SYSTEMATIC REVIEW

Factors Influencing Parental Acceptance of Paediatric Dental General Anaesthesia: A Systematic Review

Antesar A Amhamed Ahswnee[1], Siti Noor Fazliah Mohd Noor[2]

[1] Department of Dental Science, Advanced Medical & Dental Institute, Universiti Sains Malaysia, Bertam 13200 Kepala Batas, Pulau Penang, Malaysia
[2] Dental Stimulation and Virtual Learning, Research Excellence Consortium, Advanced Medical & Dental Institute, Universiti Sains Malaysia, Bertam 13200 Kepala Batas, Pulau Penang, Malaysia

ABSTRACT

Introduction: The current review focuses on the factors influencing parental acceptance and the dentists' role in facilitating dental treatment acceptance under general anaesthesia (GA). **Materials and methods:** The search was conducted on several databases, including PubMed, EMBASE, Web of Science, Scopus, Google Scholar search engine, and Cochrane Library on articles published from June 1993 to June 2023. A mixed research method was adopted for the current review, which implies that studies with both qualitative and quantitative methodologies were included. **Results:** The findings revealed several factors influencing parental acceptance towards dental treatment under GA. One of these factors was parental beliefs and attitudes that have been linked to a higher possibility of acceptance. Moreover, the income and education levels of parents revealed that parents with a higher education level were more likely to accept the adoption of GA for their children's dental treatment. Dentists' roles in promoting parental acceptance towards dental treatment under GA is important in ensuring that the parent received accurate information concerning the dental treatment procedure, its benefits, and related risks. Providing parents with this information will help them make well-informed decisions on the treatment procedure. **Conclusion:** Dentists should include parents in the decision-making process, explain key details concerning the treatment procedure and allow them to contribute to selecting the best dental treatment option for their children.
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Keywords: Dental treatment, Parental acceptance, General anaesthesia, Parental attitudes, Dentists

Corresponding Author:
Siti Noor Fazliah Mohd Noor, PhD
Email: fazliah@usm.my
Tel : +60133960943

INTRODUCTION

Oral health is an essential aspect of children's well-being. Proper dental care is crucial for maintaining oral hygiene, preventing dental diseases and promoting optimal dentition development (1). However, sustenance or cooperation of children through conventional dental procedures may be lacking due to their age, medical conditions, or behaviours (2). Dental treatment under general anaesthesia (GA) is recommended in such instances, particularly for young children; it is both an effective and safe option (3, 4). GA provides efficient and comprehensive dental care primarily because it ensures children are comfortable and facilitates completing all necessary procedures within a controlled setting (5, 6). Nevertheless, for the approach to be successful, parental acceptance and cooperation are required; as the primary caregiver, parents being the core decision makers, and are responsible for making an informed decision regarding their children's health, including dental treatment options (5). Parental willingness and acceptance greatly influence the success and overall experience of both the dental team and children; hence, it is critical to understand the factors that influence their acceptance towards dental treatment under GA (5).

Previous studies have examined the factors that influence and contribute to parental acceptance in paediatric dental care; they encompass a wide range of elements, including parental knowledge, attitude, beliefs, dental treatment experiences and socio-demographic characteristics (3). Parents with negative attitudes, misconceptions and fear about dental procedures and the application of anaesthesia tend to impede acceptance and the overall success of the treatment (4, 6). Parental understanding and knowledge of dental treatment under GA significantly influence decision-making. Socio-demographic standpoint, factors such as educational level, income, and access to dental care services are influential in parents' care decisions and acceptance (7). Likewise, while parental factors play a key role, dentists' role should also not be overlooked, as they play a pivotal part in addressing concerns, supporting and educating parents to heighten acceptance of GA (4). An effective communication is crucial in addressing

parental anxieties and involving them in care decisions through the provision of accurate information.

Dental treatment under GA is a valuable option for children, especially young children with complex dental needs (1, 6). It is necessary to synthesise existing literature on the topic to contribute towards existing knowledge and provide valuable insight for care professionals, dental practitioners and policymakers involved in paediatric dental healthcare. This systematic literature review aims, (a) to identify and analyse key factors contributing to parental decision-making and acceptance towards treatment under GA, (b) explore the factors that shape parental attitudes and perceptions concerning hindering or facilitating acceptance of the recommended treatment approach, and (c) investigate the role of dentists in facilitating parental acceptance and promoting cooperation and positive experiences.

