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“Say Ahhh”: Experience and Views on Halitosis Management in the General Public in Victoria, Australia



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ABSTRACT

Introduction: Halitosis is common and can have a significant impact on quality of life. It is attributed to both intraoral and extraoral causes. Although halitosis treatment depends on the aetiology, little is known about consumers' perception of halitosis causes and the types of assistance sought. The Say Ahhh Study aimed to explore the interprofessional care for halitosis and improve understanding by the general public. Phase 1 explored the perceptions of health care providers. This article reports the findings of Phase 2, which explored the general public's knowledge of halitosis, its management, and help-seeking behaviour.

Methods: Patients and clients at 2 medical clinics, 3 dental clinics, and 2 pharmacies in Melbourne and rural Victoria were approached and invited to participate in a short semistructured interview. Qualitative data was thematically analysed.

Results: A total of 122 participants (54 males, 66 females, 2 missing) were interviewed. Participants' past experience with halitosis influences their understanding of the cause. Halitosis was attributed mostly to poor oral hygiene and diet and less commonly to systemic disease. Their perception of the condition's severity influenced whether they seek professional help. Their perceived roles of health professionals and ease of access influenced their choice of health professionals to seek help from.

Conclusion: The Victorian general public is aware of the causes of halitosis and the available treatment options. Choice of treatment and help-seeking behaviour are influenced by experience, perceived severity of the condition, and perceived role of health professionals and their accessibility.

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Introduction

Halitosis, bad breath or malodour emitted from the oral cavity, is most commonly linked to poor oral hygiene but also diet and underlying pathology.¹⁻³ The exact prevalence of halitosis is uncertain because of different assessment methods

and insufficient study but has been estimated to vary between 2% and 87% between populations.⁴ Intraoral sources account for up to 90% of halitosis cases, such as tongue coating or periodontitis, and 8%-10% are because of extraoral causes.^{3,5,6} Persistent halitosis when a patient is free from intraoral aetiologies may be indicative of systemic, metabolic, or genetic diseases.^{3,6,7} It is a common symptom of many systemic diseases and is either an indirect or direct side effect of some commonly used drugs, such as antihistamines, sedatives, and nitrates.^{7,8} Critically, halitosis is not just a matter of physical illness because numerous studies have shown its impact on mental health and interpersonal relationships and interactions. For example, halitosis has been linked to higher

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levels of depression, obsession, sensitivity, anxiety, and phobia.^{6,7}

Three health professions have been identified to be key to the management of halitosis: general medical practitioners (GPs), dentists, and pharmacists.⁹ Because the vast majority of halitosis is of intraoral origin, initial assessment of bad breath should be performed by a dentist.¹⁰ Scaling, root debridement, and periodontal surgery have been associated with a reduction in scores used to measure halitosis.^{5,11} GPs can be instrumental in identifying the cause in patients and then referring to a dentist for correct management.¹² Pharmacists are able to provide easy access to treatments when compared to GPs and dentists. They are also best placed to reinforce the education given by GPs and dentists.¹³ Because of the commonly perceived trivial nature of halitosis, anecdotal evidence seems to indicate a lack of collaboration between the 3 professions to identify, facilitate referral, and treat or manage halitosis.

Research is limited in terms of patient attitudes towards treatment and management. Some studies have demonstrated that to cope with halitosis, patients cover their mouth with their hand when talking and avoid close interactions.¹⁴ Patients may also resort to chewing gum, using confectionery, mouthwashes, oral hygiene practices, and avoiding particular foods to manage the odour.^{5,15,16} Furthermore, the majority of patients attempt to treat the condition without practitioner guidance.¹⁶ This shows the importance of education, patient-centred care, and a reduction of social stigma to assist practitioners or patients broaching the topic.

There is limited knowledge of halitosis management by the health professions and the general public in Australia. The Say Ahhh project, supported by eviDent Foundation and the Victorian Research and Education Network (VicREN), overall aims are to improve halitosis management through interprofessional collaboration among GPs, dentists, and pharmacists as well as improve understanding by the general public. Phase 1 investigated the knowledge of GPs, dentists, and pharmacists;⁹ Phase 2 explored the general public's knowledge of halitosis, its management, and help-seeking behaviour; in Phase 3, an interprofessional care framework will be developed based on findings from Phases 1 and 2.

