

Toys + Dentistry= Winning Smiles- Combining The Magic Of Play With The Importance Of Oral Health For A Lifetime Of Happy Grins

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Abstract:

Background: Kids deal with many of the same feelings adults do. They get frustrated, excited, nervous, sad, jealous, frightened, worried, angry and embarrassed. However young kids usually don't have the vocabulary to talk about how they are feeling. Instead they communicate their feelings in other ways. Understanding the emotion of an immature child is highly useful to study and select the most appropriate behaviour management strategy during a dental appointment. Dental anxiety may present as fear or worry, but can also make children irritable and angry. One of the main reasons for cancelled dental appointments or lack of interest in dental treatment is avoidance behaviour in a child which in turn generates tooth decay, decreased self-esteem, and poor quality of life.

Aims and Objectives: The purpose of this study was to determine the anxiety levels of pediatric patients visiting the dental OP at a dental college and hospital, Kavalkinaru. This study unveils the novel technique wherein fidget toys were used in the form of **CHRIS'S Toys Assisted Therapy** to reduce the anxiety in pediatric dental patients.

Results: Results showed that intervention with toys through the **CHRIS'S Toys Assisted Therapy** significantly reduced the anxiety levels in children.

Conclusion: Thus, CHRIS'S Toys Assisted Therapy is shown to be a promising method of anxiety control, a key to a successful pediatric dental practice.

Keywords: Dental anxiety, Pediatric dentistry, CHRIS'S Toys Assisted Therapy, Non pharmacological behaviour management.

INTRODUCTION:

Behaviour of a child is a composite reflection of immature emotions. A child's behavioural presentation is influenced by a multitude of immature emotions including fear, anxiety, cry, phobia and anger. Dental fear and anxiety (DFA) is one of the major challenges encountered in pediatric dentistry¹. Fear or refusing dental treatment is a negative emotional reaction manifested by cognitive, physiological, and motor responses, which, when associated with dental visits or dental treatment, is referred to as dental anxiety. Cancelled appointments or lack of interest in dental treatment generates tooth decay, decreased self-esteem, and poor quality of life for a child.

Non-pharmacological management techniques (tell-show-do technique, voice control, non-verbal communication, positive reinforcement, distraction, coping, audio analgesia) are commonly used by a pediatric dentist when the child refuses to cooperate for the dental treatment. When all the Non-pharmacological management techniques fail, dentists resort to the Pharmacological management with nitrous oxide sedation and general anaesthesia. Though full mouth rehabilitation under General Anaesthesia is absolutely safe, many parents hesitate to accept it.

Modifying the environment in a dental setup through both sounds and lights specifically designed for helping pediatric patients can modify the behaviour of the child patient².

To ease the anxiety, infants usually seek the comfort of a familiar stuffed toy or blanket which are also known as transitional objects. These comfort object ease the pangs of separation and fear by providing familiarity and security to the child.

Fidget toys are colorful, handheld devices that users rotate between their fingers. While playing with the device, users can focus their mental energy into the task, potentially dispelling pent up anxious energy to avoid becoming distracted from it.

This study unveils the novel technique wherein fidget toys were used in the form of **CHRIS'S Toys Assisted Therapy** to reduce the anxiety in pediatric dental patients.

CHRIS'S TOYS ASSISTED THERAPY:

Fidget toys are designed to increase focus while alleviating other, more distracting habits, fidget toys give your hands something to do so the mind can effectively redirect its attention, and when needed, relax. Typically advertised towards children, fidget toys are handheld tools made to help users focus and decrease stress. The toys are also believed to improve learning ability.

Fidget toys come in many different forms, such as fidget spinners, fidget cubes and rubber band balls. Fidget spinners, usually made from plastic or metal, are a three-pronged tool that fits in your hand and is meant to be spun.

Putty is a common household and classroom item, can also be a sensory fidget toy. Similar to a stress ball, putty or play dough releases tension and stress. Putty comes in a variety of colors and is pocket-sized, but it's also a silent tool that can be less distracting than other toys, like a fidget spinner.

Fidget cube is a six-sided toy is a bit more complex, bearing multiple options to keep your fingers busy. Typically made of plastic, each side of the cube includes various activities such as twisting, clicking, spinning or flipping, allowing the hands to stay occupied and the mind to focus elsewhere.

AIM & OBJECTIVE:

This original research study was conducted to evaluate the effect of CHRIS'S Toys-Assisted Therapy for pediatric patients who are anxious during dental visits.

MATERIALS AND METHODS:

Fifty healthy children visiting the Department of Pedodontics, at a dental college and hospital between the age group 5-10 years were randomly selected for the study. Out of the 50 children, 25 were males and 25 were females. The children who expressed apprehension (stress, anxiety, fear) when going to the dentist were included in the study. Only children visiting the dentist for the first time and children who are to undergo preventive dental procedure such as fluoride application and pit and fissure sealant, oral prophylaxis, restorative procedures were selected for the study.

Parents who did not want their child to participate in the study were excluded from the study. Medically compromised children and special children were also excluded from the study.

Verbal and written consent was obtained from the parents or the guardian of the child before the start of the study. Institutional ethical committee clearance was obtained from the Institutional review board.

During the intervention, the child is given a fidget toy in hand during the dental procedure. [FIGURE 1].








The MCDAS (Modified Corah's Dental Anxiety Scale)

The MCDAS (Modified Corah's Dental Anxiety Scale) is a reliable and valid measure of dental anxiety in children. It comprises of a set of 6 questions that helps us determine how the child feels during a dental visit. Scores below 19 indicates the absence of state anxiety, scores higher than 19 indicates the presence of state anxiety and scores higher than

31, indicates severe phobic disorder. Before and after the dental procedure- MCDAS scores were obtained. [FIGURE 2].

