Application of Contingency Management in Pediatric Dentistry Practice

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Abstract

The use of Contingency Management (CM) in the dental operatory is one behavior management strategy that can be implemented easily with minimal preparation. CM is effectively used to manage variety of behavioral problems, ranging from substance abuse to obesity and development of brushing habits. In the recent years ethical, legal and safety issues related to invasive management procedures, such as physical restraint, sedation, and a hand-over-mouth procedure have encouraged and supported behavior management using non-controversial methods that have a short learning curve and can help in dispensing dental treatment to children with difficult behavior more efficiently and effectively. CM is a non-invasive technique and can be used in managing child patient’s disruptive behavior. This paper intends to rediscover the advantages and pitfalls of CM in clinical situation and behavior management for children with moderate to severe disruptive behavior.

Keywords: Behavioral management, motivation, learning, rewards, pediatric dental treatment, contingency management

Introduction:

The ability of pediatric dentists to dispense treatment to children who present moderate to severe management problems is a challenge. Various classical methods such as physical restraint and hand-over-mouth procedure have been discouraged.¹ Newer procedures such as enhanced distraction, contingent distraction, relaxation skills, filmed modeling, and desensitization have been effective but require substantial time to prepare or implement.² Unfortunately newer procedures require investment both in time and finance for the dentist to develop, where as patients pay for the procedure rather than effort and methodology involved. Hence, there is a need for cost-effective strategy that requires minimal time to prepare or implement.

The use of contingency management (CM) in the dental operatory is one management strategy that may be implemented easily with minimal preparation.

Contingency management techniques, first reported by Keller³ is a widely accepted behavior management technique involving use of motivation and reward system in the reinforcement of the desired behavior. It has been used for application in de-addiction, obesity control and some learning behavior in preventive dentistry.³,⁴ The application of CM in pediatric dentistry practice is described here for the management of the behavior of the child patient based on operator’s experience.

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Journal of Innovative Dentistry, Vol 1, Issue1, Jan-April 2011
**Contingency management:**

Contingency management (CM), is a systematic reinforcement of desired behaviors and the withholding of reinforcement of undesired behaviors, is an effective strategy in the management of behavior\[^5\]. Contingency management is based on the principle that behavior is a function of its consequences i.e., what people do, how they behave, is related in a predictable way to the consequences of their behavior. For example, if an action is followed by a positive consequence as perceived by that person, then the individual is likely to repeat that action. In contrast, if an action is followed by a negative consequence as perceived by that person, then the individual is unlikely to repeat the action. Negative consequences can be shown by no response, also known as extinction.

There are three categories of consequences (contingencies) that can influence behavior. Positive and negative reinforcement increase the likelihood of the behavior being repeated. Extinction decreases that likelihood.

**Positive reinforcement and contingent escape:**

Positive reinforcement is a response that follows a behavior and has the effect of increasing the likelihood of that behavior occurring again. This reinforcement can be in the form of a toy or a pat on the child’s shoulder along with verbal encouragement. This kind of positive reinforcement facilitates acquisition of a desirable behavior in most children and at the same time reduces the risk of negative behavior. However, the downside is that when children receive “payment” for positive behavior, they may become dependent on such payment, and reduce probability of good behavior in absence of the reward\[^5\]. It is very important that, the reinforcement be natural and logical in relation to the behavior, otherwise the child patient may feel that the reinforcement is meaningless or out of context. For example, offering a reinforcement which is important in the patient’s value system will give better results than things that do not hold any importance for her. It is a good idea to ask the caretaker of the patient about a favorite activity or a demand, as simple as being allowed to play, watch a favorite television show or a time out from dental procedure as reinforcement, because a meaningless reinforcement may result in undesirable outcome\[^5,6\].

In the clinical set up, rewarding the child with a few seconds of time out or contingent escape can be very effective as a reinforcement, upon good behavior the child is told that she is allowed to rest for a few seconds, as she has sat through the treatment and the operator tells the child that, “you are lying so nice and still and quiet that we are going to take a little rest break”. The operator can give this kind of contingent escape initially for a very short cooperative period, even as little as a couple of seconds and try to extend the cooperative behavior up to half a minute before administering the next escape.

**Negative reinforcement and removal of contingent escape:**

A negative reinforcement is anything that, when taken away contingent on a response, tends to increase the probability or rate of that response\[^5\]. Negative reinforcement is devised to guide a patient to the appropriate action in order to avoid the unwanted consequence, known as the aversive stimulus\[^7\]. A patient can be told that if she does not sit properly in the chair and opens her mouth for the treatment, she will not be allowed to play with her friends, which in the case may be a favorite activity of the child. A more clinical approach would be to deny the child a break if the cooperative behavior is not evident. To do that, disruptive behavior is ignored, and treatment continued until cooperation is regained. If a dental procedure is completed and cooperation is not yet evident, the operator maintains working position, simulating continued treatment, until cooperative behavior is demonstrated. During disruptive behavior, the operator reminds the child of the contingency that was in effect i.e., “when you are calm, and quiet, and lying still, we will stop for a rest break”.

