clinical or histologic diagnosis.

Funding for this project was provided by the J. Dean Robertson Society and the 2023-24 Student Research Program.

Title: Autogenous Dentin in Alveolar Ridge Preservation and Implant Placement**Presenter(s):** John Corbett, Postgraduate**Advisor(s):** Robin Henderson, Edwin Sutherland, John Dmytryk**Abstract:**

Purpose: Tooth extraction leads to alveolar ridge shrinkage, posing challenges for subsequent dental implant placement. This study investigates the efficacy of particulate autogenous dentin (both mineralized and partially demineralized) compared to freeze-dried bone allograft (FDBA) for alveolar ridge preservation (ARP) and implant stability enhancement.

Methods: This randomized controlled trial involved 46 sites requiring tooth extraction and subsequent implant placement. Sites were subjected to ARP using either FDBA, mineralized autogenous dentin (MAD), or partially demineralized autogenous dentin (PDAD). Various parameters were assessed, including changes in ridge dimensions, histologic healing patterns, and the Implant Stability Quotient (ISQ).

Results: Autogenous dentin demonstrated superior ridge height preservation compared to FDBA, with MAD and PDAD groups showing minimal alteration. Additionally, autogenous dentin contributed to reduced ridge width loss. Histological analysis revealed favorable bone integration and remodeling for all graft types. ISQ measurements indicated comparable implant stability across all groups.

Discussion: The results of this randomized controlled trial show that particulate autogenous dentin offers promise as a graft material for ARP and subsequent implant placement. Sites treated with autogenous dentin showed better preservation of alveolar ridge dimensions than FDBA and equal performance for subsequent implant placement. Mineralized and partially demineralized particulate dentin performed similarly. Histologically, areas grafted with autogenous dentin showed favorable integration, resorption, and remodeling.

Conclusions: In this study, autogenous dentin compared favorably to FDBA when used as a graft material for alveolar ridge preservation and delayed implant placement.

Funding for this was provided by the 2023-24 Advanced Student Research Program and ZimVie Dental Products.

This study was presented at the 2024 Southwest Society of Periodontists Pritchard Research Competition.

Title: A Comparison of AI Platforms for Caries Diagnosis and Insurance Claims**Presenter(s):** Lily Harstock, Postgraduate; Dominique Angibeau, Postgraduate**Advisor(s):** Mary Hamburg**Abstract:**

Artificial intelligence (AI) has infiltrated many industries with the goal of standardizing practices and improving efficiency. The global value of AI in the healthcare sector alone is currently estimated to be \$20.9 billion, with a forecasted value of \$148.4 billion in 2029. Within the dental industry, AI can be used to analyze radiographic images for dental conditions such as dental caries, peri-radicular bone loss, and periapical radiolucencies. These software programs can be a valuable aid to the practitioner, lending an adjunctive "second opinion" and increasing standardization among diagnostic practices. AI has become an integral component of insurance claim analysis and fraud detection, with insurance companies using the same software programs available to clinicians. Because AI is being used to assess claims and reimbursement, it is vital to ensure that there is consistency in diagnostic sensitivity between AI platforms. In this study, the goal was to compare AI diagnostic outputs for caries detection between two FDA approved software programs used in dental offices for caries detection, namely Overjet and Pearl. A comparison was also made between Overjet software installations in two different offices. The hypothesis is that different software programs will have differing sensitivity regarding caries detection and that there will be minor inconsistencies even among the same software installed in two different offices' patient management systems. In this study, fifty unidentified bitewing radiographs were obtained and imported under a profile of "test patient." The 50 images were analyzed with Overjet in office 1, Overjet in office 2, and Pearl in office 3 and the number of inconsistencies were noted between each comparison pair (Office 1 vs Office 2), (Office 2 vs Office 3), and (Office 1 vs Office 3). The quantitative inconsistencies were analyzed. The results will provide recommendations to the general practitioner regarding use of AI in practice.