The MCDAS_(f) Scale

How do you feel about:

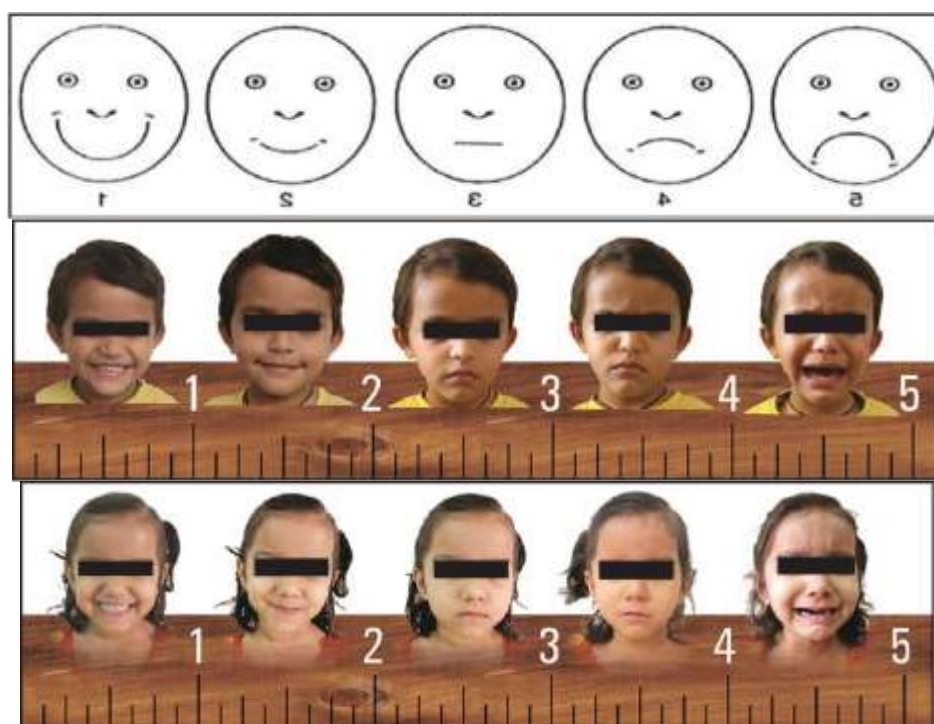
					
Q1: Going to the dentist generally	1	2	3	4	5
Q2: Having your teeth looked at	1	2	3	4	5
Q3: Having your teeth scraped or polished	1	2	3	4	5
Q4: Having an injection in gums	1	2	3	4	5
Q5: Having a filling	1	2	3	4	5
Q6: Having teeth taken out	1	2	3	4	5

Likert scale:

1. would mean: relaxed/not worried
2. would mean: very slightly worried
3. would mean: fairly worried
4. would mean: worried a lot
5. would mean: very worried

DENTAL ANXIETY- RMS pictorial scale (Ragavendra- Madhuri- Sujatha)[FIGURE 3,4,5]

Raghavendra, Madhuri, Sujata (RMS) Pictorial Scale (RMS-PS) is used for the assessment of child's dental anxiety. RMS-PS comprises a row of faces ranging from very happy to very unhappy[Figure 3]. Two separate sets of photographs were used for boys [Figure 4] and girls [Figure 5]. The children were asked to choose the face they feel like about themselves at that moment. The scale was scored by giving a value of one to the very happy face and five to the very unhappy face.



HEART RATE:

Physiological measurement (heart rate) before, during and at the end of the intervention with fidget toy were measured using Pulsoximeter. [FIGURE 6, 7]



RESULTS:

The Normality tests Kolmogorov-Smirnov and Shapiro-Wilks tests results reveal that variables (MCDAS and RMS scales) do not follow Normal distribution. Therefore, to analyse the data, non-parametric methods are applied. To compare MCDAS and RMS scales between genders independent samples Mann Whitney U test is applied.

To compare MCDAS and RMS scales between age groups, independent samples Kruskal Wallis test is used followed by Bonferroni corrected Mann Whitney test for multiple pair wise comparison. To compare MCDAS and RMS scales between before and after experiment related samples Wilcoxon Signed Rank test is used.

To compare MCDAS and RMS scales between before, during and after experiment related samples Friedman's Two-Way Analysis of Variance followed by Bonferroni corrected Wilcoxon Signed Rank test for multiple pair wise comparison. To compare proportions between study and control groups Chi-Square test is applied, if any expected cell frequency is less than five then Fisher's exact test is used.

To compare proportions between two time points McNemar's Chi-Square test is employed. To analyse the data SPSS (IBM SPSS Statistics for Windows, Version 26.0, Armonk, NY: IBM Corp. Released 2019) is used. Significance level is fixed as 5% ($\alpha = 0.05$). (If P-Value is <0.05 then statistically significant)

TABLE 1: DISTRIBUTION OF SAMPLES ACCORDING TO SEX (Frequency Tables)

Sex	N	%
Male	25	50.0%
Female	25	50.0%
Total	50	100.0%

TABLE 2: DISTRIBUTION OF SAMPLES ACCORDING TO AGE

Age group	N	%
5.0 - 7.0 yrs	15	30.0%
7.1 - 9.0 yrs	22	44.0%
9.1 - 10.0 yrs	13	26.0%
Total	50	100.0%

TABLE 3: DISTRIBUTION OF SAMPLES ACCORDING TO AGE & SEX

Age group	Sex					
	Male		Female		Total	
	N	%	N	%	N	%
5.0 - 7.0 yrs	9	36.0%	6	24.0%	15	30.0%
7.1 - 9.0 yrs	9	36.0%	13	52.0%	22	44.0%
9.1 - 10.0 yrs	7	28.0%	6	24.0%	13	26.0%
Total	25	100.0%	25	100.0%	50	100.0%

