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# Experiences of dental behaviour support techniques: A qualitative systematic review

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## Abstract

**Background:** Little is known about patients' or carers' reported experiences of dental care provided using dental behaviour support (DBS) techniques. Qualitative literature can provide unique insight into these experiences.

**Aim:** To explore and synthesize qualitative literature related to patient experience of dental behaviour support.

**Methods:** A PROSPERO-registered systematic review of qualitative articles was undertaken. Studies were identified through MEDLINE, Embase and PsycINFO. Abstracts were screened by two reviewers and data were extracted to summarize the qualitative findings included within them. A thematic summary approach was used to synthesize the qualitative data identified.

**Results:** Twenty-three studies were included. Studies primarily explored experiences of dental care of children by speaking to their parents ( $n=16$ ), particularly regarding paediatric dental general anaesthesia (DGA) ( $n=8$ ). Studies of adults' experiences of DBS ( $n=7$ ) covered a range of techniques. Nine studies explored broader dental care experiences and did not study specific DBS approaches. A thematic synthesis identified five themes applicable across the studies identified: Trust and the therapeutic alliance supporting effective care delivery; considered information sharing often alleviated anticipatory anxiety; control and autonomy-reduced anxieties; variations in the perceived treatment successes and failures of DBS techniques; and DBS techniques produced longer positive and negative impacts on patients beyond direct care provision.

**Conclusion:** Qualitative research has been under-utilized in research on DBS techniques. Care experiences of most DBS techniques outside of paediatric DGA are poorly understood. Building trust with patients and enabling autonomy appear to support positive patient-reported experiences of care.

PROSPERO Registration: CRD42022355953.

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## KEYWORDS

anaesthesia, cognitive behavioural therapy, dental anxiety, dental behaviour support, dental phobia, person-centred care, qualitative research, sedation

## 1 | INTRODUCTION

Dental care can be invasive, stressful and difficult to cope with. Many patients, adults and children, may need support to access and receive any dental care they require. Dental anxiety is highly prevalent, affecting over 15% of adults,<sup>1</sup> almost 24% of children<sup>2</sup> and can be a key barrier that prevents people from accessing and receiving dental care.<sup>3</sup> Other patient groups without dental anxiety require specific support to receive dental care such as pre-cooperative young children, autistic people and those with severe learning disabilities. Patients can be supported to receive dental care through numerous routes.<sup>4-8</sup> Dental behaviour support is an umbrella term used to describe any passive or active interaction with the patient, using specific techniques, to support patients' experience and acceptance of professional oral healthcare. DBS therefore promotes behaviours that enable acceptable oral healthcare, or prevents behaviours that inhibit acceptable oral healthcare and can be classified broadly as either communication-based, environmental, pharmacological or physical. As categorized by Mac Giolla Phadraig et al.,<sup>9</sup> specific examples include aromatherapy, systematic desensitization, physical stabilization, dental general anaesthesia (DGA) and sedation. Existing research from the BeSiDe (Behaviour Support in Dentistry) Group has highlighted the issues around variable terminology regarding DBS.<sup>10</sup> A consensus on terminology for specific techniques has only recently been formally agreed upon<sup>11</sup> to support standardization across clinical practice and research on DBS.

A vast number of studies have explored and compared different types of DBS techniques. Broadly, studies have explored either non-pharmacological (such as tell-show-do, or distraction<sup>12</sup>) or pharmacological approaches (broadly various sedatives<sup>13-17</sup>). Studies examining DBS techniques are typically trials (such as those summarized in systematic reviews) based on positivist epistemologies and quantitative outcome measures.<sup>18,19</sup> Across all trials of DBS techniques, there is very little emphasis placed on patient-reported outcomes, or on patients' or carers' satisfaction, experience and acceptability.<sup>9</sup> Rather, patient-reported outcomes tend to focus merely on anxiety and pain, using quantitative measures.<sup>19</sup> While typically reported pre-defined rating scales covering such domains offer value, they fail to explore the nuanced experiences patients undergo when engaging in DBS. The omission of patient perspectives therefore stifles a broader understanding of what ought to be considered effective and acceptable from a patient's perspective. Therefore, there is a need to incorporate patient-reported experiences into the development of future agreement on outcome measures. A review of the qualitative literature is an essential step in that process.

Dental care is typically episodic, but as complexity increases, the planning and delivery of care may involve multiple episodes of care or planning from multiple teams or individuals. A trial may look at whether treatment is completed using a type or types of DBS, but it may not study if such an approach was well received or traumatic for those involved. Why or how an approach is seen as suitable may not be fully gathered using quantitative studies alone. Indeed the (post) positivist approach will usually lead to a design adopting pre-selected and closed questions, stifling any genuine inductive exploration of experience. For example, paediatric general anaesthesia may allow for tooth extractions to be completed, suggesting the technique is effective. However, patients or parents may experience pre-treatment anxiety, or post-treatment stresses that may not be capturable within conventional study designs. We felt it was therefore necessary to explore experience of DBS to inform which measures are developed or selected for patient-centred outcome measurement.

An informal scoping process identified that there was primary research exploring experiences of dental care using different DBS Techniques, but no existing review had attempted to synthesize these data from different studies. Therefore, patients', parents' or carers' reported experiences of dental care delivery, especially in complex circumstances, had not been comprehensively studied. This review was part of a larger project, seeking to develop a Core Outcome Set (COS) regarding Dental Behaviour Support. The wider project has been registered on the COMET database (<https://www.comet-initiative.org/Studies/Details/2101>). This study aimed to bring elements of the patient or carer voice and stories of patients' experiences into the COS development process by undertaking a systematic review and synthesis of qualitative studies.

### 1.1 | Aim

The aim of this review was to identify, explore and synthesize qualitative literature related to patient experience of dental behaviour support. There were specific objectives related to this aim:

1. To describe the published qualitative literature that reports experiences of DBS.
2. To provide a qualitative synthesis of the key themes that captured patients', parents' and carers' experiences of DBS.

The following research question was addressed:

How do patients or parents/relatives/carers describe their experiences of dental care where Dental Behaviour Support techniques have been used?

