

**Research Poster Abstracts and
DENTSPLY/ADHA Graduate
Student Clinicians Program**

3M ESPE

Thursday, June 16, 2011

Nashville, Tennessee

**DENTSPLY
PROFESSIONAL**

American Dental Hygienists' Association 2011 Center for Lifelong Learning at Annual Session Research Poster Session

The American Dental Hygienists' Association (ADHA) CLL at Annual Session Research Poster Session provides dental hygiene researchers and educators the opportunity to present their work, exchange ideas and share information and effective strategies for teaching and mentoring research with their colleagues and other oral health professionals. The posters presented pertain to ADHA's National Dental Hygiene Research Agenda (<http://www.adha.org/research/nra.htm>); evidence-based patient-centered dental hygiene practice; *Healthy People 2010: National Health Promotion and Diseases Prevention Objectives*; or an area of dental hygiene-related research significant to the participant.

National Dental Hygiene Research Agenda

Both inside and outside of the research arena, it is important for practitioners, who provide the greatest representation of the profession to the public, to make decisions that are firmly grounded in knowledge that is obtained from research and clinical experiences. The National Dental Hygiene Research Agenda provides direction to hygienists on priority research areas that can help advance the profession, enhance patient-centered care, improve the quality of services, and foster other professional efforts.

NDHRA Priority Areas

- A. Health promotion/Disease prevention
- B. Health services
- C. Professional education and development
- D. Clinical dental hygiene
- E. Occupational health and safety

Abstract Review Committee

Linda D. Boyd, RDH, RD, LD, EdD – Massachusetts
Jacquelyn L. Fried, RDH, MS – Maryland
Jodi Olmsted, RDH – Wisconsin
Marilynn L. Rothen, BS, RDH – Washington

Table of Contents

Clinical Monitoring of White Spot Lesions in Children: 12-Month Data (Poster #1)	
* Amy J Nuñez, BSDH	
George K. Stookey, PhD	
Roger L. Isaacs, DDS	
Valerie A. White, DDS	
Bart D. Collins, BS	
Justin S. Williams, BS	
Susan Ofner, MS	
Barry P. Katz, PhD	
James S. Wefel, PhD	
John D. Hennette, DDS.....	5
Fluoride Varnish Application: A Method to Improve Patient Acceptance and Compliance (Poster #3)	
* Marge Beuhner, RDH, MHSA	
Kathy Neveu, RDH, RDA, MA	
Durinda Mattana, RDH, MS	
Warren Wagner, PhD	
Kathi Sheperd, RDH, MA.....	5
Effectiveness of Interprofessional Faculty Team in Teaching Dental Hygiene Students in an E-learning Environment (Poster #4)	
* Aditi Puri, PhD, RDH	
Samuel King, MLS	
Mariana Lapidus, MSLIS.....	6
Implementation of a Care Plan “Blog” to Evaluate Care Plans in a Dental Hygiene Program (Poster #5)	
* Tanya Villalpando Mitchell, RDH, MS	
Nancy T. Keselyak, RDH, MA.....	6
Improving Oral Health in China: A Dental Hygienist Training Program in Hangzhou (Poster #6)	
* Claudine L. Stevenson, RDH, MPH	
* Xin Xu, RDA	
Amy J. Bergman, RDH, BS	
Liqun Wu, DDS.....	7
The Development of an Online Dental Public Health Safety Net Course (Poster #7)	
* Carrie L. Hanson, RDH, MA	
Cynthia C. Amyot, EdD.....	7
A Survey of United States Dental Hygienists’ Knowledge, Attitudes, and Practices (KAP) Regarding Infection Control Guidelines (Poster #8)	
* Kandis V. Garland, RDH, MS.....	8
Co-locating Dental Hygienists in Medical Practices: The Attitudes of Hygienists, Staff and Parents (Poster #9)	
* Shelby L. Kahl, RDH	
Patricia A. Braun, MD, MPH	
Katina Widmer, MA	
Misoo Ellison, PhD	
Matthew F. Daley, MD.....	9

Active Learning through Questioning (Poster #10) * Ellen J. Rogo, RDH, PhD Bernadette Howlett, MS, PhD Heather M. Hessheimer, RDH, MSDH.....	9
Can Dental Hygienists Assure Comprehensive Care Services? (Poster #11) * Jodi Olmsted, RDH, PhD Nancy Rublee, RDH, CDHC Tracy Ellis, RN, BAN Emily Zurawski Laura Kleber.....	10
Expanding HIV Rapid Testing in the Dental Setting: HIV Knowledge and Attitudes among Dental Hygiene Students (Poster #13) * Winnie Furnari, RDH, MS, FAADH * Susan Davide, RDH, MS, MEd Anthony Santella, DrPH Bhuma Krishnamachari, CGC, PhD Marilyn Cortell, RDH, MS, FAADH Janet Tuthill, RDH, MA.....	10
Application of Diffusion of Innovations: Development and Pre-testing of Four Interactive Oral health Case Studies (Poster #15) * Ashley Gallentine, BS Rita D. Debate, PhD, MPH, CHES Deborah Cragun, MS.....	11
Effects of Stretching on Muscle Soreness in Dental Hygiene Students (Poster #16) *Kitty Harkleroad, RDH, MS.....	12
DENTSPLY/ADHA Graduate Student Clinician Program	
The Predictive Validity of Critical Thinking Skills on Dental Hygiene Student Performance (Poster #17) * Cheri S. Podruzny, RDH, MDH.....	13
Dental Hygiene Program Directors' Perceptions of 100% Online Degree Completion Programs in Comparison to Best Practices for Distance Learning (Poster #18) * Elizabeth O. Carr, RDH, BS, MDH.....	13
The Attitudes of Ohio Dentists and Dental Hygienists Regarding the Use of Automated External Defibrillators in the Dental Setting – A Follow-up Study (Poster #19) * Jennifer A. Pieren, RDH, BSAS.....	14
Environmental Tobacco Smoke and Periodontitis in U.S. Non-Smokers (Poster #20) * Julie D. Sutton, RDH, BS.....	14
Effectiveness of Cetylpyridinium Chloride, Chlorhexidine Gluconate, Chlorine Dioxide, and Essential Oils Against F. Nucleatum, P. Gingivalis, S. Mutans and S. Sobrinus – A Biofilm Approach (Poster #21) * Kristafer Lee Adkins, BSDH, MSDH.....	15

