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Abstract: Dental anxiety is common in adolescents and is associated with poor oral health status and worse oral health-related quality of life. As these patients move into adulthood, they may continue to be reliant on pharmacological approaches in order to cope with dental treatment and only attend when they have a problem. Managing anxious adolescents is also a source of stress for dental practitioners. This article describes how cognitive behavioural therapy (CBT) can be used to reduce dental anxiety in this group of patients.

Clinical relevance: This article provides an overview of cognitive behavioural therapy and gives practical guidance on how such approaches can be used with adolescents.

Introduction

In the UK, there are 7.4 million 10 to 19-year-olds, who make up 12% of the population. Approximately half (46%) of 15-year-olds have obvious dental caries experience and 10% of adolescents are reported to have severe dental anxiety¹. It can therefore be readily appreciated that dentally anxious young people with caries represent a large and challenging patient group. Dental anxiety is associated with poor oral health status (increased prevalence of decayed teeth and extracted teeth) and worse oral health-related quality of life^{2,3}. It is also associated with avoidance of dental care and compromised treatment decisions. For example, children with dental anxiety are more likely to have their treatment postponed, more likely to have restorative treatment without local anaesthetic and less likely to have dental radiographs⁴.

Treating children with dental anxiety can also have a significant impact on dental practitioners as it can be stressful, time consuming and has financial implications⁵. Dental practitioners may be reluctant to carry out dental treatment on anxious patients for fear of reinforcing their dental anxiety and consequently report being less satisfied with the quality of care they provide. These factors may result in children being referred to secondary dental care services and having to wait longer periods of time for their dental treatment⁶.

Dental anxiety that extends past adolescence is unlikely to resolve and may persist into adulthood with lifelong reliance on pharmacological approaches to *manage* dental treatment, rather than *reduce* dental anxiety. However, on the positive side, there is emerging evidence that psychological therapies can reduce a patient's dental anxiety in the long-term although the majority of studies have focused on adults⁷⁻⁹.

What is cognitive behavioural therapy?

Cognitive behavioural therapy (CBT) is a widely used evidence-based psychological intervention ('talking therapy') which is recommended by the National Institute for Health and Care Excellence for the treatment of depression, anxiety and phobias. It focuses on how thoughts, beliefs and attitudes affect feelings and behaviours and it helps patients to develop skills for dealing with their problems. Cognitive behavioural therapy is typically delivered by a CBT therapist but it can also be communicated via books or online resources with support, which is often termed 'guided self-help CBT'¹⁰. A recent Cochrane systematic review confirmed the effectiveness of guided self-help CBT in the management of a variety of anxiety disorders in children and young people from around the age of 6 years. It is therefore widely recommended that these easily delivered low intensity treatments should be offered as the first line of treatment, allowing psychologists to focus on more complex higher intensity work¹¹.

Use of CBT for dental anxiety with adults

Cognitive behavioural therapy has shown promising results in reducing dental anxiety in adults in terms of effectiveness, acceptability and longevity of results¹²⁻¹⁵. Different types of CBT interventions have been developed for dentally anxious adults in the UK including CBT delivered by dental nurses as well as psychologist-led interventions.

Use of CBT for dental anxiety with children and adolescents

Dentists employ a range of behaviour management techniques (including 'tell-show-do', stop signalling, modelling, graded exposure and systematic desensitisation) with children and adolescents to reduce their dental anxiety^{16, 17}. Whilst these basic psychological techniques may be adequate for adolescents with mild dental anxiety, additional psychological interventions, based on the principles of CBT, may be required for those with moderate or severe dental anxiety. There are

a variety of CBT interventions for this age group, which vary in their intensity and format, and these different approaches will be described in turn.