GRAPH 1: GRAPH DEPICTING GENDER WISE AGE GROUP DISTRIBUTION

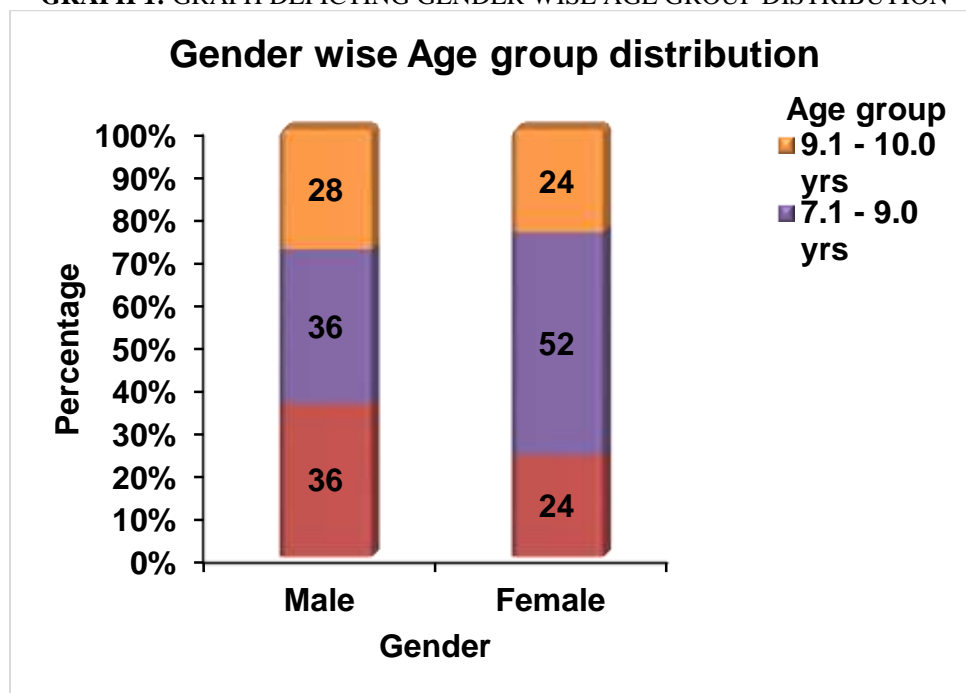


TABLE 4: COMPARISON OF TOTAL MCDAS SCALE

Total MCDAS Scale		Before	After	p-value*
Overall	N	50	50	<0.001
	Median	22.0	12.0	
	1st Quartile	15.0	9.0	
	3rd Quartile	33.0	17.0	
	Mean	22.7	12.9	
	Std Dev	9.9	5.2	

* Related-Samples Wilcoxon Signed Rank Test

TABLE 5: GENDER WISE COMPARISON OF TOTAL MCDAS SCALE

Total MCDAS Scale		Before	After	p-value*
Male	N	25	25	<0.001
	Median	22.0	13.0	
	1st Quartile	15.0	9.0	
	3rd Quartile	34.0	17.0	
	Mean	23.1	13.4	
	Std Dev	10.0	5.7	
Female	N	25	25	<0.001
	Median	22.0	11.0	
	1st Quartile	13.0	9.0	
	3rd Quartile	29.0	14.0	
	Mean	22.4	12.4	
	Std Dev	10.1	4.8	
p-value@		0.838	0.559	

* Related-Samples Wilcoxon Signed Rank Test

@Independent-Samples Mann-Whitney U Test

TABLE 6: AGE GROUP WISE COMPARISON OF TOTAL MCDAS SCALE

Total MCDAS Scale		Before	After	p-value*
5.0 - 7.0 yrs	N	15	15	<0.001
	Median	33.0	17.0	
	1st Quartile	21.0	12.0	
	3rd Quartile	39.0	20.0	
	Mean	29.5	16.4	
	Std Dev	9.9	4.7	
7.1 - 9.0 yrs	N	22	22	0.001
	Median	23.0	12.0	
	1st Quartile	20.0	11.0	
	3rd Quartile	29.0	15.0	
	Mean	24.0	13.5	
	Std Dev	7.8	4.8	
9.1 - 10.0 yrs	N	13	13	1.000
	Median	12.0	7.0	
	1st Quartile	11.0	6.0	
	3rd Quartile	15.0	9.0	
	Mean	12.8	7.9	
	Std Dev	4.0	2.0	
p-value#		<0.001	<0.001	

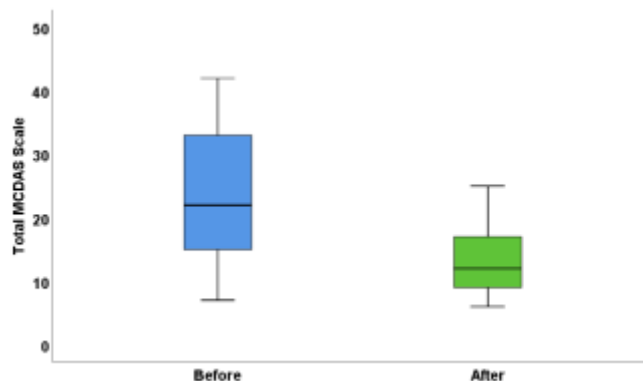
*Related-Samples Wilcoxon Signed Rank Test

