

# 2019 Dentsply Sirona/ADHA Graduate Student Clinician Research Abstracts

The following abstracts are from the participants of the 2019 Annual Dentsply Sirona/ADHA Graduate Student Clinician's Research Program. The purpose of the program, generously supported by Dentsply Sirona for the past 12 years, is to promote dental hygiene research at the graduate level. Dental hygiene post-graduate programs may nominate one student to participate in the program and present their research at the Annual Conference of the American Dental Hygienists' Association. The following posters were presented during the ADHA Annual Conference held in Louisville, Kentucky, June 20-23, 2019.

\* Indicates poster presenter + Indicates award recipient  
++ Sigma Phi Alpha Student Journalism Award recipient

## The Efficacy of Brushing with Probiotics for the Reduction of Gingivitis

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**Purpose:** To evaluate the efficacy of brushing with probiotics on gingivitis.

**Methods:** This 3-week randomized, double-blind study included 34 adults (N=34) divided into two groups (n=17) for placebo-controlled evaluation of brushing with *Lactobacillus reuteri* probiotic drops, or placebo drops, added to toothpaste. Plaque accumulation and gingival inflammation data was recorded using an O'Leary Plaque Score (PS), and modified Löe-Silness Gingival Index (GI) at the beginning and end of the study.

**Results:** Analysis utilized Wilcoxon Signed Rank tests with statistical significance set at  $p < 0.05$ . Variables included differences between the probiotic (n=17) and placebo (n=17) groups' baseline and final data for PS and GI. Statistically significant differences were noted for GI of the placebo group as a whole ( $p = 0.001$ ), and females of the placebo group ( $p = 0.004$ ). Unanticipated results of the placebo group imply participation bias. No statistical difference was noted in PS for either group.

**Conclusion:** Results demonstrate once a day topical application of probiotics into the oral cavity is too infrequent to see a statistically significant difference in PS or GI. Similar studies indicate topical application of probiotics can reduce GI; and data collected suggests brushing as an application method may be effective. Application method and quantity of probiotic required to treat and manage oral diseases is currently undetermined. Future research employing brushing as an application method is needed to ascertain the effectiveness of this approach.

## Relative Dentin Abrasivity Toothpaste Survey: Are dental hygienists making evidence-based recommendations?

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**Purpose:** The purpose of this study was to assess practicing hygienists' knowledge of relative dentin abrasivity and to identify factors that influence toothpaste recommendations.

**Methods:** Data were collected through a web-based survey that was posted on Facebook® to practicing hygienists nation-wide (n=253). Analysis included descriptive statistics, Chi-square, and one-way analysis of variance to examine associations between years of experience, level of education obtained, and knowledge of relative dentin abrasivity (RDA).

**Results:** The response rate was 66% (n=167) and the majority of participants were female and worked in general practice. Participants with less education (Certificate or Associate's degree) had a higher knowledge score in response to four case study questions. In contrast, participants with a Bachelor's or Master's degree scored higher on the factors considered question. Participants with 6 to 10 years of experience had more RDA knowledge than participants with other experience levels. The maximum knowledge RDA score was 17, however the sample mean score was 12, which corresponds to a score of 70.6 of 100.

**Conclusion:** Based on the mean knowledge RDA score of 12, it appears most participants had inadequate RDA knowledge. This suggests that practicing hygienists are

unlikely to implement evidence-based recommendations for patients with exposed dentin. Continuing education on RDA for practicing hygienists and updates to pre-professional curriculum for students are needed.

### **An Evaluation of the Perceptions of Ohio Dental Hygienists Working with Underserved Populations Holding an Oral Health Access Supervision Program Permit**

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**Purpose:** The aim of this study was to evaluate dental hygienists in the state of Ohio who currently worked with underserved communities using their Oral Health Access Supervision Program (OHASP) permit to determine their perceptions of (1) what would be necessary to practice in non-traditional settings and (2) how to create a sustainable position to increase access to care to underserved populations in the state.

