

Savitha's Desensitization Technique - A Novel Approach to Classical Conditioning in Pediatric Practice of Alpha Generation

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Abstract: Background and objectives: Aim of the study was to tailor make a desensitization method for classical conditioning in Pediatric practice of alpha generation in first dental visit. Methods: Fifteen children aged 2–7 years were studied to evaluate anxiety levels during their first dental visit using Savitha's desensitization technique. Pre - appointment data on preferred cartoons was collected, and autoclaved vanilla - flavored cartoon sticks were used for the oral examination instead of standard dental tools. Anxiety was assessed before and after desensitization using the Venham picture test. Child acceptance and anxiety scores were analyzed using paired and unpaired t - tests, with significance set at $p < 0.05$. Results: The study showed a significant reduction in mean anxiety scores pre - and post - desensitization ($p < 0.05$). This suggests that combining desensitization with structuring, using vanilla - flavored cartoon sticks instead of traditional dental tools, effectively reduces children's fear and anxiety associated with dental visits. Interpretation and Conclusion: Based on the methodology and findings of this study, Savitha's desensitization technique effectively reduces anxiety in children aged 2–7 during their first dental visits. By promoting desensitization and classical conditioning, it encourages cooperation, making it a valuable tool in pediatric dentistry.

Keywords: Desensitization, fear, anxiety, newer desensitization technique, Venham picture scale, classical conditioning, alpha generation

1. Introduction

First dental visit can be daunting for children due to presence of innate fear that is defined as the primitive response developed in an individual to protect himself/herself from harm and self - destruction. It is also aggravated by the subjective and objective fears fed to the child's mind which is often resulting in a fight or flight response, Pediatric dental visit can be one such provoking situation. However, it becomes a Pediatric dentists utmost responsibility to make the first dental visit most uneventful and non - threatening to the developing cognition of the child so that the fear of unknown or separation anxiety that peaks during the initial visit should not be triggered.¹ The first dental visit is a crucial milestone in a child's journey as a future patient. Any missteps during this visit can have serious consequences, potentially leading to dental anxiety. This fear may cause the child to grow up avoiding dental care altogether, resulting in a lifelong negative attitude towards treatment. Child's psychology is constantly developing and it's interesting to note no single theory of psychology is completely applicable for child's psychological development, rather it is an interplay between different theories as given by Jean Piaget, Skinner, Pavlov and Erik Erikson.²

It is interesting to know that psychology of the child starts to develop from day one of his/ her birth as an empty slate with constant addition and deletion of information to form cognitive structures called as schema. The most important theory in this context is classical conditioning, where a child learns to associate specific stimuli with responses. Sensations such as smell, touch, taste, sight, and sound become linked to the experiences they have at the dental office. Through a process called generalization, if these stimuli are consistently paired with positive or negative experiences, the same response may be triggered in future visits. By fostering positive associations, a pleasurable schema can be developed in the child's mind, helping to

reduce anxiety and promote a positive attitude toward dental care.⁶

Desensitization is a process of substitution of anxiety by relaxation, this paper conceptualises first dental visit with introduction of a novel desensitization technique where child's preference of cartoon as elicited from the pre - appointment data gathering as per Jenk's Strategies was used for initial oral examination. Alpha generation as they are smarter and their environment is surrounded by interactive tools and approaches, our study method encashes their likes and dislikes to tailor make a desensitization method to classical conditioning in Pediatric practice of alpha generation in first dental visit.

2. Methodology

Fifteen children visiting the dentist for first time of age group 2 - 7 years of both the sexes were selected for the study. Pre appointment data gathering regarding the cartoon of interest was done by mailing. Savitha's desensitization method - wherein cartoon sticks with vanilla flavour of their choice from pre - appointment data gathering are used for initial oral examination instead of routine dental armamentarium. All the children were assessed for their anxiety pre and post desensitization using Savitha's desensitization technique. Pre - desensitization anxiety assessment was done using Venham picture test which is a self report measure of situational anxiety in children, then the scores were noted. Then post Savitha's desensitization technique i. e using autoclaved cartoon sticks with vanilla flavour for oral examination was done and anxiety assessment was done using Venham picture test in the same children, then scores were noted. Acceptance of the child was also observed along with anxiety. Analysis of the data within groups and between groups was carried out using paired and unpaired t test respectively. $P < 0.05$ was considered as statistically significant.