This article reports on Phase 2, which aimed to explore the general public's knowledge and perspectives of halitosis.

Methods

Ethical considerations

Ethical approval was obtained from the University of Melbourne Medicine and Dentistry Human Ethics Subcommittee (ID: 1749080).

Research design

A qualitative exploratory design was utilised to investigate the general public's perspectives with open-ended interview questions.

Sample

A purposive and convenience sampling approach was used to recruit members of the general public at Victorian GP clinics, dental clinics, and community pharmacies. Locations for contacting participants were determined using contacts through eviDent Foundation (the Victorian dental practice-based research network), Victorian Research and Education Network (VicREN, the Victorian primary care practice-based research network), and the researchers' professional networks. The inclusion criteria for participants were aged 18 years and older and ability to communicate verbally in English.

Data collection

Interviews were conducted in person, by 6 University of Melbourne Doctor of Dental Surgery (DDS) student researchers (SH, AH, MH, SI, SJ, MK) either individually or in pairs, over a 2-month period at 2 medical practices (1 rural, 1 metropolitan), 3 dental practices (1 rural, 2 metropolitan), and 2 pharmacies (both metropolitan). Permission to interview at the locations was granted from clinic and pharmacy managers beforehand. Patients and clients in the waiting areas, consulting rooms, or pharmacy aisles were approached, presented with a plain language project description and invited to participate. Interviews proceeded only after verbal consent was obtained. Participants were asked some basic demographic questions (gender, age, employment, and highest educational qualification) and 5 qualitative interview questions:

- 1) Have you had any experiences of bad breath from either yourself, relatives, or friends?
- 2) What do you think causes bad breath?
- 3) If you had bad breath, what would you do?
- 4) Would you see a health professional for bad breath? Why/why not?
- 5) Is there anything else you would like to discuss about bad breath?

On completion of the short interview, participants were offered a free coffee voucher as a token of appreciation. If participants wished to receive a summary of the findings at the completion of the study, their contact details were also recorded.

Responses were recorded in text form by student researchers and later transcribed into Microsoft Excel. A qualitative data analysis computer software package such as NVivo was not used given the responses were brief and the volume of text data was not big.

Data analysis

A mixed content and thematic analysis approach was used. Data sets were cleaned and cross-checked by the 6 student researchers. They inductively coded each other's interview responses and not their own to reduce individual bias and differences in interpretation. Common codes or keywords were categorised and counted. Emerging patterns were then identified to form themes. Consensus regarding the classifications of codes between researchers were completed in face-to-face meetings and the final themes were verified by supervisor researchers, PL and ID.

Results

Demographics

A total of 122 participants, 39 from the medical practices, 40 from dental practices, and 43 from pharmacies were included in this phase (Table 1). There were 54 male (44.3%) and 66 female (54.1%) participants (2 missing data), more than half (58.2%) were between 26 and 60 years old, slightly more than half (51.7%) had a university education, and more than half (59.8%) were employed.

Content and thematic analysis of interviews

Three broad themes were identified (proportions are expressed as percentages of the sample size, $n = 122$):

Theme 1: Past experience informs understanding of halitosis

About three-quarters (72.1%) of participants had experienced halitosis; 43.4% personally and 28.7% knew someone who had halitosis. About one-third (31.1%) of participants provided information about the cause of their own or second-hand halitosis experience.

Halitosis was most commonly experienced in the morning (11.5%) “I get it in the morning when I wake up” [F, 26-40] and “more to do with morning breath” [M, 25-40] or related to diet (11.5%) “after I drink coffee” [F, 41-60] and “after eating garlic or onions” [F, 18-25]. Participants also experienced halitosis in response to smoking (4.9%) “quit smoking and haven’t had it after smoking” [M, 41-60], poor oral health (4.1%) “bad teeth can lead to bad breath” [M, 41-60], “if I brush badly” [F, 18-25], and illness (4.1%) “(my) son has diabetes” [F, 41-60] and “especially when kids are not well” [F, 26-40].

Table 1 – Descriptive statistics of participant sample.