MATERIALS AND METHODS

Study design

The current review is a cross-sectional study and adopted an inductive approach to data interpretation since it supported the utilisation of the interpretivism research philosophy (8, 9) which allowed the researcher to identify trends, similarities, and patterns from the data, and thus, generate valuable insights concerning the current research topic (10, 11), and provide more detailed insights into the research phenomenon from various sources (12, 13). The design of the current review was inductive as suggested by Chali and co-worker whereby it is important to highlight this aspect while performing a quantitative design (8). The Interpretivism philosophy complemented it to arrive at common themes and patterns in data and offer a structured overview of the underlying research concept.

Research question

The current review adopts the following research question that was generated based on the Population, Intervention/exposure, Control and Outcome (PICO) strategy (14) which are, (a) 'What is the role of dentists in enhancing parental acceptance of GA in the dental treatment of their children?', (b) 'What aspects contribute to parental decision-making and acceptance towards treatment under GA?', and (c) 'Which factors aid in streamlining parental attitudes towards GA?'. The PICO framework (14) is an acronym representing the essential components of a clinical question, and thus, it helps generate a research question that best aligns with the respective study as shown in Table I.

Table I: The PICO framework (13)

Framework	Element
Population (P)	Parents of treated children
Intervention or exposure (I)	Role of dentist in parental acceptance
Control (C)	Not Applicable
Outcome (O)	Parental acceptance

CONTINUE

Search strategy

The search strategy was focused on identifying relevant studies on factors that influence parental acceptance and the role of dentists in facilitating parental cooperation in the utilisation of GA as a measure for providing dental treatment for children. The search was conducted on several databases, including PubMed, EMBASE, Web of Science, Scopus, Google Scholar search engine, and Cochrane Library. The search process began on 18th June 2023, and it took seventy-two hours, after which the final articles were obtained. For effectiveness, the search strategy utilised a combination of keywords and controlled terms (MeSH terms) related to the study subject. The following keywords were used: "child", "dentists", "anaesthesia", and "parental" with combination of "OR" and "AND" Boolean operators to maximise the relevance of the results. A manual search was also performed to obtain additional studies for the review. In this case, the researchers searched online for the topic of the current review to obtain additional studies related to the present research topic. Moreover, the search process was guided by the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines based on the PRISMA 2020 statement: an updated guideline for reporting systematic reviews (15) as shown in Fig. 1 which aided the researcher in identifying relevant articles suitable for the current review (11, 12, 16). PRISMA 2020 is a beneficial tool that can help in the systematisation of the researchers' meta-analyses to report findings based on which the evidence of the review can be established (15).

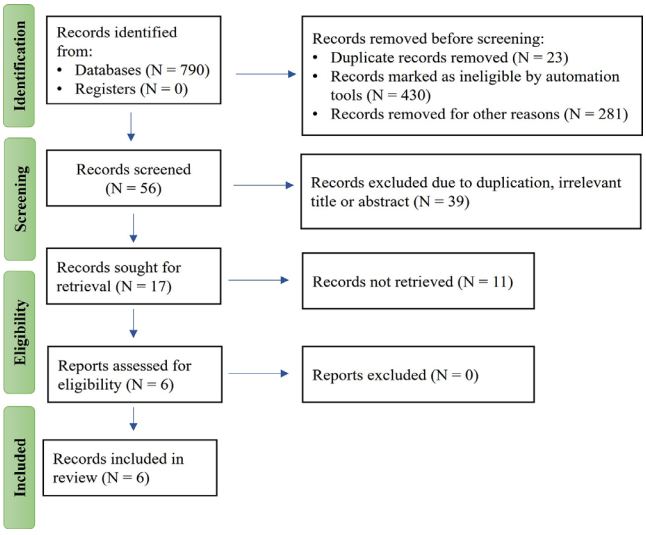

Fig. 1: The flow chart of the study based on PRISMA guidelines

Selection criteria

The inclusion criteria included studies that were peer-

reviewed, published between 18th June 1993 and 18th June 2023, published in English, and available in full text. Moreover, the included articles had to be based on primary and focus on parental acceptance and the role of dentists in facilitating dental treatment acceptance under GA. Primary articles are articles containing first-hand information obtained by the original researchers (16–18). For the current review, the dependent variable was chosen to be "Parental Acceptance Towards Dental Treatment Under General Anaesthesia" while the independent variables included factors such as cultural beliefs and the experience of dentists. Hence, this review will study how these factors influence parental acceptance towards dental treatment under GA.

The exclusion criteria did not consider articles that were not peer-reviewed and those based on secondary research. Moreover, commentary articles, articles published earlier than 18 June 1993, articles lacking precise investigations (abstracts and dissertations), and those published in non-English language were eliminated.