**Methods:** Qualitative methods were used for this study. Purposeful sampling occurred and an electronic survey was emailed to 95 dental hygienists in Ohio holding an OHASP permit. Interviews were conducted over the phone and an electronic recording device was used to record the conversation. Emerging patterns and themes were identified by the interviewer and data collection was terminated when no new themes had emerged.

**Results:** Out of the 95 individuals who were sent the survey, 52.3% participated in the initial survey. Ten percent of those who responded agreed to be interviewed. Four themes emerged: 1) Equipment and Collaboration, 2) Skill Sets Required, 3) Rewards and Motivations to Pursue, and 4) Challenges.

**Conclusion:** There continues to be a need for dental hygienists to pursue careers that provide dental care to underserved communities. Providing dental care for patients where they are located and exhibiting an empathetic and collaborative spirit is critical. While there continues to be challenges when pursuing this career path, professional organizations can play a role in influencing dental hygienists and their desire to pursue a career working with underserved populations.

### **An Assessment of Graduate Level Dental Hygiene Schools' Requirements Regarding Scholarly Inquiry and Research**

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**Purpose:** This research study was designed to examine how graduate dental hygiene programs in the United States are meeting the requirements of Scholarly Inquiry and Research.

**Methods:** A descriptive research study design was chosen for this study and deemed exempt by the UMKC IRB review board (#18-363). Graduate programs in the U.S. that award a terminal degree specific to Dental Hygiene (N=14) were invited to participate. Study questions were developed based on the ADEA competency for Scholarly Inquiry and Research. The survey was emailed to program directors via Qualtrics. Data were analyzed using SPSSv25. Descriptive statistics including frequencies and percentages were calculated. Exploration of relationships between variables were conducted using correlational analyses and t-tests.

**Results:** A response rate of 71% (10/14) was achieved. There was a significant difference in the number of minimum requirements for scholarly activity between programs with lower enrollments (M=4.43, SD=1.61) versus those with higher enrollments (M=2.00, SD=0);  $t(8)=2.51, p=.036$ . A negative correlation between submission of a manuscript to a peer reviewed journal and number of students accepted per year, ( $r(10) = -.655, p < .05$ ) indicates that students graduating from programs with larger enrollments are less likely to submit their work for publication.

**Conclusions:** All program directors reported requiring students participate in at least one of the scholarly activities listed in the document. Program size was the biggest variable in number of requirements, with schools that have smaller enrollments requiring their students to participate in over twice the number of scholarly activities as their larger counterparts.

## Screening Practices and Interventions by Pediatric Dentists in Texas to Address Childhood Obesity

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**Purpose:** Childhood obesity is emerging as a global epidemic threatening the health and well-being of children in the US. One in three children in Texas is considered overweight or obese; Texas ranks in the top 15 states for childhood obesity. The purpose of this study was to assess the childhood obesity screening and education practices of pediatric dentists in Texas.

**Methods:** Permission was granted by the Pediatric Oral Health Research and Policy Center to adapt a previously used survey. After TAMU IRB approval, a 20-question survey was mailed to a census sample of 548 pediatric dentists in Texas. Ordinal responses were analyzed using descriptive statistics. Open-ended comments were transcribed and analyzed by themes.

**Results:** The response rate was 21.7% (n=119). Texas pediatric dentists (75.2%, n=88) agree they have a role in promoting a healthy weight for children because of the impact of weight to general health. However, only 18.8% (n=22) offer childhood obesity information or healthy weight interventions. Sixty-three percent (n=74) report they would be likely to include obesity interventions in their practice if there was increased availability of patient education resources.

**Conclusion:** A majority of Texas pediatric dentists report routine performance of many procedures used to screen for obesity and are confident in their effectiveness to perform these procedures. However, results indicate there are gaps in the current delivery of services in the pediatric dental setting address the identification of childhood obesity.

