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Centration- Behaviour Modification In A Different Way

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Abstract

Background: Tell–Show–Do is the most commonly used behavior management technique in pediatric dentistry. Unlike many other nontraditional management techniques, there is some evidence that Centration is making its way into more dental clinics.

AIM: To compare the efficacy of centration and tell show technique in behavior shaping of child during dental treatment.

Method: 50 number of children of 4-7 years age were divided into two groups. The children in group A and Group B were prepared for dental examination by pediatric dentist using centration and tell show do method respectively. Each child's heart rate were monitored during dental treatment.

Results: Average heart rate over the entire treatment session was significantly lower among children in both groups. Encouraging result is obtained in Centration Technique.

Conclusion: Centration is a technique worth practicing in pediatric dentistry.

Keywords: Centration, Tell Show Do, Behaviour Management.

Introduction

Visit to a dental operatory may be a stressful event in many children that can elicit feelings of fear and anxiety. Fear is a outcome of a specific stimulus, while anxiety is a result of a more general or pervasive stimulus. Geer[1] stated that the difference between fear and anxiety is thus conceptualized as a difference in the specificity of the stimulus. Corah et al.[2] stated that dental anxiety is more specific than general anxiety. So, it is the patient's reaction to the stress specific to the dental situation. Dental anxiety is a topic of concern for dental professionals because it prevents many potential patients from seeking treatment and also causes strain to the dentists. Hence, it is one of the most challenging task for the dentists to treat young children as their level of cooperation can be restricted because of their anxiety.[3]

Though there is lots of pharmacological and nonpharmacological techniques available for behavior management technique, American Association of Pediatric Dentistry (AAPD) panel has agreed upon the fact, that although there is an abundant data on pharmacological approaches, yet paucity exists in literature on communicative and non pharmacological behavior management procedures,[4] so, we need more research on non pharmacological techniques.

Several epidemiologic studies have revealed that the nonpharmacologic technique called "tell–show– do," or "explain-show-do" which consists of explaining and demonstrating the procedure used during treatment, remains the most commonly used technique in pediatric dentistry.[5,6,7]

Another non pharmalogical technique, Centration, which mainly based on cognitive development of child is also effective .Centration is the tendency to focus, or center, on only one aspect of a situation and ignore other aspects of the situation. During treatment, the child will tend to be terrified looking at multiple instruments. The child should be directed to focus on the mirror and concentrate in watching the procedure.

AIM

According to the recommendations of the American Academy of Pediatric Dentistry[4] on the need to study nonpharmacologic behavior management techniques by means of various clinical protocols, the present study was undertaken to compare the effects of Tell-show-do and Centration method on anxiety in children undergoing dental treatment based on their heart rates and modified Venham's anxiety scale.

Materials And Methods

Inclusion Criteria

- Children reporting for the first time accompanied by parents
- non-contributory medical history of the child and parents

Exclusion Criteria

- Children posing with language, learning and behavioral barriers
- Children who were undergoing medical treatment that might affect heart rate and those with heartbeat disorders
- Children who had visual impairment
- Children who need protective stabilisation to immobilize children's body movement

The nature and purpose of the study was explained to parents in detail and then a written informed consent was obtained.the subjects were free at their will to surrender at any stage of progression of the study The study sample was comprised of 50 children aged between 4 to 7 years in the Postgraduate Clinic of Pedodontics and Preventive Dentistry Department who were randomly divided into two groups in the following criteria:

Group A : 25 children were conditioned by demonstrating and explaining the procedure and instruments used during dental treatment which is basically a Tell show Do approach of behavior management(fig 1).

Group B: 25 children were conditioned by directing them to focus on the mirror during the treatment procedure. A mirror was attached with a dental chair so that the child can see the entire dental treatment procedure comfortably during supine position in the dental chair(fig 2)

After conditioning each subject, oral & dental examination followed by oral prophylaxis was done using ultrasonic scalers (fig 3A and 3B) .The anxiety level was recorded at five different stages during

treatment using heart rate and modified Venham's anxiety scale.

- STAGE 1: When the child was sitting in the waiting area.
- STAGE 2: After demonstrating the behavior management technique (TSD or CENTRATION).
- STAGE 3: At the moment when ultrasonic scaling was started.
- STAGE 4: At the moment when scaling was completed.
- STAGE 5: After the child was sent out of the operating room.