Data extraction

Data extraction involves using a comprehensive and systematic technique to extract relevant data from the selected sources (17, 19). A standardised data extraction form was utilised to enhance the accuracy of the current review's findings (19). The form contained items such as the title of the journal, the name of its author, page numbers, and the research methods utilised (20). The extraction process focused on various categories of information to capture important factors from the selected studies, such as the authors' names and year of publication, study designs, sample size and participants, methodological details, key findings, and implications. Two or more independent reviewers typically conduct the extraction process to eliminate biases and minimise errors; however, given that the study only included a few articles, the researcher was the sole reviewer (AAA), and counterchecks were performed with the other researcher (SNF). The extracted data was carefully tabulated for easy organisation, synthesis and comparison of the data during analysis in the review. The systematic extraction of relevant information from the selected articles was crucial in ensuring all essential details were captured and contributed to the comprehensive understanding of factors influencing parental acceptance towards dental treatment under GA among children.

Quality assessment

Quality assessment of the selected articles is typically conducted to evaluate the methodological rigour and overall quality, focusing on internal validity and risk of biases (21). For the selected articles, a few analyses were utilised as suggested by Bruno and Harr (21) following the theme of this review which focuses on parental acceptance and role of dentists in facilitating acceptance of dental treatment under GA. The quality assessment includes: (a) identifying article with direct involvement of parents with children that had undergone dental treatment under GA, (b) employing ethical clearance from respective bodies, and (c) the responses from the parents are adequately analysed.

The evaluation helped the researcher establish the reliability and relevance of the articles' information concerning the study topic (22, 23). The specific criteria or tool used for quality assessment commonly depend on the nature of the included studies (24). The tool and assessment criteria provided structured frameworks on which the researcher could examine various aspects of the selected studies. Moreover, the specified tool allowed the researcher to evaluate the studies against a predetermined checklist and criteria. The quality assessment outcome was recorded and used to inform the synthesis and interpretation of findings in the systematic literature review. The researcher only used the Critical Appraisal Skills Program (CASP) tool in the appraisal process of the selected studies as shown in Table II. This tool helped ensure that all the six studies contained trustworthy information (20). Only the CASP tool was used in the current review because it was the most appropriate tool for assessing the quality and trustworthiness of the selected studies encompassing various research designs and methodologies. Its versatility within the assessment favoured the best assessment that could be applied for the reliability of the included articles (20).

Table II: The CASP tool

Authors	Thomson *et al.*, 2014 (25)	de Souza, Harrison & Marshman, 2017 (26)	Lin *et al.*, 2018 (27)	Hosey *et al.*, 2014 (28)	Alfarraj *et al.*, 2023 (30)	Al Zoubi *et al.*, 2021 (31)
Was there a clear statement of the aims of the research?	Y	Y	Y	Y	Y	Y
Is a qualitative methodology appropriate?	Y	Y	Y	Y	Y	N
Was the research design appropriate to address the aims of the research?	Y	Y	N	Y	Y	Y
Was the recruitment strategy appropriate to the aims of the research?	Y	Y	Y	Y	Y	Y
Was the data collected in a way that addressed the research issue?	Y	Y	Y	Y	Y	Y

CONTINUE

Table II: The CASP tool (CONT.)

Authors	Thomson *et al.*, 2014 (25)	de Souza, Harrison & Marshman, 2017 (26)	Lin *et al.*, 2018 (27)	Hosey *et al.*, 2014 (28)	Alfarraj *et al.*, 2023 (30)	Al Zoubi *et al.*, 2021 (31)
Has the relationship between the researcher and have participants been adequately considered?	Y	Y	Y	N	N	Y
Have ethical issues been taken into consideration?	Y	Y	Y	Y	Y	Y
Was the data analysis sufficiently rigorous?	N	Y	Y	Y	Y	Y
Is there a clear statement of findings?	Y	N	Y	N	Y	Y
How valuable is the research?	Valuable	Very valuable	Valuable	Moderately valuable	Very valuable	Very valuable

Legend: Y = Yes, N = No

Based on Table II, studies coded N based on the CASP tools were due to several reasons; (a) secondary data analysis was conducted using the original output, potentially introducing biases and measurement discrepancies, possibly leading to the perception of insufficient rigor as highlighted in their discussion (25), (b) the utilisation of GA for providing dental treatment as a full mouth rehabilitation or only for tooth extraction did not provide significant changes although parents reported positive ratings based on Oral Health Related Quality of Life (OHRQoL) questionnaires and its impact on families, suggesting that a more extensive cohort studies are required for validation (26), (c) the study design mainly focused on the forecasting of caries reoccurrence in children post-oral rehabilitation under GA, and addresses the absence of accurate prediction models in paediatric GA patients and emphasises the mid-term prognostic factors to early detection of high-risk children with caries relapses (27), (d) participants included in the study were chosen randomly with less consideration of the relationship between the participants and the researchers, and the parents chosen has been predetermined that their child required extraction of teeth under GA (28).

