



Farooq Ahmed

Imran A Quddus, Mohammad O Sharif and Khaleel Ahmed

# Dental Anxiety: Understanding is the Key to Effective Management

**Abstract:** Dental anxiety (DA) is a common problem; the latest Adult Dental Health Survey (UK) reported nearly half of the adult population experienced anxiety when visiting the dentist. Given individual differences in the experience of dental anxiety, it is important for the dentist to understand its development, detection and management. This article aims to provide an overview of the main psychological theories to explain the development of dental anxiety (behavioural, psychoanalytical and cognitive), as well as an overview of anxiety detection and management techniques from a psychological perspective.

**CPD/Clinical Relevance:** Dental anxiety is a common barrier to oral healthcare, with nearly half of the UK population affected. By understanding its causes, effective management can reduce anxiety, and therefore barriers to achieving high standards of oral health can be overcome.

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Dental Anxiety (DA) affects nearly half of the adult population in the UK,<sup>1</sup> and has been defined as distress or uneasiness of mind caused by fear of danger or misfortune: importantly this is different from phobia which is irrational fear that leads to compelling desire to avoid the situation.

Historically, anxiety associated with dentistry has been related to the expectation of pain.<sup>2</sup> However, despite advances in pain control, DA management techniques and the advent of 'preventive

dentistry' (that should now form the core of modern day treatment plans), DA is still a significant barrier to dental care for an unchanged proportion of the population.<sup>3-7</sup> Moderate to severe dental anxiety affects 75% of 12-year-olds and 49% of adults.<sup>1,8</sup> Individuals who are dentally anxious innately avoid dental care; 41% of irregular attendees attribute their attendance patterns to DA.<sup>6</sup> Consequently, clinicians experience on average two weeks of failed attendance per year due to failed appointments.<sup>9</sup>

The effects of DA extend to an individual's general wellbeing; one report has shown that it causes sleep disturbance, negative thoughts and feelings of low self-esteem and confidence.<sup>10</sup>

Understanding how DA develops can inform its management and help decrease the likelihood of cancellations, missed appointments and irregular attendance.<sup>11-12</sup>

The purpose of this article is to provide the reader with an overview of common DA theories, detection of DA, and management through psychological methods. Common and straightforward examples are presented, relevant to GDPs.

## Development of dental anxiety

The development of dental anxiety pertains to three prominent theories:

1. Behavioural;
2. Psychoanalytical; and
3. Cognitive anxiety.

### Behavioural anxiety

This theory is based on learning; it proposes that anxiety is a learned response to certain situations. There are two principal processes attributed to the development of behavioural anxiety: direct conditioning and vicarious learning.

### Direct conditioning

An unscheduled traumatic event occurs when an individual's immediate environment becomes unpleasant. Connections are made between things that are not harmful and those that have caused the pain.<sup>12</sup> Therefore, in future, the anxiety elicited by the traumatic event can be triggered by any sensory stimulus (eg sight, smell, etc) associated with the unscheduled traumatic event.

An example of this is a patient

**Farooq Ahmed**, BDS(Hons), MFDS RCSEdin, MSc, MOrth RCSEng, Post CCST Orthodontics, Barts and the London Dental Hospital, (farooq.ahmed@postgrad.manchester.ac.uk) **Imran A Quddus**, BDS, MFDS RCSEdin, Oral and Maxillofacial Surgery Specialty Doctor, Oral and Maxillofacial Surgery, Chorley and South Ribble Hospital, Lancashire, **Mohammad O Sharif**, BDS(Hons), MSc, MJDF RCSEng, MOrth RCSEdin, Post CCST Orthodontics, Eastman Dental Institute, London and **Khaleel Ahmed**, MPH, Medical Student, University of Manchester, Manchester, UK.

attending a routine dental appointment, which develops into a painful restoration (unscheduled traumatic event). Next time the patient attends for a routine dental appointment it may lead to a heightened level of anxiety at merely sitting in the dental chair (conditioned stimuli). This is known as direct conditioning.<sup>13</sup>

Direct conditioning is an important factor in the development of DA. Research shows that well over half (68%) of patients with dental anxiety acquire it through conditioning (Figure 1)<sup>14</sup>

**Vicarious learning**

This process describes how feelings of anxiety are acquired through observation, identification or indirect suggestion by family members, peers and role models.<sup>15</sup> A common dental example is school children teasing each other and telling frightening stories regarding the dental setting and the instruments used by the dentist. This can lead to the build-up of anxiety about visiting the dentist which will surface at the thought of this activity without necessarily any direct experience. Twelve percent of patients with dental anxiety have been shown to trace the anxiety back to vicarious learning.<sup>16</sup>

**Psychoanalytical**

Freud, from his clinical observation, suggested that early childhood experiences determine adult behaviour. Therefore, feelings associated with childhood experiences were transferred to other situations when the two situations had elements in common. This resulted in a misunderstanding known as 'false connections', in which feelings associated with the original situation were displaced onto another.<sup>17</sup>

A patient may stay away from the dental setting for many years due to bad experiences in childhood. Examples include waking up with blood in the mouth after a general anaesthetic, or receiving restorative treatment with insufficient local anaesthesia. These unpleasant experiences often transfer onto other situations such as seeing blood or having dental instruments in or near the mouth.

