

The Impact of Reward Types on Pediatric Dental Patient Satisfaction and Physiological Recovery Post-Treatment: A Study of Popsicles, Toys, and Stickers as Positive Reinforcements

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Introduction

Pediatric dental patients often experience significant anxiety during restorative procedures, particularly those involving local anesthesia. This stress can negatively impact behavior, cooperation, and overall treatment outcomes, highlighting the importance of effective behavior management strategies. Positive reinforcement is commonly used in pediatric dentistry to reduce fear and create a more positive association with dental visits, with rewards such as stickers, toys, or treats frequently provided after treatment. While prior research supports the general use of rewards, there is limited evidence comparing which types are most effective in improving both emotional satisfaction and physiological recovery. This study aims to evaluate the impact of different reward types on pediatric patients' post-treatment experience and physiological well being to better inform patient-centered and cost-effective clinical practices.



Figure 1: Likert score of Happiness: Used to measure patient satisfaction prior to treatment and then once again post reward.

Materials and Methods

This study was conducted at the UNLV Pediatric Dental Clinic and included pediatric patients ages 3 to 16 undergoing restorative dental procedures involving local anesthesia. Participants were randomly assigned to receive one of three rewards following treatment: a popsicle, toy, or sticker. Physiological response was measured using a pulse oximeter to record pulse rate at three intervals: before local anesthetic administration, after injection, and five minutes after receiving the reward. Emotional well-being was assessed using a child-friendly 5-point Likert scale (1: very sad; 2: sad; 3: neutral, 4: happy, 5: very happy) (Fig 1) completed before treatment and immediately after reward delivery. Informed consent was obtained from parents or guardians, and assent was obtained from all participating children, with all data collected anonymously under standard clinical conditions.

Results:

- Total of 51 patients were included in this study with each group: popsicle, toy, sticker having exactly 17 patients within their group.
- The results are currently being gathered and charts are being prepared.
- The results are being compared as averages based on the group
- **Sticker group and pulse scores** : Mean pre-pulse rate was 87.9bpm, mid pulse was 86.0, and post reward score was 86.2. (fig 2)
- **Sticker group and Oxygen saturation**: Mean pre-O2 sat. was 98.5%, mid O2 was 99.3% and post reward was 99.17
- **Sticker group and Likert score**: Mean Likert score pre-treatment was 3.35 and post score was 3.8
- **Toy Group and pulse scores**: Mean pulse rate 80.7bpm, mid pulse was 85.6, and post reward score was 82.7 (fig 2)
- **Toy group and Oxygen saturation**: Mean pre-O2 sat. was 98.7%, mid O2 was 98.8% and post reward was 98.8
- **Sticker group and Likert score**: Mean Likert score pre-treatment was 3.35 and post score was 3.8
- **Toy group and Likert score**: Mean Likert score pre-treatment was 3.7 and post score was 4.1
- **Popsicle group and pulse scores**: Mean pulse rate was 85.5bpm, mid was 88.6 and post reward score was 87.5 (fig 2)
- **Popsicle group and Oxygen saturation**: Mean pre-O2 sat. was 98.6%, mid O2 was 99.1% and post reward was 99.0%
- **Popsicle group and Likert score**: Mean Likert score pre-treatment was 3.64 and post score was 4.0

Discussion:

This study demonstrates that positive reinforcement, regardless of type, contributes to improved emotional well-being and supports physiological recovery in pediatric dental patients following treatment. All three reward groups showed increases in post-treatment happiness scores, suggesting that even simple rewards can help create a more positive dental experience. Physiological trends further support this, as pulse rates generally increased during treatment and moved toward baseline after reward delivery, indicating recovery from procedural stress. Among the groups, the toy reward was associated with the greatest improvement in Likert scores, suggesting it may be the most effective option for enhancing patient satisfaction.

Oxygen saturation remained stable across all groups, which is expected, but reinforces that stress responses were primarily reflected in pulse changes rather than oxygen levels. These findings highlight the value of incorporating reward-based behavior management strategies in pediatric dentistry to reduce anxiety and improve cooperation. From a clinical perspective, while toys may offer slightly greater benefits, all reward types appear to be effective, allowing providers to balance patient satisfaction with cost and practicality.

