

# General practitioners' knowledge and management of dry mouth – A qualitative study

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## Background

Dry mouth (xerostomia) is common and can have significant consequences for a patient's general and oral health. Multiple medications may compromise the flow and quality of saliva.

## Objectives

This study explored general practitioners' (GPs') perceptions, knowledge and management of dry mouth, and whether consideration of oral health influences prescribing patterns.

## Methods

Semi-structured interviews with 20 GPs in Melbourne, Victoria, were audiotaped, transcribed and analysed.

## Results

GPs who participated in the study were aware of dry mouth, but diagnosed it infrequently. They had limited knowledge about the oral health implications and management of dry mouth, with some offering potentially harmful advice. Some participants reported that dry mouth would influence their prescribing, but few referred patients to dentists for management.

## Discussion

Dry mouth is not on GPs' radar, and patients are rarely questioned about this during routine medical examinations. GPs in this study would welcome additional information to enhance patients' oral health and patient resources on dry mouth.

The term 'dry mouth' encompasses two conditions – the subjective feeling of oral dryness (xerostomia) and salivary gland hypofunction (objective decrease in salivary quantity and/or quality). These conditions can exist separately or together.<sup>1</sup> Physical symptoms such as mucosal discomfort, pain or burning, dry lips and mouth, difficulty in eating and speaking, unpleasant taste, halitosis, and discomfort when wearing dentures, together with psychosocial effects, such as avoidance of social contact, refusal to eat in public and poor sleep, result in a reduction in quality of life.<sup>2</sup> Furthermore, individuals with dry mouth have a higher risk of developing dental caries, dental erosion, oral mucosal infections and, ultimately, tooth loss.<sup>3</sup>

The occurrence of dry mouth increases with age because of an increased prevalence of systemic conditions affecting the salivary glands and increasing likelihood of using multiple medications.<sup>4</sup> Antidepressants, antipsychotics, anticholinergics, antihypertensives, antihistamines and sedatives are the main drug types that have been associated with causing dry mouth.<sup>5</sup>

Dry mouth can also occur as a consequence of other physical ailments including diabetes and autoimmune diseases, such as Sjögren's syndrome, highlighting the importance of appropriate examination and investigation, even among younger individuals.<sup>13,14</sup> An excellent review of the causes and management of dry mouth by Frydrych was previously published in this journal.<sup>21</sup>

General practitioners (GPs) are the health professionals most frequently consulted by older patients. The international literature suggests that GPs:

- rarely conduct an oral examination in this patient population
- refer patients with oral health problems to dentists infrequently<sup>6</sup>
- manage dry mouth symptoms poorly, despite people seeking medical advice.<sup>7</sup>

This collaborative study between a general practice (Victorian Primary Care Practice-Based Research Network [VicReN]) and dental practice-based research network (eviDent) aimed to examine Victorian GPs' perceptions, knowledge and management of dry mouth.

## Methods

The absence of literature on GPs' practices regarding the management of dry mouth led to the decision to use qualitative methods to fully explore the issues, and to obtain data that could inform the development of an educational intervention for GPs.

### Recruitment and sampling

GPs were recruited through VicReN. Following a general advertisement in the e-bulletin alerting the 200 VicReN members to the study, participants were purposively sought to recruit a broad range of GPs in terms of geographic location, age and gender, to gather a wide range of views. Although data saturation was reached after eight interviews, recruitment continued, to ensure views were sought from a range of practitioners with differing demographics.

### Data collection and analysis

Interested GPs provided written informed consent to take part in the study. Interviews were conducted via telephone or face-to-face between July 2011 and June 2012.

Two experienced research assistants conducted the interviews using a semi-structured format, using prompts that were identified from the literature. The questions focused on knowledge and awareness of dry mouth, diagnosis of dry mouth, prescribing and dry mouth, management of dry mouth, information sources for GPs, and educational resources for patients. Each participant also completed a short questionnaire that provided information regarding age, gender, type of practice and previous training in oral health.

Interviews were recorded and transcribed. Analysis was conducted via a two-step process using a conventional

content analysis approach. Following multiple readings of the transcripts by three researchers, data were grouped and labelled according to a broad coding framework using the main categories within the interview schedule.

