



The UNIVERSITY of OKLAHOMA

College of Dentistry

37th Annual

Scientific Day

April 10, 2018

Sheraton Midwest City Hotel at the
Reed Conference Center
Midwest City, Oklahoma

Sponsored by:



DELTA DENTAL OF OKLAHOMA
FOUNDATION



37th 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 next 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, Scientific Day evolved into what it is today – **the 37th Annual Scientific Day!**

The evolution of Scientific Day is due to the dedication and support of everyone here today. To the students and their faculty mentors who complete meaningful research projects, to all of 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, Heartland Dental and the J. Dean Robertson Society for their sponsorship of this event and our Student Research Program.

Please enjoy the outstanding projects presented here 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 37th Scientific Day!

Corporate Sponsors and Exhibitors

The following companies have provided additional funding to support this year's Scientific Day and will be exhibiting their company's products in the foyer. Please spend some time visiting the corporate sponsors to learn about their products and to thank them for their generosity.

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(To win a door prize you have to be present at the luncheon)

Special Thanks to the Following Individuals

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| | |
|------------------------------------|-----------------------------|
| Marc Arledge, D.D.S. | Rebecca Hughes, D.D.S. |
| Connie Basham, R.D.H. | Sharon Lloyd, R.D.H. |
| Kay Beavers, D.D.S. | Desiree Margagliano, R.D.H. |
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| Jenna Hubacz, D.M.D. | Stephen Young, D.D.S., M.S. |

ISHMAEL ESSAY CONTEST JUDGES

| | |
|---------------------------------|--------------------------------|
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| | |
|-----------------------|----------------------|
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| Mr. Jeremy Bueckers | Mr. Jason Jones |
| Ms. Luellen Chenoweth | Dr. Sharukh Khajotia |
| Ms. Deanna Foster | Ms. Megan Louk |
| Prof. Carolyn Hinckle | Ms. Caroline Rykard |
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REGISTRATION

| | |
|-------------------|----------------------|
| Ms. Liz Bennie | Ms. Camille McGinnis |
| Ms. Jessica Brown | Ms. Jennifer Quan |
| | Ms. Diana Stone |

University of Oklahoma College of Dentistry
37th Annual Scientific Day

Schedule of Events

| | |
|---------------|--|
| 9:00 - 9:30 | Registration <i>1st floor West Entrance</i> |
| 9:00 - 10:00 | Continental Breakfast <i>2nd floor East Foyer</i> |
| 9:00 - 10:30 | Poster Presentations <i>2nd floor Reed Ballroom ABC</i> |
| 10:30 | Poster Votes Due In Ballot Box <i>2nd floor West Foyer</i> |
| 10:30 - 12:00 | Ishmael Essay Presentations <i>2nd floor Reed Ballroom DEF</i> |
| 12:00 | CE Forms Available <i>1st floor Registration Desk</i> |
| 12:00 - 1:30 | Awards Luncheon <i>1st floor Exhibit Hall</i> |

Ishmael Essay Contest Finalist Presentations

Reed Ballroom DEF, 2nd floor, 10:30 - 12:00

- 10:30 a.m. Sally Maren (DH2)
Marijuana and How It Affects Dental Health
- 10:45 a.m. Aubrey Mouser (DH2)
Use of Air-Polishing Devices by Oklahoma Dental Hygienists
- 11:00 a.m. Aubree West (DH2)
Comprehensive Care: Preparing for Team Practices
- 11:15 a.m. Savneet Basati (DS3)
Correlation Between Vaccination Age & HBs Results for the HBV Vaccine
- 11:30 a.m. Brittany Hand (DS2)
Wettability of the Different States of Alginate Substitutes
- 11:45 a.m. Cooper Pasque (DS3)
Canal Transportation: Examination of Three Ni-Ti Rotary Systems

POSTER PRESENTATIONS

| Poster # | Presenter Name(s) & Title |
|----------|--|
| # 1 | HAJRA HABIB (DH2) Oral Health Literacy of Medical Students at OUHSC |
| # 2 | SALLY MAREN (DH2) Marijuana and How It Affects Dental Health |
| # 3 | AUBREY MOUSER (DH2) Use of Air-Polishing Devices by Oklahoma Dental Hygienists |
| # 4 | BROOKLYN NEAL (DH2) Bruxism: A Risk Factor for Periodontal Disease? |
| # 5 | HOLLY PERKINS (DH2) Effectiveness of a School Based Sealant Program |
| # 6 | AUBREE WEST (DH2) Comprehensive Care: Preparing Students for Team Practices |
| # 7 | ARSHIA AKBARUNI (DH2); LAYAN SALOUS (DH2) Improving Children's Oral Health Literacy |
| # 8 | KAITLYNN CHAPMAN (DH2) Orthodontics and Periodontal Disease |
| # 9 | ERIN CROSBY (DH2) The Role of Coenzyme Q10 in Periodontal Therapies |
| # 10 | BRISHAWNNA CROSS (DH2) Dental Professionals' Roles in Identifying and Reporting Child Abuse |
| # 11 | NATALY DAGGY (DH2) Nutritive and Non-Nutritive Sucking: A New Look at an Old Challenge |
| # 12 | NGAN DOAN (DH2) Periodontal Disease and Pregnancy |

POSTER PRESENTATIONS

| Poster # | Presenter Name(s) & Title |
|----------|---|
| # 13 | LITA FEDDERSEN (DH2) Learning Styles and Preferences Among Students |
| # 14 | ASHLEY GRANT (DH2); TOSHA TYLER (DH2) Recognition of Hormonal Pathologies in the Dental Patient |
| # 15 | KALEY HAYDEN (DH2); TAYLOR LORENTZ (DH2) Oral Manifestations in Patients with Renal Disease |
| # 16 | SARA HUTCHINSON (DH2) The Science of Dental Stem Cells |
| # 17 | KAYLEE JENNINGS (DH2) Treating Pediatric Patients with Autism Spectrum Disorder |
| # 18 | SAVANNAH KAPPELLE (DH2) Plaque on the Brain |
| # 19 | KADENCE KHOSRAVI (DH2); REBECCA JONES (DH2) Managing Patients with Autism Spectrum Disorder in Dental Office |
| # 20 | HANNAH LAMBETH (DH2) EMD: Use it before you lose it! |
| # 21 | NANCY LE (DH2); TIFFNIE PARRISH (DH2) Educating Scouts for the Dentistry Merit Badge |
| # 22 | MEHGANE LEWELLYN (DH2); LYNDSEY WOODWORTH (DH2) Managing Patient Stress in Dental Office |
| # 23 | LARYSSA LOMAX (DH2) Oral Manifestations of Sexually Transmitted Diseases |
| # 24 | JENNIFER LOYD (DH2); SEL HOANG (DH2) School-Based Oral Health Education |

POSTER PRESENTATIONS

| Poster # | Presenter Name(s) & Title |
|----------|---|
| # 25 | BAYLEE MARONEY (DH2) Healthcare Professionals Role on a Cleft Lip and/or Palate Team |
| # 26 | THUY MCCARTHICK (DH2) The Emerging Trends in Marijuana Use |
| # 27 | MADALYNNE MELOT (DH2) Crohn's Disease and Oral Manifestations |
| # 28 | QUYNH-ANH PHAM (DH2) Rise and Grind: relation between sleep bruxism and psychological stress |
| # 29 | HEPZHI SAM (DH2); PAIGE HOLLIDAY (DH2) Salivary Diagnostics for Diabetes |
| # 30 | ALEXYS SHADOWENS (DH2) Barriers to Dental Care in Children |
| # 31 | OLIVIA STOCKAM (DH2) Preventive Dentistry in Pediatric Populations |
| # 32 | CHRISTINA STUEHM (DH2) The Relationship between Periodontopathic Bacteria in Dogs and Humans |
| # 33 | SKYLA WALKER (DH2) Xylitol: The New Black |
| # 34 | TAYLOR WALKER (DH2) Oral Parafunctional Habits |
| # 35 | DARCIE WARE (DH2) Bruxism: A Parafunctional Habit |
| # 36 | SELENA WELLS (DH2) Interdental Aids and Oral Health |
| # 37 | MIKAYLA WILLIAMS (DH2) Microscopic and Monumental: Nanotechnology and Dental Hygiene |

POSTER PRESENTATIONS

| Poster # | Presenter Name(s) & Title |
|----------|--|
| # 38 | PAIGE WOOD (DH2) Oral Manifestations of Autoimmune Diseases |
| # 39 | SAVNEET BASATI (DS3) Correlation Between Vaccination Age & HBs Results for the HBV Vaccine |
| # 40 | TANVEER SINGH BUTTAR (DS3) The Prevalence of Periodontal Disease Among Electronic Cigarette Users |
| # 41 | MERIDITH CORWIN (DS2) Nutritional Literacy, Oral Health Status, and Dietary Intake |
| # 42 | SRUJANI REDDY GADUSU (DS3) Retention of sealants in Young Permanent Teeth-A meta analysis |
| # 43 | BRITTANY HAND (DS2) Polymerization and Disinfection on Wettability of Alginate Substitutes |
| # 44 | STEVEN HASSENPLUG (DS2) Evaluation of Intraoral Sensors Simulated Occlusal Caries Detection |
| # 45 | TARANDEEP PANNU (DS3) Maxillary Sinus Septa and Incidental Findings: A CBCT Analysis |
| # 46 | COOPER PASQUE (DS3) Canal Transportation: Examination of Three Ni-Ti Rotary Systems |
| # 47 | GARRETT BUSH (Postgraduate) Esthetic effect of abutment material and cement type on e.max™ crowns |
| # 48 | AAESHAH ALKANDERI (Postgraduate) Treatment of Intraony Defects with GTR and EMD |
| # 49 | ABDULWAHAB ALKANDARI (Postgraduate) Treatment of multiple recession with tunneling technique |

POSTER PRESENTATIONS

| Poster # | Presenter Name(s) & Title |
|----------|--|
| # 50 | MATTHEW BLACK (Postgraduate) Post-Extraction Guided Bone Regeneration: Case Report |
| # 51 | KELLEY CARLSON (Postgraduate) Materials for fixed implant prosthesis in patient with parafunction |
| # 52 | MYLES DAVIDSON (Postgraduate) Iliac Crest Graft Facilitating Dental Implants Following Ameloblastoma |
| # 53 | COLLETTE EDWARDS (Postgraduate); MARNI RUSSELL (Postgraduate) Assessment of Pre-Prosthetic Orthodontic Referrals from Dentists |
| #54 | MOHAMMED FELEMBAN (Postgraduate) Immediate Implant Placement Following Extraction of Posterior Tooth |
| #55 | ARIF KARIM (Postgraduate); JOHN MCCARTHY (Postgraduate) Role of Bone Morphogenetic Protein 6 in Primary Sjogren's Syndrome |
| #56 | JUSTIN PISANO (Postgraduate) Implant Rehabilitation of the Severely Atrophic Mandible: A Case Report |

Title: Oral Health Literacy of Medical Students at OUHSC

Presenter(s): Hajra Habib, DH2

Advisor(s): Carolyn Hinckle

Abstract:

Purpose: The purpose of this study is to determine the oral health literacy of medical students at OUHSC. All four years of medical students were surveyed to determine their level of oral health knowledge and interprofessionalism between medical and dental professions.

Methods: Participants from the University of Oklahoma Health Sciences Center College of Medicine were surveyed via the university wide webmail. The survey was sent in December 2017 and then once again, two weeks later in January 2018. The questionnaire consisted of 25 items relating to demographics, at-home oral health care, oral health knowledge, and interprofessional education. The 25-item survey was quantitatively analyzed and results were depicted using descriptive statistics.

Results: 641 students surveyed with N=92 (14.4%) medical students responding. The majority of the respondents (n=75; 85.2%) throughout the four years agreed that they received 0-2 hours of oral health education during their didactic courses.

