



## **The Celebration of Research and Scholarship**

**February 5, 2025**

Ross Hall, 2<sup>nd</sup> floor [Live Broadcast to CSLCs]

- 7:30 – 8:00 am      **Registration**
- 8:00 – 8:15 am      **Welcome and Opening Remarks [hosted by Dr. Alexandre Vieira, Associate Dean for Research]**
- Dr. Maggie Wilson, Vice Dean
- Dr. Sharon Paynter, Interim Chief Research and Engagement Officer
- Dr. Mahmoud Al-Dajani, Director of CSLC at Elizabeth City
- 8:15 – 10:00 am      **Poster Presentations and EXPO**
- 10:15 am – 12:00 pm      **Keynote Presentation**
- Introduction to Keynote**  
Dr. Wally McCarlie
- Dr. Bruce Dye  
Delta Dental of Colorado Foundation Chair in Oral Health Equity  
Professor and Chair, Community Dentist and Population Health  
University of Colorado, School of Dental Medicine  
**Presentation Title:** “Health Literacy and Health Education; A Dental Public Health Perspective”
- Panel Discussion & Q/A**  
Dr. Wally McCarlie [moderator]  
Dr. Mark Moss  
Dr. Vanessa Pardi
- 12:00 – 12:30pm      **Poster Awards**  
Dr. Alexandre Vieira, Associate Dean for Research

The Celebration of Research and Scholarship (CORAS) is our highly anticipated annual event, hosted by the ECU School of Dental Medicine and Office of Innovation and Discovery. It is an open door to our faculty, staff, residents, and students to showcase their research and scholarly work through poster presentations.

It is an avenue provided for our students to compete; with winners receiving the opportunity to represent the ECU School of Dental Medicine on a national level.

# **ABSTRACTS AND POSTER ASSIGNMENTS**

## **OPENING CEREMONY**

### **Research at CSLC Elizabeth City**

Mahmoud Al-Dajani  
ECU School of Dental Medicine

The brief presentation will highlight research initiatives at the ECU SoDM Community Service Learning Center in Elizabeth City and how they align with SoDM mission. The focus will be on three research initiatives:

1. Dental Clinic Health Screening Project.
2. The Role of Dentists in HPV Vaccination.
3. Exploring Patterns of Dental Service Utilization.

## **EXPOSITION**

### **Development of Opportunities for Research (DOOR) Program University of Florida, College of Dentistry**

The Development of Opportunities for Research is a collaboration between UF and ECU to train future dentists in clinical research. The program will run through 2028 and will include training in clinical research skills, mentoring, and interdisciplinary collaboration.

#### **Emily Bartley, PhD**

Assistant Professor  
Director of Communication and Outreach  
352-273-6617 | [ebartley@dental.ufl.edu](mailto:ebartley@dental.ufl.edu)

#### **Daniel McNeil, PhD**

Chair and Professor, Community Dentistry  
352-273-6801 | [dmcneil@dental.ufl.edu](mailto:dmcneil@dental.ufl.edu)

### **Laupus Health Sciences Library, East Carolina University**

Laupus Health Sciences Library provides literature search, research, and research data management services and support to students, staff, and faculty on the health sciences campus. Please reach out to the following librarians for assistance after the event:

Library Liaison to Dental Medicine: **Rachel Priesman Marquez**  
[priesmanmarquezr24@ecu.edu](mailto:priesmanmarquezr24@ecu.edu)

Research Librarian: **Jamie Bloss**, [blossj19@ecu.edu](mailto:blossj19@ecu.edu)

Research Data Librarian: **Xiaolan Qiu**, [quix24@ecu.edu](mailto:quix24@ecu.edu)

## **MedSurgPI, Pharmaceutical Physician Consulting Company**

MedSurgPI provides medical consulting for biopharmaceutical product development and medical affairs including fractional chief medical officers, medical monitoring, and medical communications. We also work with academic innovation centers to foster clinical research.

### **Gerald L. Klein, MD**

Principal, MedSurgPI, LLC

Adj. Prof. Pharmacology & Toxicology in BSOM

East Carolina University

[www.medsurgpi.com](http://www.medsurgpi.com)

919-930-9180

[gklein@medsurgpi.com](mailto:gklein@medsurgpi.com)

## **Office of Licensing & Commercialization, East Carolina University**

The Office of Licensing and Commercialization (L&C) assists faculty in accelerating the translation of ideas and innovations into novel products and services. Licensing and Commercialization accomplishes this mission by commercializing university-owned intellectual property (patents, copyright and trademarks), assisting in new venture development, enhancing research and industry collaboration, and providing educational programming to the campus community. Learn more at [REDE.ECU.EDU/INNOVATION](http://REDE.ECU.EDU/INNOVATION)

### **Carlyle Rogers, Ph.D.**

Director

252-737-1648 | [rogersar@ecu.edu](mailto:rogersar@ecu.edu)

### **Sirin N. Cakir, Ph. D**

Licensing Analyst

252-328-9545 | [cakirs24@ecu.edu](mailto:cakirs24@ecu.edu)

Licensing & Commercialization

East Carolina University

209 East 5th Street, Greenville NC, 27858

<https://rede.ecu.edu/innovation/>

## **Research, Economic Development and Education, East Carolina University**

The Office of Research, led by the Chief Research Officer, partners and collaborates with the different programs, assets, and resources across ECU campuses and facilities along with the UNC designated centers and institutes. The Office of Research provides

oversight of ECU's research enterprise, including grant administration and ethical practices; ensures compliance with the federal, state, and University rule and regulations; and includes the following units and committees or boards: Pre-Award Services, Post-Award Services, Research Integrity and Compliance, Compliance Monitoring, Research Administration Analytics, Research Development, Institutional Animal Care and Use Committee, and the University Medical and Behavioral Institutional Review Board.

**Deborah L. Lundin**

Director, Pre-Award Services

REDE

East Carolina University

252-328-9477 | [lundind22@ecu.edu](mailto:lundind22@ecu.edu)

209 East 5<sup>th</sup> Street, Greenville, NC 27858

## **Specialized Care and 3D Dental Design**

[www.specializedcare.com](http://www.specializedcare.com) Specialized Care is a pretty unique company and is the only manufacturer making products to treat special needs and uncontrollable dental patients. They are well known within the Special Needs community but have other products that are widely used in Peds and hygiene too. They make supportive items of all types to help with breathing, control of arms, legs, and body. This includes special sizes for Peds and wheelchair bound patients. They also make various adaptors for high speed suction, mouth props, and 3-sided toothbrushes to help patients with dexterity problems.

[www.3d-dent.com](http://www.3d-dent.com) 3D is also a pretty unique company, but in a much different way. In the past, they have made private label products for dental dealers and individual items for brand name companies. They now want to branch out and create a name for themselves. If you look at their website, the breadth of the product line is impressive, as they make just about everything that is used in your clinics for everyday use. Their goal is to create high quality products at an extremely low cost. 3D makes everything from masks, gloves, lead aprons, curing lights, amalgam, burs, sutures, mixing tips, and much much more.

**James Emery Smith**

3D Dental Design

Special Markets Director

877-605-8061

16781 Chagrin Blvd., STE # 434

Shaker Heights, OH 44120

Specialized Care Company Inc.

Business Development Manager

800-722-7375

24 Stickney Terrace, STE # 2

Hampton, NH 03842

## **Student Research Group, East Carolina University, School of Dental Medicine**

The Student Research Group (SRG) represents student interest in scholarly activity at the ECU School of Dental Medicine. This includes representation of student interests at the Research & Scholarship Committee to lead changes in scholarly activity and research mentorship. The SRG also promotes dental student participation in research within the school, as well as at interprofessional and national events.

### **Liam Hopfensperger**

President, SRG  
School of Dental Medicine  
East Carolina University  
336-504-7470 | [hopfenspergerl23@students.ecu.edu](mailto:hopfenspergerl23@students.ecu.edu)

### **Ramiro Murata, DDS, MS, PhD**

Assistant Professor, Foundational Sciences  
Advisor, Student Research Group  
252-737-7228 | [muratar16@ecu.edu](mailto:muratar16@ecu.edu)

## **Whole Child Health, North Carolina Department of Health and Human Services**

The Dental Home initiative, a project of the North Carolina Commission on Children and Youth with Special Health Care Needs, is administered by the Whole Child Health Section in the Department of Child and Family Well-Being. The initiative addresses barriers to dental care for children and youth with special health care needs. We work with family partners to share real life perspectives as well as highlight strategies and adaptations for dental and health care providers. Our goal is to create a local health care team for all children and youth.

### **Wendy Schwade, RDH, BS**

Program Consultant  
Division of Child and Family Well-Being, Whole Child Health Section  
NC Department of Health and Human Services  
919-906-1962 | [wendy.schwade@dhhs.nc.gov](mailto:wendy.schwade@dhhs.nc.gov)

## POSTER AWARDS

**9 poster awards will be given at the 2025 CORAS:**

### Student Awards

- **SCADA** – Student winner represents ECU SoDM at the 2026 SCADA Program and AADOCR Annual meeting
- **AADOCR Research Day Award** – Student winner represents ECU SoDM at the 2026 AADOCR Annual meeting and is recognized among its peers from the other US dental schools at the AADOCR Annual meeting opening ceremony
- **Hinman Research Symposium** – Student winner represents ECU SoDM at the 2025 Hinman Research Symposium at the University of Tennessee

### Poster Categories

- **Best Poster** in the “**CASE REPORTS**” category
- The **2 Best Posters** in the “**CLINICAL/COMMUNITY/IMPLEMENTATION RESEARCH**” category
- **Best Poster** in the “**EDUCATION/TRAINING/MENTORING/INTERPROFESSIONAL RESEARCH**” category
- **Best Poster** in the “**BASIC DISCOVERY**” category

### People’s Choice Award

All posters are eligible to receive the people’s choice award, which will be selected by the popular vote (all attendees are eligible to vote) during the poster exhibition (cellular phone devices required for voting)

## POSTER EXHIBITION

### SUMMER RESEARCH SCHOLARS

**1**

#### **Renal Oxidative Stress in Renin-Angiotensin-Aldosterone Model of Hypertension**

Garbrandt D, Berwin Singh SV, Aileru A

Department of Foundational Sciences, School of Dental Medicine, East Carolina University

Background: Hypertension is a polygenic condition in which high blood pressure leads to cardiovascular complications, cerebral damage, and kidney failure. The Renin-Angiotensin-Aldosterone System (RAAS) model of hypertension, (mREN2)27 transgenic rodent, triggers complex signaling pathways and cellular processes. It is characterized by overexpression of mouse Ren-2d gene in brain and adrenal gland, with a reduction in kidney renin. The main pressor component of the RAAS is Angiotensin II (AngII) and it exists in many local organs and tissues, including the nephrons. AngII signals the production of reactive oxygen species (ROS) that serves as the epicenter for intracellular signaling pathways and contributes to the hypertensive

episode. Despite the research contributions over the years, the role of circulating angiotensin peptides in genetically predisposed hypertensive episodes and their lasting effects on inflammation and immune response remains unclear. We hypothesized that in the (mREN2)27 model of hypertension, there will be imbalance in the expression of inflammatory responses and ROS modulators. Objective: The present study investigates the intracellular gene expression for reactive oxygen species (ROS) and proinflammatory modulators in renal tissue of the (mREN2)27 transgenic hypertensive rodent. Methods: Indirect blood pressure and heart rate were recorded via tail-cuff for 7 consecutive days. We isolated RNA from renal tissues using a standard extraction protocol. Quantified RNA concentration using the NanoDrop OneC spectrophotometer. The isolated RNA was then reverse transcribed into complementary DNA and Quantitative Real-Time PCR (RT-PCR) was performed to quantify the expression of genes involved in oxidative stress and inflammation. Results: In hypertensive model, there were significant increases in gene expression for reactive oxygen species (ROS) modulators: Heme Oxygenase-1 (HO-1), Nuclear Erythroid-2-Related Factor 2 (Nrf2), and Receptor for Advanced Glycation End Products (RAGE). Further, gene expression for inflammatory responses to Transforming Growth Factor Beta (TGF- $\beta$ ), and Nuclear Factor Kappa B (NF- $\kappa$ B) were significantly higher in (mREN2)27 compared to normotensive rodents. Conclusion: The generation of ROS exhibits many inflammatory properties that provoke the ultimate disruption to renal physiology. The upregulation of these modulators and inflammatory responses suggests kidney stress due to prolonged RAAS activation, potentially leading to chronic kidney disease (CKD). These findings underscore the potential to identify therapeutic targets aimed at mitigating CKD.