The heart rates of the patients were measured using a portable pulse oximeter device applied on the finger of the child. The child's hand was gently stabilized by a dental assistant to avoid ambiguous reading, owing to even the slightest movement of the hand. The child was verbally reinforced to avoid any voluntary movement, until necessary. Both the recordings of the heart rate and the observations were carried out by one dentist not taking part in the actual treatment of the children.

Venham's index (modified 6-point scale according to Venham)[17,18]

Score Criteria

Relaxed: Smiling, willing, able to converse, displays behavior desired by the dentist

Uneasy: Concerned, may protest briefly to indicate discomfort, hands remain down or partially raised; tense facial expression, high chest; capable to cooperate

Tense: Tone of voice, question, and answers reflect anxiety; during stressful procedure, verbal protest, crying, hands tensed and raised, but not interfering very much; protest more distracting and troublesome; child still complies with the request to cooperate

Reluctant: Pronounced verbal protest, crying; using hands to stop procedure; treatment proceeds with difficulty

Interference: General crying, body movements sometimes needing physical restraint; protest disrupts procedure

Out of contact: Hard loud crying, swearing, screaming; unable to listen, trying to escape; physical restraint required

Statistical Analysis

For statistical analysis data were entered into a Microsoft Excel spreadsheet and then analyzed by SPSS 24.0. and Graph Pad Prism version 5. Data had been summarized as mean and standard deviation for numerical variables and count and percentages for categorical variables. P-value ≤ 0.05 was considered for statistically significant.

Results

Table 1 shows in group-A (tell show do), the mean Heart Rate (mean± s.d.) of patients during stage 1 was 106.6800 ± 6.0603 and in group-B (centration), the mean Heart Rate (mean± s.d.) of patients was 105.6800 ± 6.3948. The difference of mean Heart Rate was not statistically significant (p=0.5730) between this two group. Table 2 shows in group-A (tell show do), the mean Heart Rate (mean± s.d.) of patients during stage 2 was 103.2000 ± 6.2650 and in group-B (centration), the mean Heart Rate(mean± s.d.) of patients was 103.5200 ± 5.8958. The difference of mean Heart Rate of this two group was not statistically significant (p=0.8532). Table 3 shows in group-A (tell show do) the mean Heart Rate (mean± s.d.) of patients was 100.8800 ± 5.2227 and in group-B (centration), the mean Heart Rate (mean± s.d.) of patients was 100.7200 ± 6.4519 during stage 3. The difference of mean Heart Rate of this two group was not statistically significant (p=0.9236). Table 4 shows that In group-A (tell show do), the mean Heart Rate(mean± s.d.) of patients was 96.2400 ± 5.7899 and in group-B (centration), the mean Heart Rate(mean± s.d.) of patients was 98.0000 ±

6.1373 during stage 4. The difference of mean Heart Rate was not statistically significant (p=0.3022).Table 5 shows that in group-A (tell show do), the mean Heart Rate(mean± s.d.) of patients was 92.5600 ± 6.5389 and in group-B (centration), the mean Heart Rate(mean± s.d.) of patients was 96.0000 ± 6.9282 during stage 5. The difference of mean Heart Rate of this two group was not statistically significant (p=0.0773) in this stage also.

In group-A (tell show do), the mean venhams score value (mean± s.d.) of patients was 2.4400 ± .5831 and in group-B (centration), the mean value (mean± s.d.) of patients was 2.4000 ± .7071 during stage 1. The difference of these values was not statistically significant (p=0.8282). In group-A (tell show do), the mean venhams score value (mean± s.d.) of patients was 2.4400 ± .5831 and in group-B (centration), the mean value (mean± s.d.) of patients was 2.4000 ± .7071 during stage 2. The difference of these values was not statistically significant (p=0.8282). During stage 3, In group-A (tell show do), the mean venhams score (mean± s.d.) of patients was 1.8400 ± .7461 and in group-B (centration), the mean value(mean± s.d.) of patients was 1.8400 ± .6880.The difference of mean score of those two groups was not statistically significant (p=1.0000). In group-A (tell show do), the mean venhams score value (mean± s.d.) of patients was 1.3200 ± .6904 and in group-B (centration), the mean venhams score (mean± s.d.) of patients was 1.0000 ± .7638 during stage 4. Difference of mean venhams score value of these groups was not statistically significant (p=0.1267) during stage 5 also. During stage 5, in group-A (tell show do), the mean venhams score (mean± s.d.) of patients was .4800 ± .7141 and in group-B (centration), the mean venhams score (mean± s.d.) of patients was .4400 ± .7681. Difference of mean venhams score of these groups was not statistically significant (p=0.8496).

