Self-perceived oral health and access to care in diabetic and non-diabetic women: A qualitative study

Hani T. Fadel, Randa A. Sultan, Lama M. Alrasheedi, Jumanah G. Alsadiq, Reham T. Kattuah, Manal I. Al-Malik, Yasser A. Ribeini

Division of Periodontology, Department of Preventive Dental Sciences, Taibah University Dental College & Hospital (TUDCH), Al-Madinah Al-Munawwarah, Saudi Arabia
Private Practice, Jeddah, Saudi Arabia
King Abdulaziz University, Jeddah, Saudi Arabia
Ministry of Health, Al-Madinah Al-Munawwarah, Pediatric Candidate, Riyadh Elm University, Riyadh, Saudi Arabia
Dental Department, King Fahd Armed Forces Hospital, Jeddah, Saudi Arabia

Abstract

Background: Access to dental care is of growing importance to individuals with chronic illnesses and policymakers alike.

Objectives: To explore personal views of diabetic and non-diabetic women regarding their oral health and access to dental care.

Methods: A qualitative study was performed involving 6 diabetic and 6 non-diabetic female hospital attendees. A thematic framework approach was used to analyze the interviews.

Results: Responses yield three emerging central themes: oral health impact, self-maintained oral health and dental service delivery and costs. Personal views varied particularly in oral health self-perception and visiting the dentist. Certain drawbacks shadowed the quality of care in governmental and private sectors. Response variations were observed among diabetics and non-diabetics.

Conclusions: Within the study limits, female hospital attendees had variable responses on how they looked upon their oral health. A variation in oral hygiene practices and visiting the dentist was observed. Participants believed that governmental and private clinics offered high quality care, with high treatment costs in private clinics and long waiting times in the public service being the main drawbacks. Practical Significance: Importance of supporting patients, educating practitioners and alarming policymakers about the impact of oral health problems and access to dental care.

Background

Diabetes mellitus (DM) is arguably the most common endocrine condition to affect man, and is rapidly increasing around the world (Zheng et al., 2018). Diabetic individuals are more susceptible to dental problems compared to non-diabetics. Particularly, periodontal disease represents one of the most frequent diabetes related complications (Sanz et al., 2018). In addition, studies have demonstrated decreased levels of salivary secretion as HbA1c values increased (Chávez et al., 2001), subsequently suggesting an increased risk for developing dental caries in diabetics (Moore et al., 2001). Diabetes was also associated with other oral tissue lesions (Guggenheimer et al., 2000a; Guggenheimer et al., 2000b; Lorini et al., 1996). It is suggested that these may be the result of chronic immunosuppression, salivary hypofunction and/or delayed healing (Kadir et al., 2002).

Oral health self-perception is related to a number of sociodemographic elements, including educational level, marital status, social rank, economical situation, and several oral-health related signs and symptoms. Studies have demonstrated an association between self-perceived oral health and the individual's dental status, required dental treatment and masticatory function. Moreover, reports suggest a negative perception of oral health conditions among females (Cohen-Carneiro et al., 2011), those with lower educational levels and smokers (Gabardo et al., 2015). Geriatric people, who often have concomitant systemic disorders, also
exhibited poor perception of oral health (Lahti et al., 2008). These raise concerns regarding the access to dental care among different communities within the population (Slack-Smith et al., 2010).

To the best of our knowledge, no previous studies have explored real life views regarding self-perceived oral health and access to dental care in Saudi Arabia, particularly in relation to diabetic status. The aim of this study was thus to explore the personal opinions and expectations of diabetic and non-diabetic women regarding their oral health and access to dental care in a hospital outpatient clinical setting in Saudi Arabia.

2. Methodology

2.1. Study design and sample

This was a qualitative study conducted at King Fahd Armed Forces Hospital, Jeddah, Saudi Arabia. The hospital provides secondary and tertiary care and accommodates thousands of patients across disciplines each year.

The study involved twelve female participants between 25 and 60 years old. Some were diabetic and were being managed at the Diabetic Center. The remaining were non-diabetic who visited the hospital for other reasons. Underaged individuals or who expressed incoherency, mental or physical disabilities were excluded.