## 2

### **Implementing the Clinical Registry of Rural Oral Health Disparities and Outcomes**

Paulina Sutton, Alexandre R. Vieira  
ECU School of Dental Medicine

Objective: The primary objective of East Carolina University's Clinical Registry of Rural Oral Health Disparities and Outcomes is to collect clinical data along with saliva samples from patients across all the Community Service-Learning Centers for a total of 20,000 participants. The goal of this presentation is to describe the experience of implementing the registry in the summer of 2024 as part of the School of Dental Medicine Summer Research Program.

Methods: Saliva samples from patients were collected in addition to their consent to participate in the clinical registry. We recruited 89 patients. Patients who attended appointments annually for 3+ years were categorized as "Routine Care," while patients whose initial appointment was within the last 2 years were considered "New Patients," and any others were categorized as "Emergency Only."

Results: Analysis of the current registry population showed that the demographics are representative of the ECU SoDM population from the 2011-2020 database, but not of the Greenville census demographics. A lower rate of routine care visits was found in male (52%) patients compared to female (68%) patients, as well as a lower rate of routine care visits among Black (5%) patients compared to White (47%) patients

( $p=0.0004$ ). Of the rural population in the registry, 32% attended routine care, compared to 37% of the urban population.

Conclusion: This registry's current demographics are representative of SoDM's comprehensive patient demographics. In this study, men were found to be less likely than females to attend routine care. In a comparison by race, Black patients were less likely than White patients to attend routine care. Lastly, patients from rural communities were also less likely to attend routine care compared to patients from urban communities.

### 3

#### **Evaluation of Panoramic Acquisition Errors by Pre-doctoral Dental Students**

Zachary Featherstone, Xiaoxi Cui, Wenjian Zhang  
ECU SoDM

##### **Evaluation of Panoramic Acquisition Errors by Pre-doctoral Dental Students**

Panoramic radiography is one of the most used dental imaging techniques for the diagnosis and treatment planning of dental alveolar pathology. Novice clinicians are prone to various technical errors that diminish the diagnostic quality of the radiographs. The objective of this study is to analyze technical errors during panoramic exposure for third-year (D3) dental students to maximize educational outcomes. Four panoramic exercises (formative assessments) and one final skills assessment (summative assessment) submitted by D3 students were analyzed by radiology instructors. Technical errors, including anterior-posterior, Frankfort plane, and midsagittal plane misalignment, tongue and spinal placement, foreign objects, and exposure errors, were recorded. The percentage of students making various errors was calculated, and error patterns were compared among formative and summative assessments via inferential analysis. Errors committed such as the chin positioned too high (40.38%) or low (25.00%), head rotation (32.69%), tilting (9.62%), tongue placement (17.31%), and presence of a foreign object (11.54%) were the most frequently committed during the summative skills assessment. Most students made one or two errors (37 of 52 students) during the skills assessment, with four being the highest number of errors per exposure (2 of 52 students). The error types and distributions did not demonstrate statistically significant differences between formative and summative assessments, as revealed by the calculated exact 95% confidence interval. Errors committed such as the chin positioned too high (40.38%) or low (25.00%), head rotation (32.69%), tilting (9.62%), tongue placement (17.31%), and presence of a foreign object (11.54%) were the most frequently committed during the summative skills assessment. Most students made one or two errors (37 of 52 students) during the skills assessment, with four being the highest number of errors per exposure (2 of 52 students). The error types and distributions did not demonstrate statistically significant differences between formative and summative assessments, as revealed by the calculated exact 95% confidence interval.

### 4

#### **Characterizing the Functions of the Novel NME1-NME2 Readthrough Transcript**

Spencer Stott, Abrar K. Bakhsh, Berwin S.S. Vetha, Ikramuddin Aukhil

This study aims to understand the role(s) of the NME1-NME2 readthrough transcript in inflammation and other pathologic conditions. This study aims to understand the role(s) of the NME1-NME2 readthrough transcript in inflammation and other pathologic conditions. The presence of parents in the dental operatory has become widely accepted by clinicians. However, parental involvement can sometimes hinder effective behavior management, and parental anxiety may adversely impact a child's cooperation and increase their anxiety. While some practitioners advocate limiting parental roles or excluding them from treatment areas, evolving societal expectations often necessitate accommodating parental preferences. This study aims to evaluate parental preferences regarding their presence during their child's dental procedures and provide recommendations for clinical guidelines on parental involvement. A full-length cDNA representing the novel NME1-NME2 readthrough transcript was cloned into pCMV6 Plasmid vector with a Myc-DDK tag. This plasmid was stably transfected into HEK cells and total RNA from transfected and wild type HEK cells was harvested and sequenced. U2OS cells that express TLR 4 receptors were also stably transfected with the NME1-NME2 readthrough plasmid and challenged with LPS (1µg/ml) for 24h. Total RNA was extracted and analyzed by RT-PCR for effects of NME1-NME2 on the expression of proinflammatory cytokine IL-6 upon LPS stimulation. Immunofluorescence microscopy of transfected cells and immunohistochemistry of inflamed and healthy gingival tissues were also carried out. A full-length cDNA representing the novel NME1-NME2 readthrough transcript was cloned into pCMV6 Plasmid vector with a Myc-DDK tag. This plasmid was stably transfected into HEK cells and total RNA from transfected and wild type HEK cells was harvested and sequenced. U2OS cells that express TLR 4 receptors were also stably transfected with the NME1-NME2 readthrough plasmid and challenged with LPS (1µg/ml) for 24h. Total RNA was extracted and analyzed by RT-PCR for effects of NME1-NME2 on the expression of proinflammatory cytokine IL-6 upon LPS stimulation. Immunofluorescence microscopy of transfected cells and immunohistochemistry of inflamed and healthy gingival tissues were also carried out. Conclusions: This study is ongoing and preliminary observations indicate NME1-NME2 readthrough transcript is a fully translated protein that shows prominent location in the nucleus and maybe serving important regulator role in inflammation.

## 5

### **Antifungal Activity of Benzophenones Against Oral *Candida* spp**

Blake Joseph Henkel, Marcelo Henrique dos Santos, Paulo Fortes-Da-Silva, Ramiro Mendonça Murata

East Carolina University School of Dental Medicine

To evaluate the in vitro antifungal activity of various Benzophenones against *Candida* species and determine the cytotoxicity of select drugs against oral cell line cultures. Initial isolation of the polyprenylated benzophenones from *Garcinia brasiliensis* using silica gel column chromatography. The isolated samples were tested against specific *Candida* species (*C. albicans* ATCC 2876, *C. albicans* ATCC 321182, *C. tropicalis* MYA 750, *C. glabrata* ATCC MYA 275, *C. dubliniensis* ATCC MYA 646) at various

concentrations. The media consisted of 90 microL final volume of RPMI/Candida, incubated at 37 degrees celsius, 5% CO<sub>2</sub> for 24 h. MIC/MFC was recorded for each benzophenone sample tested. In addition, cytotoxicity of select drugs against oral cell line cultures (HGF) was tested and results were compared to a control group of HGF cells. The cells were suspended in media to promote growth (DMEM+10% FBS). 90 microL of the media with the HGF cells was used with 10 microL of the drug and incubated at 37 degrees Celsius, 5% CO<sub>2</sub> for 24 h. CellTiter-Blue was used to stain the cells for fluorescence measurement. Of the 30 initial samples, 7 showed an initial MIC/MFC at 10 microg/mL. Of the 7 samples, Guttiferona-a produced the most MIC/MFC results at 1-10 mM/mL in comparison to the other 7 samples at the same concentrations. Additionally, Guttiferona-a effected the most Candida species of all the samples. Finally, Guttiferona-a also did not pose any cytotoxicity between 0.001-10 mM/mL against oral cell line cultures (HGF). Polyprenylated benzophenones do express antifungal properties at certain concentrations. Guttiferona-a produced the most MIC/MFC results at 1-10 mM/mL. In addition, it also posed no cytotoxic effects between 0.001-10 mM/mL against oral cell line cultures (HGF).

## 6

### **Pediatric Oral Health Status and Caregiver Oral Health Literacy**

Roberson AL, Debnam HD, Van Gurp RE, Ruffing JR, Wu Y, Tucker N, McCarlie Jr. VW

ECU School of Dental Medicine

To determine and evaluate whether there is an association between the caregiver's oral health literacy (OHL) and the oral health status (OHS) of their child (children). This preliminary study was a cross-sectional study. The inclusion criteria included caregivers seeking treatment for their children ( $\leq 8$ -years old) at a community dental office. Excluded individuals included any caregiver with a self-reported cognitive, visual, or hearing impairment, or who did not understand English. A convenience sample of 150 caregiver-child dyads that presented at the office were recruited, where they were provided written consent along with a Health Insurance Portability Act Waiver to participate. We then utilized the Research Electronic Data Capture (REDCap) application for OHL instrument data collection; and the patient's electronic health record for (EHR) for OHS. Correlation coefficients were calculated between each pair of continuous variables, such as decayed teeth, missing teeth due to caries, and filled tooth surfaces (dmfs) and the Rapid Estimate of Adult Literacy in Medicine and Dentistry (REALMD-20) score. Based on this sample, we did not find a correlation between the REALMD-20 screening instrument and dmft or dmfs score ( $r$  of -0.01 and 0.03 respectively). The adult caregivers' REALMD-20 mean score of 18.09 (SD=1.55) was a full 1.66 points higher than a previously published study of adults in this same locale. Thus, the literacy level was higher in this sample. It is important to understand that the REALMD-20 screening instrument does not capture much of the complexity of OHL. It may be that this rapid screening instrument can only capture more dichotomous relationships rather than those which are more subtle. For example, we hypothesize that if we were to sample a group more representative of the general population, where in some cases dental caries counts would be much more severe, the critical nature of

OHL may be shown to become more of a significant factor in determining OHS. In this study, we did not find a correlation between the caregiver REALMD-20 OHL screening instrument score and the dmft or dmfs score of the child. Further studies utilizing different samples or different OHL instruments are warranted to better clarify and understand the relationship between parental OHL and a child's OHS.

## 7

### **Role of Simulated Dentinal Fluid on Remineralization of Artificial Carious Dentin Lesions**

Bailey Gentle, Sarah Gillespie, Anthony Kennedy, Saulo Geraldelli  
School of Dental Medicine

**Objective:** Dentinal fluid is a protective, self-regulating extracellular fluid within dentinal tubules, containing ions and proteins that support intra- and extra-fibrillar remineralization of mineral-depleted collagen fibrils in carious dentin. Its role in restoring hardness and structural integrity of dentin is not fully understood, necessitating research to elucidate its mechanistic contributions. This study aims to evaluate the effect of simulated dentinal fluid (SDF) on the remineralization of demineralized collagen fibrils and identify the mineral's crystalline structure, with a long-term goal of improving treatments for carious lesions while preserving more natural tissue.

**Method:** Extracted molars were cut into beams and randomly allocated in four groups: 1) distilled water, 2) SDF-7days, 3) SDF-4M, and 4) demineralized dentin. Beams of 1 mm x 1 mm x 4 mm were cut using a saw machine. Artificial dentin carious lesions were created via pH cycling. Samples underwent remineralization using SDF as per the groups above and were planned to be evaluated for hardness, denting ultra-morphology, and elemental composition. Here the relative amounts of organic components like collagen (identified by amide bands) and inorganic components like mineral phases (mainly hydroxyapatite) were analyzed using Fourier Transform Infrared Spectroscopy (FTIR).

**Results:** FTIR spectroscopy revealed a progressive increase in remineralization with longer durations of simulated dentinal fluid (SDF) treatment. The spectra of sound dentin in SDF treated samples showed pronounced bands at 1030 cm<sup>-1</sup>, indicative of hydroxyapatite, and at 1630 cm<sup>-1</sup>, representing collagen. Artificial carious dentin group exhibited significantly reduced absorbance in these regions, confirming demineralization and collagen degradation. SDF-treated dentin showed a time-dependent recovery of these absorbance peaks. After seven days (SDF-7d), moderate increases in both hydroxyapatite and collagen levels were observed. By four months (SDF-4M), hydroxyapatite bands reached levels comparable to sound dentin, while collagen absorbance significantly improved, indicating enhanced biomineralization and structural recovery.

**Conclusion:** The application of SDF over an extended period promotes remineralization of demineralized dentin, with notable increases in hydroxyapatite and collagen integrity. These findings suggest that prolonged SDF treatment facilitates the restoration of both mineral and organic components of dentin, supporting its use in managing active deep carious lesions.