Oral Health Promotion: Knowledge, Confidence and Practices of Women, Infants and Children Program Personnel in Virginia (Poster #22)
 * Lorraine Fuller, RDH, BS, MS (c).....15

Painting a Portrait of Autonomy: Daily Oral Hygiene Tasks in a Long Term Care Facility (Poster #23)
 * Melanie V. Taverna, RDH, MS (c).....16

Interdisciplinary Approach to Care: The Role of the Dental Hygienist on the Pediatric Feeding Team (Poster # 24)
 * Merri L. Jones, RDH, MSDH.....16

The Status of periodontal disease and dental caries among Omani adults in Muscat Governorate and Wilayat Barka: The Need for Dental Hygiene Services (Poster #25)
 * Naeema Al Bulushi, RDH, BS.....17

Reducing Pneumonia Related Death in Amyotrophic Lateral Sclerosis Patients through Improved Oral Health Care (Poster #26)
 * Susan W. Jones, RDH, MS.....17



Clinical Monitoring of White Spot Lesions in Children: 12-Month Data

*Amy J. Nunez, BSDH; George K. Stookey, PhD;
Roger L. Isaacs, DDS; Valerie A. White, DDS;
Bart D. Collins, BS; Justin S. Williams, BS;
(*Therametric Technologies, Inc.*)
Susan Ofner, MS; Barry P. Katz, PhD;
(*Indiana University School of Medicine*)
James S. Wefel, PhD;
(*University of Iowa*) and
John D. Hennette, DDS
(*Associates of Westpointe Dentistry/John D.
Hennette Pediatric Dentistry*)

PROBLEM STATEMENT: Traditional methods for detecting caries (visual, tactile, & radiographic) cannot detect early (non-cavitated) caries. Once cavitation has been discovered, lesion reversal is impossible. Consequently, there is a need to detect early stages of demineralization, because non-cavitated lesions are completely reversible.

PURPOSE: The purpose is to determine the ability of visual and instrumental procedures to monitor changes in white spot lesions in children.

METHODS: Initially, subjects were required to have two white spot lesions and be between the ages of 7-17. Following IRB approval, 121 children were identified from a private pediatric dental practice. Subjects were asked to brush with a provided fluoride dentifrice (Crest) twice daily while participating. At all study visits, white spots are examined for lesion activity visually using the ICDAS method and instrumentally using light fluorescence (Quantitative Light Fluorescence/QLF; FluoreCam). Beginning with and continuing past the 6-month visit, subjects have/will receive a fluoride varnish application (Vanish; 3M ESPE). To date, subjects have been seen at 0, 3, 6, and 12 months. Subjects will continue to be seen in 6 month increments for a total of 30 months.

RESULTS: At 3, 6, and 12 months, mean ICDAS results indicated that the lesions were remineralizing. Mean fluorescence measurements at 0, 3, 6, and 12 months were 11.22, 10.84, 10.11, and 9.92 for FluoreCam and 12.25, 11.89, 10.72, and 10.80 for QLF. For both instruments, remineralization detected during the first 6 months was statistically significant. Similarly, remineralization detected with the FluoreCam (but not QLF) between the 6 and 12-month exams was statistically significant. Data will continue to be

analyzed by the Division of BioStatistics, IU School of Medicine.

CONCLUSIONS: These preliminary data suggest that ICDAS and both fluorescence instruments are able to monitor early enamel changes with the instrumental changes being statistically significant.

Funding source: NIH/NIDCR R01-DEO17875.

Fluoride Varnish Application: A Method to Improve Patient Acceptance and Compliance

*Marge Buehner, RDH, MHSA;
Kathy Neveu, RDH, RDA, MA;
Durinda Mattana, RDH, MS;
Warren Wagner, PhD; and
Kathi Shepherd, RDH, MA
(*University of Detroit Mercy School of Dentistry*)

Upon receiving IRB approval, a convenience sample of twenty six dental hygiene students were actively involved with patient care to determine if patients would be more compliant with fluoride varnish application utilizing an educational video verses verbal instructions.

After being educated on the importance, application and patient education of fluoride varnish, a calibration session to standardize all students was conducted at the beginning of the term informing students of the project along with instruction.

The calibration session included patient selection, obtaining patient informed consent, use of the fluoride video, clinical techniques and paperwork to prepare for a follow-up phone interview. The intention was for each student to provide fluoride varnish application for five patients using a patient education video (independent variable group) and five patients receiving verbal patient education (control group). A scripted phone survey conducted by two dental hygiene faculty included questions regarding patient opinion of the fluoride varnish, as well as compliance to instruction.

Score, nonparametric and frequency data were analyzed from collected phone surveys (n=97). Among other data, ANOVA analysis revealed a significant difference between the primary independent variable video/no video groups. Patients viewing the video kept the varnish on 37.8% longer. Although there were inherent limitations in the study, results of this

study revealed greater compliance with fluoride varnish application utilizing an educational video. Hence, the use of an educational FVA video may be a solution for practitioners and dental schools to address patient concerns and noncompliance issues.

These results also emphasize the importance of incorporating electronic patient education materials in preventive dental and dental hygiene curricula in order for graduates to become competent in multiple methods utilized to enhance compliance with preventive oral health behaviors.

Effectiveness of Interprofessional Faculty Team in Teaching Dental Hygiene Students in an E-learning Environment

*Aditi Puri, PhD, RDH; Samuel King, MLS; and Mariana Lapidus, MSLIS
(*Massachusetts College of Pharmacy and Health Sciences*)

Purpose: The purpose is to understand the effectiveness of an interdisciplinary faculty team comprised of Dental Hygiene and Library Science faculty in teaching an online informatics course to undergraduate Dental Hygiene students in a virtual environment.

Significance: Interdisciplinary faculty collaboration can be effective in preparing Dental Hygiene students to function in a collaborative health care environment.

Key Features: An interdisciplinary team, including faculty from the Dental Hygiene and Library Science disciplines, offered an online informatics course to Dental Hygiene students in summer of 2010. This collaboration was developed to create a comprehensive learning environment for students with an assumed limited knowledge of online course management and basic computer skills.

