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Evaluation of Children's Perception towards Non-pharmacologic Behavior Guidance Techniques

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Abstract

Objective: Pediatric dentistry understands that the behavior guidance of the child cannot be separated from the quality of dental work. A child's willingness in accepting dental treatment is as important as the parents', if not more. This study aimed to evaluate the children's attitude towards different non-pharmacologic behavior guidance techniques adopted by the American Academy of Pediatric Dentistry using the line of favor.

Methods: A total of 200, 6-12 years old children were selected; 100 from private schools and 100 from public schools. Each child was asked to watch 7 videos of non-pharmacologic behavior guidance techniques which include: tell-show-do, positive reinforcement, distraction, non-verbal communication, parental presence/absence, protective stabilization and voice control. After watching the videos, children were asked to express their feeling towards each technique by drawing a line of favor.

Results: In both the private and public schools, the gender didn't affect the acceptability of behavior guidance techniques among children. For the two study groups, positive reinforcement was the most accepted technique with statistically significant difference in favor of private schools, while voice control was the least accepted technique with statistically significant difference in favor of public schools.

Conclusion: Children's opinion should always be considered as they are the one receiving the treatment. Positive reinforcement was the most accepted technique, while protective stabilization and voice control were the least accepted.

Keywords: Dental anxiety; Children; Pediatric dentistry; Behavior guidance techniques

Introduction

Pediatric dentistry has been identified for decades as the specialty which is responsible for the development, research and expertise in the area of behavior management associated with the dental care of children in dental settings [1]. Despite the advances in this field, visiting the dentist remains stressful to many children which affect their behavior during treatment [2].

Anxiety from dentistry is common in children and may lead to avoidance of dental treatment [3]. There is no doubt that the uncooperative behavior is attributed to the child's behavioral manifestation of anxiety which by in turn will delay the treatment or affect the quality of care [4]. Studies found that anxious and uncooperative children tend to avoid dental care and they show worse oral health condition as compared to their less anxious and more cooperative peers [5]. Dentists have a challenging responsibility to gain their patient's cooperation and reach the best treatment [6].

To ensure the acceptance of dental care, appropriate behavior management technique should be applied. The American Academy of Pediatric Dentistry (AAPD) outlined basic behavior guidance techniques (tell-show-do (TSD), voice control, positive reinforcement, distraction, non-verbal communication, parental presence/absence) and advanced behavior guidance techniques (protective stabilization, nitrous oxide/oxygen inhalation and general anesthesia) [7]. Kuhn and Allen added three other techniques: contingent distraction, modeling and contingent escape [8]. The previously mentioned techniques aim to decrease the patient's resistance to the treatment, level of dental anxiety, disruptive behavior, and allows the passive patient to accept the dental treatment [9,10].

The importance of the parental approval of these different techniques has risen dramatically over the years. There have been numerous studies on parental attitudes towards the behavior guidance techniques used in pediatric dentistry. These studies focused on how parents felt towards the different behavior guidance techniques used to manage their children in the dental setting [11-18]. Nevertheless, children's perception of various aspects of dental environment and their willingness to accept dental treatment is far more critical to achieve a successful treatment [19,20]. Few studies stated that children have strong preferences regarding the appearance of their dentist and dental clinics which enhance a positive dental attitude in the child's mind and decrease his anxiety [21-23]. Very few studies have been found discussing children's views of different behavior guidance techniques [24,25]. Kantaputra et al. developed the line of favor (LOF), an attitude meter, to measure children's attitude towards behavior management techniques [24]. It is a modification of the visual analogue scale (VAS). It comprises of a 10 cm long horizontal rectangle with an anchor point placed just on the left margin. The length of the line drawn by the child reflected how much he likes the technique. They found that this attitude meter measuring scale is a reliable and easy tool to convey the children's feelings regarding the various behavior management techniques.

The aim of this study was to evaluate the children's attitude towards different non pharmacologic behavior guidance techniques adopted by the AAPD using the LOF.

