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Children's experiences following a CBT intervention to reduce dental anxiety: one year on

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Abstract

Objective: To investigate children's ongoing experiences of dental care and use of strategies to manage their dental anxiety following cognitive behavioural therapy (CBT).
Design: A child self-completed postal questionnaire.
Settings: Hospital, community and general dental practice.
Subjects: Questionnaires were sent to 44 children, aged 10-17 years who had been referred to specialist services due to their dental anxiety.
Intervention: Children had all previously received a guided CBT self-help intervention to reduce their dental anxiety and, on completion of treatment, had been discharged to their referring dentist. Questionnaires were sent out 12-18 months later to ascertain dental attendance patterns and application of any strategies learnt from the previous CBT intervention.
Results: 22 responses (50%) were received from 16 girls and 6 boys. 82% had subsequently accessed follow up care with a general dental practitioner and over half of these had undergone a dental procedure, other than a check-up. 91% reported feeling less worried about dental visits, than previously, and described a change in cognition, behaviours, and feelings that allowed them to manage their anxiety better.
Conclusions: CBT has positive immediate and longitudinal effects in reducing children's dental anxiety. The challenge of adopting this evidence-based approach within primary care settings remains.

Introduction

Cognitive behavioural therapy (CBT) is widely recognised as an evidence-based and acceptable approach for the management of a variety of anxiety disorders in children and young people.[1] A recent Cochrane review, including 41 paediatric studies, found CBT to be effective in 59% of cases, compared to a 16% natural remission rate in anxious children who had received no intervention.[2] As between 5 and 19% of children report distressing levels of anxiety[3] it is likely that CBT will retain its popularity as an early intervention. It can be delivered in many different formats: over single or multiple sessions; self-guided or with the support of a therapist/clinician; offered to an individual, group or family unit.[2] The overarching premise of CBT is that it seeks to help people acknowledge and identify their current problems and provides strategies to modify unhelpful thoughts, behaviours and feelings.[4] Within paediatric healthcare, CBT is frequently considered the first-line psychoeducational treatment for many behavioural and mental health conditions (in addition to anxiety) which may include: eating disorders; substance misuse, chronic fatigue syndrome and post-traumatic stress disorder. [5-7]

In contrast, the dental profession appears to have been slow to adopt CBT for the management of dental anxiety in children. Whilst there are many persuasive systematic reviews and meta-analyses to support the effectiveness of CBT in reducing dental anxiety in adults, there remains a paucity of child studies.[8] This is surprising given the high prevalence of paediatric dental anxiety, which affects an estimated 10% of children worldwide.[9] More recent data, from the 2013 UK child dental survey, cited 14% of 12-year-olds and 10% of 15-year-olds as having extreme levels of dental anxiety.[10] The negative impacts of having dental anxiety in childhood are well recognised, with the potential for lifelong dental anxiety, avoidance behaviours and poor oral health.[8,11] It is therefore encouraging to see a recent emergence of studies involving CBT for children with dental anxiety which have yielded some very positive findings. A qualitative paper, published by a multidisciplinary Swedish group, explored the experiences of dentally anxious 7-19 year olds following 4-15 sessions of CBT with a clinical psychologist.[12] The main theme to emerge was a 'perspective shift' which helped participants change their (negative) attitude towards dentistry and also enhance their personal capacity to cope with any dental procedures. The same team subsequently reported outcomes from a randomised controlled trial involving 30 dentally anxious young patients.[13] The key finding was that children who received CBT (with a trained clinical psychologist) made statistically significant improvements in their acceptance of dental treatment and a reduction in their anxiety levels compared to those receiving dental treatment without this additional psychological support. In recognition of the limited access to psychologist-led CBT, the authors of the present paper were the first to develop and evaluate a guided self-help CBT resource for the specific management of dental anxiety in children aged 9-16 years.[14] These resources, together with training videos, are free to access by patients, parents/carers and dental professionals (www.llttf.com/dental). In this study, 48 children received a minimum of three treatment episodes in a hospital or community setting, supported by the CBT resource (which includes: a 'message to dentist', agreed and documented stop signal, breathing exercises, coping strategies, gradual exposure, distraction tools, rewards and reflection). The main outcome was a significant reduction in self-reported dental anxiety scores, with 43 out of 48 (90%) children having successfully completed their course of dental treatment at the time of reporting.

