Dental Students Rank High with Bad Breath

Dentists lead by example. Their personal oral hygiene will be noticed by patients. To instill confidence in patients, dentists need to have fresh breath. Halitosis sends the wrong message to patients and undermines their confidence in him/her. Halitosis is linked to several oral factors: tongue coating, poor oral hygiene and dental disease. Objective measure of halitosis is done by smelling the breath and measuring sulphur compounds in the mouth air.

Researchers in the faculty of dentistry, Ankara University in Ankara, Turkey, evaluated the oral status and breath of 268 dental students. Measurements were taken between 9 a.m. and 11 a.m. and students were instructed to refrain from eating anything with a strong odor the night before and the morning of the testing. Volatile sulphur compounds were measured using a Halimeter. Organoleptic testing, or smelling the breath, was done by a trained breath tester. Oral malodor was measured using a six-point scale: 0=no odor, 1=barely noticeable, 2=slight, 3=moderate, 4=strong and 5=extremely strong odor. Tongue coating was measured using a scale from zero to 3, with 3 being two-thirds of the tongue covered with coating.

Bad breath was prevalent in these dental students, with 83 percent of males and 71 percent of females with oral malodor. Fifth-year students had higher rates of bad breath than first-year students. Tongue coating was significantly related to bad breath.

Clinical Implications: Dental students at this school need the expertise of dental hygienists for oral hygiene, better oral health and fresher breath.


The Maintenance Cost of Implants vs. Natural Teeth

Various treatments are available for periodontal disease, including debridement, surgery and implants. One question left unasked and unanswered is, “How successful was the treatment of choice based on reaching and maintaining health and financial cost?”

A private practice periodontist in Egersund, Norway, asked what the financial cost was to maintain implants compared to natural teeth. He looked back at his patients who had implants placed at least seven years before. He evaluated a group of 43 patients with a total of 847 teeth and 119 implants.

The number of disease-free years for implants following periodontal treatment was 8.44 years. Disease-free years for neighboring teeth was nine years and for contra-lateral teeth it was 10 years. The incidence of peri-implantitis within the group was 53 percent, the same was true for natural teeth, 53 percent experienced periodontitis. Since there were so many more teeth than implants, the incidence of disease was 31 percent at the implant level and eight percent at the tooth level.

The high incidence of peri-implantitis led to the need in some cases for surgery around an implant. Two implants were lost, one after 13 years and the other after 22 years. After various calculations the cost of maintenance treatment was determined to be $13.58 (10.2 Euro) per implant per year and $2.66 (2.1 Euro) per tooth per year.

Clinical Implications: Natural teeth are still the best option, kept healthy and free from disease with daily care and professional maintenance.

Asthma Related to Reduced Saliva Flow and Increased Oral Bacteria

Asthma is a serious childhood disease that is on the rise. The prevalence of allergies, including asthma, has reached 41 percent of children in Western countries. In Saudi Arabia the rate is lower, but increasing due to contemporary lifestyle, cigarette smoking and indoor pets. Asthma medications taken orally or inhaled change the salivary flow rate and pH of the oral cavity, leading in some cases to increased caries and gingivitis.

Researchers at King Abdulaziz University in Jeddah, Saudi Arabia, compared medical histories and oral conditions between 30 children with asthma and 30 healthy children. Saliva was tested for flow rate and buffering capacity.

Sugar consumption was high among these children, with 38 percent eating sugar more than three times a day and 36 percent eating sugar two to three times per day.

No significant differences were found between groups for decayed, missing or filled teeth or surfaces. The differences observed were for the numbers of cariogenic bacteria in the mouth and salivary flow and buffering rates. Asthmatic children had higher levels of *Strep mutans* and *Lactobacillus* bacteria in the mouth compared to healthy children. Children with asthma taking steroids or anti-asthmatic medications had even higher levels of *Strep mutans* and *Lactobacillus*. The more frequent the medications were taken, the higher the oral bacterial levels. Saliva flow rates and buffering capacity were lower for children with asthma compared to healthy children.

Clinical Implications: Asthma and caries are the two most common childhood diseases. Watch for increased caries risk factors in children with asthma.


Chlorhexidine Varnish Reduces *Strep Mutans* Counts

Dental caries is a complex disease influenced by many factors. Fluoride has been used for decades to impact tooth enamel, with fluoride varnish now the primary choice for professional treatments. Chlorhexidine rinses and gels are used to control bacterial levels. Chlorhexidine varnish is a new product that addresses the undesirable side effects of the rinse, while producing the desired reduction in *Strep mutans*.

Researchers in India compared Cervitec chlorhexidine varnish from Vivicare with Duraphat fluoride varnish from Colgate in a group of 50, seven- to eight-year-old children. The study focused on the pits and fissures of mandibular permanent first molars. These surfaces are not fully mineralized at eruption, putting them at high risk for tooth decay.

