Melaleuca alternifolia oil in comparison to Chlorhexidine on microbial counts of Streptococcus mutans. An in-vitro study
Beth Shavlik & Sydney Serp
Thomas M. Petro, Ph.D.
UNMC College of Dentistry, Lincoln, Nebraska

INTRODUCTION
Melaleuca alternifolia oil, more commonly known as Tea Tree oil, has a history of medicinal use, specifically for its anti-inflammatory properties.

The oil is found in eucalyptus leaves, dietary corns, and thymus.

Tea Tree oil is used for its antiseptic properties.
This oil contains chemicals such as 4- and 1,8-Cineole, which contribute to its antiseptic activity.

Streptococcus mutans is the bacteria in the oral flora that contributes to dental caries.

OBJECTIVES
- Determine the antibiotic effect of Tea Tree oil in comparison to Chlorhexidine and Phosphate Buffered Saline solution on the microbial counts of Streptococcus mutans.
- Compare the estimated average colony forming units between treatments.

MATERIALS & METHODS
- This study was done under the supervision of Thomas M. Petro, Ph.D.
- The experiment was carried out in the orthodontics lab.
- Three sets of root treatment were compared for a total of nine bacteria.
- Four Streptococcus mutans in root No. 10 were used in the study.
- Each sample was analyzed by using a microscope.

RESULTS
- The research was conducted using a T-test for significance.
- The sample size was 30 for each group.
- The data was analyzed using a one-way ANOVA.
- The results showed a significant difference between the groups.
- The post-hoc test was used to determine which group was significantly different.

CONCLUSIONS
- Tea Tree oil showed the greatest efficacy in the treatment of Streptococcus mutans.
- Chlorhexidine was the second most effective treatment.
- Phosphate Buffered Saline solution showed the least efficacy.
- Further research should be conducted to verify the results of this study.
Special Thanks

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- Dentsply Sirona
- International College of Dentists
- Lincoln District Dental Association
- Nebraska Dental Association
- Nebraska Dental Hygienists’ Association

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- Mr. Jason Jurca (student member)

Event Schedule & Zoom Links

Frank M. Wentz Student Scientific Program

12:00 - 1:30 p.m.  D3 first round judging  See presentation schedule
- Group 1 - Zoom link
- Group 2 - Zoom link
- Group 3 - Zoom link
- Group 4 - Zoom link
- Group 5 - Zoom link

DH4 first round judging  See presentation schedule
- Group 1 - Zoom link
- Group 2 - Zoom link

12:00 - 2:30 p.m.  Postgraduate judging  See presentation schedule
- Zoom link

1:30 - 3:30 p.m.  D3 final round judging  Zoom link
- DH4 final round judging  Zoom link

Keynote Speaker

3:30 - 4:30 p.m.  Dr. Jeffrey Ebersole  Zoom link

“The Exposome & Periodontal Homeostasis in Aging”

Dr. Ebersole has been a professor and the associate dean for research at the University of Nevada Las Vegas School of Dental Medicine since 2017. He received the IADR award for basic oral science research in 1983, the IADR award for basic research in periodontal disease in 2000, and he served as the president of the American Association for Dental Research from 2011-2012. His CV contains over 300 publications, reviews and book chapters in the microbiology and immunology of oral diseases.  View full bio.

Awards Ceremony

4:30 - 5:00 p.m.  Zoom link

(same as keynote speaker)
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<td><strong>#13 Impact of COVID-19 on Dental Students’ Preparedness for General Dentistry</strong></td>
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<td><strong>#18 The Protective Effects Of Silica On Elastomer-Base Prostheses</strong></td>
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<td><strong>#21 The role of DHHC13 in desmosome function and its effects on cellular adhesion</strong></td>
<td><strong>#19 Color Stability of Flowable Composites Used for Injectable Composite Resin Technique</strong></td>
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<td><strong>#31 The effect of orthodontic treatment with extraction of teeth on the upper airway dimensions and 3-Dimensional morphology: A retrospective radiologic evaluation using Cone beam tomography technique</strong></td>
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<td><strong>#40 Comparison of tensile bond strength of denture reline materials to 3D printed denture bases</strong></td>
<td><strong>#41 Impact of COVID-19 on Applicant Perceived Barriers to Advanced Standing Dental Program (ASDP) Admissions Process</strong></td>
<td><strong>#36 TGF Signaling Leads to EMT through the Depalmitoylation of Desmosomal Proteins</strong></td>
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#14 Exploring Sustainable Dentistry: A Survey of Nebraska Dentists’ Beliefs and Awareness of Climate Change and Eco-friendly Practice
Student presenters: Sydney Armstrong and Jared Smalley
Faculty mentor: Dr. Sarah Lowman

#15 The evaluation of microleakage between two different materials used in pit and fissure sealants: an in vitro study
Student presenter: McKenzie Brown
Faculty mentors: Dr. Adam Woroniecki and Dr. Jennifer Carter (Marshall)

#20 Comparing the accuracy of scanned alginate impressions to that of scanned physical casts
Student presenters: Reese Gebers and Brock Reichardt
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#37 Teaching Sexual and Gender Minority Health in Dental Education: Curriculum Trends in U.S. Dental Schools
Student presenters: Christine Scanlan and Jordan Brozek
Faculty mentor: Dr. Sarah Lowman

#38 Is Student Debt Decreasing the Number of Dental School Applicants?
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#1 In-vitro Study Comparing the Effects of Chlorhexidine and Stellalife® VEGA® Oral Care Rinse on S. mutans and S. salivarius
Student presenters: Jesi Adams and Kayla Bush
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#3 Tooth Loss In Correlation with Neurodegenerative Disease: A Retrospective Study
Student presenters: Katerinalda Mahdi and Brooke Lawson
Faculty mentor: Dr. Shayla Yoachim

#5 The Effect of Charcoal Infused Toothbrush Bristles Compared to a Soft Bristled Toothbrush: An In-Vitro Study
Student presenters: Haley Malnack and Collette Hamersky
Faculty mentor: Lindsay Mundil

#7 The Effects of Coconut Oil Pulling on Teeth Whitening Compared to Water
Student presenters: Megan Biddlecome and Kassi Plock
Faculty mentor: Brenda Utecht

#9 Extrinsic Stain Removal Efficiency between Phillips Sonicare DiamondClean and Burst Sonic Electric Toothbrushes
Student presenters: Shelby Rickett and Haley Hoos
Faculty mentor: Todd Junge

#11 Green Tea versus Black Tea Dental Stains
Student presenters: Kori Fischer and Madison Baumert
Faculty mentor: Amanda Dolen

#2 Erosion Potential of Alternative and Probioti Beverages on Extracted Human Teeth
Student presenters: Mahnaz Khafaji Zad and Sana Daraei Ahwaz
Faculty mentor: Dr. Marianne Day

#4 The Effect of Whitening Dentifrices on Filled Composite Resin
Student presenters: Mollee Lemmons and Ellie Myers
Faculty mentor: Dr. William Johnson

#6 Teeth Whitening: An In-vitro Study Comparing Professional-Grade and Store-Bought Whitening Strips
Student presenters: Taylor Newell and Lexi Pettit
Faculty mentor: Dr. William Johnson

#8 Effect of Fluoride on Remineralization: An In-vitro Study
Student presenters: Haley Stellingwerf and Logan Reynolds
Faculty mentor: Brenda Utecht

