

# Assessing the Attitude of Parents Towards Various Behaviour Management Techniques Used during Paediatric Dental Treatment: A Cross-sectional Study

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## ABSTRACT

**Introduction:** Every child who enters the dental clinic is different. Some of them are anxious, some are scared, some are angry, and some are confused. Rarely, children exhibit a positive behaviour, most of them being uncooperative. The child's behaviour in turn influences the efficiency and outcome of the dental treatment.

**Aim:** To assess parents or caregivers' acceptance of various Behaviour Management Techniques (BMT) through direct observation and feedback received.

**Materials and Methods:** A cross-sectional study was planned to assess the most preferred BMT. The study was conducted from November 1<sup>st</sup>, 2018 to October 31<sup>st</sup>, 2019 for a period of one year. Parents of children between the ages of four to nine years were included in the study using non random convenience sampling with 675 participants. Every parent was given an explanation about the study and briefed about nine major

BMTs in regional language. Audiovisual aid for each technique in their own mother tongue was displayed via a projector and sound systems and parents were asked to watch it. Later they were given a Visual Analog Scale (VAS) of 10 mm length with markings, printed on a sheet of paper to assess the preference for each technique. Collected data was entered in an excel sheet and analysis was done using median test.

**Results:** The results showed that 32.4% i.e., the highest percentage of people opted for Tell Show Do (TSD), indicating that TSD is the best BMT. Professional status of parent showed a significant impact on BMT selection.

**Conclusion:** This study reveals that amongst all the behaviour management methods, 'Tell-Show-Do' was the most accepted BMT by the parents and the professional background of the parent has a statistically significant role in the selection of BMT.

**Keywords:** Acceptance of behaviour management techniques, Nitrous oxide sedation, Paediatric dentistry, Patient care management, Tell show do technique

## INTRODUCTION

Every child who visits the dental clinic is different. Some of them are anxious, some are scared, some are angry, and some are confused. Rarely, children exhibit a positive behaviour, most of them being uncooperative. How the child behaves has a very significant influence on the efficiency and outcome of the dental treatment. Paediatric dentists have developed an arsenal of BMTs to meet the challenge of treating children who are unable or unwilling to cooperate [1,2].

The need for behaviour management in children has increased consistently in recent years because of the diverse myths and beliefs that parents and children have. It's the dentist's responsibility to persuade the parents and pacify the child, which permits the treatment to take place smoothly. This creates a bond between the dentist and the child, wins a child's trust and instills a positive attitude in them for future dental visits [3].

According to Wright's paediatric treatment triangle, parents have an imperative role in deciding the treatment modality for their child [4]. Acceptance and consent of the parents regarding the BMT is important prior to administering them on the children. It is the duty of the clinician to elaborate about the various techniques to the parents which shall gain the parents trust and eliminate unwanted misunderstandings leading to better results [5].

American Academy of Paediatric Dentistry has approved the use of 11 techniques for behaviour management of children during dental visits which is broadly classified into pharmaceutical techniques, physical techniques and verbal techniques. The choice of BMT

depends on the reaction of the child to the operator and the operator. The acceptability of the technique by parents and the child depends on numerous factors, but, it primarily depends on the type and urgency of the treatment [5,6].

The BMTs are employed by the dentist to obtain cooperative behaviour. Of which, TSD by Addleson and Positive Reinforcement (PR) are the most easily incorporated and widely accepted technique in positive and definitely positive children [4]. Children with uncooperative behaviour are managed with modelling, distraction, desensitisation and hypnosis which are difficult to implement, time consuming and not preferred for emergency situations [7-10]. Hand-over-mouth is the least accepted but often employed BMT in highly disruptive and defiant children. Physical restraint and papoose boards are indicated for extremely young or handicapped children [11].

Although there exists other similar studies in the dental literature, none of the studies have compared the effect of parent occupation and education on the acceptance of BMTs. This study throws light on the acceptability of BMT among the demographics of a metro city like Chennai, by direct observation and feedbacks received from parents, who were systematically categorised using the Kuppuswamy scale, demonstrated and explained about the different techniques in the operator [12].