2.2. Interviews

Open-ended, semi structured interviews were carried out for each participant. Interviews started with opening questions on general and oral health, followed by triggering questions to stimulate the participant. Triggering questions included “How do you describe your oral health at this moment?” “What was the reason for your last dental visit?” and “What are your views about dental treatment and its costs?”. Participants were given the opportunity to elaborate freely on the posed question until they felt that no further information or related aspects were worth mentioning. All collected information focused on the participants’ thoughts and emotional status. The interviews were conducted in a distant corner at the diabetic departments’ waiting area. Busy hours were avoided to limit participant distraction and uneasiness to the interview. Each interview lasted between fifteen and thirty minutes. Four trained and calibrated dentists conducted and transcribed all interviews in pairs. For each interview, one of the researchers conducted the interview and asked the questions in Arabic language, while another carefully hand-wrote down the participant’s responses in the same language word-by-word, since voice recording was not permitted. The pairs changed continuously with each interview to ensure that each researcher worked with the other three and conducted and transcribed the interviews throughout the study. One of the researchers (RS) revised the transcribed interviews and compared the responses between pairs on the same day to clarify vague responses and ensure coherence between interviewing pairs.

2.3. Ethical considerations

The study was approved by the hospital's ethics committee (approval no. REC215, 27/12/2017). Verbal and written information regarding the study was provided to the participants. It was emphasized that participation was voluntary and that the collected data were autonomous and confidential. It was also explained that they were free to discontinue the interview without any negative repercussions on the quality of care provided. A consent form was signed willingly from each participant.

2.4. Analysis

A thematic framework approach was used to describe and explain the collected data from the participants and present them in a meaningful manner (Ritchie and Spencer, 1994). Emerging central themes, core and sub-categories were distinguished from the transcribed interviews. Since all the interviews were taken in Arabic language, transcriptions were made cautiously so as to ascertain that exact participant words were used and that the intended meanings were not changed. Analysis of the transcribed interviews was performed after translating them to English language. Backward translation to Arabic was done to ensure maintenance of original word meaning. Trained co-investigators analyzed the transcriptions and extracted the central themes and core and sub-categories. Any deviations or disagreements were resolved via consensus.

3. Results

A total of 167 participants were enrolled as part of a larger cross-sectional survey. Interviews were carried out till no new central themes and/or core and sub-categories emerged. Finally, the interviews of 12 women (≈ 7% of total sample) were used for the analysis. Participants were numbered from 1 to 12 (1–6: diabetics, 7–12: non-diabetics). Following transcription of the interviews, three central themes emerged: oral health impact, self-maintained oral health and dental service delivery and costs (Fig. 1). Every central theme included core categories and sub-categories that explained the concepts and thoughts extrapolated from the interview data (Fig. 1).

3.1. Oral health impact (Central theme “I”)

Table 1 displays the participants responses under the core and sub-categories emerging from the central theme oral health impact, where participants expressed how they perceived their oral health specifically and overall, and their views on whether it had any influence on their daily lives in terms of function, well-being, socially or any other.

3.1.1. Self-perceived oral health (Core Category “I-A”)

Some participants gave a general, non-specific negative opinion as one noted: “My teeth are awful” (P3). The same participant elaborated with further details: “I’m suffering from calculus and caries in my teeth” (P3). Other participants were more positive: “All my teeth are good” (P12). Interestingly, a few participants implied: “I’m not sure. They’re not very good nor very bad” (P2) (Table 1).

3.1.2. Influence on daily life (Core Category “I-B”)

Different aspects with relation to local and/or systemic implications were touched upon. One participant complained: “I can’t chew on my food when I’m in pain. The pain is unbelievable” (P1). The same participant went on and described: “Bad breath affects my life and contributes to body pain” (P1). Another participant addressed how systemic symptoms may arise: “I feel that my teeth cause headaches for me” and “When headaches occur, they may refer to the teeth” (P9). In addition, a participant described the psychological impact by saying: “Teeth are very important as tooth problems may interrupt my daily life”. “My teeth affected me psychologically after they became damaged” (P7). However, one participant confidently related: “My teeth do not influence my daily life” (P3) (Table 1).
3.2. Self-maintained oral health (Central theme “II”)

Table 2 illustrates the participants responses under core and sub-categories related to the central theme self-maintained oral health. Participants talked about how they maintained their oral health personally and professionally, their individual views, motives and what they saw as barriers to do so.

