Xerostomia: Understanding causes and treatment options

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Introduction

Dry mouth, or xerostomia, is a pervasive and debilitating condition caused by autoimmune diseases or conditions like uncontrolled diabetes, infections, hormonal changes and toxicity from chemotherapy, head and neck radiotherapy or adverse effects of medications.[1]

While there is limited data, the disease prevalence is estimated to impact a population between 0.9 percent and 64.8 percent.[1]

Whether chronic or acute, xerostomia might inhibit speech, mastication and dental health, plus spur other negative outcomes.[1]

Patients with xerostomia can experience nagging discomfort that lessens the quality of daily life but also can contribute to caries and various other adverse conditions.[1]

The incidence of xerostomia varies widely, depending on case definitions used and differences in study samples, including, for example, age range and health status. According to a scientific paper published in the Singapore Dental Journal, titled “Dry mouth: An overview,” gender also may affect outcomes.

Reports estimate prevalence from 10 percent to 26 percent in men and from 10 to 33 percent in women.[2]

Often dry mouth occurs due to hyposalivation (reduced saliva production). Salivation enables a homeostasis of the oral cavity by excretion of vital substances that facilitate the unique functions of the mouth.[1,3]

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Dentists need to be fully prepared to act on patients' behalf to restore comfort and function to the highest extent possible, explained Dr. Linda Niessen, founding dean of the Kansas City University College of Dental Medicine and vice provost of Oral Health Affairs. That may, of course, vary depending on the specifics of the patient's case, whether they have a self-limiting affliction leading to dry mouth or a condition that will require medical management for life, she said.

This white paper examines dynamic aspects of xerostomia, including causes (primarily hyposalivation), associated morbidities and considerations for treatment planning.

Let's start at the beginning: saliva.

Despite being paramount to oral health, mastication and digestion, saliva doesn't really get the focus it perhaps deserves, Dr. Niessen explained.

“I like to say when I’m lecturing that saliva is the Rodney Dangerfield of bodily fluids,” she said. “It’s the bodily fluid that (gets no) respect. You don’t appreciate it until you don’t have it.”

For dentistry, saliva should be considered a kind of miracle fluid, Dr. Niessen said. Fully considering its essential range is key to addressing its absence, she added.

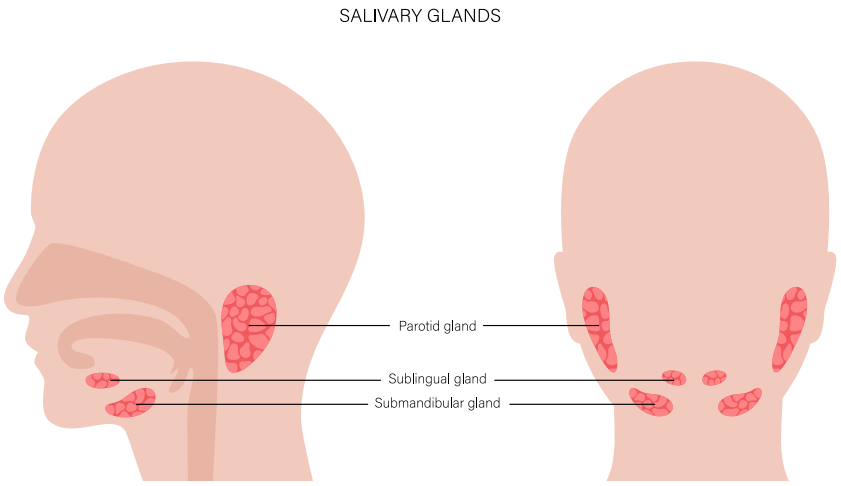
“Saliva is involved in speaking, chewing, swallowing, protecting the teeth and starting the digestive process,” Dr. Niessen said. “So, if you don’t have saliva, you’re at risk for tooth decay because you don’t have anything protecting your teeth from the bad bacteria.

> **When hyposalivation occurs, it not only leads to xerostomia but can seriously inhibit flouride delivery.**

“The mouth tissues, the cheeks, the lips, the tongue, the soft tissue—they are all drier and certainly it makes it harder for [patients].” Hyposalivation also may lead to halitosis, burning mouth, fungal infections and other conditions.[4]

Saliva production is the province of the salivary glands. An article titled “Science Behind Human Saliva” by Manjul Tiwari in the Journal of Nature Science, Biology, and Medicine, said, “The basic secretary units of salivary glands are clusters of cells called acini. These cells secrete a fluid that contains water, electrolytes, mucus, and enzymes, all of which flow out of the acinus into collecting ducts. Within the ducts, the composition of the secretion is altered.”

The article further stated, “Much of the sodium is actively reabsorbed, potassium is secreted, and large quantities of bicarbonate ion are secreted. Small collecting ducts within salivary glands lead into larger ducts, eventually forming a single large duct that empties into the oral cavity.”[5]



Significantly, saliva also delivers fluoride to the oral cavity, Dr. Niessen said. “When we drink water that’s fluoridated, the body absorbs the fluoride in the blood, and then it goes to the salivary glands. The salivary gland grabs the fluoride out of the blood and secretes it into the saliva and into the mouth.”