Discussion

Dental fear is a multifactorial problem encountered during dental treatment which develops mainly in childhood, so it is important that these fears are addressed early.[8] The role of the dental professional is crucial in developing an understanding of how children become fearful of dental procedures. Hence, the dentist should be capable to identify the children having dental anxiety, assess their fears, and help them to build confidence to overcome those fears. Noise and vibration of the drill, the sight of the injection needle, and sitting in the dental chair have been reported to cause fear and lead to unfavorable behavior in children.[9]

Tell-show-do mainly based on the principle of learning theory. Multiple epidemiologic studies have shown its positive effect on the reduction of dental anxiety, [10] but performance of TSD needs time constraints of both the dentist and the parents. Contrary to other behavior management techniques, Centration does not take much time by the dentist or his team, though it has not gained much attention. The mirror was fixed with the Dental Chair instead of using conventional hand mirror so that children dont get fatigue during entire dental treatment procedure or sometimes they dont hold the mirror properly due to their uncooperative nature. Children watch the entire dental treatment in the mirror which distracts the child from the dental anxiety and he/she prefers to watch himself/herself instead of getting frightened.

Thus, the objective of this study was to compare TSD technique and Centration on anxiety in children undergoing dental treatment based on children heart rates and modified Venham's anxiety scale. In our

study, Centration was as efficient as TSD to reduce anxiety in children and gain cooperative behavior during the dental treatment procedure.

The principle of centration, which mainly works in children between 4-7 years old age (Preoperational stage described by Swiss Psychologist Jean Piaget). After 7 years old, concept of Decentration develops i.e. child can concentrate more than one aspect of situation rather than concentrating just one aspect. So, 4- 7 years old children only for study which is a disadvantage of Centration Technique.

The American Academy of Pediatric Dentistry at the conference in 2003 has given several general principles to gauge the validity of behaviour-management techniques:[4]

- Electiveness: the potential of the technique to manage children's behaviour in the dentist's office
- Social Validity: acceptance of the technique by parents, as well as public perception of the technique
- Risks associated with the technique
- Cost: time spent practicing the technique and cost of any materials and equipment used

These principles allowed us to assess the validity of the Centration technique used in this study, as follows:

- Electiveness: children who were prepared for dental treatment by Centration Technique had lower heart rates same like the children who were prepared by means of the tell–show–do method.
- Social Validity: all of the parents selected for Centration Technique were willing to participate in the study.
- Risk: the risks associated with the behavior management technique were reduced to almost zero
- Cost: cost is minimal because centration required just one medium sized mirror which was very cheap.

Various researchers have measured fear and anxiety in children using different scales and measurements.[11-13]

In our study, anxiety and behavioral levels were assessed by two indices (behavioral and physiological indices). Validity and reliability of Modified 6 point Venham's Index has been substantiated by Veerkamp et al.[14] and Nathan et al.[15] which was used in this study. The physiological index was measured by heart rate using a pulse oximeter. Heart rate measurement related to dental treatment anxiety has been demonstrated to be positively related to each other.[16] The portable fingertip pulse oximeter is less anxiety provoking in children and an excellent means of monitoring heart rate. In our present study, a positive correlation was established between heart rates and modified Venham's score at all five intervals of measurements, which coincides with the study done by Roshan and Sakeenabi.[17]

