

Original Research Article

Behaviour Management Techniques in Paediatric Dentistry; Comparative study based on heart rate Between Live Modelling and Tell-Show-Do.

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Abstract: Tell-show-do is the most popular technique for managing children's behaviour in dentists' offices and live modelling is used less frequently. The purpose of this study was to compare the effects of these 2 techniques based on children's heart rates during dental treatments, heart rate being the simplest biological parameter to measure and an increase in heart rate being the most common physiologic indicator of anxiety and fear. For this randomized, controlled, parallel-group single-centre clinical trial, children 5 to 12 years of age, were divided into 3 groups: those in groups A and B were prepared for dental treatment by means of live modelling, the parents serving as the model for children in group A and the siblings as the model for children in group B. The children in group C were prepared by a paediatric dentist using the tell-show-do method. Each child's heart rate was monitored during treatment, which consisted of an oral examination and cleaning/simple restorations. A total of 45 children met the study criteria and participated in the study. Children who received live modelling with the parents as model had lower heart rates than those who received live modelling with the siblings as model and those who were prepared by the tell-show-do method ($p < 0.05$). The model used for live modelling with the parents and the child's age were determining factors in the results obtained. Live modelling is a technique worth practising in paediatric dentistry

Keywords: Behaviour management, heart rate, paediatric dentistry

INTRODUCTION

Behaviour management is considered a keystone entity in paediatric dentistry[1]. The major aspect of child management in the dental care is managing dental anxiety and fear as it is considered to be the main barrier for successful completion of dental treatment[2]. Disruptive behaviour can interfere significantly with providing quality dental care, resulting in increased delivery time and risk of injury to the child[3]. The etiology of dental fear in children is multifactorial. Increased dental fear has been related to previous painful dental experiences, increased general fears and the influence of dental fear in the mother. Girls and younger children, are most often reported as more fearful than boys or older children[4]. Several techniques for managing children's behaviour in dental offices have been developed to address this problem[5]. The non-pharmacologic tell-show-do technique which consists of verbal explanation of the procedure to the patient, demonstration for the patient of the (visual, auditory and tactile) aspects of the procedure and completion of the procedure, remains the most commonly used technique in paediatric dentistry. Modelling, nonpharmacologic behaviour management technique was described by Bandura in 1967 as a

process of acquiring behaviour through observation of a model. Observing a peer (whether live/filmed) successfully undergoing dental treatment is effective in reducing children's fear and anxiety about the dental treatment[6].

AIM

The aim of this study was to evaluate behaviour management techniques in paediatric dentistry, to compare between live modelling and tell show do technique based on heart rate.

OBJECTIVE

The purpose of this study was to compare the effects of these 2 techniques on children's heart rates during dental treatments, heart rate being the simplest biological parameter to measure and an increase in heart rate being the most common physiologic indicator of anxiety and fear.

MATERIALS AND METHOD

Study Sample

The study samples composed of a total 45 children including boys and girls with the age of 5 to 12 years

were selected for this study and randomly divided into 3 groups:

- **Group A:** children who were prepared for dental treatment by the live modelling technique with the mother/father as model.
- **Group B:** children who were prepared for dental treatment by the live modelling technique with the brother/sister as model.
- **Group C:** children who were prepared for dental treatment with the tell-show-do technique, presented by the paediatric dentist who performed the treatment.

The study was a randomized, controlled, parallel group single-centre clinical trial with comparative analysis of the 3 patient groups. Each group was subdivided by age (5 to < 9 years and 9 to < 12 years) to determine whether age was a determining factor.

Selection Criteria

Inclusion

- Child between the age of 5 to 12 years
- Parents having the mental and physical capacity to serve as models

Exclusion

- Child with single parent families
- Child with mental or cognitive problems
- Child having heart diseases

Data Collection

Pulse oximeter was used to monitor the heart rate of the child during entire treatment (oral examination and dental procedure) (fig.1&2). The oximeter was clipped to the thumb of the child's left hand (fig.1&2). To reduce the risk of recording errors ensured that the child did not move hand. An assistant manually transcribed the data posted on the pulse oximeter screen into the child's file at each interval for a total of 3 data points. Child was examined after taking parents' consent.



Fig. 1&2

Study Procedure

Closed question was asked to parents regarding the following elements: marital status, level of education, number of children in the family, the child's oral hygiene habits and the child's previous behaviour in a medical setting.