Collaboration among interdisciplinary faculty was demonstrated by faculty communicating their concerns about the teaching methodology and course content. Weekly meetings, web-conferencing and other methodologies were utilized for faculty communication and collaboration.

Addressed online learning and course content challenges by implementing recommendations made by the interdisciplinary faculty. For example: Illuminate web-

conferencing was implemented to increase faculty student interaction in real time based on faculty recommendation.

Developed an e-learning environment that promoted active learning among students. E-learning is defined as a synchronous as well as an asynchronous learning environment, created in a virtual classroom that utilizes technologies like Turnitin, BlackBoard quizzes, lectures, Illuminate etc.

Evaluation: The effectiveness of the interdisciplinary faculty collaboration was determined by students' ability to achieve the course goals. This achievement was measured by the students' performance (grades) in the course and their feedback on the College's student survey.

Conclusion: This course provides students with essential interdisciplinary skills necessary to function in a patient-centered interdisciplinary environment.

Implementation of a Care Plan "Blog" to Evaluate Care Plans in a Dental Hygiene Program

*Tanya Villalpando Mitchell, RDH, MS and Nancy T. Keselyak, RDH, MA
(*University of Missouri*)

Many educational institutions have adopted course management systems for presenting course content and other materials online. The purpose of this new program was to implement the use of a care plan "blog" or journal within Blackboard - a course management system - as a way to evaluate care plans proposed by students for patient care.

The blog feature within Blackboard serves as an area where communication and grading of patient care plans takes place and is accessible to students and faculty at any time of the day. A private, secured site that could support large documents was needed to review and evaluate all relevant information since email poses a threat to patient confidentiality and student grades. This method has created a collaborative learning site where faculty can provide specific and protected feedback to students.

An open-ended survey comprised of 4 questions was sent to all dental hygiene faculty involved in clinical education. Specific questions regarding the advantages and disadvantages of

using the site to view, grade, and give feedback to students were solicited. Responses were tabulated and a committee met to reach consensus on “themes” that emerged from faculty responses.

Faculty reported more advantages than disadvantages to using the blog. The ability to see the student’s thought process in developing a plan for individualized care is important for those students that may need additional instruction in writing care plans. The blog “creates a portfolio type collection of the students’ strengths and weaknesses in treatment planning” and is “easy to use” while having the ability to “see how many attempts were made to finalize the care plan.”

The Division of Dental Hygiene at UMKC will continue to use the blog in its clinical courses due to positive outcomes and ease of use for both faculty and students.

Improving Oral Health in China: A Dental Hygienist Training Program in Hangzhou

*Claudine L. Stevenson, RDH, MPH;

Amy J. Bergman, RDH, BS;

(Loma Linda University)

*Xin Xu, RDA; and Liqun Wu, DDS

(Sir Run Run Shaw Hospital, Zhejiang University Hangzhou, People’s Republic of China)

In mainland China the fields of dental hygiene and oral healthcare are emerging interests, though there are no dental hygiene schools. Periodic cleanings and oral health instructions are minimal or nonexistent. It is not customary for dental offices to perform necessary clinical assessments like periodontal charting, health history reviews, periodic x-rays, and oral cancer screenings. Over 90% of Chinese adults exhibit periodontal disease and less than 2% receive periodic exams and cleanings.

In 2009, Sir Run Run Shaw Hospital in Hangzhou, China, began a two-year dental hygienist training program in their dental clinic. The purpose was to initiate dental hygiene education to improve patients’ oral health by training dental assistants to provide better preventive, educational, and therapeutic services. Loma Linda University (LLU) sent two registered dental hygienists as full-time in-country instructors. Fifteen dental assistants were selected to receive intensive training in dental hygiene with a program modeled after LLU’s

curriculum. The first year consisted of didactic education on periodontics and other hygiene topics; clinical training began with fundamentals in assessment, treatment planning, and instrumentation. The second year was focused on in-depth, hands-on clinical training to further strengthen skills in scaling and root planing and to complete required competencies.

Fifteen dental assistants (100%) completed the training by receiving scores of 75% or better on written coursework and by completing clinical competencies that were modeled to meet California dental hygiene licensure requirements. Local anesthesia and nitrous oxide were excluded because of Chinese regulations. The final competency assessment was conducted by a registered dental hygienist and periodontist visiting from the United States. This program demonstrates the potential for improving the knowledge and skills of dental assistants in dental hygiene as a method of responding to the oral health need in China.

Funding provided by Sir Run Run Shaw Hospital and Loma Linda University.

The Development of an Online Dental Public Health Safety Net Course

*Carrie L. Hanson, RDH, MA and

Cynthia C. Amyot, BSDH, EdD

(University of Missouri-Kansas City School of Dentistry)

The issue of access to oral health care is a continuing problem throughout the United States. The 2010 PEW report “The Cost of Delay: State Dental Policies Fail One in Five Children” noted the national crisis of poor dental health and lack of access to care among disadvantaged children.¹⁷ Recent changes in the Dental Hygiene Practice Acts in Kansas and Missouri have addressed these issues by allowing dental hygienists to practice in the public health safety net. The University of Missouri-Kansas City, School of Dentistry (UMKC) developed a new online course to help practicing dental hygienists access the public health safety net. The purpose of the new course was to provide education to dental hygienists seeking opportunities in dental public health. Ultimately, the course helped participants obtain their Extended Care Permit (ECP) in the State of Kansas or work under the Public Health Designation in the state of Missouri

thereby increasing access to oral healthcare services. The format consisted of 12 learning modules with a discussion board, encouraging students to interact online.

Course evaluations were completed in 2010 with 58 students completing a course evaluation. Thirty-four percent (34%) were already practicing in an ECP site while 66% were not. The course was rated positively as students indicated it helped them gain new skills and secure future jobs (47.4%). Additionally, participants indicated they would definitely take another online course (94.8%). Reasons stated were due to time, convenience, family flexibility, and ease of access. Educational institutions should endeavor to implement alternative strategies for delivering coursework to attract students from both rural and suburban areas.^{1, 5, 9}

Study outcomes demonstrate this course to be a worthy model to utilize for similar coursework in the future. As a result of the positive outcomes, UMKC will continue to offer the course online.