#41

Title: Dental Implants in Bone-compromised Patients: Quality of Life Outcomes

Presenter(s): Jonathan Leonard, Postgraduate

Advisor(s): Martin Freilich (UConn School of Dental Medicine), Pamela Taxel (UConn School of Medicine)

Abstract:

Patient-reported outcomes represent an additional and often overlooked measure of dental implant and bone augmentation treatment. Few implant studies have evaluated patient-reported outcomes in those with systemic bone compromise. The purpose of this cohort study was to assess oral health-related quality of life (OHRQoL) outcomes in postmenopausal women receiving dental implants with normal bone density or mild osteopenia ("healthy" group; all DXA T-scores at femoral neck, total hip, and L1-L4 spine > -2.0) versus moderate osteopenia or osteoporosis ("bone compromised" group; any DXA T-score at femoral neck, total hip, or L1-L4 spine ≤ -2.0). A total of 115 patients were recruited at the University of Connecticut School of Dental Medicine as part of a standard of care, prospective, nonrandomized cohort study. All participants received 1 of 3 bone augmentation procedures with implant placement. At baseline and at various intervals after implant placement, OHRQoL was measured by using the Oral Health Impact Profile-14 (OHIP-14) and surveys of patient expectations and satisfaction. These measures were compared between healthy and bone compromised groups ($\alpha=.05$). For all OHRQoL measures across linear mixed effects models, no significant differences were found between bone groups at baseline and at each time point after implant placement ($P>.05$). Using the minimally important difference (MID) for OHIP-14, no definitive clinical differences were found in patient outcomes between bone groups at all postimplant time points ($P>.05$). For postmenopausal women receiving alveolar ridge augmentation procedures, compromised bone health does not considerably alter perceptions of oral and social discomfort after surgery. These OHRQoL outcomes offer additional evidence for the suitability of dental implant placement with bone augmentation in bone compromised, partially edentulous individuals.

Funding for this project was provided by the Clinical Research Center at UConn Health, Institute Straumann (Switzerland), and NIDCR R01DE017873.

Presented at the 2023 Academy of Osseointegration Annual Meeting.

#42

Title: Beyond the Surface: Unveiling Tobacco Related Epithelial Dysplasia

Presenter(s): Prita Dhaimade, Postgraduate

Advisor(s): Robin Henderson, Ronald Faram

Abstract:

White lesions represent a diverse spectrum of oral mucosal abnormalities, ranging from benign conditions to potentially malignant disorders. However, the identification and characterization of epithelial dysplasia within this spectrum pose significant diagnostic dilemmas for clinicians.

This poster presentation illuminates a compelling case of oral mucosal white lesion that, at first glance, appeared innocuous but harbored a hidden threat. A patient, with an extensive history of smokeless tobacco use spanning over 40 years, presented with an area of asymptomatic leucoplakia that appeared different at different timepoints during this patient's follow-up. Despite its initially non-threatening appearance, a biopsy was performed, revealing a surprising diagnosis of moderate epithelial dysplasia.

Histological examination exhibited classic dysplastic alterations both architecturally and histologically. While invasive characteristics were absent beyond the basement membrane, the level of dysplasia observed necessitated immediate excision. This case underscores the critical importance of vigilant assessment and timely intervention, even in seemingly benign oral mucosal lesions.

Detailed clinical, and histopathological findings are presented, emphasizing the pivotal role of interdisciplinary collaboration between dentist, surgeons, oral medicine specialists, and pathologists. By examining the intricacies of this case, we aim to emphasize the deceptive nature of such lesions, particularly in individuals with a history of tobacco use. The presentation highlights the significance of recognizing potential malignancy, even in lesions lacking invasive features, and advocates for a proactive approach to the management of oral mucosal white lesions. Ultimately, this case report serves as a stark reminder of why a comprehensive evaluation is imperative in preventing the underestimation of potentially hazardous oral lesions, particularly in high-risk individuals.

