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Sonrisa Clinic: Evaluation of Patient Satisfaction

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Dental hygiene students at Central Community College, Hastings, Nebraska. Wanda Cloet, RDH, MS, faculty advisor.

Purpose. To assess the satisfaction of the families treated at the Sonrisa Clinic in Hastings, Nebraska.

Methods. A sample of 101 Hispanic children ranging from the ages of 3 to 16 was seen by the dental hygiene students at Central Community College in Hastings, Nebraska, for free dental services. This program included 15 dental hygiene students, two dentists, and three translators. The goal was to provide underprivileged minority families preventive and restorative care and instruction. Each family received a questionnaire at the end of their treatment to express their overall impression of the Sonrisa Clinic. A total of 27 surveys were received and analyzed.

Results. Of the families responding, 96% were satisfied with the times the clinics were held. Ninety-three percent of these responding families were satisfied with the location and did not have trouble with transportation to the clinic site, and 96% were satisfied with the study materials provided. One hundred percent of the responding families were satisfied with the explanation of procedures, availability of interpreters, educational videos, and solving all dental needs. Lastly, all families (100%) said they would recommend the program to their families and friends.

Conclusion. Overall, most families were satisfied with all aspects of the Sonrisa Clinic. Future clinics should continue to provide satisfaction questionnaires in order to evaluate the experiences of the families involved.

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Effects of Water Fluoridation in Communities

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Purpose. *The purpose of this project was to determine if water fluoridation will help prevent tooth decay in residents of two Nebraska communities*

Methods. *Senior dental hygiene students from Central Community College in Hastings conducted oral screenings on second graders from two communities. The communities compared were Minden, Nebraska, a community with fluoridated water, and Hastings, Nebraska, where the water is non-fluoridated. Sixty-five Minden second graders and 54 second graders from Longfellow Elementary in Hastings were screened under the supervision of a registered dental hygienist. DMFT's and DEFT's were recorded, calculated, and added together for each school. Comparisons were made based on percent needing attention, decay per pupil overall, and decay per pupil needing attention.*

Results. *The percentage of students at the Minden school needing attention was 9.2%. In Minden, the decay per pupil overall was 0.138, and the decay per pupil needing attention was 1.5. The percentage of students at the Hastings school needing attention was 25.9%. The decay per pupil overall was 0.703, and the decay per pupil needing attention was 2.71 in Hastings.*

Limitations. *Limitations of the study were the lack of time to conduct a survey to assess diet, the amount of time each child had lived in a water-fluoridated community, and the amount of water consumed daily in the fluoridated community. Other contributing factors, such as level of education about oral health and daily oral care, were not determined.*

Conclusions. *Decay present in students was much higher in the non-fluoridated community, in comparison to the fluoridated community. Based on these results, it can be concluded that water fluoridation leads to a decrease in the amount of decay occurring in teeth.*

An Assessment of Oral Cancer Screening Methods Among Registered Dental Hygienists in West Virginia

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Purpose. The purpose of this study was to determine oral cancer screening methods among registered dental hygienists in West Virginia. The entire oral health care team is responsible for implementing oral cancer screenings, but recent literature suggests that dental hygienists do not regularly provide oral cancer screenings as a routine component of their patient assessment. Thorough intraoral and extraoral cancer screenings can drastically reduce the number of deaths resulting from oral cancer. Therefore, routine oral cancer screenings and thorough examinations are imperative components of each patient assessment.

Methods. Out of 687 registered dental hygienists in West Virginia, 300 were randomly selected to participate in the study. A 22-item survey was mailed to the participants' home addresses. The survey addressed demographics, attitudes, and beliefs regarding oral cancer, the frequency and thoroughness of oral cancer screenings, and overall knowledge of clinical characteristics and risk factors associated with oral cancer. Data analyses were conducted using frequencies, cumulative frequencies, and percentages. Fisher's two-tail exact test and chi square test were used to determine statistical significance, and the kappa coefficient was used to determine degrees of agreement.

Results. A response rate of 51% (n=152) was achieved. Within the dental offices of most respondents (n=93), oral cancer has been detected (p<0.01).

The majority (n=124) provide intraoral cancer screenings during each patient's recall appointment (p<0.01). Although 57% (n=81) provide extraoral cancer screenings during each patient's recall appointment, it is not a significant majority. Dental hygienist respondents are more likely to provide the extraoral cancer screening to patients if they provide the intraoral cancer screening (kappa=0.3) (p<0.0001).

The majority of responding dental hygienists feel they have adequate time, education, and confidence to provide patients with thorough oral cancer screenings (p<0.01). They are more likely to provide oral cancer screenings to patients if they feel they have adequate appointment time and confidence (kappa=0.2) (p<0.05).