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Materials and Methods

This study was performed after receiving the approval of the Scientific Research Ethical Committee, Faculty of Dentistry, Alexandria University, Egypt. It was designed as cross sectional study. The study sample included 200 children of 6-12 years old, randomly selected from both private schools (indicating a high socioeconomic status) and public schools (indicating a low socioeconomic status) with no previous dental experience. Sample size calculations were based on the assumption that a 1.2 difference (6.2 versus 5.00) in mean of LOF would represent a clinically significant difference [24]. A sample size of 100 children per group is the minimum required sample to detect an effect size of 1.2 in the primary outcome (LOF), as statistically significant with 82% power and at a significance level of 0.05 (two-tailed significance) [26]. The sample size was calculated using IBM SPSS Sample Power Program version 3.0.1.

Children included into the study were able to watch videotapes and communicate effectively. The sample was equally divided into 2 groups: Group A represented children from private schools, and group B represented children from public schools. Parents of selected children were provided by detailed explanation of the aim of the study and their consents for approval that their children would participate in the study were received. Consents for videotaping and the use of the videotape for the study purpose were also obtained from the parents of the volunteer child shown in the videotape.

Videotapes were filmed using following behavior guidance techniques: TSD, positive reinforcement, distraction, non-verbal communication (reassuring touch), parental presence/absence, protective stabilization and voice control. Performance of demonstration videos was carried out by the same dentist with the participation of a 7 year old volunteer child who had been asked to behave as instructed. All videos were filmed at the Pediatric Dentistry Department Clinics, Faculty of Dentistry, Alexandria University using a digital camera (Samsung Schneider KREUZNACH, 14.2 megapixels). The validity of the videos of behavior guidance techniques was established by two pediatric dentistry staff members at the Faculty of Dentistry, Alexandria University who viewed and evaluated them. Some shots were repeated until all of them were considered acceptable.

LOF validity and reliability

To test the LOF validity and reliability, an internal pilot test was done using 20 children, 6 to 12 years old, from private (n=10) and public (n=10) schools [27]. They were provided with a detailed explanation about the measuring tool used in the study, LOF (Figures 1 and 2) [24]. Then they were requested to express their 'liking' towards common things such as chocolate, chicken, burger and fish by using the LOF twice with 2 weeks apart. For the LOF measuring tool to be reliable, it should provide consistent results when the test is repeated. A weighted kappa with Fleiss-Cohen (quadratic) weights showed that there were statistically significant agreement between the 2 times that the children completed the LOF ($p<0.05$), meaning that the LOF was reliable.

Measurement of attitudes

Children who participated in the study were addressed separately in a private room where they were provided with a brief explanation about the nature of the videos in general that they will watch. They were told that they will evaluate the behavior guidance technique used by the dentist. The filmed videos were then shown, one video at a time. After watching each video, the technique used in it was explained to the child by using standardized phrases for each technique. Then they were asked to draw a line from the anchor point to the right. The length of the line of favor reflected how much they liked the behavior guidance technique shown. The maximum length of line of favor is 10 centimeters representing highest acceptance of a technique [24]. While a short line reflected an unfavorable technique by the child. The line of favor scale was designed to interpret the 'liking' of a child and translate it into a numerical value. A score of:

- 0 to ≤ 3 cm means the child is not very fond of that technique.
- >3 to ≤ 7 cm means the child is neutral toward that technique.
- >7 to ≤ 10 cm means the child likes that technique very much.

The evaluation of the videotaped scenes using LOF was done twice (2 weeks apart), a weighted kappa with Fleiss-Cohen (quadratic) weights showed that there were statistically significant agreement between the 2 times that the children completed the LOF ($P<.05$), meaning that the evaluation using LOF was reproducible.

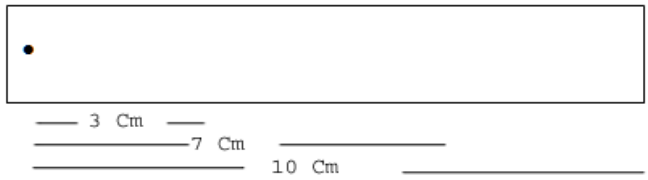
Finally, all the participated children received dental examination and were appropriately referred according to their diagnosis.