A Survey of United States Dental Hygienists' Knowledge, Attitudes, and Practices (KAP) Regarding Infection Control Guidelines

*Kandis V. Garland, RDH, MS
(Idaho State University)

Problem Statement: The Centers for Disease Control (CDC) indicated a need to understand KAP of dental healthcare workers because evidence indicates low compliance with recommended infection control practices among healthcare providers. Identifying KAP of U.S. dental hygienists (USDH) relevant to current CDC dental infection control guidelines will provide baseline data to develop future interventions.

Purpose: To assess four research questions: 1) What do USDH know about CDC infection control guidelines? 2) What are the attitudes of USDH regarding infection control guidelines? 3) What are the infection control behaviors used by USDH? 4) Are there any relationships among demographic variables and KAP data?

Methods: After IRB approval, a proportional stratified random sample of USDH (N=2500) was recruited for participation in a 39-item descriptive survey (10 demographic questions, 26 Likert-type items and 3 open-

ended). The instrument, "KAP of USDH Regarding Current Infection Control Guidelines," was adapted from a validated instrument that included a scoring rubric categorizing barriers to compliance with clinical practice guidelines into domains (lack of familiarity, awareness, agreement, self-efficacy, outcome expectancy; inertia of previous practice; external factors). The same rubric was used in this study to identify KAP of USDH. Descriptive data analyses (means; frequencies) reported demographic characteristics. Cronbach's alpha was used to determine the internal reliability of the domains. Spearman's rho was used to determine relationships among demographics and KAP responses. The level of significance was set at <0.05.

Results: A 31% response rate (n=765 of 2500) was attained. The internal reliability of the domains was not validated by Cronbach's alpha at the 0.70 level of significance; however, two domains approached significance: familiarity=0.671 and environmental factors=0.666. Respondents somewhat agreed to familiarity with guidelines (mean=4.23/6.0) and relevance to patients (mean=4.26/6.0). Responses indicated, however, CDC recommendations were rarely followed for alcohol-based hand rubs (mean=2.66/5.0), pre-procedural rinses (mean=2.86/5.0), and utility glove use (mean=2.34/5.0). Of the 25 KAP items, significant positive relationships ($p \leq 0.05$) were found between years of practice and two items: utility glove use and inconvenience of guidelines; one significant inverse relationship ($p < 0.05$) was found between years of practice and perceptions about malpractice. Comments indicated time is a barrier, and respondents' perceived a need for involvement of the entire dental team.

Conclusions: Interventions for improving compliance with dental infection control guidelines are needed.

Project funding was provided by the Division of Health Sciences, Idaho State University.

Co-locating Dental Hygienists in Medical Practices: The Attitudes of Hygienists, Staff and Parents

*Shelby L. Kahl, RDH;

Patricia A. Braun, MD, MPH;

Katina Widmer, MA; Misoo Ellison, PhD;

(*University of Colorado*) and

Matthew F. Daley, MD

(*Kaiser Permanente Institute for Health Research*)

Background: Co-locating registered dental hygienists (RDHs) in pediatric practices is one idea to improve access to preventive dental care (PDC) for low-income children. Little is known about how hygienists, staff and parents view this approach.

Objective: To determine 1) factors which facilitate and create barriers to co-locating RDHs in medical practices; and 2) parent attitudes regarding satisfaction with co-located dental services.

Methods: Five RDHs were co-located into five Colorado pediatric practices that primarily serve publicly insured and uninsured children. These sites and RDHs were recruited by the study team, based on their willingness to participate in the project. Attitudes were measured using mixed methods. Semi-structured interviews were conducted with key informants within the practices. Medical providers, RDHs and office managers who had knowledge of system changes within the practices were interviewed. These interviews were then recorded, transcribed and analyzed using Atlas.ti. Parent attitudes were measured with a 25-question survey constructed by the study team. The survey was based on the Health Belief Model, and it was administered to every parent of a child in the study 12 months after the parents' first RDH encounter.

Results: Co-located preventive dental care was provided to 1,945 children. Factors which facilitated RDH co-location included: recognition of unmet dental need, desire to build a "medical home" that included dental services, and funding support. Barriers included: finding office space for and scheduling RDH time, obtaining "buy-in" from the medical staff, and establishing effective referral systems. Parents reported (n = 119) they really liked (71%) or liked (27%) having their child see the co-located RDH; would recommend the practice to others because of the co-located RDH (91%); and planned to take their child to the co-located RDH in the future (89%).

Conclusions: Co-locating RDHs is a novel way to improve access to PDC for underserved children. Identified barriers must be overcome to facilitate future co-location projects. Parents favored co-location

Funding in part for this project through Delta Dental of Colorado Foundation.

Active Learning through Questioning

*Ellen J. Rogo, RDH, PhD;

Bernadette Howlett, MS, PhD; and

(*Idaho State University*)

Heather M. Hessheimer, RDH, MSDH

(*University of Nebraska Medical Center*)

Faculty members make decisions about the level of student learning outcomes, strategies to foster learning, and assessment methods to determine achievement of student outcomes. Based on the revised taxonomy of cognitive functioning, learning outcomes can be divided into low (remembering and understanding) and high level (applying, analyzing, evaluating, and creating). Active learning strategies engage students directly in the learning process. One low risk strategy is to incorporate questions for students to answer throughout a lecture session.

The intent of this study was to determine the effect of using low and high level cognitive questions on learning; another purpose was to determine student perceptions of using this strategy. The research design was a quasi-experimental one group cross-over design; 23 dental hygiene students participated in two control lectures and two experimental lectures employing low and high level questions for student response, during a four week period of the semester. Lesson plans for the four lectures were developed and followed by the same lecturer to reduce investigator bias by adhering to a carefully preplanned series of events. An examination composed of low and high level questions for all lectures and a student perception survey were constructed. Content validity of both data collection instruments was established by an expert panel in dental hygiene and educational methodology.

Data were gathered from examination scores and student performance was compared between the groups and question level (low or high). The ANOVA analysis determined there was no statistically significant difference in

performance when considering either factor. The survey revealed positive student perceptions related enjoyment of use, role in understanding the material, and questioning effectiveness. High alpha levels from Cronbach's analysis were achieved for survey sections.