Title: 3D Printing in Surgical Treatment Planning and Re-evaluation**Presenter(s):** Sarah Fita, Postgraduate**Advisor(s):** Jaewon Kim**Abstract:**

3D printing technology has a wide range of applications in the dental field. This includes digitally produced prosthesis, implant and crown lengthening surgical guide, as well as surgical planning of various procedures. The benefits of incorporating 3D printing into clinical practice include improving the precision in treatment planning, increasing surgical predictability, reducing operation times, and overall increased patients' satisfaction. This case report demonstrates the use of 3D printing in treatment planning and re-evaluation of treatment outcomes of Guided bone regeneration (GBR) surgery. A 61-year-old female patient was seen in graduate periodontics clinic for implant placement of missing #8. The treatment plan consisted of extraction #7, GBR at #7-8, followed by implant placement after 6-9 months. A maxilla bone model was 3D printed with a virtually extracted #7, alongside #7 as two standard triangle language (STL) files. The digital process utilized the initial CBCT and two programs (3D slicer 5.6.1 and meshmixer 3.5). The 2 STL files were printed using the digital light processing (DLP) technique on an Elegoo Mars 2P printer. The bone model guided the planning of tenting screws' number, location, and size, along with creating a template for membrane size and shape, which was then sterilized. On the surgery day, the precise screw location were replicated, and the membrane template verified for accuracy. The collagen membrane was cut and secured. After a 9-month healing period, a CBCT produced an updated bone model for planning implant placement via a 3D printed surgical guide. In summary, GBR encompasses several crucial steps that can be assessed before the surgery. In this scenario, a simulated surgery provided a direct 3D visualization of the defect, as opposed to a computer screen view. In addition, it enhanced the accuracy and reduced the time spent in surgery, leading to high levels of patient satisfaction and successful surgical outcomes.

Title: Etiology of Trismus in Head and Neck Cancer Patients – A Literature Review**Presenter(s):** Natasha Gokal, Postgraduate; Elena Dupalo, Postgraduate**Advisor(s):** Mary Hamburg**Abstract:**

Trismus, also known as limited mouth opening, can be caused from various dental procedures such as: wisdom teeth removal, dental trauma, surgeries in or around the mouth, and radiation therapy in head and neck cancer patients. Trismus is a painful condition wherein the muscles around the temporomandibular joint are constricted and inflamed. Patients with trismus have trouble in performing daily activities and this can affect their quality of life. Trismus is a common condition in the dental profession and as dental providers we need to know how to diagnose, treat, and prevent such a debilitating disease. The purpose of this literature review is to evaluate the etiology of trismus in head and neck cancer patients. An electronic search was performed using Pubmed database. 20 articles were scanned of which 6 were selected for this literature review. While our research did not pinpoint a cause of trismus, as the condition is not thoroughly understood, an abundance of research is available that aids dental professionals in effectively managing their patients, focusing on prevention, treatment, and potential outcomes.

#45

Title: Amalgam Removal: Advantages and Disadvantages in Everyday Practice

Presenter(s): Annie Jamison, Postgraduate; Lauren Parker, Postgraduate

Advisor(s): Mary Hamburg

Abstract:

Amalgam has been used in dental restorations for 150 years due to the affordable cost, clinical ease of application, strength, durability, and bacteriostatic effects. In recent years, the controversy of amalgam's safety, efficacy and potential toxicity has been put into question. This had led to a large shift in practice ideology around amalgam in dentistry. Common clinical changes in dental practices around the world have been both a decrease in placing amalgam in dental restorations and, more questionably, an increase in the removal of existing amalgam restorations regardless of the presence of secondary, recurrent decay. This shift is largely in part due to the fear of mercury toxicity from dental amalgam and the potential health risks associated with it. Amalgam is made up of 50% mercury and is believed by some to be the most significant source of mercury exposure in the general public. One organization that has had a large influence on the increased fear of amalgam restorations is the International Academy of Oral Medicine and Toxicology. This is a group of dentists and other health professionals that share a goal of removing all toxins in their practice. They are the creators of the SMART amalgam removal technique, an extensive technique in which dentists are trained to safely remove and dispose of existing amalgam restorations. On the other end of the spectrum, many dentists are still treatment planning and restoring teeth with dental amalgam. In addition, they remove and replace amalgam restorations without the drastic safety measures of the SMART removal technique. In conclusion, there are differing opinions on the use of amalgam across the dental profession. But, all dentists can agree on two things: dentistry should be evidence-based, and the safety of both patients and providers is of utmost importance. While there is legitimacy on both sides of this argument, there is still much to learn prior to deeming amalgam as a dangerous restorative material.