Data analysis

The current study utilised a thematic analysis technique, which involved reviewing the data from the selected sources, identifying similarities, trends, and patterns, and grouping similar ideas into their respective themes (16). This analysis method was preferred since it helped the researcher obtain more detailed insights on the research topic from analysing several studies (16). Additionally, the Visualisation of Similarities (VOS) software (1.6.19, Leiden University, Netherlands) was utilised to show the most prevalent keywords associated with the current research topic. It would help to provide more understanding of the relationship between the identified keywords and the bibliographical data using the VOSviewer (1.6.19, Leiden University, Netherlands).

Ethical considerations

The current researcher also followed several ethical considerations, ensuring the research process was conducted well and the findings were reliable. Firstly, since the current review relied on secondary data, the researcher ensured that there was no plagiarism by citing and referencing all the articles used in the review (21). The researcher also ensured that their interpretation of the data obtained from the selected articles was not manipulated since it would have interfered with the credibility of the results (22).

RESULTS

The initial search yielded 790 articles; after applying the selection criterion, six articles were deemed eligible to be included in this systematic review. The network of keywords showed five major clusters with a total of 70 items; cluster 1 (red) contains 18 items, cluster 2 (green) contains 16 items, cluster 3 (blue) contains 13 items, cluster 4 (yellow) contains 13 items and cluster 5 (light purple) contains 10 items (Fig. 2) and the most prevalent keywords in this research domain are 'parents', 'child', 'oral health', 'anaesthesia', 'dental caries', 'preschool', 'dental', and 'human'. All these keywords have also been used in the current research, and these keywords will help provide more insight into the research topic at hand. For instance, dental treatment on children with dental caries by GA and the role of dentists in enhancing the acceptance of GA among parents, have been covered in the three sub-topics that follows. Table III shows a summary of the findings obtained from each of the six articles.

Table III: The summary of six articles selected in this review

Author	Aim	Methodology	Findings	Conclusion
Thomson *et al.*, 2014 (25)	To assess the differences in parental acceptance of GA across dynamic cultural backgrounds. To assess the perceptions of parents concerning the dental treatment of their children under GA	Interviews	Parental acceptance of the use of GA depends on the urgency of the existing issue and cultural background.	Parental acceptance depends on the nature of the existing disease and the level of information in families.

CONTINUE

Table III: The summary of six articles selected in this review (CONT.)

Author	Aim	Methodology	Findings	Conclusion
de Souza, Harrison & Marshman, 2017 (26)	To assess parental reports concerning health quality after dental treatment using GA.	Interview	Families whose children had significant improvement after dental treatment using GA had confidence in this treatment, while the ones whose children had negative results had the greatest fear of GA treatment.	GA experiences were stressful to the parents, especially those with inadequate information on the technique.
Lin *et al.*, 2018 (27)	To determine factors affecting parental and individual acceptance towards GA.	Interview	Dental fear is the primary factor affecting parental acceptance due to its cost burden.	Dentists should ensure proper intervention, education, and cheaper alternatives to parents and families concerning dental treatment.
Hosey *et al.*, 2014 (28)	To ascertain the effectiveness of the GA-coping game for families and children's tooth removal.	Randomised control trials	GA coping games enhance the cooperation of children and their families while undergoing GA.	Immersive learning experiences such as using GA coping games can assist dentists in reducing parents' and children's fears regarding GA.
Alfarraj *et al.*, 2023 (30)	To assess parents' concerns on the utilisation of GA on their children	Cross-sectional study	Inadequate knowledge of the GA procedures was associated with reluctance to use this method.	Dentists should provide parents with education and training on dental treatment procedures.
Al Zoubi *et al.*, 2021 (31)	To determine the level of parental acceptance of the dental treatment of their children using GA.	Interviews	Parental cultural background significantly influences their attitudes towards using GA in their children's dental treatment.	Dentists need to consider social-cultural factors when educating and informing parents because the attitude may hinder parents' understanding regarding the use of GA.