#10 An In-vivo Study of Ultrasonic Scaler and Sound Production for the Overall Health of the Hygienist
Student presenters: Gabbi E. Rader and Shae A. Toof
Faculty mentor: Lisa Moravec

#43 The Effect of Interproximal Home Oral Hygiene on Clinical Parameters on Periodontal Maintenance Patients
Kevin Smith, DDS

#44 The evaluation of microleakage between two different materials used in pit and fissure sealants: an in vitro study
Adam Woroniecki, DDS; McKenzie Brown; Jennifer Carter (Marshall), DDS; Holly Roberts, PhD; Bobby Simetich, BSE

#45 Formocresol Pulpotomy vs. Vitrebond Indirect Pulp Therapy: a 5-year retrospective study on dental rehabilitation cases completed under general anesthesia
Jordan Castillo, DDS, Eric Phan, DDS, Bryan Skar, DDS

#46 Interleukin-6 Levels are Elevated in Saliva of Patients with Endodontic Disease
Arif Karim, Timothy Jernberg, Thomas Petro

#47 The effect of interproximal home regimens on inflammatory biomarkers in periodontal maintenance patients
Dr. Grace S. Moore and Dr. Richard A. Reinhardt

#48 Incidence and Cumulative Prevalence of SARS-CoV-2 in Asymptomatic Pediatric Patients
Pollmiller M, Lowman S, Roberts H

#49 Efficacy of Pit-And-Fissure Sealants on Primary Molars
Smith R, Roberts H, Koukol C, Lowman S

#50 Emergency Department and Urgent Care Utilization for Non-traumatic Dental Conditions
Cawley M, Koukol C, Roberts H
Results: Results of this study revealed that erosion was found to be statistically higher in Bubbl'r (p<0.0001). ANOVA was used to determine the significance of the difference of the means. The Bonferroni test was used to compare the different groups. The p-value was used to determine whether the difference was statistically significant. The p-value of less than 0.05 was considered significant.

Conclusion: Considering the significant percent weight loss, we can conclude that alternative drinks (especially Bubbl'r) contribute to the erosion of human teeth. Therefore, it's necessary to educate patients regarding the adverse effects of these drinks as it can be an important factor in eliminating enamel erosion.

#3: Tooth Loss In Correlation with Neurodegenerative Disease: A Retrospective Study
Katerinalada Mahdi and Brooke Lawson
Previous research supports the correlation between neurodegenerative diseases and the loss of teeth. Although there is no clear cause, the correlation can be found in patient populations but may not be so commonly known. The purpose of this research was to determine if this correlation was present in the University of Nebraska Medical Center (UNMC) College of Dentistry patients. Goals of this research were developed from a public health standpoint; assessment of the current occurrence of this correlation, education on the correlation to the patients, and implementation of preventative care based on the information gathered.

Using an IT query in the SALUD patient database, patients from the years 2014 to 2019 were screened using inclusion criteria for patients that had answered YES to the question "Have you ever been diagnosed or treated for any neurological or brain or mental health conditions as outlined below?" and indicated any number of the following: Dementia, Alzheimer’s, or Parkinson's disease. Data about patients of similar sex and age who answered NO to the neurological systems questions in the medical history was collected, as well, to compare the effects of brain function on tooth loss in neurological and neurodegenerative diagnosis.

The results of the study indicated that number of teeth lost in the patients without neurodegeneration was significantly higher than the group of patients in males 72 and 82 compared to the patients that had answered "YES" in the same cohort. This shows that in the data set for the UNMC College of Dentistry Patients, the hypothesis that the patients with neurodegeneration as defined by "YES" to the question would have a greater average of missing teeth was rejected. Although the numbers did not show a correlation occurring widespread in the patient population, this correlation still affects many individuals and must be addressed with preventative care and education.

#4: The Effect of Whitening Dentifrices on Filled Teeth
Mollie Lemmons and Allie Myers
The purpose of this experiment is to determine how Crest 3D White, Sensodyne Extra Whitening, and Arm and Hammer Advanced Whitening will abrade composite resin restorations. 20 Amelogenin composite discs were made. There were five discs assigned to each dentifrice, and to the control—water. The initial surface roughness reflection measurements were taken before treatment. The discs were then subjected to 60 seconds of brushing, a side being one stroke forward and one stroke back, to stimulate 6 months of brushing. Each group of five was brushed with a different dentifrice, Crest 3D White, Sensodyne Extra Whitening, Arm and Hammer Advanced Whitening, or water alone. The surface roughness and light reflection measurements of each composite disc was taken again post treatment. In order for a change in surface roughness to be significant, there needs to be a change of 0.17 in the surface roughness measurements from pre- to post treatment of the variable. No variable groups showed a significant difference. In total, no significant change in roughness was observed. Furthermore, there is a difference of less than 0.58 Pa between Crest 3D white showed a difference of less than 0.05 with Arm and Hammer Advanced Whitening. Crest showed greater than 0.05 when compared to the other dentifrices and the control (water). The radius of 0.5 mm, was used to determine significance between pre- and post-treatment variable groups measuring light reflection. All variables experienced a decrease of 0.5 mm or greater, indicating that they experienced significant change. When comparing the post-treatment light reflection of the variables against one another, we find that the only significant differences existed on the Crest 3D White and Crest Supreme Professional Whitening, and Sensodyne Extra Whitening and water. In conclusion, the abrasion results after one minute of brushing with Crest 3D White, Sensodyne Extra Whitening, Arm and Hammer Advanced Whitening, or water alone were not significant pre- to post-treatment, nor when compared to the control. The light reflection of each variable changed significantly and Crest 3D whitening experienced the least amount of light reflection loss.

#5: The Effect of Charcoal Infused Toothbrush Bristles Compared to a Soft Bristled Toothbrush: An In-Vitro Study
Haley Malnack and Collette Hamersky
The purpose of this experiment was to compare an Oral-B toothbrush with charcoal infused bristles compared to a soft bristles “indicator” Oral-B toothbrush and the abrasive effects it would have on extracted teeth in a laboratory setting. This study contained two groups of twenty extracted teeth soaking in a 0.5% phenol solution with pre and post weights taken to determine the weight loss of each group. Researchers brushed each tooth for four minutes and twenty-nine seconds, which is equivalent to brushing each tooth two times daily for one month. The data showed that the teeth brushed with the charcoal bristles had a larger difference in the mean weight compared to the bristles on the normal Oral-B toothbrush. This shows that there is enough data to show that charcoal infused toothbrush produced more abrasiveness towards the enamel surface.

#6: Teeth Whitening: An In-vitro Study Comparing Professional-Grade and Store-Bought Whitening Strips
Taylor Newell and Lexi Pettit
This study aims to determine if there is a significant difference between Crest 3D White and Crest Supreme Professional whitening strips. Eighteen extracted human teeth were each treated, according to manufacturer’s instructions, with one of two different strips for 20 consecutive days. Teeth strips were each soaked in a 5% Phosphate buffered saline solution at 37°C for 3 hours. The surface roughness and light reflection measurements of each composite disc was taken before treatment. No variable groups showed a significant difference between the two different strips when compared to one another.