Statistical methodology

Data were fed to the computer and analyzed using IBM SPSS software package version 20.0 [28]. Qualitative data were described using frequency and percentage. Comparison between different groups regarding categorical variables was tested using Chi-square test. When more than 25% of the cells have expected count less than 5, Yate's correction was used for 2×2 tables (n>40), Monte Carlo correction was used for >2×2 tables. Significance of the obtained results was judged at the 5% level [29].

Results

Out of the total study sample, 50% were males and 50% were females. There was no statistically significant difference between the two study groups regarding gender ($p\geq0.05$). Mean age for group A was 9.28±2.06 years while that for group B was 8.27±1.76 years. There was a statistically significant difference between both groups with group A being generally older than group B ($p\leq0.05$).



0 to ≤3 cm: not very fond of that technique; >3 to ≤ 7 cm: neutral toward that technique and >7 to ≤ 10 cm: like that technique very much

Figure 1: Line of favor sheet.

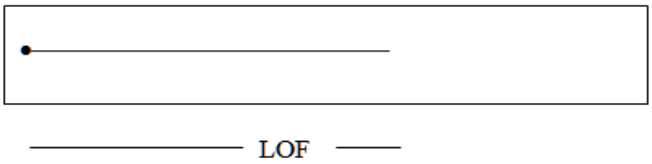


Figure 2: The length of the line of favor reflects the attitude towards the behavior management technique.

For group A, the most accepted behavior guidance techniques among males were in order of positive reinforcement (92.6%), TSD and distraction (77.8%), non-verbal communication (74.1%), Parental presence/absence (66.7%), protective stabilization (14.8%) and the least accepted was the voice control (7.4%).

While among the females, the most accepted techniques were in order of positive reinforcement (100%), TSD and distraction (82.6%), Parental presence/ absence (52.2%), non-verbal communication (43, 5%), protective stabilization (17.4%) and again the least accepted was the voice control (8.7%).

In case of group B, the order of the most accepted behavior guidance techniques among both sexes were almost the same: positive reinforcement (87.0% for males, 92.6% for females), non-verbal communication (82.6% for males, 88.9% for females), TSD (73.9% for males, 88.9% for females), distraction (60.9%for males, 77.8% for females), Parental presence/ absence and protective stabilization (52.2% for males, 66.7% for females), and the least accepted was the voice control (39.1%for males, 50% for females).

We further compared the difference between the two study groups for different behavior guidance techniques. There was a statistically significant difference between the two groups regarding the positive reinforcement and distraction with higher acceptance by children from private schools (P=0.042, P=0.006 respectively). In addition, non-verbal communication, voice control and protective stabilization were more accepted by public schools children with statistically significant difference (P=0.000). As regard to the TSD and parental presence/ absence techniques, no statistically significant difference has been found between the two study groups (P=0.254, P=0.644 respectively) (Table 1).

Discussion

The position of children in society has changed with increasing emphasis on children's rights [30]. Parental acceptance of behavior guidance techniques was also greatly considered in numerous studies [14,31,32]. Disregarding the opinion of children, Marshman et al. found that most of the researches were conducted on children rather than with children [33]. They recommended that future research should be involving children as much as possible.

As the dentist-child patient relationship seemed to move from an authoritative to a supporting position giving children a right to be involved in their treatment options [30], this study aimed to evaluate the children's attitude towards different non pharmacological behavior guidance techniques adopted by the AAPD.

Abushal and Adenubi, Paryab et al. and Elango et al. studied various demographics on parents' acceptability ratings of behavior management techniques [11,31,34]. They suggested that income and education clearly influenced parental acceptance of those techniques. Based on this, children selected for this study were from both private as well as public schools as an indicator of their socioeconomic status.

