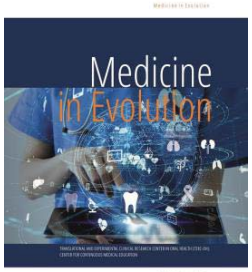
Using children's drawings to understand their emotions and expectations in the dental clinic



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Received: 21 April 2024; Accepted: 21 May 2024; Published: 30 June 2024

Abstract

Pediatric dentistry requires a specialized approach to managing children's anxiety and fear during dental visits. The use of drawings as a method of communication can be highly effective in understanding children's emotions and expectations in the dental office. This literature review analyzes relevant studies published in the last 10 years regarding the use of children's drawings in the context of dental medicine, highlighting the benefits of this approach and providing guidance for future research.

Keywords: child drawings, dentistry, pediatric dental anxiety, communication

INTRODUCTION

In pediatric dentistry, knowledge of both preventive measures and restorative skills is necessary, as well as understanding the children psychological development. This understanding enables the dentist to manage stressful situations in the dental office and identify dental anxiety and fear. The use of drawings as a means of expression and communication can facilitate the understanding and management of these emotions, contributing to a positive experience during the dental visit [1,2].

Dental fear typically refers to a normal unpleasant emotional reaction to specific threatening that occur in situations associated with dental treatment, while dental anxiety is an excessive, nonspecific negative emotional state. Emotional reactions are similar in both situations. Fear can be subjective (emotions and thoughts) or objective (behavior and physiological reactions). Children have difficulty describing subjective experiences using verbal language but fare better matching internal states with representations through drawings of emotions [3].

Currently, there is increasing interest in using art as a means of facilitating communication with children. Several authors have suggested that an appropriate way to gather information about children's perceptions and experiences is through projective self-report techniques, such as drawings. Children's drawings can provide a unique window into their inner experiences, especially when they have experienced stress and anxiety [3]. Drawing, as a graphic representation of thoughts and feelings, is one of the most primitive forms of human communication [4].

Considering Piaget's theory, Di-Leo established criteria for understanding the process of evolution of drawings in the cognitive development stages of children. In the Sensorimotor Stage (0-4 years), scratches appear, and by the age of 2, drawing is initially a reflexive reaction and part of motor activity. From the age of 2, the child draws circles as signs of symbolic communication, which becomes evident at the age of 3-4. In the Pre-Operational Stage (4-7 years), there is intellectual realism, and the child draws from an internal model, highlighting transparency and the presence of expressionism and subjectivism. In the Concrete Operations Stage (7-12 years), subjectivity is reduced, and the child begins to draw visible reality. Human figures become more proportional without transparency, and colors become more conventional due to visual realism. In the Formal Operations Stage (12 years and older), drawings are subject to self-criticism, and as a result, drawing activity decreases; however, children with drawing skills maintain this activity [4].

Aim and objectives

The aim of this study is to explore the effectiveness of utilizing children's drawings as a tool for understanding their emotions and expectations during dental visits. The objectives include:

1. Assessing the emotional themes depicted in children's drawings related to dental experiences.
2. Investigating the correlation between children's drawings and their reported emotional states during dental visits.
3. Exploring the developmental progression of children's drawings and its implications for understanding their emotional experiences in the dental setting.

MATERIAL AND METHODS

This literature review is focused on relevant studies investigating the use of children's drawings in the dental clinic. Articles were searched in academic databases such as PubMed, Google Scholar and Web of Science, using relevant search terms such as “child drawings”, “dentistry”, “pediatric dental anxiety”, and “communication”.

Inclusion criteria:

-parental consent for study participation;

-patients aged 3-14 years;

-clinically healthy patients.

Exclusion criteria:

-patients with a history of general pathological medical conditions.

In accordance with the aforementioned inclusion and exclusion criteria, only articles relevant to the study were selected. Thus, information regarding the participants' age for each study, the evaluation method, and the results and conclusions reached after conducting these studies were analyzed.

