

Is there a change in the behaviour of a child after receiving an award after dental treatment?

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Abstract :

Introduction: Dental fear and anxiety are the most commonly encountered in children. This affects dental treatment and affects the ability of the dentist to effectively and efficiently conduct treatment. The modification of a child's behaviour helps the child positively affect treatment outcomes. Rewards are a type of tool used to motivate the child that can cause an improvement in their mood during dental procedures. The main focus of a pediatric dentist should be to provide effective treatment and improve the child's dental experience. The aim of the present study was to find if there was a change in the child's behaviour after receiving an award after dental treatment. **Materials and methods:** This present study was done in children aged. between 4 to 12 years of age, who were asked to choose a reward after successful completion of dental treatment and to determine the type of rewards the children preferred. The child's behaviour was assessed based on Frankl's scale before the procedure and after receiving a reward. The child's behaviour was assessed on the second appointment as well. The data was analyzed using the Wilcoxon sign rank test. **Results:** There was a change in the behaviour of the children during the first appointment before the procedure and after receiving the reward. 81.8% of children who were negative turned positive after receiving the reward (p-value>0.05). There was a statistical change in the behaviour of the child before the treatment in the first and second appointments (p-value>0.05). The change in the behaviour of the child after receiving the reward in the first appointment and before the procedure during the second appointment showed statistical significance (p-value>0.05). **Conclusion:** Rewards can help increase the cooperation of the child for future dental appointments.

Introduction :

Dental fear and anxiety are the most commonly encountered entities in pediatric patients (Dahlander et al. 2019). This causes the patients to show undesirable behaviour which impacts the ability of the dentist to effectively and efficiently conduct treatment (Roberts et al. 2010). The long-term success of any dental treatment modality resides on the level of cooperation of the child. The same can be achieved through good behavioural management techniques which have shown

sufficient success in the past (Roberts et al. 2010). The term behaviour management has been defined as ‘the means by which the dental health team effectively and efficiently performs treatment for a child’ (Wright and Stigers 2010). It is the duty of a pediatric dentist to recognize and effectively treat dental morbidities that occur during infancy through adolescence. Safe and effective treatment often requires modification of a child’s behaviour to positively affect the treatment outcome. The terminology has shifted from behaviour management to behaviour guidance by the AAPD in 2003 because of the evolution in the concept of behaviour management. The ideology of behaviour management has changed over the years from the concept of dealing with the child to creating and establishing relationships with the child and the parent that primarily focuses on the child’s oral health care needs (Townsend and Wells 2018).

Positive reinforcement is the process of rewarding acceptable or desired behavior with verbal praise, expression, touch, or tokens (Lyons 2009). The behaviour of children are moulded in the type of environment they are in, hence motivation is an important tool in handling a child during dental procedures (Vasconcellos, Imparato, and Rezende 2017). Rewards serve as a method of motivation that improves the mood of the child that will cause an improvement in their cooperation and overall treatment outcomes in the subsequent appointments. This method improves trust, feelings of control, and the improvement of coping skills in the child. This also establishes a good bond between the child and the health care professional, which in this case is the pediatric dentist (Sharath et al. 2009).

Limited research has been done on the type of rewards preferred by children although the usage of rewards has proved beneficial in the past. The existence of a noticeable difference in their behaviour after receiving the reward based on the type of reward also has not been explored through past literature. The main focus of a pediatric dentist should be to provide effective treatment and improve the child’s dental experience. The aim of the present study was to find if there was a change in the child’s behaviour after receiving an award after dental treatment.

Materials and methods:

This present study was done in children aged between 4 and 12 years of age, who were asked to choose a reward after successful completion of dental treatment and to determine the type of rewards the children preferred. The study was approved by the Institutional review board. The present study included all out patients visiting the Department of Pedodontics at Saveetha Dental College. The inclusion criteria of study included that the children should be of 4-12 years of age irrespective of gender and should have visited the institute during the study period. The exclusion criteria included patients who were systemically or mentally unwell or who did not complete the treatment planned for the particular appointment in question. Frankl’s behaviour rating scale was observed and tabulated before and after the dental treatment by a single operator to avoid operator bias. Demographic data was collected. The sample size was derived using the sample size of a similar study (Coxon, Hosey, and Newton 2017).