## 2 | METHODS

### 2.1 | Design and approach

A systematic review of qualitative studies was undertaken. The protocol, aligned with the PRISMA-P checklist,<sup>20</sup> was registered on PROSPERO (CRD42022355953) in October 2022. The ENTREQ reporting statement<sup>21</sup> was used to present findings. This review was designed to identify qualitative studies related to any DBS used to support dental care for any patient group. The review first planned to summarize key studies and identify which DBS techniques have been examined using qualitative methods. In addition to this broad summary, a thematic synthesis approach<sup>22</sup> was planned to summarize the qualitative data across studies to gain new insight.

### 2.2 | Search strategy

The PICOS tool (Population, Intervention, Comparison, Outcome, Study Type) was used to develop the search strategy with the support of an expert librarian (IF).<sup>23</sup>

*Population:* Patients receiving dental care or those parents or carers supporting them.

*Intervention:* Experience of any form of Dental Behaviour Support (DBS). This includes pharmacological (such as sedation and general anaesthesia), non-pharmacological (such as distraction and enhancement of control) and any other approach to support patients to receive oral healthcare.

*Comparison:* None.

*Outcome:* Patient, parent or carer experiences, perceptions, viewpoints of DBS.

*Study type:* Primary qualitative studies capturing how patients or those supporting patients perceive their DBS experiences.

Guided by the PICOS strategy, a search strategy was produced using keywords and MeSH headings. This was run on Medline (Via OVID) Embase and PsycINFO via EBSCO. The specific search string ([Supplemental Material S1](#)) was modified within each database.<sup>24,25</sup> Searches were run on 5 December 2022. Preliminary informal searches identified relevant studies published prior to 2000, so a decision was made to search for studies up to 25 years old (limited therefore to 1997). Studies identified in review articles were included to identify any additional potentially relevant studies.

### 2.3 | Study screening

Two authors (AGR and CMGP) calibrated their use of inclusion and exclusion criteria on 10 relevant articles. [Figure 1](#) details the PRISMA flow diagram of study identification and screening.

Study screening was undertaken using Rayyan.<sup>26</sup> One author (AGR) undertook a basic screen of study titles to exclude those that were clearly irrelevant. Abstracts were then screened by at least two authors (AGR, CMGP, AAF and JB). Any disagreements about inclusion were mediated by a third reviewer and collaborative discussions. A final check was undertaken by one author (AGR) who reviewed the full texts of studies that had been identified against the inclusion and exclusion criteria. Uncertainties and this stage were addressed through discussions between AGR and CMGP ([Table 1](#)).

### 2.4 | Data extraction

Two forms of data were extracted onto bespoke data collection forms: 1) study information regarding participants, date of publication, type of qualitative research, patient population studied and the type(s) of DBS explored and 2) qualitative data published in this study, as well as original interpretations of qualitative data presented by study authors. This involved extracting data from each study's results, discussion and conclusions sections. Where studies included data generated from qualitative research with clinicians and patients, only the data and interpretations presented related to patients' experiences were extracted. Where studies examined a broader topic, such as experiences of dental anxiety, only the data related to DBS techniques were extracted onto separate Microsoft Word documents. These documents were imported into NVivo 14<sup>27</sup> by one author (AGR). When analysing the data, a second author (JB) confirmed the suitability of the data that had been extracted having reviewed each included study independently.

### 2.5 | Data analysis

Two authors (AGR and JB) reviewed the entire data set and independently applied open analytic codes to salient findings within the data, using NVivo. These two authors generated codes inductively from what the data were felt to be summarizing. Lists of codes were retained by each author, and existing codes were applied to new data as it arose, or new codes were generated as directed by relevant data. Two team members (AGR and JB) formed initial categories of codes, then met to explore their independently formed initial codes, categories of codes and interpretations of key findings. AGR and JB agreed upon the grouping of codes into specific categories. Data in categories were compared with data in other categories to ensure they were appropriate and distinct: these categories evolved, following constant comparison of data from each study, into candidate themes. The content and nature of these provisional themes were then peer checked by a third author, CMGP. This led to further iterative refinement of candidate themes, leading to the themes presented.

## 2.6 | Quality assessment

Methodological quality assessment of each study was undertaken using the tool presented by the Joanna Briggs Institute.<sup>28</sup> Study quality was not deemed to be a factor that determined whether or not a study was included in this review, but to inform how much confidence can be placed in the data each study contributed to the synthesis within, informed by the GRADE-CERQual assessment process.<sup>29</sup>

## 3 | RESULTS

### 3.1 | The nature of relevant literature

After removal of duplicate results, the search process identified 4440 individual studies. Following the screening process, a total of 23 studies (Table 2) were included in this review.<sup>30-52</sup> These studies were all completed in high-income countries in Europe, North America, Australia or New Zealand. Studies primarily used