Although the performance scores on the active learning strategy were similar to the traditional lecture method, students were positive about this strategy enhancing learning.

Can Dental Hygienists Assure Comprehensive Care Services?

*Jodi Olmsted, RDH, PhD;
Nancy Rublee, RDH, CDHC;
Tracy Ellis, RN, BAN; Emily Zurawski; and
Laura Kleber
(*University of Wisconsin*)

Purpose: Public health hygienists refer clients to federally qualified health centers (FQHC'S), community health centers (CHC'S) and private practice dentists for care, improving access and health for all populations, especially those with lower incomes. A research gap considering public health practices impacting Quality of Care (QoC) and Quality of Life (QoL) exists. The purpose of this research described impacts made by a hygienist working through a public health department.

Problem: Little research exists for individuals accessing dental services through public health clinics. Hygiene services examined included education, prevention, and referral. Current literature focuses on effectiveness and safety and does not evaluate impacts hygienists make for patients served. The question overlooked and not asked is, "Do preventive oral health programs in local public health departments' document QoC and QoL for underserved populations?"

Methods: A longitudinal descriptive study design was used. Study sample examined 2,364 care records spanning six years.

Results: Cumulatively, a hygienist in public health made significant contributions improving access to care and Quality of Life for school-aged children. 2,364 children received education, 1,745 received oral screenings, and 1,511 received dental sealants. 804 children with caries were referred for restorative services. 463 children received restorations and follow-up care.

Fifty-nine minorities received care. 30-35% of the total population served were Medicaid recipients. Twenty percent had private insurance; the remainder were uninsured. Sealant retention rates were 95% or higher during each of the six years of the study. Decay was averted for 735 individuals over a three-year period (2006-2009).

Conclusion: A hygienist in public health positively impacted clients through preventive care services. Education and sealant delivery were considered effective as measured by sealant retention and averted decay rates. This program improved Quality of Life for individuals with economic disparities and cultural differences.

Expanding HIV Rapid Testing in the Dental Setting: HIV Knowledge and Attitudes among Dental Hygiene Students

*Winnie Furnari, RDH, MS, FAADH;
Janet Tuthill, RDH, MA;
(*New York University College of Dentistry*)
*Susan Davide, RDH, MS, MEd;
Marilyn Cortell, RDH, MS, FAADH;
(*New York City College of Technology*);
Anthony Santella, DrPH; and
Bhuma Krishnamachari, CGC, PhD
(*Long Island University*)

In the United States, an estimated 25% of people living with HIV/AIDS (PLWHA) do not know their positive HIV status. Alternative HIV testing staff are needed. Dental hygienists, with the proper training and equipment, may serve in this capacity. It was hypothesized that dental hygiene students have high HIV knowledge because of their extensive clinical and didactic training and thus should be able to provide HIV testing services.

Cross-sectional, self-report survey data were collected from 100 dental hygiene students in New York City. Individuals with high knowledge were compared with those with lower knowledge using Fisher's exact statistic for categorical variables and a t-test for continuous variables. Pearson correlations were used to evaluate the relationship between knowledge scores and stigma. Significance was assessed at the alpha=0.05 level.

Out of a total score of 18, the high knowledge group had a mean test score of 16.1 and the lower knowledge group had a mean score of 12.9. There was no difference between the two

groups in terms in knowledge, training or prior experience in treating PLWHA as a student. Knowledge test scores were positively correlated with comfort level in interacting with PLWHA on a social level, but none of the other survey items related to attitudes were correlated with test scores. Over 90% of respondents were female; average age was 27.5 years and 45% were Caucasian. Knowledge levels in dental hygiene students vary, but most are willing to care for PLWHA. High knowledge was correlated with a willingness to extend this interaction to a social context. Thus, dental hygienists are prepared and willing to conduct HIV rapid tests.

Application of Diffusion of Innovations: Development and Pre-testing of Four Interactive Oral Health Case Studies

*Ashley Gallentine, BS;
Rita D. Debate, PhD, MPH, CHES; and
Deborah Cragun, MS
(*University of South Florida*)

Recommendations for oral health training include increasing opportunities to prepare students to treat patients with special health care needs. Case-based learning offers student exposure to patient/provider situations that they may not encounter in clinic. Despite benefits of case-based learning, teacher-directed instruction still predominates in many dental hygiene and dental schools. Although the adoption of case-based learning is likely to be influenced by faculty perceptions, research has focused on students' perceptions.

The purpose of the current study was to apply the Diffusion of Innovations conceptual framework to: a) identify characteristics of case studies that would increase adoption among dental and dental hygiene faculty; and b) develop and pretest interactive web-based case studies on communication with patients who present with sensitive oral/systemic health care needs.

The current mixed methods study spanned two phases: Phase 1) consumer input and case study development (8 focus groups; 4 semi-structured interviews); and Phase 2) pretesting and refining (10 semi-structured interviews and consumer satisfaction surveys). Questions explored characteristics of innovation adoption per Diffusion of Innovations. Two coders independently hand coded focus group and

interview transcripts. After ensuring agreement with regard to overarching themes, transcripts were imported into NVivo for axial coding and extraction of subthemes. Survey analyses included frequencies.

Triangulation of qualitative and quantitative data revealed the following positive attributes of the developed case studies: relative advantages, such as, active learning and modeling; compatibility with a variety of courses within the curricula; ability to save class time via independent learning; and, modifiability to a variety of systemic oral health issues. Negative attributes, including complexity of certain questions and need for improving observability, prompted changes to question instructions and the addition of links to related content. The majority of participants "strongly agreed/agreed" that the final version of the case studies were: a) tailored specifically for dental and dental hygiene students (75%); b) easy to navigate (100%); c) understandable (100%); d) realistic (100%); e) a good fit with curriculum (75%).

Translation of key adoption characteristics into the development and refinement of the web-based case studies is expected to increase the likelihood of adoption by dental and dental hygiene faculty; thus, increase student exposure to patients with special health care needs. Themes identified in this study may provide broader insight into case-based learning across dental and dental hygiene curricula.

