

DRY MOUTH AND CLINICAL ORAL DRYNESS SCORING SYSTEMS

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ABSTRACT

Dry mouth or xerostomia is the feeling that there is not sufficient saliva in the mouth. If this is present all or most of the time then it can be uncomfortable. It can also sometimes indicate health problems and as a result should be brought to the attention of a health care professional. Xerostomia does not always equate to hyposalivation. There are ways to assess degrees of oral dryness, namely-CODS (clinical oral dryness scoring) which helps to give a numerical value to the oral signs.

Introduction

Dry mouth, or xerostomia, is a very common complaint that general medical practitioners (GPs) and general dental practitioners (GDPs) come across in regular practice. Xerostomia has become accepted as the term describing the sensation of dryness, whereas hyposalivation is when a reduction in the volume of saliva secreted can be demonstrated. It can be caused by the side effects of prescribed medication, by a profound loss of saliva due to damage of the salivary glands, as in Sjögren's syndrome¹ or as result of treatment of head and neck cancer by external beam irradiation. When salivary function is diminished, patients are at a greater risk

of developing caries, discomfort in wearing dentures, and opportunistic diseases such as candidiasis.

Severe hyposalivation can commonly lead to general oral discomfort, extensive dental caries and candidiasis.^{2,3} It can also have other health implications, namely-psychological wellbeing and effect on nutrition. The psychosocial aspects of xerostomia can range from a mild effect on self-rated oral health to frustration. Healthcare professionals should be able to recognise and assess the effects of xerostomia or hyposalivation and advise accordingly – especially whether it can be resolved with local measures or if further investigation will be required.⁴

Prevalence of dry mouth

Saliva plays a key role in maintaining oral homeostasis, function, and health. The prevalence of xerostomia and its consequences are rising due to the increasing aging population, the effects of some systemic diseases, medical management, and commonly-prescribed medications that reduce saliva production.

Dry mouth is reported more in women than men. There is great variation in the reported prevalence of xerostomia depending on the methods used, but overall about 20% of women and 15%

of men report dry mouth. Some studies report higher figures.⁷ The difference between the sexes was statistically significant, and it was also found that xerostomia was significantly age-related.⁷ For example in Finland, 41% of 368 elderly subjects reported subjective symptoms of dry mouth and only 12% reported continuous oral dryness.⁹ Whereas some 15% of adults aged 16-34 report xerostomia, nearly 30% of those aged over 60 do so. However, it is important to note that unmedicated elderly people (those over 80) have normal stimulated parotid flow rates⁸ suggesting that lack of salivary flow is pathological rather than physiological, that is, it is not an automatic consequence of aging.⁸

Causes of dry mouth

Dry mouth can be experienced as a result of:

- Side effects of medication, which accounts for approximately 64% of all dry mouth episodes.
- Sjögren's syndrome, which can lead to salivary hypofunction. In a Norwegian study in 2008 by Haugen et al,⁹ the reported prevalence of primary Sjögren's syndrome is six to eight times higher in adults aged 71-74 years compared to younger adults aged 40-44 years.
- Effects of treatment of head and neck cancer by external beam radiation.
- Mouth breathing.
- Subjective xerostomia, mostly associated with a burning sensation – especially in the elderly.

Signs of dry mouth

The signs of mild and severe dry mouth are as follows:

Mild

- Frothing of saliva.
- Mild depapillation of the sides of the tongue.
- Thickening of the saliva.
- Dry lips.

KEY WORDS

Dry Mouth, Xerostomia, Hyposalivation, Sjögren's, Clinical Scoring System

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Figure 1 Illustrations of some of the clinical features of dry mouth (a-i) (a) Mirror sticks to buccal mucosa, (b) mirror sticks to the tongue, (c) Frothing of saliva (arrows) (d) no saliva pooling in the floor of the mouth, (e) loss of normal gingival architecture (f) glassy appearance of mucosa, especially palate (g) fissured or lobulated tongue, (h) active cervical caries due to oral dryness and (i) debris on the palate (arrows) (modified from Osailan et al 2012)¹¹

Severe

- Depapillation or erythema of the dorsum of the tongue.
- Fissuring of the dorsum of tongue.
- Atrophic mucosa.
- Residual food debris.
- Cervical caries.

Effects of dry mouth

The effects of dry mouth on the patient include:

- Oral discomfort – more if the patient is a denture wearer.
- Dental caries.
- Oral candidiasis.
- Bad breath.
- Effects on nutrition.
- Psychological effects.

Sjögren's syndrome

Sjögren's syndrome is an autoimmune disease which affects exocrine glands and that mainly causes a dry mouth and eyes, though it can also cause a range of other symptoms including joint pain and fatigue¹⁰.

