

Xerostomia: A Cross- Sectional Study- A Review

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Financial Support And Sponsorship- Nil

Conflict Of Interest: There is no conflict of interest.

Abstract: *This study was to examine the symptoms and risk factors associated with self-reported xerostomia. Data were collected from 601 self-administered questionnaires among dental clinic attendees. Logistic regression models to estimate odds ratios and 95% confidence intervals were used to investigate the association for exposures of interest, such as socio-demographic characteristics, self-reported symptoms, oral hygiene habits and xerostomia. Participants reported having dry mouth in 19.6% of cases. Xerostomia was associated with a significant increase in the odds of having dry lips, throat, eye, skin and nose. Patients with self-reported xerostomia were three times more likely to drink water to swallow food than were patients without xerostomia.*

ABBREVIATIONS

- OR = Odds ratio.
- SGH = Salivary gland hypofunction.
- CI = Confidence intervals Index

1. INTRODUCTION

Xerostomia is a common subjective complaint of dryness in the mouth¹ and is distinctly different to alterations in salivary flow rate (usually described as salivary gland hypofunction, SGH). These two conditions are not necessarily related; several studies show that people can have SGH, but do not report symptoms of dry mouth (xerostomia), and similarly people who report xerostomia may have normal or high salivary flow.² Xerostomia affects people socially and emotionally, and may reduce their quality of life.³ The presence of xerostomia with a low or altered salivary flow may place patients at a higher risk of dental caries, gingivitis, erosion and ulceration of mucosal tissues, oral candidiasis, dysgeusia and dysphagia.^{4,5}

A reduction of saliva may lead to complaints of dry mouth, halitosis and oral burning sensation. Other manifestations may include an increasing aversion to dry foods, difficulty with swallowing dry foods, or increased need to sip or drink water when swallowing.⁶ In addition, the wearing of dentures is severely complicated.⁷ The major causes of xerostomia among dental patients are the use of medications, and head and neck radiation therapy.⁴ Radiotherapy may lead to sialadenitis, parenchymal loss, and then to xerostomia. The extent of involvement is dependent upon the radiation dose received, the time over which the dose was received, the area and volume irradiated, the energy of the radiation and the type of radiation. Both stimulated and resting saliva volumes are decreased by radiotherapy but some improvement can be expected over time.

Similarly, the severity of dry mouth increases with increasing duration of treatment, number of medications used and dosage. Other possible causes of dry mouth include uncontrolled diabetes, chronic graft-versus-host disease, Sjogren's syndrome, vasculitis, dehydration, malnutrition, psychogenic conditions and immunodeficiencies.^{8,9} The evidence for

chemotherapy or normal ageing as causative factors is still controversial. The symptomatic management of xerostomia involves the use of saliva stimulants, saliva substitutes, oral lubricants, non-irritating toothpaste, sugarless sweets containing citric and malic acid, chewing gums, pilocarpine and increased fluid intake.¹⁰

AIM

- The aim of this study was to examine the symptoms and risk factors associated with self-reported xerostomia.

MATERIALS AND METHODS

- Study population and recruitment
- From September 2009 to June 2010, patients were recruited from the Unit of Oral Diagnosis at the University of Milan, Italy and were invited to complete a questionnaire.
- Participants were selected sequentially based on the following Inclusion criteria:
 1. Aged 18 years or older
 2. Ability to read, understand and answer the questionnaire. All patients signed informed consent documents.

Questionnaire

- All patients received the same questionnaire at the dental clinic; although the questionnaire was self administered, a dental student was available if any question(s) arose. The first section of the questionnaire collected socio-demographic information including gender, country of birth, age, education level, tobacco and alcohol habits, and self-reported medical history. Medication data were collected asking for the name of drug(s) taken daily. The second section assessed oral hygiene such as daily use of toothpaste, dental floss, interdental brush and mouthwash. The third section of the questionnaire asked patients if they had any oral lesion(s) or experienced burning mouth, dry mouth and/or halitosis. They were also asked to report the frequency, severity and duration of dry mouth symptoms. Responses for these items were 'never', 'seldom', 'sometimes' and 'often'. Another question assessed whether participants wore a removable denture. Finally, the last section queried whether the participant had dry lips, throat, eyes, skin and/or nose. In addition, patients were asked to report if they woke up at night to drink water and/or if they drank water to facilitate swallowing.¹¹ Salivary gland hypo function and complaints of xerostomia are common in elderly patients, irrespective of their living situation. Medication use is frequently related to dry mouth symptoms and reductions in salivary flow rates. Patients with reduced salivary flow are at increased risk for caries, oral fungal infections, swallowing problems, and diminished or altered taste. ¹²Saliva plays an important protective role in the oral environment, and reductions in saliva quantity are known to increase the risk of oral diseases. Importantly, xerostomia or the perception of a dry mouth is now being recognized as an important risk factor for dental diseases.