Table 1: Participant statements according to the sub-categories under the core categories of the central theme Oral Health Impact.

| Central Theme | Core Category | Sub-Category | Participant Statements |
|---------------|---------------|--------------|------------------------|
| Oral Health Impact | I-A Self-Perceived Oral Health | I-A-1 General perception | “My teeth are awful” (P3) |
|                  |               | I-A-2 Specific description | “Currently, they (my teeth) are aching and two of them are really bad” (P1) |
|                  |               | I-A-3 Unawareness | “I’m not sure. They’re not very good nor very bad” (P2) |
|                  | I-B Influence on Daily Life | I-B-1 Local pain | “I can’t chew on my food when I’m in pain.” (P1) |
|                  |               | I-B-2 Systemic effect | “It contributes to my body pain” (P1) |
|                  |               | I-B-3 Psychologic impact | “Bad breath affects my life” (P1) |
|                  |               | I-B-4 No influence | “My teeth do not influence my daily life” (P3) |

3.2.1. Self-performed plaque control (Core Category “II-A”)

Participants brushed their teeth, used chewing sticks i.e. miswak, flossed, and/or used mouthwash to clean their teeth. A variation in frequencies was noted pertaining to their oral hygiene methods. Moreover, participants reported a change in attitude following experiencing the devastating impact of oral health problems as one explained: “I learned a lesson because I used to ignore taking care of my teeth. Now, I brush and floss every day.” (P7) (Table 2).

3.2.2. Visiting the dentist (Core Category “II-B”)

Some of the participants only visited the dentist to relieve pain, for follow up, or for orthodontic or restorative treatments. One participant raised the issue of transportation and access to dental care, which impacted their commitment to attend their dental appointments: “If transportation was available, I’d go to my dental appointment” (P8). Others were highly committed to attend on time.
The expectations following a visit to the dentist also varied among the participants. Some heavily relied on their emotions towards the treating dentist (P5). While some expressed fear or pain from the dentist (P2, 12). Others anticipated a good outcome towards the treating dentist (P5). While some expressed fear or among the participants. Some heavily relied on their emotions

| Table 2 | Participant statements according to the sub-categories under the core categories of the central theme Self-Maintained Oral Health. |
|---------|------------------------------------------------------------------------------------------------|
| Central Theme | Core Category | Sub-Category | Participant Statements |
| --- | --- | --- | --- |
| II | Self-Maintained Oral Health | II-A | Self-Performed Plaque Control | Attitude |
| II-A-1 | • “I clean my teeth using toothpaste, toothbrush and mouth wash” (P1) |
| | • “I brush my teeth and use a whitening gel” (P4) |
| | • “I use a toothbrush with toothpaste, rinse and floss” (P5) |
| II-A-2 | Method |
| | • “I brush after every meal” (P2) |
| | • “I brush my teeth once a day when I go out” (P3) |
| | • “I brush my teeth after every meal” (P4) |
| II-A-3 | Frequency |
| | • “I only visit the dentist when I’m in pain” (P6) |
| | • “I arrive 10 min before my appointment, to finish early” (P3) |
| | • “I never come late to my appointments” (P2) |
| | • “I prefer to attend an hour earlier” (P4) |
| II-B | Visiting the Dentist | II-B-1 | Reason for visit |
| | • “I visit the dentist to avoid toothaches” (P1) |
| | • “I went two weeks ago for restorations” (P2) |
| | • “I went once for extraction and once for a checkup” (P3) |
| II-B-2 | Commitment to attend |
| | • “I only visit the dentist when I’m in pain” (P6) |
| | • “I arrive 10 min before my appointment, to finish early” (P3) |
| | • “I never come late to my appointments” (P2) |
| | • “I prefer to attend an hour earlier” (P4) |
| II-B-3 | Expectation |
| | • “I benefit from the visit even though it’s painful” (P1) |
| | • “At first it hurts, especially from the needle”, “At the end, it relieves me from the pain” (P2) |
| | • “I feel pain when I think of the dentist” (P3) |
| | • “I feel my teeth will be cleaner than before the appointment” (P4) |
| | • “My expectations depend on the doctor’s skills and work” (P5) |
| | • “I used to be scared but not anymore” (P6) |
| II-C | Cost of treatment | Non-Diabetics (7-12) |
| | • “I learned a lesson, because I used to ignore taking care of my teeth. Now, I brush and floss every day” (P7) |
| | • “I use the toothbrush. My problem was in nutrition and drinking milk from the beginning” (P10) |
| | • “I brush and floss” (P7) |
| | • “I use the toothpaste and toothbrush and sometimes the mouthwash” (P8) |
| | • “I use toothpaste, toothbrush and braces brush” (P9) |
| II-D | Suggestions | Non-Diabetics (7-12) |
| | • “I brush and floss everyday” (P7) |
| | • “I brush my teeth twice a day and use the mouthwash in the morning and evening” (P11) |
| | • “I brush my teeth 3 times a day and I use the mouthwash and dental floss” (P12) |
| | • “I visited the dentist because I feel that my teeth cause headaches for me” (P9) |
| | • “Last visit was for root canal treatment of lower teeth” (P11) |
| | • “I used to skip visiting the dentist, but now I go every six months”, “I’m very punctual with my appointments” (P7) |
| | • “It depends... If transportation was available, I’d go to my dental appointment” (P8) |
| | • “I used to go to the dentist regularly”, “I like to attend on time” but “after I got pregnant, I stopped going” (P9) |
| | • “It’s important for me to attend on time” (P10) |
| | • “I attend an hour before my appointment” (P12) |
| | • “It depends on the dentist” (P8) |
| | • “My expectations are good except for taking appointments” (P10) |
| | • “There’s some kind of fear of course” (P12) |