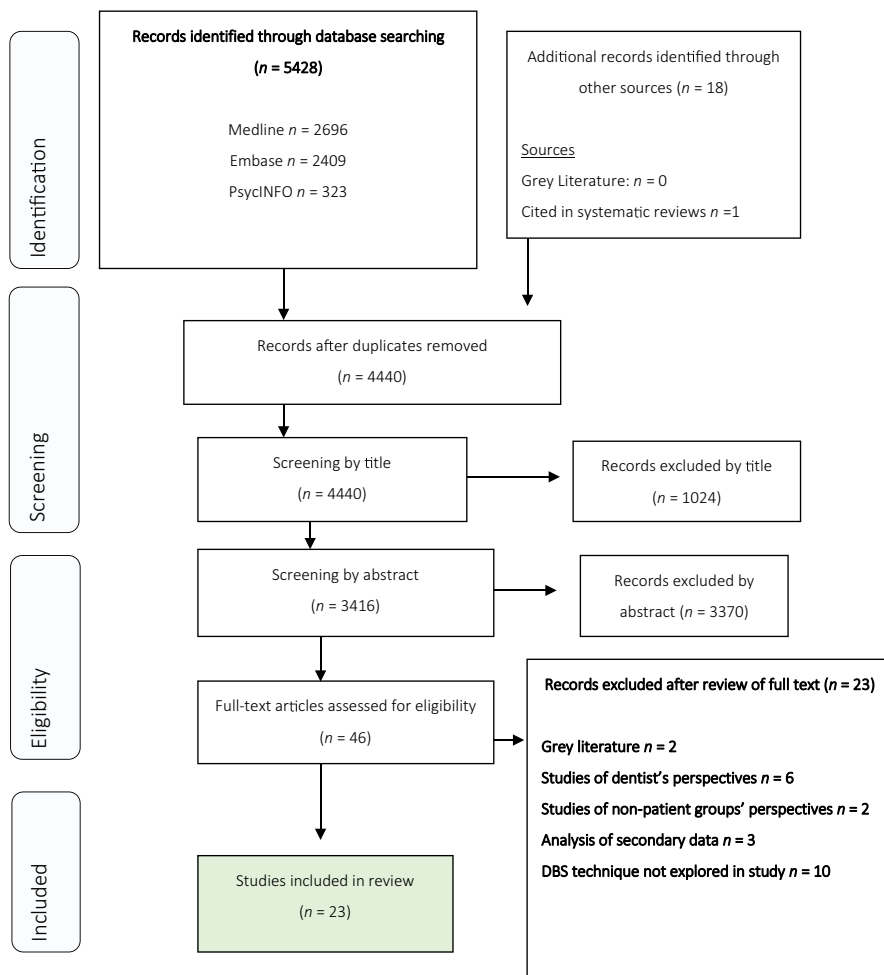


FIGURE 1 PRISMA flow diagram.

TABLE 1 Inclusion and exclusion criteria.

Inclusion criteria	Exclusion criteria
<ul style="list-style-type: none"> <li>• Patients receiving dental care or those parents or carers supporting them (care includes attendance, examination or treatment, including simulated or 'mock' dental procedures but excludes oral hygiene measures outside of the dental setting)</li> <li>• Studies of any form of DBS (any active or passive interaction with a patient to support a patient to receive dental care)</li> <li>• Studies reporting patient, parent or carers' experience of DBS</li> <li>• Primary qualitative studies (where new qualitative data were generated and analysed)</li> <li>• Studies in English language</li> </ul>	<ul style="list-style-type: none"> <li>• Studies where patients did not undergo any form of dental care (care includes attendance, examination or treatment, including simulated or 'mock' dental procedures but excludes oral hygiene measures outside of the dental setting)</li> <li>• Studies of local anaesthesia alone or studies where the primary intervention of phenomenon under investigation is not a DBS</li> <li>• Studies of patient, parent or carers' experience of non-DBS techniques, or outcomes of DBS techniques from the perspectives of healthcare professionals</li> <li>• Studies using quantitative methods, or interviews generating quantitative answers (e.g. yes/no answers to closed questions).</li> <li>• Grey literature without original content.</li> <li>• Existing review articles.</li> </ul>

TABLE 2 Description of included studies.

Study	Study aim	Location of study	Participants	DBS in question	Study design
Agel et al. (2021) <sup>30</sup>	To provide an initial insight into parental/carer views and expectations of dental treatment for compromised first permanent molars	Sweden	Parents/carers of children due to having DGA (n=7)	DGA and minimally invasive care	Semi-structured interviews
Amin et al. (2006) <sup>31</sup>	To explore parents' experience of their child's treatment under DGA, and their perception of the impact of this treatment on their children	Canada	Parents/carers of children who have had DGA (n=11)	DGA	Semi-structured interviews
Amin and Harrison (2009) <sup>32</sup>	To develop a grounded theory to help our understanding of the processes that influence parental adoption of dentally healthy behaviours following the experience of their child's 'dental general anaesthetic'.	Canada	Parents/carers of children who had DGA (n=19)	DGA	Semi-structured interviews
Baghdadi et al. (2021) <sup>33</sup>	To explore the emotional and psychological effects of dental treatment under general anaesthesia (DGA) on children and parents in Saskatoon city, Saskatchewan, Canada	Canada	Children having DGA (n=12) and their parents (n=13)	DGA	Semi-structured interviews, video diaries and drawings
Bernson et al. (2011) <sup>34</sup>	To obtain a deeper understanding of how patients with dental fear manage to undergo dental treatment.	Sweden	Adults with dental fear who attend dental services (n=14)	No specific DBS	Interviews
Cai et al. (2022) <sup>35</sup>	To elicit parents' perspectives regarding the effectiveness, benefits and barriers associated with desensitization.	Canada	Parents of autistic children (n=13) who had undergone desensitization	Desensitization	Semi-structured interviews
Duker et al. (2017) <sup>36</sup>	To provide an increased understanding of these challenges experienced during oral care in the dental office by children with ASD	USA	Parents of autistic male children (n=9)	No specific DBS	Focus groups
Goodwin et al. (2015) <sup>37</sup>	To explore the experiences and opinions on the service delivery and organization of children's dental treatment from the perspective of parents and dental staff connected to the DGA service.	United Kingdom	Parents/carers of children who had DGA (n=15) with children present for some interviews (n=9)	DGA	Semi-structured interviews
Grant et al. (2004) <sup>38</sup>	To explore and document four situations in which positive oral health outcomes occurred for people with mental retardation and moderate to high support needs.	Australia	Cares of four adults with intellectual disability (n=5)	No specific DBS	Semi-structured interviews
Lee et al. (2021) <sup>39</sup>	To assess caregiver experiences related to their child's dental surgery to inform development of a behavioural intervention.	USA	Parents/carers of children who had DGA (n=19)	DGA	Semi-structured interviews
Malik et al. (2022) <sup>40</sup>	To understand how parents or caregivers experienced physical constraint and the use of the papoose board on their children during regular dental treatment	Canada	Parents/carers (n=6) and a grandmother (n=1) of children treated using a papoose board (n=7)	Restraint	Semi-structured interviews
McKelvey et al. (2014) <sup>41</sup>	To explore the experiences of dental care under general anaesthesia in adults with an intellectual disability	New Zealand	Parents or support workers (n=13) of autistic adults, and autistic adults (n=9)	DGA	Semi-structured interviews (as part of mixed-method study)
Mirsky et al. (2021) <sup>42</sup>	To understand the oral healthcare experiences and needs of young adults with autism spectrum disorder (ASD).	USA	Young adults with autism (n=15)	No specific DBS	Semi-structured interviews

(Continues)

TABLE 2 (Continued)

