Patient education about bad breath: A focus on the source, oral health

April 10, 2018

By Alisa Cooper, DC

Bad breath, or oral malodor, is unpleasant and difficult to be around. Besides being embarrassing, it can diminish self-esteem and undermine self-confidence. Although not usually a serious medical concern, chronic oral malodor can ruin relationships as well as sabotage business and professional opportunities.¹

In today's hygiene-obsessed society, most people are concerned, even anxious, about the freshness of their breath. Unable to detect their own mouth odor and too embarrassed to ask for feedback from others, they may decline social activities and even shy away from intimacy. Conversely, some go a lifetime without ever knowing that their offensive breath odor is the cause of the vague, negative reactions they elicit from others.²

The reasons for malodor are numerous, involving both intra- and extraoral factors. In healthy individuals, simply eating sulfur-containing foods such as garlic and onions can produce oral odors that linger and offend. Consuming sugar and refined carbohydrates, and drinking acidic beverages like coffee and pop, can contribute to malodor by serving as food sources for sulfur-producing oral bacteria.³ Additionally, individuals low in stomach acid may not be able to sufficiently break down proteins, leaving undigested food to putrefy in the gut and spew foul odors.⁴

Another common factor underlying malodor is xerostomia, or dry mouth. Without sufficient saliva flow to keep oral tissues moist and clean, food odors normally washed away tend to linger impolitely. Whether a result of smoking, snoring, drinking alcohol, taking medications, or the result of an illness or cancer treatments, a lack of moisture in the oral cavity contributes to the proliferation of bacteria that yield offensive-smelling sulfur compounds.³

According to the research, only about 10% of oral malodor cases stem from an illness or disease outside the
oral cavity. Among those listed are chronic sinusitis, diabetes, liver disorders, kidney disease, respiratory tract ailments, infection, and cancer. In such instances, tactfully alerting patients of their oral malodor may lead them to a timely diagnosis and much needed treatment.

Nearly 90% of the remaining malodor issues are attributable to a problem directly within the oral cavity. Gingivitis, periodontitis, and a coated tongue resulting from inadequate oral care appear to be the main culprits. While bleeding gums and diseased oral tissues add to the malodor, it has been found that the sulfurous compounds produced by periodontal and tongue coating bacteria play a leading role. Tooth decay, food impaction, faulty restorations and ill-fitting or uncleaned dentures also contribute.

Oral bacteria are mentioned throughout the literature on malodor. Gram-negative, anaerobic bacteria are responsible for forming destructive biofilms in and around the teeth and within the grooves and fissures of the tongue. These bacteria interact to produce several foul-smelling compounds collectively known as volatile sulfur compounds (VSCs). A primary cause of oral malodor, these VSC-producing bacteria can be isolated from the plaque of patients with gingivitis as well as from the saliva coating the tongue of healthy people.

The effects of volatile sulfur compounds may extend well beyond causing fetid breath. It has recently been shown that one component of VSC's, hydrogen sulfide, damages fibroblasts necessary for the healing and repair of gingival tissue. Similarly, VSC's inhibit the activity of osteoblasts while stimulating that of osteoclasts, leading to accelerated bone loss. Additionally, one of the bacterial strains contributing to VSC production, *Fusobacterium nucleatum*, has been linked to colon cancer. Clearly, there is a need for early detection and swift reduction of these dangerous sulfurous compounds.

Considering the oral cavity is most often the source of malodor due to potentially dangerous VSC-producing bacteria, it is important to determine the effectiveness of commercially available mouth rinses at reducing both malodor and VSC loads. Researchers at Loma Linda University in California put sister products, *ClōSYS* GentleMint Rinse and *ClōSYS* Unflavored Rinse, to the test for their ability to diminish malodor in generally healthy individuals.

The study participants, ranging in age from 21-65 years, had discernable mouth odor but were screened by a dentist to rule out mucosal pathology. The breath odor assessments were conducted by individuals trained to be proficient at differentiating degree of mouth odor intensity. Prior to breath odor assessments, subjects had to refrain from brushing, flossing, rinsing and scraping their tongues as well as from using alcohol, tobacco and scented cosmetics for 12 hours. They also had to avoid eating sulfurous foods like garlic and onions for eight hours and to refrain from drinking water for two hours prior.

