



CASE REPORT

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Video modelling technique used to manage the behaviour of uncooperative children in a dental set up

Técnica de modelagem em vídeo usada no manejo de comportamento de crianças não cooperativas no consultório odontológico

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ABSTRACT

Objective: To investigate if video modelling is an effective technique in behaviour modelling of a child in a dental set up. **Material and Methods:** Fifty children aged 4-6 years indicated for pulpectomy were enrolled in this study. They were selected based on their behaviour using Frankl behaviour rating scale. Children with Frankl behaviour rating 1 and 2 were selected for this study. The video of a child who was cooperative while undergoing pulpectomy was shown to these children. The behaviour was assessed using Frankl behaviour rating scale after the video was shown to the children included in the study. **Results:** There was a statistically significant difference in the behaviour rating score of the children before after the video of the cooperative child was shown to them. **Conclusion:** It was observed that video modelling is an effective technique in managing the behaviour of an uncooperative child in a dental set up.

KEYWORDS

Video modelling; Behaviour management; Fear; Anxiety; Pediatric dentistry.

RESUMO

Objetivo: Investigar se a modelagem em vídeo é uma técnica eficaz no manejo do comportamento de crianças no consultório odontológico. **Material e Métodos:** Cinquenta crianças, de 4 a 6 anos, indicadas para pulpectomia foram incluídas neste estudo. Elas foram selecionadas com base em seu comportamento utilizando a Escala de Classificação de Comportamento de Frankl. Crianças com classificação de comportamento Frankl 1 e 2 foram selecionadas para este estudo. O vídeo de uma criança que cooperou durante o procedimento de pulpectomia foi mostrado a essas crianças. Posteriormente, o comportamento das mesmas foi avaliado usando a Escala de Classificação de Comportamento de Frankl. **Resultados:** Houve uma diferença estatisticamente significativa na pontuação da classificação do comportamento das crianças antes e depois do vídeo da criança cooperativa ter sido mostrado a elas. **Conclusão:** Observou-se que a modelagem em vídeo é uma técnica eficaz no manejo do comportamento de uma criança não cooperativa em um ambiente odontológico.

PALAVRAS-CHAVE

Modelagem em vídeo; Manejo comportamental; Medo; Ansiedade; Odontopediatria.

INTRODUCTION

Dental appointment is a stressful situation that can inculcate fear and anxiety in a child. [1] These emotions can cause behavioural changes, during dental treatment which can affect the quality of care [2]. Etiology of the child's fear and anxiety towards dental treatment can be due to many factors one of them being past experience of a family member or peer not being pleasant. There have been many researches conducted in regard to pharmacological management techniques of behaviour management rather than non pharmacological techniques [3]. The American Academy of Pediatric Dentistry has recommended researchers to perform more studies more related to non pharmacological techniques of behaviour management.[4]. Very few studies have been done in relation to video modelling.

The first dental visit is very crucial in building the child's attitude towards dental treatment and success of future treatments. In some situations management of the child's behaviour in the dental operator is essential. It can be done by various methods like Tell show do, desensitization and modelling. Modelling was introduced by Bandura in 1967 where children learn by observing a model and exhibit similar behaviour [5]. It is based on social learning theory. Modelling can be demonstrated live on a peer or another patient or it can be filmed in the form of a video or it can audio-visual. Greenbaum and Malamed [6] reported that the first study of modelling in pediatric dentistry was conducted in 1969 and several other studies followed in the 1980s [7,8]. It has been suggested that video modelling is an effective intervention to prepare the child for a dental visit [9-12]. According to these studies, live and filmed forms of modelling are effective in reducing child's anxiety.

The reason for performing the above study was because of lack of studies related to

video modelling in the population of southern part of India. Hence the aim of this study was to evaluate the effectiveness of video modelling in managing the behaviour of an uncooperative child in a dental operator.

MATERIAL AND METHODS

The present study is a cross sectional study. The ethical approval for this study was obtained from the Institutional Review Board with ethical committee number SRB/MDS/PEDO/18-19/0001.

