Research

Dentally Anxious Patients' Perceptions of Oral Health Care

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ABSTRACT

Purpose Many adults in the United States struggle with mild, moderate, or severe dental anxiety (DA). Understanding the perspectives of patients with DA may help oral health professionals gain greater insight into their needs and learn how to provide an improved experience for these patients. The purpose of this study was to identify patients' perspectives on factors that impact anxiety in a dental practice setting.

Methods A qualitative, descriptive case study design was used to identify patients' perspectives on factors impacting anxiety in a dental practice setting. Potential participants were screened using the Modified Dental Anxiety Scale (MDAS) and needed a moderate DA score to qualify for the study. An interview guide focused on obtaining information about the etiology, contributing factors, management strategies, and participant experiences of DA was used for the semi-structured virtual interviews. Responses were coded using a qualitative research analytic platform (Dedoose; Los Angeles, CA, USA). The co-investigators systematically reviewed the codes using the classic qualitative analysis strategies and journal notes to identify themes and subthemes.

Results Twenty-two individuals qualified for participation in this study. Most participants reported having DA beginning in early childhood and throughout their adult life. Seven themes, including Avoidance, Supportive Behaviors, Confidence in Provider, Diversion, Enduring, Adaptations, and Benevolence emerged. Participants reported their primary method for managing DA was to avoid attending their dental appointments.

Conclusion Participants in this study expressed various coping mechanisms and management strategies to alleviate the symptoms of DA. Multiple opportunities exist for increasing patient-provider trust and patient comfort to reduce DA, and ultimately improve the oral health status of individuals with DA.

Keywords dental anxiety, coping mechanisms, triggers, dental practice setting, communication, patient-provider relationship

NDHRA priority area, **Client level: Oral health care** (new therapies and prevention modalities).

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INTRODUCTION

Dental anxiety (DA) is a multifaceted disorder that involves somatic, cognitive, and emotional responses triggered by thoughts and actions of dental treatment.[1] Between 50% to 80% of adults in the United States (US) struggle with mild, moderate, or severe DA.[2] The most common factors found to influence DA are female gender, low education, low socio-economic status, and younger age.[3] Approximately 20% of dentally anxious patients have been shown to not regularly seek dental care while 9% to 15% avoid care completely.[2] Etiologies that induce the development of DA include traumatic childhood experiences within a dental practice, influences from family or media, psychological conditions, certain dental stimuli, low income, and poor oral health literacy.[1,4] Examples of dental stimuli include fear of pain, dental injections, sounds and smells associated with the dental practice, the sight of blood, needle phobias, fear of the unknown, and depersonalization.[5,6]

Research has shown that the quality of life associated with one's oral health decreases with higher levels of DA.[7] Neglect in regards to dental care negatively affects a person's oral health, which ultimately leads to the deterioration of a person's quality of life.[8] Poor oral health results in an increased incidence of oral diseases leading to the need for more invasive treatment.[9] Dentally anxious patients have been shown to avoid care until the pain is exacerbated enough to seek emergency treatment.[9] Quality of life is affected by negatively impacting social interactions and relationships, work performance, sleep, self-esteem, and self-confidence.[5] Dental practitioners can help decrease the prevalence of DA by understanding how and why the disorder occurred.

Various techniques can determine the level of DA from physiological, behavioral, psychometric, and projective strategies.[10] Dental practices tend to favor psychometric techniques using questionnaires or screening tools to measure the severity level of DA.[4,5,11] For example, the Modified Dental Anxiety Scale (MDAS) contains five items about different dental situations.[1] However while short screening questionnaires are easily administered, these tools are seldom used. Drown et al.[4] conducted a study to assess the knowledge, attitudes, practice, and confidence of dental hygienists providing oral health care to adult patients with dental anxiety. Of the 355 dental hygienists who participated in the study, 99% were found not to incorporate DA screening tools.[4] Additionally, 67% were unaware of DA screening tools and less than half (47%) would inquire about DA when reviewing medical histories.[4] In a study assessing dentists and their DA identification and management techniques, Armfield et al.[11] found that over half of the respondents were unaware of the existence of anxiety screening scales.[11]