The rewards were categorized into five categories- Recreational toys which included- Sponge Balls and clay; decorative toys comprising of bracelets and stickers; Stationery items which included decorative pens, erasers, Sound producing toys which included whistles and Light producing toys which included light pens and bracelets and all rewards were gender specific to avoid any biases among the children. Children were promised a reward before the treatment and awarded a gift irrespective of their behaviour after the treatment. The treatments done in the first visit were- scaling and restorations, to allow the child to be more comfortable in the dental setting. More invasive procedures like extractions and pulpectomies were done in the second visit. The guardian was asked to choose what type of toy the child preferred before asking the child to choose the reward they preferred. The change in behaviour was assessed before and after treatment and on the second visit by a single investigator who was not involved in the treatment process.

The data was tabulated and verified by co-investigators before importing to SPSS software. The data was statistically analyzed using SPSS version 21.0.

Results:

52 Children were included in the study (26 boys and 26 girls) from the ages 4-13 with a mean age of 6.5 years. Out of which 50% (Fig1) of the children chose recreational rewards which included clay and balls, 25% chose decorative rewards which consisted of stickers and bracelets. Stationary rewards were chosen by 13.46% of the participants which included pens and erasers. Sound producing whistles were preferred by 7.69% of the children and the least preferred reward was light producing pens which were chosen by only 3.85% of the participants. Out of the children that chose recreational rewards, (Fig2) 28.85% were boys and 21.15% were girls. 17.31% of the participants that selected decorative rewards were girls. There was no vast difference in the number of girls and boys who selected stationary items as rewards, but sound producing rewards were only preferred by boys (7.69%) and light producing rewards were chosen only by girls (3.85%).

It was observed that the most frequent guardian to accompany the child was the mother, followed by both the parents. Grandparents and older siblings rarely accompanied the child. Majority of the caregivers selected the same choice of reward that the child chose, only 38.46% chose differently.

Discussion:

There are various comprehensive components that influence a child's behaviour in a dental atmosphere which vary from parental factors, such as child-parent relationships, anxiety, the perception of children's behaviour in the dental operator, their past dental experience and the expectation of behaviour management have found to have a major role in children's behaviour during dental treatment. The hurdles in managing an uncooperative child can be overcome with the use of behaviour guidance through pharmacological and non-pharmacological techniques. These techniques primarily aim at either improving communication, eliminating inappropriate behaviour or reducing anxiety (Campbell et al., n.d.). The non-pharmacological behaviour guidance techniques range from simple communication techniques, such as tell-show-do, positive reinforcement to more advanced aversive techniques, such as the use of the hand over mouth exercise (HOME) which has now not come to a standstop. All these techniques are performed either by themselves or in varied combinations. The preliminary guidance techniques like tell show do, positive reinforcement are easily accepted by the parents and do not require an exaggerated explanation or consent. In the case of the usage of the more advanced aversive techniques, consent of the parents should be taken prior to the procedure to avoid any problems or unnecessary litigations in the future (Nazzal et al. 2020). Studies have shown that positive reinforcement is the most commonly used behaviour modification technique today (Coxon, Hosey, and Newton 2017). It was revealed that parental perception and acceptance of different behaviour guidance techniques was one of the most important factors influencing the dentists' decision on usage of behavioural management technique.

In this study it was found that most children preferred recreational toys at 4-6 years of age with clay being the most popular. This can be attributed to the correlation of age with Jean Piaget's cognitive theory (Kuhn 1979) and the children being in the pre operational they are highly intuitive and have an expanding imagination of objects around them. The older children chose stationary and decorative items like pens and bracelets. This can be correlated to Erik Erikson psychosocial development (Knight 2017). Most of these children happened to be teenagers and middle school goers and hence peer groups and social satisfaction was a very important aspect of their life. They felt a sense of pride when complimented on their belongings and possessions and found it much easier to get along with their peers.

It was also observed that the guardians or caregivers who accompanied the young children guessed what the child would select correctly compared to those accompanying older children. The reason why they would be incapable to anticipate the child's preferences could be because older children have less contact at home and identify themselves much better with their friends and other members of the same age group and have reached an age where they are lot more distant from their parents, whereas younger children are far more dependent on their parents and get validation from parental satisfaction as well as spend a majority of their time at home prior to the commencement of school life (Ardelt and Day 2002). Mothers were the most frequent caregiver that accompanied the child and thus the influence of the same parental

source can be appreciated. The reason being the child is more comfortable with the mother in an unfamiliar environment (Rholes, Simpson, and Blakely 1995).