## MATERIALS AND METHODS

A cross-sectional study was conducted to assess the most preferred BMT. The study was conducted in the Outpatient (OP) wing of

Department of Pedodontics, Madha Dental College and Hospital, Kundrathur, Chennai, Tamil Nadu, India. The study was conducted from November 1<sup>st</sup>, 2018 to October 31<sup>st</sup>, 2019 for a period of one year. Ethical committee approval was obtained from the Institutional Ethical Committee bearing approval no MDCH/EC/2018/034.

**Inclusion criteria:** Parents of children between the age of four to nine years without any prior dental treatment experience and the ability to view, understand and assess the various BMT's shown through videos were included in the study. Parents were interviewed at the OP reception to assess the fulfillment of inclusion criteria.

**Exclusion criteria:** Samples with incomplete questionnaires, emergency treatment needs and children with special healthcare needs were excluded from the study.

**Sample size calculation:** The sample size (n) was calculated according to the formula:  $n = \frac{z^2 * p * (1-p)}{e^2} / \{1 + \frac{z^2 * p * (1-p)}{e^2 * N}\}$  with the average OP of past five years as N (4853) at Confidence interval: 95%, margin of error: 3.5% [13].

Non random convenience sampling was done over a period of one year, 675 parents visiting the OP, who met the inclusion criteria and completed the questionnaire were included in the study after obtaining an informed consent.

## Study Procedure

Every parent was explained about the study and briefed about nine major BMT's in regional language. Audiovisual aids for each technique in their own mother tongue was displayed via a projector and sound systems and parents were asked to watch it. Later they were given a VAS [Annexure-1] of 10 mm length with markings, printed on a sheet of paper to assess the preference for each technique [14]. The questionnaire also had other required details like demographic data, extent of education and occupation details. The video of each technique ran approximately for three to five minutes, which included display of the name of the technique, and clear demonstration of each technique. The BMT's video used for the study includes: 1) Nitrous oxide sedation (N<sub>2</sub>O); 2) Passive restraint by Papoose boards; 3) Oral Sedation (OS); 4) Voice Control (VC); 5) Active Restraints (AR); 6) Hand Over Mouth Exercise (HOME); 7) General Anaesthesia (GA); 8) Parental absence/presence technique; 9) TSD technique in the same order and the participants were asked grade it according to their preference on a scale of 0-10. Zero on the VAS is the least preferred and 10 on the scale shall be the highly acceptable technique. A score of 5 and above on the VAS was considered as "acceptable".

## STATISTICAL ANALYSIS

The results were entered on an excel sheet, analysed and presented as counts and percentages using Statistical Package for the Social Sciences (SPSS) version 22 data processing software. Further analysis was done using Median test to determine the significance of parent occupation on selection of BMT.

## RESULTS

The study had a sample size of 675 parents of children belonging to various ages and backgrounds. There were 412 female participants and 263 male participants who make up to 61% and 39% of total study population respectively [Table/Fig-1]. The next major classification of the study population was classified according to age of the parent. Majority of them were found to be below the age

Gender	Frequency (n)	Percentage
Male	263	39%
Female	412	61%

**[Table/Fig-1]:** Gender distribution of study population (N=675).

of 30. Precisely, 232 participants (34.4%) were below 30 years, 214 (31.7%) between the ages of 30-39, 132 (19.5%) between the ages of 40-49 and 97 (14.4%) above the age of 50 [Table/Fig-2]. Another important criteria taken for categorization of participants is order of siblings according to which 343 (50.8%) kids were the first child of the family, 195 (28.9%) were second born children, and 137 (20.3%) were born as third or fourth child in the family and be the youngest [Table/Fig-3]. The distribution of participants based on occupation according to updated Kuppuswamy scale was as following [Table/Fig-4] [12].

