



Evaluation of using pictures and video to enhance children cooperation in dental practice

Twana Othman Hussein¹ , Burhan Altaf Misgar² , Huda Raad Mahdi³ , Halgurd Salih Jaf⁴ , Varinder Goyal⁵ , Sivakumar Nuvvula⁶ , Sarhang Sarwat Gul^{7,8}

¹ B&R Dental Center, Suleymani, Iraq

² Central Hospital, Sharjah, United Arab Emirates

³ College of Dentistry, Hawler Medical University, Kurdistan Region, Iraq

⁴ Hiwa Hospital for Cancer and Hematology, Sulaimani, Iraq

⁵ Guru Nanak Dev Dental College and Research Institute Sunam – Chandigarh Road, Sunam, Punjab, India

⁶ Narayana Dental College and Hospital, Nellore-524003, Andhra Pradesh, India

⁷ College of Health and Medical Technology, Sulaimani Polytechnic University, Sulaymaniyah, Iraq

⁸ College of Dentistry, University of Sulaimani, Sulaymaniyah, Iraq

Huda.mahdi@hmu.edu.krd

Abstract

INTRODUCTION. A wide range of behavior guidance techniques are available routinely in the dental office to enhance the cooperation between children and pediatric dentists. However, it is not feasible to achieve the desired cooperation from all child patient.

AIM. To evaluate anxious children's behavior before and after the dental treatment at their first to dental practice using a pictorial and video-graphic representation of cooperative children managed earlier in the clinic.

MATERIALS AND METHODS. This study included 50 children of 3–13 years old to determine the change in behavior of children at their first visit to dental practice using pictures and videos of cooperative children visited the dental practice in android or iPad. A numeric verbal rating scale determined the children's dental anxiety before and after the treatment, and the mean differences were evaluated.

RESULTS. Fifty children with mean age of 6.56 ± 2.95 years old (24 males and 26 females) were included in this study. A highly positive correlation was found ($p < 0.0001$) when the children with negative behavior were shown pictures and videos of cooperative pediatric patients. The mean anxiety score and standard deviation using numeric verbal rating scale before seeing pictures and watching videos were (6.34 ± 3.17) , and after seeing pictures and videos were (3.68 ± 2.14) , which was statistically significant ($p = 0.0001$). There was an effective reduction of fear and anxiety, and the results were statistically significant (p -value 0.0001).

CONCLUSIONS. Using pictures and videos of a cooperative child would enhance the desired cooperation from children. This technique also helps gain trust and improves the child's cognition, reducing anxiety.

Keywords: dental anxiety, child behavior, behavior guidance, numeric verbal rating scale

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Оценка использования фотографий и видео для повышения уровня сотрудничества детей при стоматологическом лечении

T.O. Хусейн¹ , Б.А. Мисгар² , Х.Р. Махди³ , Х.С. Джаф⁴ , В. Гойял⁵ , С. Нуввула⁶ , С.С. Гуль^{7,8}

¹ Стоматологический центр В&R, Сулеймания, Ирак

² Центральная больница, Шарджа, Объединенные Арабские Эмираты

³ Колледж стоматологии — Университет Хавлер, Регион Курдистан, Ирак

⁴ Госпиталь Хива по вопросам онкологии и гематологии, Сулеймания, Ирак

⁵ Стоматологический колледж и научно-исследовательский институт имени Гуру Нанак Дева, Патиала – Чандigarх Роуд, Сунам, Пенджаб, Индия

⁶ Стоматологический колледж и больница Нараяна, Неллор-524003, Андхра-Прадеш, Индия

⁷ Колледж медицинских технологий и здравоохранения, Политехнический университет Сулеймании, Сулеймания, Ирак

⁸ Стоматологический колледж, Университет Сулеймании, Сулеймания, Ирак

Huda.mahdi@hmu.edu.krd

Резюме

ВВЕДЕНИЕ. В стоматологической практике широко применяются различные методы управления поведением детей, направленные на улучшение их сотрудничества с детским стоматологом. Однако добиться оптимального уровня сотрудничества удастся не у всех пациентов детского возраста.

ЦЕЛЬ ИССЛЕДОВАНИЯ. Оценить поведение тревожных детей до и после стоматологического лечения при их первом визите в клинику с использованием фотоматериалов и видеозаписей, демонстрирующих кооперативное поведение детей, ранее проходивших лечение.

МАТЕРИАЛЫ И МЕТОДЫ. В исследование были включены 50 детей в возрасте от 3 до 13 лет. Целью было определить изменения в поведении детей при первом посещении стоматолога после просмотра фотографий и видеороликов кооперативных пациентов на устройствах Android или iPad. Для оценки уровня стоматологической тревожности использовалась числовая вербальная рейтинговая шкала до и после лечения; полученные средние значения были сопоставлены.