Psychologist-led CBT

Some patients will require CBT provided by a clinical psychologist, particularly those with very severe dental anxiety and/or co-existing mental health conditions (for example, attention deficit and hyperactivity disorder, depression, conduct disorders). In some countries, notably Sweden, psychologists provide face-to-face CBT or guided online CBT as part of a paediatric dentistry care pathway. A recent randomised controlled trial, the first of its kind for young dental patients, was undertaken in Sweden and compared 'normal' care with a course of online CBT guided by a psychologist. Thirty participants, aged between 7 and 18 years, were provided with a total of 10 hours of CBT, together with their parents and clinical psychologist. Sessions were held in dental clinics, and core activities included parental education, psycho-education for children, graded exposure to dental procedures through films and direct contact, cognitive restructuring and relaxation exercises. Dental treatment was then commenced alongside these sessions after a minimum of 6 hours of CBT. The key findings were significant reductions in child-reported anxiety and improved acceptance of dental treatment in the CBT group, which was still evident one year after the intervention. Furthermore, interviews with some of the children and parents revealed a universal positivity in attitudes and improved behaviours following the CBT approach. In the UK, the only NHS option for clinical psychology support for children with severe dental anxiety is through a referral to Child and Adolescent Mental Health Services (CAMHS). However, acceptance criteria state that only 'children and young people whose symptoms of distress and degree of social and/or functional impairment are severe' can access these services. As a result of exponentially increasing demands on CAMHS, long waiting times present a further barrier to the management of dentally

anxious children. Alternative, non-psychologist led interventions may therefore offer a more realistic and economic option.

Dental team-led CBT

For patients with less severe dental anxiety an intervention provided by a dentist or dental team member may be more appropriate. However, in the UK there are currently no dental team-lead CBT interventions for adolescents. Indeed, there are few reports in the wider literature of any examples of dentist-led CBT. Interestingly, a recent study conducted in Iran described how a 20-minute CBT intervention was developed for use with children aged 3-6.5 years¹⁸. The intervention, which was designed to be delivered by a dentist, contained elements of play, rapport-building, modelling, relaxation and changing cognitions. In a randomised study comparing the effectiveness of inhalation sedation, the CBT intervention and 'normal' care (control), it was found that both inhalation sedation and the CBT intervention significantly lowered anxiety with no difference found between them. However, the sample size was small with only 15 participants per group and it may be argued by some that the children were too young to fully engage in the level of cognitive processing necessary for CBT.

Guided self-help CBT

A number of self-help books for adolescents with dental anxiety have been produced based on the principles of CBT. However, it is only relatively recently that a self-help CBT resource, called 'Your teeth you are in control' has been specifically designed for delivery by dental practitioners. This resource, which is aimed at young people aged 9-16 years with mild to moderate dental anxiety, has been developed by a UK multi-disciplinary research group with input from adolescents, parents and dental team members to ensure the perspectives and needs of all stakeholders were taken into account. Alongside the guide for young patients, there are accompanying materials for parents and dental team members (Figure 1). The guide for young people encompasses three core areas:

- information on the dental team and basic procedures
- suggestions for coping tools and strategies that young people can use
- interactive activities including a 'message to dentist', a stop signal signed agreement, anxiety scores and self-reflection on how things went

[insert figure one]

A manual and online training package (www.lltff.com/dental) have been developed to support practitioners in the implementation of these resources; all materials are free. In a recent study, 48 new patients (aged 9-16 years) who attended a community dental service or a paediatric dental hospital in the UK were provided with this resource before treatment began. Ethical approval for the project was granted by NRES Committee York and Humber: Leeds West REC (13/YH/0163). At baseline, dental anxiety and health-related quality of life were assessed using the Modified Child Dental Anxiety Scale ¹⁹ and Child Health Utility 9D ²⁰. During two subsequent treatment visits the clinician and the young person, together with their parent, used the resources and worked to an agreed plan. At the end of the fourth visit, dental anxiety and health-related quality of life were re-assessed. Qualitative interviews were also used to explore acceptability and feasibility of the CBT intervention from the perspectives of adolescents, parents and dental team members. The use of the resource resulted in statistically significant reductions in dental anxiety and improvements in health-related quality of life. It was also received positively by patients, parents and clinicians. However, in order to provide high level evidence for the short and longer term effectiveness of this resource in reducing dental anxiety, future research is needed in the form of a randomised controlled trial.

Conclusion

In summary, there are great opportunities for increased use of CBT interventions to reduce dental anxiety in children and young people. In particular, there is a need for guided or self-help

approaches which do not require the services of clinical psychologists. However, further research is needed to evaluate the effectiveness, acceptability and longevity of the benefits of CBT in adolescents with dental anxiety.

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Figure 1: Self-help CBT resources for adolescents, parents and dental team members