Consensus was obtained on emergent themes. Analysis was iterative, with information from the first nine interviews offering additional prompts that were used in subsequent interviews. Three researchers independently reviewed the interview transcripts to ensure consistency across the analysis and conclusions.

### Ethics approval

This project was approved by the University of Melbourne's Health Sciences Human Research Ethics Sub-Committee (ethics number 1135493.1).

## Results

Twenty participants (six men and 14 women) were interviewed for this study. Their experience ranged from newly qualified (0–5 years in practice; n = 2), moderately experienced (6–15 years in practice; n = 6), to highly experienced (>20 years in practice; n = 8). This information was missing for four participants.

Participants worked in a mix of inner (<20 km from the central business district [CBD]; n = 12) and outer metropolitan (20–50 km from the CBD; n = 6), and semi-rural (≥50 km from the CBD; n = 2) areas.

In this small sample, no differences in knowledge or experiences of dry mouth were evident between male and female GPs, nor between those in differing geographic locations. Only one GP reported having had any type of additional training in oral health and this was in emergency dentistry.

### GPs' knowledge and awareness of dry mouth

There was wide variation in participants' knowledge of dry mouth, and the role of medications and their link with oral

health. For some, dry mouth was seen as an annoying but trivial symptom.

*... (I thought of it as) more of a nuisance for patients.* – GP4, female

*I'm sure that they wouldn't complain to me about it; they probably tell their chemist.* – GP16, female

*I have hardly had it reported to me, so yes, I don't really ask about it routinely ...* – GP14, female

A small number of participants reported that they had only a vague awareness of the problem.

*Yes I am vaguely aware of this, but it is not something that I think of often.*

– GP5, female

One participant became aware of dry mouth through two patients whose dentists had alerted them to the fact that they could request a dental care plan from their GP if they were taking medications that caused dry mouth.

Other participants were aware that medications can cause dry mouth, but they were unable to articulate the implications for a patient's oral health.

*I know that saliva is very important for oral hygiene in general ... so by inference, anything that [causes] hyposalivation can therefore cause problems, but I am not aware of the specifics.* – GP13, male

Others were more knowledgeable about the importance of saliva and its protective role for dental and oral health.

*I know that some medications, which are known to cause dry mouth, can lead to problems affecting the enamel on the teeth.* – GP14, female

Some participants could name specific medications that can lead to dry mouth.

*I am aware that saliva has a protective role ... in particular antidepressants, anticholinergic, antihistamines (I think) and drugs of addiction such as heroin can lead to dry mouth.*

– GP20, female

*I am aware of dry mouth being a side effect, particularly with tricyclic antidepressants and antipsychotics, but I have never associated it with caries.*

– GP8, female

## Diagnosis of dry mouth

Participants acknowledged that they were not systematic or consistent in enquiring about dry mouth symptoms. Dry mouth was sometimes identified through history taking, a physical examination, such as a tongue inspection, or the observation that the patient was carrying water; however, most cases were identified only after patient complaint.

*Like dry skin or dry vaginas, usually people just put up with it and don't complain about it. It is not the kind of thing that people present with, but it is probably there if you ask ...*

– GP6, female

*I'm sure that it's much more common than people actually complain to you about it ... because I know that if you actually specifically ask them they will admit that they do have it and often they don't think of it as being a side effect [of medication].* – GP13, male

Participants reported rarely seeing a case of dry mouth as the presenting complaint. However when this did happen, medication was considered as a possible cause.

*I would do a medication review initially ... check and identify the source of the problem and examine the patient's mouth, then determine if the problem was a side effect from medication.*

– GP13, male

## Prescribing and dry mouth

Many participants said that consideration of dry mouth as a possible side effect would not influence their prescribing, while others would only consider alternatives for prescribing in patients with dry mouth issues prior to starting medications.

*For patients with normal saliva production, who would have benefits from the use of specific medications, I would trial it without concern.*

– GP16, female

Some participants were prepared to consider modifying or substituting medications for a patient with dry mouth.