The expectations following a visit to the dentist also varied among the participants. Some heavily relied on their emotions towards the treating dentist (P5). While some expressed fear or pain from the dentist (P2, 12). Others anticipated a good outcome on their oral health following a dental visit (P2) (Table 2).

3.3. Dental service: delivery and costs (Central theme “III”)

Table 3 represents the participants responses under the core and sub-categories related to the central theme dental service delivery and costs. The participants praised the quality of delivered care within different sectors, but at the same time laid out their concerns regarding prolonged appointment waiting times and the exaggerated treatment costs.

3.3.1. Quality of care (Core Category “III-A”)

Some preferred governmental hospitals over private clinics, believing they offered superior care: “I have hypertension, so I prefer the public service. They know how to deal with it” (P1). On the other hand, others thought private clinics had better quality of service (P6) (Table 3).

3.3.2. Waiting time (Core Category “III-B”)

One of the main drawbacks regarding governmental hospitals was the delayed appointments and the long waiting time. Some believed that private clinics offered easier and faster appointment bookings compared to governmental hospitals (P2, 9) (Table 3).

3.3.3. Cost of treatment (Core Category “III-C”)

Most of the participants thought that dental services were expensive (P2, 7), while others expressed indifference regarding treatment costs, mainly because they made use of the free public service (P8). Opinions regarding the responsibility towards treatment costs were somewhat unanimous, since most participants believed that the government should claim responsibility. One opposing opinion was: “I think the patients should pay. This will motivate them to treat their negligence” (P7) (Table 3).

3.3.4. Suggestions (Core Category “III-D”)

Participants mainly suggested lowering the treatment costs in private clinics (P4, 6, 12). Some suggested that: “Treatment costs should be covered by insurance companies” (P10). They also hoped to solve the delayed appointments issue in governmental clinics (P11) (Table 3).

4. Discussion

This qualitative study aimed to review the opinions and expectations of diabetic and non-diabetic women regarding personal oral health and dental care access. How the participants looked upon their oral health varied between good, bad or not sure. This was in contrast to what was observed in the study by Lindenmeyer et al. (2013), where participants mostly mentioned that their oral health was good, despite having lost some teeth. Interestingly, participants in that study had visited the dentist in the past year, suggesting that they had received certain educa-
Participants described how they rigorously maintained their oral hygiene on a daily basis after having suffered from intense dental pain in the past. Others, especially diabetics, only cleaned their teeth occasionally. This slight difference from what was observed by Slack-Smith et al. (2010), where most participants used electric toothbrushes, floss and mouthwash regularly. It is worth mentioning that three quarters of those participants had visited a health professional within the past two years, unlike participants from the current investigation.

Participants highlighted the dependence on transportation availability in order to attend dental appointments. Similarly, older participants mentioned the benefits of being in close proximity to their treating dentists (Slack-Smith et al., 2010). This necessitates revisiting the available dental clinics for the public and the individual’s eligibility for care within the same district areas. The reformed health clustering strategy is an important move in the direction of facilitating care for all (Alharbi, 2018).

General participant expectations and the psychological impact of the dental visits had a notable influence on their commitment and/or interventional measures for any dental problems they may have had. Participants in the current study, on the other hand, varied in their dental visit patterns, hence the observed variation in responses.