The majority (n=136) feel it is important to provide patients who use tobacco with tobacco cessation counseling and education on their risks in developing oral cancer (p<0.01); however, most (n=102) only sometimes provide this service to their patients (p<0.01). The respondents are more likely to provide tobacco cessation counseling to their patients if they feel that it is important (kappa=0.4) (p=0.001).

Conclusions. It appears that more dental hygienists in West Virginia need to perform extraoral cancer screenings of the skin, lips, lymph nodes, and salivary glands. Most dental hygienist respondents feel they have adequate time, education, and confidence to provide intraoral cancer screenings. The majority feel that the provision of oral cancer screenings is a necessary standard of care for any dental office. Since tobacco use is the leading risk factor for oral cancer development, dental hygienists need to provide tobacco cessation counseling on a more regular basis.

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Comparison of Mask and Face Shield on the Prevention of Aerosol Exposure

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***Purpose.** The objective of this study was to investigate possible differences in barrier efficacy from aerosol exposure to clinicians during routine dental prophylaxis. The Occupational Safety and Health Administration (OSHA) requires that masks be worn in combination with eye protection devices (goggles, glasses with solid side shields, or chin-length face shields) during dental procedures. The Centers for Disease Control and Prevention (CDC) and the American Dental Association (ADA) recommend that dental professionals wear either a mask and goggles or a face shield alone. While there are limited published studies regarding the face shield, it is clearly an option offered to dental professionals under official guidelines.*

***Materials and Methods.** The treatment cells were comprised of dental hygiene students who wore either 1) face shield with mask, using the ultrasonic scaler; 2) face shield with mask, using hand instruments; 3) mask and goggles only, using the ultrasonic scaler; and 4) mask and goggles only, using hand instruments. Each cell was tested 12 different times (12 replicates). For all tests, the operator was given a mask with a sterile, thin plastic covering attached. This plastic was swabbed in a standard manner for contaminating bacteria at the end of the treatment (30 minutes). The swab was added to 10 ml of sterile saline and mixed. Bacterial colonies were counted by removing 0.25 mls and spreading it on blood agar plates that were then incubated for 48 hours at 37M-BM-0C.*

***Results.** For operators scaling by hand, 8% of the masks with face shield alone and 17% of the masks with goggles only had contaminating bacteria from aerosol. For those using the ultrasonic scaler, 33% of the masks with goggles only and 50% of the masks with face shield had detectable bacterial growth. With the two-sample binomial test, there was no statistically significant difference in bacterial contamination from aerosols between any of the test cell conditions.*

***Conclusion.** This study demonstrated that more aerosol bacterial contamination occurs with ultrasonic scaler use than with hand instrumentation. However, when masks from face shields alone were compared to masks used with eye goggles only, no significant differences were found in the numbers of masks contaminated by aerosol bacteria.*

***Clinical Significance.** If a face shield is chosen for barrier protection, a clinician may practice safely without using a separate face mask.*

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Hand Hygiene: The Efficacy of an Alcohol-based Hand Sanitizer vs. an Antimicrobial Soap and Water

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Purpose. *Because dental literature regarding the efficacy of alcohol-based gel is controversial, this study compared the effectiveness of an alcohol-based hand sanitizer versus an antiseptic hand soap for bacterial removal.*

Methods and Materials. *Product A (1.0% chloroxylenol) and Product B (62% ethyl alcohol hand sanitizer) were compared. Three subjects, the dental hygiene students completing this study, tested each product 25 times, totaling 75 trials. Staphylococcus epidermis was the indicator organism. Subjects marked a two-inch circle on a palm as an invariable testing zone. Each zone was inoculated with a swab dipped in a microbial solution of 1.6×10^7 colony forming units (CFU). After 15 seconds, for Product A, subjects followed Centers for Disease Control (CDC) handwashing guidelines, using a controlled amount of antimicrobial soap in wetted palms, rubbing them together for 15 seconds, rinsing the product off completely with warm water, and towel-drying their hands. For Product B, the subjects placed the same amount of product in their palm and rubbed them together for 15 seconds until dry. Five consecutive samples were collected before the palms were reinoculated by rubbing sterile swabs across the testing zone with even, firm pressure for 15 seconds. The swabs were then placed into 1 ml of broth and mixed. One hundred microliters of the resulting mix were placed on a TSA plate and spread with a glass rod. Plates were incubated for 24 hours at 37M-BM-0C and the bacterial colonies were counted.*