РЕЗУЛЬТАТЫ. В исследовании приняла участие 50 детей (24 мальчика и 26 девочек) со средним возрастом $6,56 \pm 2,95$ года. Обнаружена выраженная положительная корреляция ($p < 0,0001$) у детей с первоначально негативным поведением после демонстрации фото- и видеоматериалов кооперативных пациентов. Средний показатель тревожности по числовой вербальной шкале до просмотра составлял $6,34 \pm 3,17$, а после просмотра – $3,68 \pm 2,14$; различия были статистически значимыми ($p = 0,0001$). Таким образом, наблюдалось достоверное снижение уровня страха и тревожности ($p = 0,0001$).

ВЫВОДЫ. Использование фотографий и видеоматериалов с изображением кооперативных детей способствует повышению уровня сотрудничества маленьких пациентов. Этот метод также помогает завоевать доверие ребенка, улучшает его восприятие и когнитивное понимание происходящего, снижая тревожность.

Ключевые слова: стоматологическая тревожность, поведение ребенка, методы управления поведением, числовая вербальная рейтинговая шкала

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INTRODUCTION

Dental fear and anxiety (DFA) refer to the strong negative feelings associated with dental treatment, whether or not the criteria for diagnosing dental phobia are met [1]. Depending upon the individual vulnerability and maturity level of cognition and emotional status, the child, can become highly anxious, which can lead to avoidance of dental examination or treatment, leading to a deterioration of oral health [2; 3]. Eitner et al. [4], considered that more than every tenth patient was subjected to high dental anxiety and the neglect affected not only the oral health but also had a significant impact on the overall health of the individual.

An unpleasant first visit can be stressful for the dentist and the child and may negatively influence treatment. Thus, the clinician must find ways to reduce such exposures to stimuli that might trigger dental fear and anxiety and turn the treatment into a positive experience [5]. A positive experience will establish trust, reduce the child's anxiety, and allow the dentist to carry out the procedure more easily and efficiently [2]. Various techniques are available for guiding the behavior and alleviation of the child's dental fear and anxiety for the development of a positive attitude and promotion of patient's as well as parents' awareness towards good oral health [6].

The commonly used non-pharmacological behavior guidance techniques (BGTs) are tell-show-do, nonverbal communication, voice control, modelling, distraction, positive reinforcement, hand-over-mouth exercise and protective stabilization. [7]. Although these conventional techniques effectively guide children's

behavior, some invasive dental procedures limit their acceptability. Hence, there is a demand for newer, non-invasive BGTs for children. Nowadays Android and iPad are commonly used by children for entertainment, gaming and even studying, pictures and videos are effective means to communicate with children in this paper, an easy, effective, and no-cost technique examined to help pediatric dentists or pediatricians to gain a child's trust and improve the child cooperation more easily and quickly. This technique includes videos and pictures in which the dentist, smiling cooperative children with happy signaling postures, are shown to the anxious, uncooperative children at their first or subsequent visits. This new technique aims to gain the child's trust, making the child cooperate and adapt to the dental clinic environment quickly while the dentist can perform an effective dental treatment.

The present study aimed to evaluate the effect of a new technique of using pictures and videos of one's own cooperative young dental patients with new patients as a way to gain trust and for behavior management.

MATERIALS AND METHODS

Study design

This experimental investigation involved young children aged (3–13) years old, the mean age was (6.65 ± 2.95) to evaluate effectiveness in achieving cooperation after showing various pictures and videos. Neareast Faculty of Dentistry, Turkey's institutional review board, reviewed and approved this study after keen evaluation Informed written consent

was obtained from each participant’s parent for clicking pictures and recording videos during the dental treatment.

The control group included the children who were not shown any pictures or videos before or during the study period.

Study population

A cohort of 50 healthy and cooperative child patients was selected from patients attending the pediatric clinic in the Department of Preventive Dentistry Nearest Faculty of Dentistry, Turkey, during the academic year 2021/2022. At an initial visit, a Frankl Behavioral Rating Score was assigned to each child by the examining pediatric dentist following a brief general and clinical examination. Children whose behavior was “positive” or “definitely positive” on the Frankl scale were included for clicking photographs and filming videos before and after the commencement of the treatment procedures with informed consent taken priorly. Children were excluded from the study if they had physical, mental or cognitive problems. The captured pictures and videos on Android and iPad of cooperative children were shown to another children attending their first dental visits in three different countries, India, Suleimani-Kurdistan region of Iraq, and Emirate by three pediatric dentists in their private clinic.