#7: The Effects of Coconut Oil Pulling on Teeth Whitening Compared to Water
Megan Biddlecombe and Kassi Plock
Coconut oil pulling has been thought to have beneficial whitening effects on the teeth. The purpose of the study was to examine the whitening effects of coconut oil pulling on the teeth compared to water. The researchers performed the experiment using one ounce of room temperature water, which was labeled Group B and using coconut oil for the other group labeled Group A. In each main group was divided into subgroups of five that received either water or coconut oil for a different number of days. Results of the experiment showed a significant difference between coconut oil whitening effects and water whitening effects. However, there was not a conclusive difference between the different number of days within each main group. Coconut oil pulling has been thought to contribute to the decay of the oral bacteria that received either water or coconut oil for a different number of days. Results of the experiment showed a significant difference between coconut oil whitening effects and water whitening effects. However, there were several other benefits of coconut oil pulling.

#8: Effect of Fluoride on Remineralization: An In-vitro Study
Haley Stellingwerf and Logan Reynolds
The purpose of this study is to determine whether fluoride has a re-mineralizing effect on demineralized tooth surfaces. This is particularly important as demineralization can be detrimental to oral hygiene, and fluoride is considered beneficial to prevent the tooth structure from becoming demineralized. Research included demineralizing the enamel structure of 51 teeth split into three groups of 17. The first group was used as a control. The other two groups were fluoride with NaF or SDF after demineralization. Initial and final measurements were taken using the Caries System, which measures decay and demineralization of tooth structures. Findings from this study show that NaF has higher re-mineralizing potential than SDF. The results show that fluoride is an effective agent for dental caries, and while S. salivarius participates in inhibition (mean radii 0.3625mm S. mutans; 0 mm S. salivarius) and was determined to be ineffective in the management of S. mutans, however has a re-mineralizing effect on demineralized tooth surfaces.
home by means of tooth brushing with electric toothbrushes. The efficiency of stains removal was measured by the Phillips Sonicare DiamondClean and Burst Sonic electric toothbrushes were evaluated in this study. Each toothbrush was subjected to 30 maxillary and mandibular molars. The molars were soaked in an artificial saliva solution for 24 hours before they were subjected to a coffee solution made from Folgers Classic Roast Dark Coffee for four days. Before and after the staining, the Vita Easy shade was used to measure the L*, a*, b* measurements of each tooth. The teeth were then brushed for two minutes, twice a day for six days. The amount of shade was then used to assess the effects of stain removal for each toothbrush. The delta E values were calculated for the two toothbrushes and an ANOVA was used to test if there were differences between them. The results supported that both toothbrushes had significant changes from staining to post-pasting between the two toothbrushes. Both electric toothbrushes have similar effectiveness with respect to stain removal.

#10: An In-vivo Study of Ultrasonic Scaler and Sound Production for the Overall Health of the Hygienist
Gabbie E. Rader and Shae A. Too
The purpose of this study is to evaluate ultrasonic and the ultrasonic combined with the external suction unit to determine if the decibel levels exceed the threshold of 85 dB. Due to COVID-19 restrictions, dental hygienists have needed extra adjustments that produce increased sound and particulate air filtration unit will create more occupational noise induced hearing loss in dental hygienists. The decibels produced by the ultrasonic scaler with the portable handpiece air filtration unit served to identify noise due to the use of the ultrasonic alone. The methods used were a decibel reader which recorded 32 different recordings in a total of 4 rooms on 4 different soundproofs. Results found that the recordings with the HEPA filtration unit were louder than without the HEPA. In conclusion, the estimated decibel results suggest that the recordings contained higher readings than without the HEPA unit.

#11: Green Tea versus Black Tea Dental Stains
Kori Fischer and Madison Baumert
Previous studies have compared the differences in staining on teeth exposed with coffee, tea, and wine. This study’s aim was to specifically different staining effects by green and black tea when they were exposed to green tea and black tea. A total of 26 extracted teeth were used in this experiment. They were divided into two groups: green tea and black tea. A baseline tooth shade was determined and recorded with a VitaEasy Shade, measuring each individual tooth shade. The teeth were scored as having “no” caries, restorations, or cracks. The teeth were then scored as having “no” microleakage or free of caries, restorations, or cracks. The teeth were sampled to evaluate the marginal microleakage of two different materials used as pit and fissure sealants. 50 extracted third molar teeth were obtained from the College of Dentistry’s Oral Surgery department. The teeth selected for the study were intact and free of caries, restorations, or cracks. The teeth were randomly assigned to two groups according to the material used for sealing the pit and fissure (GMS,3E; S, light-cured, fluoride releasing pit and fissure sealant with a unique color-change feature and Beautifil Flow Plus (SHOFU Dental Asia-Pacific Pte. Ltd.), a fluoride-releasing and recharging light-cured flowable restorative material. Both groups received a pit and fissure sealant (no enameloplasty performed prior to sealant placement). After sealant page of two different teeth materials used as pit and fissure sealants: an sealants: an in vitro study
McKenzie Brown; Adam Woroniecki, DDS; Jennifer Carter (Marshall), DDS; Bobby Simetich, BSE; Holly Roberts, PhD
Application of sealants is a safe and effective treatment for the prevention of caries on the occlusal surfaces of permanent molars. The marginal sealing ability of sealing materials is tremendously important for successful treatment. Microleakage is often cited as the passage of bacteria, fluids, molecules, and ions through the tooth-sealant interface, can occur following lack of sealing. This in vitro study was aimed to evaluate the marginal leakage of different dental sealants used as pit and fissure sealants. 50 extracted third molar teeth were obtained from the College of Dentistry’s Oral Surgery department. The teeth selected for the study were intact and free of caries, restorations, or cracks. The teeth were randomly assigned to two groups according to the material used for sealing the pit and fissure (GMS,3E; S, light-cured, fluoride releasing pit and fissure sealant with a unique color-change feature and Beautifil Flow Plus (SHOFU Dental Asia-Pacific Pte. Ltd.), a fluoride-releasing and recharging light-cured flowable restorative material. Both groups received a pit and fissure sealant (no enameloplasty performed prior to sealant placement). After sealant page of two different teeth materials used as pit and fissure sealants: an sealants: an in vitro study

#12: Comparison of the Polishing Ability of 3D Print- ed Dental Base Materials Using Three Different Additive Manufacturing Technologies
Mandy Amberg, Shelby Brown, Dr. Gregory Bennett
The surface characteristics of removable dental prostheses are critical to biofilm accumulation and tissue adherence. Surface roughness can increase the retention of pathogenic microorganisms and decrease surface cleanability, thus emphasizing the importance of polishing. This research was conducted to determine if 3D printed denture materials, using different additive manufacturing techniques, can achieve the same level of polishing ability as conventionally created resin denture materials. To obtain a clinically predictable method of polishing for 3D printed denture materials, three different 3D printing technologies, along with conventional lab fabricated PMMA auto cured resin, were utilized to create ten cylindrical samples in which each of these five types were polished using 1lb, 2lbs, and 3lbs one-step system or the Mitexx course and fine pumice with Acryluster polishing system. The printing technologies used for manufacturing the samples include Stereolithography (SLA), Digital Light Processing (DLP), and Continuous Liquid Interface Printing (CLIP) using the Formlabs USA Form 3BL SprintFry Pre Dental 3D printer, and Carbon M2d printer. Each 3D printed used denture base resin from the same manufacturer (DENTCA) and the samples printed were identically sized cylindrically. After polishing, the surface roughness and surface gloss of each sample were measured and analyzed.

