Health Patterns in First-Year University Students

Self-efficacy is a measure of a person's confidence. The person has the ability to complete tasks and reach goals. Self-efficacy plays an important role in many health issues, but few studies have evaluated the relationship between self-efficacy and oral health.

Researchers at Okayama University in Okayama, Japan, evaluated oral health self-efficacy responses from a written questionnaire and compared it to gingivitis indices. The study subjects were 2,111 first-year university students. Due to the presence of a large engineering department in this university that attracts more males than females, more men participated in the study: 1,197 men and 914 women.

Gingivitis was determined by calculating the total percentage of bleeding upon probing sites. In addition to the self-efficacy scale, questions were also asked about daily toothbrushing, flossing and visits to the dentist.

Similar to studies in other populations, the females had less bleeding and plaque than the males. Twice-daily brushing or more was reported by 80 percent of the group. Regular dental floss usage was reported by five percent and regular dental visits were reported by 14 percent. The percentage of bleeding upon probing sites was 29 percent for the entire group, 28 percent for women and 30 percent for men. Higher self-efficacy scores corresponded to better oral hygiene practices and fewer bleeding upon probing sites.

Clinical Implications: Interacting with young university students to boost their confidence might help them realize they have the skills to prevent dental disease and can improve oral health. ■

Mizutani, S., Ekuni, Furuta, Tomofuji, T.m, Irie, K., Azuma, T., Kojima, A., Nagase, J., Iwasaki, Y., Morita, M.: Effects of Self-Efficacy on Oral Health Behaviours and Gingival Health in University Students Ages 18-19-Years-Old. J Clin Perio 39: 844-849, 2012.

Perio Reports Vol. 25, No. 1

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Honey Mouthrinse Shows Promising Results

Mouthrinses have been used for centuries for both medicinal and cosmetic reasons. Today's gold-standard antibacterial mouthrinse ingredient is chlorhexidine. Within the past decade more products that claim to have antiplaque, anticalculus and anticaries properties have been introduced.

Complementary and alternative medicine includes a diverse group of practitioners, disciplines and treatments. The area of apitherapy offers treatments for many diseases using honey and bee products. The good taste, availability and antibacterial properties make honey a potentially valuable ingredient in various oral health products.

This two-part *in vitro* and *in vivo* study was conducted by researchers at the College of Dental Sciences in Bangalore, India. The *in vitro* or laboratory portion of the study tested the bacterial inhibition of chlorhexidine, saline and a honey mouthrinse on six oral bacterial species. These tests were done in duplicate. Chlorhexidine was the most effective, followed by the honey mouthrinse. No effects on the six species were observed for the saline solution.

The *in vivo* or clinical portion of the study measured four-day plaque regrowth in a group of 66 volunteers aged 20-24 years. Both the chlorhexidine and the honey mouthrinses inhibited plaque regrowth better than the saline rinse. There was no statistical difference between the chlorhexidine and honey groups. The honey mixture was a 1:1 dilution of honey and distilled water.

Clinical Implications: Honey has the potential to be an effective antigingivitis/antiplaque ingredient in oral mouthrinse. ■

Aparna,, S., Srirangarajan, S., Malgi, V., Setlur, K., Shashidhar, R., Setty, S., Thakkur, S.: A Comparative Evaluation of the Antibacterial Efficacy of Honey In Vitro and Antiplaque Efficacy in a 4-Day Plaque Regrowth Model In Vivo: Preliminary Results. J Perio 83: 1116-1121, 2012.

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Biofilm Redevelopment is Rapid and Complex on Natural Teeth

Biofilm is composed of many bacterial species held together in a polysaccharide slime. Biofilm formation is influenced by three things, the surface it attaches to, the fluid environment and the available bacterial species. Supragingival plaque regrowth samples are similar between people with good oral health and those with periodontitis. Subgingival regrowth differs between these two groups.

Researchers at the Forsyth Institute in Cambridge, Massachusetts, compared supragingival plaque samples from pre-prophylaxis samples collected from individuals with teeth and individuals with dentures. Following the prophylaxis, plaque samples were collected from randomly selected quadrants on days one, two, four and seven from both groups. Subjects were instructed to refrain from all oral hygiene during this seven-day period. Counts and proportions were calculated for 41 bacterial species.

Baseline bacterial counts in supragingival plaque from natural teeth and denture teeth were similar prior to the oral prophylaxis. On each of the subsequent days without oral hygiene, more bacterial biofilm formed on natural teeth compared to denture teeth. Of the 41 species tested, 28 had higher counts on the natural teeth compared to denture teeth. Biofilm redevelopment was significantly faster on natural teeth compared to denture teeth. From day one to day two on natural teeth, *S. mitis* and *S. oralis* increased significantly. *S. gordonii* increased significantly over the seven days on denture teeth but on natural teeth. The biofilm forming on the natural teeth was more complex than on the denture teeth.

Clinical Implications: Gingival crevicular fluid likely influenced biofilm reformation on natural teeth. ■

Teles, F., Teles, R., Sachdeo, A., Uzel, N., Song, Z., Torresyap, G., Sigh, M., Papas, A., Haffajee, A., Socransky, S.: Comparison of Microbial Changes in Early Redeveloping Biofilms on Natural Teeth and Dentures. J Perio 83: 1139-1148, 2012.