Inclusion criteria: Healthy children aged 3–13 years old, first dental visit, children who were able to watch videotapes and pictures and communicate effectively, and uncooperative child (definitely negative-- and negative-)

Exclusion criteria: Children with physical, mental or cognitive disabilities, and cooperative children (positive + and definitely positive++)

The pictures and videos demonstrated the pediatric dentist communicating and performing treatment with cooperative children. This demonstration included very young children getting a general clinical examination done, children who displayed happiness after their teeth were extracted, and children who received gifts after completion of treatment and a certificate for being brave during treatment. Photographs and videos of the same dentist playing and spending time with children and pictures of friendship postures with child patients were also on display. A video of patients who performed fillings on mannequin teeth and examinations on artificial dolls, video and pictures of children while playing, acting and engaging in indoor games, were provided within the clinic.

The study then utilized these before and after pictures and videos using i-pad (iPad pro-2020, One apple park way, Cupertino CA 95014, USA) and Redmi note 7 pro (Redmi, Xiaomi) for reducing the fear and anxiety of an uncooperative child (Franks negative of definitely negative behavior). These pictures and videos were used for patients who saw the dentist for the first time and had evident stress and anxiety, and the response was noted. The degree of anxiety before and after the treatment was measured through a numeric verbal rating scale (NVRS).

Statistical analysis: Statistical analysis was done using A NOVA test to calculate the mean value. *p*-values less than 0.05 were considered statistically significant.

RESULTS

Fifty children with mean age of 6.56 ± 2.95 years old (24 males and 26 females) were included in this study. In this study, a positive and highly significant correlation was found when the children with negative behavior (Frankl’s -/--) were shown pictures and videos of our cooperative pediatric patients who had visited the clinic before. Table 1 depicts the mean values of anxiety before and after seeing the pictures and videos, which were measured through a numeric verbal rating scale. The mean anxiety score and standard deviation using NVRS before seeing pictures and watching videos were 6.34 ± 3.17 , and after seeing pictures and videos were 3.68 ± 2.14 . On statistical evaluation between the before and after seeing pictures, the mean difference was found to be statistically significant ($p = 0.0001$).

Table 1. The mean values of anxiety before and after seeing the pictures and videos

Таблица 1. Средние значения уровня тревожности до и после просмотра фотографий и видеоматериалов

Groups	N	MEAN	SD	F-value	p-value
Before seeing pictures and Videos	50	6.34	3.17	232.0024	<.0001
After seeing pictures and Videos	50	3.68	2.14		

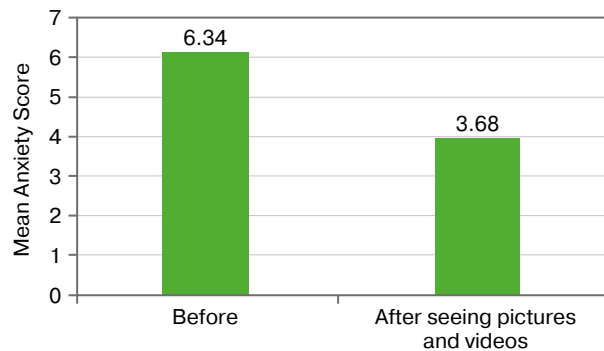


Fig. 1. Mean of anxiety before and after seeing of videos and pictures

DISCUSSION

The management of behavior is considered to be a vital part of the pediatric dental specialty. It is widely agreed to play a crucial role in providing oral care for children. If the child’s behavior cannot be managed in the dental clinics, it is difficult to carry out a dental procedure that is needed at that point. It is imperative that whichever approach is taken for managing behavior, it must be rooted in empathy and a concern for each child’s wellbeing.

A wide variety of behavior guidance techniques are available to pediatric dentists, which are used routinely in the dental office to benefit the child and the concerned dentist. Nevertheless, sometimes it is difficult to achieve the desired cooperation from the child patient despite every effort made. A pediatric dentist must consider his/her responsibility to make dentistry efficiently social, child-friendly and pain-free as much as possible to bring about positive changes in the behavior of the child during his/her visit as well as while carrying out the dental procedure. So, we introduce a novel, time-saving alternative method for pediatric dentists, which helps achieve the child's cooperation by showing pictures and videos of a cooperative child. Hence, helping the child's cognition in reducing the anxiety pattern.

Not all children can express their fears and anxieties, depending upon their cognitive development. Young children have relatively limited communication skills at younger ages [8].

Around 10% of pediatric patients and young persons may have fear of dental treatment that can influence on behavior problems within the dental clinic [9].

The use of a smartphone by the dentist for clinical usage and demonstrating the use of standard dental equipment using various applications that are available online for demonstration of equipment. These include equipment such as an air motor, scalers, and suction tip, in the form of animated pictures with visual and sound effects to give the child a first-hand experience of their

usage, sounds produced, and effective handling of patients pre-operatively and during the procedure was found [10].