#Independent-Samples Kruskal-Wallis Test

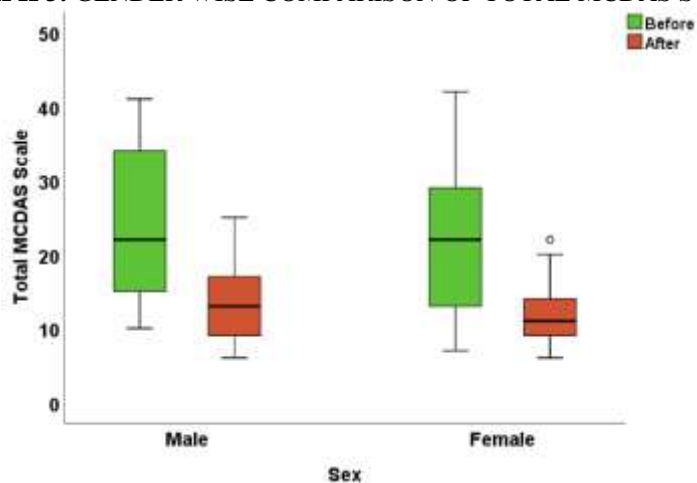
TABLE 7: BONFERRONI CORRECTED PAIRWISE COMPARISONS OF TOTAL MCDAS SCALE

Pairs (Age group)	Before	After
9.1 - 10.0 yrs vs 7.1 - 9.0 yrs	0.001	0.001
9.1 - 10.0 yrs vs 5.0 - 7.0 yrs	<0.001	<0.001
7.1 - 9.0 yrs vs 5.0 - 7.0 yrs	0.511	0.382

GRAPH 2: COMPARISON OF TOTAL MCDAS SCALE



GRAPH 3: GENDER WISE COMPARISON OF TOTAL MCDAS SCALE



GRAPH 4: AGE GROUP WISE COMPARISON OF TOTAL MCDAS SCALE

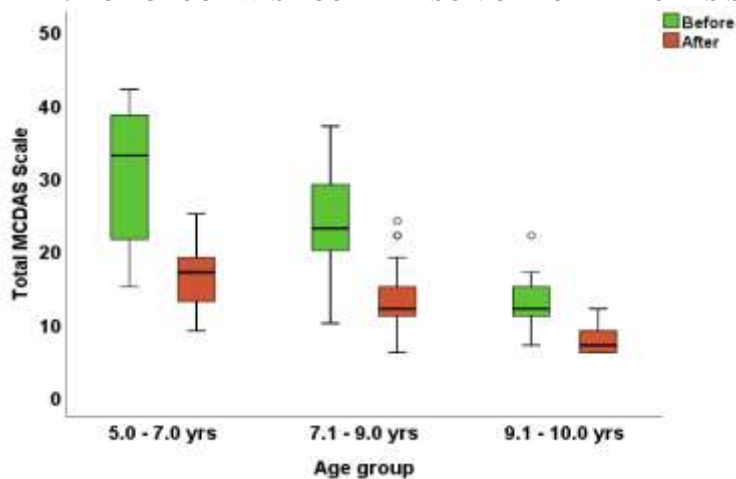


TABLE 8: COMPARISON OF TOTAL RMS SCALE

RMS Scale		Before	During	After	p-value [§]
Overall	N	50	50	50	<0.001
	Median	1.0	1.0	1.0	
	1st Quartile	1.0	1.0	1.0	
	3rd Quartile	2.0	1.0	1.0	
	Mean	1.8	1.2	1.0	
	Std Dev	.9	.5	.0	

[§]Related-Samples Friedman's Two-Way Analysis of Variance

TABLE 9: BONFERRONI CORRECTED PAIRWISE COMPARISONS OF RMS SCALE

Pairs (Time points)	p-value
After vs During	0.750
After vs Before	<0.001
During vs Before	0.024

TABLE 10: GENDER WISE COMPARISON OF TOTAL RMS SCALE

RMS Scale		Before	During	After	p-value [§]
Male	N	25	25	25	<0.001
	Median	2.0	1.0	1.0	
	1st Quartile	1.0	1.0	1.0	
	3rd Quartile	2.0	1.0	1.0	
	Mean	1.8	1.2	1.0	
	Std Dev	.9	.4	.0	
Female	N	25	25	25	<0.001
	Median	1.0	1.0	1.0	
	1st Quartile	1.0	1.0	1.0	
	3rd Quartile	2.0	1.0	1.0	
	Mean	1.7	1.2	1.0	
	Std Dev	.9	.5	.0	
p-value [@]		0.687	0.771	1.000	

[§]Related-Samples Friedman's Two-Way Analysis of Variance

[@]Independent-Samples Mann-Whitney U Test

TABLE 11: BONFERRONI CORRECTED PAIRWISE COMPARISONS OF RMS SCALE

Pairs (Time points)	p-value	
	Male	Female
After vs During	1.000	1.000
After vs Before	0.011	0.040
During vs Before	0.143	0.231

TABLE 12: AGE GROUP WISE COMPARISON OF TOTAL RMS SCALE

RMS Scale		Before	During	After	p-value [§]
5.0 - 7.0 yrs	N	15	15	15	<0.001
	Median	3.0	1.0	1.0	
	1st Quartile	3.0	1.0	1.0	
	3rd Quartile	3.0	2.0	1.0	
	Mean	2.9	1.4	1.0	
	Std Dev	.6	.6	.0	
7.1 - 9.0 yrs	N	22	22	22	0.051
	Median	1.0	1.0	1.0	
	1st Quartile	1.0	1.0	1.0	
	3rd Quartile	2.0	1.0	1.0	
	Mean	1.4	1.2	1.0	
	Std Dev	.5	.4	.0	
9.1 - 10.0 yrs	N	13	13	13	1.000
	Median	1.0	1.0	1.0	
	1st Quartile	1.0	1.0	1.0	
	3rd Quartile	1.0	1.0	1.0	
	Mean	1.0	1.0	1.0	
	Std Dev	.0	.0	.0	
p-value [#]		<0.001	0.071	1.000	