In both study groups, the gender did not affect the selection order of the preferred behavior guidance technique. In case of the public schools, it has been found that both male and female children showed

Line of Favor	Group A (Private schools children) (n = 100)	Group B (Public schools children) (n = 100)	p-value
Positive reinforcement			
0-3 (not very fond of that technique)	4	4	p_{MC}=0.042*
>3-7 (neutral forward that technique)	0	6	
>7-10 (like that technique very much)	96	90	
Distraction			
0-3 (not very fond of that technique)	4	18	p=0.006*
>3-7 (neutral forward that technique)	16	12	
>7-10 (like that technique very much)	80	70	
Non-verbal communication			
0-3 (not very fond of that technique)	4	2	p_{MC}=0.000*
>3-7 (neutral forward that technique)	36	12	
>7-10 (like that technique very much)	60	86	
Voice control			
0-3 (not very fond of that technique)	56	48	p=0.000*
>3-7 (neutral forward that technique)	36	7	
>7-10 (like that technique very much)	8	45	
Protective stabilization			
0-3 (not very fond of that technique)	52	22	p=0.000*
>3-7 (neutral forward that technique)	32	18	
>7-10 (like that technique very much)	16	60	
Tell-Show-Do			
0-3 (not very fond of that technique)	4	8	p=0.254 NS
>3-7 (neutral forward that technique)	16	10	
>7-10 (like that technique very much)	80	82	
Parental presence/absence			
0-3 (not very fond of that technique)	12	16	p=0.644 NS
>3-7 (neutral forward that technique)	28	24	
>7-10 (like that technique very much)	60	60	

*Statistically significant at p<0.05; MC: Monte Carlo correction

Table 1: Comparison between children from private and public schools regarding their acceptability of behavioral guidance techniques.

almost the same sequence in accepting the different management techniques. For the private schools, both sexes were highly accepting the positive reinforcement and TSD, and least accepting the voice control. But it has been noticed that female children preferred the parental presence more than the non-verbal communication while for the males the non-verbal communication was more preferred. This finding was probably due to higher anxiety among females [25]. Also the male children that did not prefer the parental presence, may have thought they look stronger if they underwent their dental treatment without their mothers.

The present study revealed a statistically significant difference among acceptability ratings of different behavior guidance techniques between the two study groups. Although positive reinforcement was the most favorable among children from both schools, it was more significantly accepted by private schools children. Such technique is highly reflected to their life style. Davies and Buchanan similarly found that positive reinforcement was highly perceived by children in their study and suggested that it may enhance positive dental attitudes as well as promote future attendance [25]. Distraction was considered acceptable by children included in the study. Nevertheless, it was also more significantly accepted by children from the private schools. This significant difference could be attributed to the smaller age of the children from the public schools as compared to the private schools. Younger children most probably viewed the scenes differently from the older ones. This limitation, the wide age range, could be a point of interest for future research. Aitken et al. in their study found that distraction didn't reduce the anxiety, pain or uncooperative behavior of young children [35]. Furthermore, Davies and Buchanan in their work considered distraction to be highly accepted by old age children [25]. Working on wide age range (6-12 years old), Singh et al. reported better pediatric patient compliance when distraction was used [36]. Non-verbal communication, although comprises lots of factors such as facial expressions, speaking tone, body language and even dentist's attire [7], it was represented in this study in the form of reassuring touch on the shoulder. Results revealed that this technique was greatly accepted by children who explained that reassuring touch made them see the dentist as a kind and lovable person. It is also worth to mention that non-verbal communication was significantly more accepted by children from public schools reflecting their stronger need for care and affection which could be due to their young age. Likewise, Davies and Buchanan found that children greatly valued the friendly communication style of their dentist [25]. This was also consistent with the results of the study conducted by Greenbaum et al. which revealed that physical contact with the child dental patient through a reassuring touch reduced anxiety and resulted in improved behavior [37]. Additionally, results showed that voice control and protective stabilization were significantly less accepted by children from private schools compared to the public ones. Such difference could be due to the older age of private schools children which make them more aware of their rights and thus rejecting such aversive techniques.

