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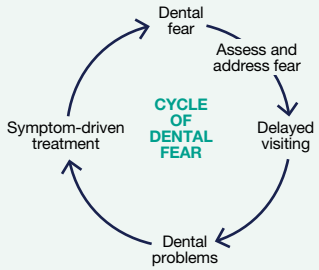
Breaking the dental fear cycle

by **Professor Zac Morse**
BDS, BScDent(Hons), GradDip(Sed)/(Endo), CertAdvOrtho, PhD
Professor of Oral Health, Auckland University of Technology

I. Introduction

1. Definition of Dental Anxiety

Dental anxiety(DA) is a complex psychological problem that describes feelings of fear, worry, nervousness, or unease associated with dental settings or procedures.[1]



The terms dental fear, anxiety, and phobia are often used interchangeably, but they have distinct differences:

Dental fear:
This is an emotional reaction to a known, specific dental-related stimulus (danger or threat), characterised by a "fight-or-flight" response.[2]

Dental anxiety:
DA is a more intense emotional state of apprehension or worry that can lead to avoidance of dental care. This negative feeling is more anticipatory and is less about the actual pain from dental procedures and more about the fear of experiencing pain, i.e. the fear of fear.[2]

Patients with DA may be able to tolerate dental care with some difficulty, but they may avoid it altogether if possible.

Dental phobia:
This is an intense and persistent irrational fear of dental treatment that can lead to complete avoidance of dental care (i.e. the danger), even when experiencing severe pain or dental problems and is the most severe form of DA. People with dental phobia have an irrational and intense fear of the dentist that can lead to panic attacks and avoidance behaviour. They may not be able to see a dentist at all, even when they are in pain.[3,4]

Fear	Anxiety	Phobia
Mild	**Moderate to severe**	**Severe**
May feel some nervousness	May experience sweating, nausea, or panic attacks	May experience full-blown panic attacks
Usually able to tolerate dental care	May avoid dental care if possible	May not be able to see a dentist at all

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2. Prevalence of Dental Anxiety in New Zealand and Globally

DA is a common issue, with approximately one in eight (13.3%) New Zealanders being affected by DA, which is almost the same as the global estimate (13.8%).[5,6] The global prevalence of DA varies across different age groups. In children, the overall pooled prevalence of DA is approximately one in four (23.9%) children affected.[7]

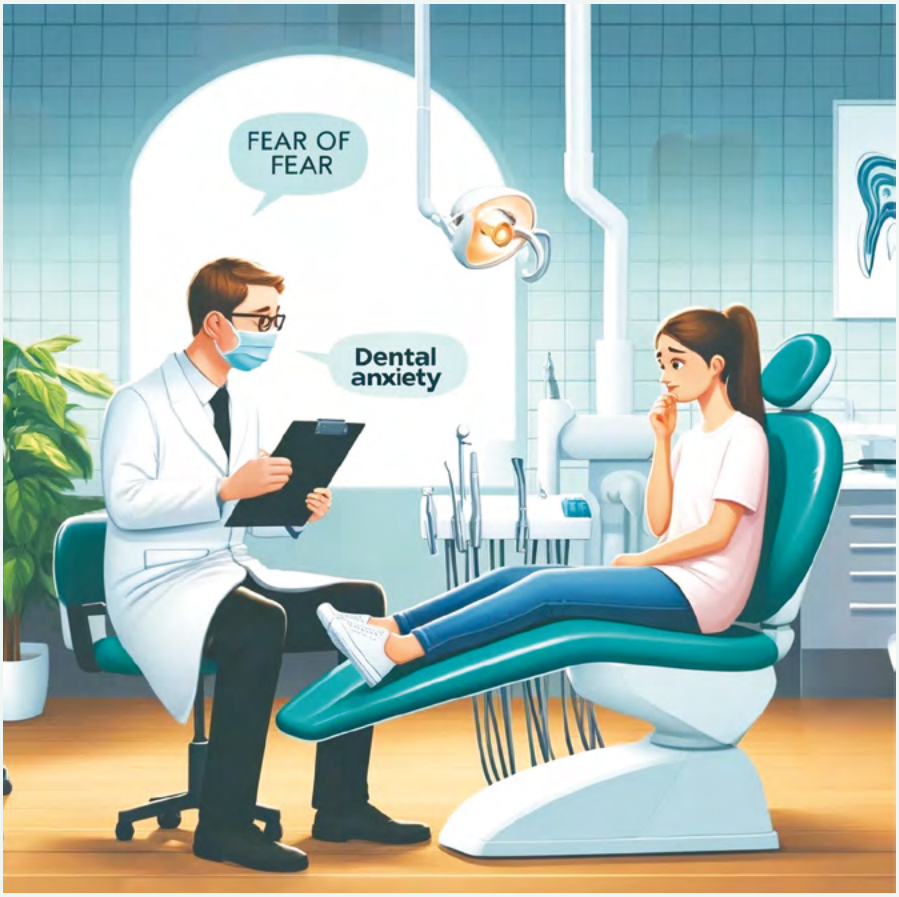
DA has been recognised as a worldwide public health concern and the fifth most common anxiety.[2]