[§]Related-Samples Friedman's Two-Way Analysis of Variance

[#]Independent-Samples Kruskal-Wallis Test

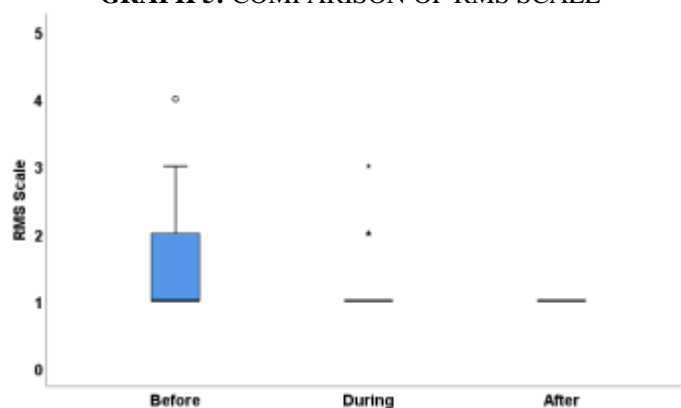
TABLE 13: BONFERRONI CORRECTED PAIRWISE COMPARISONS OF AGE GROUP

Pairs (Age group)	Before
9.1 - 10.0 yrs vs 7.1 - 9.0 yrs	0.288
9.1 - 10.0 yrs vs 5.0 - 7.0 yrs	<0.001
7.1 - 9.0 yrs vs 5.0 - 7.0 yrs	<0.001

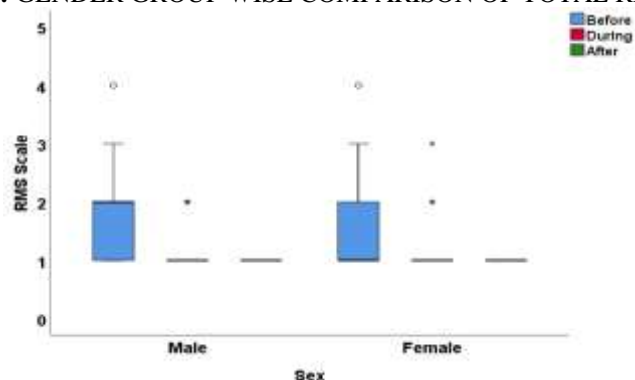
TABLE 14: BONFERRONI CORRECTED PAIRWISE COMPARISONS OF RMS SCALE

Pairs (Time points)	p-value
5.0 - 7.0 yrs	
After vs During	0.946
After vs Before	<0.001
During vs Before	0.002

GRAPH 5: COMPARISON OF RMS SCALE



GRAPH 6: GENDER GROUP WISE COMPARISON OF TOTAL RMS SCALE



GRAPH 7: AGE GROUP WISE COMPARISON OF TOTAL RMS SCALE

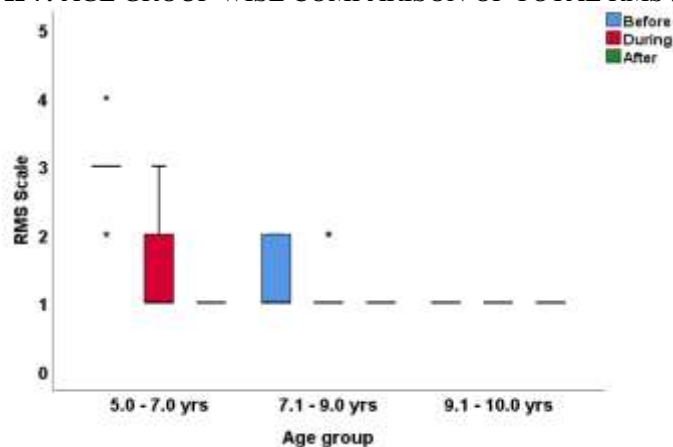


TABLE 15: CHI-SQUARE TEST TO COMPARE PROPORTIONS OF HEART RATE BETWEEN GENDERS

Heart Rate		Sex						p-value
		Male		Female		Total		
		N	%	N	%	N	%	
Before	Normal	11	44.0%	12	48.0%	23	46.0%	0.777
	High	14	56.0%	13	52.0%	27	54.0%	
	Total	25	100.0%	25	100.0%	50	100.0%	
During	Normal	22	88.0%	20	80.0%	42	84.0%	0.702*
	High	3	12.0%	5	20.0%	8	16.0%	
	Total	25	100.0%	25	100.0%	50	100.0%	
After	Normal	23	92.0%	24	96.0%	47	94.0%	1.000*
	High	2	8.0%	1	4.0%	3	6.0%	
	Total	25	100.0%	25	100.0%	50	100.0%	

* Fisher's exact test p-value

TABLE 16: CHI-SQUARE TEST TO COMPARE PROPORTIONS OF HEART RATE BETWEEN AGE GROUPS

Heart Rate		Age group								p-value
		5.0 - 7.0 yrs		7.1 - 9.0 yrs		9.1 - 10.0 yrs		Total		
		N		N		N		N		
Before	Normal	3	20.0	10	45.5	10	76.9	23	46.0	0.011
	High	12	80.0	12	54.5	3	23.1	27	54.0	
	Total	15	100.0	22	100.0	13	100.0	50	100.0	
During	Normal	11	73.3	18	81.8	13	100.0	42	84.0	0.172*
	High	4	26.7	4	18.2	0	0.0	8	16.0	
	Total	15	100.0	22	100.0	13	100.0	50	100.0	
After	Normal	14	93.3	20	90.9	13	100.0	47	94.0	0.781*
	High	1	6.7	2	9.1	0	0.0	3	6.0	
	Total	15	100.0	22	100.0	13	100.0	50	100.0	