#46

Title: Surgical Management of Peri-Implantitis: A Clinical Case Report

Presenter(s): Madhumati Ramachandrareddy, Postgraduate

Advisor(s): Jaewon Kim

Abstract:

Despite their popularity, dental implants are prone to inflammatory complications such as peri implant mucositis and peri-implantitis. Peri-implantitis is an inflammatory process affecting the supporting hard and soft tissues around an implant in function, leading to loss of supporting bone, most commonly caused due to the presence of bacterial plaque and host response. Clinical and radiographic symptoms include Probing Depth (PD) ≥ 6 mm, Bleeding on probing (BOP), suppuration & bone loss. Treatment options include both nonsurgical and surgical approaches. This case report will discuss the remarkable efficacy of a technique for surgical intervention for the treatment peri-implantitis. A 68-year-old male patient presented to Graduate Periodontics with a chief complaint of pus discharge and pain around implant #18. Clinical & radiographic exam revealed PD of 6-7mm, (BOP), pus discharge & vertical bony defect on the Distal of implant #18. The recommended treatment involved debriding and decontaminating the implant surface, followed by using particulate bone graft and membrane for guided bone regeneration. A full thickness flap was raised over #17-19. The implant was Degranulated using titanium brushes (Roto brush kit Salvin®) and decontaminated with Citric Acid (Henry Schein®). Autogenous bone shavings obtained using Safescraper® (Osteogenics®), combined with the xenograft particulate graft were used to obtain defect fill. Amnion chorion membrane (Bioexclude) was placed over the bone graft. Complete primary closure was obtained. Bitewing radiographs were obtained immediately post op and at 6 months showing marked bone fill. Uncovery was performed at 6 months and referred to AEGD for crown placement. The treatment outlined in this case report demonstrates significantly enhanced clinical outcomes, making it a valuable treatment option in peri-implantitis management.

Title: A Case Report of Immediate Implant Placement and Hybrid Prosthesis

Presenter(s): Jose Silverio, Postgraduate

Advisor(s): Robin Henderson

Abstract:

This case report explores the comprehensive periodontal care provided to a 59-year-old male presenting at the OU Graduate Periodontics Clinic with a chief complaint of desiring oral rehabilitation and a renewed, aesthetically pleasing smile. The patient exhibited clinical manifestations of advanced periodontal disease, including clinical attachment loss (CAL) measuring 3-5mm, generalized horizontal bone loss of 50%, probing depths (PD) ranging from 4-8mm, 39% bleeding on probing (BOP), grade 2 and furcation involvement (FI), a history of losing ≥5 teeth loss to periodontal disease and <10 opposing pairs of teeth. The established periodontal diagnosis was Generalized Periodontitis Stage IV Grade B.

Following a restorative consultation, it was determined that the optimal course of action to address the patient's functional and esthetic concerns involved full mouth extraction. The treatment plan proposed the placement of a maxillary and mandibular implant hybrid prosthesis, with the decision for 6 implants on both the maxilla and mandible based on comprehensive radiographic analysis. Implant placement done with a stackable guide.

This abstract outlines the interdisciplinary approach to manage this complex case, emphasizing the collaboration between periodontics and restorative dentistry to achieve optimal outcomes. The focus on implant hybrid prosthesis not only addresses the patient's periodontal concerns but also aims to restore both form and function. This case underscores the importance of a personalized, collaborative treatment strategy in achieving successful results in the rehabilitation of advanced periodontal cases.