Study	Study aim	Location of study	Participants	DBS in question	Study design
Modabber et al. (2022) <sup>43</sup>	To qualitatively explore (1) children's self-reported perceptions of DFA (dental fear and/or anxiety) across a wide variety of dental procedures, and (2) the acceptability of the CARDTM (C—Comfort, A—Ask, R—Relax and D—Distract) system as a dental care delivery framework to help mitigate DFA	Canada	Children aged 8–12 years needing dental care (n = 12)	No specific DBS	Semi-structured interviews
Morgan et al. (2017) <sup>44</sup>	To explore with children their own experiences of dental anxiety using a cognitive behavioural therapy assessment model.	United Kingdom	Children aged 11–16 with dental anxiety (n = 13)	No specific DBS	Semi-structured interviews
Morhed Hultvall et al. (2010) <sup>45</sup>	To increase the understanding of factors of importance for maintaining regular dental care for individuals who have completed the treatment for dental fear provided by a psychologist and a dentist in cooperation.	Sweden	Adults who completed a CBT Programme (n = 14)	CBT	Semi-structured interviews
Parry et al. (2021) <sup>46</sup>	To examine parental perceptions of difficulties associated with dental attendance and oral care for autistic children and young adults, to highlight reported challenges and potential adaptations, and to identify interventions that will encourage positive experiences of dental attendance	United Kingdom	Parents of autistic children (n = 6)	No specific DBS	Focus groups
Rodd et al. (2013) <sup>47</sup>	To explore children's experiences of having teeth extracted under general anaesthetic, with a focus on opportunities to participate in their care pathway	United Kingdom	Children aged 6–11 years (n = 10)	DGA	Video diaries and semi-structured interviews
Rodd et al. (2014) <sup>48</sup>	To obtain children's accounts of having dental extractions under general anaesthesia and to gain greater understanding of the physical and psychological impacts from a child's perspective.	United Kingdom	Children aged 6–11 years (n = 10)	DGA	Video diaries and semi-structured interviews
Shahnavaz et al. (2015) <sup>49</sup>	To explore how children with dental anxiety and their parents experience cognitive behavioural therapy (CBT) in dentistry.	Sweden	Children who had CBT (n = 12) and parent (n = 1)	CBT	Semi-structured interviews
Thomas et al. (2018) <sup>50</sup>	To gather dental experiences of UK parents of children with autism or working diagnosis of autism and explore how they feel primary care dental services can be improved.	United Kingdom	Parents of autistic children (n = 17)	No specific DBS	Semi-structured interviews
Wang et al. (2017) <sup>51</sup>	To explore the fear/anxiety inducing triggers associated with dental treatment, and what dentally anxious adults would like from their dental encounter.	United Kingdom	Adults with dental anxiety (n = 14)	No specific DBS	Two focus-groups and three interviews
Woolley et al. (2017) <sup>52</sup>	To explore some of the people-work, integral to conscious sedation, which augments technical delivery	United Kingdom	Adults who had received sedation (n = 9)	Sedation	Semi-structured interviews

semi-structured interviews to explore people's experiences of care,<sup>30-35,37-45,47-52</sup> yet focus groups were used in three studies.<sup>36,46,51</sup> The use of video diaries was described in three publications,<sup>33,47,48</sup> one of which one also elicited participant drawings.<sup>33</sup> No ethnographic studies were noted, meaning there was no identifiable data exploring peoples' perspectives of DBS techniques at the time they were used. Two studies<sup>47,48</sup> described the same sample of patients from the same study.

The dental care of children was the focus of the majority of studies ( $n=16$ ),<sup>30-33,35-37,39,40,43,44,46-50</sup> of which four studies focused on the dental care of children with autism.<sup>35,36,46,50</sup> Of these studies, nine generated data through interactions with parents alone,<sup>30-32,35,36,39,40,46,50</sup> four engaged with children only<sup>43,44,47,48</sup> and three included both parents and children.<sup>33,37,49</sup> Seven studies considered dental care for adults, of which three related to those with intellectual disabilities and/or autism.<sup>34,38,41,42,45,51,52</sup> No studies explored the dental care experiences of both paediatric and adult patients simultaneously. No studies focused on older or medically compromised adults.

General anaesthesia was the most studied DBS.<sup>30-33,37,39,41,47,48</sup> Only one study considered the use of DGA for adults (with intellectual disability).<sup>41</sup> The remaining DBS-specific studies explored desensitization,<sup>35</sup> restraint,<sup>40</sup> cognitive behavioural therapy in adults<sup>45</sup> or children<sup>49</sup> and conscious sedation in adults.<sup>52</sup> Nine studies did not focus on a specific DBS technique<sup>34,36,38,42-44,46,50,51</sup> yet explored broader aspects of peoples' experiences of dental care, and presented primary data describing experiences related to DBS techniques. [Table 3](#) summarizes the DBS techniques detailed within the included studies.

### 3.2 | Study quality

All studies had a research question aligned with qualitative methodology and used qualitative methods in a broadly appropriate manner. There was little reference to specific theoretical stances underpinning qualitative research, and reflexivity was only actively considered and discussed in a small number of studies.<sup>37,44,45,50,51</sup> The quality assessment process highlighted that qualitative research around DBS-contained studies with variable methodological quality and rigour, employing theory to different extents or none. The qualitative data within each study was still adequate to inform the synthesis process detailed below. [Table 4](#) shows the application of the Grade CER-Qual process. [Supplemental material S2](#) summarizes the quality assessment of each study.

## 4 | THEMATIC SYNTHESIS

Fives themes were identified: Trust and the therapeutic alliance supporting effective care delivery; considered information sharing often alleviated anticipatory anxiety; control and autonomy-reduced

anxieties; variations in the perceived treatment successes and failures of DBS techniques; and DBS techniques produced longer positive and negative impacts on patients beyond direct care provision. Together these themes allowed for better understanding of how relationships, patient and family reactions and treatment outcomes all contributed to the experience of dental care. Data presented with quotation marks represent a direct participant quote extracted from an included article. Data purely in italics denote a description or interpretation provided by the authors of these studies.