Regarding TSD and parental presence/absence techniques no statistically significant difference has been found between the two study groups. A number of children did not prefer TSD as they explained that it may lead them to be anxious, this explanation had also been reported by Davies and Buchanan, where TSD was found to be only moderately accepted by children in their study [25]. Nevertheless, it remained highly accepted in our study. Likewise Kantaputra et al. found it to be the most popular behavior guidance technique among children [24]. Among many studies parents were more comfortable to accompany their children to the dental operatory [32,38,39].

Obviously, in the present study communicating with the children, where the objective of each given technique was clearly explained, had made a positive impact of the child's understanding of the situation. Children appeared more likely to justify the use of some unlikeable techniques if they received a logic explanation of the dentist's point of view.

Conclusions

Children's opinion should always be considered as they are the ones receiving the treatment. Positive reinforcement was the most accepted technique by all children, while protective stabilization and voice control were the least accepted.

Recommendations

To study the acceptance of different behavior guidance techniques in different age groups and compare between them.

References

1. Wilon S, Cody WE (2005) An analysis of behavior management papers published in the pediatric dental literature. Pediatr Dent 27: 331-338.
2. Baier K, Milgrom P, Russell S, Mancl L, Yoshida T (2004) Children's fear and behavior in private pediatric dentistry practices. Pediatr Dent 26: 316-321.
3. Forehand R, Long N (1999) Strong-willed children: a challenge to parents and pediatric dentists. Pediatr Dent 21: 463-468.
4. Allen KD, Stark LJ, Rigney BA, Nash DA, Stokes TF (1988) Reinforced practice of children's cooperative behavior during restorative dental treatment. ASDC J Dent Child 55: 273-277.
5. Klingberg G, Berggren U, Carlsson SG, Norén JG (1995) Child dental fear: cause- related factors and clinical effects. Eur J Oral Sci 103: 405-412.
6. Law CS, Blain S (2003) Approaching the pediatric dental patient: a review of nonpharmacologic behavior management strategies. J Calif Dent Assoc 31: 703-713.
7. American Academy of Pediatric Dentistry (2014) Guideline on behavior guidance for the pediatric dental patient. Pediatr Dent 36: 179-191.
8. Kuhn BR, Allen KD (1994) Expanding child behavior management technology in pediatric dentistry: a behavioral science perspective. Pediatr Dent 16: 13-17.
9. ten Berg M. (2008) Dental fear in children: clinical consequences. Suggested behavior management strategies in treating children with dental fear. Eur Arch Paediatr Dent 9: 41-46.
10. Howard KE, Freeman R (2009) An evaluation of the PALS after treatment modeling intervention to reduce dental anxiety in child dental patients. Int J Paediatr Dent 19: 233-242.
11. Abushal MS, Adenubi JO (2003) Attitudes of Saudi parents toward behavior management techniques in pediatric dentistry. J Dent Child 70: 104-110.
12. Wilson S, Antalis D, McTigue DJ (1991) Group effect on parental rating of acceptability of behavioral management techniques used in pediatric dentistry. Pediatr Dent 13: 200-203.
13. Lawrence SM, McTigue DJ, Wilson S, Odom JG, Waggoner WF, et al. (1991) Parental attitudes toward behavior management techniques used in pediatric dentistry. Pediatr Dent 13: 151-155.
14. Peretz B, Zadik D (1999) Parents' attitudes toward behavior management techniques during dental treatment. Pediatr Dent 21: 201-204.
15. Eaton JJ, McTigue DJ, Fields HW Jr, Beck M (2005) Attitudes of contemporary parents toward behavior management techniques used in pediatric dentistry. Pediatr Dent 27: 107-113.
16. Alammouri M (2006) The attitude of parents toward behavior management techniques in pediatric dentistry. J Clin Pediatr Dent 30: 310-313.
17. Marshall J, Sheller B, Mancl L, Williams BJ (2008) Parental attitudes regarding behavior guidance of dental patients with autism. Pediatr Dent 30: 400-407.
18. Boka V, Arapostathis K, Vretos N, Kotsanos N (2014) Parental acceptance of behaviour-management techniques used in pediatric dentistry and its relation to parental dental anxiety and experience. Eur Arch Paediatr Dent 15: 333-339.