Figures and Tables

Figures

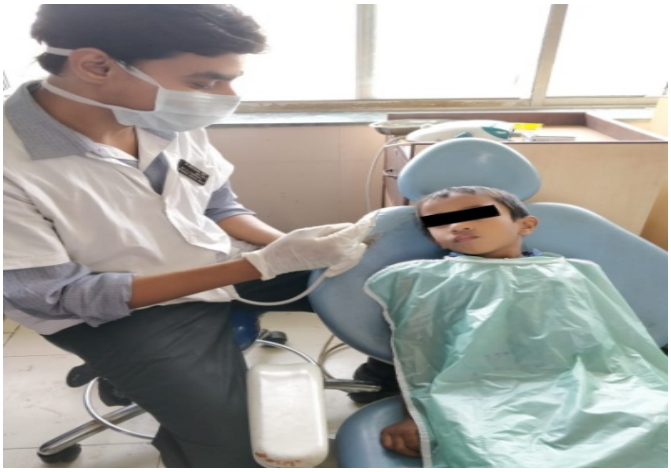

Figure 1: Behavior modification by Tell-show-do technique

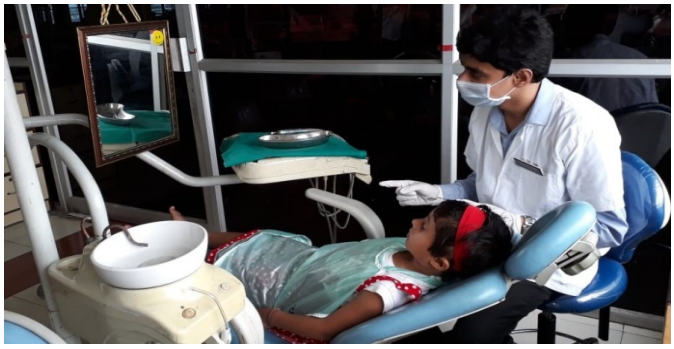

Figure 2: Behaviour modification by Centration Technique

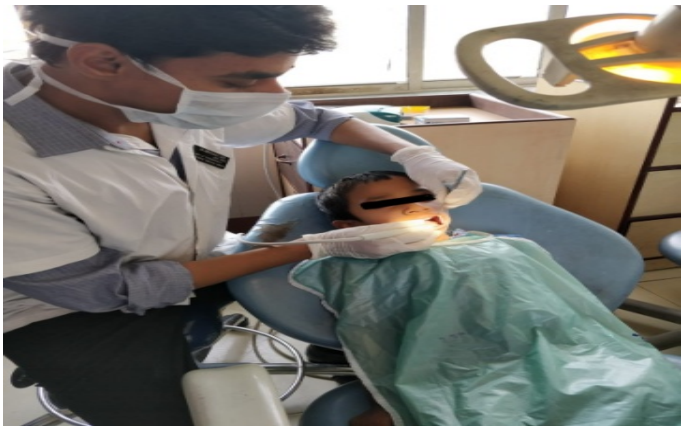

Figure 3A: ultrasonic Scaling was performed after behavior modification by Tell-show-Do technique

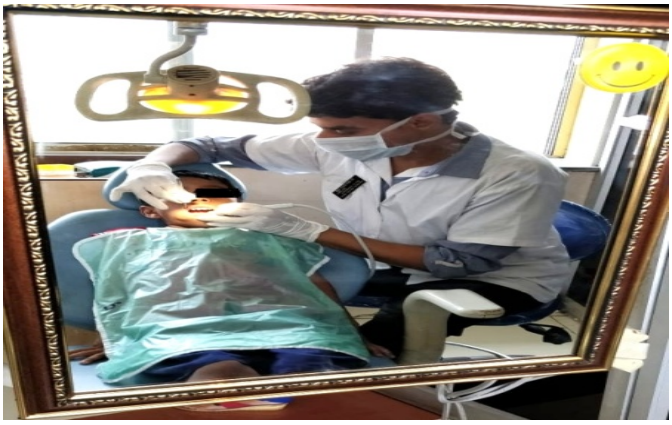

Figure 3B: Ultrasonic Scaling was performed after behavior modification by Centration technique

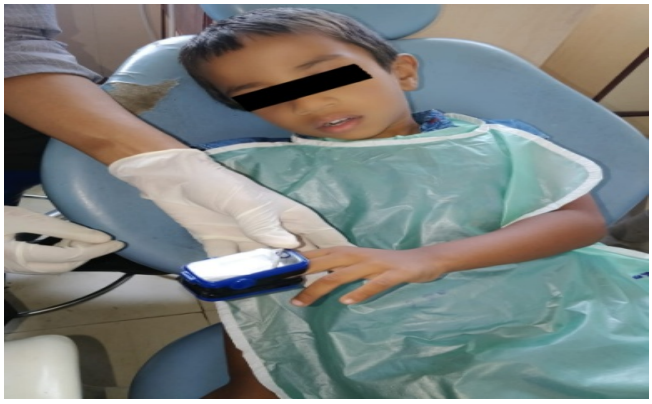

Figure 4: Anxiety level of child was measured using Pulse Oximeter

Tables

Table 1: Distribution of mean Heart Rate during Stage 1 :