Conclusions: Students at OUHSC's School of Medicine reported little oral health literacy in their curriculum throughout their education. Further research needs to be done to help incorporate better techniques to increase oral health literacy and interprofessionalism in medical schools.

This study was supported by a grant from the J. Dean Robertson Society. This study was presented at the Oklahoma County Dental Hygienists' Society Meeting, 2018.

Title: Marijuana and How It Affects Dental Health

Presenter(s): Sally Maren, DH2

Advisor(s): Carolyn Hinckle

Abstract:

Background: While many states have legalized the use of marijuana, it has not been legalized at a federal level. Research pertaining to the effects of marijuana use is therefore limited and inconclusive. **Specific Aims:** The purpose of this study was to determine if the use of marijuana resulted in observable oral manifestations. Specifically, the purpose of this study was to focus on dental patients who smoke marijuana and to determine if there are any oral manifestations as a consequence. **Methods:** A 21-item questionnaire was electronically sent to practicing, registered dental hygienists (RDHs) in Colorado via OUHSC Qualtrics. The RDHs accessed the survey link through the Colorado Dental Hygienists' Association (CODHA) website or Facebook page. The data was quantitatively and qualitatively analyzed. **Results:** There were 26 partial responses with N=9 being completed. It was reported that 78% (n=7) of respondents estimate that less than 5% of their patient's report using marijuana. 22% (n=2) reported their patients use marijuana for medicinal purposes. Manifestations reported to occur more in patients who smoke marijuana are stain, bad breath, and xerostomia. Manifestations that were reported to occur less or the same in patients who smoke marijuana were caries, oral cancer, bleeding on probing, and periodontal disease. Colorado RDHs were asked to compare the oral home care effectiveness of patients who use marijuana to those who do not. After analysis, 33% (n=3) indicated oral home care effectiveness was somewhat less, 56% (n=5) indicated it was the same, and 11% (n=1) somewhat better. Respondents were generally comfortable with discussing their patient's marijuana use with 33% (n=3) reported being comfortable and 33% (n=3) were very comfortable. **Conclusion:** Current marijuana laws hinder research regarding its use. Presently, the data have to be collected from a sample of convenience where participants' answers are speculative and possibly inaccurate.

This study was supported by a grant from the J. Dean Robertson Society. This study was presented at the Oklahoma County Dental Hygienists' Society Meeting, 2018.

Title: Use of Air-Polishing Devices by Oklahoma Dental Hygienists

Presenter(s): Aubrey Mouser, DH2

Advisor(s): Carolyn Hinckle

Abstract:

Background: Half of all Americans aged 30 and over have periodontal disease with pathogenic bacteria co-existing in oral biofilm as a common etiologic factor. Dental professionals endeavor to practice and promote professional and patient interventions that mechanically remove biofilm.

Purpose: The purpose of this study is to determine the use of air-polishing devices on patients by dental hygienists in Oklahoma and investigate their knowledge regarding the device.

Methods: Members of Oklahoma Dental Hygienists' Association (ODHA) who had been or were currently registered dental hygienists were surveyed. The 14-item questionnaire was quantitatively analyzed and open-ended questions were qualitatively reviewed.

Results: Ninety members completed and returned the survey. Results indicated dental hygienists in Oklahoma do not consistently use air polishers supragingivally (68%) or subgingivally (80%) in a practice setting. The clear perceived advantage to using air-polishing was for stain-removal (86%) and its speed and efficiency (29%). The majority of participants ranked air polisher characteristics as very important with most for safety (51%) followed by patient acceptance (47%), time efficiency (45%) then antimicrobial effects (39%). Participants had a greater understanding of the air polisher used supragingivally rather than subgingivally.

Conclusions: It is essential to implement adequate education and training to increase the use of the air polishing device subgingivally. Implementing proper air-polisher training and education will equip dental hygienists to manage biofilm in pockets and provide periodontal therapy with great results for patients.

This study was supported by a grant from the J. Dean Robertson Society. This study was presented at the Oklahoma County Dental Hygienists' Society Meeting, 2018.

Title: Bruxism: A Risk Factor for Periodontal Disease?

Presenter(s): Brooklyn Neal, DH2

Advisor(s): Carolyn Hinckle

Abstract:

Background: The Academy of Periodontology recently added bruxism as a risk factor for periodontal disease. Research associating bruxism with periodontal disease is lacking. The purpose of this study is to report on the incidence of periodontal disease in patients who exhibit oral manifestations of bruxism in a dental school clinic.

Methods: A quantitative, non-experimental, retrospective study was conducted by accessing the University of Oklahoma College of Dentistry Axium patient pool in the last 2 years. The sample was selected based on attrition or abfraction being noted on their odontogram as a clinical finding. Three hundred charts out of the 550 were randomly selected for this study. Patients aged 18 to 65 charts were reviewed. The incidence of bruxism in the patient chart was noted. Age, gender, periodontal diagnosis, attrition, abfraction, bleeding on probing (BOP), and tooth mobility were all factors recorded to determine if any relationship of bruxism with these conditions.

Results: Bruxism was diagnosed in n=128 (42.7%) of the 300 patients in this study. Female patients n=75 (59%) exhibited significantly more bruxism compared to the males n=53 (41%) with p=0.038. The findings in this study showed no significant differences between bruxism and the periodontal diagnosis p=0.43.

Conclusion: This study of bruxism and its ramifications on the periodontium showed that 48.4% of women with moderate to severe periodontal disease have bruxism which was significantly different than that of the male counterparts with 36.6% with a p value of 0.038. With this being said, there was no significant evidence showing a relation in people who have bruxism and their periodontal status.

This study was supported by a grant from the J. Dean Robertson Society. This study was presented at the Oklahoma County Dental Hygienists' Society Meeting, 2018.

Title: Effectiveness of a School Based Sealant Program

Presenter(s): Holly Perkins, DH2

Advisor(s): Tina Tuck

Abstract:

Purpose

The purpose of this research is to determine the effectiveness and outcomes of a ten- year school-linked sealant program.

Background

The school-linked program is a partnership between the public-school system and a career technology center housing a distance education clinic for degree dental hygiene students attending a four-year dental hygiene program. The public school assisted in collection of consent forms and provided transportation for the children. In 2012, 297 occlusal sealants were placed on the permanent first molars of 83 2nd graders. A light-cure BIS-GMA, fluoride releasing sealant material was utilized. Children received a dental screening and diagnosis of sealant by a dentist prior to sealant placement. Of the 297 sealants placed, 82% were well retained at a 1- year assessment.

Methods

Dental screenings were conducted at 1 and 5-year intervals. The five-year DMF-S screening compared post-sealant caries development rates to those of teeth not previously sealed. Outcomes reports over seven years were generated to determine the retention rates of dental sealants one-year after placement.

Results

A Fisher's exact test compared the proportions between two groups. A 2-sided 0.05 alpha level defined the statistical significance. Analyses were conducted in SAS 9.4. Among the children who participated in the school-linked program as a 2nd grader, the percentage of decay and fillings were not significantly different.

Conclusion

Results from 2010-2017 indicate effective one-year retention rates for this school-linked program. Results are inconclusive concerning retention 5 years later since a small number of students participated in the study.

This study was supported by a grant from the J. Dean Robertson Society. This study was presented at the Western Oklahoma Dental Hygiene Society Meeting, 2018.

Title: Comprehensive Care: Preparing Students for Team Practices

Presenter(s): Aubree West, DH2

Advisor(s): Carolyn Hinckle

Abstract:

Purpose: Comprehensive care clinics are beginning to become part of the normal curriculum at dental colleges. This research study was conducted to gain insight from the students who experienced this conversion. Since these students treated patients in both traditional and comprehensive care clinics, the reported data can not only be critically analyzed to understand how comprehensive care clinics have positively impacted their experience, but also to learn what improvements can be made in the future.

Methods: The 2017 dental and dental hygiene graduates of the University of Oklahoma College of Dentistry were surveyed using OUHSC Qualtrics survey tool. A 17-items questionnaire was electronically sent to the graduates. The questions related to the graduates' perceptions of their patients' experiences, their experiences, and production via Comprehensive Care Clinics. An open-ended question regarding the benefits and strengths was asked. The results were quantitatively and qualitatively analyzed.

Results: There were 23 respondents which resulted in a response rate of 47.06%. Nine (39%) of these completed responses were from dentists, and the other fourteen (60.8%) completed responses coming from dental hygienists. Both dentists and dental hygienists agreed that they were able to enhance patient care, perform multiple tasks within one appointment, and understand how a clinic would run in a dental office while in comprehensive care. However, they also agreed that there is still a lack of student collaboration and communication.

Conclusions: Comprehensive Care in dental school provides dental and dental hygiene students the opportunity to interact as collaborators in providing oral health care to patients.

This study was supported by a grant from the J. Dean Robertson Society. This study was presented at the Oklahoma County Dental Hygienists' Society Meeting, 2018.

Title: Improving Children's Oral Health Literacy

Presenter(s): Arshia Akbaruni, DH2; Layan Salous, DH2

Advisor(s): Carolyn Hinckle

Abstract:

Goal/Objective: The Healthy People 2020 objective is to reduce the proportion of children age six- to nine-year old with dental caries experience in their primary or permanent teeth. The goal of this community health project was to reduce childhood caries in primary or permanent teeth of six- to nine-year old students at Martin Luther King Jr. Elementary School. The objective of the project was to educate students on three oral health topics: the benefits of nutritional diet in caries reduction, caries preventive measures, and the importance of proper brushing and flossing techniques.

Methods: The four-participating classroom at Martin Luther King Jr. Elementary School were given a pre- and post-test survey regarding oral health care routine, knowledge on sealants and healthy vs. non-healthy food. Presentations relating to brushing and flossing methods, nutritional diet, and caries preventive measures were given to the participating students and they were instructed to demonstrate the proper brushing and flossing techniques.

Results: Following the presentations, the post-test survey showed an increase in students' knowledge on caries preventive measures, brushing and flossing techniques, and the difference between cariogenic vs non-cariogenic food.

Conclusions: The outcome of the community health project demonstrated an increase in participants knowledge in majority of the topics presented. However, the participants' knowledge regarding the benefits and usage of sealants did not improve.

This study was presented at the Oklahoma County Dental Hygienists' Society Meeting, 2018.

Title: Orthodontics and Periodontal Disease

Presenter(s): Kaitlynn Chapman, DH2

Advisor(s): Carolyn Hinckle

Abstract:

Purpose: The purpose of this literature review was to investigate all possible outcomes of orthodontics on an adult with a reduced periodontium.

Background: A growing number of adults receive orthodontics, but with treatment comes more risk. Studies suggest that factors such as oral hygiene and systemic diseases cause more problems on an orthodontic patient with periodontal disease. Orthodontics also become more detrimental to the oral health with age, often causing damage to the TMJ and enamel. However; orthodontic treatment on a periodontally involved patient is very subjective and can have varying outcomes depending on the motivation and oral hygiene of the patient.

Clinical Significance: Orthodontics can lead to issues of the periodontium. Putting orthodontics on a patient with an unstable periodontium can cause detrimental effects to the oral health. Accurate records of the periodontal health, motivational interviewing and education will help reduce the adverse findings of further gingival recession and bone loss.

Conclusion: Orthodontic treatment on an adult with periodontitis is very individualized. Studies completed are not an accurate representation of the entire population. Oral hygiene is a major influence in the success or failure to treatment, along with systemic diseases. Dental professionals need to be aware of all the aspects that affect treatment by educating and motivating these patients in order to maintain oral health.

This study was presented at the Oklahoma County Dental Hygienists' Society Meeting, 2018.

Title: The Role of Coenzyme Q10 in Periodontal Therapies

Presenter(s): Erin Crosby, DH2

Advisor(s): Lindsey Hays

Abstract:

Purpose: To educate dental professionals on the use of coenzyme Q10 (CoQ10) as an adjunct to dental therapies, specifically Non-Surgical Periodontal Therapy.