Age (years)	Frequency (n)	Percentage (%)
<30	232	34.4
30-39	214	31.7
40-49	132	19.5
50 and above	97	14.3

**[Table/Fig-2]:** Distribution of study participants based on age (N=675).

Order of sibling	Frequency (n)	Percentage (%)
1 <sup>st</sup> child	343	50.8
2 <sup>nd</sup> child	195	28.9
3 and >3	137	20.3

**[Table/Fig-3]:** Distribution of patients according to their order of birth in their respective families (N=675).

Occupation of the head of the family	Frequency (n)	Percentage (%)
Profession (I)	59	8.7
Semiprofession (II)	66	9.8
Clerical, shop owner (III)	98	14.5
Skilled (IV)	118	17.5
Semi-skilled (V)	158	23.4
Unskilled (VI)	164	24.3
Unemployed (VII)	12	1.8

**[Table/Fig-4]:** Distribution of study population based on occupation as per Kuppuswamy scale [12] (N=675).

The results showed that 32.4% i.e., the highest percentage of people opted for TSD. Passive restraint was second in preference with 19.1% participants opting for it. Parental separation was the third most preferred BMT after TSD and passive restraint. The least preferred were HOME, sedation methods, AR and GA. The frequency distribution is expressed in the table below [Table/Fig-5].

Treatment modalities	n (%)
N <sub>2</sub> O	18 (2.7%)
Passive restraint	129 (19.1%)
Voice control	114 (16.9%)
Oral sedation	16 (2.4%)
HOME	17 (2.5%)
Active restraint	18 (2.7%)
GA	16 (2.4%)
Parental separation	128 (18.9%)
TSD	219 (32.4%)

**[Table/Fig-5]:** Choice of BMT made by the study population (N=675).

The frequency distribution of the choices made by the parents based on their occupational background is given below [Table/Fig-6]. The preference of BMT influenced by order of birth/number of siblings was as shown in [Table/Fig-7]. Median test was done to compare the selection of BMTs between parents of different occupations [Table/Fig-8]. It was seen that amongst the parent occupation groups, there was a statistically highly significant difference in selection of N<sub>2</sub>O and significant difference in the selection of Passive Restraints, VC, AR and Parent Separation techniques.

Occupation	Professional (59) n (%)	Semi professional (66) n (%)	Clerical, shop owner (98) n (%)	Skilled (118) n (%)	Semi skilled (158) n (%)	Unskilled (164) n (%)	Unemployed (12) n (%)
N <sub>2</sub> O (18)	3 (16.7%)	8 (44.4%)	3 (16.7%)	4 (22.2%)	0 (0%)	0 (0%)	0 (0%)
Passive restraint (129)	10 (7.8%)	11 (8.5%)	16 (12.4%)	22 (17%)	31 (24%)	38 (29.5%)	1 (0.8%)
Voice control (114)	4 (3.5%)	8 (7%)	15 (13.2%)	16 (14%)	37 (32.5%)	32 (28.1%)	2 (1.7%)
Oral sedation (16)	2 (12.5%)	6 (37.5%)	5 (31.2%)	3 (18.8%)	0 (0%)	0 (0%)	0 (0%)
Home (17)	0 (0%)	0 (0%)	1 (5.8%)	2 (11.8%)	6 (35.3%)	6 (35.3%)	2 (11.8%)
Active restraint (18)	0 (0%)	0 (0%)	1 (5.6%)	2 (11.1%)	6 (33.3%)	8 (44.4%)	1 (5.6%)
GA (16)	5 (31.2%)	4 (25%)	4 (25%)	3 (18.8%)	0 (0%)	0 (0%)	0 (0%)
Parental separation (128)	10 (7.8%)	11 (8.6%)	19 (14.8%)	28 (21.9%)	36 (28.1%)	22 (17.2%)	2 (1.6%)
TSD (219)	25 (11.4%)	18 (8.2%)	34 (15.5%)	38 (17.4%)	42 (19.2%)	58 (26.5%)	4 (1.8%)