RESULTS

Table 1. Article analysis

Method	Age	Results	Conclusions
The methods used in this research included observation and analysis of drawings using Vygotskian method [1].	6 - 9	Personal relationships were represented by including the child in drawings and by what the children said during the activity, highlighting a strong relationship established with the dentist. Dental anxiety was expressed by children through their drawings, depicting them as “immobilized” or tense in the face of situations perceived as threatening. Additionally, a lack of representation of oral hygiene tools was observed.	The study underscores the need for a more careful approach in the dental education of children and in managing their anxiety during dental visits. It also highlights the importance of involving children in the dental care process and the necessity of effective communication between the dentist and the pediatric patient.
Data analysis was conducted using Riley's (1996) technique of data coding using colored fluorescent highlighter pens to identify common themes [5].	7 - 14	The writing and drawing technique used revealed that fear of the white coat and fear of needles were observed among children, and they also expect a play area within the dental office. Additionally, children showed greater trust in procedures and exhibited improved cooperation after using this technique.	The writing and drawing technique can be successfully applied as a tool to identify children's opinions regarding pediatric dentistry and the dental office.
The drawings were evaluated using the Drawing Scale Manual (CD: H) and correlated with FLACC, FPS-R, and Frankl using Pearson correlation test [6].	4 - 13	A positive correlation, although statistically nonsignificant, was observed between the CD: H scores and all other parameters considered (Frankl, FPS-R, and FLACC) in the present study.	The drawings could not act as a measure to substitute the child's pain; however, they acted as a recounting of experiences and reflection of internal emotions. Therefore, drawings can be used as an

			additional tool in the dental arsenal.
The drawings were evaluated using the CD:H scoring sheet, and the findings were compared with SEM and Frankl scores [3].	4 - 11	A significant positive linear correlation was observed between SEM scores and CD:H (P < 0.001, correlation coefficient = +0.483). Furthermore, a significant negative linear correlation was found between Frankl scores and CD:H (P < 0.001, correlation coefficient = -0.550). The correlation coefficient between SEM scale and Frankl scale was -0.905 (the evaluation system in Frankl is inverse to SEM and CD:H scales).	Drawing can be a statistically valid indicator of the child's emotional state compared to SEM and Frankl scales. This method is reliable enough to be recommended for all age groups.
The Sound, Eye, and Motor (SEM) and Frankl scales were used as objective assessments of behavior during treatment. Children's drawings were evaluated using the Child Drawing: Hospital (CD: H) scale and the Emotional Indicators of Human Figure Drawings (HFD). The findings were compared with Frankl and SEM scores [7].	6 - 12	A significant negative correlation was identified between Frankl scores and CD: H (P =.017), and likewise, a significant negative correlation was found between HFD scores and Frankl (P =.048).	Drawings can reveal a considerable amount of information about the emotional state of children, and children's drawings can be a useful non-verbal self-report measure to assess anxiety in a pediatric dental setting.
The drawings were collaboratively analyzed by the two dental authors of this study, using theoretical support from books and articles on child psychology, human developmental psychology, and drawing interpretation studies, in addition to articles on children's perceptions of dentists through drawings available in the scientific literature, as a basis for interpreting children's drawings in the dental office [4].	5 - 12	The results showed that boys (521 volunteers - 51.3%) were more prevalent than girls (494 volunteers, 48.6%), 688 (67.7%) of the children had experience with dental care, and the need for treatment was the reason for seeking dental care for 306 (30.1%) of them. In describing the profession using a single word, positive words totaled 805 (79.1%) responses, negative words represented 24 (2.2%), and 186 (18.3%) participants could not answer. The drawing category with the highest number of volunteers was"Procedures", with 238 (23.4%) drawings, followed by:"Dental Consultation" with 228 (22.4%),"Other Professionals" with 174 (17.1%),"Dentist" with 115 (11.3%),"Oral Health" with 71 (6.9%),"Miscellaneous" with 71	The drawings were effective in representing the individual vision and showed a plurality and complexity of concepts and ideas related to dentistry. In addition to procedures and consultations, professional behavior, knowledge conveyed to patients, the physical environment, and experienced sensations, factors related to the origin of the main idea about the profession were also relevant. The volunteers' perception was positive both in the drawings and in the semi-structured interview responses.