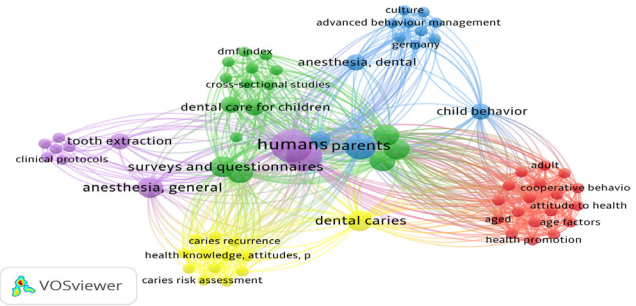

Fig. 2: The most frequently used keywords in the current research domain

Influencing factors on parental acceptance

The results of the six chosen research have revealed several factors that affect parents' willingness to consent to dental treatment under GA. According to Hosey and co-worker, parental acceptance rates were impacted by parental knowledge about GA (28). Similarly, Amin and co-worker supported these findings by asserting that parents who thought GA worked well for dental treatment were willing to subject their kids to it since they thought it would provide positive experiences throughout the procedure (29). The results of Thomson and co-worker (25) coincided with those of Lin and co-worker (27), who found that most parents are reluctant to use GA because of misconceptions that were spread upon them by family members and other close friends. Misconceptions about GA, usually passed on from family members and friends, contribute greatly to creating parental views towards dental treatments under GA. This pointed to the studies by Thomson et al. (25) and Lin et al. (27). Parents could be reluctant to allow GA for their children because of possible misconceptions or rumours from the community circles they are part of. Some misconceptions may be related to issues such as overestimated costs of the procedures, concerns regarding the safety of GA, potential risks that may accompany GA such as laryngeal spasm, pain from the tube insertion, or bad experiences related to previous GA experiences.

Researchers have already proven that parents' knowledge concerning GA is a vital indicator, according to the findings of Hosey et al. (28) where these parents were provided with information regarding the GA while attending the hospital pre-GA session. Parents equipped with adequate and comprehensive information about GA have shown a high degree of acceptance. Researchers identified that the amount of parents' knowledge regarding the use of GA significantly influences their perception. One report perceived that parents' decisions about whether or not to consent to use GA for their children's dental care were influenced by their understanding of GA (28). In this case, the researchers also connote that parents were more likely

to oppose to the use of GA on their children if they had little or no understanding of it. Alternatively, Amin and associates (29) state that positive attitudes toward the effectiveness of GA for dental surgery increase parents' willingness to choose it as their preferred choice. This positive correlation between prior knowledge, parental attitudes and choices of parents reaffirms the role of information when provided earlier before the GA took place plays in parental decisions. Further, parents with little knowledge of GA were likelier to believe in its misconceptions, making them hesitant to allow its use on their children (25), and parental GA knowledge inadequacy involving GA procedures was associated with reluctance to use this method (30). Such parents are not aware of the potential risks and advantages of GA (25). Thus, parents may seek alternative options when determining whether to approve this treatment for their children.

Besides, parental acceptance of the use of GA depends on the urgency of the existing issue and cultural background (25). Parental cultural background such as from bigger or smaller township or countries significantly influences their attitudes towards using GA in their children's dental treatment as reported by Al Zoubi and co-worker when their study compares parents from a city in Germany and Jordan (31). Cultural beliefs, values, and norms within a specific culture contribute to how parents perceive GA for their children's dental care. The cultural lens directs accepting or rejecting GA in children's dental care. Different cultural backgrounds can affect the views on health, medical treatments, and anaesthesia. Similarly, some cultural communities can have their own opinions about the safety, effectiveness and need of GA for dental processes. These cultural aspects can either facilitate parental acceptance or hinder it according to the alignment or mismatch of cultural beliefs with GA-based as the recommended dental care approach (31). An example may be a cultural background that places high value on preventive measures and regular dental check-ups, which might accept GA as a comprehensive in-one-session method to deal with dental issues (31). Contrarily, cultural origins where scepticism or fear of medical procedures exists, or if there are traditional healing practices, may exhibit refusal or rejection of GA in dental care.