Figure 1: Different cartoon sticks with vanilla flavor as per Jenks strategy of data gathering by pre - appointment mailing



Figure 2: Picture showing Savitha’s desensitization method

Sample size estimation:

Using the formula,

$$n = \frac{2 (SD)^2 (Z_{1-\alpha/2} + Z_{\beta})^2}{(d)^2}$$

Where,

SD= STANDARD DEVIATION - 3.29

$Z_{1-\alpha/2}$ = 1.96 AT 95% CONFIDENCE INTERVAL

Z_{β} = 0.84 AT 80% power

d = MEAN DIFFERENCE - 3.47

Substituting the values, we get n = 14.09

Therefore, the final sample size of the study is 15.

3. Results

The Venham pictorial test includes eight cards, each with two figures: an “Anxious” and a “Non - anxious” image. The children were asked to choose which figure most accurately represented their current feelings, and their answers were recorded. For determining the final score, the number of times the “anxious” figure was selected and scored. The score goes from 0 to 8. The data was collected and entered into Microsoft excel spreadsheet and all the statistical analysis was performed by using the SPSS software. The mean and standard deviation was calculated

for each variable. Analysis of the data within groups and between groups was carried out using paired and unpaired t test respectively. $P < 0.05$ was considered as statistically significant. Descriptive data were presented in the form of frequencies, percentages, mean and standard deviation. It is given below in tables (1, 2, 3, 4) and (1, 2) bar graphs.

Table 1: Age and Gender Categorisation among study participants

Parameters	Values	p - values
Age (in years)	Mean Age of Participants 4.73±1.32	-
Gender – Males Females	Frequency and Percentage 7 (46.6%) 8 (53.3%)	0.912

Table 2: Comparison of Acceptance of Savitha's desensitization method using Chi square test

Total number	Acceptance (Frequency and Percentage)	P - value
15	15 (100%)	0.0000000

$P < 0.05$ is considered as statistically significant

Table 3: Comparison of anxiety pre and post use of Savitha's desensitization method by paired t test

Parameter	Pre - sensitization	Post – sensitization	p - value
Anxiety score	2.2± 0.67	0.2± 0.41	8.03e - 10

$P < 0.05$ is considered as statistically significant

Table 4: Comparison of gender - based anxiety pre and post use of Savitha's desensitization method using upaired t test

Parameter	Males	Females	p - value
Anxiety score Pre- Desensitization	1.85± 0.69	2.50± 0.53	0.0631
Anxiety score Post- Desensitization	0.00±0.00	0.37±0.51	0.0787

$P < 0.05$ is considered as statistically significant

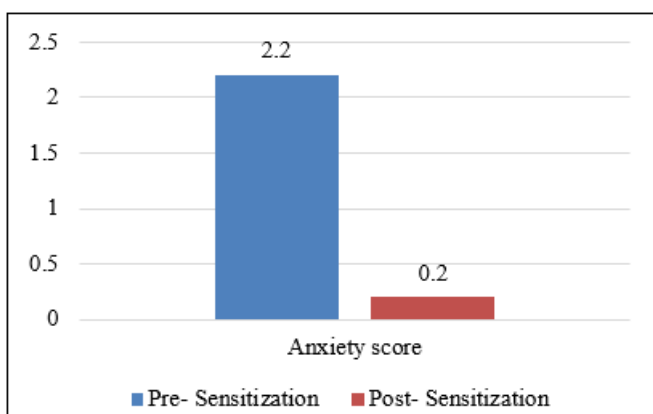


Figure 1: Comparison of Mean Anxiety scores pre and post Desensitization using Savitha's Desensitization Method