**[Table/Fig-6]:** Frequency distribution of choice of BMT based on occupation.

BMT	N <sub>2</sub> O (18) n (%)	Passive restrains (129) n (%)	Voice control (114) n (%)	Oral sedation (16) n (%)	Home (17) n (%)	Active restrain (18) n (%)	GA (16) n (%)	Parental separation (128) n (%)	TSD (219) n (%)	Total
1 <sup>st</sup> child (343)	4 (22.2%)	46 (35.6%)	14 (12.3%)	2 (12.5%)	0	0	2 (12.5%)	16 (12.5%)	70 (32%)	154
2 <sup>nd</sup> child (195)	8 (44.4%)	51 (39.5%)	47 (41.2%)	7 (43.7%)	9 (53%)	7 (38.9%)	7 (43.7%)	47 (36.7%)	71 (32.4%)	254
3 <sup>rd</sup> child (137)	6 (33.3%)	32 (24.8%)	53 (46.5%)	7 (43.7%)	8 (47%)	11 (61.1%)	7 (43.7%)	65 (50.7%)	78 (35.6%)	267

**[Table/Fig-7]:** Frequency distribution of acceptance of BMT based on order of birth/number of siblings.

Even though 343 parents bringing 1<sup>st</sup> born children filled the questionnaire, NOT ALL of them found BMT's acceptable. Whereas, few parents found more than one BMT acceptable. Parents who scored a BMT less than 5 out of 10 were deemed to not accept that technique

Treatment modality	Median value	Profession						Chi-square	p-value	
		I	II	III	IV	V	VI			
N <sub>2</sub> O	3	> Median	35	22	31	32	42	34	32.66	0.001**
		≥ Median	24	44	67	86	116	129		
Passive restraint	3	> Median	26	26	36	48	44	38	17.09	0.004*
		≤ Median	33	40	62	70	114	125		
Oral sedation	2	> Median	22	34	57	60	75	82	6.93	0.226
		≤ Median	37	32	41	58	83	81		
Voice control	3	> Median	20	19	34	47	39	37	13.25	0.021*
		≤ Median	39	47	64	71	119	126		
Active restraint	2	> Median	35	36	38	52	63	65	11.89	0.036*
		≤ Median	24	30	60	66	95	98		
HOME	2	> Median	29	32	36	46	67	64	4.36	0.498
		≤ Median	30	34	62	72	91	99		
GA	2.5	> Median	32	35	49	53	84	78	2.82	0.728
		≤ Median	27	31	49	65	74	85		
Parental separation	3	> Median	24	22	35	52	41	47	13.15	0.022*
		≤ Median	35	44	63	66	117	116		
TSD	4	> Median	25	18	34	38	42	58	6.89	0.229
		≤ Median	34	48	64	80	116	105		

**[Table/Fig-8]:** Comparison between groups (Profession) using median test.

p-value ≤0.001\*\*: Highly significant; \*Significant; Profession (I), Semi Profession (II), Clerical, Shop owner (III), Skilled (IV), Semi-skilled (V), Unskilled (VI), Unemployed (VII); Due to ultra-low sample size of category VII (Unemployed) parents in the study, their data cannot be compared with other groups. Hence, category 7 values were considered Outlier and negotiated for better comparison using Median test

## DISCUSSION

In the present study, parents of children who had no previous experience with any BMT were given a visual recorded demonstration of the various techniques. This approach towards educating the parents was similar to what was used by Boka V et al., and Patel M et al., [15,16]. Although various studies have been conducted, the acceptance of BMT changes over time [17].

The study results advocated TSD to be the most accepted BMT, confirming the results of previous studies. The exceptionally high rating (32.4%) shown for TSD was predictable, it being one of the safest and least invasive BMT with a relatively stable acceptability over time and ratification by previous studies [18-21]. HOME and AR were the least accepted techniques among the parents possibly due to consequences like physical or psychological injury, loss of dignity, and violation of a patient's rights [22]. Hand-over-mouth is no longer included in the AAP since it is deemed a controversial technique [17].

Consistent with previous studies, GA along with OS was found to be the least preferred technique as per our study, probably owing to the stigma around inpatient nature of treatment and the invasive nature of the procedure [20,23]. This finding was however in sharp contrast to studies by Patel M et al., which has suggested an increase in acceptability of pharmacological behaviour management techniques. This however could be attributed to the said study only providing four choice of techniques for the parents meanwhile excluding the more favored TSD and VC [16].