#13: Impact of COVID-19 on Dental Students’ Preparedness for General Dentistry
Ellen Anderson, BS; Yon Sakensa, BSc, MMS; MD: Mariebelle Ayabon, DMD, MS; Joyce A. Barbos- ur, DDS, MBA; Susi Hamilton, MEd; Esvar Kandas- wamy, BDS; Neeraj Panchal, MD, DDS, MA; Rachel Rogers, BA; Joseph Vitolo, DMD, MS, PhD
Objective: The purpose of this study was to determine if and how the COVID-19 pandemic affected dental students’ pre- paredness for general dentistry (GDS) programs/applicants’ preparedness for general dentistry (GDS) programs/applicants’ practice (rural/settings/public health settings).

Methods: To investigate the effect of COVID-19 on students’ preparedness, we conducted an electronic survey directed at students from the graduating classes of 2021 and 2022. This project was granted IRB exemption status.

Results: A total of 37 students completed the survey. De- scentistics were used to analyze the results. For the students who applied to AEGD/GPR programs (minority of re- spondents) one third of the Class of 2022 and one half of the Class of 2021 found the COVID-19 pandemic had not occurred. The majority of respondents indicated they would have applied to the same number of programs or fewer if COVID-19 had occurred. When asked about clinical require- ments, 13 students indicated requirements decreased, while 18 students indicated requirements did not change. Regard- less of race, a majority of students felt not at all confident or somewhat confident in their ability to practice general dentist- ry in private practice, rural, or public health settings. Students of both races, less of race, a majority of students felt not at all confident or somewhat confident in their ability to practice general dentist- ry in private practice, rural, or public health settings. Students of both races, a majority of students felt not at all confident or somewhat confident in their ability to practice general dentist- ry in private practice, rural, or public health settings.

Conclusion: The pandemic appeared to have a negative effect on the class of 2021 and 2022 though, for most students surveyed, clinical requirements didn’t change. Students appeared to have confidence in their ability to practice general dentistry in a private practice, rural, or public health settings. This survey highlights the negative effect of the COVID-19 pandemic amongst dental students’ perception of their training, which has influenced students’ decision in applying to AEGD/GPR programs or beginning practicing as a general dentist.

#14: Exploring Sustainable Dentistry: A Survey of Nebraska Dentists’ Beliefs and Awareness of Climate Change and Eco-Friendly Practice
Sydney Armstrong, Jared Smalley; Jesse Bell, PhD; Azar Abadi, PhD; Sarah Lowman, DDS, MPH
Introduction: Dentistry is a resource-intensive practice that includes consumption of plastics, water, electricity, and chemi- cals. Pollutants. However, few studies have investigated the attitudes and beliefs of practicing dentists regarding climate change. This study aimed to assess dentists’ knowledge and beliefs regarding climate change. The retentions are not occur. The majority of respondents indicated they would not have applied if COVID-19 did not occur. The median p-value after conducting this experiment was 0.0132. This study was conducted to identify the differences between two tooth’s staining. This study concluded that the extracted teeth soaked in black tea had a greater staining effect than the extracted teeth soaked in green tea. This indicates that among people concerned about dental stains, green tea is a better alternative beverage than black tea.

#15: The evaluation of microleakage between two different materials used in pit and fissure sealants: an in vitro study
Dang D, Truc D, Simetich B, Byrne G
Purpose: The purpose of this in vitro study was to investi- gate the effect of cyclic dislocation on the retention of an microlayer on the dentin and free of caries, restorations, or cracks. The teeth were randomly assigned to two groups according to the material used for sealing the pit and fissure (GMS,3E; S, light-cured, fluoride releasing pit and fissure sealant with a unique color-change feature and Beautifil Flow Plus (SHOFU Dental Asia-Pacific Pte. Ltd.), a fluoride-releasing and recharging light-cured flowable restorative material. Both groups received a pit and fissure sealant (no enameloplasty performed prior to sealant placement). After sealant page of two different teeth materials used as pit and fissure sealants: an sealants: an in vitro study
Materials and Methods: The attachments placed on angulation of 0-degrees and 20-degrees implants were placed at different anulations. In this study, we evaluate the retention strength of locators with comparative insertion and removal forces from 0 to 5000 test cycles, for locator attachments at 3 different vertical forces and at a non-angled (Zero-degrees) versus angled (20-degrees), to mimic the duro- lenture attachment system when 2 implants were an overdenture attachment system when 2 implants were attached to a mandible in the anterior region. The retention strength was analyzed with a non-parametric Kruskal-Wallis test.
Aim: This study aimed to analyze the color stability of different restorations in anterior teeth.

Background: There are many resin-based composite materials needed to optimize protective properties, while having limited darkness. A photospectrometer was used to measure the color of silica impregnated vinyl terminated polydimethylsiloxane (12mm x 2mm). After 48 hours, the initial color of each restoration was measured, and the color difference (ΔE) was calculated. The data were analyzed by the One-Way ANOVA test, complemented by the Tukey test.

Results: There was a statistical difference between the compositions of the different flowable resins. Tetric Flowable and Filtek Flowable Supreme presented the highest color stability (ΔE=0.95 and 1.59, respectively). Filtek Supreme and Beautiflow Flow showed lower color stability, being clinically unacceptable (ΔE=3.3). Conclusion: The color stability results suggest that new maxillofacial prosthetic materials that are more life-like to the touch. This study evaluated nanofilled polydimethylsiloxane (PDMS) composites for data manipulation that allows the dentist to invert data of inverted models.

Methods: Ten samples (n=10) of five composite resins (Filtek Supreme Fluid, Tetric Flowable Restorative, 3M ESPE; Tetric Evoceram – Vivadent; Beautiflow Flow Plus – Shofu, Gaenial Universal Flo – GC) were obtained using a Teflon matrix (12mm x 2mm). After 48 hours, the initial color of each restoration was measured using a spectrophotometer with CIEL*a*b* system. In sequence, the samples were aged in a thermocycling machine for 5,000 cycles. After aging, color was measured, and the color difference (ΔE) was calculated. The data were analyzed by the One-Way ANOVA test, complemented by the Tukey test.

Results: There was a statistical difference between the compositions of the different flowable resins. Tetric Flowable and Filtek Flowable Supreme presented the highest color stability (ΔE=0.95 and 1.59, respectively). Filtek Supreme and Beautiflow Flow showed lower color stability, being clinically unacceptable (ΔE=3.3). Conclusion: The color stability results suggest that new maxillofacial prosthetic materials that are more life-like to the touch. This study evaluated nanofilled polydimethylsiloxane (PDMS) composites for data manipulation that allows the dentist to invert data of inverted models.
adjusting for other variables in the regression model, patients with diabetes had 2.35 (95% CI: 1.09, 5.10) the odds of losing at least one tooth during the study period than those without diabetes, patients with Stage 3 or 4 periodontitis had 2.48 (95% CI: 1.29, 4.78) the twice odds of losing at least one tooth than those with a Stage 0 condition. Most often, how they determine which material, and for which procedures they use. The study also took into account the practice setting, specialty, board-certification, years in practice, and the various factors that determine materials used. These factors included: the type of practice, material, material properties, compa- nies’ sales pitch, risk of complications, continued education/men- tor preference, and procedure type. A survey was created and distributed via email to dental providers that were included on the Nebraska Dental Association’s member roster and those that are UNMC alumni. The survey was distributed using Google Forms, which allows for completion and feedback to auto- matically shown in the appropriate graphical representation. Overall, of the providers that responded, most are general dentists and practice in an urban setting. Bone grafting is most commonly done for socket preservation among the surveyed providers. Allograft was the most frequently used material. Procedure type was the most important factor when choosing what material to use overall, but board-certified specialists con- sidered material properties the most important. These results demonstrate a preference for allograft material for most pro- cedures among Nebraska dental providers. However, there is a difference on how providers choose their material based on specialty.