## **Evaluating Access to Oral Healthcare in Pregnant Patients**

Sheikhi HN, Sheaffer LA, Pardi V

ECU School of Dental Medicine

This study evaluates access to oral healthcare in pregnant patients and highlights the importance of dental care during pregnancy. Hormonal changes increase the risk of gum disease, which can lead to adverse outcomes like preterm birth and low birth weight. Dental treatments are safe during all trimesters, but many women struggle to complete their treatment plans. The Prenatal Oral Health Program (pOHP) promotes collaboration between medical and dental providers to enhance maternal and fetal health. The objective is to understand challenges in dental care access and improve awareness. The study includes pregnant patients over 18 who speak English and receive care at ECU OBGYN and ECU SODM. Participants answered survey questions about marital status, transportation, knowledge of oral health importance, and comfort levels during pregnancy and appointments. The study aims to identify barriers preventing pregnant women from accessing and completing dental treatments. Several barriers to dental care were identified, including missed appointments, difficulty in reaching participants, and scheduling conflicts. Some women required multiple rescheduling attempts, but many still did not attend. Language differences also posed a communication challenge. The result summarizes the preliminary results of a study assessing dental care access among pregnant patients, focusing on payment methods and treatment outcomes. A total of 484 patients were referred, with the majority using either self-pay (243 patients, 50.2%) or Medicaid (236 patients, 48.8%), while a small number had private insurance (5 patients, 1.0%). Among self-paying patients, 206 did not attend any appointments, while 37 attended one or more. Of those who attended, 26 had no emergency visits, with 10 receiving some dental treatment during pregnancy. Seven patients had one emergency visit, and 4 had more than one, with both groups including 6 patients who received treatment.

For Medicaid patients, 203 did not attend any appointments, while 33 attended one or more. Of these, 19 had no emergency visits, with 3 completing some dental treatment. Ten patients had one emergency visit, and 4 had more than one, with 11 patients from each group completing dental treatments. The small group with private insurance was not detailed further in the data. These findings reveal significant challenges in appointment attendance and treatment completion, especially among Medicaid and self-paying patients, emphasizing the need for improved access and adherence strategies. Despite recognizing the importance of oral health, pregnant patients face significant obstacles in accessing care. Efforts should be made to improve patient adherence and communication, particularly among non-English speakers. Collaboration between medical and dental providers remains essential to enhance maternal and fetal health outcomes. Increasing awareness and addressing logistical challenges can improve access to necessary dental treatments during pregnancy.

## **Evaluating Salivary Screening Test as a Complimentary Periodontal Risk Assessment Tool**

Noah Murray, Mark Moss, Acela Martinez-Luna, Annette Echevarria  
East Carolina University School of Dental Medicine

Periodontitis is a serious gum infection that damages the soft tissue around teeth. Left untreated, periodontitis can lead to bone and tooth loss. Furthermore, studies have shown periodontitis has adverse effects on various systemic health conditions, which makes it both an oral and systemic health concern. The effects of periodontitis are irreversible, providers recognize this and make it a priority to assess patients for periodontal risk. The gold standard for periodontal risk assessment relies primarily on clinical examination. During these examinations providers assess levels of plaque, sites with bleeding on probing (BOP), pocket depth, bone loss, etc. These clinical examinations are very thorough and yield accurate assessments. However, these assessments establish risk after the biologic onset of the disease process and are unable to substantiate disease activity or future risk. Is there a tool that could be used in conjunction with traditional periodontal risk assessment that could remedy this limitation? Several studies are beginning to highlight saliva as a potential screening method for periodontal risk, and some have already identified inflammatory biomarkers within our saliva. The purpose of this study is to evaluate the Sill-Ha Oral Wellness System as a potential complimentary tool to traditional periodontal risk assessment. We recruited 30 existing patients from clinics within the ECU School of Dental Medicine. Half (n=15) of these patients will be at low risk for periodontal disease as determined by the data in their electronic records, while the other half (n=15) will have some degree of existing periodontal disease. Once the treatment and control populations were identified, participants were required to do a "swish & spit" of 3 mL of distilled water. These salivary samples were collected and ran through the Sill-Ha machine and a multipoint analysis of the participant's saliva was presented. On average, leukocytes and protein scores were higher in the treatment group. However, blood scores were higher in the control group. There was association between leukocytes (reported by Sill-Ha) and plaque (reported by EHR). There was also an association between blood (Sill-Ha) and percent of sites with BOP (EHR). Limitations of the study included a small population size and incomplete electronic health records (EHR). We hypothesized that the Sill-Ha salivary analysis would report values that reflected data in the participant's EHR's. More specifically, Sill-Ha analysis would show higher blood, leukocyte, and protein scores in participants at risk for periodontal disease. The results were nearly consistent with the hypothesis, as the blood score reported by Sill-Ha was higher in the control group on average. More data is to be collected to fully evaluate the Sill-Ha Oral Wellness System as a complimentary tool to periodontal risk assessments.

## **CASE REPORTS**

**10**

### **Case Report: Dental Trauma in patient with Lennox-Gastaut Syndrome**

Sukyung Moon, Cayleigh Herman  
General Dentistry, ECU SoDM

This study reports a case of dental treatment under general anesthesia in a child suffering from Lennox-Gastaut syndrome (LGS). Lennox-Gastaut Syndrome (LGS) is one of the most severe epileptic encephalopathies of childhood onset. It is characterized by multiple types of generalized seizures, slowness of intellectual growth, and specific electroencephalogram patterns. It is one of the most difficult epilepsy syndromes to treat and is frequently resistant to treatment. In this report, we present the details of a patient with LGS who received dental treatment under general anesthesia. A 16-year-old patient with LGS visited East Carolina University Dental School Special Care Clinic for dental treatment. Patient had a fall during seizure attack and hit face in the floor. Prior to visiting our clinic, patient visited Emergency Room in a hospital and received emergency treatment: #8 and #9 repositioned with digital pressure and wire splint for a week and radiograph taken at that visit. Patient was evaluated in our clinic for follow up treatment. Evaluation revealed that patient cannot tolerate endodontic and restorative treatment in outpatient setting. Patient was brought to OR under general anesthesia and received treatment. Recalled patient virtually a week after and patient was not in distress. The patient recovered from general anesthesia without complications. After one month of treatment, the pain subsided, and by six months, the patient had fully regained both functionality and aesthetics. Our case study shows emergency dental management after traumatic injury for patient who suffers frequent seizures.

## 11

### **Case Report: Restoration for Traumatic Dental Injury for Patient with Cerebral Palsy**

Sukyung Moon, Cayleigh Herman, Matthew Davis  
General Dentistry, ECU SoDM

The goal of this report is to explore a restoration option for patient with cerebral palsy after traumatic dental injury. Data from earlier studies suggest that traumatic dental injury prevalence in individuals with various disabilities is higher than in those with no disabilities. TDI is a common occurrence and can result in irreversible damage to dentition. Persons with disabilities are unable to prevent trauma voluntarily due to physical and cognitive impairments. This study aims to explore treatment option to restore function and esthetics after TDI. Loss of teeth in the anterior region in a young patient may create severe aesthetic and emotional problems. Functional, esthetic, and biologic restoration of anterior teeth often presents a daunting clinical challenge. Various treatment approaches have been indicated for fractured teeth including implant restorations, fixed partial dentures and removable appliances. In our case, we treated with fixed partial denture. The rule of nature is to conserve as much of tooth structure as possible. Preservation of the remaining natural and healthy tooth structure will have a positive psychological impact on the patient. We also must consider chance of experiencing patient's traumatic injury or fall during lifetime and consider durable treatment option.

## 12

## **Prosthetic Rehabilitation with Complete Maxillary Denture for a Patient with Scleroderma Induced Microstomia: A Clinical Report**

Lakshmi Senkumar, Matthew Davis

Department of General Dentistry/ECU School of Dental Medicine

This clinical report describes the prosthetic rehabilitation of an edentulous patient with microstomia. The patient presented with an existing maxillary complete denture that was non-retentive due to posterior underextension. The existing denture was used to take a pickup impression, which was then used to create a digital printed prototype with the aid of 3Shape software and a Straumann P40 printer. Scleroderma is a heterogeneous, chronic autoimmune disease. Also known as systemic sclerosis, dermatosclerosis, or hidebound disease, it is an autoimmune disorder of unknown etiology, characterized by vasomotor disturbances, fibrosis of connective tissue, and the overproduction of collagen fibers<sup>1</sup>. Microstomia (a small oral opening) is observed in 70% to 80% of patients with systemic scleroderma<sup>3</sup>. It is likely the most significant oral consequence of the condition, resulting in limited mouth opening and, consequently, difficulty with eating and sometimes speech<sup>2,4</sup>. A maximal oral opening smaller than the size of a complete denture can make prosthetic treatment challenging<sup>5</sup>. Conclusion: The patient was satisfied with the retention of the final maxillary complete denture prosthesis. Keywords: Scleroderma, complete dentures, digital dentures, microstomia 1. Suzuki Y, Abe M, Hosoi T, et al: Sectional collapsed denture for a partially edentulous patient with microstomia: a clinical report. J Prosthet Dent 2000;84:256-259 2. Cura C, Cotert HS, User A: Fabrication of a sectional impression tray and sectional complete denture for a patient with microstomia and trismus: a clinical report. J Prosthet Dent 2003;89:540-543 3. Marmary Y, Glaiss R, Pisanty J: Scleroderma: oral manifestations. Oral Surg Oral Med Oral Pathol 1981;52:32-37 4. Prosthetic rehabilitation with collapsible hybrid acrylic resin and permanent silicone soft liner complete denture of a patient with scleroderma-induced microstomia J Prosthodont. 2014 Jul;23(5):412-6. doi: 10.1111/jopr.121275. 5. Yenisey M, Kulunk T, Kurt S, Ural C. A Prosthodontic management alternative for scleroderma patients J Oral Rehab. 2005;32:696–700

## **13**

### **Osteosarcoma Mimicking Necrotic Pulp and Acute Apical Abscess: A Case Report**

Jarod Ruffing, Dalia Nashed, Doug Kellogg, Bud Fiddler, Arbrar Bakhsh, Zach Schnoor, Shankar Venkat

Department of Surgical Sciences, ECU SoDM

The purpose of this table clinic is to present a case of osteosarcoma mimicking a tooth with a necrotic pulp and acute apical abscess. The clinical and radiographic findings, diagnostic efforts, and treatment steps taken are described. The case highlights similarities in presenting symptoms between osteosarcoma of the jaw and necrotic pulp with acute apical abscess. Differentiating indicators are discussed. With this knowledge, the clinician will be better able to recognize similar scenarios, identify appropriate next steps when treatment is non-responsive, and understand the importance of CBCT and biopsy.

**14**

**A Case Report with Retrospective Analysis of Oral Leiomyosarcoma**

Cameron Dove, A. Gillone, Kellogg D, Venkat S

ECU School of Dental Medicine

Report and discuss a case of oral leiomyosarcoma to contribute to knowledge of understanding leiomyosarcoma presenting in the oral cavity. Compare our case report of oral leiomyosarcoma to other cases of oral leiomyosarcoma that have been reported in the literature. Materials included utilizing PubMed to conduct a retrospective literature review of reported cases of oral leiomyosarcoma. Immunochemical markers were compared in our case to those reported in the literature. The patient case that is discussed in this poster presentation is a patient who presented to ECU's SoDM Emergency Clinic. The biopsy results reported low-grade leiomyosarcoma. Leiomyosarcoma is a malignant smooth muscle neoplasm that is rare in the oral cavity. The microscopic features and immunochemical markers in our case provided conclusive evidence of this diagnosis. Our research contributes the growing knowledge of oral leiomyosarcomas by providing a comparative analysis of our case report with all the cases in the literature.

**15**

**Regenerative Endodontics on a Maxillary Anterior Tooth**

Christian Penister, Paul Lindauer, Zachary Schnoor

Pediatric Dentistry and Orthodontic and Dentofacial Orthopedics/ East Carolina University School of Dental Medicine

Pulpal and periradicular pathologies, often caused by caries, trauma, or dental abnormalities, are common conditions encountered in clinical dental practice. Root canal treatment (RCT) is a standard approach for managing endodontic diseases in fully developed permanent teeth, yielding excellent clinical outcomes. In contrast, apexification is the traditional treatment for immature permanent teeth with pulp necrosis. In 2001, Iwaya SI pioneered the use of revascularization to successfully promote root development and restore pulpal sensitivity in a young permanent tooth with apical periodontitis. The primary goal of endodontic treatment is to eliminate pulp and periapical inflammation or infection while preserving the tooth. However, these procedures remove both the pulp and some dentin, which can compromise dentinal strength, immune responses, and proprioceptive functions, increasing the risk of reinfection and tooth fracture. As a result, contemporary endodontics aims to reconstruct the vital pulp, restore the biological function of teeth, regenerate a functional pulp-dentin complex, and regain immune competence and normal nociception.

Case report & Methods:

Access and Irrigation: Using low-concentration sodium hypochlorite (1.5%) and gentle EDTA (17%) are often preferred for irrigation, preserving stem cell viability.