Contributing factors such as income or availability of resources and education influence parental acceptance of using GA (26). Al Zoubi et al. support this claim by stating that the parents' willingness to permit the application of GA to their children's dental treatment was influenced by their degree of income and education (31). Lin and co-worker established that cultural and socio-demographic factors significantly affect parents' acceptance of dental services under GA due to existing beliefs and misconceptions (27). At the same time, prior dental care experiences influenced parents' decisions regarding the acceptance of GA in dental treatment (28). Consequently, parents with better finances could consider options outside the GA rather than GA for their children's dental care. These alternatives could be, for instance, premium dental service, nitrous oxide sedation, or specialised treatments that work on the particular patient's requirements (31). Higher-income parents who can afford dental procedures with high prices may enjoy personalised care and advanced behavioural techniques including sedation combined with conventional treatments. Medical procedures could be specialised to solve any specific problem in a precise way (27). Examination of perceived advantages and disadvantages versus GA gives a clue into the family's choice for which method is preferred and the factors considered while deciding between these methods, thus enlightening more about why parents choose these options.

According to Hosey and co-worker, parents choose physically and psychologically comfortable options for their children (28). According to this researcher, most parents perceive GA as a riskier way of treating dental diseases. Al Zoubi and co-worker determined that parents who believed GA was better for their children's well-being were more likely to consent to the use of GA during the treatment (31). It is suggested that parents are unlikely to consent to the recommended dental treatment procedure when their children have unpleasant oral experiences, such as extreme pain or discomfort after the procedure (25). Lin and co-worker supported this conclusion by determining that adverse experiences decreased treatment acceptance likelihood (27). Therefore, it can be determined that past experiences in dental care influence parental acceptance of treatment under GA. Increased parental acceptance rates have been linked with past painful experiences in dental treatment, which compel parents to opt for GA, since it provides positive experiences during the treatment procedure. Moreover, higher education and income levels have been associated with higher parental acceptance rates. Thus, socio-demographic factors interact in shaping parental behaviours and willingness to accept recommended dental care options, such as the application of GA for their children dental treatment.

Dentists' roles in facilitating and promoting parental acceptance

The chosen six studies also showed how dentists helped parents embrace their children. Hosey *et al.* determined that dentists should foster a calm environment for parents and other medical personnel to contribute to the effectiveness of the dental treatment procedure (28). In addition, Al Zoubi et al. believe that dentists and parents should work together throughout treatment to ensure a thorough approach to the child's dental care. Besides, this researcher suggests that dentists must involve parents in the decision-making process regarding the dental treatment plans for their children (31). At the same time, Thomson et al. emphasise that the dentist must know the

parent's cultural background. In this case, the researcher believes that dentists can assist parents in addressing any misconceptions established against using GA resulting from their cultural background (25).

de Souza and colleagues emphasise that dentists need enough training and preparation to reassure parents about the safety of GA (26). This implies giving dentists a full understanding of the necessary precautions and techniques associated with GA so that the parents can express their fears and concerns to the dentists without having any panic attacks. Communication with the parents by a dental person after the training becomes comprehensive and thus provides parents with correct and reliable information, adding to the parent's confidence in the safety of GA. In this scenario, the dentists can demystify any form of parents' belief about the side effects related to the treatment process (26). Hosey and co-worker suggest dentists should guide families and parents on the best oral routine, food, and pain management after the treatment. The implication is that dentists should be considered the main motivators of parental and family education in post-treatment care (28). This implies giving complete direction to performing proper oral hygiene, making healthy food choices, and managing pain following GA. Dentists can individualise the ideal treatment plans for every child, depending on their situation (28). In addition, simple and concise information can be presented to parents to reinforce the regularly recommended oral care behaviours and type of diet a child should follow. Through this pro-active approach, the dentists add their part to the supportive care environment, empowering the parents with the required knowledge and resources for the positive result of dental interventions in their children. This way, parents will know how to mobilise their children and provide encouragement in using GA. This researcher emphasises that dentists play a primary role since they have the foundations of the most professional dental health, which may educate parents or reveal any existing contradictions from families (28). Overall, the dentist's primary role is to provide parents with accurate information on different techniques for practitioners, focusing on improving parent communication, particularly in advancing parent communication. This entails creating an atmosphere of transparency and using simple and understandable language to address parents' concerns and actively involve them in decision-making. By fostering a supportive atmosphere and using educational resources, children's level of understanding and engagement will be raised, leading to positive outcomes.

Al Zoubi and co-worker emphasise that dentists should ensure that parents are aware of the advantages and drawbacks of GA for their children in addition to making this point (31). According to Hosey and colleagues, the likelihood that parents will consent to use GA in dental treatment is impacted by the fact that most parents lack the appropriate knowledge of dental treatment techniques (28). This situation will assist parents in making choices that are best for their children's health. The researchers concluded that dentists should educate parents on the dental treatment process to help parents make better judgments that are not influenced by misconceptions about dental treatment under GA (28).