**Cognitive**

This theory proposes that anxiety

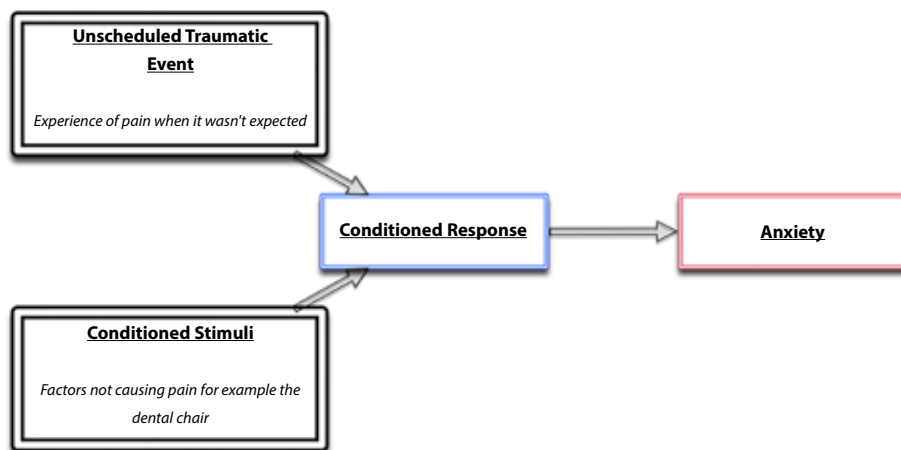


Figure 1. Diagrammatic development of direct conditioning.

Physical signs of anxiety	Anxious patient response	Non-anxious patient response
Sweating	Hyperhidrosis	No change
Breathing pattern	Shortness of breath	No change
Eye contact	Avoidance or excessive (staring)	Normal
Posture	Sit upright or leaning backwards	Lean forward
Rigidity	Rigid	Relaxed, non rigid
Body position	Generally closed body position. Crossed legs or ankles, folded arms	Generally open body position, knees slightly apart
Body focused movements	Adjusted clothing, scratched facial area (chin, forehead), stroked hair, touched legs and stomach, rubbed hands	None
Head nodding	Some side to side head movements. Fewer positive head nods	More positive head nodding

Figure 2. Physical signs of anxiety.<sup>24-26</sup>

develops when an individual's thought processes about future events are negative or when the potential negative consequences of the events are overestimated.<sup>18</sup> In addition, this theory accounts for anxiety that arises when individuals do not know what to anticipate, ie fear of the unknown.<sup>19</sup>

Individuals expecting pain from dental encounters are generally more likely to be anxious. This can lead to a greater intensity of pain experienced in the dental setting<sup>20,21</sup> and consequently individuals may avoid future dental treatment, a behaviour

which propagates negativity and reinforces the original idea of pain association.<sup>20,22</sup> For example, a patient who had not attended a dentist for over 20 years, because 'everything goes wrong',<sup>23</sup> the principal evidence for this was based on a friend's experience of a 'bad injection'.

**Detection of dental anxiety**

In a large number of cases, clinical impression alone will alert the clinician to the presence of anxiety. Physical signs of

anxiety are clear and are listed in Figure 2.<sup>24–26</sup> Subjective assessment of anxiety by the clinician relies on the refined communication skills of the dentist. This method of determining anxiety levels has been shown to be equally successful to the use of formalized questionnaires, when the clinician has an understanding of the psychological causes of anxiety.<sup>27</sup>

#### Detecting anxiety in adults

For adults, the Modified Dental Anxiety Scale (MDAS)<sup>27</sup> is a brief five item questionnaire which can be used pre-assessment to identify patient anxiety levels (Figure 3).<sup>28</sup> The reliability and validity of the MDAS has been proven, with most patients finding it quick and easy to complete.<sup>29,30</sup> MDAS also acts to alert the dentist to the presence and extent of anxiety, and therefore allows treatment to be managed appropriately.<sup>9,31</sup>

#### Detecting anxiety in children

In children, picture tests such as the Venham Picture test<sup>28</sup> can be used, where children can indicate their level of anxiety by picking out or pointing to a picture that

illustrates their perceived emotion<sup>32</sup> (Figure 4). The images commonly used are faces with a value of 1–8, with 8 representing higher dental fear. The Venham Picture Test has been shown to be a reliable and valid measure of DA in children aged 8–12 years.<sup>32</sup>

### Management of dental anxiety

Dental anxiety management techniques have been well reported<sup>33,34</sup> and can be divided into two main categories:

1. Pharmacological; and
2. Non-pharmacological.

These techniques aim to instil a positive attitude to dentistry.<sup>35</sup> Success at resolving anxiety in patients can be improved by clinicians having an understanding of the theory behind each individual's anxiety, as this will govern the decision of the most appropriate management technique.<sup>36</sup>

The following section on management will not be exploring the traditional management techniques associated with DA (eg tell show do, sedation, etc.) but will aim to explain as an overview from a basic psychological perspective the management of the previously discussed anxiety theories.