Sealing Material: Calcium hydroxide was the used medicament. Mineral trioxide aggregate (MTA) was used and is commonly used for coronal sealing after regenerative procedures.

**Intra-canal Bleeding Technique:** Bleeding stimulated in the canal introduces stem cells from the apical papilla, which contributes to the regeneration process. A case selection process was used to determine which patient would benefit from the procedure:

1. REPs are recommended for ASA 1 and ASA 2 patients, as controlling root canal infections is challenging in those with impaired immunity, such as poorly controlled diabetes or long-term hormone use.
2. Necrotic permanent teeth with incomplete root formation, regardless of presence of periradicular lesions with no need of post/core for the final restoration
3. Patients/parents with good compliance and not allergic to medicaments or antibiotics used in the procedures.

Studies have shown that regenerative endodontic procedures (REPs) can promote continued root development, including an increase in root length and thickening of dentinal walls. This enhances the structural integrity of immature teeth. Primary goals of regenerative endodontics to eliminate symptoms and regain bony support/healing. Achieved secondary goals are thickened root walls with continued root development and increased root length. A tertiary goal is to have positive Pulp vitality test response. Regenerative endodontics for immature anterior permanent teeth offers significant advantages, including root maturation and improved tooth survival. However, successful outcomes depend on appropriate case selection, meticulous technique, and careful post-operative monitoring.

## **16**

### **Restoring Oral Function in Neurofibromatosis Type 1: A Case Report**

Bell B, Debnam H, Bakhsh A, Cui X, Paquette DW  
ECU SoDM

Neurofibromatosis type 1 (NF1) is a genetic disorder characterized by development of cutaneous and mucosal tumors, which significantly affect quality of life and oral function. While most NF1 lesions are benign, they may undergo malignant transformation, highlighting importance of timely diagnosis and management. Objective: Aim To document the diagnostic work-up and tailored dental treatment plan of a NF1 patient. Subject: A 54-year-old White female patient with history of NF1 presented with a chief complain of difficulty with mastication. Case Report: Clinical examination exhibited NF-associated lesions involving both gingival hyperplasia on the edentulous ridges and dentate areas. The proposed treatment plan includes the surgical excision of hyperplastic tissue in all four posterior sextants performed under local anesthesia, histopathological examination of the excised tissue, and placement of interim maxillary and mandibular partial dentures during the post-surgical healing phase. Conclusions: The cumulative evidence indicates that the risk of lesion recurrence or malignant transformation in patients with NF1 is minimal; hence we propose a plan that highlights the important of a tailored multidisciplinary approach, which includes surgical intervention and conservative dental treatment to improve oral function and quality of life.

## **17**

### **Case Report: Diagnosis and Management of Dental Implant Fracture**

Daugherty M, Piscorik P, Sude A, Cui X, Martinez Luna AA  
East Carolina University School of Dental Medicine

**Objective:** To describe the diagnostic approach and treatment plan for managing a fractured dental implant. **Case Description:** A patient presented with a fully osseointegrated dental implant replacing the mandibular first molar. The implant showed a mobile crown without screw loosening, and radiographs revealed a distal platform fracture. Six years following implant placement, the patient experienced loosening of the implant crown and porcelain fracture after the implant was restored with a screw-retained crown. The fracture involved a small piece of the distal platform. The management plan included re-torquing the implant crown, performing an occlusal analysis and adjustment, fabricating an occlusal guard, and implementing regular follow-up maintenance. Dental implants offer a reliable solution for replacing missing teeth however, rare complications, such as implant fractures, can significantly compromise the long-term success of the implant, prosthesis, and surrounding tissues. The incidence of implant fractures ranges from 0.2% to 2.3%, with contributing factors including material fatigue, excessive occlusal forces, improper placement, inadequate bone support, and suboptimal prosthetic design. **Conclusions:** This case illustrates how dental implants can fail under prolonged stress or adverse loading conditions. Adequate treatment planning and consistent maintenance could have potentially prevented this complication. Early detection of implant failure symptoms, along with accurate diagnosis and individualized treatment, are essential for effective management and improved long-term outcomes for patients.

**18**

### **The Role of AI in Smile Design: A Comparison with Traditional Techniques in Dental Treatments – Case Report**

Cameron Smith, Hanan Elgendy  
ECU SoDM

**Introduction:** Advances in artificial intelligence (AI) are reshaping many aspects of healthcare, with dentistry being no exception. AI-driven smile design tools are revolutionizing the way dental professionals plan and execute aesthetic treatments, offering a more precise, personalized, and predictable approach to smile design. However, traditional smile design methods rely heavily on the clinician's experience and manual techniques, such as wax-ups, photography, and direct measurements. This case report compares the effectiveness, efficiency, and aesthetic outcomes of AI-guided smile design versus traditional techniques in a multi-disciplinary dental treatment involving restorative, and periodontal care. A 78-year-old female patient presented with multiple dental concerns, including anterior aesthetics along with misalignment and gingival asymmetry. A multi-disciplinary approach was adopted, restorative crowns for the anterior teeth, and periodontal therapy to address gum recession. Two smile design approaches were employed: the traditional method, which involved manual wax-ups and photographs, and the AI-guided approach, which used advanced software (Smilefy) to analyze the patient's teeth and facial features and create a digital mock-up. Both designs were used as guides for treatment planning. **Results:** The AI-guided approach

proved more efficient and precise. The software generated a customized smile design based on facial symmetry and occlusion, allowing for real-time modifications and seamless collaboration between specialists. The traditional method, while effective, required multiple iterations of physical mock-ups and adjustments, which prolonged the treatment timeline. The final AI-driven design closely mirrored the predicted result, achieving optimal tooth proportions and gum contours. The traditional approach resulted in a satisfactory outcome, though with additional refinements. Conclusion: AI-guided smile design offers significant advantages over traditional methods in terms of precision, efficiency, and predictability. The ability to visualize and adjust the design digitally allows for more coordinated, faster treatment with a higher degree of aesthetic accuracy. This case highlights the growing role of AI in multi-disciplinary dental care, offering a more streamlined and reliable method for achieving superior outcomes in smile design.

## **19**

### **Fabrication of Provisional Crowns and Veneers Using 3D Printing for Aesthetic Dental Restorations - Case Report**

Kaylee Bradford, Valeria Del Castillo, Matthew Francis Davis, Hanan Elgendy  
ECU School of Dental Medicine

This case report examines the use of 3D printing to fabricate provisional crowns and veneers for a patient seeking aesthetic dental restoration. The focus is on evaluating the precision, esthetic outcomes, and efficiency of using 3D-printed provisional restorations as a temporary solution prior to the final, permanent restorations. A 42-year-old female patient with aesthetic concerns on her anterior teeth. The treatment plan included the fabrication of Emax crowns and veneers to enhance both appearance and function. After performing the necessary tooth preparation, digital impressions were taken. A virtual model of the prepared teeth was created, and provisional restorations (crowns for #8 and 9, veneers for the adjacent teeth) were designed using CAD software (Exocad). The design files were then sent to a 3D printer, utilizing a biocompatible resin material specifically designed for dental applications. After printing, the restorations underwent post-processing with UV light curing to ensure optimal hardness and fit. The provisional crowns and veneers were then tried in, adjusted for occlusion, and cemented temporarily. The 3D-printed provisional crowns and veneers exhibited excellent fit and natural aesthetics, with the color and translucency closely matching the patient's surrounding natural teeth. The restorations required minimal adjustments during try-in, ensuring ease of placement. The use of 3D printing for the fabrication of provisional crowns and veneers in aesthetic dental restorations proved to be highly effective, offering excellent fit, aesthetics, and patient satisfaction. This approach facilitated a faster, more efficient workflow compared to traditional methods. While the long-term durability of the materials used for provisional restorations warrants further research, 3D printing presents a promising option for high-quality, temporary aesthetic solutions in restorative dentistry.

## **CLINICAL/COMMUNITY/IMPLEMENTATION RESEARCH**

## 20

### **School Program Effective in Providing Critical Referrals Leading to Treatment**

Penister C, Yockey A, Wright W, Moss M, Carmago G, McCarlie Jr. VW  
ECU School of Dental Medicine Pediatric Dentistry & Orthodontic & Dentofacial  
Orthopedics

This study evaluates the Bertie County Schools' Oral Health Program (BCOHP), highlighting its significance and impact on vulnerable populations in North Carolina, where access to healthcare remains an important problem. The 2023 North Carolina Department of Health and Human Services report generally shows untreated decay of 23.9% in Bertie County. The BCOHP provides pediatric patients a screening where if dental need is identified a referral is made to East Carolina University's School of Dental Medicine (ECU SoDM), its Community Service-Learning Center (CSLC) in Ahoskie or any private-office dentist. The purpose of this study is to analyze the effectiveness of these referrals. With approval by the Institutional Review Board (UMCIRB 23-002353), we conducted retrospective chart reviews of pediatric dental patients referred by the program over 5.5 years (January 2019 – July 2024) and analyzed the quantity of time elapsed between initial referral and start of treatment, including between those identified with less need and those with more treatment need. We also identified those who received care after referral. Of 1,053 screened, 377 patients with dental need were identified and referred (35.8%). Of those referred, 50.8% had moderate need while 49.2% had severe need. A two-sample t-test showed no difference between treatment time means of those with moderate need and severe need ( $P$ -value=0.69). Of those referred, 66.3% received follow up treatment and established a dental home, close to 35% higher than a similar 2020 study in another state. This study illuminates how the BCOHP program is effective in identifying substantial dental need and in providing critical referrals. It also shows that further study is needed to understand what barriers impeded 33.6% referred pediatric patients from receiving follow up treatment. These findings support the BCOHP and the establishment of similar programs to improve access to care.

## 21

### **Retrospective Analysis of Anterior Endodontic Outcomes Performed at ECU School of Dental Medicine**

Schnoor Z, Nashed D, Betancourt A, Curry K, Lindauer PA  
ECU AEGD Residency Program

To determine the number and survival rate of anterior teeth treated with nonsurgical endodontic procedures in a dental school practice. A retrospective analysis of extant data was performed on charts having a D3310 (endodontic therapy, anterior teeth) recorded between 2011 and September 2024. Additional inclusion criteria included subsequent restorative treatment as well as extraction codes for the endodontically treated teeth. 2,452 cases were identified and analyzed. 980 male and 1301 female patients between the ages of eight and 94 years were included with a mean age of 34 years. 2452 teeth were treated: 1970 maxillary and 482 mandibular. Distribution by tooth type: 982 central incisors, 753 canines and 717 lateral incisors. Of the 171 teeth

that were extracted, only 97 teeth had a permanent restoration placed (57%). For all 2452 treated teeth, 1629 teeth had a permanent restoration placed (66%). The average time between root canal completion and permanent restoration placement was 98 days. Distribution of treatment by provider type was: faculty 7%, student 44%, and resident 49%. The overall tooth survival rate was 93% with a 95% survival rate for centrals, 86% for laterals and 92% for canines. Survival rate by provider was 93% for students, 93% for residents, and 94% for faculty. Anterior endodontic procedures had an 93% survival rate. Further investigation is warranted to explain why there is such a significant delay between completion of root canal therapy and placement of a permanent restoration. A standardized chart entry for the direct pulp cap procedure would enhance future research.

## **22**

### **Dental Treatment Considerations of Pediatric Patients with Autism Spectrum Disorder**

Marlene Dontsop, Nikki Tucker, Mark Moss  
Pediatric Dentistry, ECU SoDM

Due to pediatric patients with autism spectrum disorder having varied social interactions and communication skills, we want to determine a trend for dental treatment and which treatment option dental providers plan for this population to address their dental health care needs pertaining to their disorder and the role it plays in their oral care. The goal of our investigation is to investigate trends in dental treatment options for pediatric patients with ASD and how behavior plays a role in the decision of the provider in treatment for this population. This study aims in determining a correlation between dental treatment options and behavior management techniques that favor pediatric patients with autism spectrum disorder. This study will collaborate with ECU School of Dental Medicine and utilize patients of record from January 2019– December 2023 who have been a patient in the Pediatric Dentistry Department. This retrospective study will be conducted via a clinical chart review on Axium where patients of record aged 0-5 and diagnosed with ASD will be utilized in the study. The goal is to have 100 patients of record. Upon Approval of IRB, our study hopes to obtain results from the data that will determine the trends in dental treatment considerations for pediatric patients with autism spectrum disorder including dental treatment with nitrous oxide sedation, oral conscious sedation, and general anesthesia. This study aims to investigate dental treatment trends planned for patients with ASD; the role that behavior, cooperation, and Frankl score plays in dental treatment planning; and if there is a trend in other treatment modalities planned prior to general anesthesia treatment rendered.