#26: Determining preferred bone grafting mate- rials among Nebraskan dental providers

Nicklaus Hofmaier, Rachel Persson, Dr. Joseph Bavitz

Bone grafting procedures have become common practice for dental providers. However, there are several different types that can be used. Most frequent types are allograft, xenografts, and/or autografts. In addition, other options include autogenous or exogenous growth factors. Many providers have used or at least tried a multitude of materials before deciding on the one they prefer to use most often. This study aimed to determine which materials and, for which procedures they use. It was important to note that when choosing what material to use overall, but board-certified specialists considered material properties the most important. These results demonstrate a preference for allograft material for most procedures among Nebraska dental providers. However, there is a difference on how providers choose their material based on specialty.

Conclusion: Our hope in identifying these stressors which negatively impact to dental providers is to provide knowledge to public health advocates and dental healthcare providers. By doing this, the information can provide awareness for healthcare providers to support these at risk popula- tions or limiting condition that requires medical management, or exogenous growth factors. Many providers have used or at least tried a multitude of materials before deciding on the one they prefer to use most often. This study aimed to determine which materials and, for which procedures they use. It was important to note that when choosing what material to use overall, but board-certified specialists considered material properties the most important. These results demonstrate a preference for allograft material for most procedures among Nebraska dental providers. However, there is a difference on how providers choose their material based on specialty.

#27: How life stressors affect dental service utili- zation in the pregnant women of Nebraska

Isaac Hohman, Laura Jacobs Mckniff, Sarah Lowman, DDS, MPH, Jessica Seberger, MA

Background: Oral health is critical for the overall health and well-being of pregnant women and their unborn children. Peri- odontal disease and its link with adverse pregnancy outcomes, including preterm labor and low birth weight, which increase the risk of poor health among children. Additionally, many studies and experts point that periodontal disease is associated with increased risk of gestational diabetes among pregnant women compared to those without periodontitis. In this study, we seek to identify specific factors relating to “life stressors” that decrease dental service utilization during pregnancy.

Methods: Stressors were broken down into categories so as to group together certain life stressors that occurred in some women’s lives during pregnancy. These categories were: trau- matic stress, partner related stress, environmental stress, and minimal stress and no stress if none of the previous applied to the individual. By analyzing the 2018-2020 Nebraska PRAMS (Pre- mises, Reports, and Measures) data set collected, we set out to identify life events that decrease dental service utilization in order to address oral health care utilization directly and work towards alleviating this issue.

Results: According to the PRAMS data set analysis, dental service utilization showed an overall decrease in pregnant women even with no stressors as compared to pre-pregnancy dental service utilization. Dental service utilization decreased even further in pregnant women with traumatic stress events, partner related stress events, and financial stress.

#28: Pricing differences between Traditional and Digital dentures at UNMC College of Dentistry

Ethan Hoopes, Dr. Gregory Bennett, Dr. Nick Murray

As a student at UNMC we are introduced to the world of digital dentistry in our academic courses and shown its advantages and disadvantages. With shifts towards a newer age in technology it was interesting to see the comparison of traditional fabrica- tion of dentures vs the digital fabrication and the processes that accompanied each. The aim of this study was the compare the financial cost and time spent for each of the two denture making methods at the UNMC college of dentistry. To obtain the pricing for each method it had to break down each of the methods into its individual steps and evaluate what materials would be needed and how much time would be associated with the following steps. I found that the digital fabrication of dentures was 4 appointments including delivery was $1785 while the traditional denture method was 7 appointments and $3430. Both methods incorporate the use of traditional crowns to outweigh the financial advantages of digital dentures as most cases treated at UNMC are done traditionally even though time and monetary advantages align to their favor. Future studies investigating involvement of more digital dentures being fab- ricated would benefit the cost evaluation for the school.

#29: Effects of Electronic Nicotine Delivery Systems (ENDS) liquid on the color stability of Dental Resin Composite

Logan Johnson, Ian Fullinaw, Bobby Simetric, Dr. Mark Beatty

The use of Electronic Nicotine Delivery Systems (ENDS), commonly known as Electronic cigarettes (E-cigs), has increased rapidly over the past 10 years. Due to the explosion of Elec- tronic cigarette usage, limited research has been done looking at the correlation of ENDS and discoloration of composite resin. The purpose of this study is to evaluate the effectiveness of ENDS solution on the color stability of dental resin composite. A total of 20 resin composite disks were split into 4 groups: control, 14% of ENDS solution concentration, and 7% of ENDS solution plus 2% of ENDS. The disks were left in either distilled water (control) or Juul™ vapor solu- tions of different nicotine concentrations for 2 weeks. The disks were placed in a spectrophotometry and the L*a*b* values were re- corded. Data analysis of final outcomes is ongoing.

#30: Printer variability and the impact on resin physical properties, an in vitro study

Heath Ketteler, Isaac Langan, Dr. Gregory Bennett

Background: Digital dentistry is a new and rapidly evolving field. 3D printers are incredibly versatile and cost efficient when compared to milling counterparts. Printable dental materials and restorations have become a growing corner of the market leading to advancements which have begun to challenge tradi- tional restorative processes.

Purpose: 3D printing is only limited by the properties we can achieve with the material we use. The focus of this study is to develop VarseoSmile Crown plus, a hybrid resin designed and marketed to produce final indirect restorations. This product is new to the market, and little has been done in the way of independent research. Due to widespread innovation leading to a large number of new 3D printers companies are not able to test their products on all possible 3D printer and curing sys- tems on the market. Theway a resin is cured can have huge implications on the properties of the final product. The goal of this experimental study is to compare the physical, mechanical, and thermal properties of the VarseoSmile plus samples that have been printed and cured through two different systems. Group 1 was printed and cured using SprintRay Pro 95 and SprintRay Procure, Group 2 was printed using The Vareo XS printer and the Offset by BEGO.

Methods: The experimenters will use SprintRay Pro95 to print samples of appropriate size for each test in two different prints out of the VarseoSmile Crown plus material. Post processing will be completed according to company recommendations with final cure occurring in a Procure. Technicians at BEGO on the same day will print and cure samples using Vareo XS printer and perform the company recommended post processing and final cure using the Offset. ISO 10477-2020 will be fol- lowed to measure more flexural strength along with flexural strength with water sorption and solubility. The average groups of 1 and 2 will be determined and compared for statistically significant difference. The Soisoft software will be used to determine compression and flexural strength. Sorption and solubility will be tested by first desiccating the samples to acquire a weight reference. The samples will then be soaked for 1 week to measure water sorption. Lastly, the samples will be desiccated a second time to acquire a final weight demon- strating solubity. Results will be compared between the sam- ples produced by the two different systems.

Results: Results showed a significant differences in the flexur- al strength (p<0.0021) and compressive strength (p=0.0037) between SprintRay and Bego samples. Although sorption between the groups was not significantly different (p=0.44) the calculated solubility difference was statistically significant (0.005).

Conclusion: It can be concluded that the different printing and post processing systems did have some impact on the solubili- ty, flexural and compressive strength of the final products.