Techniques to increase parental acceptance

The chosen research has recommended several tactics to aid dentists in encouraging parental acceptance of GA in children's dental care. Dentists can communicate all the benefits, side effects, and the entire GA treatment process to establish parents' confidence in this treatment as suggested by de Souza et al (26). In this case, dentists should provide parents accurate information about the GA treatment process, its dangers, and its benefits to assist parents in addressing any existing misconceptions. Thomson and co-worker believe dentists should use their professional capacity and strategy to educate parents on dental treatment techniques to combat misconceptions about GA (25). Therefore, dentists can increase the rates of parental acceptance of treatment under GA by educating parents on the advantages of GA for their children's oral health.

DISCUSSION

Behavioural management techniques (BMT) encompass wide spectrum technique that can be classified as basic and advanced. Basic BMT normally involve simple methods such as tell-show-do, modelling, and positive reinforcement while advanced BMT includes active and passive restraint, sedation and general anaesthesia (32). Tell-show-do allows communication and explanation between practitioners, parents, and child (tell), followed by demonstrations of procedures (show) and performed those procedures in a control setting (do) in order to familiarise patients and parents to the dental treatment (32). General anaesthesia is considered as part of advanced BMT and needs to be employed with care designated for selected cases (32). Each technique has its own advantages and disadvantages (32) and the perceived benefits and drawbacks of these alternatives compared to GA could offer insights into parental preferences and decision-making criteria. This systematic review discussed on the parental acceptance towards the use of GA, which is influenced by their education and income levels, dentist roles in providing information prior to GA, and suitable techniques to enhance parent's acceptance as highlighted in the relevant sections.

The current review has identified the factors that shape parental attitudes and perceptions concerning hindering or facilitating acceptance of the recommended treatment approach are their traumatic dental visits and experience. Prior dental visits significantly impact parents' attitudes concerning their children's dental treatment with GA. Parents whose children have experienced traumatic,

painful, and unpleasant results due to GA have negative attitudes towards GA especially when their children's behaviour was altered or changed after the GA, and this significantly affects parents' attitudes towards the use of GA drug. Parents concerned about the psychological impacts of this anaesthetic may be uncomfortable when dentists suggest its application for treating their children.

Parents with a high level of education mainly accept dentists' requests to use GA while treating their children's dental issues. In this case, such parents know the reasons and benefits of using this GA method while treating children. Besides, most educated parents know that GA enables children to experience comfortable treatment procedures. GA allows quality dental care for the child patient provided preceding thorough investigations and indications has been well established (32). While education level affect parental acceptance towards GA, past experiences also influence their decisions. Past experiences may be related to the parents' own experiences (29) and parents whose children have had negative consequences after GA procedures tend to have a negative perception regarding this type of treatment (31). However, it was shown that among the newer generation of parents, the decision to accept GA is not influenced by the parent's negative experiences (29), and most of the parents accepted GA due to the urgency and nature of the problems their children are facing such as dental trauma and toothache (31).

Parents with lower income levels are more likely to accept GA since they perceive it as a necessary and cheaper alternative for their children to receive the treatment in a single visit and comprehensive manner compared to attending clinic multiple times for dental treatment. However, parents with higher income levels tend to avoid using GA for their kids and seek alternative treatments such as basic BMT for example positive reinforcement, modelling, memory restructuring, and distraction. Hence, the key factors contributing to parental decision-making and acceptance towards treatment under GA is their income and level of education.

Other socio-demographic factors such as geographic location, either urban or rural, and access to healthcare resources especially hospitals with GA services also influence parental acceptance. Parents that must travel far to seek dental appointments because of living in most deprived areas have children with high diseases burden (26). Dental treatment under GA is available mostly in tertiary referral centres, university hospitals, and university-based paediatric dental clinics located in urban areas (31, 33, 34). This may contribute to lower attendance and acceptance for dental treatment under GA.

Dentists should play a crucial role in addressing parental fears, worries, and safety concerns by providing thorough instruction prior to GA, risks and procedures with an appropriate communication since this facilitates parental acceptance and promote positive experience. Therefore, an excellent way to overcome misconceptions and worries about the use of GA in dental operations is to make an effort in providing thorough and transparent information about the treatment techniques, advantages, and alternative treatment alternatives. The results of Alfarraj et al. were consistent with those of the present review because they demonstrate that parental trust and positive attitudes toward the benefits of the dental procedure significantly influence parental acceptance of GA in children (30).