### 4.1 | Trust and the therapeutic alliance supported effective care delivery

The first theme related to trust and the therapeutic alliance that arises from trust. Patients or carers detailed the importance of trust and the implications of loss of trust. When trust was established, dental care delivery was easier for all involved. Therapeutic alliance—with dentists and patients working collaboratively—supported effective care delivery, even when DBS techniques were needed. Specifically, the building of trust between the dentist and patient was described as fundamental for a positive experience of dental care. As one parent commented:

It helps your kid be...to trust the dentist... this guy gained my daughter's trust right from the first day. He let her play with the instruments the first day. She had a blast. So the next time was so much easier. It was crazy.<sup>35</sup>

Patients and family members supporting patients benefited from having faith in their dentist. This may function in several ways. The act of trusting the dentist itself was a means of reducing anxiety and creating a more positive experience of dental care, as illustrated in the discussion of one study:

Most of the participants wanted the opportunity to build up a relationship with their dentist, they felt this would enhance their trust and increase their confidence in the dentists' treatment and advice.<sup>51</sup>

A trust-based therapeutic relationship seemed to differentially reinforce behaviours, thoughts and feelings that are incompatible with dental fear, avoidance or escape:

My dentist that I go to is really kind. He really knows how to take care of me and make me feel comfortable. He does give me support and encouragement to keep up the good work on my brushing. I like him. I just like his smile. He has a pretty jovial attitude. He's very kind, very friendly and the people that work with him are very nice as well.<sup>42</sup>

TABLE 3 DBS techniques mentioned in included studies.

Study	DBS technique <sup>a</sup>							
	Breathing retraining	Cognitive Behavioural Therapy	Clinical Empathy	Distraction	Enhancing Control	Dental General Anaesthesia	Graded Exposure	Person-centred care
Agel et al. (2021) <sup>30</sup>						●		
Amin et al. (2006) <sup>31</sup>						●		
Amin et al. (2009) <sup>32</sup>						●		
Baghdadi et al. (2021) <sup>33</sup>						●		
Bernson et al. (2011) <sup>34</sup>	○			○	○			○
Cai et al. (2022) <sup>35</sup>								
Duker et al. (2017) <sup>36</sup>						○		
Goodwin et al. (2015) <sup>37</sup>						●		
Grant et al. (2004) <sup>38</sup>								○
Lee et al. (2021) <sup>39</sup>						●		
Malik et al. (2022) <sup>40</sup>								
McKelvey et al. (2014) <sup>41</sup>						●		
Mirsky et al. (2021) <sup>42</sup>			○					○
Modabber et al. (2022) <sup>43</sup>	○		○	○	○			○
Morgan et al. (2017) <sup>44</sup>			○	○				○
Morhed Hultvall et al. (2010) <sup>45</sup>	○	●	○		○			○
Parry et al. (2021) <sup>46</sup>				○	○			●
Rodd et al. (2013) <sup>47</sup>						●		
Rodd et al. (2014) <sup>48</sup>						●		
Shahnavaz et al. (2015) <sup>49</sup>	○	●		○			○	
Thomas et al. (2018) <sup>50</sup>								●
Wang et al. (2017) <sup>51</sup>					●			○
Woolley et al. (2017) <sup>52</sup>								○

●, Primary focus of study; ●, Mentioned in detail in study; ○, Mentioned briefly in study data.

<sup>a</sup>The descriptors of DBS techniques relate broadly to those described by study authors, as opposed to any alternative classification of techniques.

Conversely, negative experiences of care, where kindness had not been demonstrated, lead to distress and concern:

The dentist didn't... have the patience for her because she wouldn't put the glasses on... and it all kind of escalated from there so then he was shouting at her.<sup>46</sup>

Across studies, trust was built through empathic care, where patients noticed the dentist's awareness of their emotional state and willingness to respond based on this. This was true on studies of sedation and non-pharmacological approaches:

[The sedation providers] have got affection for their patients, they are concerned what happens to you.<sup>52</sup>

I guess the dentist had set aside a certain amount of time, but she never gave me the feeling her time was limited. No, she seemed to have all the time in the world for me. And that gave me a sense of security.<sup>45</sup>

The steps taken to build trust seem to be modifiable, active and, potentially, intentional. Thus, these may be a set of potential techniques available to the dentist, which are activated through patient trust and relationship building.

## 4.2 | Considered information sharing often alleviated anticipatory anxiety

The second theme was related to information sharing before a procedure and anticipatory anxiety. The period leading up to care provision was associated with anxiety for many patients, carers or parents: This was described as being mitigated by sufficient preparatory information. While the anxiety experienced by patients and parents in anticipating pending behaviour support interventions featured strongly across studies, anxiety in experiencing unanticipated DBS interventions was also observed. This means that there is a nuance in sharing information to reduce anxiety and optimizing experience. Many participants reported feeling anxious in anticipation



TABLE 4 Grade-CERQual assessment of the confidence in the review's findings.

Finding from thematic synthesis	Studies contributing to finding	GRADE-CERQual assessment of confidence in the evidence: Factors informing this confidence assessment	Explanation of GRADE-CERQual assessment
Trust and building trust is essential to support patients to receive dental care	34,35,42–45,50–52	High confidence <i>Coherence: no concern</i> <i>Adequacy: no concern</i> <i>Relevance: minor concern</i>	The importance of a therapeutic alliance and factors contributing to this were mentioned in multiple studies, supported by a large volume of data, related to most of the DBS techniques mentioned. Data from certain studies was less relevant in supporting this finding.
Patients value control and autonomy over their care	34,38,40,43,45–51	Moderate confidence <i>Coherence: minor concern</i> <i>Adequacy: no concern</i> <i>Relevance: minor concern</i>	Decision-making and control were not a focus of any studies but there was a substantial volume of data from certain studies supporting this finding.
Patients encounter anxieties relating to information and the use of DBS techniques	31–37,39–42,44,45,47–50	Moderate confidence <i>Coherence: minor concern</i> <i>Adequacy: minor concern</i> <i>Relevance: minor concern</i>	Anticipatory anxiety and preparatory challenges related to DBS techniques were not discussed in every study. For studies that did present data to support this finding, there was variation in the richness and coherence of data.
DBS techniques are experienced as both successes and failures, and this depends on a range of patient and external factors	30–33,35–37,39,40,43,44,47–49	Moderate confidence <i>Coherence: minor concerns</i> <i>Adequacy: minor concern</i> <i>Relevance: no concern</i>	Studies provided detailed acceptability and experiences of success and failure of only some DBS techniques. This was not the specific focus of many studies, but the coherence of data and its adequacy, despite minor concerns, meant moderate confidence was placed in this broad finding.
DBS techniques impact long-term outcomes related to oral health and dental anxiety	31–33,36,37,39,44,45,47–51	Low confidence <i>Coherence: Moderate concerns</i> <i>Adequacy: minor concern</i> <i>Relevance: moderate concern</i>	Many studies presented information on long-term outcomes of oral health, but data were limited in their coherence and relevance, as long-term outcomes were not the primary focus of any of the included studies.