For the duration of the study, participants were required to rinse their mouth for 30 seconds twice a day with one of the assigned oral mouth rinses or a placebo while avoiding mints, lozenges, gum or any extraneous mouthwashes or rinses.

The results revealed that while baseline malodor scores obtained from the unflavored rinse and placebo groups were similar, oral malodor decreased more rapidly and significantly in the test group (unflavored rinse) as compared to the control group (placebo).

Amazingly, 72% of the unflavored rinse group exhibited a reduction in oral malodor while 69% of the placebo group exhibited no reduction in malodor at all. Interestingly, the results from the trial using the flavored version of the rinse paralleled those of the first. No adverse side effects were reported by participants or noted upon visual inspection of their oral soft tissue.

Conclusions

The active ingredient in the oral rinses used in the study was buffered, stabilized chlorine dioxide. Previous studies have suggested that chlorine dioxide can safely convert foul-smelling VSCs, detectable in exhaled mouth air, into non-malodorous products by way of oxidation. It appears that the study rinses provided long-lasting, antibacterial properties that reduced VSCs without harmful or annoying side effects.

Although the study included individuals with generally healthy oral cavities, the results suggest that patients...
with diagnosed halitosis, as well as those with periodontal disease exhibiting higher concentrations of VSCs, might also derive benefit. Perhaps future studies will examine the effects of stabilized chlorine dioxide on those populations.

There is a social stigma associated with oral malodor. Nearly half of the population in the USA and France claim to suffer from bad breath, and this is likely to be true for populations in other countries as well. Since most malodor cases are linked to the oral cavity, it follows that general oral hygiene, along with the use of oral rinses, plays a vital role in preventing and overcoming this affliction.

Unfortunately, many commercially available mouth rinses temporarily mask malodor while others have unwanted side effects. For instance, chlorhexidine (CHX)-based solutions, while effective at reducing bacterial loads that contribute to the production of VSCs, can lead to teeth and gum tissue discoloration.

Also, CHX has been shown to kill osteoblasts and fibroblasts, impeding the healing process and providing additional sources of VSCs; stabilized chlorine dioxide does not present these untoward effects.

ClOSYS oral rinses, recently awarded the American Dental Association (ADA) Seal for reduction of bad breath, may be a safe and effective choice for tackling oral malodor at its point of origin. According to Jennifer Hosburgh, a veteran hygienist of 17 years, “I have used CloSYS products for nearly two decades with very favorable results, but it wasn’t until my son developed an issue with allergies back in the 4th grade that I realized just how much of a difference these products can make.”

As a result of his severe allergies, Hosburgh’s young son had become a mouth breather, and the resultant dry mouth, along with thickened mucous and post nasal drip, led to oral malodor that made it nearly impossible to sit across from him at the breakfast table. Luckily, the CloSYS products turned that condition around in short order. Years later, when Jennifer’s son was in 8th grade, he would excitedly come home from school to tell her that people were saying things to him like, “How do you always have such fresh breath?” And, “You always have the sweetest breath.” Mother and son both knew precisely what had made that possible.

Dental hygienists are at the forefront in patient education when it comes to oral hygiene and its effect on health and wellbeing. By learning about oral health products that utilize safe and effective stabilized chlorine dioxide, hygienists can help their patients eliminate oral malodor at its source. By reducing VSC-producing bacteria, not only is the scourge of bad breath alleviated, but so too are the potential health hazards posed by volatile sulfur compounds.

Dr. Alisa Cooper is a chiropractor, clinical nutritionist, and certified EFT (Emotional Freedom Techniques) practitioner with over 25 years of experience helping others achieve and maintain optimal health and well-being. Dr. Cooper’s health presentations, books, articles, and blogs empower others to embrace vibrant, joyful living. Dr. Cooper maintains a private practice while writing and speaking on a sundry of topics and trends in healthcare today.

References