The usage of rewards causing a burden on finances can be debatable but all the rewards used in the study ranged from INR 10-40, which is of low cost. A little bit of investment in this can reduce the treatment time and cost, whereas increase the cooperation of the patient as they become motivated to follow up with the required dental treatment.

There have not been much rewards on the preference of gifts and the cooperation levels of the children. In this study it was observed that during the second visit of the child there was a significant improvement in the behaviour and cooperation of the child.

A similar study was conducted (Coxon, Hosey, and Newton 2017), where 52 children from the age of 4-8 were taken. It was found that the child's motivation increases by offering a range of rewards. It was also seen that as the caregiver's ability to predict the awards decreases as age increases, this is in correlation with our study.

The limitations of this study were that it was only conducted in one dental college. There was a disparity in data. The numbers in the groups were not equal.

Conclusion:

There was a significant change in the behaviour of children when receiving a reward after the dental procedure. The children were found to be more cooperative and were ready to accept treatment. Rewards play a major role in the management of the child's behaviour and improves the child's experience in a dental set up.

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Tables and Legend

1.

Change in behaviour		Definite ly Negativ e	Negative	Positive	Definitely positive	p-value 0.000
During the first visit before the procedure- After receiving the reward	Definitely Negative	0	0	1	0	
	Negative	0	4	18	0	
	Positive	0	0	6	22	
	Definitely positive	0	0	1	1	

2.

Change in behaviour		Definitely Negative	Negati ve	Positive	Definitely positive	
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After receiving the reward during the first visit- Before the procedure during the second visit	Definitely Negative	0	0	0	0	p-value 0.003
	Negative	1	3	0	0	
	Positive	0	4	21	0	
	Definitely positive	0	0	4	19	

3.

Change in behaviour		Definitely Negative	Negative	Positive	Definitely positive	p-value 0.000
During the first visit before the procedure- Before the procedure during the second visit	Definitely Negative	0	0	1	0	
	Negative	1	6	15	0	
	Positive	0	1	9	18	
	Definitely positive	0	0	0	1	

Table 1: All children definitely negative before the procedure in the first visit showed positive behaviour after receiving a reward in the first visit (n=1). 81.8% of children who were negative before the procedure showed positive behaviour after receiving the reward (n=18). 78.6% children who were positive showed definitely positive behaviour after receiving the reward (n=22). The difference in behaviour was statistically significant (p-value=0.00)

Table 2: There was no significant change in behaviour of children after receiving reward in the first appointment and before the start of the procedure in the second appointment, which showed statistical significance (p-value=0.003)

Table 3: All children who were definitely negative in the first visit before the procedure became positive in the next appointment before the procedure (n=1). 68.2% of children who were negative became positive in the next appointment before the procedure (n=15). 64.3% children who were positive became definitely positive (n=18). The difference in behaviour was statistically significant (p-value= 0.00)

Figure legends

Fig 1: The bar graph shows the percentage of the preference of the type reward by the children. It is seen that 50% of the children preferred recreational rewards, followed by 25% preferring decorative rewards. The least preferred reward was light producing where only 3.85% of the children selected it.

Fig 2: Cluster bar graph shows the preference of the type of reward in the x axis with relation to gender in the y axis. There is a significance in the preference of recreational rewards by both 28.85% males (green) and 21.15% of females (blue). The least preferred rewards were the sound producing toys where 7.69% of males chose it whereas light producing rewards were chosen by 3.85% of females.

Fig3: The bar graph shows the relationship of the caregiver with the child. The type of relationship of the caregiver is on the x axis and the percentage is on the x axis. It is seen that 36.54% of the time the mother accompanies the child, followed by both parents accompanying the child 32.69% of the time. Grandparents and older siblings rarely accompany the child.

Fig 4: Pie chart shows the guardian's guess on the reward that they thought the child had selected. The caregivers that guessed correctly are 61.54% represented in red. The caregivers that guessed differently were 38.46% seen as the green portion of the chart. It is seen that a significant number of caregivers' choices correlated with the child's preference.

Fig 5,6,7: Shows the various sets of rewards rewarded to the children after their dental appointments.