The duration of each trial was 15 minutes: for the psychological preparation (either live modelling or tell-show-do), attaching the pulse oximeter and for performing the dental treatment (oral examination and dental procedure).

For groups A and B, the child observed the mother/father and brother/sister, respectively, sitting in the dental chair and undergoing oral examination and dental procedure (by the tell-show-do method). The child was encouraged to participate in the session by asking questions about the instruments and how they work (fig.3). He or she then sat in the chair and underwent oral examination and dental procedure (fig.4).



Fig. 3



Fig.4

The child's heart rate was recorded as described above. For children in group C, the tell-show-do procedure was performed without live modelling but with the child's active participation and with recording of heart rate, both as described above. The same examination was carried out in all participants.

STATISTICAL ANALYSIS

The data from the 3 groups were subjected to the following statistical tests. The ANOVA test was

used to establish the normality of distribution of the results, and Bonferroni test was used to establish homogeneity of variances. The 3 groups were compared by analysis of variance (ANOVA), and the Bonferroni test was used for multiple pairwise comparisons between the groups.

RESULTS

A total of 45 children (girls and boys) met the study criteria and participated in the study: 15 in group A, 15 in group B and 15 in group C [Table 1]. All examination and dental procedure appointments were completed for each group. The ANOVA test confirmed the normality of distributions, and Bonferroni test confirmed the homogeneity of variances. Average heart rate over the entire treatment period was significantly

lower among children in group A (live modelling by parents) than among those in group B (live modelling by siblings) and group C (tell– show–do method) [Table 2]. ANOVA by a single factor (age), followed by comparative analysis of the subgroup averages, and revealed that age influenced the results in 2 ways [Tables 3 and 4]. First, the effect of live modelling with parents was less powerful for the subgroup of 5 to < 9-year-olds than for the subgroup of 9 to < 2- year-olds [Table 4]. However, for children 9 to < 12 years of age, the difference between groups A and C during dental procedure remained highly significant, [Table 4]. Second, for the subgroup of 5 to <9-year-olds, there was no statistically significant effect between groups A, B and C [Table 3].

Table 1: Behaviour management groups

Srl no.	Group	No. Of participant
1	Group A	15
2	Group B	15
3	Group C	15

Table 2: Significant and Average heart rate over the entire treatment period in different groups.

	Groups	df	Sum of Squares	Mean Square	F	P
BBMAT	Between Groups	2	113.733	56.867	6.132	.005
	Within Groups	42	389.467	9.273		
	Total	44	503.200			
BBMBT	Between Groups	2	100.044	50.022	6.382	.004
	Within Groups	42	329.200	7.838		
	Total	44	429.244			
BTAT	Between Groups	2	.711	.356	.185	.831
	Within Groups	42	80.533	1.917		
	Total	44	81.244			

Table 3: Comparative analysis of the subgroup averages according to age.

		df	Sum of Squares	Mean Square	F	Sig.
BBMAT	Between Groups	2	23.530	11.765	1.407	.269
	Within Groups	19	158.833	8.360		
	Total	21	182.364			
BBMBT	Between Groups	2	19.955	9.977	1.379	.276
	Within Groups	19	137.500	7.237		
	Total	21	157.455			
BTAT	Between Groups	2	1.030	.515	.262	.772
	Within Groups	19	37.333	1.965		
	Total	21	38.364			

Table 4: Showing high significance to 9 to <12 years of age between groups A and C.

		df	Sum of Squares	Mean Square	F	Sig.
BBMAT	Between Groups	2	107.567	53.783	5.282	.014
	Within Groups	20	203.651	10.183		
	Total	22	311.217			
BBMBT	Between Groups	2	115.591	57.796	7.537	.004
	Within Groups	20	153.365	7.668		
	Total	22	268.957			
BTAT	Between Groups	2	1.695	.847	.433	.655
	Within Groups	20	39.175	1.959		
	Total	22	40.870			

CONCLUSION

Assessment of behaviour is the most important tool in the hands of the dentist. This helps the dentist to execute required treatment plan in the most appropriate manner in children. Live modelling is a technique worth practising in paediatric dentistry. The model used (e.g., mother or father) and the age of the child represent determining factors in the success of this technique. Techniques like live modelling and tell-show-do are very effective in achieving treatment goals in all age groups.

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