Whilst the immediate benefits of CBT (in whatever format or frequency) are indisputable, the longer term outcome of maintaining any reduction in anxiety is less well supported. Indeed, the need for long-term follow up studies, involving larger cohorts, has been highlighted for both children and adults.[2,15] Nonetheless, evidence within the general paediatric CBT literature, seems to support some maintenance of anxiety reduction over time.[16] This outcome, however, is challenged by some researchers who suggest that childhood anxiety disorders may actually improve naturally over time without any intervention.[17] Furthermore, it is recognised that CBT alone may not account for long-term reductions in anxiety as children's self-efficacy, self-esteem and social support may all be important confounders.[17,18]

Longitudinal studies in the dental setting remain extremely sparse. However, recently, Berge and colleagues[19] explored the durability of effect following five sessions of group CBT for 67 Norwegian 10-16 year olds, in terms of managing their specific fear of an intra-oral injection. Following the CBT intervention, self-report general anxiety, specific intra-oral injection phobia, and avoidance behaviours, were all significantly improved. Importantly, these positive effects were maintained at one-year follow up. An important finding was that 70% of young patients had managed to accept an injection at their own dentist during the follow-up period, suggesting that they had maintained the positive behaviours and thoughts generated by the CBT intervention. The trial conducted by Shahnavaz and co-workers[13] also undertook a one-year review and found that 91% of the CBT group, compared to 25% of the 'usual care' group, no longer met the diagnostic criteria for dental anxiety.

Objective

The overall aim of the present study was to investigate children's ongoing experiences of dental care and use of strategies to manage their dental anxiety following previous exposure to cognitive behavioural therapy (CBT). As so little is known of how children, who have received an intervention for their dental anxiety, fare in the longer term, the authors of the current paper contacted the participants of their original CBT study, one-year after discharge from the dental hospital service.[14] This was part of an ongoing CBT service development and evaluation. The specific objectives of this follow up inquiry were to explore children's self-reported levels of dental anxiety, attendance patterns and treatment experiences in general dental practice following a previous CBT intervention. The premise was that subsequent attendance and acceptance of treatment in primary dental care would indicate maintenance of the CBT intervention in anxiety management. The group were interested to see if the young patients would draw on any of the coping skills, behaviours and attitudes learnt through their previous CBT exposure.

Study design and subjects

Data were collected via a self-completed brief questionnaire which was posted to children who had previously taken part in a CBT intervention study, for the management of their dental anxiety. Full details of the study, which was completed in 2015, have been previously reported.[14] The study received ethical approval from the NRES Committee York and Humber: Leeds West REC (13/YH/0163). At initial consent, participants were asked to indicate if they would be happy to be contacted again by the research team at some stage in the future. Forty four of the 48 original hospital patients (92%) gave specific written consent for this eventuality. A covering letter, which explained the reason for the follow up contact, together with a 6-item questionnaire, and a pre-paid

return envelope was mailed to these 44 participants in March 2017. A repeat questionnaire was sent out if there was no response after four weeks and all respondents were sent a thank you letter and £10 gift voucher in recognition of their contribution.

The questionnaire sought the following information using a tick box response format:

1. Which dentist had the participants gone to see once their treatment had been completed in the hospital/community clinic? (the same referring dentist, a different dentist, no dentist)
2. How many times had the participants been to see a dentist over the past year?
3. What treatment (if any) had the participants received at their dentist? (check-up, x-ray, clean and polish, fluoride varnish, fissure sealant, an injection, a filling, an extraction, root canal treatment, a brace)
4. How did participants now feel about going to the dentist, after their CBT sessions? (a lot less worried, a bit less worried, no different, a bit more worried, much more worried)
5. Did participants show or tell their dentist about the CBT guide that they had been provided with? (if yes, could they say what they did)
6. Did participants use the 'message to dentist' or any of the coping skills they had learnt to feel less anxious? (if yes, could they say what they did)

In addition, respondents were invited to complete a free text box with any additional comments about their experiences and feelings of going to the dentist.

Quantitative data were collated using the Statistical Package for the Social Sciences v24 (IBM® SPSS Statistics®) and simple descriptive analyses employed to describe the participants' characteristics and responses. Participants had a unique ID, allowing access to their previous anxiety scores, derived from completion of the 8-item Modified Child Dental Anxiety Scale (MCDAS; 8=minimum anxiety score and 40=maximum anxiety score) (Wong et al., 1988). The qualitative free-text responses were subject to simple thematic analysis by two independent investigators (HDR and ZM). Narratives were used to support and illuminate the quantitative data where appropriate.

Results

Participants' characteristics

Twenty two responses (50%) were received from 16 girls (73%) and 6 boys (27%), reflecting the same higher female to male ratio seen in the original study (Table 1). Their ages ranged from 10 to 17 years with a mean of 12 years. Two respondents (9%) identified as being from a Black and Minority Ethnic group and ten (45%) were from the two most deprived quintiles according to the Index of Multiple Deprivation. Table 1 provides further summary details of the respondents' profile compared to those included in the original CBT study[14], to illustrate that they were a representative sample. It can be seen that this follow up subgroup had similar mean self-report anxiety scores (MCDAS) to those found for the original study participants as a whole.