especially challenging for both the patient and those who accompanied them:

Participants frequently reported that the time spent waiting at the hospital immediately prior to the [D]GA had been problematic. They reported that even short waiting times seemed longer to individuals with intellectual disabilities and, because of this, were additionally stressful for caregivers.<sup>41</sup>

Conversely, negative experiences were also often described when the dentist had not appreciated the need for some patients to receive preparatory information:

Me eldest had to have a filling and it was suddenly thrown upon him and I said, “woah, you've got to tell him what you're doing. You can't just do it! You've got to explain what you're doing the whole time you're

doing it because this is the only way he's going to cope!”<sup>50</sup>

The data above show that generally all parties involved in dental visits (patient, clinician and parents/carers) benefit from pre-appointment preparation and being appropriately informed about the proposed care. They also demonstrate a nuance in sharing information to improve the experience and alleviate anticipatory anxiety.

### 4.3 | Control and autonomy reduced anxieties

The third theme related to issues of control (or the lack thereof) and autonomy. A respect for autonomy was felt to reduce patient anxiety. Examples of care with effective communication were detailed across a range of techniques, generally in the data describing and reflecting upon positive care experiences. Negative or generic

attitudes, in contrast, were unhelpful in supporting people to receive their care.

Patients, carers or parents wanted to be involved in decisions about care and how it was delivered. A paternalistic approach was not conducive to optimal outcomes. Facilitating person-centred care and advocacy was described as a key aspect of care planning and delivery. Notably, the role of autonomy was felt to be important to adults with intellectual disability<sup>38</sup> and children also. Facilitating autonomy enabled those receiving dental care to do so in an acceptable manner. Many positive experiences of care were reported when people were given a sense of control:

By preparing the patient before treatment, the dentist gives the patient control and the right to decide over their own choice of dental therapy...The patients become even more involved if they are able to 'pass on their own needs and wishes', by asking for an early or a late booking ..., or by asking for anesthesia during treatment.<sup>34</sup>

Participants wanted treatment planning ... with the dentist ...so that they were part of that decision making process. ...this supported feelings of control and confidence and reduced anxiety ... they did not want to passively receive dental treatment.<sup>51</sup>

Children expressed a desire for autonomy and opportunities for self-advocacy during dental encounters. Such opportunities provided them with a higher degree of control and ownership over their care, which enhanced their overall experience.

In contrast, frustration arose when children felt decisions had been made for them, instead of with them:

Children perceived that the decision to have a [D]GA had been made by the hospital paediatric dentist (a vague figure), rather than their own referring dentist, their parents or themselves. The following quotes from different interviews<sup>47</sup> highlights this.

Who decided you would go (to have the DGA)? (Researcher).

The dentist (Catherine).

Did your mum or dad get to choose? (Researcher).

I don't know (Catherine).

And what about you, did you get to decide? (Researcher).

I would have said no, no, no.<sup>47</sup>

#### 4.4 | Variations in the perceived treatment successes and failures of DBS techniques

The next theme related to perceptions of success and failure. Treatment with any DBS was not predictably effective in every regard for every person and context. Some DBS techniques were well received, others were traumatic and reported experiences did not relate to the type of DBS delivered, but to the need to receive support to have dental care all together. While a number of DBS approaches were reported in the included studies (see Table 3), there was only adequate data to support an understanding of experiences of specific techniques, such as DGA, sedation and restraint. Experiences of these techniques are detailed below.

DGA experiences for children were described to be broadly successful. Parents of children having DGA were positive with the short-term success of dental care provided:

When asked about her daughter's experience...Mother 12 stated, "Her eating gets better after the surgery because... no more pain! No more pain".<sup>33</sup>

Interestingly, the outcome of having DGA was positive as it removed the anticipatory anxiety of having to have a DGA in the first place, such as the anxiety created awaiting a DGA:

Children described a number of positive emotional and physical outcomes. They reported a sense of achievement and relief at successfully going through with the procedure. Furthermore, they were pleased that the treatment had been undertaken.<sup>48</sup>

DGA, however, was itself a difficult experience, particularly during the postoperative phase:

When he was in the recovery room, he was so annoyed and upset as well as crying...he started to vomit a lot, several times. And even on our way home...he vomited some blood because he swallowed a lot while they were working on him...<sup>33</sup>

...certain factors such as recovery were a traumatic aspect to the process many parents were optimistic about the treatment as a whole and acknowledged the necessity of going through the procedure.<sup>37</sup>

Variable success or failure of techniques beyond DGA were also detailed across multiple studies. For example, referring to conscious sedation with nitrous oxide, studies described when it was and was not successful, both for children and for autistic adults. Examples of a positive and negative experience are presented below:

I want the laughing gas. I think it helped a lot. When they gave me the needle, I felt the pain. But with the laughing gas I didn't feel anything. It was a lot more comfortable than the needle.<sup>43</sup>

One mother explained how her son:

... does not respond well to nitrous oxide. In fact, it makes him aggressive; he was screaming, he was kicking, despite having a lot of nitrous oxide. ... it just did not work. He was fully alert throughout the whole thing...that's not going to be an option for us anymore.<sup>36</sup>

As with sedation, the use of desensitization was associated with a range of outcomes ranging from complete success to utter failure. One positive report noted that:

[desensitization] has helped take an experience that I never thought was possible, like having his teeth cleaned. I never thought it would happen, and we're at a point where yes, he's having a cleaning, he's having even the fluoride—we've gotten even to the fluoride point.<sup>35</sup>

Specifically for autistic people, multiple separate accounts detailed when this approach was ineffective to deliver dental care or minimize distress:

... the process of desensitization did not work well for her child, who refused to cooperate with the clinicians. This made their experience a waste of their energy, time, and money...: "He didn't want to sit down, he didn't want to stay to lie down, or open his mouth."<sup>35</sup>