## **23**

### **PREDICT-PC Study: Improving Primary Care Diagnosis of Periodontitis and its Potential Consequences for Some Inflammatory Systemic Diseases**

Gerald L. Klein, Michael Fath, Roger E. Morgan, Alexandre R. Vieira  
ECU School of Pharmacology and Toxicology, Brody School of Medicine, and School of Dental Medicine

The PREDICT-PC Study (Periodontitis Recognition and Evaluation for Diagnosis and Intervention in Chronic Treatment - Primary Care) is a simple method for improving primary care providers' literacy about periodontitis as well as their ability to diagnose and treat it, and its potential effect on quality of life and certain inflammatory systemic diseases. A linear patient periodontal self-grading scale as well as the Oral Health Impact Profile (OHIP-14) questionnaire will be administered to 600 patients (age >50) in 20 primary care offices in rural North Carolina. The self-grading scale consists of tender/painful gums, swollen gums, bleeding gums, mouth odor, reddish or purple gums, and gum recession or loose teeth. Healthcare professionals (HCPs) will also grade any systemic disease on a linear scale. Patients will be provided with both recommendations for proper oral care as well as referral to a dentist. Follow-up assessment will be conducted at both 6 and 12 months. The linear scales and OHIP-14 will be repeated for oral and systemic symptoms. Improvement in periodontitis will be compared to improvement in systemic disease. Periodontitis is one of the most common chronic adult disorders, yet there is limited awareness among primary care providers, resulting in inadequate diagnosis and treatment. Notably, periodontitis is associated with several inflammatory systemic diseases such as diabetes, cardiovascular disease, pulmonary conditions, rheumatoid arthritis, and metabolic disorders. These all are associated with an increase in inflammatory cytokines such as tumor necrosis factor (among others) which may account for their potential consequential effects. This study aims to address the following: Given that approximately one-third of the adult U.S. population and 43% of the rural population does not seek regular dental care, it is increasingly vital for HCPs to enhance their periodontal literacy. This study may also provide further evidence of a correlation between periodontitis and a specific systemic disorder. In a subsequent study, we will investigate this relationship in greater detail by examining the associated cytokines. HCPs do not realize the potential impact that periodontitis may have on a patient's quality of life and systemic health. The PREDICT-PC Study should provide a simple method for HCPs to evaluate periodontal disease and encourage its diagnosis, treatment, and referral. Further studies may demonstrate a correlation to improving periodontal disease with the systemic improvement of some inflammatory disorders.

## **24**

### **Erosive Tooth Wear is the Result of Gene-Environment Interactions**

Alexandre R. Vieira

ECU School of Dental Medicine

Erosive tooth wear is a gene-environmental model. It requires the exposure to acids, typically from the diet or from the gastric content of the host, and shows variation among individuals and populations, which suggests it to be determined by more than one gene, each with small individual effects. This presentation expands the discussion that supports the assumption that a genetic component modulates the expression of erosive tooth wear. PubMed was used to identify studies that described genetic influences to erosive tooth wear. We aimed to establish mode of inheritance, gene-environmental influences, and genetic mechanisms contributing to erosive tooth wear. PubMed was used to identify studies that described genetic influences to erosive tooth wear. We

aimed to establish mode of inheritance, gene-environmental influences, and genetic mechanisms contributing to erosive tooth wear. Erosive tooth wear is influenced by genetic, requiring exposure to acidic conditions from the diet or chronic vomiting.

## 25

### **Saliva Microbiome Profiles in Patients with Implant-Retained Overdentures**

Gillone A, Martinez Luna AA, Paquette DW, Sheba M, Abdelaal M, Cui X  
Surgical Sciences, ECU SoDM

Limited clinical data exist regarding the saliva microbiome in edentulous patients with implant-retained overdentures (IRO). This study aimed to evaluate the saliva microbiome profiles in IRO patients, compare these profiles with peri-implant plaque microbiomes, and examine their correlation with pre-treatment periodontal diagnoses. The study included 25 patients with a total of 50 implants. Demographic data and pre-treatment periodontal diagnoses were recorded. Clinical measurements, peri-implant plaque, and saliva samples were collected, followed by 16S rRNA gene-targeted sequencing. Participants had an average age of 71 years. Pre-extraction diagnoses included:

- Group 1: 4 patients with clinically healthy gingiva on a reduced periodontium
- Group 2: 4 patients with localized Stage II to IV periodontitis, Grades B or C
- Group 3: 7 patients with generalized Stage I to III periodontitis, Grades A or B
- Group 4: 10 patients with generalized Stage IV periodontitis, Grade C

Nineteen implants exhibited signs of peri-implant mucositis, while 31 were healthy. Salivary microbiome results showed statistically significant differences in alpha diversity between male and female patients ( $p < 0.05$ ). This study confirmed notable differences in salivary microbial profiles among IRO patients, as well as between saliva and plaque microbiomes across all patient groups. However, assessing the biological significance of these differences remains complex.

## 26

### **Comfort with HPV-related Discussions by Oral Health Care Providers among College Students**

Laura Merrell, James Bishop, Dayna Henry, Katherine Ott Walter, Wilhelmina Azariah, Kyra Loughlin  
Health Education and Promotion, College of Health and Human Performance, ECU

Human papillomavirus (HPV) is the most common sexually transmitted infection in the United States. While many are aware of HPV-related anogenital cancers, fewer recognize its role in causing oropharyngeal cancer. Oral healthcare providers (OHPs), including dental hygienists, are increasingly focused on preventing HPV-related oral health outcomes through oral cancer screenings and promoting HPV vaccination. While previous research has examined parents' and providers' views on discussing HPV in dental settings, little is known about adult patients' perceptions. This study explored the acceptability of HPV-related discussions with OHPs among college-age individuals.

Participants enrolled in a required 100-level personal health course at a large public university in the mid-Atlantic region were invited to complete an anonymous online survey regarding comfort levels with discussion of oral health topics, follow-up open-ended questions, and demographic variables. Oral health topics included oral health prevention behaviors, oral cancer screening, smoking and alcohol as risk factors for oral cancer, HPV as a risk factor for oral cancer, the HPV vaccine, OHP recommendation of the HPV vaccine, discuss about HPV and the HPV vaccine at next visit. Means and standard deviations were calculated for each of the comfort items and item differences were compared using paired-samples t-tests. Participants also answered open-ended questions about reasons for wanting to discuss HPV and the HPV vaccine with an OHP, reasons for not wanting to do so, and reasons for lack of comfort with these discussions. Pilot-test data were used to identify major themes to responses, and then participant data was open-coded. Investigators met and discussed codes until consensus was met. Participants (N=2,198) were mostly female (71%), white (73%), and between the ages of 18-19 (76%). Most had dental insurance (85%) that they received through their parents (97%). Participants reported the highest comfort discussing general oral health behaviors, like tooth brushing and flossing, and the least comfort discussing HPV-related topics. Qualitative responses from participants who were comfortable with HPV-related discusses indicated wanting to seek out information to improve their own health (74.1%). Less comfortable participants revealed limited knowledge about HPV and HPV vaccination, as well as a belief that these discussions were better suited for physicians (40%). Participants in this study were comfortable discussing general oral health prevention behaviors. As topics moved from to oral cancer and its risk factors, there was markedly less comfort with these discussions. The findings suggest that college-age dental patients may feel uneasy discussing HPV with OHPs. However, given the link between HPV and adverse oral health outcomes, it is crucial to educate this population on the oral-systemic connection and HPV vaccination as primary prevention. These results underscore the need for enhanced professional development for OHPs to build confidence, knowledge, and communication skills for addressing HPV-related topics with young adult patients.

## 27

### **Refining the Methodology of the Dental Disparity Database**

Jaeden Phelix, Alexandre R. Vieira  
ECU School of Dental Medicine

Background: Sample collection can be a time-consuming portion of a research project. When looking for certain demographics or conditions, the sample collection process can be elongated. East Carolina University's School of Dental Medicine has 8 dental clinics across the state of North Carolina, who have treated over 100,000 patients. These clinics strive to provide affordable dental care for the community. At East Carolinas School of Dental Medicine's main clinic, located in Ross Hall, a project was implemented to create a registry, with the intention to help the people in the community and the advance dental research.

The rural health disparities research registry aims to collect saliva samples and access to patient's dental record/clinical charts to be kept in a repository to be used by

researchers at East Carolina University's SoDM. This registry allows researchers to search for patients with specific demographics and conditions in the database. The researcher can then pull the designated samples for use in their experiments. Our goal was the make a registry that allows researchers to have access to saliva samples from people of all demographics and dental conditions.

Methods: Our cohort consists of 124 participants that were recruited from East Carolina School of Dental Medicine's AEGD clinic. All patients provided medical records through written consent and supplied saliva samples for later DNA extraction and genotyping experiments. The methodology was developed to increase participation through involving the doctors, assistants, and front desk staff.

Front desk cards were implemented to increase patients' awareness of the research project. Patients either pick up a card from the clinics front table or they are handed one at check in to review. The front desk cards include a basic overview of the study on the front, and answers to frequently asked questions on the back. This way the participant is familiar with the project, can accumulate questions, and let their care provider know if they would like to participate or not.

The research inventory was developed to conveniently supply care providers with all the necessary materials to efficiently collect samples. The research inventory is comprised of a small filing cabinet with a consent form "drop-box" on top. The filing cabinet has 4 drawers including, consent forms, 50mL conical tubes, sugar free candy, and procedure documents. The drop-box on top is where the care provider places all forms associated with the project for the investigators to collect. A -20°C freezer is located next to the research inventory; stocked with convenient racks to store samples until they are moved to the lab.

Results: Since implementing the updated materials and methodology, participation has increased. Multiple faculty members have reached out to participate in sample collection. On average the amount of saliva produced by patients is 4.30mL, indicating that each participant is providing enough saliva to be used in about 4 studies. There are about 6 boxes of samples as of right now, totaling 550 microcentrifuge tubes.

Conclusions: Implementing the research inventory and front desk cards seems to be increasing participation and decreasing sample collection time. Working with faculty members has also greatly increased sample collection. The front desk cards allow quicker sample collection as the provider is not needing to explain the project each time. Collection time is also reduced through the utilization of the research inventory, which ensures that materials are always available to providers. Sample collection for the research registry is intended to expand to other clinics across the state.

## **28**

### **Parental Preferences for Remaining with Child During Dental Procedures**

Diyora Amanova, Randall Ball, Mark Moss

Pediatric Dentistry/ East Carolina School of Dental Medicine

The presence of parents in the dental operatory has become widely accepted by clinicians. However, parental involvement can sometimes hinder effective behavior management, and parental anxiety may adversely impact a child's cooperation and increase their anxiety. While some practitioners advocate limiting parental roles or

excluding them from treatment areas, evolving societal expectations often necessitate accommodating parental preferences. This study aims to evaluate parental preferences regarding their presence during their child's dental procedures and provide recommendations for clinical guidelines on parental involvement. A total of 78 parents/guardians were surveyed using an iPad during their child's dental visit at the East Carolina School of Dental Medicine. However, only 75 responses were included in the data analysis, as some participants did not complete all sections of the survey correctly. Redcap was utilized to collect, store, and analyze the data. Most parents (85%, 64 out of 75) prefer staying with their child during dental treatment, regardless of whether it is the first treatment (87%, 13 out of 15) or not (84%, 51 out of 60). Past positive experiences do not significantly impact this preference, as 85% (41 out of 48) of parents with positive experiences and 89% (8 out of 9) of those without still preferred staying. Preferences varied slightly based on the type of treatment being administered, though the differences were not statistically significant: 83% (10 out of 12) of parents preferred staying when local anesthesia was used, 89% (39 out of 44) preferred staying with nitrous oxide, and 78% (14 out of 18) preferred staying with sedation. Primary reasons for wanting to stay included the belief that their presence would improve their child's behavior (53, 84.1%), the dentist might require their assistance (7, 11.1%), an assumption that their presence was mandatory (2, 3.2%), and a desire to observe the dental procedure (19, 30.2%). Universal trust in the dentist was reported and did not affect preferences. No significant correlations were identified between preferences and demographic or procedural factors. 1) Most parents/guardians consistently preferred to stay in the operatory during their child's dental procedure, regardless of factors such as treatment experience, appointment type, child behavior expectations, or demographic variables.

2) Offering clear explanations or providing visual access to the room can enhance comfort and facilitate acceptance when parents are asked to step out.