A number of studies have shown that oral health care practitioners are unprepared to treat patients with DA due to lack of formal training in management techniques.[1,4,11] Furthermore, dental practitioners also tend to underrate an individual's DA as compared to the individual's self-assessment.[12] Implementing an anxiety screening questionnaire would provide more frequent and correct diagnoses, that would in turn facilitate better management. Additionally, there is no formal training for dental practitioners regarding effective communication skills when managing patients with DA.[13] Patients have indicated feeling offended, uncomfortable, or misunderstood and reported dental practitioners portray disregard for their feelings or exhibit judgmental behaviors regarding their DA.[13] Poor communication between the dental practitioner and the patient could result in a negative experience and the patient avoiding dental care in the long term.[13] Dentally anxious patients would rather have oral health care providers who understand and accept their DA over their technical competence.[14]

A number of strategies may be used to help manage DA. Psychotherapeutic interventions focus on either behavioral or cognitive adaptation.[5] Behavioral therapy uses learning to alter undesirable behavior. Muscle and/or breathing relaxation used in conjunction with guided imagery and possibly a physiological monitoring technique are used in behavioral therapy.[5]

Cognitive strategies restructure negative thoughts and teach control over negative thinking.[5] Combination cognitive and behavioral therapy is a common way to treat any situational anxiety because it focuses on changing both the negative thoughts and the behaviors related to the anxiety. If cognitive and behavioral management strategies are not effective, pharmacological management may be necessary.[14] Nitrous oxide with oxygen analgesia is an effective strategy used to reduce mild to moderate DA.[15] Prescribed oral sedation, such as benzodiazepines, and intravenous sedation have been recommended to treat moderate to severely anxious dental patients.[15]

Although strategies exist for screening and providing care for patients with DA, improvements are needed in the utilization of these tools and techniques. Understanding the perspectives of patients with DA may assist oral health professionals in gaining greater insight into their needs and provide opportunities to learn ways to provide an improved experience for these patients. The purpose of this study was to identify patients' perspectives on the factors impacting their anxiety in the dental practice setting. The following questions guided the study: What factors contribute to patient anxiety in a dental practice setting? How do patients currently cope with anxiety in a dental practice setting? What interventions would reduce patient anxiety in a dental practice setting?

METHODS

A qualitative, descriptive case study design was used to identify patients' perspectives on factors that impact anxiety in a dental practice setting. The Institutional Review Board of Idaho State University approved this study (IRB: FY2024-23). Berggren's Model of Dental Fear and Anxiety served as the theoretical framework. This model predicts that DA is related to avoidance of treatment, which leads to a vicious cycle of DA, poor oral health, and feelings of embarrassment.[16] The Consolidated Criteria for Reporting Qualitative research (COREQ) checklist was utilized in creating and evaluating the study design.[17]

A purposive sample of patients with DA were invited to participate in the study. Patients were required to have moderate DA to qualify and be 18 years or older. Exclusion criteria included individuals who were less than 18 years of age and those with mild DA. Snowball sampling was the method used to acquire the study participants by asking dental practitioners and participants to refer patients and acquaintances known to have DA. Participants came from the eastern region of the United States.

To determine eligibility, potential participants were screened using the MDAS. This screening tool includes five questions measuring the level of DA on a scale of one to five, with one indicating not anxious and five indicating extremely anxious. Topics of the MDAS scale included how one would feel if they went to the dentist for treatment tomorrow, sitting in the waiting room, having a tooth drilled, about to have teeth scaled and polished, and about to have a local anesthetic injection. The MDAS score for mild DA ranges from five to ten, moderate ranges from 11 to 18, and severe ranges from 19 to 25.[8] The MDAS has demonstrated high reliability and excellent completion of scale items with an internal consistency of 0.957.[18] The concurrent validity was evaluated between Corah's Dental Anxiety Scale and MDAS with a correlation coefficient of 0.85 ($p<0.001$).[19] To meet the inclusion criteria, participants were required to score a minimum of 11 on the MDAS.

A semi-structured interview guide was developed, with a focus on obtaining information about the etiology, contributing factors, management strategies, and experiences of DA[20] (Table I). The interview included five elements: an opening question, introductory questions, transition questions, and key questions. The concluding question asked participants whether there was anything they would like the researchers to know about this topic. The interview guide was validated by two experts in qualitative research, in addition to conducting a pilot interview.