Background: Coenzyme Q10 was discovered in the 1950's but only recently has it come to the scene of medical science. It is an antioxidant that is found naturally in the body and can also be obtained from outside sources. CoQ10 is difficult for the body to produce and production sharply declines under certain conditions such as age, chronic inflammation, and chronic disease. This deficiency results in underactive cells throughout the body leading to more cellular degradation.

Significance: CoQ10 has been found to improve gingival/periodontal inflammation in multiple studies both alone and in conjunction with scaling and root planing. It serves as an antioxidant that boosts the body's natural ability to repair itself, making gingival repair occur at a faster rate. CoQ10 works both in systemic and topical applications, making it a possible adjunct to care in numerous dental and dental hygiene procedures.

Conclusion: Due to disease prevalence in the United States and the current research on Coenzyme Q10 supplementation, this coenzyme should be considered as a part of treatment planning for patients battling chronic diseases, specifically periodontal disease. Dental professionals should be able to identify patients at risk for deficiency and make proper referrals to the medical team.

Title: Dental Professionals' Roles in Identifying and Reporting Child Abuse

Presenter(s): Brishawna Cross, DH2

Advisor(s): Carolyn Hinckle

Abstract:

Purpose: The purpose of this literature review is to educate dental professionals on the importance of identifying and reporting child abuse and neglect in the dental office.

Background: In 2016, a report of child maltreatment in the U.S. showed 676,000 children were victims of child abuse and neglect. An estimated 1,750 children died as a result of child maltreatment. The World Health Organization defines child abuse as any act or failure to act by the child's guardian or caregiver which can lead to death, sexual abuse or exploitation, physical or emotional harm; or an act or failure to act, which presents impending risk or grave harm.

Significance: 50-75% percent of child abuse cases result in children presenting with orofacial signs of abuse that could be easily detected by a dental professional. Although state law mandates dentists and dental hygienists be mandated to report child maltreatment, many fail to do so. The most common reasons given for failing to report are lack of confidence in their diagnosis and not knowing the proper agency to report to. Dentists who have been educated on identifying and reporting child abuse and neglect are five times more likely to report than dentist who have not been educated on child abuse.

Conclusions: Many instances of child abuse and neglect go unreported by dental professionals, because they have not been properly trained on measures to identify and report abuse. Detection of signs of abuse and reporting the suspected abuse is crucial in removing a child from a possibly life-threatening situation. Training relating to this topic should be incorporated into school curriculum and continuing education courses for dental professionals so that they will be better able to help children receive the care that they deserve, and potentially save lives.

This study was presented at the Oklahoma County Dental Hygienists' Society Meeting, 2018.

Title: Nutritive and Non-Nutritive Sucking: A New Look at an Old Challenge

Presenter(s): Nataly Daggy, DH2

Advisor(s): Laurie Cunningham

Abstract:

Purpose: The purpose of this literature review is to update dental professionals on the effects of nutritive and non-nutritive sucking habits.

Background: The outcomes and the associated risks of non-nutritive sucking habits on the formation of malocclusion is currently being investigated and debated among scholars. Most of the research in this specific area of study concludes that non-nutritive sucking habits are the root cause of many of the malocclusion abnormalities among children. Prolonged non-nutritive sucking (thumb-sucking and pacifiers) significantly increases the probability of teeth becoming improperly aligned. The longer a child continues the non-nutritive sucking habit, the more likely orthodontic treatment will be needed in the future to correct the malocclusion.

Clinical Implications: Dental professionals should be familiar with new research on the effects of long term nutritive and non-nutritive sucking habits. Dental interventions need to include management strategies to educate parents on the negative consequences of long term non-nutritive sucking habits and avenues of breaking the dependency. Parents should also be aware of the positive implications of nutritive sucking during infancy.

Conclusion: While sucking habits are associated with malocclusion, genetic factors also play a role in the formation of malocclusion. Awareness of all factors by dental professionals is imperative to communicating the correct information to patients, ensuring provision of the most current dental recommendations possible.

This study was presented at the Oklahoma County Dental Hygienists' Society Meeting, 2018.

Title: Periodontal Disease and Pregnancy

Presenter(s): Ngan Doan, DH2

Advisor(s): Carolyn Hinckle

Abstract:

Purpose: The purpose of this literature review is to evaluate the link between periodontal disease and adverse pregnancy outcomes and how periodontal treatment affects adverse pregnancy outcomes.

Background: Preterm birth and low birth weight are the leading causes of infant mortality and morbidity. Maternal periodontal disease is a common condition during pregnancy. Recent studies indicate an association between periodontal disease and adverse pregnancy outcomes.

The link between periodontal disease and adverse pregnancy outcomes is biological plausible. However, periodontal treatments during second trimester provided both negative and positive effects on pregnancy outcomes. Effects of periodontal treatments on improving pregnancy outcomes remain inclusive.

Conclusion: Biological plausibility supports the link between periodontal disease and adverse pregnancy outcomes. Inconsistent results highlight the need for further studies with better design to identify the best dental treatments for pregnant women. Dental professionals is responsible to educate pregnant women on the importance of good oral hygiene during pregnancy. Appropriate treatments and good oral home care is crucial to maintain oral health of both mothers and babies.

This study was presented at the Oklahoma County Dental Hygienists' Society Meeting, 2018.

Title: Learning Styles and Preferences Among Students

Presenter(s): Lita Feddersen, DH2

Advisor(s): Tina Tuck

Abstract:

Introduction:

Health care education requires developing intelligence in a classroom setting and pursuing the knowledge in the clinical setting. 46% of females and 88% of males prefer to learn with multiple mode of information rather than a single mode. Whether those modes be reading-writing, auditory, visual, or kinesthetic. Dental hygiene students prefer constructive feedback for clinical education and organization in the classroom setting.

Themes:

Studies found males prefer a variety of teaching and learning styles. Females prefer one mode with the majority favoring kinesthetic. Females tend to relate their learning to something personal while males focus more on logic. Students also fall into categories of type I and type II; meaning they either learn by listening and asking why or they learn by thinking and asking what. Most of the students today fall into the millennial generation making them technologically gifted, optimistic, and in need of praise and immediate feedback. Results from studies showed that hands on activities and critical thinking are desired in dental hygiene education. Additionally, students want certain characteristics from faculty like rapport, instructional feedback, and organization.

Significance:

Awareness of learning styles, teaching styles, and barriers to transference of information from the classroom the clinic are necessary for the advancement of education.

Conclusion

Students and faculty recognize their own learning style preferences and the methods needed to grasp their knowledge. Generations and genders have differences in learning preferences. Juniors in dental hygiene school are preferring hands on activities to prepare for clinic, while seniors are preferring the critical thinking exercises to prepare for practice after school.

This study was presented at the Western Oklahoma Dental Hygiene Society Meeting, 2018.

Title: Recognition of Hormonal Pathologies in the Dental Patient

Presenter(s): Ashley Grant, DH2; Tosha Tyler, DH2

Advisor(s): Lindsey Hays

Abstract:

Introduction: Metabolic pathologies in the U.S. are at epidemic proportions therefore dental professionals must take a closer look at the oral implications. Healthy People 2020 has set forth objectives to increase preliminary blood glucose monitoring in dental offices. Early recognition of hormone-related conditions could improve overall health of millions of Americans.

Background: Metabolic syndrome encompasses co-morbidities including central abdominal obesity, elevated glucose, blood pressure, triglycerides and reduced HDL. MetS, is a precursor to more serious hormonal pathologies, with the end result of diabetes and sex hormone deficiencies. While bacteria is the protagonist of periodontal disease, it has also been found that hormone fluctuations can affect occurrence, evolution, and severity of the disease.

Clinical Significance: Hormonal pathologies can place a patient at risk for a defective immune response. This increases the risk for periodontal disease and compromises a patient's ability to properly heal or fight infections. Estrogen heavily influences the immune response which can induce osteoclastic activity and accelerate bone loss. Hormones can also be metabolized by bacteria and used as a nutritive source exacerbating the plaque response. Studies show that hormone fluctuations produce higher plaque scores, bleeding indices, and increases the risk for pathologies such as bacterial imbalances, pyogenic granulomas, TMD, and xerostomia.

Conclusion: The dental staff must be able to identify patients who are at risk for Metabolic Syndrome and recognize the significant changes that hormone fluctuations cause in the body and oral cavity. Only then can they proceed to administer patient specific education, oral health instruction, and early intervention.

Title: Oral Manifestations in Patients with Renal Disease

Presenter(s): Kaley Hayden, DH2; Taylor Lorentz, DH2

Advisor(s): Abbie Gustafson

Abstract:

Purpose:

To investigate the oral manifestations of renal disease, implications of declining oral health on the disease process, and considerations for altering treatment for those with advancing disease.

Background:

Renal disease is a debilitating world-wide public health problem consisting of 5 stages. Renal disease patients may receive hemodialysis, or less invasive, peritoneal dialysis. Inflammation is prevalent in renal disease due to increased C-reactive protein levels and up to 90% of patients with renal disease exhibit oral manifestations of the disease.

Clinical Implications:

Dental health care providers should be aware of conditions often seen in patients with renal disease, as well as considerations for altered treatment at different stages of disease. Consideration must be taken to ensure that all treatments are coordinated with the patients' medical provider to prevent bacterial complications from advancing. Dental management of oral manifestations, including periodontal disease and xerostomia, are not often the primary focus of physicians and therefore must be stressed during regular visits with dental care providers.

Conclusion:

Oral health professionals play an important role in improving and maintaining oral health by providing optimal oral care and preventing destruction of the oral cavity. More research should be considered to investigate the role successful dental management plays in reducing inflammation and other systemic complications found in patients with renal disease.

Title: The Science of Dental Stem Cells

Presenter(s): Sara Hutchinson, DH2

Advisor(s): Melissa Stutzman

Abstract:

Purpose: This literature review will provide dental professionals with information about the growing body of science regarding dental stem cells and their potential use in dentistry.

Background: Stem cell research has been an ongoing field of study for the past several decades. Dental stem cells are obtained from the oral cavity and are capable of self-renewal and differentiation. Regenerative stem cell therapy helps stimulate dental tissue and facilitate cellular growth. Dental stem cells can be harvested from dental pulp, periodontal ligaments, exfoliated deciduous teeth, and third molars. Cryopreservation methods can conserve vital dental stem cells for long-term use.

Significance: In 2016 Americans spent an estimated \$124 billion on dental care. Diseases that originate in the oral cavity can affect the aesthetic appearance, masticatory function, and psychological health of an individual. Traditional dentistry utilizes restorative materials to simulate physical and chemical properties of a tooth and its surrounding structures. However, recent advances in stem cell therapy suggest it may be a viable option for dental treatment.

Conclusion: Recent advances in regenerative medicine are changing the outlook of dentistry. Dental stem cells show great promise in providing therapeutic benefits for treatment of oral tissue diseases. Due to the growing rate of dental disease and the advances in technology, it is important to educate dental professionals about the future possibilities of dental stem cell therapy.

Title: Treating Pediatric Patients with Autism Spectrum Disorder

Presenter(s): Kaylee Jennings, DH2

Advisor(s): Melissa Stutzman

Abstract:

Purpose: The purpose of this literature review and poster presentation is to educate dental professionals on techniques used to facilitate low-stress dental appointments with pediatric patients with autism spectrum disorder (ASD).

Background: ASD is one of the fastest growing disorders affecting 1 in 50 American children. Three primary characteristics associated with all five recognized types of autism include: difficulty in communication, repetitive characteristics, and social anxiety. These unique characteristics can make dental appointments challenging for all involved. Preparation is the key to a successful dental appointment with a pediatric patient with ASD.