## 29

### **Parental Oral Health Literacy and Child Dental Anxiety and Fear**

Shah R, Moss M, McCarlie Jr. V

Department of Pediatric Dentistry and Orthodontics and Dentofacial Orthopedics

Dental anxiety is a significant concern in pediatric patients, that often affects their behavior during treatment and long-term oral health. Parental oral health literacy and avoidance levels may play a crucial role in shaping children's dental experiences, yet the relationship between these factors is underexplored. This study aims to investigate the relationship between parental oral health literacy and their children's dental anxiety. Additionally, it examines whether parental dental fear and avoidance correlate with pediatric patients' dental anxiety. An observational study will be conducted at East Carolina University's Pediatric Dental Clinic. In order to detect a difference of 0.5 in the Facial Image Scale with at least 80% power, we will need to recruit 100 participants. Parents/guardians of pediatric patients will complete the REALMD-20 questionnaire to assess oral health literacy and the Dental Fear and Avoidance Scale (DFAS) to evaluate their fear and avoidance levels. Pediatric patients will use the Facial Image Scale (FIS) to self-report their dental anxiety. Data on demographics, socioeconomic

status, and oral health education sources will also be collected. It is anticipated that analysis will reveal an inverse relationship between parental oral health literacy and pediatric dental anxiety, with lower literacy scores correlating to higher child anxiety levels. Similarly, higher parental dental fear and avoidance scores on the DFAS are expected to be positively associated with increased pediatric dental anxiety. Demographic factors such as socioeconomic status and access to oral health education may affect these relationships. Understanding these relationships would provide the basis necessary to rationalize the development of targeted interventions and educational resources. These resources would aid in reducing dental anxiety in children and their parents, improving dental care experiences and outcomes.

### **30**

#### **Limited Exams Leading to Establishment of Dental Home**

Anjana Krishnan, Eonsoo Kim, Mark Moss  
Department of Pediatric Dentistry/ ECU SODM

The purpose of this study is to collect data on the number of patients coming to the ECU SODM pediatric clinic initially for limited exams, and then establishing this as their dental home. This study will compare data before and after COVID. This will be a retrospective chart review. Data will be collected from 100 charts before COVID and 100 charts after. For this study dental home establishment will be defined as having a comprehensive exam and two periodic exams 6 months after. The D0140, D0150, and D0120 codes will be used. Included charts will be of children whose first completed code was D0140. It is hypothesized that the number of children establishing a dental home here after their limited exam will be higher in the group before COVID. This study will provide insight into characteristics of the patient population and how it was affected by COVID. It will also potentially provide broader insight into patient populations in dental schools across the country who see a large Medicaid population.

### **31**

#### **The Future of ECU SoDM Hyde County Dental Clinic- Community Input**

Melony Grace Hodges, Rob Tempel  
East Carolina University Honors College and School of Dental Medicine

The ECU School of Dental Medicine's Hyde County Clinic was opened with the goal of bringing oral healthcare to the residents of Hyde County. Hyde County is one of four counties that does not have a single practicing dentist within county lines. The goal of the Hyde County Clinic is to partner with local health and government agencies to bring sustainable and accessible dental care to the residents of Hyde and other neighboring counties. Since the opening of the Hyde County Clinic, 439 patients have been treated by 126 ECU SODM dental students and 62 dental residents. Since its opening, the clinic has also provided \$80,379.25 worth of dental care. With the Hyde County Clinic being open for over two years, it is essential to ask what is next. To answer this question, data was gathered from the residents of Hyde County to determine the future of the Hyde County Clinic. A fourteen-question survey was created to gather information from Hyde County residents regarding oral healthcare and what they feel is needed in

their community. This survey was then posted online on the Hyde County Health Department's social media outlets and handed to each patient who came into the Hyde County Clinic. The data being analyzed is based on 24 responses from the survey posted online and 20 responses from patients at the clinic. As seen in the data results, dental cleanings, fillings, extractions, and pediatric dentistry are what residents of Hyde County feel are most needed in their community. The ECU SoDM Hyde County Clinic addresses all of these needs except pediatric dentistry. Based on the responses from the survey conducted, 95% of residents feel that there is a need for a dentist to visit the local schools and provide dental exams for the children in the community. To the residents of Hyde County, the clinic's future endeavors should focus on providing pediatric care. The results from this survey will be shared with the Hyde County Health Department Health Director to compare with the Hyde County community needs assessment. The information gathered from the survey will help shape the efforts in the county to develop a long-term dental presence within the community. (I have pie charts with percentages on my poster to present the data collected from the survey and data that has been compiled since the ECU SoDM Hyde County Clinic was opened. The data includes the age of patients, the kinds of procedures seen, what type of dental services the community thinks they need, and if they think a local dentist should visit the schools to provide dental exams). In conclusion, to improve oral healthcare and satisfy the community of Hyde County, the next steps of the Hyde County Clinic should be toward pediatric dentistry. Whether that looks like visiting the local schools and providing dental exams or seeing children at the Hyde County Clinic, based on the survey conducted, the residents of Hyde County have voiced their opinion. Tooth decay is the most common chronic disease among children in the United States, and the sooner a dentist sees the children in Hyde County, the sooner cavities and tooth decay can be prevented. When the ECU SODM Hyde County Clinic finds a way to see the children of Hyde County, those kids will not have to worry about missing a full day of school to visit a dental office.

**32**

### **Recurrence of General Anesthesia (GA) in Pediatric Dental Care: A 7-Year Retrospective Study at ECU SoDM**

Antonio D. Roberts, Nikki Tucker, Gerard Camargo, Mark Moss

Department of Pediatric Dentistry, Orthodontics and Dentofacial Orthopedics

A retrospective cohort study was conducted to investigate the outcomes of pediatric patients treated with general anesthesia (GA) within the East Carolina University Pediatric Dental Residency Program from Fall 2016 to Fall 2023. The objectives of the study were to assess demographic trends, treatment recurrence, and follow-up care for children requiring GA in a pediatric dental setting. The retrospective analysis of patient records was fulfilled using the Axium electronic health record system to evaluate the establishment of a dental home, post-GA follow-up, and the need for repeat GA procedures. A total of 1,159 pediatric patients were treated under GA during the study period. Of these, 62 patients required repeat GA treatment, with 23 in the 3–6-year age group, suggesting a higher recurrence rate in this cohort. Patients were stratified into four age groups: 0–3, 3–6, 6–9, and 9+. The 3–6 age group accounted for the highest

proportion of GA treatments ( n=609). Males represented (n=611) of treated patients, and 92.5% were Medicaid beneficiaries, reflecting the socioeconomic factors influencing access to care. These findings highlight that children aged 3–6 years are particularly at risk for requiring repeat GA procedures, underscoring the need for early and comprehensive dental interventions in this age group. The study suggests that clinicians should be particularly vigilant in managing treatment and follow-up care for younger pediatric patients, especially those from lower-income backgrounds. Future research could explore strategies for reducing the need for repeat GA procedures and enhancing early dental care in vulnerable populations.

### 33

#### **ECU School of Dental Medicine - School-based Oral Health Program**

Stewart RR, Pardi V, Webb MD, Wright W

ECU School of Dental Medicine

The ECU School of Dental Medicine School-Based Oral Health Program was established in Bertie County in November 2019 with funding from The Duke Endowment and The Blue Cross Blue Shield Foundation. Additional funding was secured in 2022 to facilitate program expansion to Jones County. Currently, the program provides diagnostic and preventive services, including but not limited to comprehensive exams, periodic exams, radiographs, intraoral photos, prophylaxis, fluoride varnish, silver diamine fluoride (SDF), sealants, interim/temporary restorations, and case management. To date, the program has served over 1,400 rural school children. Since inception, program staff have monitored evaluation metrics and strategic plans of similar programs to increase awareness, enrollment, sustainability, and overall success. Various strategies to optimize program success include: participation in local events, streamlining the enrollment process, multilingual outreach (English and Spanish consents), and collaboration with private funders to promote program awareness. Additionally, third-year dental students deliver oral health education as part of their Practical Experience Service-Learning course. This experience not only enhances their education but also inspires future professionals to consider careers in public health and service-oriented dentistry. Approximately 4000 rural children have received oral health education through this initiative. By working together with schools, parents, and community partners, we can grow this program, ensuring more children receive the dental care they need while guiding future dentists toward serving their communities.

### 34

#### **Growth Rate of *C. albicans* under PMMA and PA**

David MacPherson, Robert Yard

ECU School of Dental Medicine

The objective was to evaluate rate of growth of *C. albicans* under polymethyl methacrylate (PMMA) and polyamide (PA) denture base materials.

Denture Stomatitis (DS) is a common chronic oral inflammatory condition strongly associated with an overgrowth of *Candida albicans* (*C. albicans*) within the denture-biofilm. The RDP is the key factor in the initiation and progression of DS, so selection of denture base materials that may limit the growth of *Candida* may help prevent or limit

DS. Twenty-four samples of PMMA (Lucitone 199®, Dentsply Sirona), PA (Thermoplastic Comfort System®, TCS Dental Inc.), and glass covers (positive control) were prepared and sterilized. The negative control was unimpeded growth of *C. albicans*. *C. albicans* was cultured and plated on trypticase soy agar (TSA) plates with 5% sheep's blood, and the materials placed over single monoclonal colony forming units (CFUs) and incubated at 35°C for 12- and 24-hour periods. At the end of each time period the underlying CFU's were harvested and the *C. albicans* counted. Statistical analysis using a two-factor ANOVA and post hoc t-tests corrected for multiple comparisons showed a statistically significant difference in growth rate under PMMA and PA at both the 12- and 24-hour time intervals, with less growth under the PA. There was no statistical difference in growth under PA and a glass cover (positive control). This finding may account for the clinical observation that patients who wear RDPs fabricated from PA do not seem to develop DS as frequently as those who wear RDPs fabricated from PMMA. However, there are other factors involved, such as flexibility and movement of the PA material during function, which may account for the clinical observation.

## **EDUCATION/TRAINING/MENTORING/INTERPROFESSIONAL RESEARCH**

### **35**

#### **Dental Defenders – Schweitzer Fellowship Project**

Baldwin Bell, Maya Grimes, Luis Sensi, Mark E Moss, Taneet Ghuman  
East Carolina School of Dental Medicine

Many parents and student athletes are uneducated on the importance of dental health in relation to the prevention of oral trauma, and how primary teeth are connected to the permanent dentition. Our program is to improve the oral health knowledge of student athletes and coaches along with other members of the community. This involves educating student athletes on the importance of oral health within multiple oral hygiene sessions, as well as preventative techniques to avoid oral trauma while playing sports. We conducted oral hygiene education sessions at Welcome Middle School. A pre and post survey were conducted for participants pre and post oral health education sessions. The surveys collected data to assess changes in attitude, habits and gain in oral health knowledge. Oral Health Education sessions and training on trauma prevention were provided to football and basketball athletes as well as the Greenville community during sporting events. Post survey data was obtained to assess the increase in oral health literacy and the importance of oral trauma prevention. Student athletes who participated in the oral hygiene education sessions demonstrated a significant improvement in their knowledge, literacy, and attitudes toward oral health. Additionally, they expressed motivation to adopt healthier oral hygiene behaviors and share their newfound knowledge with peers and family members. Despite limited prior exposure to oral health education, the students were highly receptive to the information provided during the sessions. Post session surveys revealed a strong intention to incorporate improved oral health practices and preventive techniques for oral trauma into their daily routines and activities. These findings suggest that targeted education

effectively enhanced awareness and promoted positive behavioral changes in this population. The student-athlete oral health education and trauma prevention program received positive feedback from players, coaches, and facilitators. Pre- and post-test evaluations demonstrated a measurable increase in participants' knowledge of oral health and trauma prevention techniques. Future studies are recommended to assess the long-term impact of the program, particularly whether participants actively integrate oral health practices and trauma prevention strategies into their daily routines and athletic activities.

## 36

### **Innovation through integration: Medical Family Therapy & Dental Medicine Partnership**

Kimber Jones, Naomi Williamson, Angela Lamson  
ECU Human Development & Family Science

Service delivery model has been adopted by healthcare systems all over the world to better care for the holistic needs of patients and their families (Lamson et al., 2022). “Medical family therapy (MedFT), as a field, has offered innovation to IBHC models by delivering biopsychosocial-spiritual (BPS-S), relational, and family-oriented care across a variety of healthcare contexts. (p.29)” This presentation details of a pilot program that includes medical family therapists as integrated behavioral health providers embedded in clinics via the School of Dental Medicine. The authors illustrate a collaborative framework for integrated care, including common presenting concerns, interventions, and a standardized protocol to serve patients and their families. Integrated behavioral health care (IBHC) occurs when medical and behavioral health providers work collaboratively to assess, diagnose, and treat patients and their families in areas of health, illness, and trauma. Providers working in IBHC settings strive to tailor treatment to fit the particular needs of the individual patients and families with whom they work. Using a biopsychosocial framework, medical family therapists (MedFTs) collaborate with healthcare professionals to improve patient outcomes and enhance patient satisfaction while addressing a variety of common behavioral and mental health topics. To address these concerns, services provided by MedFTs may include the following:

- Assessment, diagnosis, and intervention for common DSM-5 7 psychiatric disorders
- Improve Health Behaviors (e.g., sleep, nutrition, physical activity, medication adherence, etc.)
- Chronic Disease Management • Pain Management
- Crisis Management (i.e., suicidal ideation, domestic violence, abuse)
- Smoking Cessation
- Stress Management/Self-Care

During integrated behavioral health visits at the School of Dental Medicine MedFTs collaborate with patients, families, and oral health providers to assess, diagnose, intervene, and/or initiate healthy lifestyle modifications through the use of health goals. 'We have an Integrated Behavioral Health Interview Flow Chart that will be included in the poster. Unfortunately, this PDF would not attach here.