3. Significance of Addressing Dental Anxiety: Impact on Society and Economic Burden on the Healthcare System

DA has a significant impact on society, affecting individuals of all ages. In children, DA that is not adequately managed or leads to actively avoiding treatment can have negative academic consequences due to missed school days and decreased concentration, affecting educational achievements and future societal contributions.[8,9] Social interactions and self-esteem are also negatively affected, influencing children's psychosocial development and societal integration.[10] Furthermore, parents and caregivers can experience increased stress, further amplifying the societal impact.[11] In adults, DA can lead to reduced productivity due to work absences that could have been prevented with regular care.[12]

DA not only affects individuals and society but also places a significant burden on the healthcare system. People with DA are more likely to avoid regular dental check-ups and preventive care, leading to more severe dental problems that require more extensive and costly treatments.[12]

This increased need for complex treatments and the higher likelihood of emergency dental visits contribute to increased healthcare costs and strain on the system.



II. Epidemiology of Dental Anxiety in New Zealand

DA has been found to be higher among individuals who visit the dentist episodically and those without a recent dental visit, suggesting that DA is associated with lower frequencies of dental care engagement.[13,14] The Dunedin Study is among the few investigations that track changes in DA over time. Caries experience by age 5, higher dental caries experience by age 15, tooth loss between the ages of 26 and 32, and negative emotionality are associated with higher DA.[15] The most recent national oral health survey conducted in 2009 found that DA was higher in females, European/Other ethnicities, those residing in the most deprived neighbourhoods, and those less likely to have visited the dentist in the last year. Conversely, those in the oldest age group had lower DA.[5] Understanding the risk factors contributing to DA could help prevent its development.

III. Causes of Dental Anxiety

There isn't a single cause for DA; therefore, the causes of DA may differ from person to person. The causes of DA are multifaceted, including previous experiences, psychological predispositions, and cognitive perceptions, i.e. a combination of nurture (exogenous) and nature (endogenous). The fear of pain can result from direct experiences or the anticipation of discomfort associated with dental procedures. Another significant factor is the fear of blood or needles, which can trigger profound anxiety responses in some individuals.[16] The environment of the dental clinic itself (i.e. sights, smells, sounds) can also play a role, especially if it evokes a sense of unfamiliarity or discomfort.[17] Recent studies have increased our understanding of the role of peoples' disgust sensitivity in DA, which can be more significant than pain sensitivity.[18] Neurodevelopmental disorders such as alexithymia, where individuals have difficulty identifying and expressing their feelings, have been positively associated with the development of DA.[19] A lack of trust in dental professionals, the fear of the unknown, or the fear of losing control during dental procedures can exacerbate feelings of anxiety.[4,20] Adding to the complexity is the fact that while DA can be caused by non-cognitive factors such as past traumatic dental events, it can be adversely mediated by cognitive factors such as the patient's subjective perceptions of a lack of control.[38]

IV. Symptoms and Manifestations of Dental Anxiety

1. Cognitive:

Cognitive manifestations of DA often include negative thoughts and catastrophising. Patients may envision the worst possible outcomes, exacerbating their fear and avoidance behaviours.[16]

2. Emotional:

Emotional responses to DA typically involve intense feelings of fear, panic, and helplessness. These emotional reactions can be overwhelming and lead to significant distress during dental visits.[16,3]

3. Physiological:

Physiological manifestations include increased blood pressure, heart rate and respiration, sweating, trembling, and other stress-related physical responses. These symptoms are indicative of the body's fight-or-flight response being triggered in anticipation of dental procedures.[21]

4. Behavioural Symptoms:

Behavioural symptoms of DA include avoidance of dental appointments, frequent cancellations, and uncooperative behaviour during dental visits. These behaviours can lead to deterioration in oral health due to neglect. [22]

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V. Impact of Dental Anxiety

1. Effects on Patients

DA significantly impacts patients' oral health and overall quality of life. Patients with DA often delay or avoid dental visits. This avoidance behaviour, results in deteriorating oral health (caries experience and periodontal status) over time, making patients more difficult to treat when they do attend by necessitating more complex and costly treatments, which in turn can lead to heightened DA. This vicious circle is known as the Dental Fear Cycle. DA not only impedes access to routine dental care but also manifests broader psychosocial impacts, including poorer oral health-related quality of life, low self-esteem, and potential social withdrawal due to embarrassment or fear of judgment related to dental conditions.[15,5]

