Original Article

# Behavior Assessment of Children after Placing Colored Restorative Material: A Randomized Controlled Trial

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## Abstract

**Background:** Children tend to have a unfound fear and anxiety. Placing coloured restoration can motivate and reduce the anxiety in the child. **Aim:** To assess the behaviour of the child after placement of coloured restorative material. **Materials and Methods:** 48 Children of 3-7 years who visited department of pedodontics and preventive dentistry with a occlusal lesion in primary molar teeth were included in the study. The child's behaviour was assessed before and after the treatment. The outcome was based on the cooperation on the child on further appointments. **Results:** The children who were given coloured restoration had better improvement in the behaviour when compared to that of the regular restoration which was statistical significant. **Conclusion:** The coloured restoration are effective motivational tool for the children and reduces anxiety which ultimately benefits better cooperation and improvement in oral hygiene maintanence.

**Keywords:** Behavioural modification, frankl scale, multi-coloured restoration

## Introduction

Children tend to have unfound fear and anxiety. Dental fear is a normal emotional reaction to one or more specific threatening stimuli in the dental situation. Dental anxiety (DA) denotes a state of apprehension that something dreadful is going to happen in relation to dental treatment, and it is coupled with a sense of losing control. Dental phobia represents a severe type of DA and is characterized by marked and persistent anxiety in relation either to clearly discernible situations/objects (e.g., drilling, injections) or to the dental situation in general.[1] The management of a child with fear and anxiety in dental care management is the main barrier for a successful completion of any dental procedure. Assessment of the fear and anxiety of the child based on the behavior is one of the important skills of a pediatric dentist.[3]

The colored restorative material with glitter effect was developed for children. The placement of these restorations is considered to lessen the fear and anxiety of the child and to expect a positive attitude of the child toward the treatment. It is difficult to motivate these children to receive effective treatment. One way of motivating them is to use multicolored restorations.[2] The reason for including this in the present study is that there are no previous studies being conducted in the Indian population, and the motivation of the child is more important. The aim of this study is to assess the behavior of the child after placement of colored restorative material.

## Materials and Methods

This randomized controlled trial was conducted in the Department of Pediatric and Preventive Dentistry, Saveetha Dental College and Hospital, India, to assess the behavior of the child before and after placement of colored restorative material during their dental visit. The study protocol received ethical approval from the Institutional Review Board of Saveetha Dental College. Informed consent was obtained from children's parents or guardians before participation in the study. Every child should assent to participate. Participant's confidentiality was assured with an identity number, and also the records were maintained only by the researcher.

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**Figure 1a:** Armamentarium of Group A.


**Figure 1b:** Armamentarium of Group B.

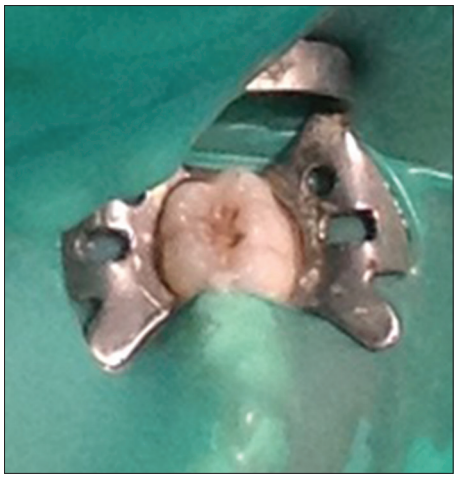

**Figure 2:** Tooth selected.

**Figure 3:** Posttreatment.

The inclusion criteria for the participant include children's parents or guardian accept and sign the informed consent; aged between 3 and 8 years; with good general health condition; presenting at least one occlusal lesion extending up to the dentin in any primary molar. The inclusion criteria for the tooth include absence of pain, fistula, or abscess of tooth adjacent to the selected tooth, absence of pulpal exposure, and absence of mobility [Figure 2]. In case of more than one tooth met the eligibility criteria, the tooth number were written down of a paper, folded, and placed in an envelope. The child was asked to select one, and that tooth was included in the study. The participant will receive the remaining dental treatment in the department after completing the trial.