This same participant interviewed by Cai et al.,<sup>35</sup> explained how, eventually, protective stabilization was used to deliver dental care for her child. Interestingly, this was said to be her preference to allow predictable care. In studies of restraint, the process of its use and the outcome of using it appear to be viewed differently. The primary study exploring restraint<sup>40</sup> detailed a range of perspectives on the use of stabilization ranging from positive:

You know what? I felt good, I felt good about it. When I saw [my grandson] strapped in it, to me it looked safe...to me he has no chance of getting hurt by those drilling instruments during the treatment.<sup>40</sup>

To negative:

It's horrible; like, my daughter screams the whole hour we were there, so it's traumatic for her, it's traumatic

for me, and it's traumatic for everyone who hears her.<sup>40</sup>

Restraint was also described as a 'making do' approach to allow care to be delivered:

There was general consensus that [stabilisation] was a stressful process... 'when we take him [her son] to the dentist it has to be both my husband and I because, really, it's so rough on us we have to take turns... I think we both get very nervous, it's a very tense experience.<sup>36</sup>

The data presented above show that techniques detailed were not universally successful but also did not fail or cause distress consistently. The nature of success or failure of techniques detailed was not the primary focus of many studies, and the data presented only provide a degree of insight into why techniques were or were not successful.

#### 4.5 | DBS techniques produced longer positive and negative impacts on patients beyond direct care provision

The final theme focused on long-term outcomes of DBS. Dental care with the support of DBS techniques impacted patients beyond the time allocated to direct care provision. Both dental care itself and the sense of having coped with care supported long-term positive outcomes, while adverse experiences related to DGA potentially led to anxiety over time for some children.

The use of DBS techniques not only facilitated the completion of dental treatment but some (such as CBT) also had benefits which were noticed in other parts of the participant's lives:

He used to hide behind you before, so I had to do all the talking. But now he makes contact himself and it's no problem at all. He's got a confidence that I've never seen before.<sup>49</sup>

Much of the data on long-term outcomes came from studies relating to DGA. Many participants thought undergoing a DGA led to improvements in a participant's appreciation of the need for good oral hygiene and an improvement in function:

She has no pain anymore and she never wakes up during the night at all. She brushes her teeth a lot better now than she used to ...<sup>31</sup>

Where caregivers had concerns about DGA, these were generally balanced against the perceived benefits that comprehensive dental treatment under DGA could bring:

My hopes are that all his teeth can be well cleaned and complete. For the future for him not to have no more problems with his teeth so they can grow healthy ...<sup>39</sup>

While most participants reported having positive DGA experiences, there were some concerns that the procedure may have negatively impacted children's views on future dental attendance:

it appeared that the [D]GA dental treatment itself was a difficult experience for most children. Some parents even speculated that their child might avoid future dental visits as a result of long-term trauma after the [D]GA. Parents repeatedly expressed this opinion: "She/he doesn't want to come back to the dentist."<sup>31</sup>

Additionally, some carers did have concerns about (unspecified) negative health impacts of undergoing a DGA and for them, this meant that even though they had a positive experience with DGA, in the future, they would prefer to attempt treatment not using a DGA:

I think we would prefer without. Just because...if there were to be complications...But if you have to do it, we are not against it. What has to be done, it has to be done. But we rather prefer to go to a regular dental.<sup>33</sup>

Desensitization was generally seen to have good long-term benefits in terms of improving the acceptance of dental treatment and needing less parental support to attend appointments:

It used to be that it had to be both of us bringing him. Now we're at a point where it can be one parent, and that's an accomplishment in itself.<sup>27</sup>

The data suggested that some DBS techniques may have long-term impacts over and above facilitating dental treatment; however, these were only really discussed for CBT, DGA and desensitization.

## 5 | DISCUSSION

### 5.1 | The volume and nature of relevant qualitative research

This review has identified the volume, breadth and depth of qualitative research related to DBS techniques. No previously identifiable reviews have sought to do this; hence, this research presents the first summary of when qualitative methods have been used to understand DBS techniques.

Many different DBS techniques, described in a range of ways,<sup>11</sup> can be used in isolation, or combination, for a range of patient groups. Summarizing the included studies could only be done so in a broad manner due to certain DBS techniques featuring more heavily in the literature. While some DBS techniques were discussed in multiple studies, others were not described in any qualitative research. The plurality of studies and the range of patient groups included in the studies identified does pose challenges for analysis and interpretation and limits the depth of understanding that can be synthesized. However, DBS techniques do vary substantially, and this initial review has sought to identify the extent of study plurality and overlap, identify where the effectiveness of DBS techniques as not been explored with qualitative methods and set a foundation on which future qualitative research in this broad area can be considered.

As well as the studies being highly variable, the studies identified rarely presented conceptual frameworks or theoretical foundations, and their ability to explore wider aspects of care experiences is limited. Specifically, the lack of ethnographic research pinpoints a substantial gap in the understanding of the use of various DBS processes. Dental care, including when DBS techniques are used, can happen in a range of contextual and regulatory contexts, by teams of varying composition, for different patients. Considering this, and the potential impact on consciousness, affecting patient recall, when DGA or sedation is used, interviews or focus groups alone may not provide a full understanding of factors contributing to patients' reported experiences. The use of video diaries<sup>33,47,48</sup> was novel, and provided useful insight into experiences before and after DGA was used for children. Such techniques could be valuable in understanding a range of other DBS techniques, including with other patient groups: The use of such tools could aid dental teams' understanding of how best to support patients before, during and beyond a specific episode of care.

The focus on paediatric DGA was not surprising considering the frequency with which this procedure is undertaken.<sup>53</sup> It is noteworthy that the only study that specifically explored the use of DGA in adults only studied the experiences of autistic adults.<sup>41</sup> There is therefore no literature on adults' experiences of DGA related to dental phobia, despite the ubiquity of dental phobia and need for DBS.<sup>8,54</sup>

The lack of studies exploring the use of conscious sedation in any population group was an unexpected finding of the review. The only study exploring sedation in adults<sup>52</sup> contained a very minimal volume of data from patient participants meaning little insight can be gained into sedation experiences, despite the obvious benefits of such data.<sup>55</sup> The volume of quantitative literature exploring sedation outcomes is substantial, but the absence of the patient voice in this body of literature is striking, and there can be little justification for excluding the patient voice—paediatric or adult—from future trials of sedation in dentistry.