#### Behavioural anxiety

To alleviate this common form of anxiety two main principles exist:

1. Latent inhibition; and
2. Result evaluation.<sup>15,37</sup>

#### Latent inhibition

Latent inhibition is defined as: 'a measure of reduced learning about a stimulus to which there has been prior exposure (of negative consequences) without any consequence.'<sup>38</sup> In this management technique the 'conditioned stimulus' is experienced several times without the 'unscheduled traumatic event', in order that the association of the paired events is weakened, lessening the feelings of anxiety. For example, after a painful experience in the dental chair, sitting in the dental chair several times without having any painful stimulus could weaken the association of the dental setting with anxiety (Figure 5).

#### Result evaluation

Result evaluation refers to the process of literally evaluating the 'result' of the event ('conditioned stimulus' and an 'unscheduled traumatic event') and where the patient decides whether the result is a favourable outcome, outweighing the anxiety experienced. If so, the feeling of anxiety is changed by the knowledge that such an experience results in a greater good. For example, a patient requiring extensive dental treatment to obtain a stable dentition may overcome the associated anxiety in order to have a healthy dentition, ie the greater good (Figure 6).

#### Psychoanalytical therapy (psychodynamic psychotherapy)

The aim is to provide patients with successful coping strategies in times of stress through the insight of the subconscious conflicts maintaining their problems.<sup>39</sup> This method involves establishing a good rapport with patients and utilizing various strategies to carry out the treatment.<sup>40</sup> Strategies include analysing the current issue and: exploring childhood memories, analysing defensive characteristics, facilitating the patient in transferring the subconscious negative notions from themselves to the clinician (known as transference).<sup>41</sup> In the example of having anxiety of dental instruments in or near the mouth, exploration of the childhood

#### Modified Dental Anxiety Survey

CAN YOU TELL US HOW ANXIOUS YOU GET, IF AT ALL, WITH YOUR DENTAL VISIT?  
PLEASE INDICATE BY INSERTING 'X' IN THE APPROPRIATE BOX

1. If you went to your Dentist for TREATMENT TOMORROW, how would you feel?

Not Anxious  Slightly Anxious  Fairly Anxious  Very Anxious  Extremely Anxious

2. If you were sitting in the WAITING ROOM (waiting for treatment), how would you feel?

Not Anxious  Slightly Anxious  Fairly Anxious  Very Anxious  Extremely Anxious

3. If you were about to have a TOOTH DRILLED, how would you feel?

Not Anxious  Slightly Anxious  Fairly Anxious  Very Anxious  Extremely Anxious

4. If you were about to have your TEETH SCALED AND POLISHED, how would you feel?

Not Anxious  Slightly Anxious  Fairly Anxious  Very Anxious  Extremely Anxious

5. If you were about to have a LOCAL ANAESTHETIC INJECTION in your gum, above an upper back tooth, how would you feel?

Not Anxious  Slightly Anxious  Fairly Anxious  Very Anxious  Extremely Anxious

Each item scored as follows:

Not anxious	1
Slightly anxious	2
Fairly anxious	3
Very anxious	4
Extremely anxious	5

Total score is a sum of all five items, range 5 to 25: Cut off is 19 or above which indicates a highly dentally anxious patient, possibly dentally phobic

Figure 3. The Modified Dental Anxiety Scale (1995).<sup>26</sup>

memory of insufficient local anaesthetic, and its displacement to all dental instruments in close proximity to the patient, will give patients awareness of their subconscious conflict. By showing empathy, and discussing the hallmark features of effective local anaesthesia alongside patients' ability to have other implements near/in their mouths (for example, a toothbrush/fork), without anxiety, can help customize individual coping strategies.

**Cognitive**

Cognitive strategies involve reappraisal and restructuring of negative thought processes by exploring and challenging the value in the patient's life. Coping promotes patients to seek statements from people they trust which in turn helps patients cope with DA.

In the example given previously, concerning a patient who concluded 'everything goes wrong', the patient was challenged on the over-generalization, which was based on an injection around an inflamed site. It was explained to the patient that this would cause pain due to the heightened pressure in the vessels, and that this was necessary to remove the tooth. In addition, the patient was asked if he thought it was reasonable, on the basis of this event, to draw the conclusion that 'everything goes wrong'. After some time in thought, the patient realized that it was an irrational conclusion and that such a negative way of thinking would not be of help. Immediately after the session he had reduced his rating of the statement.