2. Impact on Dental Professionals and Dental Teams

The other side of this issue that is far less examined and understood is the effect of patient DA on the dentist and the dental team. Patients with DA are perceived to be difficult, unreliable, and often complaining excessively. Treating these patients may irritate, frustrate, or anger the dental team. These patients can also be considered to be time-consuming and unprofitable. [23]

Anxious patients who demonstrate hostility towards the dentist often lead to challenging patient-dentist relationships.[24] This perceived hostility may be a way that patients can psychologically cope with their DA. Careful assessment needs to be made of patients with negative attitudes or passive-aggressive behaviour, as it may be that they are displaying a coping mechanism. Previous research from 2008 found that the top stressors reported by New Zealand dentists included: treating difficult children; coping with difficult patients; and treating extremely nervous patients.[25]

Dentists who have reported more challenging patient encounters have also reported a lower quality of life,[26] and New Zealand dentists who receive patient complaints can find these stressful experiences.[27]

DA not only jeopardises the dental care experience but may also affect the clinical result, as anxious patients may not cooperate fully during procedures, thereby challenging the dentist's ability to perform with precision.[28]

While DA may create challenges for dentists, treating anxious patients can also be viewed as an opportunity to make a positive and meaningful contribution to the community.[23]

VI. The "Murder House" in New Zealand Dental History

The term "murder house" is unique to New Zealand and remains a cultural memory of the past school dental service and clinics. The term refers to the traumatic experiences of children who underwent fillings without local anaesthetic, resulting in inadequate pain and anxiety control. [29] "The Murder House" has been portrayed in a short film of the same name and is available online.[30]

VII. Measuring Dental Anxiety

Over 20 DA measurement tools or scales have been reported in the literature. [31] There is no universally accepted gold standard, and their use in practice is very low; e.g. only 3.7% of Australian dentists use one.[32] A single-item 10-point visual analogue scale where zero indicates no fear and 10 equates to the maximum fear imaginable can be used to quickly and easily assess a patient's anxiety. While this provides information about the patient's global level of anxiety, it does not provide comprehensive information related to the multifaceted aspects of DA.

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How would you rate your fear of dental treatment?

The Index of Dental Anxiety and Fear (IDAF-4C+) has been validated in NZ adults.[13] It comprises three sections. The first section has 8 questions assessing DA and fear, the second has 5 questions on phobia and avoidance, and the third assesses specific stimuli or triggers. Interestingly, in the last section, one question asks the extent to which the cost of dental treatment makes the patient anxious.

VIII. Treatment of Dental Anxiety

DA can be managed through both psychotherapeutic and pharmacological approaches or a combination of the two. The goal of these interventions is to help individuals better cope with their anxiety, reduce their fear response, and ultimately enable them to receive necessary dental care.

1. Nonpharmacological Interventions for Dental Anxiety

Psychotherapeutic approaches aim to address the psychological factors contributing to DA with the goal of curing the underlying anxiety. These methods focus on modifying thought patterns, beliefs, and behaviours associated with the DA.

A meta-analysis of cognitive behavioural therapy interventions (CBT) found a significant reduction in DA in adults.[33] Even though these evidence-based treatments exist, they have not been widely adopted for various reasons. One reason is the investment required for this kind of intervention. In a UK study, an average of five psychologist-led cognitive behavioural therapy appointments were required before a patient could receive dental treatment without sedation.[34] Single-session (one-hour) technology-based interventions are showing promise. [35]

Newton et al. have proposed a model of DA management that involves the objective assessment of DA and intervention strategies corresponding to the assessed DA level.[36] Low levels of DA can be managed with nonpharmacological techniques, including rapport-building, voice modulation, distraction techniques, behavioural modelling, memory reconstruction, enhancement of personal control, cognitive distraction, and environmental modifications. Individuals with moderate DA can be given information on three aspects of the treatment.

1. Information about what will happen (procedural information),

2. Information about what sensations the individual will experience (sensory information), and

3. Information about what the individual can do to cope with the situation (coping information). Individuals with high DA but do not require urgent treatment should be provided with psychological therapy such as CBT. Patients with high DA requiring urgent care can be provided with pharmacological interventions, e.g., sedation.

