ABSTRACT

Aim: The aim of the present study was to identify the various background variables and its influence on behavior management problems (BMP) in children.

Materials and methods: The study included 165 children aged 2 to 8 years. During the initial dental visit, an experienced operator obtained each child’s background variables from accompanying guardians using a standardized questionnaire. Children’s dental behavior was rated by Frankel behavior rating scale. The behavior was then analyzed in relation to the answers of the questionnaire, and a logistic regression model was used to determine the power of the variables, separately or combined, to predict BMP.

Results: The logistic regression analysis considering differences in background variables between children with negative or positive behavior. Four variables turned out to be as predictors: Age, the guardian’s expectation of the child’s behavior at the dental examination, the child’s anxiety when meeting unfamiliar people, and the presence and absence of toothache.

Conclusion: The present study concluded that by means of simple questionnaire BMP in children may be expected if one of these attributes is found.

Clinical significance: Information on the origin of dental fear and uncooperative behavior in a child patient prior to treatment process may help the pediatric dentist plan appropriate behavior management and treatment strategy.

Keywords: Behavior, Dental anxiety, Management problems, Prediction.

How to cite this article: Sharma A, Kumar D, Anand A, Mittal V, Singh A, Aggarwal N. Factors predicting Behavior Management Problems during Initial Dental Examination in Children Aged 2 to 8 Years. Int J Clin Pediatr Dent 2017;10(1):5-9.

INTRODUCTION

Despite the evolving nature of pediatric dentistry, a greater challenge facing the profession still remains: How to prevent or intercept dental fear/anxiety at the outset. Dental fear is a normal emotional reaction to one or more specific threatening stimuli in the dental situation, whereas the dental anxiety 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.1 In practice differentiating dental anxiety, dental fear and phobia is complicated, and these terms are often used interchangeably in the literature. Moreover, the term “dental anxiety” is often used to include all different types of dental fears and phobias.2

Dental anxiety is a common problem which develops mostly in childhood and adolescence.1,3 Dental anxiety can have major implications for the child, dental team, and dental services. Providing treatment for the child patient with dental anxiety can be time-consuming, costly, and demanding for the clinician.1,3 Previous studies have shown that a majority of children with dental anxiety present behavior management problems (BMP) in dental treatment situations.6 Evaluating a child’s level of anxiety before pediatric treatment is the key, since this anxiety is closely related to their behavior during dental visits.6 Identifying and quantifying which factors trigger a situation of fear/anxiety is a basic requirement for controlling these factors to the largest extent possible and, therefore, reducing the child’s negative behavior during treatment.

The interaction of several variables, often suggested to be elements of a child’s behavior pattern, makes it difficult to study and analyze single elements. The objective of the science is to widen an understanding of the interpersonal social force that influences a patient’s behavior. Researchers have yet to determine which variables to target in order to improve their behaviors in a dental setting. No single assessment method or tool is completely accurate in predicting a child’s patients behavior for dental treatment, but awareness of the different types of background factors on child behavior may aid in predicting the behavior of pediatric patient.
Historically, research in the behavior aspects of children dentistry has focused on methods for altering the child’s behavior; however, the studies concerning the prediction of behavior of child in a dental clinic has received less consideration. Therefore, it is necessary to effectively predict children dental behavior, identify children at risk of BMP before such problems arise, and develop an appropriate management stratagem. Consequently, the present study was planned to explore and identify the various children background variables with a view to estimating their influence on BMP by means of a structured questionnaire.

MATERIALS AND METHODS

This study included 165 children aged 2 to 8 years (90 boys and 75 girls) presenting for initial visit and seeking dental care. The criteria for including a child in the study were as follows: (1) Children aged 2 to 8 years; (2) child patients indicated for dental treatment including filling, tooth extraction, pulp therapy, pit and fissure sealants, and topical fluoride application; (3) the accompanying parent/guardian was one of the child’s primary caretakers; (4) the dentist had no previous connection with child or guardian; and (5) the accompanying person was able to understand and reply to our questions.