In this study, an android phone or iPad was used to show the pictures and videos of a cooperative child to an uncooperative child displaying negative behavior in the dental clinic. Statistically, significant results (3.68 ± 2.14) were achieved in reducing dental anxiety and increasing the child's cooperation during his dental visit. It was found that it was easier to handle the child effectively and carry out the procedure using an android smartphone or an iPad to reduce the fear and anxiety of the child.

A previous study concluded that earlier negative dental experiences may lead to greater anxiety severity. Using CBT-based dental anxiety treatment one time lessens the use of avoidant coping strategies, that might result in reduce patient fears [11].

Limitations of the study: The number of cooperative children whose included in the pictures and videos record was limited due to parents' compliance who were worry about repetition and the time needed to capture pictures and record videos.

CONCLUSION

This novel behavior guidance technique be simple, effective and easy to use, resulting in improved dental fear and anxiety outcomes. Hence, we suggest that every pediatric dentist carry out extensive research further regarding the effectiveness of this novel technique.

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INFORMATION ABOUT THE AUTHORS

Twana Othman Hussein – Ph.D in Pediatric Dentistry, Private Practice, B & R Dental Center, Suleymani, Iraq; <https://orcid.org/0000-0003-4565-4406>

Burhan Altaf Misgar – MDS Pediatric and Preventive Dentistry, Dentist, Central Hospital, Sharjah, United Arab Emirates; <https://orcid.org/0000-0003-2526-956X>

Huda Raad Mahdi – Ph.D Pediatric Dentistry, College of Dentistry, Hawler Medical University, Kurdistan Region, Iraq; <https://orcid.org/0000-0002-5035-2210>

Halgurd Salih Jaf – MS.c. in Dental Public Health, Hiwa Hospital for Cancer and Hematology, Sulaimani Directorate of Health, Ministry of Health, Sulaimani, Iraq; <https://orcid.org/0009-0000-0286-4687>

Varinder Goyal – Professor and HOD Pediatric dentistry Guru Nanak Dev Dental College and Research Institute Patiala – Chandigarh Road, Sunam, Punjab, India; <https://orcid.org/0000-0001-5747-466X>

Sivakumar Nuvvula – MDS. Professor and Head, Pediatric and Preventive Dentistry, Narayana Dental College and Hospital, Nellore-524003, Andhra Pradesh, India; <https://orcid.org/0000-0002-1204-5551>

Sarhang Sarwat Gul – PhD in Periodontics. Medical Laboratory Department, College of Health and Medical Technology, Sulaimani Polytechnic University, Sulaymaniyah P.O. Box 20-236, Iraq; Department of Periodontics, College of Dentistry, University of Sulaimani, Sulaymaniyah 46001, Iraq; <https://orcid.org/0000-0003-1413-4934>

ИНФОРМАЦИЯ ОБ АВТОРАХ

Твана Осман Хусейн – к.м.н. (детская стоматология), частная практика, стоматологический центр B&R Dental Center, Сулеймания, Ирак; <https://orcid.org/0000-0003-4565-4406>

Бурхан Алтаф Мисгар – магистр по детской и профилактической стоматологии, врач-стоматолог, Центральная больница, Шарджа, Объединенные Арабские Эмираты; <https://orcid.org/0000-0003-2526-956X>

Худа Раад Махди – к.м.н. (детская стоматология), стоматологический колледж Медицинский университет Хавлер, Курдский регион, Ирак; <https://orcid.org/0000-0002-5035-2210>

Халгурд Салих Джаф – магистр в области общественного здравоохранения (стоматология), больница Хива по лечению рака и гематологических заболеваний, Управление здравоохранения Сулеймании, Министерство здравоохранения, Сулеймания, Ирак; <https://orcid.org/0009-0000-0286-4687>

Вариндер Гойял – профессор, заведующий кафедрой детской стоматологии, стоматологический колледж и исследовательский институт Стоматологический колледж и научно-исследовательский институт имени Гуру Нанак Дева, Патиала – Чандигарх Роуд, Сунам, Пенджаб, Индия; <https://orcid.org/0000-0001-5747-466X>

Сивакумар Нуввула – магистр стоматологии, профессор и заведующий кафедрой детской и профилактической стоматологии, Стоматологический колледж и клиника Нараяна, Неллор-524003, Андхра-Прадеш, Индия; <https://orcid.org/0000-0002-1204-5551>

Сархан Сарват Гуль – к.м.н. (пародонтология), кафедра медицинских лабораторий, Колледж медицинских технологий и здравоохранения, Политехнический университет Сулеймании, Сулеймания, Ирак; кафедра пародонтологии, стоматологический колледж, Университет Сулеймании, Сулеймания, Ирак; <https://orcid.org/0000-0003-1413-4934>

AUTHOR'S CONTRIBUTION

All the authors made equal contributions to the publication preparation in terms of the idea and design of the article; data collection; critical revision of the article in terms of significant intellectual content and final approval of the version of the article for publication.

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