**Conclusion**

Dental professionals should have a working understanding of the development of DA in order to cater for patients' needs effectively. The use of an empathetic approach catering for the specific cause of anxiety and



Figure 4. Venham Picture Test, anxiety questionnaire for children, reliable from the age of eight.<sup>28</sup>

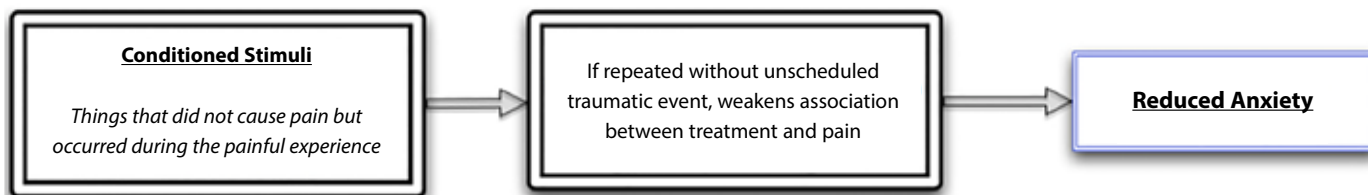
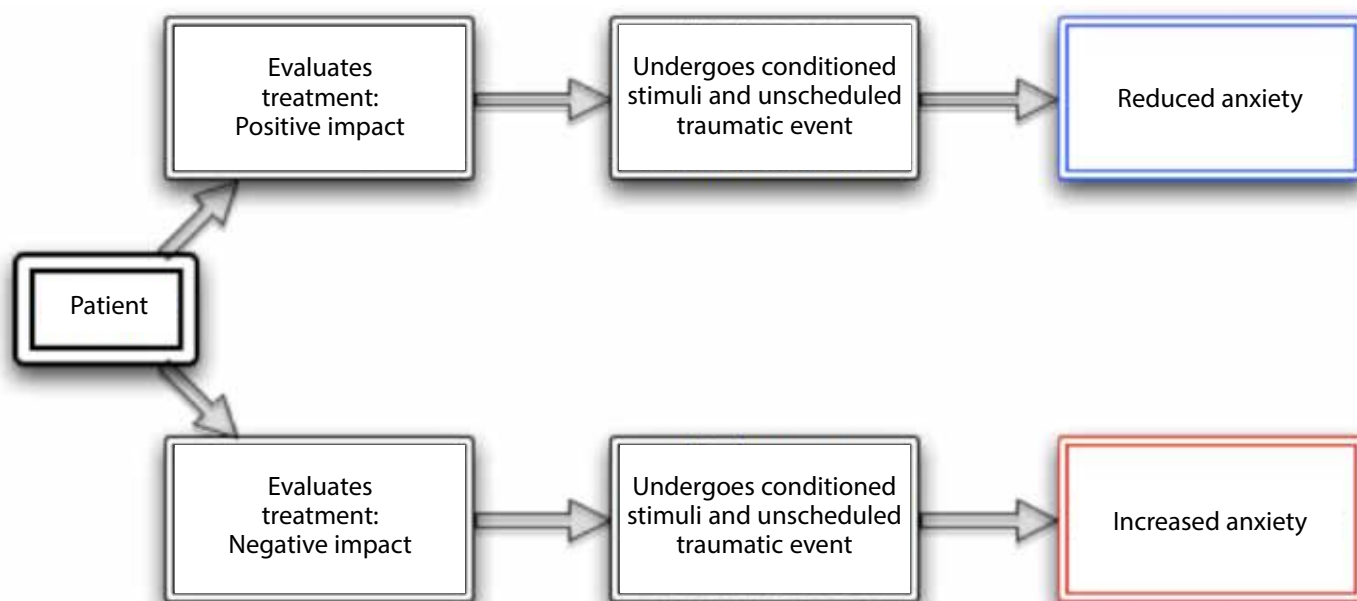


Figure 5. Management of Latent inhibition.





**Figure 6.** Management of result evaluation.

employing an appropriate management technique is more likely to result in treatment completion.

This article has highlighted the continual problem of DA experienced in a significant proportion of patients.<sup>5</sup> Behavioural sciences were only incorporated into the dental UK undergraduate programmes in 1997.<sup>42</sup> This would suggest that the majority of practitioners have no formal training of psychological aspects of DA development, detection and management. We have therefore provided an overview of the main theories attributed to the development of DA, techniques to detect and quantify anxiety, as well as an overview of the changes in thought processes required to help reduce the experiences of DA. We hope that the dental examples provided will allow the GDP to relate theory to practice.

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