		(6.9%),"Dental Office" with 55 (5.4%),"Mouth" with 36 (3.5%), and"Pain/Fear" with 27 (2.6%).	
The drawings were evaluated and scored using graphological method [8].	5 - 10	Significant reductions in stress levels were observed in the drawings made after play therapy.	Play therapy is an effective behavior modification technique in pediatric dentistry, which can be used in routine dental practice.
The three coloring and drawing sections were correlated with the Frankl Behavior Rating Scale [9].	3 - 14	Out of the 178 patients, 60 exhibited a definitely positive behavior, 73 displayed a positive behavior, 37 had a negative behavior, and 8 were totally negative on the Frankl Behavior Rating Scale; 133 children showed no stress markers or had one, while 45 presented 2 or 3 stress markers in their drawings.	The presence of stress markers in their drawings can help identify children who require specialized behavioral techniques. This nonverbal activity itself can have an overall positive effect on the behavior exhibited in the dental office.

DISCUSSIONS

The analyzed studies have highlighted numerous benefits of using children's drawings in the dental office. Among these, they are facilitating communication and expression of emotions, reducing anxiety and stress associated with dental visits, increasing children's cooperation and trust in medical staff, as well as improving the quality of their experience in the dental office.

Some studies have indicated that the success of using drawings in the dental office may depend on factors such as the child's age, level of development, previous experiences in a medical context, and linguistic abilities. Additionally, methodological limitations of some studies, such as small sample sizes or lack of appropriate comparison groups, may influence the interpretation of results.

Torriani (2014) has shown that children's drawings can reflect their perceptions of dental care and oral health. Most of the analyzed drawings presented positive and neutral scenes about dental visits, with few representations of pain or anxiety associated with dental treatments. The results suggest that children's drawings could be used as useful tools to assess their perceptions of dental care and identify potential issues or concerns. This approach could improve communication between children and medical staff, facilitating anxiety management, and providing more personalized care [1].

Rupak Kumar Dasarraju (2017) demonstrated that the write and draw technique could be effective in reducing anxiety and stress in children during dental treatments. The results indicate that this technique could be a promising way to manage children's anxiety and fear in the dental office. This approach could be integrated into pediatric dental practice to improve children's experience and ensure a more comfortable and safer environment [5].

Pala SP, Nuvvula S, and Kamatham R (2016) found that drawings made by children during dental extraction procedures reflected varying levels of pain and discomfort. Children used the drawings to express their emotions and communicate their feelings to the medical staff. The children's drawings served as a useful tool for assessing the level of pain and discomfort associated with dental procedures. Using drawings as a projective measure could be beneficial in obtaining information about the emotional state of children and adapting medical approaches accordingly [6].

Naser Asl Aminabadi demonstrated that drawings made by children during the visits to the dentist reflected significant levels of stress and anxiety. Children's drawings could be considered as useful tools for assessing stress and anxiety in pediatric dentistry. Integrating these drawings into clinical evaluation could improve understanding of individual needs and concerns, and could guide treatment plans and psychological interventions [3].

Guner Onur S (2020) found a positive correlation between the emotional content of children's drawings and their level of anxiety before dental procedures. Children with more negative drawings exhibited higher levels of anxiety during treatment. Children's drawings could be used as indicators of anxiety and fear in pediatric dentistry. Identifying and interpreting the meaning of these drawings could guide medical staff interventions to reduce anxiety and improve children's experiences in the dental clinic. Additionally, the Human Figure Test aids in evaluating cognitive level and identifying unconscious and expressive aspects, personality traits, and the child's experiences with others and the environment. It also serves as an indicator of internalized disorders, gender identity, and eating behavior. The human figure, mostly representing either the child themselves or important people around them. The presence of exaggerated or highlighted body parts, such as hands, shoulders, prominent nose, eyebrows, double or prominent ears, and the presence of teeth, are often associated with hostility and aggression. Details such as shaded eyes and the absence of arms and hands are associated with feelings such as helplessness, shame, fear, and social anxiety. These drawings should be interpreted with care and in context, considering the child's life history and developmental stage [7].