Clinical Implications: Due to the high prevalence of this disorder, it is likely for dental professionals to encounter pediatric patients with ASD in a general dentistry setting. To provide quality comprehensive care to these patients, dental professionals must understand the disorder itself, the unmet dental needs associated with the disorder, and techniques to facilitate appointments.

Conclusion: With the number of children diagnosed with autism expected to rise, dental professionals should be prepared to treat pediatric patients with ASD in a general practice setting. Behavioral management techniques can help eliminate modifiable problems associated with pediatric patients with ASD in the dental office during treatment. With proper training, dental professionals can address the significant unmet dental needs in this population. More importantly, it is essential that all health care providers show patience and open-mindedness when learning new techniques to treat pediatric patients with ASD.

This study was presented at the Oklahoma County Dental Hygienists' Society Meeting, 2018.

Title: Plaque on the Brain

Presenter(s): Savannah Kappelle, DH2

Advisor(s): Melissa Stutzman

Abstract:

Scientists predict that by the year 2050 one in 85 people will be living with Alzheimer's Disease. This disease characteristically reduces life expectancy and quality of life with a progressive decline in memory, thinking, language and learning capacity. Recent studies showed increased numbers of pathogens, including those derived from the oral cavity, present on the brains of patients with Alzheimer's. This suggests that inflammatory molecules and oral pathogens such as those found in periodontal disease may play a role in the brain inflammation associated with Alzheimer's Disease. Dental professionals must be aware of the relationship between periodontitis and Alzheimer's to tailor treatment to the patient's ever-changing needs. Clinicians should recognize common signs of Alzheimer's Disease, and be able to clearly communicate and provide appropriate patient education and clinical interventions.

This study was presented at the Oklahoma County Dental Hygienists' Society Meeting, 2018.

Title: Managing Patients with Autism Spectrum Disorder in Dental Office

Presenter(s): Kadence Khosravi, DH2; Rebecca Jones, DH2

Advisor(s): Tammie Golden

Abstract:

Purpose: The purpose of this literature review is to investigate strategies on how to manage patients in the dental office environment who have Autism Spectrum Disorder (ASD).

Background: Patients who experience Autism Spectrum Disorder (ASD) can suffer with social interaction, communication, repetitive behaviors and restricted interests. This makes visiting the dental office very difficult for patients and dental professionals. Patients may experience anxiety from fear of the unknown, difficulties communicating their feelings, and reactions to sensory sensitivities. Patients that experience these behaviors do not always know how to control them and may demonstrate noncompliant or uncooperative behavior. These barriers can put ASD patients at risk for having their oral health neglected.

Clinical Significance: Strategies to assist in compliance can make ASD patients more receptive to dental care. Some alternative methods for creating a positive dental experience consist of TV, music therapy, tell-show-do, and deep touch pressure. ASD patients also struggle with concept of the “big picture” if subject matter is not interesting. The challenge is to adapt a learning style that is effective in motivating patients with ASD. Understanding strengths can assist in managing behavior issues while making dental care less difficult.

Conclusion:

Dental professionals can help ASD patients reduce stress and increase comfort level by considering strategies in managing care at the dental office. New techniques are being developed and research is ongoing as dental health care professionals seek to better understand and treat ASD patient with care and concern they deserve.

Title: EMD: Use it before you lose it!

Presenter(s): Hannah Lambeth, DH2

Advisor(s): Carolyn Hinckle

Abstract:

Purpose: The purpose of this literature review is to explore the application of Enamel Matrix Derivative to regenerate the soft and hard tissue of the periodontium.

Background: Approximately 36 million people residing in the United States are edentulous related to conditions such as periodontal disease, dental trauma, congenital abnormalities, tumors, and illness. There are many materials that can be used along with scaling and root planning surgery, flap procedures, and different types of periodontal surgery that promote the regeneration of periodontal soft tissue. The application of enamel matrix derivative (EMD) in conjunction with various bone biomaterials allows not only the soft tissue of periodontium to regenerate but the hard tissue as well.

Clinical Significance: Reestablishing the periodontium's original form and function remains a constant challenge in dentistry because each specific tissue involved has an exact form and function that it provides. EMD is a gel that contains proline-rich non-amelogenins, tuft protein, serum proteins, amelogenins, and tuftelin. These ingredients promote cell attachment and proliferation when applied to a site-specific area that has been previously debrided and prepped. This gel form allows for the clinician to apply EMD conveniently to the affected area and provides good clinical outcomes in the areas where periodontal support is necessary.

Conclusion: This extracted enamel that is obtained from embryonic fetal pigs called EMD is the game changer dentistry has been looking for to prevent tooth loss. EMD allows the soft tissues of the periodontium to rejuvenate which provides better clinical outcomes regarding probe depth, gingival recession, keratinized tissue, and root coverage. EMD has just begun to make its appearance into the dental field and the more readily available it becomes to periodontists, dentists and dental hygienists, the better we will be able to understand the exact potential EMD has on the periodontium.

This study was presented at the Oklahoma County Dental Hygienists' Society Meeting, 2018.

Title: Educating Scouts for the Dentistry Merit Badge

Presenter(s): Nancy Le, DH2; Tiffnie Parrish, DH2

Advisor(s): Lydia Snyder

Abstract:

Goal/Objective: The purpose of this community project was to educate adolescents on the importance of oral health and inform them of the different aspects of dentistry. The objectives were set in place in order to accomplish our goal of educating these individuals while simultaneously helping these adolescents of the Boy Scout community in obtaining their dentistry merit badge.

Methods/Materials: Fifteen boy scout members from Troop 80 participated in this program. This project utilized presentations and multiple hands-on activities in dental education and nutrition counseling. Assessments were administered prior to and after each visit to evaluate dental knowledge of participants. Power-point and visual aids related to dental anatomy, caries process and prevention, oral hygiene and nutrition were among the topics presented. Other themes discussed various equipment utilized in dentistry, while highlighting different career choices in dental profession.

Results: Improvement was noted in all scores after oral health education sessions were presented. The most notable improvement was found with the scouts' understanding of the oral systemic link and its connection to poor oral health.

Conclusions: Upon completion of this community project, the scouts were able to attain the majority of requirements in order to gain their dentistry merit badge. Healthy People 2020 objective of OH-8 in reducing proportion of adolescents who received any preventive dental service was accomplished through education.

Title: Managing Patient Stress in Dental Office

Presenter(s): Mehgane Lewellyn, DH2; Lyndsey Woodworth, DH2

Advisor(s): Tammie Golden

Abstract:

Purpose:

The purpose of this literature review was to examine alternative methods vs. high risk pharmacological interventions to determine what is currently in use and identify those that have been successful in managing and improving patient stress in dental office.

Background:

Dental anxiety is a common occurrence in dental offices and can lead to underutilization of dental care. It is also closely related to pain stimulus and perception of pain. Stressed patients are often uncooperative and create undue stress for dental health professionals, making treatment outcomes complicated and sometimes unsuccessful.

Clinical Significance:

Customizing strategies for individuals to alleviate stress include: behavior modification, psychotherapeutic and pharmacologic techniques to list a few. Pharmacological strategies can create greatest risks, produce undesirable outcomes and are only effective short term. Cognitive or behavioral modified strategies tend to be long term safer solutions that carry little risk. A combination of multiple strategies can also be useful in achieving positive results.

Conclusion:

It is imperative for the dental health professional to integrate strategies as part of treatment if and when necessary for optimal care. These therapies can vastly improve patient acceptance and improve outcomes long term for dental utilization.

Title: Oral Manifestations of Sexually Transmitted Diseases

Presenter(s): Laryssa Lomax, DH2

Advisor(s): Carolyn Hinckle

Abstract:

Purpose: The purpose of this literature review is to inform dental professionals of their role in helping to identify patients with sexually transmitted diseases (STDs) such as human immunodeficiency virus (HIV), human papillomavirus (HPV), and syphilis.

Background: The CDC reports over 20 million new cases of STDs every year with half of those cases being young adults age 15-24, though adults older than 50 years old make up the majority of cases present today. These diseases may be acquired or congenital, potentially affecting the offspring of infected mothers. A lesion may arise in the oral cavity as the first clinical sign of infection and may worsen or spread if not treated properly.

Clinical Implications: Oral manifestations include: candidiasis, ulcers, hairy leukoplakia, warts or papillomas, patches, plaques, tonsillitis, gummas, and Hutchinson's incisors or mulberry molars in children.

Significance: A variety of bodily functions or appearances may be altered, affecting these patients' quality of life. There has been a link between STDs and chronic periodontal disease (CPD) due to an altered oral flora. It is important for dental professionals to be knowledgeable and educate patients on how to prevent CPD from occurring or progressing.

Conclusion: Dental professionals can play a key role in preventing, identifying, educating, and treating patients that present with oral manifestations of STDs. Patients with these infections may require modified dental treatments such as oral hygiene techniques, prescriptions, prophylaxis, non-surgical periodontal therapy, restorative, and endodontic treatments.

This study was presented at the Oklahoma County Dental Hygienists' Society Meeting, 2018.

Title: School-Based Oral Health Education

Presenter(s): Jennifer Loyd, DH2; Sel Hoang, DH2

Advisor(s): Carolyn Hinckle

Abstract:

Purpose: The purpose of this community oral health project is to promote preventive oral health techniques to a 2nd grade class at a local elementary school. The aim of this instruction is to reduce the rate of caries in school aged children. The Healthy People 2020 objective for this community project is OH-1: Reduce the proportion of children and adolescents who have dental caries experience in their primary or permanent teeth.

Methods: A needs assessment was performed to determine the 2nd graders knowledge about oral health. It was determined that the students lacked knowledge about overall oral health. Each session involved educational activities which focused on the importance of nutritional habits, sealants, and fluoride.

Results: Upon reviewing the summative evaluations, it was shown that the 2nd grade students' knowledge of nutritional habits, fluoride supplements, and benefits of sealant placement had improved.

Conclusion: A pre-test/post-test performed by the students showed an increase in their knowledge about oral health. By the end of the 3 session the students were able to demonstrate knowledge about healthy foods for their teeth, the purpose of a sealant, and the benefits/sources of fluoride. The Healthy People 2020 goal was to reduce dental caries experience in primary or permanent teeth and with the knowledge the students gained they will be able to reduce the number of dental caries in the future.

This study was presented at the Oklahoma County Dental Hygienists' Society Meeting, 2018.

Title: Healthcare Professionals Role on a Cleft Lip and/or Palate Team

Presenter(s): Baylee Maroney, DH2

Advisor(s): Marla Holt

Abstract:

Purpose: The purpose of this Literature Review is to educate dental professionals and other healthcare professionals regarding their expertise on a Cleft Lip and/or Palate Team.

Background: Cleft lip with or without palatal involvement is one of the most prevalent orofacial malformations in humans. There is a frequency of this disorder in approximately 1 in 700 live births. This condition can result from genetic mutations, environmental factors, or alcohol and tobacco. Effects on speech, hearing, psychology, and appearance can play a big role in long-lasting adverse outcomes for health and social integration

Clinical Significance: Since these patients tend to have numerous health challenges, some from a syndrome or condition, it is the role of health professionals to collaborate to provide plans of treatment. The collaboration of these health care professionals is called the cleft lip and palate team. This team usually consists of plastic surgery, nursing, otolaryngology, speech pathology, social work, audiology, orthodontics, oral surgery and pediatric dentistry professionals. Other interdisciplinary teams occasionally include ultrasound technicians, counselors, and dieticians.

Conclusion: Therefore, as with any medical condition, especially one that affects newborns, special attention and services are provided. The biggest benefit that a family can receive is the help of a team that is willing to combine their talents and care for a child and their loved ones in this time of distress and fear. This collaborative approach is the perfect method to treat any neonatal medical disorder.

This study was presented at the Western Oklahoma Dental Hygienists' Society Meeting, 2018.