The IBC flowchart explains a process in which, after obtaining consent, we complete both a depression (Patient Health Questionnaire [PHQ-9]12) and anxiety (Generalized

Anxiety Disorder [GAD-7]<sup>13</sup> screening (both should be done annually, and if either screen is clinically significant [score of 1 or higher], that screen should be repeated at each subsequent appointment, but not more than once every two weeks or until the score is below five). MedFTs also screen whether the patient uses tobacco/vaping, alcohol, or illicit drugs. If no significant mental health symptoms or relational problems are present, our encounter will likely focus on behavioral health interventions. If symptoms exist, our visit will likely focus on mental health interventions and/or referral. Each visit includes MedFTs encouraging patients to make “SMART” goals to focus on between their appointments. “SMART” goals are goals that are Specific, Measurable, Assignable, Realistic, and Timely.

The following list contains questions that MedFTs may use to facilitate behavioral health goal conversations:

- “What is one small change you would like to make to reach your goal? Just one thing that you are willing to do consistently.”
- “What would be different in your life if you were able to meet this goal?”
- “Who can help you reach their goal? How can they help you? How can you ask them for their support?”

We will include a graphic on most common presenting concerns for integrated care sessions at SODM.

Throughout the past nine months, patients have received access to well-trained behavioral health providers as part of their dental visit.

Sessions with patients (and sometimes with their family) are focused on enhancing mental, emotional, and relational health.

Without integrated care, many of these patients would struggle with symptoms of mental health or behavioral health without another outlet for care. IBHC offers an easily accessible option for these patients.

To further efforts toward integrated care, interprofessional education and collaborative care pathways may strengthen partnerships between MedFT and dental students, residents, and faculty.

### **37**

#### **Self-directed Online Extracurricular Learning of Clinical Procedures**

Cui X, Ahmed SN, Walston S, Rhodes C, Boushell LW  
General Dentistry, ECU School of Dental Medicine

Self-directed learning (SDL) is increasingly recognized as a vital component of dental education, enhancing critical thinking and clinical skills. However, research on the use of self-directed online extracurricular learning, specifically for clinical procedures among dental students while completing their dental education is scarce. Objectives: This study aimed to describe self-directed online extracurricular learning resources utilized by third- and fourth-year dental students, assess perceived effectiveness of these resources in learning clinical procedures, and explore students' strategies for evaluating the quality of information. Methods: A cross-sectional survey was designed and administered to third- and fourth-year dental students, with 97 respondents (35.7% response rate) out of 272 participants. The survey measured SDL resource use, perceived effectiveness of these resources, and students' ability to critique online content. Descriptive statistics and

analysis of variance (ANOVA) were used to analyze the data. Results: Among the participants, 76% reported using self-directed online resources for clinical learning. Students rated the effectiveness of these resources on a scale from 1 to 5, with an average rating of 3.9, indicating moderate to high usefulness for learning. However, only 25% of students felt highly confident in their ability to critically assess the reliability of online materials, suggesting a need for improved guidance in evaluating content quality. Conclusion: A majority of survey respondents utilized self-directed online extracurricular learning and considered it moderately effective. Study participants expressed limited ability to critically evaluate the quality of the information. These findings highlight the need for formal pathways for navigating and validating online learning resources, which could enhance the integration of SDL into dental education curricula.

### 38

#### **Opening “DOORS” for Research for Dental Students, Residents, and Clinical Faculty: A Collaboration with ECU and UF**

Alexander E, Alwazni A, Browning H, Hendrick A, Hopfensperger L, Koroma S, Montani M, Mottinger Z, Rao S, Spencer A, Xie Y, Williams J, Hoang A, Rivera J, Abdelaal M, Al-Dajani M, Bakhsh A, Cui X, Elgendy H, Kaur R, Mark S, Sheba M, Venkat S, Worm D, Geraldini S, Murata R, Pardi V, Wright W, Bartley E, Moss M, Pacho K, Paquette DW, McNeil DW

East Carolina University School of Dental Medicine and Department of Community Dentistry and Behavioral Science, University of Florida College of Dentistry

The translation of new findings to dental clinical practice to improve patient outcomes depends on a dynamic future workforce that understands and can participate in clinical and practice-based research. To address this critical need, ECU and UF are collaborating on an NIDCR U01 PRIMED grant to avail clinical research training and experiences to dental students, residents, and clinical faculty via the “DOOR” (Development of Opportunities for Research) project. Objectives: 1) to describe the DOOR curriculum design and intended research competencies; 2) to identify baseline demographics for the first cohort of dental students, residents, and clinical faculty at ECU in the DOOR project; and 3) to communicate participant perceptions on the developing project. The DOOR curriculum consists of 15 seminars offered in the fall and spring terms jointly at ECU and UF that can be mapped to eight clinical research competencies: scientific concepts and research design; ethical and participant safety considerations, investigational products development and regulation; clinical study operations; study and site management; data management and informatics; leadership and professionalism; and communication and teamwork. Recruitment of participants for the DOOR project was conducted in the summer and early fall of 2024 at ECU and UF. This first DOOR cohort at ECU includes 12 dental students (D2), 2 residents (AEGD), and 9 clinical faculty. Participant perceptions on the DOOR project are positive as reflected in seminar attendance and feedback. Enrollment and engagement have been excellent, exceeding projected goals. Two more cohorts at ECU and UF will be recruited over the next two years of the DOOR project with the intent of developing a robust, collaborative research program for the advancement of dentistry.

39

### **Enhancing Healthcare Access for LEP (Limited English Proficiency) Populations: Communication Strategies and Cultural Competency Awareness/Development**

Roopwant Kaur

East Carolina University, School of Dental Medicine

Background/Introduction: Populations with Limited English Proficiency (LEP) often face significant barriers to accessing healthcare, leading to disparities in health outcomes. These barriers include language difficulties, lack of culturally appropriate care, and limited access to health information. Effective communication strategies and cultural competency training are essential to bridging these gaps and promoting equitable healthcare. Methods: A comprehensive review of existing literature was conducted to identify the challenges faced by LEP populations in healthcare settings and to evaluate successful models and interventions. Key strategies, including the use of professional medical interpreters, bilingual healthcare providers, culturally tailored health education materials, and technology solutions, were analyzed. Additionally, the components of effective cultural competency training for healthcare providers were examined. Results: The review identified that LEP populations experience delayed or foregone medical care, increased risk of medical errors, and lower patient satisfaction due to communication barriers. Implementing professional medical interpreters and recruiting bilingual healthcare providers significantly improved communication and patient outcomes. Culturally tailored health education materials and technology solutions further enhanced access to care. Effective cultural competency training, focusing on awareness of cultural differences, skill development, and organizational support, improved provider-patient interactions and care delivery. Successful models such as patient navigation programs and community health workers were highlighted as effective interventions. Conclusion: Addressing the healthcare access challenges faced by LEP populations requires a multifaceted approach involving communication strategies and cultural competency training. By implementing these strategies, healthcare systems can create inclusive environments that ensure high-quality care for all patients. Commitment from policy makers and healthcare institutions is essential to bridge the communication gap and achieve equitable health outcomes for LEP populations. Further research and evaluation are needed to identify best practices and optimize interventions.

40

### **Integration of Social Work and Dentistry at East Carolina University**

Taneet Ghuman, Nikki Teel, Kelley Reinsmith-Jones, Mark Moss

ECU School of Dental Medicine

The goal of this collaborative project is to enhance training, for both dentistry and social work students, to support integration of oral health within the broader primary health care delivery system. By doing so, it will improve access to oral health care, mental health care, and other supportive services for populations and individuals with medically complex health conditions, special and/or behavioral health care needs in rural, underserved communities. Social workers and dental professionals can act

cooperatively to advance health equity and address community-centric determinants of health throughout eastern North Carolina.

**Key Objective 1:** Collaborate with ECU School of Social Work to implement a community-level case management and referral coordination system for underserved children and adults in need of dental, behavioral health, and other supportive services.

**Key Objective 2:** Collaborate with ECU School of Social Work to rotate student interns as full participants in didactic and experiential sessions within existing dental school course modules that address care coordination, social determinants of oral health, access to dental services, and health equity.

**Key Objective 3:** Collaborate with NC AHEC Scholars to place social work and dental students into the existing multidisciplinary 2-year program where they will have 40 hours per year of didactic training and 40 per year of experiential training related to skills and knowledge designed to support the transformation of health care in North Carolina.

**Key Objective 4:** Annually, at least 12 dental and social work students will participate in a day-long ECU IP Leadership Workshop designed to improve communication and teamwork skills among health care professionals.

Supported by Health Resources and Services Administration Training Grant # D85HP45702. Co-investigators: Rob Tempel, Skip Cummings, LaTonya Gaskins, Ford Grant, Wanda Wright, Vanessa Pardi, Lorrie Basnight.

## 41

### **Strengthening Sustainable School Based Oral Health Programs in the Carolinas**

Anna Pollard, Mark Moss, Vanessa Pardi, Amah Riley, Amy Martin

#### **Objectives**

School-Based Oral Health Programs (SBOHPs) provide critical access to dental care for underserved children, addressing oral health disparities. However, the sustainability of these programs remains a challenge due to the absence of standardized implementation guidelines. This report demonstrates how philanthropic, public, and academic partnerships facilitated the implementation of a Technical Assistance (TA) curriculum to support SBOHPs in North and South Carolina, equipping them with operational, financial, and policy tools for long-term success.

#### **Methods**

A multi-sector leadership team designed a two-phase program consisting of a six-month Readiness Phase followed by an Implementation Phase. The Readiness Phase provided TA through coaching and 15 online learning modules covering operations, finance, enabling services, and impact. Ten grantee organizations—including Federally Qualified Health Centers, health departments, universities, and nonprofits—participated in the program. A process evaluation was conducted using a Readiness Stoplight Report to track progress and identify challenges in SBOHP development.

The 15 Learning Modules covered key sustainability domains: operations, finance, enabling services, and impact evaluation. Grantees were required to complete competency-based deliverables, including establishing partnerships, implementing data tracking, and developing financial sustainability plans. A post-COVID SWOT analysis was conducted to assess grantee preparedness and long-term sustainability.

## Results

All grantees successfully completed the Readiness Phase and advanced to implementation, demonstrating increased **provider oral health literacy** in financial performance tracking, production goals, and policy development. Additionally, the initiative fostered **system-level oral health literacy** through multi-sector collaboration, policy alignment, and improved communication tools. Emerging **state-specific grantee networks** contributed to shared learning and advocacy, strengthening the long-term impact of SBOHPs beyond the grant cycle. Ultimately, the initiative supported the expansion of school-based oral health services into 350 schools, serving 15,795 children.

## Conclusions

Providing structured TA and financial planning support to SBOHPs enhances their sustainability, promotes best practices, and facilitates program replication. Lessons learned underscore the need for policy alignment, cross-sector partnerships, and ongoing education for providers and organizations. Stakeholders looking to establish or expand SBOHPs should consider structured TA approaches to navigate implementation and sustainability challenges effectively.

## BASIC DISCOVERY

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### **Acmella Oleracea Extract Treated with Active Charcoal**

Leticia T Campos, Joanilda P R Silva, Priscilla G S Vasconcelos, Joanda P R Silva, Edja M M B Costa, Ramiro M Murata  
Foundational Sciences/ School of Dental Medicine

*Acmella oleracea* is a Non-Conventional Food Plant applied in the treatment of various disorders due to its wide range of biological activities including anesthetic, analgesic, anti-inflammatory, antioxidant and neuroprotective, which are correlated to its secondary metabolites, especially spilanthol. This study aimed to obtain a *A. oleracea* extract treated with active charcoal and evaluate a cytotoxicity and inflammatory potential in THP-1 monocytes. Dried flowers heads of *A. oleracea* were used as material vegetal of this study. For the crude hydroethanolic extract the 550 mg of dried flowers were subjected to the percolation process, in which the material has been macerated in 95% alcohol (1:4, w/v), in addition filtration and solvent exchange that were performed every 48 hours. This process was three times repeated and, after that, was subjected to a final filtration. The crude extract was treated by the added of 4% (w/w) of active charcoal. The treated extract was applied to a vacuum filtration. Then, was concentrated in a rotary evaporator and subsequently lyophilized. THP-1 human monocyte cytotoxicity assay was performed using resazurin fluorometric method. Gene expression of inflammatory cytokines in THP-1 cells were evaluated through RT-PCR using IL-1 $\beta$ , IL-6, IL-8, and TNF genes primers. A yield of 4% was obtained. The aspect exhibits a moss green color and a strong characteristic odor. The extract had a LD50 of 592.5  $\mu$ g/mL and did not induce pro-inflammatory gene expression in THP-1 cells after 6 h of treatment. The current results indicate that this extraction method can be used in

future studies targeting spilanthol-related activities, which are promising for the pharmaceutical and food industries. The *A. oleracea* extract showed low cytotoxicity in THP-1 monocytes and does not induce inflammation in THP-1 cells.