#31: The effect of orthodontic treatment with extraction of teeth on the airways: Dimensions and 3-Dimensional Morphology: A Retrospective radiologic evaluation using Cone Beam tomography technique

Yan Mei, Nagadeepthi Kollipara, Ehsan Mostaghni

Background: Orthodontic treatment with extraction of teeth has been speculated to reduce the upper airway dimension and minimum cross-sectional area. Upper airway assessment...
to analyze the changes after orthodontic treatment has been done with various occlusal interferences. However, no study has implemented a superimposition technique using reliable landmarks to assess changes in the upper airway morphology following orthodontic treatment.

**Method:** The records of 40 patients who received orthodontic treatment with or without dental extractions were retrospectively studied. Pre- and post-treatment upper airways were superimposed on each other using voxel-based registration and fixed coordinate system using 3D Slicer 4.1.1 and ITK-SNAP.

**Results:** Welch Two Sample t-test was used to ensure that there was no statistically significant age difference between the patient groups (p=0.65). Pearson’s Chi-square test with Yates’ continuity was used to confirm no statistically significant difference in sex distribution among the two study groups (p<0.05). Correlation Coefficient (ICC) among the three examiners proved the study to be reliable (ICC value ranging >0.8).

**Conclusion:** Results show that there is no evidence to conclude that orthodontic treatment with teeth extractions would result in reduction of the upper airway dimensions. The results suggest that InVivo Dental Software has the potential to analyze the oropharyngeal airway volumetric and linear dimensions.

**#32: Investigating burnout, grit, and associated factors in dental students**

Tommy Waters, BS; Bridget McKeegan, BS; Sarah Lowman, DDS, MPH; Merlyn Vogt, DDS; Holly Roberts, PhD; Jillian Wallen, BDS, MS

**Background:** The non-cognitive concept of grit has gained traction within the health professions literature as a possible correlate of success among trainees. However, grit is a relatively new concept within dental education and research. Prior grit studies, on the other hand, have been studied across the health professions and implicated in negative outcomes for patients and clinicians alike. Furthermore, as many as one-third of dental students have the choice to participate or not participate in the Medicaid program. It is hypothesized that fourth year dental students at UNMC College of Dentistry will have an increased knowledge and negative attitudes towards participating in Medicaid with patients in the clinic. Fourth year students will have taken courses on public health during school and encountered patients that participate in Medicaid by the time they take the survey, opposed to first year students with potentially less experience and exposure to patients that participate in Medicaid.

**#33: Assessing Impacts of e-Module instruction on SOAP note documentation**

Shyamal Premaraj; Cassandra Nguyen; Elizabeth Beam, PhD, RN; John Reinhardt, DDS; Liz Lyden, MS; Jennifer Kallo, DDS

**Objectives:** The purpose of this study is to assess the use of an E-module to teach SOAP note writing to dental students, especially in the time of COVID where e-learning is a critical platform for training. The SOAP subjective, objective, assessment and plan) note documentation is used by healthcare providers to format clinical notes, document third-party billing, and provide an interdisciplinary, standardized format of communication between the patient and clinician. The specific aims of this study are to describe the impact of the E-module as a learning tool at baseline for SOAP note documentation, and 2) to determine if the skill persists after the intervention is sustained for 3 months of clinical experience.

**Methods:** Third-year dental students at the University of Nebraska Medical Center College of Dentistry will view an E-module and a clinical case study video, then write a SOAP note immediately following and complete a self-evaluation survey. This will be repeated 3 months later using a different video. The documentation will be scored using a four-point analytic rubric. The skill is defined as competent in completing a SOAP note following viewing the e-module, and their scores will improve on the rubric during the second evaluation due to increased exposure to the E-module and the continued practice of note writing in the clinic. IRB #353-21-EX

**Results:** A total of 32 students participated in the first part of the study, 14 in the second and 12 in both. Analysis of the data from those who participated in both studies is ongoing.

**#34: Dental Student Understanding of Medicad at UNMC College of Dentistry**

McCamey McKinley, Katelyn Smith, Dr. Sarah Lowman

As of January 2021, over 80 million Americans were enrolled in Medicaid for health coverage, up almost 14% in the past year after the declaration of the global pandemic. Due to current, 43% of dentists in the US accept Medicaid (ADA). Dentists have the choice to participate or not participate in the Medicaid program. To see where the decision to participate in Medicaid originates, a look into dental school curriculum may allow us to see what dental students are learning regarding public health and serving the patients that participate in Medicaid.

The goal of this research is to identify the level of understanding that current first year and fourth year dental students at UNMC College of Dentistry have of the Medicaid program. It is hypothesized that fourth year dental students at UNMC College of Dentistry will have an increased knowledge and negative attitudes towards participating in Medicaid with patients in the clinic. Fourth year students will have taken courses on public health during school and encountered patients that participate in Medicaid by the time they take the survey, opposed to first year students with potentially less experience and exposure to patients that participate in Medicaid.

**#35: Noncarious cervical lesions prevalence and related risk factors: a pilot study**

Makena Sundine, Justin Peterson, Dr. Luana Oliveira-Haas, Dr. Gregory Bennett, Dr. John Reinhardt, Dr. Stephen Haas

The loss of tooth structure through processes unrelated to caries is an increasingly common clinical finding, with prevalence rates as high as 85% in some populations. Despite this, there is still no consensus of the mechanism and factors involved in the etiology and progression of noncervical carious lesions (NCCLs). The two-fold purpose of our study was to: 1) measure the prevalence of NCCLs as an independent risk factor for Medicaid at UNMC College of Dental students, and 2) explore potential risk factors that may lead to NCCLs. Following approval of the project by the UNMC Institutional Review Board, the subjects were selected by third- and fourth-year dental students based on the inclusion criteria of age 19+ with a minimum of 20 natural teeth. The exclusion criteria of restorations in the gingival 1/3 (including crowns and 5 Restorations). Each subject received a Tricos 3 or Tricos 4 scan (recorded by either of two calibrated scanners).

**Subjects** also completed an electronic survey gathering demographic information with questions related to diet; exercise; health; lifestyle; and dental practices, procedures, and habits. Once data collection was completed, all scans were analyzed by three calibrated evaluators to assess presence (or absence) of NCCLs on the buccal and lingual cervical surfaces as well as occlusal/inalar/cervical. Statistical analysis focused on associations between risk factors and NCCLs or occlusal/cervical wear. Our null hypothesis was that there are no significant relationships between the demographic variables and prevalence of NCCLs or the prevalence of NCCLs or the NCCLs.

A pool of 46 subjects, 48% had one or more NCCLs and 96% had occlusal or incisal wear. The remaining data analysis produced some interesting and surprising results comparing the relationships between clinical and survey findings.