Title: The Emerging Trends in Marijuana Use

Presenter(s): Thuy McCarthick, DH2

Advisor(s): Lindsey Hays

Abstract:

Purpose: With the rising use of cannabis in Oklahoma and its neighboring states, it is likely to be encountered in the dental setting, therefore, clinicians should be aware of all aspects of care for cannabis users.

Background: The use of marijuana has been considered taboo in the past but legalization of cannabis has been gaining greater acceptance for its recreational and medicinal use among individuals worldwide. According to the United Nations Office of Drug and Crime, there has been an increase in use from 37 million people in 2005 to 49 million people in 2015, particularly in the United States.

Clinical Implications: In a clinical setting, the use of non-prescribed drugs can interfere with proper treatment. Studies have linked smoking cannabis to periodontal disease with side effects that include xerostomia, increased presence of *Candida Albicans*, and gingival dysplasia. Alternatively, studies also report that cannabis derivatives have therapeutic benefits against inflammatory diseases including periodontal disease. Cannabis and related substances are being studied and considered as treatment for several diseases such as severe epilepsy, degenerative conditions in AIDS, and nausea in cancer patients.

Conclusion: The number of Americans using marijuana is rapidly increasing. Oklahoma may soon join 30 other states in the legalization of medical marijuana. The strong increase in availability and usage will require dental professionals to address the possible effects of marijuana based on scientific evidence and not on social stigma associated with illegal drug use.

Title: Crohn's Disease and Oral Manifestations

Presenter(s): Madalynne Melot, DH2

Advisor(s): Carolyn Hinckle

Abstract:

Purpose: The purpose of the literature review was to highlight important information about the classification, diagnosis, treatment, and oral manifestations of Crohn's disease.

Background: Crohn's disease is an inflammatory bowel disease that can affect the entirety of the digestive tract and is distinguished by the presence of skin lesions. There are many different forms of classification for this disease and several different presentations of the disease that can be seen outside of the digestive tract. Diagnosis and treatment that are less invasive have evolved over recent years.

Significance to Dentistry: Oral manifestations of irritable bowel diseases, specifically Crohn's disease, have been documented intraorally and pathologically. With increased knowledge of these pathologies and manifestations, dental professionals can be more involved in the diagnosis of the disease.

Conclusions: Dental professionals can play a key role in educating, diagnosing, and providing resources to their patients with Crohn's disease. With increasing evidence linking irritable bowel diseases with oral manifestations and pathologies, it is more imperative for dental professionals to be aware.

This study was presented at the Oklahoma County Dental Hygienists' Society Meeting, 2018.

Title: Rise and Grind: relation between sleep bruxism and psychological stress

Presenter(s): Quynh-Anh Pham, DH2

Advisor(s): Carolyn Hinckle

Abstract:

Purpose: The aims of this literature review are to increase awareness of dental professionals to the symptoms of sleep bruxism, the disease's correlation to stress or stress-related issues, and provide insights on methods to help manage the manifestations of sleep bruxism.

Background: When mastication goes beyond its intended purposes in terms of force, duration, and lack of awareness, destructive potentials are bound to manifest. This act of unconscious grinding, termed sleep bruxism, has been recognized worldwide as a disorder. Sleep bruxism is believed to be a common stress-coping mechanism.

Clinical Implications: Bruxers tend to seek assistance from the dental profession as their initial, if not only, method to manage the symptoms of bruxism.

Conclusions: Educating, counseling, and motivating patients are essential attributes to the success of managing stress-related bruxism. Especially in highly developed or high-stress societies, the prevalence of sleep bruxism is shown to occur more frequently. Dental hygienists are on the frontline in dental practices with the opportunity to greatly impact the care of patients by recognizing and educating patients regarding sleep bruxism.

This study was presented at the Oklahoma County Dental Hygienists' Society Meeting, 2018.

Title: Salivary Diagnostics for Diabetes

Presenter(s): Hepzhi Sam, DH2; Paige Holliday, DH2

Advisor(s): Tammie Golden

Abstract:

Purpose:

The purpose of this literature review was to determine if saliva is a viable option for diagnosing and monitoring diabetes.

Background:

The Center for Disease Control and Prevention statistics report for 2017 stated there are 30.3 million people with diabetes (9.4 % in U.S.), 23 million diagnosed and 7.2 million undiagnosed. Diabetes is commonly detected by use of traditional vena puncture methods that use diagnostic fluids to detect glucose in blood. Sometimes this method can be uncomfortable and create unnecessary anxiety, lowering patient compliance.

Results:

Benefits of salivary diagnostics include: abundance of biomarkers, genetic material and proteins. Advantages also include noninvasiveness, unlimited supply, cost effectiveness and patient comfort. Salivary diagnostics are already being utilized for many diseases such as: periodontal disease, cystic fibrosis, cardiovascular disease and some malignant tumors with much success. Salivary point of care technology (PoC) diagnostics can replace need for centralized lab, offering quick and easy responses to testing on site. Emerging technologies could also involve smart phone based biosensors.

Conclusion:

Dental health professionals can assist physicians more readily in screening processes and utilization of salivary tests could be beneficial in dentistry. More efforts are needed to focus on prevention and control of diabetes as early detection is key in treating diabetes, improving outcomes and quality of life

Title: Barriers to Dental Care in Children

Presenter(s): Alexys Shadowens, DH2

Advisor(s): Marla Holt

Abstract:

Purpose: The purpose of this literature review was to identify barriers that limit children from receiving dental care.

Background: The American Academy of Pediatrics considers dental caries to be the most common chronic disease within the childhood population. In a study, 27% of children had poor oral conditions, 18% experienced toothaches or caries and 21% hadn't see a dentist within the past year. Children with multiple risk factors influencing access to care are more likely to suffer from poor oral conditions. Low socioeconomic status, lack of oral education in parents, and decreased availability of dental care facilities are some of the factors that limit children's access to care.

Significance: If untreated, poor oral conditions can lead to other health problems in children. Systemic health disorders, chronic pain, and reduced performance in daily activities can be linked to oral diseases such as caries or infection.

Conclusion: Dental healthcare professionals must be aware of this gap in access to care. A multifactorial approach is needed when addressing this deficit. Promoting oral health education and increasing community-based programs is imperative to decreasing barriers that effect children's dental care.

This study was presented at the Western Oklahoma Dental Hygienists' Society Meeting, 2018.

Title: Preventive Dentistry in Pediatric Populations

Presenter(s): Olivia Stockam, DH2

Advisor(s): Carolyn Hinckle

Abstract:

Purpose: Early childhood caries (ECC) is a widespread chronic disease affecting many children across the world. Early intervention is essential to preventing disease and obtaining oral health. Preventive needs of this young population are not being met. The purpose of this literature review was to determine measures that could be taken to prevent pediatric oral disease.

Background: Parents and caregivers are often unaware that important preventive care for children should start at the time of primary tooth eruption. Age has shown to be a strong indicator on whether a child has seen a dentist for preventive measures with data suggesting children aged 6-12 are 10 times more likely to see a dentist than children aged 2-5.

Clinical Implications: Children are not being seen in dental offices before 3 years of age due to factors relating to both parent compliance and dental office protocols resulting in 23% of children entering school at age 4 who have already developed dental caries. Pediatrician referrals to dental offices are not resulting in pediatric patient care.

Significance/Conclusions: Integrating registered dental hygienists into pediatrician's practices to perform early childhood caries risk screenings, educate parents, provide dental prophylaxes and primary preventive care services has the potential to greatly benefit the population of pediatric patients in Oklahoma.

This study was presented at the Oklahoma County Dental Hygienists' Society Meeting, 2018.

Title: The Relationship between Periodontopathic Bacteria in Dogs and Humans

Presenter(s): Christina Stuehm, DH2

Advisor(s): Carolyn Hinckle

Abstract:

Purpose: The purpose of this literature review is to determine the relationship of canine oral bacteria and human oral bacteria.

Background: Dogs have been known as man's best friend for centuries and continue to live in close proximity or even within the same homes as humans. The periodontium of canines has been under close study in recent years to determine whether the similarities between canine and human oral cavities are beneficial or damaging. Specifically, the transfer of periodontopathic bacteria between canines and humans has been suspected which has implications to human oral health. On the contrary, similarities between the two-species' periodontium have proven to be extremely advantageous as canines are used as study models to provide enhanced preventive, diagnostic, and treatment measures.

Significance: Results of these studies are extraordinary as they have the ability to heighten the field of dentistry, however, more research is needed to confirm the transfer of periodontopathic bacteria from canines to humans and the similarities between oral cavities.

Conclusions: More research needs to be done to determine if and what the relationship is between animal and human oral flora.

This study was presented at the Oklahoma County Dental Hygienists' Society Meeting, 2018.

Title: Xylitol: The New Black

Presenter(s): Skyla Walker, DH2

Advisor(s): Lindsey Hays

Abstract:

Purpose: Xylitol is changing the caries prevention model in dentistry. Therefore dental professionals need to understand the dynamics behind this popular alternative to fluoride.

Background: The CDC estimates that 27% of US population have untreated dental caries, with certain ethnic groups as high as 42%. Although there has been a decline in dental caries since the introduction of fluoride in the 1960's, tooth decay is still the most common chronic childhood disease. Xylitol is a naturally occurring sugar alcohol and it has been proven to inhibit the bacteria *Streptococcus mutans*, which is known to cause dental caries. Furthermore, xylitol is readily available in a wide variety of products.

Significance: Current methods of preventing tooth decay focus on strengthening tooth structures in order to better resist bacterial invasion. However, the paradigm is shifting to the possibility of inhibiting the bacterial growth in the first place. Xylitol is a promising alternative to fluoride treatments and is growing in popularity due to its low cost and less toxic side effects. Research suggests that daily xylitol intake significantly lowers caries risk when compared to daily topical fluoride exposure.

Conclusion: Despite years of research and education, caries rates have stagnated in the US population with only slight declination. Xylitol is changing the way dental professional approach dental caries. Due to its wide acceptance in today's culture, xylitol is a promising alternative approach to caries risk reduction.

Title: Oral Parafunctional Habits

Presenter(s): Taylor Walker, DH2

Advisor(s): Carolyn Hinckle

Abstract:

Purpose – The purpose of this literature review is to educate dental professionals on the impact of oral parafunctional habits on our patients oral health.

Background - Oral parafunctional habits are unusual movements of the tongue, mouth, or jaw. These habits affect thousands of children and adults throughout the world. Nail biting, chewing on ice or gum, grinding teeth, tongue thrusting, and mouth breathing are all oral habits people commonly do. Being aware of the signs and symptoms are a great way to stop these habits from occurring or decrease the possibility of them getting worse.

Clinical Implications – Chronic, long lasting complications can occur depending on the severity, duration, and frequency of these habits being performed. Temporomandibular joint pain, tension headaches, tooth sensitivity, malocclusion, anterior overbite, increased overjet, and wearing away of the teeth are all oral manifestations of these chronic habits. In order to help treat these habits, dental professionals need to ask the patient questions and perform thorough intraoral examinations at each visit.

Significance – Due to the numerous amounts of treatment options, it is imperative that dental professionals pick the right option for every patient. Treatment options can include occlusal splints, orthodontic appliances, patient awareness, and mild pain relievers. The growing use for Botulinum Toxin A to treat these habits are shown to be effective when other treatment options have failed.

Conclusion - It is essential for dental professionals to be aware of these abnormal oral habits. With the continuation of further research and experimentation, there is the potential for a better understanding of what truly causes these habits, and the best way to treat them.

This study was presented at the Oklahoma County Dental Hygienists' Society Meeting, 2018.

Title: Bruxism: A Parafunctional Habit

Presenter(s): Darcie Ware, DH2

Advisor(s): Marla Holt

Abstract:

Purpose: The purpose of this literature review is to educate dental professionals regarding the symptoms, etiologies, and treatments of bruxism.