19. Marshman Z, Hall MJ (2008) Oral health research with children. Int J Paediatr Dent 18: 235-242.

20. Rodd HD, Abdul-Karim A, Yesudian G, O'Mahony J, Marshman Z (2011) Seeking children's perspectives in the management of visible enamel defects. Int J Pediatr Dent 21: 89-95.

21. Alsarheed M (2011) Children's perception of their dentists. Eur J Dent 5: 186-190.

22. Umamaheshwari N, Asokan S, Kumaran TS (2013) Child friendly colors in a pediatric dental practice. J Indian Soc Pedod Prev Dent 31: 225-228.

23. Panda A, Garg I, Bhobe AP (2014) Children's perspective on the dentist's attire. Int J of Paediatr Dent 24: 98-103.

24. Kantaputra PN, Chiewcharnvalijkit K, Wairatpanich K, Malikaew P, Aramrattana A (2007) Children's attitudes toward behavior management techniques used by dentists. J Dent Child 74: 4-9.

25. Davies EB, Buchanan H (2013) An exploratory study investigating children's perceptions of dental behavioral management techniques. Int J Paediatr Dent 23: 297-309.

26. Charan J, Biswas T (2013) How to calculate sample size for different study designs in medical research? Indian J Psychol Med 35: 121-126.

27. Wittes J, and Brittain E (1990) The role of internal pilot studies in increasing the efficiency of clinical trials. Stat Med 9: 65-72.

28. Kirkpatrick LA, Feeney BC (2013) A simple Guide to IBM SPSS Statistics for version 20.0. (Student edn), Cengage Learning, Belmont, California.

29. Kotz S BN, Read CB, Balakrishnan N, Vidakovic B (2006) Encyclopedia of Statistical Sciences. (2nd edn), Wiley, Hoboken, NJ.

30. Roberts JF, Curzon ME, Koch G, Martens LC (2010) Review: behaviour management techniques in pediatric dentistry. Eur Arch Paediatr Dent 11: 166-174.

31. Paryab M, Afshar H, Mohammadi R (2014) Informing parents about the pharmacological and invasive behavior management techniques used in pediatric dentistry. J Dent Res Dent Clin Dent Prospects 8: 95-100.

32. Peretz B, Zadik D (1998) Attitudes of parents towards their presence in the operatory during dental treatments to their children. J Clin Pediatr Dent 23: 27-30.

33. Marshman Z, Gibson BJ, Owens J, Rodd HD, Mazey H, et al. (2007) Seen but not heard: a systematic review of the place of the child in 21st-century dental research. Int J Paediatr Dent 17: 320-327.

34. Elango I, Baweja DK, Shivaprakash PK (2012) Parental acceptance of pediatric behavior management techniques: a comparative study. J Indian Soc Pedod Prev Dent 30: 195-200.

35. Aitken JC, Wilson S, Coury D, Moursi AM (2002) The effect of music distraction on pain, anxiety and behavior in pediatric dental patients. Pediatr Dent 24: 114-118.

36. Singh D, Samadi F, Jaiswal J, Tripathi AM (2014) Stress reduction through audio distraction in anxious pediatric dental patients: An adjunctive clinical study. Int J Clin Paediatr Dent 7: 149-152.

37. Greenbaum PE, Lumley MA, Turner C, Melamed BG (1993) Dentist's reassuring touch: effects on children's behavior. Pediatr Dent 15: 20-24.

38. Shroff S, Hughes C, Mobley C (2015) Attitudes and preferences of parents about being present in the dental operatory. Pediatr Dent 37: 51-55.

39. Kim JS, Boynton JR, Inglehart MR (2012) Parents' presence in the operatory during their child's dental visit: a person-environmental fit analysis of parents' responses. Pediatr Dent 34: 407-413.