Effects of Stretching on Muscle Soreness in Dental Hygiene Students

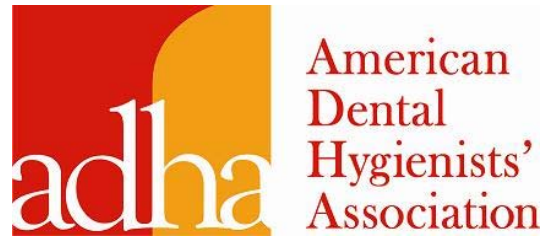
*Kitty Harkleroad, RDH, MS
(*Valencia College*)

Muscular soreness is not uncommon for dental hygienists due to body positioning necessary for routine practice. If muscular soreness can be reduced and injury prevented, dental hygienists can practice longer and find more satisfaction with their professional and personal lives. The purpose of this study was to determine if specific yoga stretches, performed regularly, can reduce or prevent muscular soreness experienced by dental hygiene students during routine dental hygiene practice. A convenience sample of 17 dental hygiene students was used. Students were

given an initial survey to determine the location and intensity of any existing muscular soreness. Eleven students were then instructed in how to stretch properly, and shown a series of yoga stretches to perform. The remaining 6 students served as the control group. The stretches targeted the lower back, shoulders, neck and wrist/fingers. The series of stretches were performed by the students for 15 weeks before clinical periods. At the conclusion of the study, the original survey was repeated by all 17 students.

Results from the two surveys revealed that specific pre-treatment yoga stretches, performed regularly, can reduce the muscular soreness experienced by second year dental hygiene students. Study participants experienced more than three times the reduction in sites of muscle soreness and half the increase in soreness sites when compared to the control group. Over 90% of study participants experienced an improvement in muscle soreness compared to only 40% in the control group. Pre-treatment yoga stretching was also shown to prevent muscle soreness. There were no individuals in the treatment group whose muscle soreness got worse; while 40% of students in the control group experienced an increase in muscle soreness over the semester. Pre-treatment stretching is beneficial in reducing and preventing muscle soreness in dental hygiene students.

DENTSPLY PROFESSIONAL



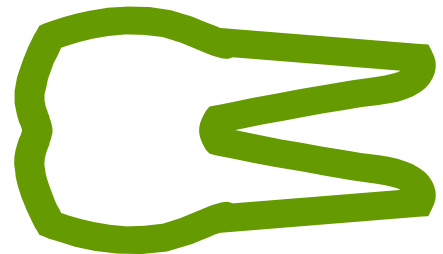
2011 DENTSPLY/ADHA

Graduate Student

Clinicians Program

The DENTSPLY/ADHA Graduate Student Clinicians Program encourages and promotes graduate dental hygiene students to participate in and conduct dental hygiene research. The program provides a wonderful opportunity for student clinicians to share their findings through a poster presentation. In addition, the students compete for awards and recognition during the ADHA Center for Lifelong Learning (CLL) at Annual Session. This program is made possible through the generous sponsorship of DENTSPLY Professional.

ADHA Center for Lifelong Learning
at Annual Session
Nashville, Tennessee



Wednesday, June 15, 2011
Judging Session 4:00PM - 6:00PM
Thursday, June 16, 2011
Open Viewing 12:30PM - 4:00PM
Awards Ceremony 5:30PM - 8:30PM
(Invitation Only)
Friday, June 17, 2011
Open Presentation 1:00PM - 3:00PM



The Predictive Validity of Critical Thinking Skills on Dental Hygiene Student Performance

Cheri S. Podruzny, RDH, MDH

Dental hygiene educators are charged with the responsibility of selecting applicants with the potential for successfully completing a rigorous dental hygiene curriculum and providing positive contributions to the profession thereafter. The aim of this project was to examine the predictive validity of critical thinking skills on dental hygiene student performance including: clinical GPA, National Board Dental Hygiene Examination (NBDHE) scores, and Western Regional Examination Board for Dental Hygiene scores (WREB DH) in a convenience sample of community college dental hygiene program graduates (N=63). The impact of the Health Occupations Basic Entrance Test - Critical Thinking Analysis (CTA) was correlated with success indicators to determine the viability of utilizing a critical thinking assessment as a dental hygiene student selection criterion. Pre-requisite GPA was correlated with success indicators for control purposes.

Findings from this study indicate a statistically significant positive impact of critical thinking skills (CTA) on a convenience sample of dental hygiene graduates' performance on two indicators of student success: clinical GPA ($p = .032$) and NBDHE scores ($p = .021$). Both CTA ($p = .371$) and pre-requisite GPA ($p = 0.247$) correlated inversely with WREB DH scores. Interestingly, clinical GPA was more strongly associated with NBDHE ($p = .001$) and WREB DH ($p = .057$) than CTA or pre-requisite GPA. These findings support the use of a critical thinking assessment instrument as a component of the selection process for dental hygiene students.

Dental Hygiene Program Directors' Perceptions of 100% Online Degree Completion Programs in Comparison to Best Practices for Distance Learning

Elizabeth O. Carr, RDH, BS, MDH

An online survey evaluated perceptions of program directors of 100% online dental hygiene degree completion programs to evaluate compliance with five key areas outlined in The North Central Association Commission on Institutions of Higher Education document Best Practices for Electronically Offered Degree and Certificate Programs. Areas evaluated were, (1) institutional context and commitment, (2) curriculum and instruction, (3) faculty support, (4) student support, and (5) evaluation and assessment. Inclusion criteria were dental hygiene degree completion programs offering 100% online curricula. Nineteen programs fit into the inclusion criteria. Seventy-three percent ($n=14$) of program directors participated in the study.

The population surveyed overwhelmingly perceives they follow the recommendations for best practice in all regards except faculty support. Thirty-three percent of directors Disagreed with the statement 'my DCP staffs adequate numbers of faculty'. Fifty percent either Strongly Disagreed or Disagreed when asked if compensation was commensurate to the amount of time spent working on the DCP. Stipends are offered to course instructors' reveal 50% Disagreeing or Strongly Disagreeing. The major limitation of the study was the small sample size. This study will add to the understanding of online education best practices, and lead to practical recommendations for use in online dental hygiene degree completion programs. Dental hygiene online education requires additional study.