Background: Bruxism is a parafunctional habit defined as excessive teeth grinding or clenching. It affects 20% of the adult population. There are two types of bruxism: horizontal bruxism (grinding) and vertical bruxism (clenching). The parafunctional habit is usually done unconsciously and can have a negative impact on the oral cavity. Studies show that bruxism can lead to acquired periodontal conditions. Hypersensitivity, attrition to teeth, loose teeth, abfraction, tori, disorders of the temporomandibular joint and pain in the masticatory muscles are associated with bruxism.

Clinical implications: The symptoms of bruxism include tooth wear on the occlusal surface, mandibular tori, temporomandibular joint disorder, and headaches. Etiologies include personalities and stress. Treatment options include myofunctional therapy, botox, and dry needling.

Significance: The myofunctional therapy treatment 62.5% of bruxism cases disappeared. The botox treatment was beneficial for 87% of patients with bruxism Their pain was significantly lowered in their temporalis and masseter muscles. The results were more beneficial after the 10-week period than the 5-week period. One study concluded that the dry needling therapy was effective in patients with sleep bruxism and TMD. It significantly lowered pain, tenderness, jaw opening, and jaw function. The down fall of the study was the sample size which was 34 individuals. More research should be done to conclude if dry needling lowers the symptoms of bruxism and TMD.

Conclusion: Bruxism is a common parafunctional habit that has a negative impact on the oral cavity. Dental professionals have an ethical obligation to look for signs and symptoms along with providing treatment options for relief of symptoms related to bruxism. arch perimeter were recorded and evaluated during growth and development.

This study was presented at the Western Oklahoma Dental Hygienists' Society Meeting, 2018.

Title: Interdental Aids and Oral Health

Presenter(s): Selena Wells, DH2

Advisor(s): Carolyn Hinckle

Abstract:

Purpose: The purpose of this literature review is to examine the effects interdental aids have in oral health.

Background: Historically, the toothbrush has been the primary device utilized in the prevention of oral diseases. Research reports that while it is an essential element in maintaining oral health, it is unable to adequately reach the interproximal surfaces between the teeth. Interdental aids such as manual floss, interdental brushes, and water jets are able to reach the interproximal spaces where biofilm collects. Manual floss has received the most attention in removing interproximal biofilm which leads to the reduction of gingivitis, yet many people present with a lack of compliance to daily flossing.

Significance: Manual toothbrushing is 42% effective at biofilm removed. The American Dental Association (ADA) reports that 80% of biofilm can be disrupted with the use of manual floss in conjunction with brushing. Flossing alone shows no significant difference in plaque reduction and gingival inflammation when compared to brushing alone. Interproximal brushes disrupt interproximal biofilm approximately 2-2.5mm beneath the col area with adequate accessible space. Water jets improve the reduction of gingivitis, biofilm, periodontal disease, gingivitis, and inflammatory mediators. The water jet utilized with water resulted in 29% more successful than waxed floss in disrupting biofilm. Irrigating with water and Zinc sulfate showed a significant decline in gingivitis, bleeding, and pocket depths when compared to brushing alone.

Conclusion: Interdental aids play a critical part in the oral health. When used as an adjunct to toothbrushing, microbial biofilm, gingival inflammation, and pocket depths have significantly. For patients who struggle with manual flossing, interdental aids or the water jet may be a better selection.

This study was presented at the Oklahoma County Dental Hygienists' Society Meeting, 2018.

Title: Microscopic and Monumental: Nanotechnology and Dental Hygiene

Presenter(s): Mikayla Williams, DH2

Advisor(s): Lindsey Hays

Abstract:

Introduction: Nanoscience is the analysis and development of an applied science at the atomic, molecular, or macromolecular levels. “Nano” is one billionth of a unit meaning one nanometer is one billionth of a meter. Particles reduced to this scale have dramatically altered properties/behaviors comprising increased hardness, active surface area, chemical reactivity, biological activity, and also changed optical, electrical, and magnetic behaviors. These qualities bring nanoscience to the forefront of precision healthcare making it revolutionary in the advancement of all aspects of dentistry.

Clinical Implications: NT has greatly affected restorative dentistry by contributing to the enhancement of resin-based composites. However, applications in dental hygiene are on the horizon. Utilizing NT, the body’s own immune response can be invoked via an antibody/antigen trigger, thus effectively eradicating dental caries and periodontal disease. Incorporating nanotechnology into toothpaste and mouthrinse will provide the ability to kill harmful bacteria while sparing the normal flora. Furthermore, nanoscience improves the understanding of the pathophysiologic origin of disease, expresses further enhancements in diagnosis, and produces more efficient preventive and treatment options.

Conclusion: Nanotechnology is an exciting development in the world of dentistry. There are many possible uses including nanocomposites, nanosolutions, oral cancer detecting nanomaterials, and nanorobot incorporated dental hygiene products. The use of NT could improve health and use natural resources more appropriately, however, mishandling could lead to negative and ethical consequences. The magnitude of possibilities for nanodentistry is not yet fully understood, therefore cautious research should be conducted to explore the monumental advances nanoscience can bring to the profession.

Title: Oral Manifestations of Autoimmune Diseases

Presenter(s): Paige Wood, DH2

Advisor(s): Marla Holt

Abstract:

Purpose: The purpose of this literature review is to educate dental professionals in detecting oral manifestations that are associated with autoimmune disorders.

Background: The human body can mistake its cells as foreign cells and begin to create antibodies that attack these tissues. This response is an autoimmune reaction and can lead to an autoimmune disease. Currently, there are more than 80 identified autoimmune diseases. Sjogren's syndrome, systemic lupus erythematosus, type I diabetes, scleroderma, Crohn's disease, lichen planus, and rheumatoid arthritis are some common autoimmune diseases and often present with oral manifestations. According to The National Institute of Health, approximately 8% of Americans are living with an autoimmune disease.

Clinical Implications: Oral manifestations can form in the oral cavity long before any exhibitions appear in other areas of the body. Moreover, it is imperative that dental professionals are educated about the unusual oral manifestations and are competent when detecting them during oral exams.

Conclusion: Dental professionals are ethically responsible for providing the best care possible for each patient. This includes overall health as well as oral health. If there is an underlying autoimmune disease that has yet to be detected, dental professionals could be the first to identify the issue and refer the patient to another healthcare provider for their systemic health.

This study was presented at the Western Oklahoma Dental Hygienists' Society Meeting, 2018.

Title: Correlation Between Vaccination Age & HBs Results for the HBV Vaccine

Presenter(s): Savneet Basati, DS3

Advisor(s): Kim Graziano

Abstract:

Introduction: Accidental exposure to blood borne pathogens is a high risk occupational hazard in dentistry. Dental and dental hygiene students at the University of Oklahoma Health Sciences Center (OUHSC) have demonstrated to be at higher risk for blood borne pathogen exposures when compared to students from other health-care careers (IR=4.3/100). Students enrolled in the College of Dentistry are required to provide an HBs titer to determine the presence of antibodies. Over the past few years, an increase in the number of negative titer results in students vaccinated for hepatitis B (HBV) at birth has been observed.

Purpose: The aim of this cohort study is to determine if there is a direct correlation between HBV vaccination age and negative titer results in the dental school population at OUHSC (N=322).

Methods: Descriptive and inferential statistics were performed (292 complete student records) to determine correlations between age of first HBV vaccine and titers.

Results: The results revealed a statistically significant relationship between age at initial HBV vaccine and HBs titer results, $p < 0.0001$. The descriptive results showed students who received the HBV vaccine from 1-6 months had a negative titer 68.3% of the time. The students who received the first vaccine from 7-12 months of age, the negative titer results dropped dramatically to 22.3%. Those students who received the initial dose of the vaccine over the age of 13 had a 96.6% positive titer result.

Conclusion: The results of this study indicate there is a relationship between age of the first HBV vaccine and titer results. This may imply an HBV booster may be recommended at a later age. Another proposal is for all entering health care students have an HBs titer prior entering their prospective program.

This study was supported by a grant from the J. Dean Robertson Society.

Title: The Prevalence of Periodontal Disease Among Electronic Cigarette Users

Presenter(s): Tanveer Singh Buttar, DS3

Advisor(s): Karen Luce

Abstract:

Objective: Use of Electronic Nicotine Devices (ENDs), also known as electronic cigarettes, is a popular alternative to conventional cigarette use. While smoking tobacco is well established as a major risk factor of periodontitis, the effects of ENDs on the periodontium are largely unknown. The aim of this study was to investigate whether an association exists between use of ENDs and periodontal disease.

Method: A total of 158 patients, age 18 and older, screened in the College of Dentistry Oral Diagnosis Clinic at the University of Oklahoma Health Sciences Center were surveyed between June and August of 2017. Dental students assessed and discussed diagnosis with participants. Participants then completed the survey regarding tobacco and END usage, and periodontal history. Aggregated data were analyzed using Pearson chi-squared tests of cross-tabulations.

Results: END users were more likely to be Caucasian (users 93% vs. non-users 69%, $p=0.011$) and younger in age (59% users under 45 years vs. 33% non-users under 45 years, $p=0.010$). END users were much more likely to be current (78% vs. 22%, $p<0.001$) or previous (96% vs. 32%, $p<0.001$) tobacco smokers. Periodontal disease was more prevalent in END users (90% vs. 79%, $p=0.17$) albeit not significantly. However, this is confounded with concurrent use of smoking tobacco. Among non-smokers, periodontal disease was more prevalent in END users (100% vs. 77%), however, this was again, not significant ($p=0.19$), and with very few END users ($n=6$).

Conclusion: This suggests periodontal disease may be more prevalent in END users than non-users.

This study was supported by a grant from the J. Dean Robertson Society. Statistical analysis was supported via funding provided by National Institutes of Health / National Institute of General Medical Sciences grant 1U54GM104937. This study was presented at the 2018 AADR General Session and Exhibition.

Title: Nutritional Literacy, Oral Health Status, and Dietary Intake

Presenter(s): Meridith Corwin, DS2

Advisor(s): Mariam Gawargi, Marsha Beatty

Abstract:

Studies have shown that an individual's nutritional intake may be suspect in oral diseases. However, it is less widely discussed that an individual's viable nutrient-rich options might decrease as their oral health and ability to chew comfortably diminishes. The study's aims were to correlate oral health status with dietary nutritional intake, while taking nutritional literacy into account. Subjects in the study included men and women who were Caucasian, Latino, or African American from age 20 to 70. Demographics were collected to examine any other correlations with oral health and nutrition. Oral health was quantified using a DMFT index, which records the number of decayed, missing, and filled teeth in a permanent dentition (DMFT). Nutritional intake was recorded with a one page 6-day food diary given to the subject. Third, each individual was given a nutritional literacy scale survey—developed and tested by James Diamond, MD, at Thomas Jefferson University—sentences with multiple choice options to complete declarative statements about general health nutrition. In analysis, the food diary was excluded due to complications in translating the responses into usable data in time to compare. In a univariate regression model, only a few significant correlates were found. Race turned out to be the only aspect correlated with the survey score: the average non-white score was 3.23 points lower than for white, with a p value of 0.0122. This indicates a lower health literacy in general among English-speaking non-whites compared to whites, shown in a recent study by ND Eneanya et al. (*J Health Care Poor Underserved*. 2016; 27(3): 1427-1440). Secondly, age was the only correlate to DMFT score: the average DMFT increases by 0.20 each year, with a p value of 0.0107. Which suggests that with increasing age, functional dentition decreases, and may play a role in proper nutritional intake.

This study was supported by a grant from the J. Dean Robertson Society.

Title: Retention of sealants in Young Permanent Teeth-A meta analysis

Presenter(s): Srujani Reddy Gadusu, DS3

Advisor(s): Kevin Haney

Abstract:

This study has been focused on the retention of sealants in the newly erupted permanent teeth of younger children. Axium is the dental electronic health record, which is used in the Oklahoma University College of Dentistry, where it can run individual patient records. We have collected the Axium data and analyzed it based on the age group to determine the relation between the age and sealant retention capacity. Success and failure of individual teeth or patient case for the sealant retention based on age group has been identified from previous Axium data.