The occupation of the participants also play an important role in choosing the right BMT to be employed during the treatment for their kids, it also gives a better idea about the socio-economic background of the families and how the extents of education help in influencing the choice of BMT. In contrast to previous studies, statistical analysis showed that among the parents who found N<sub>2</sub>O acceptable, higher acceptability was among parents who were

professionals and semiprofessionals [15,23-25]. This probably can be attributed to the higher level of education and sophisticated lifestyle led by them leading to a better understanding of the procedure as well as a demand for the most comfortable form of treatment and was in accord with previous study by Elango I et al., [3].

Parental separation is also one of the preferred methods of behaviour management as even the uncooperative children cooperated and got the treatment done faster and smoothly [26-28]. Sedative techniques were not much preferred mainly because of fear; however minor surgical procedures need sedation, which must be informed to the parents prior to the actual procedure being performed [29,30]. The order of birth was another criterion taken into consideration in this study, which also revealed that TSD is the most accepted technique of behaviour management and the third born children were more readily accepting TSD.

Interestingly, Passive restraints had the second highest acceptance rate in this study and was conflicting to existing study by Boka V et

al., Patel M et al., Jafarzadeh M et al., and Martinez Mier EA et al., who all gave an identically low acceptance score to the same [15-17,31]. On the flipside, Seangpadsa K et al., obtained similar results with Passive restraints obtaining second highest approval rating in their study [21].

In our study, HOME was one of the least accepted techniques among the parents which was consistent with studies by Elango I et al., and Desai SP et al., [3,19]. In studies by Murphy MG et al., and Lawrence SM et al., HOME was the fourth least accepted technique [11,32]. Considering the results of a previous study, we observe that acceptability of aggressive behaviour management techniques especially use of HOME decreased among parents over time [17]. On the other hand, acceptability of more interactive and less invasive methods i.e., TSD has increased over time.

A comparison of the results of the present study with previous study is given in [Table/Fig-9] [3,16,18-21,23,31].

Sl. No.	Author's name and year	Place of study	Type of study	Number of subjects	Age of children considered	Behaviour management techniques considered	Parental acceptance of BMT (conclusion)
1.	Elango I et al., 2012 [3]	Karnataka, India	A comparative study	204	3-15	Tell-Show-Do (TSD), Positive Reinforcement (PR), Live Modeling (LM), Contingent Escape (CE), Mouth Prop (MP), Voice Control (VC), Physical Restraint by the Dentist (PRD), Hand-Over-Mouth Exercise (HOME), Oral Sedation (OS), and General Anaesthesia (GA)	Techniques like CE and LM were more accepted than TSD and PR.
2.	Patel M et al., 2016 [16]	The Ohio State University, Columbus, Ohio, USA	Cross-sectional	105	n/a	Passive immobilisation, Active immobilisation, GA, and OS	Pharmacological techniques have better acceptance than non pharmacological
3.	Acharya S, 2017 [18]	Bhubaneswar, Odisha, India	Cross-sectional	50	3-6 years	VC, TSD, PR, MP, Modelling, HOME, Physical restraint, Oral premedication N <sub>2</sub> O-O <sub>2</sub> sedation and GA	TSD technique was the most accepted behaviour technique and HOME the least accepted behaviour technique. Parents seem to be more acceptable to pharmacologic methods than in previous studies
4.	Martinez Mier EA et al., 2019 [31]	Indianapolis, USA	Cross-sectional	142	1-17	Active Restraint (AR), GA, N <sub>2</sub> O, oral premedication/sedation (OP), passive restraint (PR) with a Papoose Board, TSD and VC	VC>TSD >PR>OP>N <sub>2</sub> O>AR>GA in Hispanic Parents TSD>N <sub>2</sub> O>VC>OP>GA>AR>PR in Non Hispanic White parents TSD>N <sub>2</sub> O>GA>OP>VC>AR>PR in Non-Hispanic Black parents
5.	Desai SP et al., 2019 [19]	Pune, Maharashtra, India	Cross-sectional	300	2- 13 years	TSD, PR LM, VC, HOME, passive restraints, AR, oral premedication, N <sub>2</sub> O, 10) GA	Parents were more accepting of TSD, PR, and LM. Pharmacological BMT such as N <sub>2</sub> O and OS techniques were preferred over the aggressive management techniques. HOME technique was the least accepted technique
6.	Massignan C et al., 2020 [20]	Florianópolis, SC, Brazil	Meta-analysis	49	n/a	Basic Behaviour Management techniques-(Communication and communicative guidance; positive pre-visit imagery; direct observation; TSD; ask-tell-ask; VC; nonverbal communication; PR and descriptive praise; distraction; memory restructuring; parental presence/absence and nitrous oxide/oxygen inhalation) Advanced Behaviour Management techniques -(protective stabilisation, sedation, and GA)	Basic Behaviour Management techniques more acceptable than Advanced Behaviour Management techniques
7.	Seangpadsa K et al., 2020 [21]	Bangkok, Thailand	Cross-sectional	200	2-5	TSD, VC, parental presence/absence (PP/PA), nitrous oxide/oxygen inhalation (N <sub>2</sub> O/O <sub>2</sub> ), passive restraint (PR) with Papoose Board, AR by parents, OS, and GA	Parental acceptance was ranked TSD>PR (with a Papoose Board) >VC and AR> inhalation sedation (N <sub>2</sub> O/O <sub>2</sub> ), OS, and GA > PP/PA
8.	Al Zoubi L et al., 2021 [23]	Greifswal, Germany	Cross-sectional	100	n/a	N <sub>2</sub> O, AR, GA, and passive restraint	Parental acceptance was ranked- N <sub>2</sub> O >Passive restraints >GA >Active restrains
9.	Present study	Chennai, Tamil Nadu, India	Cross-sectional	675	4-9	N <sub>2</sub> O, Passive restraint by Papoose boards, OS, VC, AR, Hand-over mouth, GA, Parental absence/presence technique, TSD	Parental acceptance was ranked-TSD > Passive Restrains >Parental Separation >VC >Active restrains=N <sub>2</sub> O >HOME >OS=GA