Diabetic individuals notably expressed their self-perceived oral health in a negative manner. This falls in line with the well-established link between oral health and diabetes (Sanz et al., 2018). Moreover, visiting the dentist was of lower priority among diabetics when weighed against their general health issues, emphasizing the need to educate diabetics and the public in general regarding the importance of maintaining good oral health personally and professionally and its serious impact on general health (Bissett et al., 2013).

According to the participants, the impact of oral health is either limited to local pain, may have systemic effects, could also have psychologic implications or has no influence on daily life at all. This was in line with what was expressed by older people in Australia, where oral health was associated with pain and discomfort, may impact one’s nutrition, general health and well-being, and affects social functioning due to the implications on effective speech and appearance (Slack-Smith et al., 2010). This indirectly points to the role of practitioners in addressing their patient’s chief complaints, as each patient has a different prospective and issue impacting his/her life, and thus needs to be cared for respectfully and holistically (Stenman et al., 2009).

Table 3

| Central Theme | Core Category | Sub-Category | Participant Statements |
|---------------|---------------|--------------|------------------------|
| Dental Service Delivery and Costs | III | III-A Quality of Care | III-A-1 Governmental Vs. Private |
| | | | • “I have hypertension, so I prefer the public service. They know how to deal with it” (P1) |
| | | | • “I prefer the public clinics even if I can pay for the private ones” (P2) |
| | | | • “I prefer the private clinic” (P3) |
| | | | • “If it was an urgent problem, I prefer the public service”, but “If it was for regular treatment, I’d go to the private clinic” (P5) |
| | | | • “I prefer the private clinics because they care more than the public ones” (P6) |
| | | | • “Here in the governmental hospitals, appointments are distant” (P2) |
| | | III-B Waiting Time | III-B-1 Short/Long |
| | | | • “It’s very expensive” (P1), (P2), (P4), (P6) |
| | | | • “I had financial difficulties with the costs” (P3) |
| | | III-C Cost of Treatment | III-C-1 High/Low |
| | | | • “I think both the government and patient must be responsible” (P1) |
| | | | • “Citizens could pay some of the fees and the government help with the rest” (P2) |
| | | | • “Honestly, I think the government should be responsible for the costs of treatment” (P4) |
| | | | • “I never thought of who must be responsible” (P5) |
| | | | • “Insurance companies should cover the costs” (P6) |
| | | | • “I suggest that citizens could pay some of the fees and the government help with the rest” (P2) |
| | | | • “I suggest lowering the costs. They (the clinic) may consider offering a basic treatment budget for every patient. If that budget is exceeded, then the patient pays the rest” (P4) |
| | | | • “I suggest lowering treatment costs because they are exorbitant” (P6) |
| | | III-D Suggestions | III-D-1 Treatment costs |
| | | | • “I wish insurance would handle the whole cost” (P5) |
| | | | • “There should be insurance companies that pay for the treatment” (P6) |
| | | | • “I suggest that citizens could pay some of the fees and the government help with the rest because it’s impossible that the citizens can pay it all” (P2) |
| | | | • “I suggest lowering treatment costs because they are exorbitant, especially that some people can’t afford those costs” (P6) |
| | | III-D-2 Insurance | |
| | | | • “Treatment costs should be covered by insurance companies” (P10) |
| | | III-D-3 Help for people in need | |
| | | | • “I wish if they could fix the appointments problem” (P11) |
| | | III-D-4 Waiting time | |
| | | | • “I would rather go to private clinics; their appointments are faster” (P9) |
| | | | • “Yes, it’s expensive. I almost sold everything I own to afford the treatment costs” (P7) |
| | | | • “Some of the treatment is expensive and some can be handled” (P8) |
| | | | • “I think the prices are exaggerated” (P9) |
| | | | • “They’re overpriced and expensive” (P10), (P12) |
| | | | • “It’s very expensive” (P11) |
| | | | • “I think the patients should pay. This will motivate them to treat their negligence” (P7) |
| | | | • “It should be the patients’ responsibility” (P9) |
| | | | • “The insurance companies should pay or the government” (P10) |
| | | | • “I think both the government and patient must be responsible” (P12) |

\[214\]
to attend appointments. A few mentioned how they became more committed to attend ahead of schedule after experiencing the personal benefit of those visits. Others referred to the practitioner’s skills to have a major influence on their decision to attend. Fear from pain and anxiety during visits was the main turn down for visiting the dentist. These findings corroborated well with participants’ expressions from other studies (Derblom et al., 2017; Slack-Smith et al., 2010), and stresses on the importance of comforting the patient and approaching their needs systematically and professionally.