*It's a consideration, especially if somebody's elderly and on multiple*

*medications ... it might make me consider an alternative medication.*

– GP17, male

*Yes it does inform what I do ... I look at the medication and see if the medication is actually causing the problem ... but because its drug-induced, it's really hard ... Sometimes you can't or it's not appropriate to change their medication.*

– GP15, female

*Because if the side effect is unwanted, then the patient is less likely to take the medication, or stop the medication for that matter.* – GP12, female

Other participants acknowledged the challenges of prescribing to avoid dry mouth.

*Changing medication prescribing would depend on the severity of the problem to the patient. If dry mouth becomes a problem, then my planning is patient-centred and I make the appropriate changes if necessary.* – GP13, male  
*I am not confident in knowing which medication to swap a patient to in order to reduce dry mouth.* – GP6, female

## Management of dry mouth

Knowledge of appropriate non-drug management approaches was variable. About half of the participants highlighted the importance of conducting a thorough initial assessment of the problem to identify the cause. However, most participants were not providing appropriate or precise advice,<sup>21</sup> or were unsure of the advice they should offer patients.

Nearly all participants correctly referred to the importance of hydration. However, if the advice was too general or specific (eg eat highly acidic citrus fruit or suck lollies or lozenges, without specifying 'tooth-friendly' sugar-free and acid-free products), patients might choose sweetened and/or acidic beverages. This might increase the risk of dental caries and erosion, particularly in cases of salivary gland hypofunction, where the protective effects of saliva are reduced.<sup>8–10</sup>

*I've got a very limited knowledge of it and my advice I guess would*

*be to make sure that they are not dehydrated, sip on fluids in small amounts and don't drown yourself.* – GP11, male

*Lemon drinks in water.* – GP16, female  
*If it was a minor problem then I would suggest artificial saliva or sucking on lemons.* – GP19, male

Other participants offered more appropriate advice for stimulating saliva flow by specifying sugar-free products.

*I encourage them to make sure they are well hydrated ... and then I encourage them to chew sugar-free chewing gum, particularly after meals, ... to ... increase the amount of saliva they are making ...*

– GP18, female

Some participants recommended saliva substitutes for symptom relief.

*I might get them to speak to a pharmacist about medications available to moisten the mouth ... there are lubricant products available. Patients with cancer often need oral lubricants.*

– GP14, female

*I might initiate artificial saliva, but this is rare.* – GP10, female

Three participants stated that they had referred patients with extreme dry mouth to a medical specialist for a second opinion.

*For patients undergoing chemotherapy, I often refer the patient back to their specialist.* – GP12, female

*I often use the oral medicine specialist if it's really affecting quality of life ... and we can't manage it easily.*

– GP16, female

Only two of the 20 participants indicated that they would encourage patients to pay close attention to their oral hygiene and visit a dentist more regularly.

*... then I encourage them to be really vigilant in their dental care, so they make sure they're flossing every day and they're brushing twice a day ... and try to avoid a high-sugar diet so to ... reduce the risk of caries.*

– GP18, female

*I sometimes suggest that patients see a dentist or maybe a rheumatologist*

*depending on the underlying condition.*  
– GP19, male

Two barriers to dental referral were identified in the interviews. First, several participants commented on the lack of communication from dentists following previous referrals, which discouraged them from building relationships with dentists.

*Dentists never send letters back when they see patients.* – GP8, female

Second, some participants commented that the cost of dental care was prohibitive for some patients.

*The cost of going to the dentist and lack of free services prohibits people from attending.* – GP9, male

### Information sources used by GPs for patients

Participants overwhelmingly searched the internet for patient information on dry mouth, choosing websites they trusted such as The Royal Australian College of General Practitioners (RACGP). Only one participant reported consulting with a dentist. Information sources identified included search engines, text books and journals, locally developed therapeutic guidelines,<sup>11</sup> or consultations with specialist or GP colleagues.

While some public education about dry mouth took place during the study period, through local health authorities and media advertisements about artificial saliva, no participants cited these as sources of information.

*GPs are not generally made aware or offered training on this matter.*

– GP14, female

One participant (GP6, female) commented that this research project had ‘exposed the great big holes in our practice’ in terms of evidence and guidelines.