The virtual interviews (Zoom; San Jose, CA, USA) lasted approximately thirty minutes. The principal investigator (PI) conducted each interview with a co-investigator serving as an observer. An interview protocol was followed to ensure no biases were introduced

Table I. Interview guide

Opening	Tell us your pseudonym for this research and when was your last dental or dental hygiene visit? What was completed during that appointment? Describe your feelings of those experiences.
Introduction	How long have you experienced dental anxiety?
Transition	What, if anything, contributed to your original feeling of dental anxiety?
Key	What dental and/or dental hygiene procedures create anxiety for you? What other factors contribute or cause anxiety in the dental office setting? What strategies have you used in the past to help with your dental anxiety? Have any of those strategies been successful? If not, why not? How do you typically cope with your dental anxiety now? How do you inform the dentist or dental hygienist that you have dental anxiety? What responses have you received from them? What additional strategies might you try to use to help you reduce your dental anxiety? What specifically could the dentist and/or dental hygienist do to help you reduce your dental anxiety?
Ending	Is there anything else you would like the researchers to know about this topic?

to enhance methodological rigor. The PI evaluated each transcript to ascertain the key concepts were represented and that participants were allowed to restate main ideas to further support non-bias.[20]

Each interview, including the closed-caption transcript, was recorded and saved to an encrypted password-protected account; only the PI had access to the account. The PI was responsible for verifying the accuracy of the transcripts. Following the interview, each participant was emailed their transcript and provided an opportunity to review their responses for accuracy. Interviews were conducted until saturation was reached.

The qualitative responses were coded and grouped into parent and child codes related to the participants' feedback using a qualitative research analytic platform (Dedoose; Los Angeles, CA, USA).[21] The co-investigators systematically reviewed the codes using the classic analysis strategy and the journal notes to identify themes and subthemes.[19] Validity was established by pilot testing the interview, saturation, triangulation by collecting and analyzing data with multiple investigators, and journaling.[22] Member checks helped to ensure that the interpretation of the data was accurate.[22, 23]

RESULTS

Twenty-two individuals met the inclusion criteria for participation; there were sixteen females (72.7%) and six males (27.3%) ranging in age from 18-71 years with an average age of 42.7 years. The majority were from New York (n=18, 81.8%), two (9.2%) were from Florida, one was from New Jersey (4.5%), and one was from Massachusetts (4.5%). Six participants (27.3%) presented with moderate DA with scores ranging from 11 to 18 on the MDAS, while 16 participants (72.7%) had severe DA with scores ranging from 19 to 25 on the MDAS.

Participants were asked to describe how long they experienced DA. Most individuals reported having DA from early childhood throughout their adult life. Three participants noted their DA began in their mid-forties. When asked what triggers contributed to the original feeling of DA, participants described either a poor interaction with a dental provider or a bad experience during a dental procedure. For example, Jill described,

> *"So I was in this appointment, and the dentist gave me one shot of novocain in each of the 3 areas. One shot that*

was it, and then proceeded to take my teeth out. I expressed discomfort and pain. And he told me that he hoped he wasn't around when I gave birth because I was being a baby, like basically I mean, it was incredibly insulting. I felt very powerless."

Steve explained,

"So, it was a precursor to getting braces for an overbite and they were taking out the 4 bicuspids just to create room to get everything aligned. So, I went to the regular dentist, and when I got there, they numbed up the bottom, but then, I remember, he hooked the needle, like he turned it into a fishhook, and went through like the palate on the top of my mouth. And that was a new level, a new experience. And he said I should be numb, and he started the extractions. They had a nurse, or a hygienist hold my head and then he had a knee on my chest, and I mean he was really pulling and yanking and driving and grinding, and he got the 4 of them out, and I'll just never forget at the end he says, 'Wow! If I knew they had roots like that, I would have sent him to an oral surgeon.' And I think just sitting through that hour and a half of trying to get those teeth out, it just kind of set-in stone that I wasn't thrilled to be there. And yeah, I'd say by the time we got the braces off about 3 and a half years later, I pretty much didn't go back to a dentist."

Participants were also asked to identify what dental and dental hygiene procedures create anxiety and what other factors contribute to DA in the office setting (Table II). Dental hygiene scaling, administration of local anesthesia, and restorative procedures were techniques that precipitated DA for many participants. Sensory issues such as smells, noises, taste, and sensations as well as waiting too long in the reception area appeared to increase anxiety. As participants described experiences related to dental procedures that contribute to DA, strategies that help manage DA, and current coping mechanisms, seven themes emerged: Avoidance, Supportive Behaviors, Confidence in Provider, Diversion, Enduring, Adaptations, and Benevolence.

Helpful Strategies for Dental Anxiety

Participants were asked to identify what strategies they used to help with DA in the past. Two themes emerged from questions focusing on the management of DA: Avoidance and Supportive Behaviors.