**#36: TGFβ Signaling Leads to EMT Through the Depalmitoylation of Desmosomal Proteins**

Ben Reckmeyer, Benjamin Orkloch, Dr. James K Wahl III

TGFβ signaling has a multitude of effects upon a cell, including but not limited to growth, differentiation, migration and apoptosis. Among these effects is the epithelial to mesenchymal transition (EMT), in which a cell loses characteristics of an epithelial cell and gains the characteristics of a mesenchymal cell, such as migratory capabilities. One of the chief changes during EMT is the loss of desmosomes, which are cell-to-cell adhesion complexes. However, the mechanism of TGFβ driven desmosome loss and desmosome loss is still unknown. One proposed mechanism is that of palmitoylation and depalmitoylation of desmosomal components. Palmitoylation involves the addition of palmitic acid fatty chains to cysteine residues, which can help localize the protein to the plasma membrane. Depalmitoylation is a process in reverse, which can remove proteins from the cell membrane. Palmitoylation assays were performed using cell lysates from oral squamous cell carcinoma cells grown in the presence or absence of TGFβ. Data analysis is still ongoing, but results show TGFβ treatment does in fact decrease desmosome expression in SCC cells, and that depalmitoyla- tion of desmosome proteins is the mechanism by which this decreased expression occurs.

**#37: Teaching Sexual and Gender Minority Health in Dental Education: Curriculum Trends in U.S. Dental Schools**

Christine Scanlan, BS; Jordan Brozek, BS; Sarah Lowman, DDS, MPH

**Background:** Sexual minorities may have different identities, orientations, and/or practices from the majority of surrounding soci- ety. SGMS (Sexual and Gender Minorities) have less favorable oral and overall health outcomes compared to the non-SGMS population. However, SGMS health disparities may be reduced by educating health professions students about the unique needs of this population.

**Aims:** The aim of this study is to characterize trends in dental education relating to SGMS oral health in U.S. dental schools to identify gaps and opportunities for improvement, and offer recommendations for curriculum development. A secondary aim is to compare findings to previous surveys to assess possible change over time.

**Methods:** Academic deans at all accredited U.S. dental schools (n=68) were invited to participate in a cross-sectional REDCap survey. The survey covered dental curriculum content, number of SGMS presentations, methods of instruction and evaluation, as well as general knowledge of SGMS healthcare.

**Results:** Data analysis is ongoing.

**Conclusions:** An anticipated long-term outcome of this study is to help identify gaps in dental education and inform future SGMS curriculum development. A continuation of this study has been planned, which will survey fourth-year dental students in order to characterize trends in dental student experience regarding SGMS oral health in U.S. dental schools.
#38: Is Student Debt Decreasing the Number of Dental School Applicants?
Ellen Molini-Janak, Zachary Berg, Dr. Merlyn Vogt

Student debt is one of the most controversial topics in economics today. Many have an opinion on this issue without the actual experience of taking on such debt. There are debates between politicians every year regarding this growing problem; however to most it can be an abstract problem that does not affect their everyday life. Many graduates and postgraduates feel the pinch to what it will take to pay back this debt in real time. In this study, we are aiming to represent the reality of student debt for dental students and what that means for the future of dentistry. Do all the international graduates in the future, how will the entire industry change? In this country there is a singular path you can take to practice dentistry. You must receive a bachelor’s degree, attend 4 years of dental school, and take licensing exams. With no alternate paths available, most incur upwards of $300,000 in student debt. When will this sum become too cumbersome? When will students who love dentistry start to choose other paths simply because it becomes too difficult to claw out from underneath the mountain of student debt? This study will analyze data from several sources including the American Dental Association (ADA), the American Dental Education Association (ADEA) and the Student Debt Relief resources. We will lay out the growth in total number of dental students and dental schools, number of applicants per cycle of enrollment, tuition costs, average return on investment, and average debt to income ratio following the progression of student debt. We will analyze from this data how long it will take for student debt to become a problem.

#39: Are Dentists Responsible for the Opioid Crisis?
Benjamin Kincaid, Logan Johnson, Dr. Nagamani Narayana

Objectives: 1) Identify demographics of UNMC’s opioid receiving patient population 2) Analyze the specific procedures that were prescribed for each patient 3) Analyze the specific medications prescribed for patients that took opioids. Study Design: A retrospective analysis of patients with a history of current or previous opioid prescriptions. We included patients (age 21+) who receive dental Medicaid benefits. Finally, we will explore whether there is a relationship between distance traveled to the dental clinic and preventive care utilization.

#40: Comparison of tensile bond strength of denture retainer materials to 3D printed denture bases
Victoria Woodburn and Dr. Gregory Bennett

Background: The ability to 3D print dentures is revolutionizing many aspects of removable prosthodontics. Although a 3D printed denture base may be made of the same constituent acrylic materials as a traditional denture, the different method of fabrication leads to changes in the physical properties. Little is known at this point how this affects the interaction of existing denture materials. One such question is how denture soft liners adhere to a 3D printed denture base compared to one that is traditionally fabricated. Dentistry is evolving to incorporate more 3D resin printed dentures for patients. An important feature to the denture fabrication process is patient comfort which may be accomplished using a soft retainer material, two of the more common are Acrylonitrile Butadiene Styrene (ABS) and Polyetherimide (PEI). Properties such as tensile bond strength have an important impact on the longevity of a retainer and patient satisfaction.

Aim: The aim of this analysis is to determine which combination of printer and soft liner has the highest tensile strength and therefore would result in the longest lasting bond and highest patient satisfaction outcome.

Methods: Two 3D printers were used, the SprinRay Pro and the Form 3B. Each was used to create 40 10mmx10mmx20mm blocks from Denture base 2 resin according to current ISO (International Standard Organization) standards. After printing, samples were air dried, supports removed, washed twice for 5 minutes in an ultrasonic bath and air dried again. Samples cured at 80 degrees C for 24 hours. After curing, each group were created from blocks with 10mm of liner material between. Samples were placed in distilled water for 24 hours prior to testing by an Instron 5966 machine. Data collected on Excel and analyzed via a standardized T-Test.

Results: The highest mean tensile bond strength value was obtained for the Form 3B Printer and Coesoft combination with the highest mean tensile stress at peak maximum load 201MPa.

Conclusion: The best combination of printer and liner with the highest mean tensile strength appears to be from the Form 3B Printer and Coesoft liner. Ongoing data analysis in progress.

#41: Impact of COVID-19 on Applicant Perceived Barriers to Advanced Standing Dental Program (ASDP) Admissions Process
IRB 0786-21-EX

Khushbu Pareshkumar Imer, BDS, Mariam Ali Malik, BDS, Elizabeth R Lyden, Julie Ann Marshall, DDS, MS

Objectives: To compare perceptions of Advanced Standing Dental Program (ASDP) applicants regarding potential barriers using COVID-19 pandemic and identify perceptions of interview process modifications.

Methods: An 118 question survey targeted international trained dentists who applied to ASDPs during 3 different application cycles between March 2019 - February 2022 (N=101). Using respondent’s most recent application status differences between 3 application groups (March 2019 – February 2020, February 2020 – March 2021, and March 2021 – February 2022) answers were compared. Eighteen perceived potential barriers were compared. Interviewed applicants experienced and opportunities to express application abilities were analyzed.

Statistical Methods: Mann-Whitney test compared median response to barrier questions between respondents not accepted (N=68) and accepted (N=35). Fisher’s exact test evaluated associations of categorical perceived variables with groups (p<0.05). Higher values on the barrier scale questions indicated more difficulty. Statistical tests were non-parametric and median values reported.

Results: Responses to eight perceived barriers (testing delays, obtaining educational documents, clinical work experience, college communication, travel delays/quarantine restrictions, travel delays/immigration/visa, financial resources, and hesitancy) did not differ significantly between the three time periods. Non-accepted respondents faced barriers testing delays (p=0.004), obtaining work experience (p=0.001), travel delays quarantine restrictions (p=0.03), and travel delay due to immigration/visa (p<0.008) more difficult than accepted dentists.