*Journal of Innovative Dentistry, Vol 1, Issue1, Jan-April 2011*
When using negative reinforcement the operator should be careful so as not to allow the patient to forego the reward in order to avoid the stimulus, e.g. the patient may decide that she will rather not take a break if to avoid the dental treatment. This is a result of multiple negative reinforcement and child realizing that she does not want the treatment even if it costs her to loose on a rest break \[2, 5\].

**Non contingent reinforcement:**

Providing positive reinforcement in a non structured manner without any targeted behavior during the treatment helps to develop a generally positive behavior of the child\[8\]. The child patient can be randomly complimented or allowed to indulge in pleasurable activities to develop a generalized positive attitude\[3\].

**Extinction:**

Extinction occurs when a behavior is followed by no response, which decreases the likelihood of the behavior occurring again\[5\]. Ignoring the undesirable behavior will reduce the likelihood of the repetition of the behavior even though the patient may have indulged in it, consciously or unconsciously, to have an effect on the operator. If undesired behavior is given attention, there is a likelihood that the frequency of such behavior will increase. The operator has to be very careful while using extinction, because if the undesirable behavior is being ignored and the operator finally looses patience and reacts, it can result in worst possible outcome as the child is rewarded for persisting with an undesirable behavior. The child patient, who is otherwise cooperating, discovers that by giving a false signal to stop the operator for discomfort, actually stops the treatment, and she starts using this to control the operator who ignored this behavior a couple of times.

**Discussion:**

Effective management of consequences is important for all children, especially in a clinical context. Compliance and orderly behavior are critical for providing dental treatment. A patient who has successfully avoided treatment in earlier sessions, may have become accustomed to control activities more than that is allowed in the clinic\[5\]. For this reason, a consistent and well implemented behavior management system, including careful management of consequences, is particularly important when the patient is known to show difficult behavior patterns\[9\].

Well implemented behavior management systems are additionally important because behavioral difficulties are common when providing dental treatment to children. However, caution must be exercised in using CM procedure with children. A few may have difficulty benefitting from feedback or learning from the consequences of their behavior. CM works on the assumption that consequences are the primary instrument of discipline. If a patient misbehaves, she should receive some sort of unpleasant consequence so that she will learn not to engage in that behavior again\[2, 5\].

Patient has to be assessed to ensure that the problem is behavioral and not medical, cognitive or emotional. If it is determined that the problem is behavioral, then the meaning of patient’s negative behavior is identified. Patient’s caretaker needs to be involved in the planning and implementation of the CM. The caretaker, parent or the siblings are in a good position to tell what may be used as an effective reinforcer. If consequence-oriented behavior management (contingency management) systems are used, the emphasis should be on rewarding positive behavior rather than on extinguishing or punishing negative behavior. Reward system creates a more positive culture for the child patient. Systems that rely on ignoring or punishing negative behavior create a more negative culture and tend to backfire. Reinforcement with rewards can be used to strengthen the already positive behaviors or to teach alternatives to negative behavior. In strengthening positive behaviors, operator makes a point of rewarding positive behavior say on arrival in the clinic greeting nicely by the child is rewarded with praise or some other desirable consequence. Whether or not operator chooses to make primary use of contingency management procedures, reinforcement for
positive behavior should be a salient component of managing the child patient.\textsuperscript{[5]}

Reinforcement procedures can also be used to teach positive alternatives to negative behavior. These procedures are referred to as differential reinforcement of alternative behaviors. Here in a rewarding consequence for behavior is designed to replace the patient’s negative behavior. For example, if a patient requests a break rather than being disruptive, then that request is followed by praise and a break.

Negative behavior can be targeted with extinction. They can also be targeted with a reinforcement procedure called differential reinforcement of low rates of negative behavior, e.g. the patient is rewarded for systematically decreasing the frequency of negative behavior, e.g. a patient who frequently stops the procedure may be rewarded if he reduces the number of disruptions during the procedure. Typically this number would be negotiated in advance.

\textbf{Conclusion}

Application of Contingency Management can have important and useful application in pediatric dentistry practice with benefits of economy of time and efficiency in treatment. The pediatric dentist operator needs to develop and apply contingency management, which is application of basic principal of motivation, learning, providing and withholding rewards in his practice to have positive results.

\textbf{References}