Participants reported their primary method for managing DA was to avoid attending their dental appointments. Many respondents stated that they avoided the dental office on average for two to six years while one individual indicated not attending a dental practice for ten years or more and another for 20 years. These avoidance behaviors were associated with negative experiences in dental practice settings. Dale illustrates this issue, "So I skipped going to the dentist for a good 5 years to avoid that and my first one back after that I had 8 different cavities that all needed to be done."

Other than avoiding dental care, participants described coping strategies that enabled them to complete dental and dental hygiene appointments successfully. These strategies were supportive behaviors that created protective mechanisms to assist them in reducing their DA sufficiently to finish a procedure and/or schedule a follow-up appointment as needed. Several subthemes became evident including Preventive, Medication, Breathing, and Sensory. Several participants noted that if they performed excellent oral hygiene care, they were actually preventing oral disease and would not require extensive dental or dental hygiene procedures. As Dani noted,

"I'll be real honest. Avoid what causes you to have a cavity. I'm very religious about [going to the dentist] every 6 months, I avoid any food that might be sticky. I'm very extreme about brushing teeth. I floss. Then I water pic, and then I brush my teeth."

Other participants relied on medications to reduce their anxiety. Xanax and valium were common prescriptions along with the use of nitrous oxide-oxygen analgesia in-office to alleviate anxiety. As Rick expressed, "I would not be getting services if it wasn't for nitrous. I can't imagine, if that wasn't available to me, or I

Table II. Sources of dental anxiety created in a dental practice setting

Dental and Dental Hygiene Procedures	Provider Actions

Every Single Procedure
• Restorations
• Extractions
• Scaling
• Local Anesthesia
  • Injections
  • Fear of needles
• X-rays
• Flossing
Waiting Room
• Waiting too long
• Hearing others
Sensory
Smell
• Too Sterile
• Drilling of bone
Sights
• Operatory looks like a medieval torture chamber
• The instruments
• Lighting is strong on the eyes
Noise
• High-pitched whine from drilling
• Scaling
• Suction
Sensation
• Scaling/scraping on bone
• Sharp instruments are uncomfortable in gums
• Metal against teeth
• Feeling the pressure during scaling
• Chair feels claustrophobic
• If something falls onto tongue
• The grit
• Vibration of polisher
Taste
• Plastic from sensor
• Blood
Anticipation of Pain
Openness of operatories
• Everyone will hear
The Dental Unit AKA "The Chair"
• Positioning back too far
Cost
The Thought of Going
	Inconsistency
	Personal Space
	• Having hands in mouth
	Lack of information
	• Poor communication
	• Not being able to vocalize during procedure
	Not recognizing signs of anxiety
	Rushing procedures or patients when they are not ready
	Speaking in dental terms
	Telling patients not to think about it, relax, or to take calming breaths
	Fear that Provider will break a tooth
	Anticipation that provider will find a cavity

couldn't afford to pay for it out of my pocket." Some participants preferred breathing exercises as an alternative to medication. Caroline explained her breathing routine, "Usually when I'm in the car before I go in; in the parking lot before I go into the waiting room." Lastly, several participants related the use of sensory strategy to deflect the noises of the office and help them focus on reducing their DA. Jim described, "Just through my headphones to kind of drown out some of the outside noise" while Brad stated he, "listens to my own music and then I can adjust the volume if it's getting to a point where my anxiety is going through, I can either hear or really feel like what's happening to try to distract me."

Current Coping Strategies

As interviews continued, participants were asked to describe how they coped with DA presently. Three themes emerged from this discussion, Confidence in the Provider, Diversion and Enduring. Many of the participants related that their DA improved as they developed trust and confidence in their oral health providers. As Tess indicated, "I have a very good oral surgeon that I've been going to for over 25 years. I knew that when he told me it was going to be okay, I kind of trusted that it would be, and he was right." Anna confirmed this perspective, "I found a dentist that I can talk to, and that talks to me, and it's been better having one that I trust."

Other participants indicated they used a variety of diversionary

tactics as coping strategies to manage their DA. These strategies include humor, fidgeting in the dental chair, distractions, and positive thoughts. For example, Bex stated, "I purchased an anxiety ring which is like a fidget spinner that you wear as jewelry. That helps a lot in the chair." Chad offered, "I get a little jokey. I try to make light of it and have fun with it."