2. Pharmacological Treatments

On the other hand, pharmacological approaches involve the use of medications (almost exclusively sedatives) to manage DA. Particularly for urgent and invasive treatments, a combination of both psychotherapeutic and pharmacological approaches may be most effective, where sedation is provided first with subsequent psychological support. As the pharmacological management of DA does not address the underlying

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causes, it unfortunately does little to reduce DA for subsequent visits or avoidance, and if it is not available for their next visit, it may increase distress.[37]

It has been recommended that nonpharmacological methods of managing DA should be considered first as a long-term solution for treating DA.[40] The specific approach to managing DA should be tailored to the individual's needs, preferences, and the severity of their anxiety.[1,39]

IX. Comparison with Pharmacological Treatments

The willingness to pay for dental fear treatment and its social desirability is a complex issue influenced by various factors, including the effectiveness of treatment, patient outcomes, and broader societal benefits. Initially, it's important to note that before treatment, only a minority of patients are willing to pay the actual cost of dental fear treatment, i.e. a fear of the fear treatment. However, post-treatment, a significant majority express willingness to pay, indicating a change in perception once the benefits of treatment are experienced firsthand. This suggests that many patients undervalue the treatment's benefits before experiencing them, highlighting a gap between perceived and actual value.[41] Brief yet effective psychotherapeutic interventions that can help avoid the need for intravenous sedation can provide significant cost savings to the healthcare system.[42]

An issue with Newton's approach to deciding if sedation should be utilised is that management is based on the patient's objective level of anxiety and not necessarily on what they wish, i.e. it lacks a patient-centred perspective.

Pharmacological sedation is a valuable method that aids in managing anxiety and can provide much-needed, temporary relief. In contrast, psychological techniques offer the possibility of complete recovery and the ability to manage future appointments independently.[43]

X. Importance of Shared Decision-Making, Personalised, and Holistic Treatment Approaches

Informed consent and shared decision-making are essential components of a personalised and holistic approach to treating DA. By engaging patients in open discussions about their fears, treatment options, and potential outcomes, dental professionals can empower patients to make informed decisions about their care, which creates a sense of control and trust in the patient-provider relationship. As oral health practitioners, we are required to take a holistic approach that is all-inclusive and requires consideration of the patient's psychological situation and their desired outcomes.[44]

"The willingness to pay for dental fear treatment and its social desirability is a complex issue influenced by various factors, including the effectiveness of treatment, patient outcomes, and broader societal benefits."

XI. Implications for New Zealand Dentistry

1. Training and Education for Dental Professionals

Dental education programs should incorporate comprehensive, holistic training on identifying, assessing, and managing DA using pharmacological and nonpharmacological approaches. This training should be provided at the undergraduate, postgraduate, and continuing professional development levels to ensure dental professionals have sufficient knowledge and skills to manage DA effectively upon graduation and throughout their careers.

2. Assessing Dental Anxiety and Referring to Specialized Care

DA should be systematically and objectively assessed using validated tools. If a patient scores 5 or more on the 0 to 10 visual analogue scale, an additional multidimensional DA questionnaire, such as the IDAF-4C+, should be administered to help understand specific anxiety-inducing stimuli and triggers. Where high levels of DA are coupled with a long absence from dental care (>2 years), dental professionals should consider referring patients to appropriate mental health professionals.[45]

3. Collaborative Efforts Between Dentists and Mental Health Professionals

As DA lies at the interface of psychology and dentistry, neither profession has adequately addressed it.[46] A lack of historical collaboration and even a perception of having little in common can produce uncertainty about why and how these professions could work together, with some cynicism regarding psychology and dentistry as a natural pairing.[46] Establishing a network of trusted mental health professionals and developing a streamlined referral process can facilitate a collaborative approach to managing DA, helping patients overcome their anxiety, improve their oral health, and establish a more positive relationship with dental care.

4. Public Awareness and Patient Education Initiatives

Developing and implementing public awareness campaigns and patient education programs is essential to help individuals with DA seek necessary dental care and promote oral health in the community. These initiatives should focus on an increasing understanding of DA and its management options.

XII. Conclusion

Unlike other anxiety disorders, oral health professionals are usually the first point of contact and the ones to identify DA or phobia in patients initially. This unique position emphasises the importance of dental professionals being well-equipped to recognise, assess, and manage DA using a holistic approach combining pharmacological and nonpharmacological interventions. By proactively addressing DA, the dental profession can significantly improve patient experiences, oral health outcomes, and the overall well-being of patients and the dental team while reducing the burden on the healthcare system.

XIII. Future Directions for Research and Clinical Practice

More research is needed on DA in various dental specialties and the unique stressors dental specialists face.[46,47, 50]

As technology advances, innovative approaches like virtual and augmented reality may increasingly be used to manage DA, particularly as distraction or desensitisation therapies. The integration of artificial intelligence could reduce the dependence on healthcare professionals in delivering these interventions, potentially leading to the emergence of “digital therapists.” [49]

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BIOGRAPHY

Professor Zac Morse, BDS, BScDent(Hons), GradDip(Sed)/(Endo), CertAdvOrtho, PhD
Professor of Oral Health, Auckland University of Technology

Prof Morse's research interests are diverse, with formal training in dental pain and anxiety control from Australia and Japan. His focus has evolved from managing dental pain and anxiety to addressing the underlying causes, exemplifying the importance of interdisciplinary collaborations to understand and resolve complex issues.