Children were instructed to refrain from toothbrushing for 24 hours prior to examination. Plaque was stained with disclosing solution and then removed from the occlusal surfaces of both mandibular first molars. Plaque samples were again collected at the end of one and three months.

After baseline plaque removal, the assigned varnish was applied. Each child then returned for two additional varnish applications at day five and day 10. *Strep mutan* levels were measured in the laboratory. Both groups had similar bacterial levels at baseline. At one month, the Cervitec varnish group showed a significant reduction in *Strep mutan* counts. No change in the Duraphat varnish group. At three months, the Cervitec varnish group still had *Strep mutan* levels at half that of the Duraphat varnish group.

Clinical Implications: Chlorhexidine varnish provides a preventive option when reduction in *Strep mutans* is desired.


Chlorhexidine Varnish

Chlorhexidine (CHX) is a broad-spectrum antibacterial agent that inhibits the growth of both gram-positive and gram-negative bacteria. It is commonly used in oral hygiene products due to its effectiveness in reducing dental plaque and preventing oral infections.

In dentistry, CHX is often used as a rinse, gel, or mouthwash to help control bacteria and prevent the development of dental plaque. It is also used in the form of varnish to provide long-term protection against caries (dental decay) and gingivitis.

Chlorhexidine varnish is a thick, gel-like formulation that is applied directly to the tooth surfaces to provide sustained release of the antibacterial agent. This helps to reduce the risk of caries and maintain oral hygiene over time.

In this study, researchers compared the effects of Cervitec chlorhexidine varnish with Duraphat fluoride varnish. Both varnishes were applied to the occlusal surfaces of mandibular permanent first molars.

The study aimed to evaluate the impact of these varnishes on the levels of *Strep mutans*, a type of bacteria that plays a significant role in dental caries. The researchers observed that the Cervitec varnish group showed a significant reduction in *Strep mutans* levels after one month compared to the Duraphat varnish group. At three months, the Cervitec varnish group still had *Strep mutans* levels at half that of the Duraphat varnish group.
In 2012, researchers convened in Segovia, Spain, for a workshop on the oral-systemic link. An introductory article set the stage for these discussions by summarizing the mechanisms of infection, inflammation and the inflammatory response as they might relate to the movement of infection from the mouth to other parts of the body.

Periodontal disease is considered metastatic in that bacteria and inflammatory cytokines can be moved to distant parts of the body, creating disease in another organ or body part. Periodontitis has been shown to have an impact on systemic inflammation as well.

Periodontal disease is triggered by a bacterial infection that triggers an inflammatory response that causes damage to bone and connective tissue. Not everyone with periodontal pathogens in their mouth develops periodontitis; the host must be susceptible.

Although a periodontal infection appears to be localized, it can spread throughout the body. A healthy sulcus will prevent bacteria from entering the underlying tissue and the circulatory system. Severely inflamed pocket epithelium provides easy access to underlying tissues and the circulatory system for the oral bacteria. Toxins also easily enter the blood stream from an infected pocket. Chewing, toothbrushing, probing and endo treatment further enhance this transfer.

Pro-inflammatory mediators are secreted in response to bacteria and bacterial toxins dispersed from the mouth to distant locations and organs. A cascade of inflammatory reactions occur as oral bacteria and associated proteins reach these distant sites.

It is clear that periodontal disease is linked to many other systemic conditions, but cause and effect evidence is elusive.

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**The Workings of Infection and Inflammation**

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**NovaMin Prophy Paste Reduces Sensitivity**

Root sensitivity is a common complaint, especially following scaling and root planing. Open dentinal tubules can be occluded mechanically to reduce sensitivity. NovaMin is a bioactive glass made of calcium sodium phosphosilicate that creates a strong hydroxyapatite-like layer on the root surface that is resistant to repeated acid challenges. NovaMin was first used for bone regeneration and is now found in toothpaste and prophy paste to reduce sensitivity.

Researchers at the University of Bern in Switzerland compared NUPRO Sensodyne prophy paste with and without fluoride to classic NUPRO without fluoride. These prophy pastes are products of Dentsply Professional. Subjects with dental hypersensitivity were tested with air and pressure to determine objective sensitivity scores. Subjective scores were obtained with a patient questionnaire. Sensitivity was measured at baseline before scaling and root planing, immediately after polishing with one of the three assigned prophy pastes and again 28 days later.

The two NovaMin-containing prophy pastes successfully reduced root sensitivity immediately after polishing and for 28 days for half the test sites in those groups. The control prophy paste was not successful in reducing sensitivity immediately after polishing or 28 days later. Control group scores remained unchanged throughout the study.

Another desensitizing prophy paste, available from Colgate, contains arginine and calcium carbonate and has been shown to reduce sensitivity as well. These two prophy pastes have not yet been directly compared.

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**Clinical Implications: Use a desensitizing prophy paste for patients experiencing dentinal hypersensitivity.**

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**Clinical Implications: Understanding the concepts of infection and inflammation provide a basis for relating to the oral-systemic link.**

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