* Fisher's exact test p-value

TABLE 17: MCNEMAR'S CHI-SQUARE TEST TO COMPARE HEART RATE BETWEEN TIME POINTS

Heart Rate		Heart Rate: Before						p-value
		Normal		High		Total		
		N	%	N	%	N	%	
During	Normal	22	95.7%	20	74.1%	42	84.0%	<0.001
	High	1	4.3%	7	25.9%	8	16.0%	
	Total	23	100.0%	27	100.0%	50	100.0%	
After	Normal	23	100.0%	24	88.9%	47	94.0%	<0.001
	High	0	0.0%	3	11.1%	3	6.0%	
	Total	23	100.0%	27	100.0%	50	100.0%	

Heart Rate		Heart Rate: After						p-value
		Normal		High		Total		
		N	%	N	%	N	%	
During	Normal	42	89.4%	0	0.0%	42	84.0%	0.063
	High	5	10.6%	3	100.0%	8	16.0%	
	Total	47	100.0%	3	100.0%	50	100.0%	

TABLE 18: MCNEMAR'S CHI-SQUARE TEST TO COMPARE HEART RATE BETWEEN TIME POINTS: GENDER WISE

GENDER WISE										
Sex	Heart Rate		Heart Rate: Before						p-value	
			Normal		High		Total			
			N	%	N	%	N	%		
Male	During	Normal	11	100.0%	11	78.6%	22	88.0%	0.001	
		High	0	0.0%	3	21.4%	3	12.0%		
		Total	11	100.0%	14	100.0%	25	100.0%		
	After	Normal	11	100.0%	12	85.7%	23	92.0%	<0.001	
		High	0	0.0%	2	14.3%	2	8.0%		
		Total	11	100.0%	14	100.0%	25	100.0%		
Female	During	Normal	11	91.7%	9	69.2%	20	80.0%	0.021	
		High	1	8.3%	4	30.8%	5	20.0%		
		Total	12	100.0%	13	100.0%	25	100.0%		
	After	Normal	12	100.0%	12	92.3%	24	96.0%	<0.001	
		High	0	0.0%	1	7.7%	1	4.0%		
		Total	12	100.0%	13	100.0%	25	100.0%		

Sex	Heart Rate		Heart Rate: After						p-value
			Normal		High		Total		
			N	%	N	%	N	%	
Male	During	Normal	22	95.7%	0	0.0%	22	88.0%	0.999
		High	1	4.3%	2	100.0%	3	12.0%	
		Total	23	100.0%	2	100.0%	25	100.0%	
Female	During	Normal	20	83.3%	0	0.0%	20	80.0%	0.125
		High	4	16.7%	1	100.0%	5	20.0%	
		Total	24	100.0%	1	100.0%	25	100.0%	

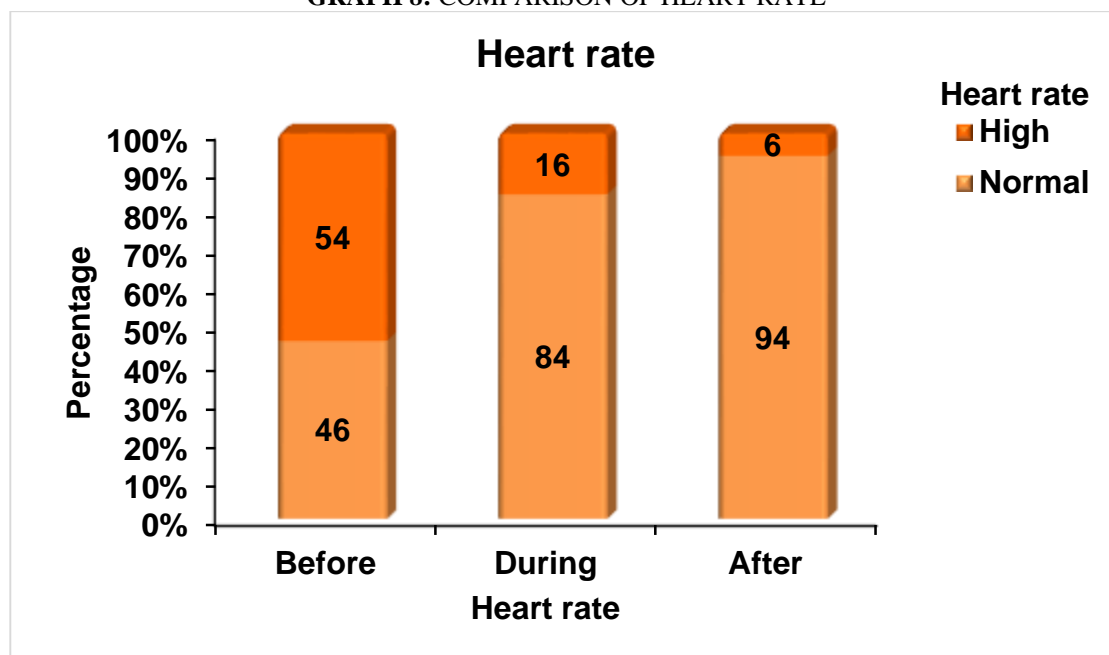
TABLE 19: MCNEMAR'S CHI-SQUARE TEST TO COMPARE HEART RATE BETWEEN TIME POINTS: AGE GROUP WISE