The Attitudes of Ohio Dentists and Dental Hygienists Regarding the Use of Automated External Defibrillators in the Dental Setting - A Follow-up Study

Jennifer A. Pieren, RDH, BSAS

The benefits of automated external defibrillators (AEDs) are well documented. In 2004, a study examined the attitudes toward and use of AEDs by Ohio dental professionals. While they were willing to use an AED, most did not have access to one in their office settings. Since that study, AED-related legislation has been enacted and awareness of the benefits of AEDs has increased. Therefore, the purpose of this study was to document the prevalence of and attitudes toward AED usage in the dental setting seven years following the initial study.

A two-page survey instrument was mailed to a random sample of 1629 dentists and 1801 dental hygienists in Ohio. Data were analyzed for descriptive statistics and correlations with the 2004 data using SPSS. A 24% response rate was achieved (36% dentists and 64% hygienists).

Results indicate 16% of respondents had experienced a cardiac emergency in their practice setting that required contacting emergency personnel. AED's are available in 48% of dental practice settings. The majority of respondents feel AEDs should be mandated in the dental setting. These findings indicate a change in perceptions from dentists and hygienists from the initial 2004 study. These results suggest: (1) an increase in the incidence of cardiac emergencies in the Ohio dental setting; (2) an increase in the prevalence of AEDs in Ohio dental settings and; (3) that the perceptions of dental professionals are changing in favor of the use of AEDs in the dental setting.

Environmental Tobacco Smoke and Periodontitis in U.S. Non-Smokers

Julie D. Sutton, RDH, BS

The association of environmental tobacco smoke (ETS) and periodontitis in non-smokers has not been confirmed using a biomarker of ETS exposure.

Purpose: 1) To estimate periodontitis prevalence in non-smokers with detectable serum cotinine, and, 2) investigate racial/ethnic and socioeconomic variation in ETS exposure in a representative sample of the United States (U.S.) adult population.

Methods: Data were from the 1999-2004 National Health and Nutrition Examination Surveys (NHANES). Subjects were 3,137 adults who had smoked fewer than 100 cigarettes and had not used other forms of tobacco. ETS exposure was classified as 1) negligible (below sex and race/ethnicity cut-points for smokers); 2) moderate (cotinine 0.5-<1.5 µg/mL) or 3) high (cotinine ≥ 1.5 ng/mL). Periodontitis was classified according to the Centers for Disease Control and Prevention (CDC)/American Academy of Periodontology (AAP) case definition for moderate-severe disease. Survey estimation procedures were used to estimate prevalence and odds ratios (OR) were from multivariable logistic regression models.

Results: ETS exposure was observed in 40.0% of subjects and 2.6% had periodontitis. ETS exposure was inversely associated with educational attainment and family income and was higher in non-Hispanic blacks than whites. After adjusting for age, sex and year of survey, adults with high ETS exposure had more than twice the odds of periodontitis as people with negligible exposure (OR = 2.3; 95% confidence interval = 1.3, 4.1)

Conclusions: ETS exposure was higher among non-Hispanic blacks than whites and inversely associated with socioeconomic status. Higher ETS exposure was a risk indicator for periodontitis.

Effectiveness of Cetylpyridinium Chloride, Chlorhexidine Gluconate, Chlorine Dioxide, and Essential Oils against F. Nucleatum, P. Gingivalis, S. Mutans and S. Sobrinus – A Biofilm Approach

Kristafer Lee Adkins, BSDH, MSDH

Results of evaluating chemotherapeutic effectiveness have focused on planktonic, two-dimensional bacterial existence. Biofilms exist as three-dimensional structures which shelter bacteria deep within. Current research is needed to evaluate the effectiveness of various chemotherapeutics against bacteria residing inside of a biofilm. In order to do so, this study evaluated the effectiveness of four common chemotherapeutics (cetylpyridinium chloride, chlorhexidine gluconate, chlorine dioxide, and essential oils) against four bacteria (*S. mutans*, *S. sobrinus*, *F. nucleatum* and *P. gingivalis*) in both planktonic and biofilm modeled culture media.

Data was obtained through the measurement of zones of inhibition (ZOI) surrounding test discs placed on experimental plates. ZOI comparisons were made across culture media types and between chemotherapeutics within culture plates. *F. nucleatum* and *P. gingivalis* data were excluded from this study, because *F. nucleatum* was unable to be amplified while the *P. gingivalis* Poloxamer F127 plate presented with an unreadable media surface. Chemotherapeutic effectiveness across culture media for both *S. mutans* and *S. sobrinus* produced significant differences in resultant ZOI formation. Only CHX 100% and CPC 100% were classified as effective agents against both bacteria across both brucella blood agar and Poloxamer F127 media.

Oral Health Promotion: Knowledge, Confidence and Practices of Women, Infants and Children Program Personnel in Virginia

Lorraine Fuller, RDH, BS, MS_(c)

Purpose: To examine the oral health promotion of knowledge, confidence, and practices of Women, Infants and Children (WIC) personnel in Virginia.

Methods: A convenience sample of 257 WIC personnel were asked to complete a 22-item questionnaire via an electronic survey. A response rate of 69% was obtained. Descriptive statistics were performed using WIC personnel demographic characteristics and their oral health knowledge, confidence and practices. Frequencies, Pearson Chi-square, and Fisher's Exact test were performed to determine strength of associations.

Results: There is significant difference in oral health promotion of WIC personnel according to age (40+ years) $p=.046$, WIC experience (10+ years) $p=.022$ and level of education (college graduate) $p=.001$ in knowledge, confidence and oral health promotion practices. Additionally, only four percent of WIC personnel are applying fluoride varnish to at risk children.

Conclusions: The majority of WIC personnel were more knowledgeable and performed more oral health promotion practices than they were confident in the prevention of infant, toddler, and childhood dental diseases. The results suggest that WIC personnel lack the oral health training in providing preventive interventions for early childhood caries.

Painting a Portrait of Autonomy: Daily Oral Hygiene Tasks in a Long Term Care Facility

Melanie V. Taverna RDH, MS_(c)

This mixed method exploratory study will explore resident autonomy in oral hygiene tasks in a long term care facility (LTC).