Recommendations

Several recommendations can be made based on the findings obtained in this review. Dental practitioners might adopt specific recommendations to strengthen communication and decision-making processes for the parents, giving providers a comprehensive and inclusive approach to paediatric dental care under GA.

- The first point concerns Transparent and Plain Language Communication; this is the most crucial matter to improve parental communication through simple and direct language. Dentists should always be clear when discussing treatment plans and benefits and proceeding towards GA. The decisions and treatment planning must be conveyed using smooth and simple languages, and explained to the parents including stating that the GA will be administered by the anaesthetic team (35). Communication should be comfortable, and parents should be able to ask questions or share their concerns openly. The idea behind this strategy is to provide reliable data and involve parents in meeting their child's goals.
- Information and pre-GA counselling session: Most parents appreciate, and request information and counselling session being provided to them before embarking on GA for their children's dental treatment (29).
- Interactive educational resources: The advancement in artificial intelligence (AI) and virtual stimulations should be adopted by dentists. Additional educational resources that complement verbal communication with interactive educational resources that cater to various learning styles are provided (28). This could involve pamphlets, videos, or online content that illustrates dental treatment, the role of GA and guidelines for post-treatment care for patient and parents' education. The value of interactive materials lies not only in their ability to serve as effective educational tools but also in providing parents with the valuable opportunity to practice and reinforce their knowledge when convenient and at their own pace (28). Incorporating technology and multimedia in patient education conforms to current media trends and thus improves communication efficiency and can be used for managing anxious parents or children, and tips for applying a more inclusive decision-making process.

• The last recommendation deals with Establishing a Supportive Environment. Establishing a welcoming and sympathetic environment within the dental office will be crucial for addressing parents' fears (32). This is achieved by carefully considering parents' concerns, prompt replies to their questions, and recognising the emotional dimensions of a child's dental care practices. Dentists can provide staff with skills, dedicated complaints and time for discussing treatment plans, and create a conducive environment for open dialogue. This empathic aspect further strengthened their confidence and minimised the worries of the parents and the kids, leading to a positive experience for both parties (28). Efforts by dental practitioners to include these strategic approaches in their practice can be employed to improve communication skills that will enable parents to have knowledge and stay involved in the decision-making process. Adopting transparency principles, employing interactive learning tools, and instituting a supportive setting are all essential elements of a sophisticated paediatric dental practice under GA that culminates in patient-centred healthcare that embodies high parental acceptance and satisfaction.

CONCLUSION

Parental attitudes, beliefs, and understanding influence their readiness to permit GA use on managing their children's dental care. Higher income and education levels have been linked to a higher likelihood of accepting treatment under GA, while lower levels have been linked to a lower acceptance rate. The fact that the present review has identified the critical elements influencing parental decision-making and support for treatment under GA shows that all the goals stated in the introduction section have been met. These elements include the parents' education level, attitudes and beliefs, and prior pain experiences. Additionally, socio-demographic elements such as education, income, and cultural backgrounds have impacted parents' willingness to pay for dental care under GA. Additionally, the review has identified the elements, such as parental knowledge of dental treatment protocols, influencing parental attitudes and views regarding dental treatment acceptance under GA. Dentists play a significant role in their children's parental acceptance of GA.

Limitations

The current review has its limits and matters of consideration. Significantly, relying on secondary sources makes the researchers vulnerable to bias; therefore, the findings may be unreliable. Incorporating literature from the last five years may not be beneficial either, as dental care practices and attitudes may have already evolved, and some of those texts might be outdated. Besides, there may be an issue of the review being affected by publication bias where those studies with positive outcomes might be more frequent in publication. Another limitation is that there is no comprehensive quality assessment or risk of bias analysis for the included studies because they do not clarify the general strength of evidence on the topic. This is further compounded by the studies' mixed approaches and populations, which may limit the ability to account for this variability. These restraints collectively raise some questions about the evaluation of the findings to be taken into account and point out the ways for future studies to be conducted.

The limitation also seeks that a single researcher is involved; however, the criteria were applied systemically to mitigate the risk of bias, including predefined criteria, systematic search strategies, and quality assessment tools. These measures endeavoured to guarantee transparency and accuracy, further contributing to a holistic view of those elements determining the parental acceptance of giving paediatric dental treatment under GA.

Future research

The current review has studied the role of dentists in promoting parental acceptance of the application of GA in the dental treatment of their children. However, it has not studied the challenges dentists face while performing their roles. Therefore, future researchers could investigate dentists' challenges in facilitating parental acceptance of GA and promoting cooperation and positive experiences during dental treatment procedures.

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