According to the literature review, the procedures like enameloplasty, air abrasion, laser, bonding agent were performed prior to the sealant application. In all these procedures, the results are almost similar as with the normal sealant application without any additional steps. This indicated that isolation plays a key role in sealant retention. We have accessed and analyzed a total of 991 sealants from Axium. The codes used in the procedure are de-identified. For the first-time previous patient data was collected based on the codes used for the sealant application and the codes for the re-application due to prior treatment failure. This information was used for program planning and enhanced outcome. The collected data from previous Axium records has been analyzed and we found significantly higher number of sealant failures in higher age group (9-11yrs) children than the lower age group. The data is presented as bar charts with statistical significance.

This study was supported by a grant from the Delta Dental of Oklahoma Foundation.

Title: Polymerization and Disinfection on Wettability of Alginate Substitutes**Presenter(s):** Brittany Hand, DS2**Advisor(s):** Sharukh Khajotia, Fernando Esteban Florez

Abstract:

Alginate substitutes are a relatively new impression material category, and little is known about their surface properties. *Objectives:* To compare wettability of four fast-set products during and after polymerization, and after disinfection. *Methods:* Eight specimens each ($\approx 55 \times 20 \times 2$ mm) of alginate substitute products AlgiNot (AN; Kerr Corp.), Algin-X Ultra (AX; Dentsply Sirona), Free Algin (FA; Zhermack SpA), and Xantasil (XL; Kulzer) were fabricated. A distilled water drop ($8 \mu\text{L}$) was dispensed on each specimen in a contact angle goniometer (OCA15-Plus, Future Digital Scientific Corp.) within 45s after mixing (Unpolymerized state). Digital images of axisymmetric sessile drops were recorded (5 frames/s, 1 min, $37 \pm 1^\circ\text{C}$). Each specimen's lower half was immersed in Dispatch disinfectant (25 mL, 15 min immersion; Disinfected state), whereas the upper half was not (Polymerized state). Contact angle measurements of the latter states were obtained at $25 \pm 1^\circ\text{C}$ after 30 minutes. Contact angle values were calculated at drop placement (θ_{INITIAL}) and after ≈ 1 min (θ_{FINAL}). Data were statistically analyzed (ANOVA, *post hoc* SNK tests; $\alpha=0.05$). *Results:* Product * state interaction was statistically significantly different for θ_{INITIAL} and θ_{FINAL} (both $p < 0.0001$). Mean \pm S.D. values (degrees):

| State | AX | | FA | | XL | | AN | |
|---------------|-----------------------------|----------------------------|---------------------------|---------------------------|---------------------------|-------------------------|-----------------------------|----------------------------|
| | θ_{INITIAL} | θ_{FINAL} | θ_{INITIAL} | θ_{FINAL} | θ_{INITIAL} | θ_{FINAL} | θ_{INITIAL} | θ_{FINAL} |
| Unpolymerized | 145.47 \pm 1 3.27 A | 120.56 \pm 1 .13 A | 125.87 \pm 2 2.12 A | 46.84 \pm 14 .74 B | 132.62 \pm 1 3.22 A | 117.67 \pm 6 .05 A | 142.54 \pm 1 6.02 A | 62.29 \pm 16 .64 A |
| Polymerized | 123.01 \pm 6. 22 B | 101.12 \pm 2 .56 C | 143.69 \pm 1 4.80 A | 36.77 \pm 2. 00 C | 119.07 \pm 1 0.05 A | 105.85 \pm 2 .18 B | 123.89 \pm 1 1.86 B | 45.90 \pm 2. 23 B |
| Disinfected | 122.81 \pm 6. 39 B | 106.75 \pm 1 .35 B | 143.05 \pm 1 4.68 A | 60.04 \pm 0. 70 A | 132.58 \pm 1 4.77 A | 108.21 \pm 1 .53 B | 123.90 \pm 1 0.48 B | 47.27 \pm 1. 47 B |

Capital letters in each column denote different SNK rankings ($p < 0.05$).

Conclusions: Wettability at drop placement differed depending on the alginate substitute product and differed among the three states of each product. All products demonstrated a non-linear reduction in wettability from θ_{INITIAL} to θ_{FINAL} .

This study was supported by a grant from the J. Dean Robertson Society. Materials for this study were graciously provided by the respective manufacturers. This study was presented at the 2018 AADR General Session and Exhibition.

Title: Evaluation of Intraoral Sensors Simulated Occlusal Caries Detection

Presenter(s): Steven Hassenplug, DS2

Advisor(s): Ji Li, Farah Masood

Abstract:

Aim: To compare the diagnostic accuracy of three different digital intraoral x-ray sensors for detection of simulated occlusal caries.

Methods: 120 non-carious molars were obtained. Simulated carious lesions were prepared on 90 teeth with #1/8, #1/4, #1/2 round carbide bur in either the mesial, central, or distal pit. The remaining teeth were left as controls. Each tooth was coded and location of simulated caries was noted. Then teeth were mounted in groups of 3 in plaster blocks. All blocks were imaged with the following three sensors: Carestream, Dexis, and Planmeca using the Planmeca x-ray unit with a 12- inch beam indicating device and an optical bench with a standardized technique. Four raters evaluated all the radiographic images, twice, in two sessions. Raters scored the presence or absence of simulated occlusal caries. Sensitivity of each sensor was calculated. Inter-rater and intra-rater reliability was also computed.

Results: The sensitivity of the three sensors is as follows: PlanMeca 81.39%, Dexus 78.75% and Carestream 46.67%. PlanMeca sensor had the highest sensitivity. These sensitivities were found significantly different among 3 sensors ($P < 0.0001$). Intra-rater ability is as follows, rater 1: the strongest agreement between the 1st and repeat reading was using PlanMeca ($\kappa=0.77$); rater 2: the strongest agreement between the 1st and repeat reading was using Dexis ($\kappa=0.45$); rater 3: the strongest agreement between the 1st and repeat reading was using Dexis ($\kappa=0.76$); rater 4: the strongest agreement between the 1st and repeat reading was using Dexis ($\kappa=0.87$). Inter-rater reliability was found to be Carestream $\kappa = 0.33$, Dexis $\kappa = 0.44$, and PlanMeca $\kappa = 0.34$.

Conclusion: Diagnostic accuracy of the PlanMeca sensor was the highest this study. Dexis was only 2.64% lower in sensitivity. Inter-rater and intra-rater agreement was highest with the Dexis sensor.

This study was supported by a grant from the J. Dean Robertson Society.

Title: Maxillary Sinus Septa and Incidental Findings: A CBCT Analysis

Presenter(s): Tarandeep Pannu, DS3

Advisor(s): Farah Masood

Abstract:

Introduction: Maxillary posterior teeth are often lost due to dental diseases. Surgical implants are one of the choices for tooth replacement. In order to proceed with the surgery and to avoid possible complications, the dentist must have thorough knowledge of the anatomy of the maxillary sinus and the surrounding structures, any anatomical variations and incidental findings that may be encountered in this region.

Aim: To investigate the prevalence, location, morphology and orientation of maxillary sinus septa and to study the prevalence of the incidental findings within the maxillary sinus by using the Cone Beam Computed Tomography (CBCT).

Material and Methods: Selected CBCT scans made at the Oklahoma University College of Dentistry were evaluated. CBCT were taken using Planmeca Promax 3D machine. Images were interpreted using the Romexis Planmeca software. The maxillary sinuses were evaluated for presence or absence of septa and incidental findings. Total 129 maxillary sinuses were viewed.

Results: We found 89 (68.9%) septas in 129 sinuses. Among the total septa, 1 was in the anterior region, 88 (68.2%) were found in the posterior region. The directional analysis showed 22 (17%) septa in buccopalatal position, 67 (51.9%) in mesiolateral position. For incidental findings, mucosal thickening was found in 62 (48%) sinuses. The second most common finding was pneumatization, found in 21 (16.2%) sinuses. Other incidental finding was antral pseudocyst and was found in 8 (6.2%) sinuses.

Conclusion: Three dimensional CBCT scans can provide important information, which can help in the surgical treatment planning. The precise planning can aid the clinician in avoiding future complications.

This study was supported by a grant from the J. Dean Robertson Society.

Title: Canal Transportation: Examination of Three Ni-Ti Rotary Systems

Presenter(s): Cooper Pasque, DS3

Advisor(s): Suhair Jambi, Sharukh Khajotia

Abstract:

Objectives: The objective of this study was to measure the effect of three instrumentations with the same rotary file on the angle of simulated J-shaped canals in resin blocks and to compare changes in canal angle caused by different Ni-Ti rotary systems

Methods: Thirty-six resin blocks (Endo Training Bloc; Dentsply Maillefer, Switzerland) were instrumented with three file groups: Vortex Blue (Dentsply Tulsa Dental Specialties, USA), and EdgeSequal Sapphire and EdgeEvolve (EdgeEndo, USA). Digital images of the blocks were taken before instrumentation (I0) and after three successive instrumentations (I1 through I3) with an Olympus SZX-12 stereomicroscope and Spot digital camera. Images were compared for transportation in terms of change in canal angle using the Schneider method and Image J software. Mean canal angle produced by each file group, and change in canal angle between successive instrumentations ($D1 = I1 - I0$, $D2 = I2 - I1$, and $D3 = I3 - I2$) were individually analyzed using Repeated Measures ANOVA tests (SAS software; $\alpha=0.05$). One-factor ANOVA was used to determine differences in canal angle among the file groups at each instrumentation ($\alpha=0.05$).

Results: There were no statistically significant differences among the mean canal angles of the file groups at each instrumentation ($p>0.05$). The results of the Repeated Measures ANOVA demonstrated a statistically significant difference among mean canal angles at successive instrumentations ($p<0.0001$), but not among the file groups tested ($p=0.62$). There were, however, no statistically significant differences among the mean change in canal angle values of the three file groups after successive instrumentations ($p=0.22$).

Conclusions: The three groups examined in this study did not differ significantly with the degree of transportation they produced in the resin block over the course of three instrumentations. Instrumenting the canal three times did not produce a significant degree of transportation in any of the three file groups.

This study was supported by a grant from the J. Dean Robertson Society.

Title: Esthetic effect of abutment material and cement type on e.max™ crowns

Presenter(s): Garrett Bush, Postgraduate

Advisor(s): Phoebe Vaughan, Lars Bouma

Abstract:

Dental implants are continuing to be more widely used for restoring edentulous spaces. One of the most difficult tasks for clinicians to overcome is creating an implant restoration in the anterior maxilla that emulates natural dentition with superior esthetics. By examining the effect milled custom abutment material and cement type have on the color properties and overall esthetics, one may be able to better harmonize the final implant prosthesis with the adjacent existing dentition. In this study, a standardized #9 lithium disilicate (e.max™) crown was seated onto three different types of Atlantis™ custom abutments: monolithic zirconia with a titanium fixture, titanium, and nitride-coated titanium. Each crown and abutment combination was luted together using four different cement materials (GC FujiCem™ 2, Kerr TempBond™, Kerr TempBond Clear™, and Premier® Implant Cement™), each containing slightly different color characteristics. The effect these combinations had on shade fastness was examined using both in vitro and in vivo models. The combinations using monolithic zirconia abutments yielded the best esthetic outcome. By successfully determining which abutment and cement combination yields the most accurate shade match, one might be able to utilize a lithium disilicate implant restoration in the anterior esthetic zone with very predictable results.

Title: Treatment of Intrabony Defects with GTR and EMD

Presenter(s): Aaeshah Alkanderi, Postgraduate

Advisor(s): Tapan Koticha

Abstract:

Periodontal regenerative technologies can be applied to improve long-term clinical outcomes of teeth that are periodontally compromised by intrabony defects. This clinical case outlines and describes guided tissue regeneration in combination with enamel matrix derivative to manage such defects.