	Number	Mean	SD	Minimum	Maximum	Median	p-value
GROUP A (TELL SHOW DO)	25	106.6800	6.0603	98.0000	120.0000	108.0000	0.5730
GROUP-B (CENTRATION)	25	105.6800	6.3948	98.0000	120.0000	106.0000	

Table2: Distribution of mean Heart Rate during Stage 2 :

	Number	Mean	SD	Minimum	Maximum	Median	p-value
GROUP A (TELL SHOW DO)	25	103.2000	6.2650	92.0000	116.0000	102.0000	0.8532
GROUP-B (CENTRATION)	25	103.5200	5.8958	96.0000	116.0000	102.0000	

Table 3: Distribution of mean Heart Rate during Stage 3 :

	Number	Mean	SD	Minimum	Maximum	Median	p-value
GROUP A (TELL SHOW DO)	25	100.8800	5.2227	90.0000	110.0000	100.0000	0.9236
GROUP-B (CENTRATION)	25	100.7200	6.4519	92.0000	112.0000	100.0000	

Table 4: Distribution of mean Heart Rate during Stage 4 :

	Number	Mean	SD	Minimum	Maximum	Median	p-value
GROUP A (TELL SHOW DO)	25	96.2400	5.7899	85.0000	106.0000	98.0000	0.3022
GROUP-B (CENTRATION)	25	98.0000	6.1373	88.0000	110.0000	98.0000	

Table 5: Distribution of mean Heart Rate during Stage 5 :

	Number	Mean	SD	Minimum	Maximum	Median	p-value
GROUP A (TELL SHOW DO)	25	92.5600	6.5389	80.0000	102.0000	90.0000	0.0773
GROUP-B (CENTRATION)	25	96.0000	6.9282	86.0000	110.0000	96.0000	

Table 6: Distribution of mean Venhams Score during Stage 1 :

	Number	Mean	SD	Minimum	Maximum	Median	p-value
GROUP A (TELL SHOW DO)	25	2.4400	.5831	1.0000	3.0000	2.0000	0.8282
GROUP-B (CENTRATION)	25	2.4000	.7071	1.0000	4.0000	2.0000	

Table 7: Distribution of mean Venhams Score during Stage 2 :

	Number	Mean	SD	Minimum	Maximum	Median	p-value
GROUP A (TELL SHOW DO)	25	2.4400	.5831	1.0000	3.0000	2.0000	0.8282
GROUP-B (CENTRATION)	25	2.4000	.7071	1.0000	4.0000	2.0000	

Table 8 : Distribution of mean Venhams Score during Stage 3 :

	Number	Mean	SD	Minimum	Maximum	Median	p-value
GROUP A (TELL SHOW DO)	25	1.8400	.7461	1.0000	3.0000	2.0000	1.0000
GROUP-B (CENTRATION)	25	1.8400	.6880	1.0000	3.0000	2.0000	

Table 9 : Distribution of mean Venhams Score during Stage 4 :

	Number	Mean	SD	Minimum	Maximum	Median	p-value
GROUP A (TELL SHOW DO)	25	1.3200	.6904	0.0000	3.0000	1.0000	0.1267
GROUP-B (CENTRATION)	25	1.0000	.7638	0.0000	3.0000	1.0000	

Table 10 : Distribution of mean Venhams Score during Stage 5 :

	Number	Mean	SD	Minimum	Maximum	Median	p-value
GROUP A (TELL SHOW DO)	25	.4800	.7141	0.0000	2.0000	0.0000	0.8496
GROUP-B (CENTRATION)	25	.4400	.7681	0.0000	3.0000	0.0000	

Conclusions

It is important to give much attention to every child on their visit to the dental clinic and perform simple behavior management techniques that can create a profound effect in achieving our goal to teach good oral health habits and positive approach toward dentistry. Parental acceptance of behavior management technique used by a pediatric dentist is another concern. In our study, both TSD and Centration both behavior management techniques were effective in reducing children's fear and anxiety, as most of the children in our study were showing cooperative behavior at the end of the treatment. More elaborate clinical trials are needed to establish legitimacy of Centration in Clinical Dentistry for child patient. Hence, the behavior management techniques should be such that the child eagerly returns for the treatment and follow-up at regular intervals of time throughout lifetime and carries a positive approach toward dentistry.

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