Some participants described doing their best to survive each dental appointment hoping to contain their DA. As Jim expressed,

> *"Yeah, when I don't go. I'm not nervous about it. But it's always in the back of my mind that I know I need to go. I need to be going on a consistent basis. It's just something I force myself to do and get over. I just force myself to get through it."*

Informing Care Providers

Participants were asked to identify how they inform oral health providers of their DA. Most participants were honest about their dental fears. Some preemptively apologized for their anxiety while others tried to be nonchalant about their DA. Some participants indicated they did not inform the providers at all because they believed the providers should have intuited their anxieties. When asked how providers responded to being informed about their DA, there were more positive responses than negative reactions. The general positive responses demonstrate understanding, compassion, support, and a willingness to accommodate participant needs. As Laura explained,

> *"I was right up front with them when I started as a patient, I just said, Look, I'm really uptight, I don't want anything to hurt. And they were really good about it. They said, Okay, don't worry. We'll give you whatever you need."*

On the other hand, Erica experienced a negative response from a provider about her DA. When discussing treatment with her dentist, his impatience with her heightened her DA so much so that she stated she may need a prescription for Xanax, to which the dentist replied, "You're going to have to bring me some just to deal with you!"

Additional Strategies

The theme Adaptations arose when participants were asked what additional strategies they might try to use to help reduce DA. These additional approaches included asking questions of the practitioner to better understand the procedures that would be performed, avoiding coffee/caffeine in the morning, scheduling morning appointments so that the appointment is completed earlier in the day, attending appointments routinely rather than avoiding regular oral health care appointments, advocating for oneself better, and using comfort remedies. As Charlotte noted, "I've thought about bringing a weighted blanket in or having something different for my hands or asking to bring my dog in kind of like a therapy dog."

Provider Strategies

When participants were asked what oral health care providers could do to help alleviate their DA the theme Benevolence developed. Examples of this theme included clinicians who offered suggestions for alleviating DA; provided distractions such as talking through a procedure, music, or headphones; provided reassurance, understanding and compassion; administered nitrous oxide-oxygen analgesia, topical anesthetic or local anesthesia, and used warm blankets, or a therapy dog for comfort. Chad reported, "music kind of helps drone out everything and the dental hygienist, as long as they're nice and talkative and stuff like that, I think that's great." Harvey affirmed, "Just always being open to working with me, not getting frustrated with me and with the stuff that happens, being willing to get through it together. Telling me that it's okay, reassuring me. So that's always good."

Concluding Comments

At the conclusion of the interview, participants were offered an opportunity to provide final thoughts to the researcher. Some individuals offered additional impressions of their experiences receiving oral health care. Laura expressed how she feels at the end of an appointment, "Happy. Thrilled. I'll see them in 3 months. I'm like, 'Oh, that wasn't so bad. Why am I so stressed out about this all the time?' Dentistry has come a long way." Steve provided a different perspective.

> *"My temperature drops. I get cold. I get shaky. Fidgety. I'm anxious. I'm sick to my stomach. Dry mouth. Just not feeling great. It's an interesting conundrum where the fear is having something major be wrong but it's preventing you from going to prevent the thing from being wrong. A self-fulfilling cycle of fear where you don't go on a routine. You're not getting taken care of to prevent issues. And then when you go and you have issues, they find more issues."*

Many participants emphasized that anxiety is a real phenomenon. Mara stressed, "I am not an anomaly. I think there are more people like me. I suspect there are people who don't go to the dentist because of that." Further, participants wanted DA to be taken seriously and believed that oral health professionals may not be well educated in this area. As Emily stated, "I don't feel like it's talked enough through the dentist and the dental hygienist and anyone else who's in the office. I don't feel like they're prepared or not necessarily trained for that type of interaction with the patient." Further, she noted that providers should be more attuned to the body language of the patient.

> *"Oh, hey! I noticed you're gripping the handles of the chair pretty hard. You okay? Are you feeling any pain? Just kind of like being more aware of what's going on with your patient, besides just their teeth by taking in their full posture and everything."*

DISCUSSION

Findings from this study provided an opportunity to gain a broader perspective on DA from the patient's viewpoint. Many participants felt strongly that they wanted dental providers to recognize that DA is a real condition that requires a diagnosis and warrants treatment considerations. However, there are underlying considerations influencing the recognition and management of DA. For example, many participants reported that they did not inform oral healthcare providers of their anxieties. Participants in this study believed that oral healthcare providers should be able to identify their anxiety through the physical reactions they manifest. This lack of recognition and management could be resolved if patients were more forthcoming about their fears or anxieties. Patients also need to recognize that health care providers should not be expected to be mind readers. While oral health professionals can be empathetic and attuned, they still may not be aware of a person's DA if they are not overt in presenting anxiety-related symptoms.