Generally, participants thought that the public service offered more comprehensive and affordable care, especially for the medically compromised. However, long appointment waiting times was the main issue concerning governmental clinics. While some, on the other hand, thought that private clinics offered higher quality of treatment and had the benefit of shorter appointment bookings and waiting times. The high treatment expenses were the major concern related to the private sector. These follow the same trend reported in other studies, where participants also added that private clinics had more pleasant surroundings, superior equipment, and their health professionals spent more time with them during the course of treatment (Hancock et al., 1999; Mittal et al., 2019).

4.1. Limitations

All interviews were conducted in the Arabic language. Thus, not all terminology from the participants’ exact words could be translated at the time of the interview. However, care was taken to represent and maintain the meaning of the participant’s phrases, and any confusions while doing so were resolved by agreement between investigators.

As per hospital policy, voice recording was not allowed, which may have impacted the representativeness of the transferred information from the participants. Nevertheless, investigators were cautious to transcribe all interviews as a whole while maintaining the participants exact words.

All participants were females, which could infer a certain response bias based on participating gender. However, the cultural lifestyle suggests that members of the community function as families, members of which support each other and are aware of the financial status and issues, including healthcare. Accordingly, and as women’s roles are central in each family; opinions of the participating women may well represent the family’s health-related issues and access to care.

Another point of argument could be the generalizability of the study findings, since the study population comprised hospital attendees from a single hospital. As mentioned earlier, the study venue is considered one of the major secondary and tertiary referral centers in the region and provides care for patients of different backgrounds and socioeconomic levels. In addition, the aims of this qualitative research were to look into real life views of hospital attendees which may differ in different settings or times.

5. Conclusions and recommendations

Within the limits of this study, it can be concluded that the group of diabetic and non-diabetic hospital outpatient female attendees had variable responses on how they looked upon their oral health and its impact on their daily lives. There was also a variation in oral hygiene practices, with influence of previous oral disease experience. Visiting the dentist was dependent on a number of factors such as motivation, the dentist’s skills, expectations and transportation. Participants believed that governmental and private clinics offered high quality care. High treatment costs in private clinics and long waiting times in the public service were the main drawbacks.

The findings offer a real-life insight on how citizens perceive their oral health and access to available care. They also alarm practitioners on the importance of educating their patients on oral health maintenance and guide them to a more passionate and holistic approach when managing each patient. Policymakers may also make use of these inside opinions on how to improve the offered service in both public and private sectors.

Declaration of Competing Interest

The authors declare that they have no conflict of interest related to this study. No external sources of funding were utilized in any manner.

Acknowledgements

The authors would like to thank the hospital administration and diabetes department at King Fahd Armed Forces Hospital for their cooperation and facilitation of the study.

References

Alharbi, M.F., 2018. An analysis of the Saudi health-care system's readiness to change in the context of the Saudi National Health-care Plan in Vision 2030. Int. J. Health Sci. (Qassim) 12, 83–87.

Bissett, S.M., Stone, K.M., Rapley, T., Preshaw, P.M., 2013. An exploratory qualitative interview study about collaboration between medicine and dentistry in relation to diabetes management. BMJ Open 3.

Chávez, E.M., Borrell, L.N., Taylor, G.W., Ship, J.A., 2001. A longitudinal analysis of salivary flow in control subjects and older adults with type 2 diabetes. Oral Surg Oral Med Oral Pathol Oral Radiol Endod. 91, 166–173.

Cohen-Camino, F., Souza-Santos, R., Rebelo, M.A.B., 2011. Qualidade de vida relacionada à saúde bucal: Contribuição dos fatores sociais. Cienc. e Saúde Coletiva 16, 1007–1015.

Derblom, C., Hagman-Gustafsson, M.L., Gabre, P., 2017. Older people’s description of factors that facilitate and impede regular dental care – a qualitative interview study. Int. J. Dent. Hyg. 15, 313–320.