A 21-year-old healthy male was referred for periodontal consultation concerning severe bone loss localized to #3, 14, 19, 30. Scaling and root planing was completed by the referring dentist. Patient was presented with 9-11 mm probing depth and 1-2 wall wide and deep intrabony defect.

The procedure involved full thickness flap reflection following sulcular incisions involving teeth #3, 14, and 19. Following granulation tissue removal, root surfaces were instrumented and conditioned with 24% EDTA. Demineralized freeze dried bone allograft was mixed with enamel matrix derivative and packed into the defects. Non- cross linked collagen membrane was used to protect the bone graft around teeth #14 and 19. Tooth #3 received titanium reinforced dPTFE membrane.

This attempt for regeneration resulted in pocket reduction and complete radiographic bone fill around teeth #14, 19 and ~80% fill around #3.

Title: Treatment of multiple recession with tunneling technique

Presenter(s): Abdulwahab Alkandari, Postgraduate

Advisor(s): Tapan Koticha

Abstract:

Periodontal plastic therapeutic surgical techniques are used to treat gingival recession within the esthetic zone, surgical protocols have been described to achieve root coverage successfully. This clinical case outlines and describes the tunnel technique with an allograft for the coverage of multiple adjacent gingival recessions.

A 23-year-old female was referred for periodontal consultation, concerning her multiple lower anterior mandibular dentition recessions. The patient was concerned about the esthetics of her smile and the health of her gum, she was presented with multiple Miller class I & II recession on esthetic zone of maxillary and mandibular dentition.

The surgical technique is based on the construction of a tunnel under the gingival tissue by means of a sulcular incision beyond the mucogingival line without incising the papillae. An allograft was introduced through this tunnel, covering the adjacent gingival recessions. A suturing technique to allow this graft to slip through the tunnel under the gingival tissues and to secure and stabilize the graft, and move the entire gingiva-papillary complex coronally, covering the recessions is described.

The use of this surgical procedure allows the treatment of multiple adjacent recessions in a single procedure with adequate early healing and highly predictable root coverage results.

Title: Post-Extraction Guided Bone Regeneration: Case Report

Presenter(s): Matthew Black, Postgraduate

Advisor(s): Edmund Braly, Neil Glass

Abstract:

Guided bone regeneration (GBR) has long been acknowledged as an effective method in the management of localized defects associated with implant placement. The principles of GBR allow the surgeon to achieve ideal implant positioning based on the final restoration to allow for appropriate form, function, and esthetics. In particular, the literature has demonstrated the successful treatment of dehiscence and fenestration type defects with GBR at the time of implant placement. This case report demonstrates successful immediate implant placement using the principles of GBR for a dehiscence defect following extraction of a maxillary right first premolar in a healthy 62 year-old female. The properties of different bone grafting materials and barrier membranes as it relates to the desired outcome along with surgical techniques are discussed.

Title: Materials for fixed implant prosthesis in patient with parafunction

Presenter(s): Kelley Carlson, Postgraduate

Advisor(s): Phoebe Vaughan

Abstract:

There are many different materials that can be used when planning an implant supported fixed dental prosthesis. Most commonly is the metal-acrylic hybrid. Others include monolithic zirconia, porcelain-veneered zirconia and retrievable crown prostheses. The metal-acrylic hybrid limitations are increased tooth wear, tooth debonding and fracture, and fracture of the veneering acrylic. Monolithic zirconia has become popular for implant-supported prostheses because it has desirable chemical properties, high mechanical strength, and can be incorporated into digital workflow. The purpose of this study is to analyze the best material to be used for a fixed implant prosthesis in a patient with severe parafunctional habits. A patient presented with a history of fracturing multiple metal-acrylic hybrids. Parafunctional habits were noted as well as fracture of the acrylic resin on the prosthesis. The new treatment plan was to remake the fixed implant prosthesis with monolithic zirconia due to its high mechanical strength. The prosthesis spans from tooth #5-14 and opposes a combination of implant supported prostheses and natural dentition. It is expected that the final restoration will have superior mechanical strength compared to the metal-acrylic hybrid and help withstand the high occlusal forces from the patient to prevent fracture. Creating implant-protected occlusion and maintaining the restoration with an occlusal guard is important. When restoring an implant supported fixed dental prosthesis, it is important to choose the correct materials on a case-to-case basis. In a patient with parafunctional habits and an opposing dentition of implants and natural teeth, it is beneficial to choose material of high strength to minimize fracture for long-term success of the prosthesis.

Title: Iliac Crest Graft Facilitating Dental Implants Following Ameloblastoma

Presenter(s): Myles Davidson, Postgraduate

Advisor(s): Alan Miyake

Abstract:

Ameloblastoma is a tumor of odontogenic origin, and although considered to be benign, can cause significant distortion of the facial skeleton and surrounding structures. The destructive nature of this neoplasm presents significant challenges for restoration of form and function following tumor removal. We present a seventeen-year-old male with left mandibular ameloblastoma who underwent tumor resection, rigid fixation, and immediate defect reconstruction using a posterior iliac crest harvest. Pre-surgical computed tomography was used for fabrication of a cutting guide and resorbable bone crib to ensure ideal resection and graft placement. Due to concerns for neural involvement with ameloblastoma, as recently detailed by Engelbrecht et al. (*Br J Oral Maxillofac Surg* 51:757-761), the inferior alveolar nerve was not preserved. Ideal bony dimensions in the horizontal and vertical dimensions were able to be successfully restored, and these results have been successfully maintained for six months following surgery without any major complications. This case highlights an accurate method of defect reconstruction which will facilitate future implant placement and return to function.

Title: Assessment of Pre-Prosthetic Orthodontic Referrals from Dentists

Presenter(s): Collette Edwards, Postgraduate; Marni Russell, Postgraduate

Advisor(s): Phoebe Vaughan

Abstract:

Background: Aberrant tooth alignment and uneven gingival levels can be corrected with orthodontic therapy as pre-prosthetic treatment (PPT), if indicated, for potentially better outcomes. This treatment, including intrusion and extrusion of teeth, is increasingly indicated for enhanced restorative results in the “full rehabilitation patient.”

Purpose: This study aimed to evaluate the frequency of PPT referrals, identify the most common reasons adult patients reject PPT, and investigate techniques to increase case acceptance.

Methods: A six-question survey was sent via email link to all general dentists and prosthodontists in the 2017 Oklahoma Dental Association directory (1,100 dentists).

Results: There was a 13.3% (N=146) response to the survey. Most respondents have made a referral for PPT (n=125). In an average month, most dentists are either sending 1-2 patients for PPT referrals (n=75), or no referrals (n=59). Many dentists estimate that 0-25% of the adult patients referred to PPT accept and proceed with treatment (n=56), and the most common reason for rejecting treatment was financial objections (n=82).

Conclusion: The majority of respondents have referred patients to PPT. Respondents reported a variety of referral frequencies and patient age ranges for PPT. Less than half of patients referred for PPT proceed with orthodontic treatment, and finances were the most common reason to reject this treatment. Dentists who are successful in their referrals for PPT usually emphasize to the patient how important the treatment is for an ideal restorative and esthetic outcome; some dentists will not continue to treat patients unless they agree to PPT.

Practical implications: Dentists should familiarize themselves with reasons to refer more adults for orthodontic therapy prior to prosthetic rehabilitation. Treating the right patients with orthodontic therapy will improve esthetic and functional outcomes, thereby benefiting patient care.

Title: Immediate Implant Placement Following Extraction of Posterior Tooth

Presenter(s): Mohammed Felemban, Postgraduate

Advisor(s): Tapan Koticha

Abstract:

Immediate implant placement to replace multi-rooted molar is associated with a series of site-specific anatomical challenges, including implant bed preparation in the presence of interradicular bone septa. In some cases, the osteotomy drill may be deflected from the surface of the interradicular septa, making ideal implant positioning difficult.

A 44 years old male presented with carious and fractured crown #30. His chief complaint was “I want an implant to replace my broken tooth as soon as possible”. The fracture lines were at the gingival level. The tooth was deemed to be non-restorable. Periapical radiographs shows that tooth #30 has a divergent root with no periapical radiolucency. A cone beam computed tomography (CBCT) scan was taken to shows the available alveolar bone volume for implant placement. Immediate implant placement was planned utilizing **Rebele et al (2013)** technique named “Pre-extractive Interradicular Implant Bed Preparation”. A surgical guide was used to perform the osteotomy through the tooth structure to place 4.8 x 12 mm bone level implant. The remaining roots were extracted before the final drill. The implant was placed and sockets were grafted using deproteinized bovine bone minerals (DBBM) and covered with an amnion-chorion membrane. Continuous non-resorbable sutures were used to secure the site. The implant was exposed and restored at 6 months following placement.

This case report is to present Pre-extraction implant site preparation for immediate implant placement in a mandibular multi-rooted molar.

Title: Role of Bone Morphogenetic Protein 6 in Primary Sjogren's Syndrome

Presenter(s): Arif Karim, Postgraduate; John McCarthy, Postgraduate

Advisor(s): Phoebe Vaughan

Abstract:

The purpose of this literature review is to inform the scientific community about research involving primary Sjogren's syndrome (SS), an autoimmune disorder that is characterized by the loss of function of secretory epithelia within lacrimal and salivary glands. It will focus on recent findings regarding the signaling pathway and the development of novel treatment modalities. Despite being one of the most frequent autoimmune disorders diagnosed in the United States, the etiology of primary Sjögren's syndrome (pSS) is still unclear. The resulting xerostomia can negatively impact quality of life by making the oral environment susceptible to tooth decay and periodontal disease. A recent study has shown that bone morphogenetic protein 6 (BMP6) is over-expressed in the salivary glands in over 50% of patients with pSS and is linked to a decrease in salivary gland function. The present work also reveals that aquaporin 5 expression, a water channel critical for salivary gland fluid secretion, is regulated by BMP6. This finding led to the development of a therapy that increases water permeability of the glands to restore salivary flow. Utilizing immunofluorescence imaging techniques, it was discovered that BMP6 functions through ALK 2 and ALK 3 receptors, which leads to the phosphorylation of SMAD 1/5/8 transcription factors that ultimately alters gene expression within the nucleus. Inhibitors for ALK 2 and ALK 3 were developed and tested to examine their ability to block BMP6 signaling. When human salivary gland cells were treated with these inhibitors, it resulted in decreased BMP6 signaling and increased AQP 5 which led to a recovery of fluid movement. Treatment with BMP6 inhibitors has been shown to reverse loss of function within the salivary gland as well as decrease inflammation in mouse models. The current research suggests that BMP6 inhibition is a promising approach to the treatment of xerostomia in primary Sjogren's patients.

Title: Implant Rehabilitation of the Severely Atrophic Mandible: A Case Report

Presenter(s): Justin Pisano, Postgraduate

Advisor(s): Edmund Braly

Abstract:

Prosthetic rehabilitation of the edentulous mandible can be challenging due to the many anatomical interferences with a prosthesis. After loss of the dentition, the mandible is prone to resorption of the alveolar ridge. The surrounding soft tissues, muscle attachments and tongue prevent adequate seating and stability of a lower denture while functioning. Implants have greatly improved the stability of lower dentures, and implant retained over dentures have now become the gold standard for restoring an edentulous mandible. However, in the severely atrophic mandible, there are numerous challenges to placing implants. Limited bone height, risk of fracture, proximity to the exposed mental nerve, lack of vestibular depth, and thick cortical bone type are some of these obstacles. We present a case of successful implant placement in a severely atrophic, edentulous mandible with a height of less than 15mm. Using bicortical implant placement and careful surgical planning, we successfully placed two implants in the anterior mandible for use with an implant retained overdenture.