## Dental Professionals and Students Willingness to Administer the HPV Vaccine

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**Purpose:** To determine the willingness of dental professionals in Michigan to administer the HPV vaccine, if allowed by law. Secondly, to assess their confidence in discussing HPV with patients as well as beliefs, barriers, and sites of referral regarding the vaccine. A third goal was to determine the knowledge levels of dental professionals and students regarding HPV and the vaccine.

**Methods:** A total of 623 dental professionals in Michigan, including dentists, hygienists, dental students, and hygiene students were surveyed about their attitudes regarding the HPV vaccine. Characteristics and experiences that most predicted their willingness to administer the vaccine were identified.

**Results:** A majority of all four professional groups were willing to administer the HPV vaccine if allowed by law. Dental professionals were fairly confident discussing HPV with patients and largely believed that it enhanced their patients' health. Willingness to administer it was greater among students and professionals with greater confidence and stronger beliefs. Licensed dental professionals were significantly more knowledgeable about HPV than students. Barriers to administering the vaccine included lack of training as well as liability concerns. Common sites of referral to receive the HPV vaccine are discussed as well.

**Conclusions:** Dental professionals are well positioned to become leaders in the prevention of HPV and HPV-related cancers. Results demonstrated the interest and willingness of dental professionals to recommend and administer the HPV vaccine. Training could further improve their confidence and willingness to administer the vaccine. Legislation allowing for dental professionals to administer the HPV vaccine would increase its accessibility to patients and improve population health.

## Occupational Stressors of Dental Hygienists in the United States

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**Purpose:** Demand of the work environment can cause stress. Stress can cause anxiety, depression, reduced productivity, job dissatisfaction, and health issues. Little attention has been placed on the stressors of dental hygienists. The purpose of this study was to examine occupational stressors related to personal, environmental, and physical stressors and their relationship to job satisfaction and burnout of dental hygienists.

**Methods:** Survey research was conducted with a convenience sample of practicing dental hygienists (n=763). The survey instrument consisted of 10 scales from the New Brief Job Stress Questionnaire and four questions related to burnout.

**Results:** Job satisfaction was affected by work overload, anxiety, depression, and emotional demands. Leaving clinical dental hygiene in the next year was affected by physical stress ( $p < 0.05$ ), and burnout was related to the emotional demands ( $p < .05$ ).

**Conclusions:** Dental hygiene has a significant emotional component to the profession and these emotional demands were more likely to lead to burnout and affect job satisfaction. Physical demands were related to dental hygienists leaving clinical dental hygiene. Attention needs to be paid to these stressors to enhance retention and job satisfaction of dental hygienists.

## Human Papillomavirus Related Oropharyngeal Cancer: The effect of a continuing education course on dental hygienists' knowledge, attitudes, and practices

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**Purpose:** The purpose of this study was to investigate the effect a continuing education (CE) course on dental hygienists' knowledge, attitudes, and practices regarding human papillomavirus related oropharyngeal cancer.

**Methods:** A two-group experimental posttest only design was used and exempt status was granted by the Idaho State

University Institutional Review Board (IRB-FY2018-323). Randomly selected licensed Florida dental hygienists were recruited by email and assigned to either an experimental or control group. A self-designed questionnaire was developed and validity and reliability was established. The experimental group received a one-hour web-based CE course. Six weeks later, the questionnaire was administered using the online platform Qualtrics®. Data were analyzed using descriptive statistics and analysis of variance (ANOVA). The level of significance was established at  $p=0.05$ .

**Results:** Out of 302 who initially agreed to participate, 133 completed the study for a response rate of 44.04%. The majority of the participants were middle-aged, graduated in the 2000s, and were in clinical practice working full-time. The Knowledge Score for the experimental group was 72.6% while the control group scored 58.4%. Results revealed statistically significant differences between the groups in terms of knowledge ( $F=33.81$ ,  $df=1$ ,  $p=0.00$ ) and attitudes ( $F=13.91$ ,  $df=1$ ,  $p=0.00$ ). No differences were found in examination procedures; however, statistically significant differences ( $F=7.47$ ,  $df=1$ ,  $p=0.007$ ) were noted for items related to HPV specific topics between the two groups.