Results. *The Kruskal-Wallis Ranks Test demonstrated a highly significant decrease for both antimicrobial soap with water and alcohol-based gel ($p < .0001$). The Mann-Whitney U-Test showed that alcohol-gel significantly reduced bacterial counts compared to soap and water ($p < .0001$).*

Conclusions. *The alcohol-based gel was more effective in reducing bacterial counts than the antimicrobial soap after one application. It required four handwashings with the antimicrobial soap to be equally effective.*

Clinical Significance. *Because alcohol-based hand gels are highly effective, health care professionals should feel confident in replacing soap and water with an alcohol-based gel.*

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Effect of Herbal Medication on Amoxicillin Activity

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Purpose. *This study investigated whether three herbal medicaments had any effects on amoxicillin activity.*

Methods and Materials. *Streptococcus mitis was the indicator microorganism. The following were placed on 10mm filter paper discs using a pipette:*

T1) St. John's Wort extract (15 M-BM-5l) and amoxicillin solution (15 M-BM-5l)

T2) Echinacea extract (15 M-BM-5l) and amoxicillin solution (15 M-BM-5l)

T3) Ginkgo Biloba extract (15 M-BM-5l) and amoxicillin solution (15 M-BM-5l)

T4) Amoxicillin, positive control (15 M-BM-5l prepared solution at concentration of 125 mg/5 ml)

T5) Sterile water, negative control (30 M-BM-5l)

The series was repeated 5 times (25 times). Plates were incubated for 24 hours at 37M-BM-:C. Zones of inhibition (mm) were measured and analyzed using the Kruskal-Wallis Ranks and Mann-Whitney U-Tests. Zones of inhibition, areas of no microbial growth, are produced on bacteria-inoculated agar whenever an antimicrobial is diffused into the medium from the paper disc. The effect of the antimicrobial is negative if no zone of inhibition develops, while a moderate or large zone indicates that the bacterium would not grow in the presence of that medication. This test is used routinely to determine clinical microbial sensitivity or resistance to many antimicrobials.

Results. *The mean inhibition zone was determined for each treatment. For T1, the value was 74.40 mm (SD=6.82). T2 averaged 55.3 mm (SD=15.49), while T3 measured 60.67 mm (SD=1.84). T4 value was 73.87 (SD=6.49), and T5 measured 0 (SD=0). T1 was greater than both T2 and T3 (p=0.008), but T1 showed no significant difference from T4 (p=0.841). T2 showed no significant difference from T3 (p=0.841), and T2 and T3 was less than T4 (p=0.008). All treatments were greater than T5 (p<0.0001).*

Conclusion. *Results showed that echinacea extract and ginkgo biloba extract reduced the zone of inhibition of amoxicillin at a significant level. St. John's wort appeared to increase amoxicillin zone of inhibition.*

Clinical Significance. *It is imperative that patients disclose use of all medications and herbal supplements because antibiotic efficacy may be negatively affected.*

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The Effect of Toothbrush Covers on Bacterial Retention

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Purpose. Studies have established that toothbrushes harbor pathogenic microorganisms. This study's purpose was to investigate how covers on three powered toothbrushes affected bacterial retention.

Materials and Methods. The retention of *Streptococcus mutans* was evaluated on the Oral-B Cross Action Power, the Sonicare Advance 4100, and the Crest SpinBrush Pro. The brushes were first sterilized with ethylene oxide. Brush heads from each brand were then submerged in a *Streptococcus mutans* solution for two minutes. Ten toothbrushes from each brand were covered, while 10 from each brand were allowed to air dry and were stored at room temperature. After 12 hours, five of each covered and aerated were vortexed in 10 ml sterile saline. Dilution was made (1/10), and 40 ml was placed on Mitis salivarius agar and counted after 72 hours at 37M-BM-0C. The identical procedure was carried out with the replicate 30 toothbrushes. A negative control was included.

Results. Findings from the Mann-Whitney test showed that the covered brushes at 12 hours had a statistically higher number of colony forming units (CFU) than at 24 hours ($p < 0.0001$), but uncovered toothbrushes had no significant differences at 12 and 24 hours ($p = 0.3620$). At 12 hours, the covered brushes had significantly higher CFU than the uncovered brushes ($p < 0.0001$), and at 24 hours no significant difference existed between the two brush types ($p = 0.2120$).

Conclusions. Toothbrush head covers affected retention of *Streptococcus mutans*. The longer the toothbrushes dried, bacteria levels decreased regardless of whether the brushes were covered or uncovered.

Clinical Significance. All patients should be encouraged to leave toothbrushes uncovered after use to minimize bacteria survival. If patients do cover their toothbrushes, they should wait 12 hours before reuse to allow time for decreasing the bacterial load.