Sample size was calculated based on the study conducted earlier by Akbay Oba *et al.*, 2009.[4] The study was done involving 48 children of age group 3–7 years who visited the dental office for the first time. Every child who entered the department for the first time was screened by the operator who is a postgraduate student in pediatric dentistry and only children who met the inclusion criteria were selected. All the information was recorded in the individual forms.

Random allocation list was generated, and randomization sequence was carried out electronically. This randomly generated sequence will be sealed in opaque envelopes. Children included in the study were sent to the dentist with the sealed envelope, which decides the treatment for that child.

The children recruited were the ones who had no previous dental experience. The children were assessed on the behavior every visit, i.e., pre- and post-treatment. During the first visit, children in Group A [Figure 1a] were given colored compomer with the child's own preference to color and parental preference to the color was not encouraged and children in Group B [Figure 1b] were restored with tooth-colored restorative material. The child's behavior was assessed before initiating any procedure at the chair side and posttreatment behavior after placement of colored restorative material before leaving the dental clinic [Figure 3]. During the next appointment, children, both the groups, were assessed for behavior. The outcome was based on the child's behavior between the appointments on the same group and the behavioral changes between the groups.

Outcome data of the trial were analyzed by Statistical Package for social Sciences Software (Version 20.0, Chicago). Mann–

Whitney test and Wilcoxon-signed rank test were used. $P < 0.005$ was considered statistically significant.

## Results

A total of 48 children of age group 3–7 years participated in the study. It was observed that children's behavior before any dental procedure was positive and negative. Children in the category definitely negative were not included in the study where any improvement in the behavior cannot be expected as they show negativism toward any action. Chi-square test was done for statistical analysis. The children who received colored restoration had a positive behavior postdental treatment which is highly statistically significant ($P < 0.001$*-Highly significant) whereas the children who got the regular tooth-colored restoration showed little to no improvement in the behavior toward dental treatment which was statistically significant ($P = 0.003$). The present study reveals that there is increased cooperation for the dental treatment in the group of colored restoration where the child is given the deciding authority to choose what they want makes the child feel that he/she is the part of the treatment planning.

## Discussion

In the present study, every child's behavior was noted using Frankl scale.[11] The children who participated in the current study displayed positive or negative behavior on Frankl scale. The children had a better improvement as the age advanced which is in congruency with Aminabadi *et al*., who reported that among children, a more positive behavior can be expected as the age increases.[5]

The children were assessed postdental management for the behavior where the child exhibited better cooperation and which is more easy for the dentist to carry out a better treatment for the child which is similar to a clinical research associate study, where 90% of dentists found that possibility of selecting the color of composite not only relaxed the children but also inspired them to have a lasting interest in the condition of their teeth.[6]

It has been reported that young patients who are allowed to choose the color of their restorations are more likely to accept the idea of treatment. The success of the treatment is aided even further by the dentist's explanation to the children that the fillings will continue to look good as long as the patient maintains them properly.[7]

The study also reveals that children preferred colored restoration over the regular tooth-colored restoration, which was in accordance with the study done by Fishman *et al*., who evaluated children's preference for posterior restorations. After viewing photographs of amalgam, composite, colored compomer, and stainless steel crowns, 100 children aged 5–12 years responded to a satisfaction survey. Early interest in colored compomers was seen in young, males, and Caucasians.[8]

Colored restoration can be used as an alternative to the composite restoration due to the clinical success rate which was stated by Nicholson, who has shown that commercially available colored compomers have high clinical success rates as compared to other materials, and this makes them a suitable alternative for restoring deciduous teeth in children.[9]

## Conclusion

Assessment of behavior of the child is the most important tool which helps the dentist execute the better treatment plan in the appropriate manner.[10] The multi-colored restorations are an effective motivational tool for oral hygiene at home. Children take special care of restored tooth and the other tooth surfaces also profit, which ultimately benefits the health of the entire deciduous dentition.

Multi-colored restorative material could be used as an alternative to tooth-colored compomers and other restorative materials because of its high clinical success rate. At present, children will look forward to their dental appointments with a generous sprinkling of sparkle in their restorations which in turn improves the cooperative level of the child.[10]

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Nil.

### Conflicts of interest

There are no conflicts of interest.

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