Follow up dental attendance and experiences

In the 12-18 months following completion of their course of treatment and discharge from the hospital service, the majority (N=15, 68%) had returned to the care of the original referring dentist in

a primary care setting; three (14%) had seen a different dentist, but four (18%) had not seen a dentist at all. On average, children and young people had visited a dentist 1.6 times (range=0-4) during this follow up period. Of those who did attend for a subsequent dental visit, ten (56%) had undergone a procedure (two reporting an injection in their gum) and the remaining eight (44%) had simply had their teeth 'looked at'. The majority of respondents reported feeling 'a lot less worried' (9, 41%) or 'a bit less worried' (11, 50%) about dentists following the CBT intervention,A few children (N=3) expressed a wish that they could still be seen in the hospital or community clinics where they reportedly felt more relaxed:

'If I had the choice, I would always come to Charles Clifford [the dental hospital] I still don't like going to my normal dentist' (P30, 13-year-old girl)

Reflections on dental anxiety
Children described how they now felt more relaxed about visiting the dentist including a reduction in anticipatory anxiety, although for some it was still an anxiety-provoking prospect.

'I now like going to the dentist' (P25, 13-year-old girl)
'I feel very comfortable going to the dentist now as I have braces and attend on a regular basis' (P46, 16-year-old girl)
'I am not as nervous regarding the build up to the appointment' (P4, 14-year-old girl)

However, two (9%) reportedly felt no different in terms of anxiety levels experienced at the dentist.

'I don't know why, its just when someone tells me I am going to the dentist I panic and just don't like it there' (P81, 15-year-old girl)

The prospect of an injection or needle was still highlighted by some as particularly anxiety-provoking.

'I'm still not 100% unafraid of injections, but the programme has helped me feel a little less worried (P80, 16-year-old boy)
'I am still very scared of needles!!!!' (P46, 16-year-old girl)

Application of previous CBT
Six children (27%) stated that they had specifically informed their dentist about the CBT resource they had been given.

'I shown them how it helps over the fear of dentists' (P25, 13-year-old girl)
'I told him about raising my hand for time out' (P56, 10-year-old girl)

Participants were able to describe in detail the various coping strategies that they now drew upon to help them manage their dental anxiety, which included: listening to music; stress balls; counting techniques; stop signals; better communication of their needs and seeking a detailed explanation of the treatment proposed.

'We got a rock from a beach, we went on holiday so that I could use it like a stress ball' (P50, 12-year-old girl)
'Mum has phoned [the dentist] and explained what keeps me calm' (P21, 15-year-old boy)
'I had my earphones in' (P30, 14-year-old girl)

It was encouraging to note that new learnt behaviours and cognitions were even having a beneficial effect for other family members.

'I feel confident about going to the dentist now and I am going to pass on what I've learnt to my little brother' (PC4, 10-year-old girl)

Therapeutic alliance

In addition to the above comments that expanded on the questionnaire items, respondents were asked 'is there anything else that you'd like to tell us?' This free text opportunity revealed the main theme of therapeutic alliance and its role in reducing dental anxiety.

The children were appreciative both of the CBT resource they had been provided with as well as the time that had been dedicated to them in overcoming their fears.

'I am so grateful for the care I received and how much time was dedicated to explaining things to me' (P30, 14-year-old girl).
'The guide you gave me really helped, I think everyone should be able to use these books because of how much help they give (P50, 12-year-old girl).

It was clear that having a good and trusting relationship with the dentist was paramount to overcoming dental anxiety. Children really valued an honest explanation of what was going to happen and a discussion of why treatment was needed. In contrast, feeling rushed or not listened to was reported to heighten their anxiety.

'Because I always knew what they were doing, when they explain it to you, its actually not so bad' (P50, 12-year-old girl)
'They told me everything they did before they did it, helped me understand why' (P19, 15-year-old boy)
'They dont explain anything to me, I feel like I'm being rushed' (P30, 14-year-old girl)

Discussion

Although this was only a simple service evaluation, it did reveal some surprisingly detailed insights into the ongoing experiences of dentally anxious children following a CBT intervention. The first point to highlight was the maintenance of positive thoughts, behaviours, feelings and active strategies which enabled better coping in the dental setting. It was evident, from their comments, that children had a greater insight into their own dental anxiety and had found new ways of articulating and self-managing it. The ability for some children to now accept an intra-oral injection in general dental practice was particularly encouraging. In retrospect, inviting some of the respondents to participate in a focus group would have provided greater insight into these new coping strategies and subsequent dental experiences. Such an approach would have also been beneficial in exploring reasons why some children had not subsequently seen a dentist, as it is not known whether this related to anxiety or other barriers.