Children with dental emergencies, such as trauma, acute pulpitis, periapical abscess, and acute periodontitis and the child with easily discernable mental limitations or communicative disorders were excluded from the study.

Upon arrival at the clinic, the guardians were informed of the aims of the study and could choose whether to take part in the study without affecting the dental care provided to child. An experienced operator elicited each child’s background variables from accompanying guardians using a standardized questionnaire. The questionnaire comprised of 16 questions, 8 of which had 3 to 5 alternative answers arranged as semantic scale and 8 of which had dichotomized answers (yes or no). The questions covered the child’s sociodemographic features (e.g., age, gender), previous dental and medical treatment experience, personality factors, health status, environmental conditions within or outside the family, and guardian’s attitude toward and experience with dental treatment.

The initial examination was evaluated in the following order: Step 1—enter treatment room; step 2—mirror in mouth; step 3—probe on fingernail and tooth surface; step 4—air blower on hand and in mouth; step 5—lie or sit in dental chair; and step 6—examination. The demands are gradually augmented in ascending order of relative magnitude as anxiety-provoking stimuli. Direct ratings of behavior were made by the Frankel behavior rating scale which was dichotomized into positive and negative behavior. The degree of acceptance was coded 1, 2, 3, or 4 according to the Frankel behavior rating scale. Positive behavior was defined as positive acceptance (rating 3 = positive; or 4 = definitely positive) whereas the negative behavior was defined as negative acceptance (rating 1 = definitely negative; or 2 = negative) at step 6.

The behavior was then analyzed in relation to the answers of the interviews, and a logistic regression model was used to determine the power of the variables, separately or combined, to predict BMP. Regression was performed on the data with complete questionnaires. Chi-square tests using exact methods to compute the statistical significance (p value) were used to compare possible predictors and uncooperative behavior.

RESULTS

A total of 165 children aged 2 to 8 years were included in the study with a distribution of 85 males and 80 females. The mean age of the studied population was 4.2 years old with a standard deviation of 1.4 years. The numbers of children with acceptance 1, 2, 3, and 4 at different treatment steps are shown in Table 1 and Graph 1. The logistic regression analysis considering differences in background variables between children with negative or positive behavior at step 6 indicated four statistically significant variables as predictors: Age, the guardian’s expectation of the child’s behavior at the dental examination, the child’s anxiety when meeting unfamiliar people, and

| Step                                    | Negative acceptance | Positive acceptance |
|-----------------------------------------|---------------------|---------------------|
| 1. Enter treatment room                 | No.    | %   | No.    | %   | No.    | %   | No.    | %   |
| 2. Mirror in the mouth                  | 10     | 16.5| 17     | 28  | 79     | 47.8| 59     | 35.7|
| 3. Probe on fingernail and tooth surface| 18     | 10.9| 25     | 15.1| 72     | 43.7| 50     | 30.3|
| 4. Air blower on hand and in mouth      | 20     | 12.1| 24     | 14.5| 69     | 41.8| 52     | 31.6|
| 5. Lie or sit in the operating chair    | 16     | 9.7 | 25     | 15.1| 72     | 43.6| 52     | 31.6|
| 6. Examination                          | 12     | 7.2 | 30     | 18.2| 66     | 40  | 57     | 34.6|
|                                         | 18     | 10.9| 20     | 12.1| 68     | 41.2| 59     | 35.8|
the presence and absence of toothache (Table 2). While 113 (68.4%) guardians expected positive dental behavior from their children, 52 (31.5%) expected negative behavior (Graph 2). More than one-third (60/165, 36.3%) of children were anxious around strangers, and 93 out of 165 (56.3%) of children had suffered toothache prior to the dental visit.