Age group	Heart Rate		Heart Rate: Before						p-value
			Normal		High		Total		
			N	%	N	%	N	%	
5.0 - 7.0 yrs	During	Normal	2	66.7%	9	75.0%	11	73.3%	0.021
		High	1	33.3%	3	25.0%	4	26.7%	
		Total	3	100.0%	12	100.0%	15	100.0%	
	After	Normal	3	100.0%	11	91.7%	14	93.3%	0.001
		High	0	0.0%	1	8.3%	1	6.7%	
		Total	3	100.0%	12	100.0%	15	100.0%	
7.1 - 9.0 yrs	During	Normal	10	100.0%	8	66.7%	18	81.8%	0.008
		High	0	0.0%	4	33.3%	4	18.2%	
		Total	10	100.0%	12	100.0%	22	100.0%	
	After	Normal	10	100.0%	10	83.3%	20	90.9%	0.002
		High	0	0.0%	2	16.7%	2	9.1%	
		Total	10	100.0%	12	100.0%	22	100.0%	
9.1 - 10.0 yrs	During	Normal	10	100.0%	3	100.0%	13	100.0%	-
		High	0	0.0%	0	0.0%	0	0.0%	
		Total	10	100.0%	3	100.0%	13	100.0%	
	After	Normal	10	100.0%	3	100.0%	13	100.0%	-
		High	0	0.0%	0	0.0%	0	0.0%	
		Total	10	100.0%	3	100.0%	13	100.0%	

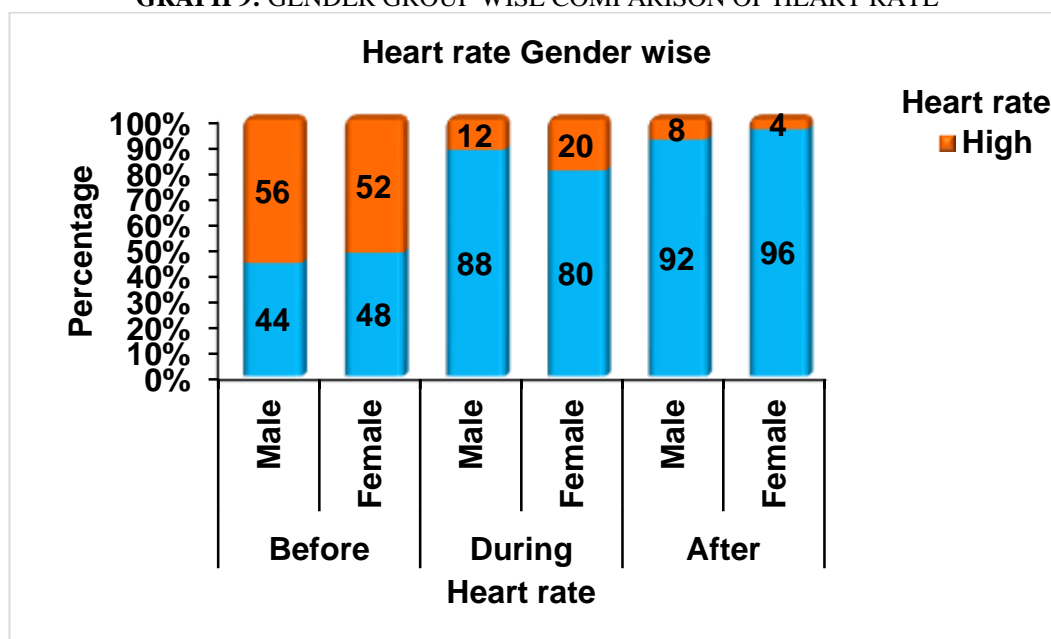
Age group	Heart Rate		Heart Rate: After						p-value
			Normal		High		Total		
			N	%	N	%	N	%	
5.0 - 7.0 yrs	During	Normal	11	78.6%	0	0.0%	11	73.3%	0.250
		High	3	21.4%	1	100.0%	4	26.7%	
		Total	14	100.0%	1	100.0%	15	100.0%	

7.1 - 9.0 yrs	During	Normal	18	90.0%	0	0.0%	18	81.8%	0.500
		High	2	10.0%	2	100.0%	4	18.2%	
		Total	20	100.0%	2	100.0%	22	100.0%	
9.1 - 10.0 yrs	During	Normal	13	100.0%	0	0.0%	13	100.0%	-
		High	0	0.0%	0	0.0%	0	0.0%	
		Total	13	100.0%	0	0.0%	13	100.0%	