Statistical analysis.

- The distribution of socio-demographic characteristics, tobacco smoking (current smokers) and alcohol consumption (more than two drinks per day), medical history, oral hygiene habits and symptoms and oral conditions were evaluated. Age was divided into quartiles. Education was measured as the highest level of education achieved, which we described in four categories: 1. Five years of school (primary school). 2. Eight years of school (junior high school). 3. 13 years of school (high school). 4. Some college education or more (14 years or more of school).

Results

A total of 601 questionnaires were collected (296 males). Overall, patients ranged in age from 18 to 88 years, with a median age of 47 (inter quartile range 32–63 years). The majority of participants were:

- Italian 90.0%. Around 21% of patients completed university. 48.2% had a high school diploma. 21.4% completed junior high school. 8.8% reported five years of education.
- Approximately 28% of the study population reported current smoking, and alcohol consumption was reported by 61.2% of subjects. Among current smokers, 43.2% smoked from 0 to 5 cigarettes per day, 24% smoked 6–15 cigarettes per day. 32.3% reported smoking more than 15 cigarettes daily. Nearly 49% were taking systemic medication. Daily medication use and daily number of drugs increased significantly with age (data not shown). Hypertension was present in 20.0% of individuals. Less than 10.0% of patients were affected by cardiovascular disease, followed by diabetes (7.7%), Thyroid (7.7%), Nervous or mental disorder (7.5%), Osteoporosis (5.7%).

DISCUSSION

The study investigated the prevalence of and risk factors for dry mouth among a large number of dental patients. Self-reported xerostomia was present in about 20% of individuals, and the sensation of oral dryness increased significantly with age. This is probably due to a higher number of medications taken among the elderly compared to younger individuals.¹³ The results showed that there was a significant increase in self-reported xerostomia with increasing number of xerostomic medications being taken. This confirms what has been reported previously in other studies.^{14–16} Therefore, the geriatric population is more likely to be affected by dry mouth. Dry mouth symptoms significantly increased in patients affected by mental or nervous disorders. It may be that these individuals took antipsychotic, tricyclic antidepressant, anxiolytic, sedative or anticonvulsant medications, which are well known for their antisialologic effects and thus cause dry mouth.² Secondly, the logistic regression suggests that there was an association between age and xerostomia independent of the effects of the number of medications. Drug-induced xerostomia has been reported to contribute to difficulty with swallowing and chewing.^{6,17} The findings show that patients with a dry mouth sensation were three times more likely than those not reporting xerostomia to drink water to swallow certain foods. Patients with swallowing complaints may exhibit lower saliva production rates than those without complaints.¹⁸ As such, in order to compensate the reduced amount of saliva, individuals usually feel the urge to drink frequently while they eat. Also, xerostomia was strongly correlated with wearing removable dentures. Niedernicier and colleagues¹⁹ reported that individuals who wore dentures continuously showed significantly severe signs of inflammation compared to a control group without dentures. Thus, the consequent reduction rate of saliva secretion from palatal salivary glands contributes to xerostomia.

2. CONCLUSION

Dentists should carefully review patients' medical history. Life expectancy has greatly increased in the last century and there will be increasing numbers of people with acute and chronic diseases;²¹ the changes that occur with ageing make people more likely to suffer medication-related problems.²² This study underlines the importance of evaluating the use of xerostomic medication, especially in elderly individuals, and asking xerostomia-related questions as part of the dental history. This is extremely important given that 1 in 5 patients suffer from this problem. Oral health care practitioners have the unique opportunity to detect xerostomia and provide appropriate treatment towards improved well-being.

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