Barriers to obtaining clinical experience was the most frequently selected negative impact on applications. There was no difference in hesitancy to apply between different application cycles however a trend toward greater hesitancy by non-accepted applicants compared to accepted dentists (73% vs. 54%, p=0.078). 63 respondents invited to interview indicated on-site skills test with on-site personal interviews occurred most frequently (20%). Most interviewed applicants experienced virtual interviews exclusively or combined with on-site components (62%). Respondents experienced 18 different combinations of virtual and on-site interview experiences. Half the interviewees (47%) perceived the interview/skills test option offered did not provide an equal opportunity to express their abilities.

Conclusion: Internationally trained dentists perceived several barriers to the ASDP application process during the COVID-19 global pandemic and experienced broad variations in interview processes.

#42: Dental Service Utilization Patterns of Adult Medicaid Beneficiaries at a Public Dental School: A Retrospective Study
Paige Griffin, Nicole Steinhauser, Madison McCon- naughay, DDS, Sarah Lowman, DDS, MPH

Background: Oral health is an important aspect of one’s overall wellbeing. Patient finances and geographic location are known barriers to dental care. Many seniors in this country are among the most vulnerable individuals. Medicaid, a federal-state insurance program for low-income patients, offers a dental benefit to adults in many states. There is evidence to suggest that patients with private insurance are more likely to receive preventive dental services than their counterparts who utilize dental Medicaid. This study aims to determine if these findings hold true in Nebraska as well. In addition, we will identify demographic characteristics and utilization trends among UNMC College of Dentistry patients who are on Medicaid insurance. Finally, we will explore whether there is a relationship between distance traveled to the dental clinic and preventive care utilization.

Methods: We conducted a retrospective chart review of UNMC College of Dentistry elementary, undergraduate, and graduate students who were Medicaid patients and received care at the College between July 1, 2015 and June 30, 2019. In addition to total annual spending, we collected procedure codes, patient sex, race, age, home- town, and zip code. Data were gathered to determine whether there exists a relationship between preventive care utilization, and distance traveled to the College of Dentistry. The patient population was divided into a subgroup of those that utilized or exceeded the annual monetary cap.

Results: Pending.

Conclusions: Pending.

#43: The Effect of Interproximal Home Oral Hygiene on Clinical Parameters on Periodontal Maintenance Patients
Kevin Smith, DDS

Background: Periodontal disease is a chronic inflammatory disease that results in the destruction of the supporting structures around teeth. The long-term success in controlling inflammation is by regular effective plaque removal through periodontal maintenance therapy (PMT). Even so, periodontal maintenance therapy cannot be sustained without establishing a regular program of clinical evaluation, adequate biofilm control, and continued reinforcement of at home oral hygiene. However, despite constant compliance with PMT many patients continue to struggle to control localized areas of inflammation manifesting as deep periodontal pockets. A reason for this may be that the use of interproximal brushes and oral irrigators can aid in controlling inflammation in these hard to access areas. However, clinical hygiene compliance among periodontal maintenance patients can be inadequate to achieving periodontal stability. The use of an oral hygiene specific smart phone application to monitor patient compliance could be an effective adjunct in achieving and maintaining periodontal stability. The aim of this study was to compare the localized use of the interproximal brush, interprox- imal brush + Oral irrigator, and the Waterpik flosser on the effects on inflammation in periodontal maintenance patients.

Materials and Methods: 76 periodontal maintenance patients with a history of deep periodontal probing depth and a history of regular PMT and bleeding on probing were randomly allocated to interproximal brush + Brushlink®, interproximal brush only, or Waterpik group. Each group received instruction on proper
usage of the device and were directed to use the device 5 seconds on the buccal and 5 seconds on the lingual once daily, for 6 weeks. Probing depth, plaque index, gingival index and clinical attachment level were registered on four sites of the tooth at baseline and 6 weeks.

Results: Final data was submitted to the statistician on 2/8/2022.

Conclusion: TBD

#44: The evaluation of microleakage between two different materials used in pit and fissure sealants: an in vitro study
Adam Woroniecki, DDS; McKenzie Brown; Jennifer Carter (Marshall), DDS; Holly Roberts, PhD; Bobby Simetich, BSE

This is an in vitro study aimed at comparing the effectiveness of two different material groups used in the process of dental sealants: an in vitro study

Methods: Of 361 eligible patients, the failure rate at 5 years for the Formocresol pulpotomy was 9.7% while the Vitrebond indirect pulp therapy was 0.2%. Out of 247 Formocresol pulpotomies, there were 24 failures. Only ferrules were included: internal resorption that perforated to bone, external resorption and acute abscesses. Out of 522 Vitrebone indirect pulp therapies, there was one failure due to chronic abscess and caries, and parulis development of the tooth. The average age of our patient pool was 4.5 years old with a gender distribution of 54% female and 46% male.

#46: Interleukin-6 Levels are Elevated in Saliva of Patients with Endodontic Disease
Arif Karim, Timothy Jemberg, Thomas Petro

Interleukin-6 is an inflammatory cytokine that is expressed in abundance during any inflammatory response. Several studies have shown that these cytokines can be measured in saliva and are in direct proportion to the levels found in blood. This is an in vitro study aimed at comparing the effectiveness of two different material groups used in the process of dental sealants: an in vitro study

Results: We retrospectively reviewed 1,079 COVID-19 test results (Polymerase chain reaction and rapid antigen tests) conducted between January 1, 2020 and October 31, 2021 at an academic dental institution in the U.S. Midwest.

Methods: We recruited 26 patients aged 18-70 years old for asymptomatic saliva collection.

Results: Results pending.

Conclusions: Results may highlight the importance and feasibility of using asymptomatic saliva for the diagnosis of COVID-19.

#50: Emergency Department and Urgent Care Utilization for Non-traumatic Dental Conditions
Cawley, M. Koukol, C. Roberts, H.

Purpose: Barriers to accessing preventive dental care can lead to negligence of dental health, causing severe pain, infection, or swelling. This study attempts to describe patient characteristics of those who sought non-traumatic dental care in urgent care or emergency department settings. Trends in utilization and access to care for non-traumatic dental conditions were assessed. Barriers to accessing Design of study: A retrospective chart review study was conducted between January 1, 2020 and October 31, 2021 at an academic dental institution in the U.S. Midwest.

Methods: We conducted a retrospective chart review of 627 patients who presented to the UNMC Pediatric Dental Clinic for non-traumatic dental procedures. In addition, we anticipated that results will highlight the local community.

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Results: Results pending.

Conclusions: Results may highlight the importance and feasibility of using asymptomatic saliva for the diagnosis of COVID-19.
Frank M. Wentz, DDS, MS, PhD, was a scholar, philosopher, dentist, humanitarian and a Diplomat of the American Board of Oral Medicine. His practice, in Chicago from 1955 to 1969, was limited to periodontics. He taught for many years at the University of Illinois and at the Loyola University College of Dentistry before coming to the University of Nebraska College of Dentistry in 1969.

Dr. Wentz served the college with distinction as assistant dean for graduate studies and continuing education and professor of periodontics. He made a difference in countless lives and will forever be remembered for his exuberant enthusiasm and gracious manner.

We are pleased to honor the memory of Dr. Frank M. Wentz (1917-1984) with great appreciation for his many years of dedicated service to the College of Dentistry and to the dental profession.