There are two types of Sjögren's syndrome:

- Primary – when it occurs on its own.
- Secondary – when it also occurs in association with another rheumatic disease such as rheumatoid arthritis, lupus or scleroderma.

Assessment and Clinical Oral Dryness Score (CODS)

The Clinical Oral Dryness Score (CODS) consists of a 10 point scale, each point representing a feature of dryness in the

mouth. These ten features (Figure 1) are:

- 1 Mirror sticks to buccal mucosa (Figure 1a).
- 2 Mirror sticks to tongue (Figure 1b).
- 3 Frothy saliva (Figure 1c).
- 4 No saliva pooling in floor of mouth (Figure 1d).
- 5 Tongue shows loss of papillae.
- 6 Altered/smooth gingival architecture (Figure 1e).
- 7 Glassy appearance to other oral mucosa especially palate (Figure 1f).
- 8 Tongue lobulated/fissured (Figure 1g).
- 9 Active or recently restored (in the last six months) cervical caries (more than two teeth)(Figure 1h).
- 10 Debris on palate (excluding under dentures)(Figure 1i).

Although the scoring system reflects an approximate severity scale, each feature scores one point and the total is determined. The total score indicates increased severity of oral dryness and can indicate mild, moderate or severe dryness (see below). A specially designed form with illustrations of dry mouth features can be used for scoring oral dryness for each patient. The examiner scores the features he/she observes in the patient's mouth and thus derives a COD score of between 0 and 10.

Interpretation of the COD score⁴

Mild dryness (score 1-3)

An additive score of 1-3 indicates mild dryness which may not need treatment. Sugar-free chewing gum chewed for 15-20 minutes twice a day may be adequate to maintain oral health and diminution of symptoms. Patients should also be advised with regard to the importance of maintaining hydration, especially the elderly.

Moderate dryness (score 4-6)

An additive score of 4 to 6 indicates moderate dryness. Sugar-free chewing gum or mild sialogogues may be required. Saliva substitutes and topical fluorides or fluoride toothpaste may be appropriate. If the reason for the dryness is not apparent, then these patients should be further investigated. Monitor at regular intervals to ensure that the symptoms remain unchanged and to that caries development is controlled.

Severe dryness (score 7-10)

An additive score of 7 to 10 indicates

severe dryness. Saliva substitutes and topical fluorides are usually needed. The cause of the hyposalivation must be determined and Sjögren's syndrome excluded. This usually requires referral and investigation by a specialist oral medicine or rheumatology department. Patients then need to be monitored regularly to ensure maintenance of oral health, for changing symptoms and signs and further specialist advice if appropriate. The CODS score can be repeated at intervals to ensure that it is stable.

Investigation of dry mouth

Further investigations for patients with moderate to severe dryness include:

- Unstimulated whole saliva flow rate.
- Stimulated parotid flow rate.
- Ultrasound of salivary glands – to assess changes within the salivary glands.
- Blood test.
- Labial gland biopsy (biopsy of minor salivary glands from the lip).
- Ocular staining (to assess ocular Sjögren's).

Treatment and management of dry mouth

The following is recommended for patients suffering from dry mouth:

- Establish whether symptoms reflect xerostomia or hyposalivation.
- For dry mouth caused by medicines, the prescribing physician can be asked to change the medication or adjust the dose.
- If the salivary glands are affected but can still produce some saliva, the physician can prescribe medicine like pilocarpine to help

the glands function better.

- If the mouth dryness has led to oral candidiasis, the physician should prescribe anti-fungal medication, preferably of a liquid type.
- Saliva substitutes include chewable tablets, gels, sprays, and pastilles., Sugar free chewing gums can be suggested. Patients can also try natural lubricants namely a couple of drops of edible oil in the mouth per hour.
- Sips of water or a sugar-free drink during meals. This will make chewing and swallowing easier.
- Avoid drinks with caffeine, such as coffee, tea, and some sodas as they can aggravate oral dryness.
- Avoid tobacco and alcohol. They can exacerbate the sensation of a dry mouth.

Conclusion

The clinical oral dryness scoring system (CODS) has proven to be a useful tool to assess the effects of salivary hypofunction and lack of mucosal wetness. It can indicate the need for intervention or referral from primary care.¹¹ Another feature of this scoring system is that it takes very little chair-side time during the decision-making process, hence the system can be used very conveniently in general practice as well as in a hospital setting.⁴ It adds to a series of oral disease severity scoring systems used for a variety of oral diseases including lichen planus and aphthous stomatitis, all of which are available to dental professionals.¹²

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