[Table/Fig-9]: Comparison of results with existing studies [3,16,18-21,23,31].

## Limitation(s)

The current study is in accordance with most of the other similar studies in terms of choices made by the parents however statistical analysis wasn't conducted for all the parameters obtained through the questionnaire. The present study had to exclude category VII (unemployed) parents from statistical comparison of occupation due to extremely low sample size.

## CONCLUSION(S)

This study reveals that among the various behaviour management techniques 'TSD' was placed as the most accepted BMT, by the parents. The second most accepted technique was passive restraint followed by parental separation and VC. HOME, OS and GA was the least preferred BMT because of various drawbacks and stigma. It was also found that the occupation of parent resultant of education level plays an important role in the selection and acceptance of BMTs.

Future studies analysing the impact of parent's age and urgency of treatment on selection of behaviour management techniques can be done. Future studies with fixed and uniform sample size of occupational groups would shed more coherent light on the topic.

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### AUTHOR DECLARATION:

- Financial or Other Competing Interests: None
- Was Ethics Committee Approval obtained for this study? Yes
- Was informed consent obtained from the subjects involved in the study? Yes
- For any images presented appropriate consent has been obtained from the subjects. NA

### PLAGIARISM CHECKING METHODS: [Jain H et al.]

- Plagiarism X-checker: Apr 10, 2021
- Manual Googling: Jul 16, 2021
- iThenticate Software: Aug 20, 2021 (5%)

### ETYMOLOGY: Author Origin

Date of Submission: **Apr 07, 2021**  
Date of Peer Review: **May 21, 2021**  
Date of Acceptance: **Jul 17, 2021**  
Date of Publishing: **Sep 01, 2021**

# VISUAL ANALOGUE SCALE



1)

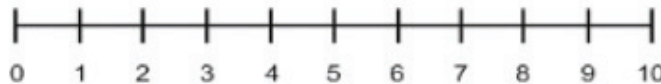
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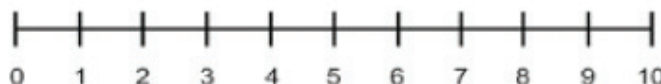
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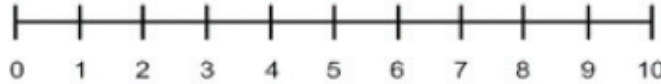
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