**DISCUSSION**

Before the 1960s, prevailing theories of children’s psychological development proposed that a child is a “tabula rasa,” or blank slate, i.e., imprinted upon by external forces which were considered to be the major formative factors in child behavior patterns. However, Stella Chess and Alexander Thomas after studying behavior patterns hypothesized that children are not “blank slates,” rather they have internal influences that lead to inherent individual differences in their reactions and motivations. A more comprehensive view may be that the child’s development and behavior are affected by a host of factors including individual physiology, temperament, and cognitive traits, as well as family and other environmental influences. Dental anxiety is likely to have multifactorial origins which are broadly divided into the internal and external origin. The external origin has been described as a simple conditioned phobia emerging from direct and indirect negative dental experience, and that internal origin can be characterized as a personality trait or endogenous anxiety, including factors related to the person.

The clinical pediatric dentist must be capable of effectively managing a child’s behavior and to accomplish this, there is need to discover what factors reduce anxiety and improve potentially negative behavior during a dental procedure. Through an understanding of child development and origin of dental fear and uncooperative behavior in a child patient prior to treatment process may help the pediatric dentist plan appropriate behavior management and treatment strategy. The response of a child patient to the demands of dental treatment is complex and determined by many factors. Child age/cognitive level, temperament/personality characteristics, anxiety and fear, reaction to the strangers, previous dental experience, and maternal dental anxiety influence a child’s reaction to the dental setting. Moreover, difficulties exist in assessing dental fear in younger children, and therefore its evaluation is largely based on interpretation of observed behavior in the dental situation using rating scales. Some authors have claimed that, because of limited emotional
The previously cited findings suggesting that not only the behavior of various studies to be considered in predicting the child's anxiety when experiencing unknown people or situations. Venham et al. concluded that older children had stronger promotion of independence and weaker socialization training, resulting in anxiety when encountering unfamiliar people or situations. All these four factors proved to be important parameters, and many authors, as described below, have justified the predictors used in the present study.

Baier et al. concluded that children under age 6 are more likely to exhibit negative behaviors, signifying that age may play a role both in behavior and anxiety in a dental setting. Housi, in addition, suggested that the younger children are often afraid of the dental office, no matter what procedure they are facing. Moreover, Rud and Kisling identified that chronological age does not always correspond to the level of mental development and stated that children who had reached a mental development corresponding to 29 months of age were able to cooperate in the dental situation. In the present study, logistic regression analysis identified four variables of the questionnaire that proved to be statistically significant predictors: The child's age, the guardian's expectation of the child's behavior, the child's anxiety when meeting strangers, and the presence of toothache. All these four factors proved to be important parameters, and many authors, as described below, have justified the predictors used in the present study.

Based on this study, predictors for uncooperative behavior in the child were identified. The results of this investigation were established with a relatively simple questionnaire, and certain key questions asked prior to the initial dental examination may perhaps be helpful in assessing cooperative ability.

**CONCLUSION**

Based on the results of this study, the following four factors were found to be predictive of children's BMP in the dental clinic: The child's age, the guardian's expectation of the child's behavior at the dental clinic, presence of anxiety around strangers, and the presence of toothache. In a country like India, where health services have been usually oriented toward therapeutic care, toothache has been the main reason for seeking dental treatment. In the present study, the presence of toothache was found to be a significant predictor. Our results showed that 58.7% of children had a history of toothache; moreover, 29% of the children presented for the first dental treatment because of toothache. Ferrar reported that fear of pain is the most important predictor of dental anxiety. We believe that from a cognitive behavioral perspective, younger children with toothache to some degree anticipated aggravation of pain during the initial dental examination; furthermore, they are more likely to fear the consequences of pain sensations and more likely to avoid them, subsequently resulting in the negative behavior.

Based on this study, predictors for uncooperative behavior in the child were identified. The results of this investigation were established with a relatively simple questionnaire, and certain key questions asked prior to the initial dental examination may perhaps be helpful in assessing cooperative ability.
Factors predicting Behavior Management Problems during Initial Dental Examination in Children Aged 2 to 8 Years

REFERENCES

1. Klingberg G, Broberg AG. Dental fear/anxiety and dental behaviour management problems in children and adolescents: a review of prevalence and concomitant psychological factors. Int J Paediatr Dent 2007 Nov;17(6):391-406.