#### **43**

##### **Anti-candida activity of P-113, Fragmented Peptide of Histatin 5**

Maya Montani, Leticia Targino, Robert Hughes, Ramiro Murata  
ECU SoDM

This study aimed to evaluate anti-candida activity of P-113 (synthetic and recombinant). Minimum Inhibitory Concentration (MIC) was determined for fluconazole resistant *C. albicans* (ATCC 321182) and non-albicans species *C. glabrata* (ATCC MYA 275) using a serial broth microdilution. After the MIC test, Minimum Fungicidal Concentration (MFC) was determined on a new set of agar plates with visibly inhibited growth. Peptide concentrations of 100  $\mu$ M, 10  $\mu$ M, 1  $\mu$ M, 0,1  $\mu$ M and 0,01 $\mu$ M were administered. All analyses were performed in triplicates. Both Synthetic and Recombinant P-113 peptides demonstrated fungistatic effect towards *C. albicans* at the highest concentration (100  $\mu$ M). The MFC of Synthetic P-113 was 100  $\mu$ M; the MFC was not found for the Recombinant version. The peptides did not demonstrate fungistatic or fungicidal activity for *C. glabrata*. This in vitro study showed P-113 has promising antifungal activity against drug-resistant *C. albicans* ATCC 321182. For future experimentation with the P-113, we will test other non-albicans *Candida* spp. and intend to measure the cell viability of human gingival fibroblasts subjected to p-113 treatment. If successful, this peptide could provide an alternative to current oral antifungal medications with safe gingival epithelial activity.

#### **44**

##### **$\mu$ CT Analysis of Craniofacial Skeleton in ADAP1 KO Mice**

Sehizadeh, Kia<sup>1</sup>, Paulina Sutton<sup>1</sup>, Keerthana Surabhi<sup>2</sup>, Jonathan Frank<sup>3</sup>, Alexandre R Vieira<sup>1</sup>, Erzsebet M. Szatmari<sup>1,2</sup>

<sup>1</sup>Department of Foundational Sciences, School of Dental Medicine, East Carolina University, Greenville, NC, <sup>2</sup>Department of Physical Therapy, College of Allied Health Sciences, East Carolina University, Greenville, NC, <sup>3</sup>Biomedical Research Imaging Center, Small Animal Imaging Facility, University of North Carolina, Chapel Hill, NC

The growth of the craniofacial skeleton is a complex process regulated by genetic and epigenetic factors. Mouse models replicating clinical craniofacial phenotypes are key in understanding disease progression and revealing the underlying genetic and molecular factors. ADAP1 (Arf-GAP with dual PH domain-containing protein 1) is highly expressed in the brain and the immune system. Its level increases during development and decreases with adulthood. Given that the craniofacial skeleton develops parallel with the brain, we evaluated the postnatal craniofacial ontogeny changes associated in ADAP1 KO mice. Mice: 4-6 /genotype, 5-7 months old  
Morphometry of dentition:

Incisor evaluation using Fiji/Image J was performed on images collected with a Motic stereo microscope connected to a camera. We measured the length and fork and inspected the appearance of the enamel and incisor edges.

$\mu$ CT imaging:

Paraformaldehyde-fixed skulls were scanned on a ScancoCT uCT40 system with a 30 $\mu$ m isotropic voxel size, a 30mm FOV, 70kVp, 114  $\mu$ A, 200ms integration time, and 250 projections. Following conebeam reconstruction, we measured the distances between established landmarks on the dorsal, ventral, and endocranial surfaces. In this pilot study, we performed a quantitative morphometric analysis of the craniofacial skeletal structures in ADAP1 KO and ADAP1 WT mice using classic morphometry and high-resolution microcomputed tomography ( $\mu$ CT). The upper and lower incisors of ADAP1 KO mice were significantly longer, while no enamel discoloration or chips were observed.  $\mu$ CT assessment of the effect of ADAP1 KO on the development of the skull indicated no statistical difference between genotypes in a small cohort of mice (3-4/genotype). This work provides insights into the role of ADAP1 in the development of craniofacial skeletal structures. Our pilot data indicate that a lack of ADAP1 enhances the length of incisors without affecting the length of established bone landmarks within the skull.

**45**

#### **Proteomics in Left Ventricle Heart of Transgenic Rodents Expressing Submandibular Ren2d Gene-Associated Hypertension**

Berwin Singh SV, Dillon Garbrandt, Tonya Zeczycki, Ryan J, Aileru A  
East Carolina University School of Dental Medicine, Greenville, NC and EHH BSOM  
Biochem. and Molecular Biology, Mass Spectrometry Core, Brody School of Medicine,  
Greenville, NC

Quantitative proteomic profiling is extensively applied in biomarker discovery and drug target identification. This study explores the proteomic changes in transgenic rodents (mREN2)27, expressing the mouse Submandibular Ren2d gene, leading to fulminant hypertension in contrast to Hannover Sprague Dawley (HnSD) normotensive rodents. An angiotensin receptor blocker (ARB), Candesartan (TCV-116), decreased blood pressure to normal level via blocking Angiotensin 1 receptor to mitigate left ventricular excitability and contractility. Initial isolation of the polyprenylated benzophenones from *Garcinia brasiliensis* using silica gel column chromatography. The isolated samples were tested against specific *Candida* species (*C. albicans* ATCC 2876, *C. albicans* ATCC 321182, *C. tropicalis* MYA 750, *C. glabrata* ATCC MYA 275, *C. dubliniensis* ATCC MYA 646) at various concentrations. The media consisted of 90  $\mu$ L final volume of RPMI/*Candida*, incubated at 37 degrees celsius, 5% CO<sub>2</sub> for 24 h. MIC/MFC was recorded for each benzophenone sample tested. In addition, cytotoxicity of select drugs against oral cell line cultures (HGF) was tested and results were compared to a control group of HGF cells. The cells were suspended in media to promote growth (DMEM+10% FBS). 90  $\mu$ L of the media with the HGF cells was used with 10  $\mu$ L of the drug and incubated at 37 degrees celsius, 5% CO<sub>2</sub> for 24 h. CellTiter-Blue was used to stain the cells for fluorescence measurement. Of the 30 initial samples, 7 showed an initial MIC/MFC at 10  $\mu$ g/mL. Of the 7 samples,

Guttiferona-a produced the most MIC/MFC results at 1-10 mM/mL in comparison to the other 7 samples at the same concentrations. Additionally, Guttiferona-a effected the most Candida species of all the samples. Finally, Guttiferona-a also did not pose any cytotoxicity between 0.001-10 mM/mL against oral cell line cultures (HGF).

Polyprenylated benzophenones do express antifungal properties at certain concentrations. Guttiferona-a produced the most MIC/MFC results at 1-10 mM/mL. In addition, it also posed no cytotoxic effects between 0.001-10 mM/mL against oral cell line cultures (HGF).

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### **Aquaporin-5's Effect on Human Gingival Fibroblasts and Primary Gingival Keratinocytes**

Jaeden Phelix, Alexandre R. Vieira  
ECU School of Dental Medicine

Background: Aquaporin-5 (AQP-5) is a protein that helps water pass through cell membranes and helps produce saliva. NPA motifs are amino acid sequences within the AQP-5 protein that plays a role in the selective permeability of water through the protein. Two peptide sequences were chosen to target AQP-5 domains and NPA motifs to evaluate the biosafety of AQP-5 protein in primarily cultured human buccal cells. The two cell lines chosen were human gingival fibroblasts and primary gingival keratinocytes, which were cultured, then treated with peptides for 24-hours. Following treatment, fluorescence readings were performed on each plate and one-way ANOVAs, and t-tests were used to analyze data. It was found that peptide 1 had either no effect or a negative effect on both cell lines, indicating that it may not be suitable for dental care. Peptide 2 had a positive effect on both cell lines, seen through proliferation, indicating that it may be suitable for use in dental care. The goal of this study was to evaluate the effect of AQP-5 peptides on human gingival cells.

Methods: HGF & PGK cells were treated with 2 peptides at 5 different concentrations. The cell lines were seeded in T-25, then T-75 flasks after 70% confluence was reached. After the cells reached 70% confluence in the T-75's they were transferred to 24-well plates. After the cells were seeded and confluent, they were treated with different concentrations of peptides 1 & 2. After 24-hours Celltiter-blue cell viability assay was applied to the cells, then sat for 4-6 hours before fluorescence was read on the plates. The fluorescence read was normalized, standardized then put into graphs to be visualized. One-way ANOVA's and T-tests were run on each plate to determine if the peptides had a significant effect on the cells.

Results: A one-way ANOVA and t-test were run to evaluate if peptide 1 & 2 significantly effected HGF cells. It was found that peptide 1 did not have significant effects on HGF cells when all treatment groups were compared to the control ( $p=0.08$ ); however, significant results were found between conditions ( $p<0.001$ ). indicating that the concentrations of the peptide were significantly different however, peptide 1 did not have a significant effect on HGF cells. The concentration of peptide 2 did not have a significant effect on the HGF cells however the presence of the peptide was significant ( $p=0.003$ ).

The same statistical analyses were run on PGK cells to evaluate if the peptides had a significant effect on the cells. Both the one-way ANOVA and t-test showed significant differences between the control conditions and experimental conditions for peptide 1 ( $p=0.021$ ,  $p=0.042$ ). However, these results imply that peptide one induced apoptosis to PGK cell. A significant relationship was also found between peptide 2 and PGK cells ( $p<0.001$ ). This relationship showed that peptide 2 caused PGK cells to proliferate. Conclusions: Peptide 1 had a negative effect on both PGK cells and HGF cells. In a rare case it was seen that one condition was higher than the control, however in most instances, plates showed that peptide 1 caused no difference or apoptosis. Peptide 2 showed to proliferate cells in both cell lines, stronger proliferation rates were seen in PGK cells.

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##### **Maternal and Infant Proteomics: Connecting Health through Molecular Signatures**

Camila L. Crescente<sup>1</sup>, Emiliy F. Lima<sup>2</sup>, Juliana M. Sciani<sup>2</sup>, Ramiro M. Murata<sup>1</sup>, Thais M. Parisotto<sup>2</sup>

<sup>1</sup>Department of Foundational Sciences, School of Dental Medicine, East Carolina University at Greenville, North Carolina, United States of America

<sup>2</sup>Laboratory of Clinical and Molecular Microbiology, University São Francisco, Bragança Paulista, São Paulo, Brazil

**Objective:** To investigate the salivary proteomic profile in the mother-baby dyad before and after birth.

**Methods:** Twenty pregnant women (PW) in the third trimester were assessed for caries (DMFT) and periodontal condition (CPI). Socioeconomic data, including income, education, and dietary practices, were collected through questionnaires. Saliva samples were collected from PW, postpartum women (PP), and infants (IF) at 1 month postpartum, and analyzed using mass spectrometry. Data were evaluated with descriptive statistics and bioinformatics.

**Results:** PW were from mid-level socioeconomic backgrounds and exhibited high prevalence of caries and periodontal disease. The average BMI increased from 28.37 kg/m<sup>2</sup> in early pregnancy to 31.04 kg/m<sup>2</sup> in the third trimester, indicating overweight. Thirty-five to 40% of PW reported high consumption of sugar-sweetened beverages, sweet cookies, and cakes. Proteomic analysis identified 17, 18, and 22 unique proteins in PW, PP, and IF, respectively. Six proteins were common across all groups, with key biological interactions observed for amylase-AMY (AMY1B, AMY2A, AMY2B) and maltase-glucoamylase, which are involved in carbohydrate metabolism and potentially linked to obesity. Gene ontology revealed recurring gene attributes among the groups, with varying expression levels.

**Conclusion:** The salivary proteomic profiles of PW, PP, and IF showed notable similarities, suggesting relevant biological interactions. These findings may help develop strategies to modulate health and disease during pregnancy, with particular attention to the impact of feeding practices and other social determinants associated with overweight.