In addition, the recognition of DA is compounded by the fact that a percentage of oral health care providers lack knowledge regarding DA, including identification and management.[1,4,11] An Australian-based study found that there is limited undergraduate training for dentists concerning DA and of those who received training it was considered to be fair to poor.[11] Anxiety screening scales were not implemented by 20% of participating dentists, which affected the rating and identification of DA.[11] Diagnosing DA is the first step in helping a patient manage their anxiety and create effective therapeutic interventions.[11] Individualized care is needed as every patient's DA is expressed differently and strategies are not one size fits all.

Another interesting finding was that the female participants tended to be more expressive of their fears and more readily open to discussing them. Men appeared to be more reserved possibly due to the mindset that they should be strong, or it would be embarrassing to show fear. These sentiments were noted as cultural representations of gender identity.[7,24]

A compelling finding was that participants expressed their need for validation and understanding but reported that they rarely received those experiences in the dental practice. This finding was similar to a study by Wang et al. where participants wanted their dentists to show patience, understanding, and sympathy throughout the treatment process and work towards developing a collaborative relationship of trust to better manage their DA.[25] Establishing effective patient-provider communication on both sides is the key to building a trusting relationship.[26] This trusting relationship, with effective, positive communication is pivotal to managing DA and person-centered care.[26,27]

Based on the results of this study, oral health care providers appeared to contribute to the prevalence of DA by perpetuating negative experiences through a lack of communication. Other studies have noted that providers' actions are a contributing factor which in turn leads to a barrier to dental care.[13,27,28] Most participants in this study also felt that providers lacked adequate communication skills when they addressed pain and they were offended by comments made about their DA. The negligence in communication and provider acknowledgment of DA contributes to an increased prevalence of anxiety, mistrust, and avoidance of care.[3,27] Multiple participants reported their negative experiences within a dental practice setting led to avoidance of care at some point in their lives. These findings align with previous studies that feelings of negative communication contribute to DA and delay access to care.[13,26,28]

Individuals who do not avoid receiving oral health care endure through the treatment with their DA because they recognize the importance of their oral health. van der Zande et al. found that individuals were only motivated to attend their dental appointments based on the importance of oral health. [27] The cycle of fear that dentally anxious people experience continues when they start avoiding oral healthcare. Avoidance leads to problem-oriented visits and typically more invasive treatment.[7, 24] Dentally anxious patients are more likely to have higher scores on the decayed, missing, and filled teeth index.[3] These troublesome consequences that arise from avoidance could be prevented if oral health care providers focus on reducing avoidance behaviors for this population.[24] For providers to reduce or eliminate this cycle of fear, proper education regarding the identification and management of DA and communication skills are needed. Patients will be more apt to pursue routine oral healthcare once they establish a trusting relationship and efficient coping strategies.[26] Berggren's Cycle Model of Dental Fear and Anxiety illustrates the impact of DA on avoidance of care and deterioration of oral health leading to symptom-based treatment (Figure 1).[16,29] This model can be modified to reflect the primary factors of why the cycle begins (Figure 2). Deterring the start of this cycle of fear begins with focusing on the role oral health care providers play in addressing DA. Providers' lack of knowledge contributes to the negative experiences patients report.

Opportunities exist to better prepare oral health professionals to assist patients with DA. Curriculum content for oral health care students can be modified to include screening tools to assess for DA as well as appropriate coping strategies for the various levels of DA. Continuing education programs should

Figure 1. Berggren's Cycle Model of Dental Fear and Anxiety[16,29]

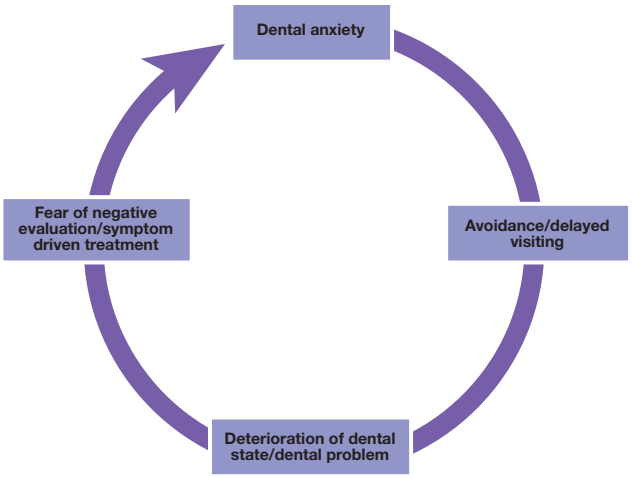
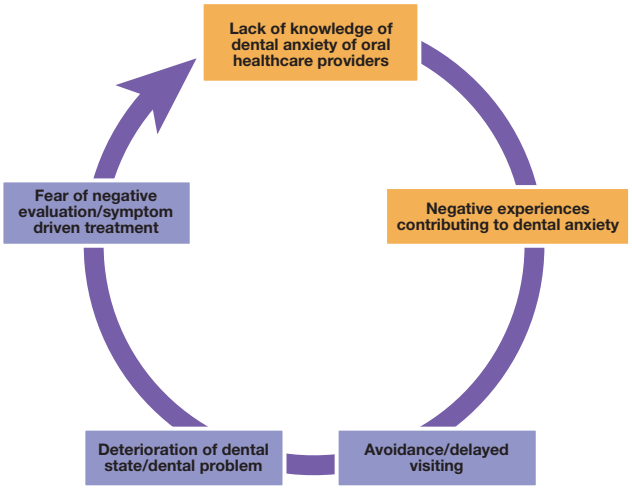