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Preventive Services at the University of Nebraska Medical Center Dental Day

Liza Bumgarner, Mary Fuchuck and Jenny Mollner

Dental hygiene students at Central Community College, Hastings, Nebraska. Wanda Cloet, RDH, MS, faculty advisor.

Purpose. *The University of Nebraska Medical College (UNMC) Dental Day is an event that provides free oral health care and education to underserved Nebraska children. Held annually since 2001, the one-day event is an occasion for dental and dental hygiene students and faculty to provide care for about 130 children per day. Children from low-income, uninsured, and homeless families receive cleanings, fluoride treatments, sealants, cavity fillings, education, and emergency care. The UNMC Dental day has received the ADA's Community Preventive Dentistry Award.*

Methods. *In 2000, Dental Day began to target children of different populations. Between 2000 and 2004, a sample of 178 children between the ages of three and 16 were seen in a clinical setting at the dental hygiene department at Central Community College in Hastings, Nebraska. Children were selected from the Hastings area and surrounding communities including Sutton, Harvard, and Grand Island. Central Community College dental hygiene students provided x-rays, prophylaxis procedures, fluoride treatments, and sealants to prepare the children for further restorative and preventive care at the dental school at University of Nebraska Medical Center at Lincoln. Clinical examinations and radiographs were completed to detect caries, and restored surfaces were documented. In this process, 87 pit and fissure sealants were placed. Each child was evaluated by a dental hygiene instructor and a dentist.*

Results. *Several children presented with moderate to severe decay. Along with the sealants that were placed, many prophylaxes were completed to shorten the appointment time in Lincoln. The remaining restorations and sealants were completed at the University of Nebraska Medical Center Dental School on Dental Day.*

Conclusions. *With the preventive services at Central Community College, a full day of treatment was divided in half, making the children's experiences more positive. There was great success in seeing a wide range of children at the many dental days. The Central Community College dental hygiene program will continue to provide this service in the future.*

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Evaluation of a Method to Access Preventive Treatment at Sonrisa Clinic

Kelly Nathan and Tori Thompson

Dental hygiene students at Central Community College, Hastings, Nebraska. Wanda Cloet, RDH, MS, faculty advisor.

Purpose. *The Sonrisa Clinic provides dental care for Hispanic children who are not covered by the state of Nebraska's children's health insurance program or Medicaid. This clinic was funded by a grant and was held at the dental hygiene clinic at Central Community College in Hastings, Nebraska. The purpose of this study was to assess the preventive treatment provided to children at the Sonrisa Clinic.*

Methods. *The treatment was provided by volunteer dentists, dental hygienists, dental assistants, dental hygiene students, faculty from the college, and translators. One hundred one children were seen at the clinic, all of whom received a prophylaxis and an exam. The children all received x-rays, both bitewings and occlusal, to check for decay and the status of unerupted permanent teeth. The children also received fluoride treatments and instructions on how to brush their teeth. They were then examined by licensed dental hygienists and licensed dentists.*

Results. *Oral needs for each patient were identified. A total of 213 permanent teeth were sealed to prevent decay. The children who had decay went to another Sonrisa Clinic at Central Community College in Hastings that provided restorative care. The restorative care was completed by dental students from the University of Nebraska Medical Center dental school.*

Conclusions. *The clinic has benefited 100 children from the surrounding areas of Hastings and Grand Island. This clinic provided needed oral health preventive services for this specific population of children.*

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A Report of Oral Screenings of Residents of Two Nebraska Nursing Homes

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Dental hygiene students at Central Community College, Hastings, Nebraska. Wanda Cloet, RDH, MS, faculty advisor.

Purpose. *The purpose of this paper is to provide a report of the oral health screenings of the residents of two nursing homes.*

Methods. *Since 1990, dental hygiene students have performed oral screenings for residents of two nursing homes in Grand Island and Hastings, Nebraska. Beginning in the fall of 2003, a dentist contracted to provide services with the nursing home. Dental hygiene students were then able to work under general supervision of the dentist, provide prophylactic procedures for those in need, and refer the residents to a dentist or physician if their screenings revealed anything abnormal.*

Results. *In the fall of 2003, 104 nursing home residents were screened to determine the need for cleanings. Twenty-nine residents were screened in the Grand Island nursing home, and nine received prophylactic procedures by dental hygiene students. In the Hastings nursing home, 75 residents were screened and 10 received prophylactic procedures by dental hygiene students.*

Conclusion. *No attempt was made to evaluate the effectiveness of this screening activity. However, these oral screenings were likely beneficial to the residents who were screened because they were provided preventive services and additional oral care needs were identified.*