Variable	number (%; $n = 122$)
Gender	
Male	54 (44.3)
Female	66 (54.1)
Missing	2 (1.6)
Age group (years)	
18-25	24 (19.7)
26-40	35 (28.7)
41-60	36 (29.5)
61+	26 (21.3)
Missing	1 (.8)
Highest level of education	
Secondary	24 (19.7)
Tertiary	35 (28.7)
Postgraduate	28 (23.0)
TAFE	22 (18.0)
Missing	13 (10.7)
Employment	
Service	14 (11.4)
Health	18 (14.8)
Business	10 (8.2)
Other	10 (8.2)
Unemployed	41 (33.6)
Employed but occupation not disclosed	21 (17.2)
Missing	8 (6.6)

TAFE, Training and Further Education (Australia, Department of Employment).

Participants attributed halitosis mostly to poor oral hygiene (23.3%), diet (18.4%), and gastrointestinal issues (10.2%). Other causes such as smoking, gum disease, poor general health, medication, and dehydration were less commonly implicated. Many participants described either “not cleaning well” [F, 26-40] or “a lack of brushing” [F, 41-60] as part of the reason why “food and bacteria” [M, 26-40] remained on the teeth. Others thought that “eating gross, stinky foods” [M, 18-25] or “acidic foods” [M, 26-40] could exacerbate the situation. Some participants complained about systemic problems such as “problem[s] to do with the tummy” [F, 61+], “oesophagus” [M, 41-60], or “throat” [F, 26-40] causing halitosis.

Participants who personally or through others had experienced infection or systemic disease (eg, gastric reflux, coeliac disease, cancer, tonsillitis), dry mouth, dental issues, or poor oral hygiene identified that oral malodour was a consequence of both intraoral and extraoral aetiologies: “Yes chronic tonsillitis, resolved when tonsils removed” [F, 18-25] and “When my dad had got sick, cancer” [M, 41-60]. Participants offered many other causes such as “poor oral hygiene, not brushing tongue/teeth, gastric reflux, liver issues, diabetes” [M, 18-25].

Theme 2: Perception of severity of the halitosis influences decision to seek help

Most participants seem to use multiple treatment options to overcome halitosis. Almost half (41.9%) would self-treat “Drink water, chew gum” [F, 41-60], and less than one-third (29.5%) would manage with oral hygiene measures (ie, brushing their teeth, mouthwash, and flossing) “brush teeth more often” [M, 18-25] and “use some mouthwash, floss” [F, 25-40]. Less than one-fifth of participants (17.1%) said that they would see a health professional in combination with self-treatment “go to dentist to make sure there are no dental issues or go to the counter and get a mouthwash” [F, 25-40] and “go for the mouthwash, gargle, if longer than a day would go to the dentist or see local GP” [M, 41-60].

The majority of participants (78.8%) would seek professional help if self-treatments with oral hygiene and masking methods were ineffective or if the malodour was appearing to be a chronic problem “see a dentist if it was severe enough” [F, 61+], and the halitosis was perceived to indicate something more serious such as a systemic disease “check if anything [was] wrong” [F, 18-25]. Reasons given by participants who said they would not seek professional help included the belief that it was not a serious enough issue to warrant professional help “didn’t think it was a big deal” [M, 26-40].

Theme 3: Perceived roles of health professionals and ease of access influence choice of health professionals to seek help from Participants’ perception of severity of the halitosis also influenced their choice of health professionals to seek help from “Would see the dentist if it continued. Would see a GP if it was systemic, possibly see pharmacist” [F, 41-60], or “Would go see a dentist if other options weren’t working as it is in the oral region; Would speak to a pharmacist as they’re trained in the use of commercial products. Wouldn’t see a GP” [F, 26-40]. When asked which health professionals they would seek help from, 55.8% said a dentist, 35.4% a GP, and 8.8% a pharmacist.

Dentists were regarded as “specialists in the oral cavity” [M, 18-25], but GPs were considered to have “more medical knowledge”

[M, 61+]. GPs seem to be the preferred first point of call for some participants for referral to a dentist or a pharmacist, “we would see a local doctor and whatever information we get, we will do what he says” [M, 18-25]. Many participants did not consider a pharmacist to be the first point of call for treatment “Pharmacy is a maybe.” [M, 18-25], “see GP first, could be something coming from a non-oral region. If it was coming from the mouth would see a dentist. Wouldn’t see a pharmacist but it might be a good option but it wouldn’t be the first health professional that comes to mind”, and “Depends if it felt like something in the mouth (dentist) or throat (GP).”