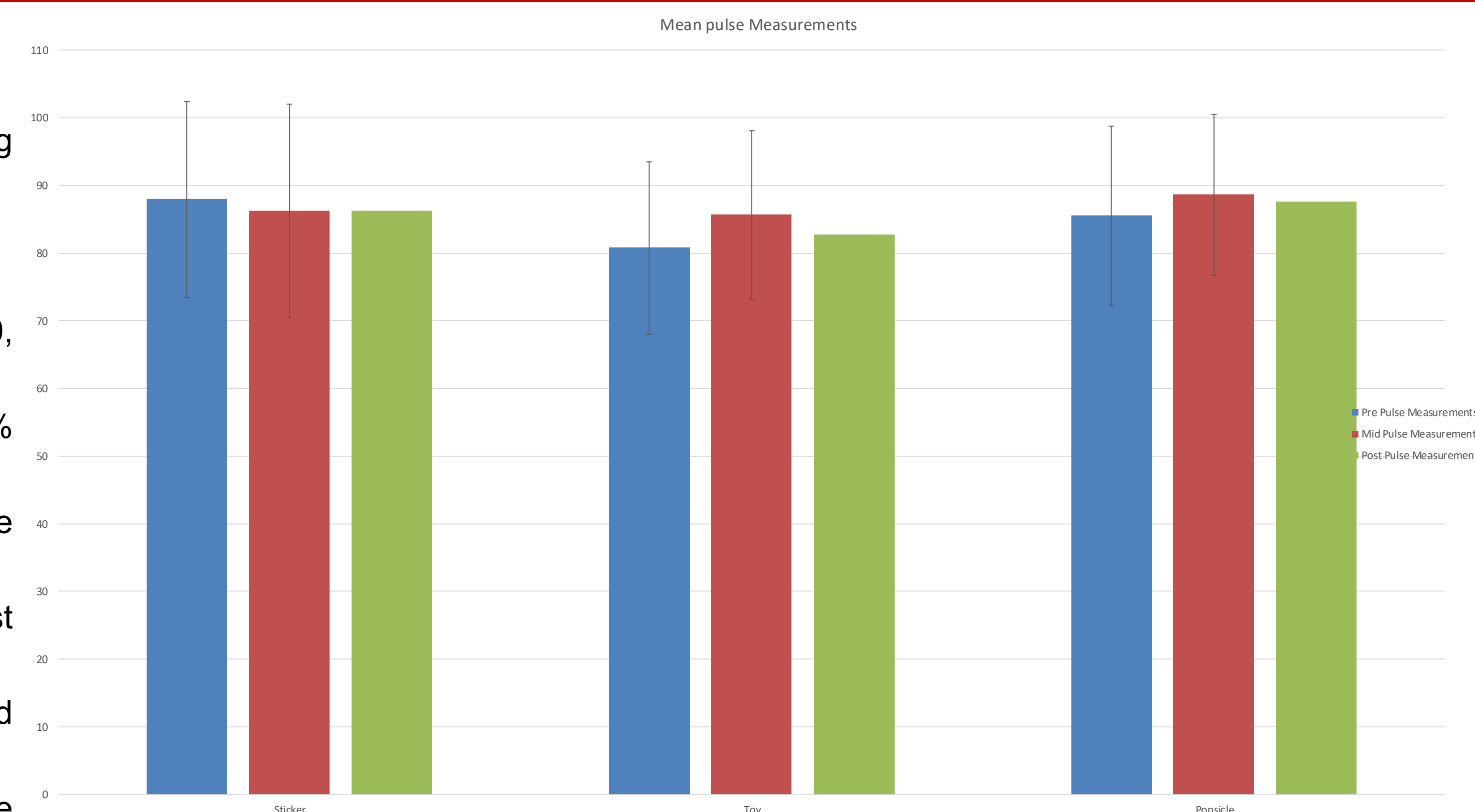


Figure 2 shows mean pulse measurements across groups. Blue bars represent pre-procedure pulse rates, red bars represent mid-procedure pulse rates, and green bars represent post-procedure pulse rates. The first set of bars corresponds to the sticker group, the second to the toy group, and the third to the popsicle reward group.

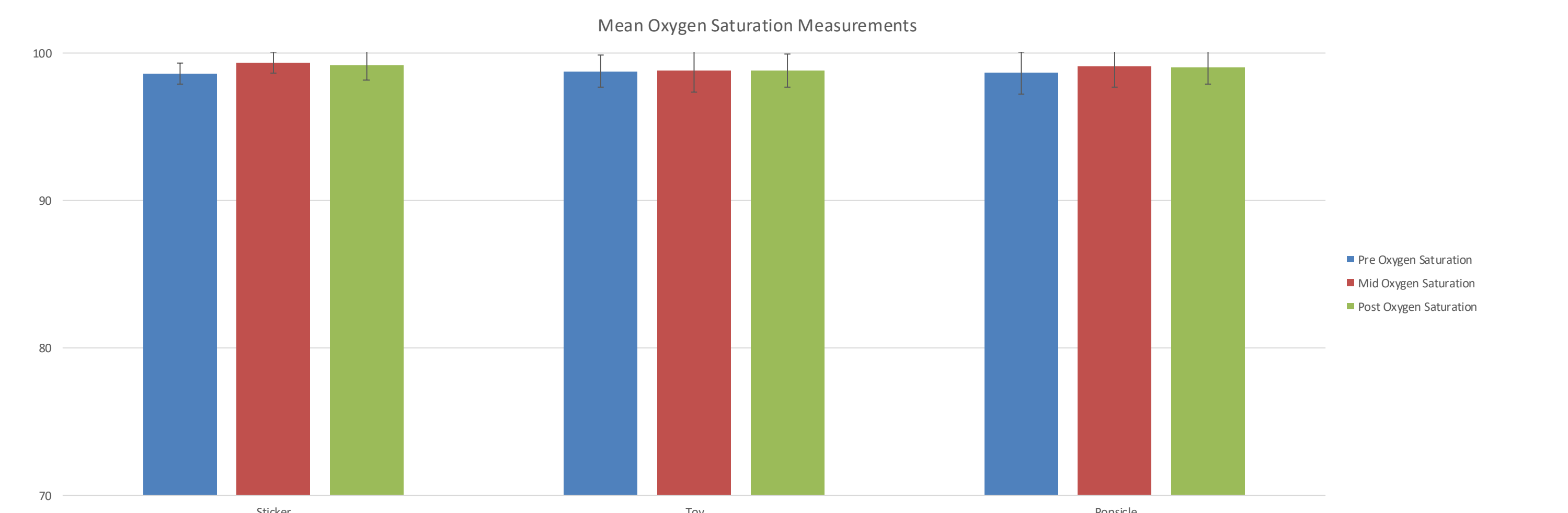


Figure 2 shows mean oxygen saturation measurements across groups. Blue bars represent pre-procedure oxygen saturation rates, red bars represent mid-procedure oxygen saturation rates, and green bars represent post-procedure oxygen saturation rates. The first set of bars corresponds to the sticker group, the second to the toy group, and the third to the popsicle reward group.

References

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