Magalhães Costa (2015) highlighted that drawings made by children could reflect their perceptions of the dentist. Analysis of these drawings revealed various feelings and perceptions, including fear, anxiety, or trust in dental professionals. Integrating these drawings into clinical evaluation could help improve communication and the relationship between children and medical staff [4].

Kiran SDP (2018) has shown that play therapy can be effective in reducing anxiety and stress in children during dental procedures. Analysis of drawings made by children revealed a more positive attitude and open communication after participating in play therapy. The results suggest that play therapy can be an efficient and non-invasive way to manage children's anxiety and fear during dental visits. Using drawings as an assessment tool can provide an additional perspective on the effectiveness of this approach [8].

Mathur J (2017) found that children's drawings can reflect the level of anxiety associated with dental visits and treatments. Analysis of the drawings revealed that certain characteristics of the drawings were associated with behavior scores according to the Frankl scale. Integrating these drawings into clinical practice could facilitate the identification and efficient management of anxiety in pediatric dentistry [9].

These discussions and results highlight the various ways in which children's drawings can be used in pediatric dentistry to understand and manage their emotions and expectations during dental visits. Integrating these techniques into clinical practice could improve the quality of dental care for children and contribute in reducing anxiety and fear associated with dental treatments.

CONCLUSIONS

The use of children's drawings in the dental office represents a promising approach for understanding their emotions and expectations during dental visits. However, further research is needed to investigate the effectiveness of this method in various clinical contexts and populations of children. Future research directions should explore the impact of using

drawings on clinical outcomes and identify optimal strategies for integrating this approach into pediatric dental practice.

REFERENCES

1. TORRIANI, D. D., et al. Representation of dental care and oral health in children's drawings. British dental journal, 2014, 216.12: E26-E26
2. FABRIS, Matteo Angelo, et al. Children's drawings: evidence-based research and practice. Frontiers in Psychology, 2023, 14: 1250556.
3. AMINABADI, Naser Asl, et al. Can drawing be considered a projective measure for children's distress in paediatric dentistry?. International journal of paediatric dentistry, 2011, 21.1: 1-12.
4. COSTA, Renato Magalhães; ARRIAGA, Marcel Lautenschlager. Children's perception of dentists through the interpretation of drawings. Pesquisa Brasileira em Odontopediatria e Clínica Integrada, 2015, 15.1.
5. DASARRAJU, Rupak Kumar, et al. Application of write-and-draw technique in pediatric dentistry: A pilot study. International Journal of Pedodontic Rehabilitation, 2016, 1.2: 56.
6. PALA, Sai Priya; NUVVULA, Sivakumar; KAMATHAM, Rekhalakshmi. Expression of pain and distress in children during dental extractions through drawings as a projective measure: A clinical study. World journal of clinical pediatrics, 2016, 5.1: 102.
7. GUNER ONUR, Sirin, et al. Children's drawing as a measurement of dental anxiety in paediatric dentistry. International journal of paediatric dentistry, 2020, 30.6: 666-675.
8. KIRAN, Shital DP, et al. Evaluation of the efficacy of play therapy among children undergoing dental procedure through drawings assessed by graphological method: a clinical study. International Journal of Clinical Pediatric Dentistry, 2018, 11.5: 412.
9. MATHUR, Jyoti, et al. Identifying dental anxiety in children's drawings and correlating it with Frankl's Behavior Rating Scale. International journal of clinical pediatric dentistry, 2017, 10.1: 24
10. Anghel T, The art of behavioral management in pediatric dentistry, Medicine in Evolution Volume XXIV, No. 1, 2018