Figure 2. Figure 2. Adapted model of dental fear and anxiety cycle[16,29]



be offered that address these same principles for practicing clinicians. Practitioners should learn strategies for improving the office environment so it is less threatening including the use of calming music, headphones, aromatherapy, therapy dogs, and weighted blankets.[30,31] Some practices now offer patients a list of calming services that they can choose before arriving for their appointment, so they already are anticipating a more relaxed environment and experience. The health history form should specifically address signs and symptoms of DA, so the oral care providers are informed and able to converse with the patient about their condition.[11] When possible, having a more secluded treatment room available to patients with DA is an option for privacy and a quiet environment. Individuals with higher levels of DA may require advanced strategies to reduce anxiety such as pharmacological management.[14] However, pharmacological interventions should only be incorporated when all non-pharmacological strategies are exhausted.[15]

This study had limitations. The purposive sample and size for this study precludes generalizability to the entire population of people with DA, however qualitative studies focus on obtaining rich information to understand how people interpret their experiences.[20] Another limitation was the possibility of researcher bias with having the PI conduct the semi-structured interviews. Steps were taken to control researcher bias, such as pilot-testing the interview questions, member checks, and using an ending question that allows participants to restate their position on DA.

Further research is needed to examine gaps in dental and dental hygiene curricula related to DA and identify where modifications could be made to improve provider skills in screening and effectively managing DA. Additional research related to methods for increasing awareness of the impact of dental clinician behavior on patient DA and strategies for behavior modification is essential.

CONCLUSION

This qualitative study investigated patients' perceptions of anxiety related to dental care. Participants in this study expressed that DA is a valid condition and that collaboration between the patient and the provider is key to helping alleviate the symptoms related to DA. Avoidance of dental treatment was cited as a primary coping strategy preventing individuals from achieving optimal oral health. Multiple opportunities exist for increasing patient-provider trust and comfort leading to reduction of DA, and ultimately improving the oral health status of individuals with DA.

DISCLOSURES

The authors have no conflicts of interest to disclose.

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REFERENCES

1. Kanzigg L, Phillips CL, Stein MB, et al. Dental hygienists' knowledge, attitudes, and comfort level in treating patients with dental anxiety. J Dent Hyg. 2018 Oct; 92(5):30-37.

2. White AM, Giblin L, Boyd LD. The prevalence of dental anxiety in dental practice settings. J Dent Hyg. 2017 Feb; 91(1):30-34.

3. Khan SDAA, Alqannass NM, Alwadei MM, et al. Assessment of the relationship between dental anxiety and oral health-related quality of life. J Pharm Bioallied Sci. 2021 Jun; 13(Suppl 1):S359-S362.

4. Drown DA, Giblin-Scanlon LJ, Vineyard J, et al. Dental hygienists' knowledge, attitudes and practice for patients with dental anxiety. J Dent Hyg. 2018 Aug; 92(4):35-42.

5. Appukuttan DP. Strategies to manage patients with dental anxiety and dental phobia: literature review. Clin Cosmet Investig Dent. 2016 Mar; 10(8):35-50.

6. Jeddy N, Nithya S, Radhika T, et al. Dental anxiety and influencing factors: A cross-sectional questionnaire-based survey. Indian J Dent Res. 2018 Feb; 29(1):10-15.

7. Razzak NM, Demirsoy N. Evaluation of the effect of dental anxiety on the quality of life of the patients. Int J Caring Sci; 2022 Aug;15(2):861-74.