Thus, when hyposalivation occurs, it not only leads to xerostomia but can seriously inhibit fluoride delivery.

Xerostomia can be discrete from hyposalivation and vice versa. They can co-exist in a patient, though not necessarily, as xerostomia is a subjective report from the sufferer, whereas hyposalivation may be clinically observed – a sign rather than a symptom.

Here are the most frequently recognized causes of hyposalivation:

Medications

Many classes of drugs may interfere with adequate salivation, including anticoagulants, antidepressants, antihypertensives, antiretrovirals, hypoglycemics, levothyroxine, non-steroidal anti-inflammatory drugs, and steroid inhalers. Even multivitamins and supplements may induce the condition.[6]

"The most common cause of xerostomia is medicines and multiple medications," Dr. Niessen said. "The medicines that are the most damaging just by themselves are the medicines that adults, usually older adults, take for incontinence. If they've got urinary incontinence, they (may) take oxybutynin, which dries up the urinary incontinence. ... But it also dries up your tears and dries up your saliva."

Radiation therapy

Patients who undergo radiotherapy to the head and neck are at risk for damage to the salivary glands, which may cause salivation dysfunction. "If somebody has a brain tumor and the field of radiation is going to go through the salivary glands, they try to provide lead shielding for the salivary glands so that they don't destroy them and they have some ability to function," Dr. Niessen said.

Disorders and autoimmune disease:

A variety of disorders of the salivary glands also may affect salivation. Causes can include: small stones in the gland ducts, infection of the salivary duct or lymph nodes, tumors, HIV-AIDS and rheumatoid arthritis.[6]

Sjögren's syndrome is an autoimmune disorder that has as its two most common symptoms dry eyes and dry mouth.[7]

Systemic diseases

Hyposalivation may be associated with hypertension, asthma, diabetes mellitus, hematological diseases, thyroid diseases, psychiatric diseases and eating disorders.[7] Dry mouth from CPAP usage is also prevalent.[8]

What's the real impact?

Dental professionals need to understand the essential role of salivation. Dental patients experiencing xerostomia want solutions to improve the condition, and dentists may provide defense to ease xerostomia symptoms.

Sometimes, patients don't even realize they have certain debilitating conditions in their mouths, Dr. Niessen said. She recalled a case with a patient who had an infection in the salivary gland, in the duct, and didn't report any of the symptoms until prompted.

“It was very interesting because, when I did my oral exam, we palpated the salivary gland and we palpated the duct to see if we can get a little fluid coming through the duct to make sure that it’s open. I said, ‘We’re having a problem.’ He said, ‘You know it’s funny, when I go to eat, I feel this little pain and then it goes away and then I’m fine.’ I said, ‘Well, when does it happen?’ He said it only happens when I eat. Turns out he had infection in his salivary gland.”

While xerostomia symptoms can go unrecognized by patients, symptoms can also be ignored. Therefore, uncovering xerostomia may take some detective work from dentists taking thorough histories and asking the right questions.

“You have to ask,” Dr. Niessen said. “One of the things that we know about tooth decay, for example, is that the best predictor for future tooth decay is current tooth decay.” As a clinician, if you begin to notice changes in a patient’s oral health that are remarkably different from previous exams, start to further assess risks for tooth decay.

When clinicians consider the many causes of xerostomia, “that’s when we need to be the dental detective,” Dr. Niessen added.

What else can you do?

Be vigilant with your patient assessment when it comes to patients experiencing dry mouth and signs of hyposalivation. Depending on what you discover, it will guide your treatment planning ranging from encouraging behavior modifications (drink more water, sleep with a humidifier, etc.) to other courses that may encompass advising seeing a physician, dental specialist, such as an oral surgeon, for treatment of underlying disease or conditions.

Therapeutics are available for acute xerostomia. Fluoride mouth rinses can help patients as well, especially since fluoride rinses are already foundational to good dental health, and help strengthen teeth and protect against dental caries. Some patients may have xerostomia indefinitely due to chronic diseases and conditions, such as Sjögren's syndrome, and dentists may need to cooperate with their other health care providers to provide palliative therapy and to protect their teeth, dentition, tissue and bone.

Sometimes you must be prepared to take a different approach depending on the patient's station in life, such as age and even location.

"If you live in Arizona or you live in Colorado, it's a drier climate. You don't sweat because it's dry," Dr. Niessen said. "You don't know that you're dehydrated. So, climate could make a difference."

If patients are struggling with dry mouth, "you'll want to provide a supplement for them, like a salivary substitute... And then you also want to provide them some fluoride," Dr. Niessen said. "If they're at risk of tooth decay, they're going to need some fluoride because they're not getting the fluoride from the saliva."

To help stimulate saliva production, moisturizing gums and lozenges made specifically to soothe dry mouth are options in addition to using a dry mouth fluoride rinse. Fluoride can be obtained through a number of sources, ranging from municipal water to retail products such as toothpaste and oral rinses, such as ACT® Dry Mouth Anticavity Fluoride Mouthwash.

Learn more

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