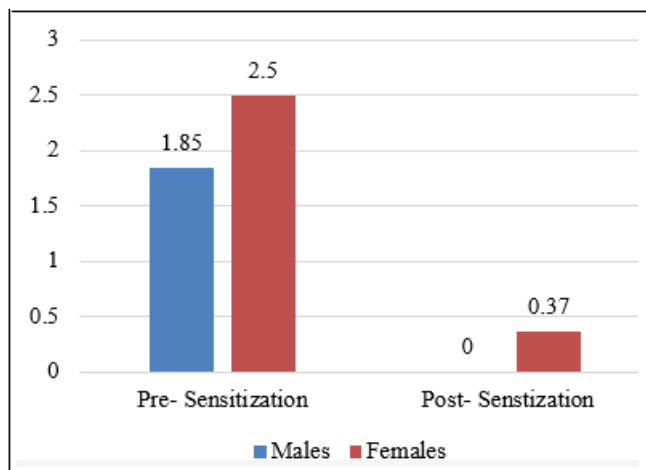


Figure 2: Comparison of Gender-based Mean anxiety scores Pre and Post Desensitization using Savitha's Desensitization Method

4. Discussion

Children have a limited level of cognition and understanding based on their age. By recognizing this aspect of cognitive development, a Pedodontist can tailor appropriate behaviour management strategies that align with each child's cognitive abilities. This approach can enhance their learning experience and reduce the need for more complex strategies in clinical settings.

Alpha generation kids aged 2 to 7 are growing up in a world that shapes their perceptions and behaviours, including their approach to dental care. In Pediatric dental practices, cognitive conditioning plays a significant role in helping these young patients develop positive associations with dental visits. By using engaging visuals and interactive experiences, dental professionals can create a welcoming environment that reduces anxiety. Classical conditioning techniques, such as pairing dental procedures with fun rewards or enjoyable activities, help these children associate dental care with positive feelings, fostering better cooperation and more positive dental behaviours in the long run.¹⁰

Our study sample comprised children in the preoperational stage of child psychology, aged 2 to 7 years. During this developmental phase, children's understanding begins to grow through various stages, leading to the development of their intellectual abilities. A strong foundation established during this period can help foster a positive dental attitude. This age range often marks the first dental visit for many children, usually due to early childhood caries. Therefore, effectively managing these children in a positive manner is essential for Pediatric dentists to implement appropriate behaviour management strategies and encourage a favourable attitude toward dental care.

Children in/under pre - operational period have a characteristic of thought process called animism, investing inanimate objects with life essentially everything is as being alive by a young child and so the stories that invest the most improbable objects with life are quite acceptable to children of this age. At this stage, capabilities for logical reasoning are limited, and child's thought processes are dominated by

immense sensory impressions. The child's view of time is centred around the present and is dominated by how things look, feel, taste, sound and smell. Our desensitization technique leverages these factors, particularly the sense of smell and sight.

The present study was designed to assess the acceptance of our novel desensitization technique (Savitha's desensitization technique) of classical conditioning in pediatric practice of alpha generation.

Savitha's desensitization technique - The icecream sticks with cartoons adorned on it were dipped in vanilla flavour and the child was asked to choose the stick of interest and the chosen stick was used for oral examination tool instead of mouth mirror and general armamentarium, later the child was rewarded the stick of choice.

The patients participating in this study had no prior experience of a dental visit, therefore they experienced visiting a dental office for the first time. Since a traumatic dental experience can result or hamper the further sessions our desensitization technique has shown acceptable results with the children looking forward to a pleasant dental experience.⁹

In our study anxiety was measured using a Venham picture selection task which can be rapidly administered and is readily understood and accepted by the child. Studies conducted by kavitha et al and many others also used Venham picture task for assessing the anxiety in children.³

Our study gave similar results as Krishna Sharma et al, that colors and color of armamentarium used can be a potential modality of behavior management in children.⁸

In our study when the mean anxiety scores were measured pre and post desensitization, it showed statistically significant results with p value < 0.05. This gives us an inference that our study is a combination of desensitization and structuring where the child is allowed to see - feel - smell the ice - cream sticks with cartoons in vanilla flavor away from the routine unpleasant dental armamentarium be it mouth - mirror or be it Eugenol and many others, thus overcoming their preformed fear and anxiety of dental setup and armamentarium.

5. Conclusion

Based on the methodology and findings of this study, we can conclude that Savitha's desensitization technique is both effective and efficient in managing anxiety among children aged 2 to 7 during their initial dental visits. This approach not only aids in desensitizing young patients but also facilitates classical conditioning to the dental environment, promoting cooperative behavior. Given its positive outcomes, this technique represents a valuable practice in pediatric dentistry.

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