8. Silveira ER, Cademartori MG, Schuch HS, et al. Estimated prevalence of dental fear in adults: A systematic review and meta-analysis. J Dent. 2021 May; 108:103632.

9. Muneer MU, Ismail F, Munir N, et al. Dental anxiety and influencing factors in adults. Healthcare (Basel). 2022 Nov 23; 10(12):2352.

10. Lu C, Zhang YY, Xiang B, et al. Management of fear and anxiety in dental treatments: A systematic review and meta-analysis of randomized controlled trials. Odontology. 2022 Jan; 111 (1):20-32.

11. Armfield JM, Mohan H, Luzzi L, et al. Dental anxiety screening practices and self-reported training needs among Australian dentists. Aust Dent J. 2014 Dec; 59(4):464-72.

12. Höglund M, Bågesund M, Shahnavaz S, et al. Evaluation of the ability of dental clinicians to rate dental anxiety. Eur J Oral Sci. 2019 Oct; 127(5):455-61.

13. Fico AE, Lagoe C. Patients' perspectives of oral healthcare providers' communication: Considering the impact of message source and content. Health Commun. 2018 Aug; 33(8):1035-44.

14. Armfield JM, Heaton LJ. Management of fear and anxiety in the dental clinic: A review. Aust Dent J. 2013 Dec; 58(4):390-407.

15. Husack E, Ouanounou A. Pharmacological management of the dentally anxious patient. Compend Contin Educ Dent. 2023 Mar;44(3):128-34.

16. De Jongh A, Schutjes M, Aartman IH. A test of Berggren's model of dental fear and anxiety. Eur J Oral Sci. 2011 Oct; 119(5):361-5.

17. Tong A, Sainsbury P, Craig J. Consolidated criteria for reporting qualitative research (COREQ): a 32-item checklist for interviews and focus groups. Int J Qual Health Care. 2007 Dec; 19(60): 349-57.

18. Humphris GM, Dyer TA, Robinson PG. The modified dental anxiety scale: UK general public population norms in 2008 with further psychometrics and effects of age. BMC Oral Health. 2009 Aug 26; 9:20.

19. Humphris GM, Morrison T, Lindsay SJ. The modified dental anxiety scale: Validation and United Kingdom norms. Community Dent Health. 1995 Sep; 12(3):143-50.

20. Merriam SB, Tisdell EJ. Qualitative research: a guide to design and implementation. 4th ed. San Francisco (CA): Jossey-Bass; 2016. 346p.

21. Dedoose. Great research made easy [Internet]. Los Angeles: University of California Los Angeles; 2021 [cited 2023, Oct 20]. Available from: https://www.dedoose.com/home

22. Krueger RA, Casey MA. Focus groups: a practical guide for applied research. 5th ed. London (UK): SAGE Publications, Inc; 2015. 258p.

23. Mertler CA. Introduction to educational research. 3rd ed. Thousand Oaks (CA): SAGE Publications, Inc; 2021.440p.

24. Kurki P, Korhonen M, Honkalampi K, et al. Patients' multifaceted views of dental fear in a diagnostic interview. Acta Odontol Scand. 2021 Apr; 79(3):194-204.

25. Wang MC, Vinall-Collier K, Csikar J, Douglas G. A qualitative study of patients' views of techniques to reduce dental anxiety. J Dent. 2017 Nov; 66:45-51.

26. Yuan S, Freeman R, Hill K, et al. Communication, trust and dental anxiety: A person-centered approach for dental attendance behaviours. Dent J (Basel). 2020 Oct; 8(4):118.

27. van der Zande MM, Exley C, Wilson SA, et al. Disentangling a web of causation: An ethnographic study of interlinked patient barriers to planned dental visiting, and strategies to overcome them. Community Dent Oral Epidemiol. 2021 Apr; 49(2):144-57.

28. Calladine H, Currie CC, Penlington C. A survey of patients' concerns about visiting the dentist and how dentists can help. J Oral Rehabil. 2022 Apr; 49(4):414-21.

29. Armfield JM, Stewart JF, Spencer AJ. The vicious cycle of dental fear: Exploring the interplay between oral health, service utilization and dental fear. BMC Oral Health. 2007 Jan; 7:1.

30. Gupta A, Ahmed B. Experience of listening to music on patient anxiety during minor oral surgery procedures: a pilot study. Br Dent J. 2020 Jan; 228(2):89-92.

31. Karan NB. Influence of lavender oil inhalation on vital signs and anxiety: A randomized clinical trial. Physiol Behav. 2019 Nov; 211:112676.