**Conclusion:** Additional research is needed to appreciate what types of interventions would increase knowledge and practices about HPV-related OPC among dental hygienists.

## Care of HIV Positive Children: Pediatric HIV education in dental hygiene curricula in the United States

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**Purpose:** Dental hygiene students must be prepared to care for patients with special health care needs however the Commission on Dental Accreditation (CODA) lacks specific requirements regarding the care of pediatric patients with HIV (PP\_HIV). The purpose of this study was to evaluate the differences in instructional format regarding PP\_HIV and identified potential barriers to incorporating this topic in the curricula of entry-level dental hygiene programs in the United States (U.S.)

**Methods:** A 58-item online, cross-sectional, mixed methods survey was distributed to program directors of all the entry-level dental hygiene programs in the U.S. Questions included program demographics, instructional format, and program directors' perceptions regarding incorporating education about PP\_HIV in dental hygiene curricula. Data analysis included descriptive statistics and qualitative narrative responses.



**Results:** Of 335 DH programs in the U.S., 32% responded. The majority of programs (57%) did not offer education on oral care of PP\_HIV. Programs in private institutions (60%) and programs awarding an Associate's degree (44%) reported higher percentages of topic inclusion. Of the programs offering PP\_HIV education, the instructional setting was didactic courses (65%) and the educational formats were presentations designed by course instructors (89%) and textbook (49%). A major reason for not incorporating this topic was not having any PP\_HIV present to their clinics (30%).

**Conclusion:** Absence of an accreditation requirement and not treating PP\_HIV in the school clinic setting may be barriers to incorporating this topic in entry-level dental hygiene programs' curricula. Accreditation guidelines with details for instructional format may encourage broader inclusion within programs' curricula.

### **Interprofessional Collaboration among Students on Oral Health for Cancer Patients**

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**Purpose:** The purpose of this pilot study was to provide education to nursing and dental hygiene (DH) students on oral considerations during cancer treatment and evaluate changes in knowledge, confidence, and willingness to provide oral screening, counseling, and referrals for patients undergoing cancer therapy.

**Methods:** A mixed-methods design including all first-year DH and accelerated nursing (ABSN) students at the University of North Carolina at Chapel Hill (UNC) was used. Data was collected using baseline and post-intervention surveys and debriefing session. Students received a presentation regarding oral considerations and provision of screening, counseling, and referral for cancer patients. A control group (16 ABSN, 8 DH) was asked to complete an immediate post-survey; others were organized into small, mixed groups and evaluated an unfolding case study and post-survey completion. A debriefing session followed. Descriptive statistics were used to analyze the data.

**Results:** 93 matched surveys returned (61 ABSN, 31 DH). Baseline surveys revealed 82% (n=76) indicated no knowledge to complete oral health screenings, 68% (n=63) counseling, or 65% (n=60) referral; post-survey results denoted positive

changes to knowledge in screening (72%, n=67), counseling (81%, n=75) and referral (89%, n=83). Baseline confidence assessment revealed 22% (n=20) had confidence to complete oral screening, 25% (n=23) for counseling, and 47% (n=44) for referral. Post-survey results showed confidence increases to screen (75%, n=70), counsel (83%, n=77), and refer (91%, n=82). Baseline and post-intervention levels of willingness to screen, counsel, and refer were high. Results revealed 96% (n=89) had willingness to collaborate with other healthcare professions and 99% (n=92) agreed shared learning would help them become a more effective team member.

**Conclusion:** Educating students in an interprofessional collaborative learning environment can increase their knowledge, confidence, and willingness to provide screenings, counseling, and referrals for patients undergoing cancer therapies. Responses indicate a willingness and desire to collaborate with other disciplines to enhance patient care.