To ensure that daily oral hygiene tasks are preformed successfully for oral health and general health considerations of the residents in LTCs there must be some oversight. Certified Nursing Assistants (CNAs) receive four weeks of training for certification and little oral health instruction. Residents in facilities guard their autonomy by maintaining that their capability to complete oral hygiene tasks is achieved without assistance or supervision. Consequently, a great level of unrestrained autonomy may exist in this relationship; therefore, reducing the accountability necessary for successful oral hygiene practices.

A convenience sample of residents and care staff was interviewed using Likert Scale surveys and open ended questions to gather narrative data. The survey questions were matched, by topics of ageism, respect and time constraints, to explore perceptions held by both residents and care staff. Narrative data will be explored to expand on these fixed responses. Narrative data will be analyzed using NVIVO 9 utilizing the constructivist method and fixed data will be analyzed using Mann-Whitney test for two independent samples.

Initial data analysis reveals that autonomy, as reported by both residents and care staff, may hinder appropriate oversight as to the proficiency of oral hygiene tasks and therefore may be limiting routine visits to a dentist or dental hygienist.

Initial analysis suggests that resident autonomy may negatively impact care staff interaction in oral hygiene tasks. To ensure the daily oral hygiene tasks are performed successfully, intervention by an oral health professional may be required to educate and oversee daily oral hygiene tasks and provide guidance to autonomous tasks.

Interdisciplinary Approach to Care: The Role of the Dental Hygienist on the Pediatric Feeding Team

Merri L. Jones, RDH, MSDH

Achieving and maintaining optimal oral health is challenging in children with special health care needs (CSHCN) due to the many challenges this group faces in both medical and dental care.

Purpose: The purpose of the study was to gain a consensus from Washington State pediatric community feeding team members on the role of the dental hygienist as a team member in relation to elements of care coordination: assessment, dental hygiene diagnosis, planning, implementation, evaluation, advocacy, and health education/promotion.

Methods: The Delphi technique was used in two (2) online rounds to survey community feeding team members (n=112). In Round One, participants were asked to identify items within the elements of care coordination deemed necessary for inclusion in the roles of the dental hygienist as a member of the team. Items identified were categorized within the elements of care coordination. In Round Two, participants rated the importance of each item for inclusion.

Results: Participants identified 33 items for possible inclusion in the role of the dental hygienist in Round One and reached consensus in identifying 31 specific roles for the dental hygienist in all seven elements of care coordination in Round Two.

Conclusion: Members of the WSCFTs believe the dental hygienist's role in an interdisciplinary approach to care would encompass all elements of care coordination. These findings may provide a framework for future implementation of a model for integrating dental hygienists into this multidisciplinary team.

The Status of Periodontal Disease and Dental Caries among Omani Adults in Muscat Governorate and Wilayat Barka: The Need for Dental Hygiene Services

Naeema Al Bulushi, RDH, BS

The purpose of the study was to provide a statistical analysis of the prevalence and extent of periodontal disease and dental caries among Omani adults in Muscat Governorate and Wilayat Barka, and to determine the need for dental hygiene services for the adult population.

Three hundred and eighty (N=380) Omani adults between the ages of 19 to 59 were screened from Muscat Governorate and Wilayat Barka. The Community Periodontal Index (CPI) and DMFT index were used to measure the prevalence of the oral diseases. A questionnaire was used to collect additional information about the subjects, such as demographic data, medical history, oral habits and dental knowledge. The study consists of four research questions and two hypotheses. Chi-square analyses, T-test, and regression through an analysis of variance (ANOVA) were used to test if statistically significant differences in the prevalence and extent of periodontal disease and dental caries existed among Omani adults in Muscat versus Barka.

The results of this study revealed that 94% of Omani adults need some form of periodontal treatment, and DMFT scores (M= 3.95) indicate the need for restorative services. No statically significant difference ($p=.224$) was found in the prevalence and extent of periodontal disease between Governorate of Muscat and Wilayat Barka. However, statistically significant differences were found in the prevalence of dental caries ($p=.026$) among Omani adults between locations, with Barka's exhibiting higher DMFT scores. Additionally, significant association was found between the CPI score and the following risk factors: age ($p= .006$), gender ($p= .034$), education ($p=.000$), brushing habits ($p=.000$), smoking ($p= .014$), knowing what a dental hygienist is. The analysis also indicated a significant relationship between the DMFT total and the following risk factors: age ($p=.000$), gender ($p=.014$), location ($p=.026$), education ($p=.008$), pregnancy ($p=.043$), and its related problems ($p=.006$). Therefore, the dental hygiene services are needed to address the following risk factors to reduce the burden of oral diseases such

as periodontal disease and dental caries among Omani adults.

Reducing Pneumonia Related Death In Amyotrophic Lateral Sclerosis Patients Through Improved Oral Health Care

Susan W. Jones, RDH, MS

In patients diagnosed with Amyotrophic Lateral Sclerosis (ALS), the primary pathological cause of death, as determined by autopsy, is pneumonia. Research associates poor oral health with an increased incidence of pneumonia. The incidence is further elevated in mechanically ventilated, disabled and high-risk individuals. A proactive approach in oral health care could mitigate the risk of pneumonia related deaths in patients with ALS. This study evaluated whether the dental needs of ALS patients were being met.

Over a three-month period 121 ALS patients were surveyed regarding their oral health status. Both written and online survey formats were employed. ALS Association Multidisciplinary Clinics and Certified Centers assisted in survey promotion and distribution. Research results were analyzed utilizing bivariate Pearson correlation coefficients to determine relationships among study variables.

Results showed patients' difficulty in obtaining dental health care increased by 38.7% when the responsibility of their oral health care transitioned from patient to caregiver. Also increasing the difficulty in obtaining dental health care was the length of time elapsed since patient diagnosis. An overwhelming 85% of patients responded that they had not received dental health care information at their multidisciplinary clinic appointments.

Educating patients, their caregivers and ALS medical support personnel on the significance of oral health care and its association with pneumonia and pneumonia related death could have a positive impact on ALS patient life expectancy. This study supports the need for inclusion of a dental component into ALS patients' multidisciplinary clinic appointments.



444 N. Michigan Avenue
Suite 3400
Chicago, IL 60611
(312) 440-8930
adha.org/research