Gabardo, M.C.L., Moyés, S.J., Moyés, S.T., Olandoski, M., Teresa, M., Olinto, A., Pattini, M.P., 2015. Mixed analysis of self-perception in oral health and associated factors in Southern Brazilian adults: a cross-sectional study. Análise em multinível da autopercepção em saúde bucal e fatores associados em adultos do Sul do Brasil: um estudo transversal. Cad. Saúde Pública 31, 49–59.

Guggenheimer, J., Moore, P.A., Rossie, K., Myers, D., Mongelluzzo, M.B., Block, H.M., Weyant, R., Orchard, T., 2000a. Insulin-dependent diabetes mellitus and oral soft tissue pathologies. I. Prevalence and characteristics of non-candidal lesions. Oral Surg Oral Med Oral Pathol Oral Radiol Endod. 89, 563–569.

Guggenheimer, J., Moore, P.A., Rossie, K., Myers, D., Mongelluzzo, M.B., Block, H.M., Weyant, R., Orchard, T., 2000b. Insulin-dependent diabetes mellitus and oral soft tissue pathologies: II. Prevalence and characteristics of Candida and Candidal lesions. Oral Surg Oral Med Oral Pathol Oral Radiol Endod. 89, 570–576.

Hancock, M., Calnan, M., Manley, G., 1999. Private or NHS General Dental Service care in the United Kingdom? A study of public perceptions and experiences. J. Public Health Med. 21, 415–420.

Kadri, T., Pisirciiler, R., Akyüz, S., Varol, A., Emekli, N., Iphukier, A., 2002. Mycological and cytological examination of oral candidal carriage in diabetic patients and non-diabetic control subjects: Thorough analysis of local aetiologic and systemic factors. J. Oral Rehabil. 29, 452–457.

Lahti, S., Suominen-Taipale, L., Hausen, H., 2008. Oral health impacts among adults in Finland: Competing effects of age, number of teeth, and removable dentures. Eur. J. Oral Sci. 116, 260–266.

Lindenmeyer, A., Bowyer, V., Roxloe, J., Dale, J., Sutcliffe, P., 2013. Oral health awareness and care preferences in patients with diabetes: A qualitative study. Fam. Pract. 30, 113–118.

Lorini, R., Scaramuzza, A., Vitali, L., D’Annunzio, G., Avanzini, M.A., De Giacomoni, C., Severi, F., 1996. Clinical aspects of coeliac disease in children with insulin-dependent diabetes mellitus. J. Pediatr. Endocrinol. Metab. 9, 101–111.

Mittal, R., Wong, M.L., Koh, G.C.H., Ong, D.L.S., Lee, Y.H., Tan, M.N., Allen, P.F., 2019. Factors affecting dental service utilisation among older Singaporeans eligible for subsidized dental care - A qualitative study. BMC Public Health 19, 1–8.

Moore, P.A., Weyant, R.J., Etzel, K.R., Guggenheimer, J., Mongelluzzo, M.B., Myers, D.E., Rossie, K., Huber, H., Block, H.M., Orchard, T., 2001. Type 1 diabetes mellitus and oral health: Assessment of coronal and root caries. Community Dent Oral Epidemiol. 29, 183–194.
Ritchie, J., Spencer, L., 1994. Qualitative data analysis for applied policy research. In: Analysing Qualitative Data. Routledge, London, UK, pp. 173–194.

Sanz, M., Ceriello, A., Buysschaert, M., Chapple, I., Demmer, R.T., Graziani, F., Herrera, D., Jepsen, S., Lione, L., Madianos, P., Mathur, M., Montanya, E., Shapira, L., Tonetti, M., Vegh, D., 2018. Scientific evidence on the links between periodontal diseases and diabetes: Consensus report and guidelines of the joint workshop on periodontal diseases and diabetes by the International Diabetes Federation and the European Federation of Periodontology. J. Clin. Periodontol. 45, 138–149.

Slack-Smith, L., Lange, A., Paley, G., O’Grady, M., French, D., Short, L., 2010. Oral health and access to dental care: A qualitative investigation among older people in the community. Gerodontology 27, 104–113.

Stenman, J., Hallberg, U., Wennström, J.L., Abrahamsson, K.H., 2009. Patients’ attitudes towards oral health and experiences of periodontal treatment: a qualitative interview study. Oral Health Prev. Dent. 7, 393–401.

Zheng, Y., Ley, S.H., Hu, F.B., 2018. Global aetiology and epidemiology of type 2 diabetes mellitus and its complications. Nat. Rev. Endocrinol. 14, 88–98.