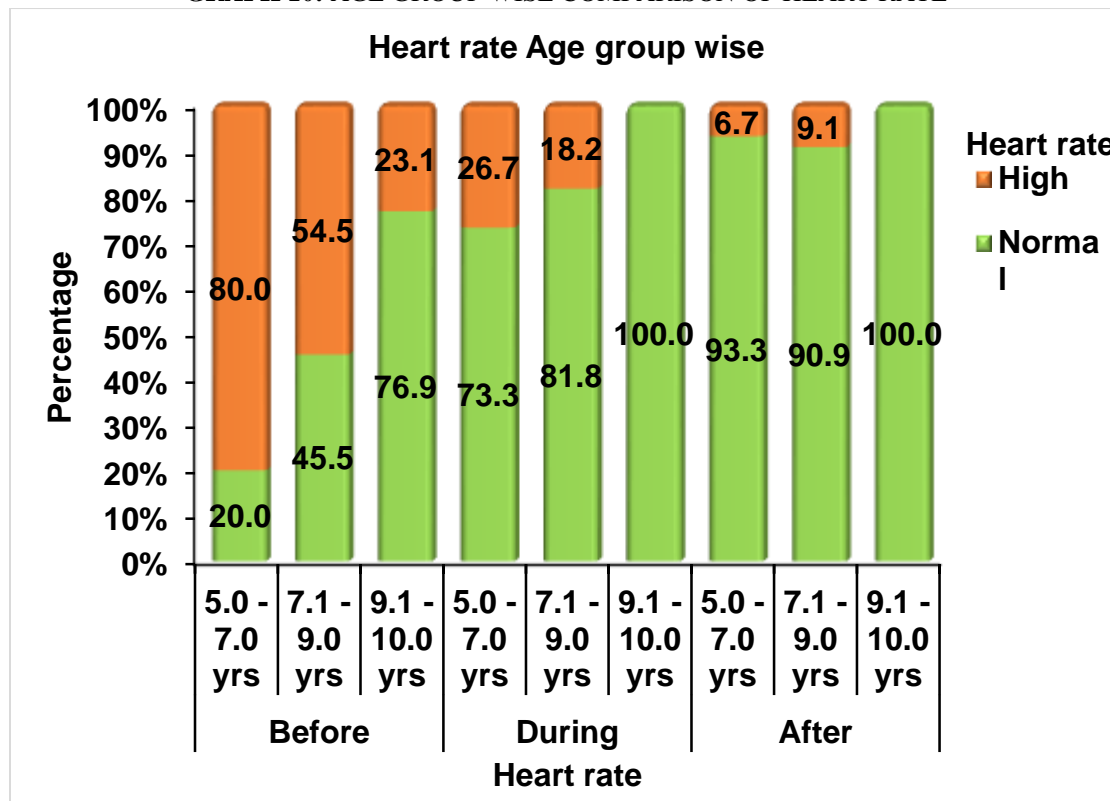
GRAPH 8: COMPARISON OF HEART RATE



GRAPH 9: GENDER GROUP WISE COMPARISON OF HEART RATE



GRAPH 10: AGE GROUP WISE COMPARISON OF HEART RATE



DISCUSSION:

Barlow has described anxiety as “a unique and coherent cognitive-affective structure within our defensive and motivational system³.” Despite the advances in dental care, encountering anxiety and its management remains a challenge to the pediatric dentist. There are multiple manifestations and impacts of dental fear and anxiety, including immediate physical reactions (e.g., crying, screaming, and shivering), psychological responses (e.g., worry, upset, panic, helplessness, insecurity, resentment, and hatred), and uncooperativeness in dental treatment⁴.

The injection is associated with the psychological pain rather than physical pain. Injections have been voted as the most anxiety provoking procedure in a pediatric dental procedure. Children express immature emotions such as fear, anxiety, cry at the sight of the needle rather than the prick of the needle.

In addition to the relatively simple techniques such as providing information, tell-show-do, and signaling, there are several psychological approaches to manage dental anxiety and fear which can be used in the clinic. These range in complexity from those that are relatively easy to carry out to others requiring specialized training⁵.

In our present study, we had evaluated 50 children between the age group of 5- 10 years (**TABLE 1- 3; GRAPH 1**).

The fidget toys enable users to indulge in manipulative play to help with their emotions. For example, kids may squeeze a stress ball when they feel angry, or they might stroke a soft, fuzzy toy when they are anxious. Nowadays, Slime is a popular toy that allows for free play, which helps a user feel in control and eases anxiety,” said Sushmita Ganguly, a psychologist.

Fidget toys give movements an outlet, which can help calm a person’s nerves, relieve stress and serve as a distraction in an over stimulating environment. The toy pulls the user away from any particular stressful thought or situation and provides a temporary form of relief.

“It gives people a place to park their mental worries,” says Sue Varma, M.D., a board certified psychiatrist in New York City. “The rhythmic sensation of any motion is a form of self soothing—like tapping your feet or shaking your leg.”

Some toys, when used by adults, can also provide time for a break, she adds. However in some cases with children, certain toys, such as fidget spinners, can become a distraction.

In our present study, on comparison of MCDAS scores before and after intervention with fidget toys, there was a statistically significant reduction in the anxiety of children with a p value of <0.001(**TABLE 4- 7; GRAPH 2- 4**). Children who are between the age group of 5-7 yrs showed a statistically significant reduction in the anxiety levels when compared to the children who were older than 7 years. Considering the RMS pictorial scale, most of the children visiting the dental

operatory came with a unhappy face. After intervention with Fidget toys in the dental chair, the face of most of the children changed to a smile which was also statistically significant (**TABLE 8- 14; GRAPH 5-7**).

The normal heart rate for children is 70 to 110 beats per minute. When there is a 20% increase in the normal heart rate, it is considered as high. Before the start of the dental procedure, the children had an increased heart rate but during the procedure while the child was given a fidget toy in the dental chair, the heart rate significantly reached normal for most of the children. There was a statistically significant reduction in the anxiety of children during the dental procedure and after the dental procedure with a p value of <0.001 (**TABLE 15- 19; GRAPH 8-10**).

CONCLUSION:

Toys with Dentistry creates a Winning smile in pediatric dental patients. Fidget toys give movements an outlet, which can help calm a child's nerves, relieve stress and serve as a distraction in an over stimulating dental environment.

REFERENCES:

1. Eden E., Sevinç N., Akay A., Kiliç G., Ellidokuz H. Evaluation of children's dental anxiety levels at a kindergarten and at a dental clinic. *Braz. Oral Res.* 2016;30:1–8. [PubMed] [Google Scholar].
2. Serpell JA. Animal Assisted Therapy- Conceptual model and guidelines for quality assurance. In: Fine AH, editor. *Handbook on Animal-Assisted Therapy: Theoretical Foundations and Guidelines for Practice*. Second ed. United States of America: Elsevier Publications; 2011. p.119-64.
3. Steimer T. The biology of fear- and anxiety-related behaviors. *Dialogues Clin Neurosci* 2002;4:231-49.
4. Gao X, Hamzah SH, Yiu CK, McGrath C, King NM. Dental fear and anxiety in children and adolescents: Qualitative study using YouTube. *J Med Internet Res* 2013;15:e29.
5. Armfield JM, Heaton LJ. Management of fear and anxiety in the dental clinic: A review. *Aust Dent J* 2013; 58:390-407.