Some participants suggested that it may be appropriate to add a question about dry mouth to specific health reviews or to include it in a review undertaken by a practice nurse (eg 45–49 or 75+ health assessment administered by the GP or practice nurse).

### Educational resources for patients

A shortage of educational resources for patients to help them manage their dry mouth was identified.

*I don't think I have any resources available at the moment. There is some information on the computer system for patient education, although I am not aware if any of it covers dry mouth. It often covers halitosis or bad breath.*

– GP12, female

Typical comments regarding the need for patient education resources included:

*Yes, a general brochure about oral hygiene would be good as well as another about preventative dental health care.* – GP1, female

*I would like a database to be able to search on local information (eg from the RACGP or the university).*

– GP11, male

*Medical software – it would be useful to have leaflets on this subject available on the software.* – GP16, female

### Discussion

The most notable finding in this qualitative study was that dry mouth was not an issue of importance for GPs. Many participants ignored, downplayed or overlooked dry mouth as a symptom or side effect of their prescribing. Most did not think about dry mouth when taking a history or conducting an examination, and only considered it after opportunistic patient complaint, suggesting that dry mouth has not been a focus of past medical education.

Once identified, many participants were unable to offer any specific or useful recommendations for managing dry mouth. The non-specific nature of some advice left the potential for patients to choose deleterious products, while some specific advice was potentially deleterious to oral health.

Our main findings are consistent with existing international literature suggesting that dry mouth is neglected by GPs and dentists, and that patients are rarely questioned about oral dryness during routine medical and dental examinations.<sup>6</sup>

The literature provides evidence that polypharmacy is linked to dry mouth. Furthermore, multiple medications may have a synergistic dry mouth effect.<sup>12</sup> Some participants in this study did not consider modifying or substituting medications for a patient who complained of dry mouth, but this has been a recommended strategy in the literature for clinicians, especially in consultation with pharmacists.<sup>7</sup> However, information on the relative xerostomic/hyposalivatory effects of medications within and between drug classes is lacking. More research is needed in this area.

This study identified that GPs want to know more about oral and dental health, a finding strongly supported by the literature, with a number of articles arguing for increased training for GPs about oral health.<sup>3,15,16</sup> Some studies have suggested that oral examination should be regularly conducted in the general practice setting, especially in children and older patients.<sup>17</sup> Recent Australian and international policy and guidelines for general practice have highlighted the need for an enhanced role for primary care clinicians in the promotion of oral health for all age groups.<sup>16,18</sup> Recommendations include the development and dissemination of high-quality educational resources.<sup>3</sup>

Participants in this study perceived that communication between dentists and GPs was poor, and that referrals were made infrequently, a finding supported by the literature.<sup>19</sup> Previous research also found that medical practitioners’ poor knowledge was seen to hinder dental referral, while others found that good knowledge did not necessarily correspond to more referrals to dentists.<sup>20</sup> A lack of insurance was also identified as a main reason for not referring patients to dentists. This is a particular problem in Australia as the current Medicare Benefits Schedule (MBS) does not cover general dental services except under certain circumstances.

This is the first Australian study to examine in-depth GPs’ knowledge and

attitudes on dry mouth. A strength of this study was the cross-disciplinary research team, comprising GPs and dental practitioners alongside researchers, which ensured the study was firmly grounded in real practice.

A limitation of this study was that the participants were recruited only from the environs of Melbourne, Victoria. However, participants represented a range of ages, gender and general practice experience. In common with all qualitative research, the study findings are context-specific and time-specific. The study findings provide useful baseline information that can inform the content of further quantitative research and continuing education.

## Implications for general practice

GPs should actively enquire about dry mouth when prescribing more than one medication, particularly in older patients who, with receding gums, have an increased tooth surface area that is potentially at risk of decay.

As the relationship between oral and general health is increasingly recognised, stronger collaborations and communications between GPs and dentists will need to be forged.<sup>21</sup> Early detection of oral diseases by GPs and the opportune referral of patients to dentists could improve the oral health status of the population and contribute to relieving the burden of oral-related systemic complications.

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