In addition to the above omissions, while this review highlighted the available qualitative studies related to DBS techniques, its key finding is how many DBS techniques have no

supporting qualitative studies. A range of quantitative studies were highlighted in a separate component of the wider project in which this work is situated: Thousands of studies were found to explore DBS techniques quantitatively including hundreds of clinical trials. However, none of the qualitative studies identified were part of trials despite how complementary qualitative findings can be to the interpretation of trial data.<sup>56</sup> This is a notable omission from the broader literature on clinical trials of any DBS technique or combinations of techniques. Furthermore, DBS techniques may be used in combination, such as pre-medication prior to DGA, or distraction during inhalation sedation: None of the studies sought to study experiences of combinations of DBS or compare experiences of one technique to another. Future studies of DBS using qualitative method to compare DBS approaches would be well advised to consider qualitative components to guide interpretation of their results and subsequent policy or practice guidelines.

## 5.2 | Thematic synthesis

The qualitative synthesis highlighted the importance of trust, control and autonomy in supporting care. Trust in dentistry is a complex concept<sup>57</sup> warranting further research; yet, it is clear that dentists need to build trust and it is likely that doing so is an active process reliant on high quality communication.<sup>58</sup> The desire for autonomy promotes the concepts of shared decision-making<sup>59</sup> and the increasing desire of patients to be actively involved in their care.<sup>60</sup> The reported desire of children to maintain autonomy<sup>48</sup> details how, regardless of legal status or age, the person receiving care should be engaged appropriately to do so.

The qualitative data and synthesis also highlighted that the period surrounding dental care, can cause suffering due to anticipatory anxiety. The scoping review of DBS descriptors and labels<sup>9</sup> presented the techniques of 'pre-visit preparation' and also specific 'preparatory visits': These may both reduce the fear of the unknown and support acceptance of care, and the findings presented highlight the potential positive impact of such preparation, especially for children or autistic adults. Potentially, appropriate information tailored to other DBS techniques, such as conscious sedation and sensory adaptation, could support a wider range of patients and contribute to successful dental care delivery.

The data regarding acceptability and experience detailed that all DBS techniques were reported in both positive and negative contexts depending on a range of patient factors and their unique perspectives and experiences. This finding underpins the variation in patients' preferences, ideas and expectations for care, and the crucial need to seek their own views and perspectives on DBS. Understanding the reasons behind peoples' experience is crucial to inform appropriate outcome measures, and such outcome measures could capture the positive or negative experiences patients reported encountering within the included studies.

## 5.3 | Confidence in findings

The qualitative data within the included studies highlighted several consistent findings representing patients' carers' and parents' experiences related to DBS. However, none of the studies explicitly examined an area that relates to a theme presented. For example, studies looked at experiences of DGA, but did not specifically focus on its success or failure. The same is true across techniques, so the relevance and coherence of data to certain findings of the thematic synthesis is limited. Table 4 presents each theme and details the confidence that can be placed in either finding, and the factors influencing this.

A consistent finding was that the cultural or theoretical context of research was rarely specified (see Supplemental material S2) and reflexivity was only mentioned in certain studies.<sup>37,44,45,50,51</sup> Many studies were undertaken by a combination of researchers, with varying degrees of clinical practice or experience. This can impact on qualitative data collection and analysis<sup>61</sup> yet was not openly discussed or considered in depth, despite the impact it may have. Potentially, a large proportion of our limited understanding of patients' experiences of DBS techniques has been acquired by dental teams who have not exercised substantial reflexivity to consider how their roles and knowledge may impact on the interpretation. Similarly, four of the five authors of this article (AGR, CMGP, AAF and JB) are special care dentists: This work aimed to identify the patient voice in published literature, but our analysis may have been informed by our own clinical experience and inherent biases: This is largely unavoidable, yet we did seek to consider if or how this impacted the data and to mitigate this through collaborative discussion.

## 5.4 | Strengths and limitations

This review identified an under-researched area of research and strived to identify all relevant studies. The involvement of an expert librarian (IF) supported the optimization and execution of the search strategy. However, it is possible that studies containing qualitative data relevant to the research question were not identified. The search strategy focused on all potential DBS techniques yet this preceded any formal consensus on technique names or descriptors. Other researchers may use different terminology, or terminology in languages other than English.

Furthermore, the search focused on studies of DBS techniques, though did identify studies that did not focus on specific DBS techniques. Had the search aimed to identify studies more broadly reporting patients' experiences of dental care, an excessive number of studies would have been identified, beyond those that could be realistically screened or synthesized. This review has presented a synthesis with recommendations within which we broadly have confidence, and which should support both the recommendation that more qualitative research of DBS techniques is needed and the foundations of a Core Outcome Set development for DBS.

## 6 | CONCLUSION

The quantity of qualitative research exploring DBS is limited. Numerous studies detail children's' or parents' experiences of DGA, yet studies are otherwise highly varied on whether they consider a specific DBS or which DBS they study. Qualitative studies of DBS suggest that trust between dentists and patients, and the facilitation of autonomy, are key to supporting care experiences reported as positive. There is substantial scope and need for a greater understanding of patients', parents' and carers' experiences of a greater range of DBS techniques, used in isolation or combination. Doing so can support the design of care pathways, the effective and person-centred application of DBS techniques and inform an understanding of what outcomes, such as the patients', carers' or parents' relationship with dentist, sense of control, anticipatory anxiety and retrospective acceptability of the DBS technique, should be considered in DBS research.

### AUTHOR CONTRIBUTIONS

AGR and CMGP conceived the study. IF designed the search strategy with advice from AGR and CMGP. AGR, CMGP, AAF and JB screened studies for inclusion/exclusion. AGR, JB and CMGP led the thematic synthesis, which was approved by AAF. AGR drafted the article and led the quality assessment processes. All authors commented on and approved the article.

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### CONFLICT OF INTEREST STATEMENT

The corresponding author declares on behalf of all the authors that they have no conflict of interest.

### DATA AVAILABILITY STATEMENT

Data sharing is not applicable to this article as no new data were created or analysed in this study.

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## SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

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