Children aged between 4-6 years of age requiring pulpectomy on atleast one primary molar were included in the study. Healthy children without a past dental experience who were accompanied by their parents were considered for the study. Children suffering from any systemic and mental health condition were not included in the study and children showing a positive approach towards dental treatment were excluded from the study.

An informed consent was taken from the parents or guardians of the children who were willing to participate in the study. The study was performed in the Department of Pediatric Dentistry of a dental institute in Chennai. All the children entering the department for treatment were considered for the study. The children were considered based on Frankl Behaviour rating scale. Rating 1 of the scale represented a child with "Definitely negative" behaviour where the refuses treatment and is forcefully crying. Rating 2 of the scale represents "negative" behaviour where the child is reluctant towards the treatment but the negative behaviour is not as enhanced as Frankl behaviour Rating 1. Frankl rating 3 represented "positive" behaviour where the child accepts the treatment and follows the instructions of the dentist but is cautious about the procedure. Frankl rating 4 represents "definitely positive" behaviour where the child shares a good rapport with the dentist

and is interested and enjoying the procedure. Children with a behaviour rating scale of 1 and 2 and meeting the other inclusion criteria were considered for this study. Fifty children were finally included in the study.

The video of a five-year-old cooperative child undergoing pulpectomy in lower left first primary molar was filmed with the consent of the parent, prior to starting the study. The video first showed how the child was given local anaesthesia with a prior topical application followed by access opening of the tooth using air rotor. This was followed by pulp extirpation using hand and rotary files and finally obturation using metapex. The entrance filling was closed with glass ionomer cement. The child in the video was reinforced with a reward at the end of the procedure. The video was approved by three pediatric dentists. This video was used as a model and was showed to the fifty uncooperative children included in the study in their first appointment. While the video was shown to these children they were explained each and every procedure. To reduce their anxiety. Local anaesthesia was referred to as sleeping water, air rotor was referred to as jet spray, files were referred to as cleaning brushes and metapex was referred to as yellow paste. Their behaviour was again assessed using Frankl rating scale. The assessment of the behaviour was done by a reviewer who evaluated the behaviour of the children before the video was shown to them. The reviewer then evaluated the behavior of the children while undergoing the dental treatment after the video was shown to them. A comparison of the behaviour of the children was done before and while undergoing dental treatment after they were shown the video using Frankl behaviour rating scale.

Statistical analysis

Statistical analysis was performed by compilation and presentation of the data and analysis of the data. The data were entered

over a spreadsheet, and statistical analysis was performed using SPSS software version 22 (IBM, Armonk, New York, United States). Wilcoxon test was used to compare the behaviour of the child before and during the treatment after the video was shown.

RESULTS

A total of fifty children participated in the study aged between four to six years. 28 participants were female children and 22 were male children with a mean age group of 4.5 years. The demographic data division for each group of the study is given in table I.

The mean Frankl behaviour rating of all the children before the video was shown to them was 1.58 and after the video was shown to them was 2.52. A statistical significant difference was found between the behaviour rating of the children after the video was shown to them as compared to before the video was shown to them ($p < 0.05$). The behaviour of these uncooperative children was found to be improved after the video modelling (Table II).

Table I - Summary of demographic variables describing sample size and number of males and female participants in each group

| Group | Sample size | Female | Male |
|------------------------|-------------|--------|------|
| Behaviour before video | 50 | 28 | 22 |
| Behaviour after video | 50 | 28 | 22 |

Table II - Comparison of behaviour of children before and after they were showed the video

| Group | N | Mean | Std. deviation | Std error mean | P value |
|------------------------|----|------|----------------|----------------|---------|
| Behaviour before video | 50 | 1.58 | 0.499 | 0.71 | 0.000 |
| Behaviour after video | 50 | 2.52 | 0.707 | 0.100 | 0.000 |

DISCUSSION

Dental fear is termed as Odontophobia and is commonly found to be present in children [13]. Carter AE et al in 2014, described various

pathways of general fear and anxiety. These included Cognitive Conditioning, Informative, Visual Vicarious, Verbal Threat and Parental etiology [14]. Communication between a child and his or her pediatric dentist is very essential. It not only builds a relationship of trust but also helps in easing out the dental procedure for the child. A child fearing to undergo any dental procedure will lack cooperative ability and interfere more frequently thereby reducing the efficacy of the treatment. Video modelling is considered as an effective tool for modification of a child's behaviour but is not used routinely in dental practice due to lack of research related to this topic.