The authors had concerns, however, that because the initial CBT and dental treatment provision was not in a 'real life' setting (being in a hospital or community service) children may cope less well on returning to general dental practice. Although there was some anticipatory anxiety about leaving the secondary care service, it was reassuring to observe a maintenance of anxiety reduction, which concurs with findings from other dental CBT studies.[13,19] Children had clearly adopted new cognitions and behaviours following their previous (successful) course of dental treatment, supported by the principles of CBT. It is well recognised that the use of sedation or general anaesthesia (GA) alone, to facilitate treatment for dentally anxious children, does not actually promote transferrable skills, or changes in attitudes and behaviours in the same way as a psychological intervention would do. Some of the participants had in fact required inhalation sedation as an adjunct to treatment, but this had been coupled with a CBT approach. In light of ongoing concerns about the high numbers of children requiring a dental GA, and indeed a repeat dental GA, it is evident that there is a systematic failure to address and manage this vulnerable group's dental and emotional needs. A dental GA is a quick fix and high-cost 'solution' which does little to reduce any underlying dental anxiety in the long term, and, indeed, may serve to increase it.[20] Referral of dentally anxious children, even for simple restorative treatment, within hospital and community dental services is one of the most common reasons cited for the referral.[21]

Furthermore, managing dentally anxious children can be a profound source of anxiety for the providers, as well as the children and their families.[22] Therefore, there would seem to merit in offering evidence-based approaches, such as self-help CBT, more widely within primary care settings. Investing time and resource to more appropriately manage children's dental anxiety, has to be the better strategy for the patient, their family, the dental profession and the wider NHS. But for this to occur, it is recognised that sufficient training and support must be put in place for primary care dental health professionals.

Alongside the benefits of CBT, this survey identified that the formation of a good therapeutic alliance, between the patient and dentist (therapist) is paramount. Children inferred that liking and trusting their dentist was very important in anxiety reduction. This positive interplay between the child and the therapist has also been highlighted in the general CBT literature as predicting a good outcome. Understandably, clinicians will vary greatly in their 'enjoyment' of treating children, but the basic acts of acknowledging and discussing a child's anxiety, telling them (truthfully) the treatment procedures involved, gaining their trust and giving them adequate time, are all inherent to successful outcomes.

This service evaluation has acknowledged limitations, the first of which is the low response rate (50%) and relatively small number of participants which raise obvious questions about reporting bias. It is conceivable that the non-respondents had a different perspective and may not have sought any follow up dental care at all. However, the respondents' characteristics, in terms of gender, MCDAS anxiety scores, ethnicity and social deprivation were representative of the whole group.[14] Greater participation could have been achieved through a telephone call to non-responders, rather than relying on them to complete a postal questionnaire. However, as the original ethics submission and consent process did not specify that participants may be contacted in the future by telephone, this was not an option. In retrospect, the research team did not support the participants as well as they could have on discharge. Although children were encouraged to show their subsequent dentist the CBT guides, and use tools such as the 'message to dentist' and signed agreements for stop

signals, this was not followed through by many of the respondents. Some voiced the opinion that they did not think their own dentist would be '*interested*' in the CBT guide. A better approach would have been to write to each referring practitioner (with a copy to the family to take to any dentist of their choice in the future) providing a detailed explanation of the CBT intervention and identified needs of each child. This would have given the dentist greater insight into the patient's dental anxiety and coping skills, and reassured the family that the specialist service had acted as their advocate. The practitioner could have been signposted to the on-line training videos and CBT resources which would have enhanced dissemination of the approach. Opportunities for the transfer of research knowledge to primary care should be maximised in future. Although there appears to be some maintenance of anxiety reduction at 12-18 months, authorities have suggested that a 'booster' session could be effective in the longer term. [18] Further work is needed to explore the need for this, and identify the most acceptable and cost-effective means of its delivery in the dental setting.

Conclusions

The use of a self-help CBT approach for dentally anxious children appears to be helpful in effecting a longer term reduction in anxiety as children are able to draw on coping strategies that have been taught by the dental team.

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Characteristics	Participants who responded to the one-year follow up survey	Participants included in the original CBT study
Number	22	48
Gender ratio of girls:boys	16 girls, 6 boys 2.7:1	33 girls, 15 boys 2.2:1
Mean age (range)	12 years (10-17)	12 years (9-16)
Respondents from an ethnic minority group	9% (n=2)	6% (n=3)
Respondents from the two most deprived quintiles	45% (n=10)	52% (n=25)
Mean MCDAS score at baseline T_0 and following CBT intervention T_1	T_0=25.4 (SD 6.5; range=15.0-35.0) T_1=18.4 (SD=6.2; range=10.0-31.0)	T_0=25.0 (SD=6.5; range=15.0-35.0) T_1=17.4 (SD=6.1; range=8.0-31.0)