Individualized Spoken Instructions Better than Written

There is a difference between toothbrushing frequency and effectiveness. Just because someone brushes his teeth, doesn't mean he actually removed the plaque. Previously published studies reveal that more than 70 percent of Germans age 35 to 44 years report that they brush their teeth twice daily yet 98 percent have some plaque on their teeth and 24 percent have high levels of plaque. In this sample, 99 percent had gingivitis and 53 percent had periodontitis. Frequency of toothbrushing is not the problem while lack of toothbrushing skill is the apparent problem.

Researchers at Heinrich-Heine University in Duesselforf, Germany, compared three methods of teaching toothbrushing skill development: standardized instruction, written instructions and individualized instruction. A fourth group was given written instructions on sun protection, to be the control group.

The written instructions included a brochure on how to floss and the Bass toothbrushing technique. Subjects were left alone to read this information. The group receiving standardized instructions was provided the same information as presented in the written pamphlet but demonstrated on a model. Those receiving individualized instruction received the same information demonstrated in their mouth with attention paid to skill deficits and ways to overcome these deficits.

Four weeks later, plaque and bleeding scores were recorded after subjects were allowed to clean their teeth. All four groups showed reduction in plaque and bleeding after four weeks. The control group did not show as great a reduction in plaque and bleeding as the three test groups.

Clinical Implications: Individualized skill development instruction showed slight, but not significantly better clinical outcome. ■

Harnacke, D., Beldoch, M., Bohn, G., Seghaoui, O., Hegel, N., Deinzer, R.: Oral and Written Instruction of Oral Hygiene: A Randomized Trial. J Perio 83: 1206-1212, 2012.

Periodontal Therapy Improves Quality of Life

Probing depths and clinical attachment levels have traditionally been the surrogate outcomes used to determine success or failure of periodontal therapy. In 2003 the World Workshop on Emerging Science in Periodontology recommended using patient-based outcomes as well, taking into account the patient's opinions before and after treatment.

Researchers at Queen Mary University in London, England systematically reviewed the literature to determine if periodontal therapy actually improved the quality of life for the patients. Eleven studies met the criteria for inclusion in the review. All of these studies reported that periodontal disease negatively impacted the person's quality of life. Post-treatment evaluations of quality of life were measured at various intervals from one week to one year post-treatment. The majority of studies provided non-surgical periodontal therapy and some provided surgical therapy. Study subjects ranged in age from 20 to 75 years.

The greatest improvement in quality of life was reported following non-surgical therapy. All non-surgical periodontal therapy studies reported a post-treatment improvement in the quality of life. The better the treatment outcome was, the higher the improvement in quality of life. Poor clinical outcomes led to low levels of change in quality of life outcomes. Surgical studies reported no change in quality of life after treatment. From a patient-centered perspective, non-surgical therapy is viewed as beneficial.

Clinical Implications: In addition to controlling periodontal infection, reducing probing depths, reducing bleeding upon probing and controlling attachment loss, non-surgical therapy can also improve the quality of life for the patient. ■

Shanbhag, S., Dahiya, M., Coucher, R.: The Impact of Periodontal Therapy on Oral Health -Related Quality of Life in Adults: A Systematic Review. J Clin Perio 39: 725-735, 2012.

Effectiveness of Manual Toothbrushing

Toothbrushing is generally accepted as the most common practice to reduce oral plaque biofilm. Despite the introduction of a variety of toothbrush designs and bristle configurations, no single toothbrush design has been found to be superior for plaque removal. Personal preference for one brush over another is how people decide which brush to use. Enthusiastic brushing is not however synonymous with effective plaque removal. Most people are able to remove approximately 50 percent of plaque with a one-minute brushing. This means people are generally not very good toothbrushers and live their lives with considerable plaque on their teeth. A systematic review was needed to determine the effectiveness of manual toothbrushing.

Researchers at University of Amsterdam in the Netherlands evaluated all available studies to determine the effect of manual toothbrushing on plaque removal. A total of 59 papers with 212 brushing experiments were evaluated. A total of 10,806 subjects participated in these studies. The outcome analyzed from each of these studies was the percentage of reduction in plaque from before to after the brushing exercise.

Overall, the manual toothbrush provides a 42 percent reduction in plaque scores. The reduction is 30 percent when the Quigley and Hein plaque index is used and 50 percent when the Navy plaque index is used. Sub-analysis revealed that various bristle designs reduced plaque scores 24 to 61 percent. Toothbrushing time also impacted plaque removal. For studies brushing for one minute, the mean plaque reduction was 27 percent and increased to 41 percent with two minutes of brushing.

Clinical Implications: Toothbrushing doesn't remove as much plaque as you might expect. ■

Slot, D., Wiggelinkhuizen, L., Rosema, N., Van der Weijden, G.: The Efficacy of Manual Toothbrush Following a Brushing Exercise: A Systematic Review. Int J Dent Hygiene 10: 187-197, 2012.