However, some participants thought that dentists were not easily accessible compared to pharmacists and GPs “Would see a pharmacist first. It’s cheaper and easy access. If problem persists, will go see a doctor (GP)” [M, 18-25] and “GP, because I have easy access. Can’t get to a dentist within 24 hours” [F, 41-60].

Discussion

Our results demonstrate that the Victorian general public’s knowledge of halitosis, its management, and help-seeking behaviour are varied. Their views on the cause and management of halitosis are influenced by past experience, perceptions of disease severity, and perceived roles and accessibility of health professionals.

Current literature centres around the aetiology, diagnosis, and management of halitosis, but little is understood about the knowledge and perceptions of patients and consumers. Our participants recognised that halitosis could be a symptom of either intraoral or extraoral sources. Poor oral hygiene and oral-related pathology were implicated as the most common causes and accurately reflects the literature that reports that the key causes of halitosis are localised to the oral cavity.^{3,5,6} The most common strategies thus employed were masking the odour, cleaning the mouth, or altering diet. This finding was supported by previous studies.^{15,16} Contrary to the belief that patients with halitosis would consult primary care practitioners for diagnosis and management,² our participants seemed to seek professional help only if they thought that their halitosis could not be resolved with self-treatment, was chronic, or may indicate more serious systemic causes. Other studies, like a survey of female university students in the Saudi Arabia, similarly found that halitosis is not a common reason for patients to visit a dentist.¹⁷ There is, hence, an inherent risk of incorrect self-diagnoses potentially leading to delayed diagnosis, inappropriate treatment, or inadequate management of the real problem.¹⁸ Future strategies should include direct consumer education and broader public health campaigns to increase consumer knowledge, improve early detection of potentially more serious systemic conditions, and more broadly prevent potentially problematic psychological sequelae from occurring.^{6,7,14,18}

It was clear that many of our participants self-determined whether they had a “medical” or “dental” problem and used the differentiation to guide their choice of health professional to consult. In general, dentists were viewed to be more knowledgeable than GPs about oral pathology and are, therefore, more appropriate to diagnose and manage halitosis; whereas GPs were deemed to be more appropriate when halitosis had an extraoral aetiology. This is congruent with findings from a South

African study that found dentists were perceived to be more knowledgeable than GPs to manage orofacial symptoms.¹⁹ However, in the same study, most people with oral symptoms will still visit a GP instead of dentists because GPs were regarded as the “primary coordinator of integrated and total health care” and were easier to access than dentists.¹⁹ The central role of GPs was the same reason that our participants gave for preference of GPs over dentists and pharmacists. Participants in our study also described pharmacists as “accessible” compared to GPs and dentists, a result reiterated in the literature.¹³ In Australia, accessibility to dentists is hampered by a concentration in metropolitan areas, cost, and lack of availability outside business hours.²⁰ The inclusion of GPs, pharmacists, and allied oral health professionals such as oral health therapists and dental hygienists in interprofessional management of halitosis should be part of an overall policy strategy to address dental care accessibility and affordability issues.⁹ Effective interprofessional referral pathways are needed to improve management of halitosis and related conditions.⁹

This study contributes to addressing the gap in the literature on the general public’s perspectives on halitosis. A key strength is the semistructured interview format that helped participants to give relevant and on-topic responses, while allowing increased detail and elaboration by the participants if they wanted. However, the nature of recruiting and interviewing patients and clients in medical and dental clinics and pharmacies had necessitated the interviews to be short and simple, which inadvertently limited the depth of the interviews. It should also be noted that about half of the participants in this study were highly educated and may affect the generalisability of our findings because they could perhaps be expected to know more about halitosis and its management.

Strategies including public health promotions to raise consumer awareness and policy and practice interventions to implement effective interprofessional care should be explored to improve diagnosis and management of halitosis. Future research should include a more diverse range of participants not exclusively recruited from health care settings and further explore the influences of access, transport, finances, health insurance, health literacy, health beliefs, and cultural differences (language barrier, stigma or openness to discussion) on complex help-seeking behaviour.

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Conflict of interest

The authors declared no conflict of interest.

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