The study was carried out with a sample size of fifty children who were rated definitely negative and Negative on Frankl behaviour rating scale. This scale was used as it is considered reliable and assesses and describes the behaviour of a child to a great extent. All the children included in the study did not have any previous dental experience. The age group that was selected was between 4 to 6 years. The reason for selecting this age group was because children below the age group of 4 years would not have the understanding to interpret the video. Holst and Crossner [15] and Klingberg et al [16] have also established that dental anxiety was more pronounced in younger children (4-6 years) as compared to older children (9-11 years).

The children were made to watch a video of a 5 year old cooperative child undergoing pulpectomy. The children were explained every step in the video that was shown to them. The children were assured that it would not be a painful procedure and if the child would cooperate for the treatment he/she would be sent home early and would be allowed to play. At the end of the video, it was shown that the child in the video was rewarded. This was done to establish a sense of positive reinforcement in the children. The children were allowed to ask

queries related to the procedure. It prompts the learning and portrayal of that behaviour in the child to receive the rewards. The assessment of portrayal of behavior before the video was shown to them and during the dental procedure after the video was shown was done by a reviewer to minimise the potential bias. Out of fifty children, thirty two children cooperated for the dental treatment without any fear and anxiety while undergoing treatment after the video was shown to them. This may be attributed to the fact that video modelling prompts the learning and behaviour in the child.

A similar study was carried out by Paryab and Arab, where the efficacy of tell-show-do and audio visual modelling technique was compared and the audio visual modelling showed better results as compared to tell-show-do technique [17].

A study by Machen and Johnson [18] have found Filmed modelling to be more effective when compared to desensitization in different pediatric patients.

When the statistical comparison was done between behaviour changes of children before and after the video was showed to them, the result was found to be significant. Out of fifty children, thirty two children showed positive behaviour on Frankl behaviour rating scale. Five children showed who showed negative behaviour on Frankl's behaviour rating scale before the video was showed to them, turned definitely negative while undergoing treatment according to the scale after the video was showed to them. The reason for this was that there was no elicitation of pain shown in the video but when these children underwent the actual procedure the feeling of pain while administration of a local anaesthetic got the children to be more fearful and anxious. This is according to the study carried out by Sharma and Tyagi [19] where they stated that the sole reason for uncooperative behaviour could be due to pain at the time of treatment. Thirteen

children showed no difference in behaviour after the video was showed to them and were not ready to undergo treatment . Various other non-pharmacological techniques were used to manage the behaviour of these children.

The limitation of the present study was that the child filmed in the video was not of similar age gender and race in respect to every child included in this study. Also the primary molars that were treated was not the same for all the children involved in the study. In the future researchers can perform more studies related to this topic with a larger sample size and in respect to more dental procedures. Various parameters can be assessed along with the behaviour of the child. Such studies will not only help us in learning more about the topic but will play a major role in clinical practice while managing children lacking cooperative ability due to fear and anxiety. This will not only help us in assessing the psychology of the child but will also help us in managing the behaviour of the child in a dental operatory in his or her first visit which will benefit both the child as well as the pediatric dentist.

CONCLUSION

Video modelling technique can be used as an effective way to reduce anxiety and uncooperative behaviour in paediatric dental patients and it also aids the dentist for easy and smooth progress of the dental procedure. The video modelling was found to be very useful and beneficial in managing uncooperative children.

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Conflict of interest

No potential conflict of interest relevant to this article was reported.

Regulatory Statement

This study was conducted in accordance with all the provisions of the local human subjects oversight committee guidelines and policies of Saveetha Institute of Medical and Technical Sciences .The approval code for this study is SRB/MDS/PEDO/18-19/0001.

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