2. Locker D, Thomson WM, Poulton R. Onset of and patterns of change in dental anxiety in adolescence and early adulthood: a birth cohort study. Community Dent Health 2001 Jun;18(2):99-104.

3. Locker D, Liddell A, Dempster L, Shapiro D. Age of onset of dental anxiety. J Dent Res 1999 Mar;78(3):790-796.

4. Moore R, Brodsgaard I. Dentists’ perceived stress and its relation to perceptions about anxious patients. Community Dent and Oral Epidemiol 2001 Feb;29(1):73-80.

5. Folayan MO, Ufomata D, Adekoya-Sofowora CA, Otuyemi E, Idehen E. The effect of psychological management on dental anxiety in children. J Clin Pediatr Dent 2003 Summer;27(4):365-370.

6. Ramos-Jorge ML, Marques LS, Pavia SM, Serra-Negra JM, Pordeus IA. Predictive factors for child behaviour in the dental environment. Eur Arch Paediatr Dent 2006 Dec;7(4):253-257.

7. Frankl SN, Shiere FR, Fogels HR. Should the parent remain with the child in the operatory? J Dent Child 1962 Apr;29(2):150-163.

8. De Pauw SS, Mervielde I. Temperament, personality and developmental psychopathology: a review based on the conceptual dimensions underlying childhood traits. Child Psychiatry Hum Dev 2010 Jun;41(3):313-329.

9. Thomas, A; Chess, S; Birch, H; Hertzig, M; Korn, S. Behavioral individuality in early childhood. 1st ed. New York: New York University; 1963. p. 1-7.

10. Milgrom P, Manci L, King B, Weinstein P. Origins of childhood dental fear. Behav Res Ther 1995;33(3):313-319.

11. McNeil DW, Berryman ML. Components of dental fear in adults? Behav Res Ther 1989;27(3):233-236.

12. Berggren U. General and specific fears in referred and self-referred adult patients with extreme dental anxiety. Behav Res Ther 1992 Jul;30(4):395-401.

13. American Academy of Pediatric Dentistry. Guideline on behavior guidance for the pediatric dental patient. Pediatr Dent 2012;34(6):170-182.

14. Peretz B, Kharoubia J. Dental anxiety among Israeli children and adolescents in a dental clinic waiting room. Pediatr Dent 2013 May-Jun;35(3):252-256.

15. Baier K, Milgrom P, Russell S, Mancl L, Yoshida T. Children’s fear and behavior in private pediatric dentistry practices. Pediatr Dent 2004 Jul-Aug;26(4):316-321.

16. Hoosey MT. Anxious children: coping in dental practice. Dent Update 1995 Jun;22(5):210-215.

17. Rud B, Kising E. The influence of mental development on children’s acceptance of dental treatment. Scand J Dent Res 1973;81(5):343-352.

18. Holst A, Hallonsten AL, Schroder U, Eklund K. Prediction of behavior-management problems in 3-year-old children. Scand J Dent Res 1993 Apr;101(2):110-114.

19. Xia B, Wang CL, Ge LH. Factors associated with dental behavior management problems in children aged 2-8 years in Beijing, China. Int J Paediatr Dent 2011 May;21(3):200-209.

20. Venham LL, Murray P, Gaulin-Kremer E. Child rearing variables affecting the preschool child’s response to dental stress. J Dent Res 1979;58(11):2042-2045.

21. Poulton R, Waldie KE, Thomson WM, Locker D. Determinants of early- vs late-onset dental fear in a longitudinal-epidemiological study. Behav Res Ther 2001 Jul;39(7):777-785.

22. Ferrari M. Fears and phobias in childhood: some clinical and developmental considerations. Child Psychiatry Hum Dev 1986 Winter;17(2):75-87.

23. Versloot J, Veerkamp JS, Hoogstraten J. Children’s self-reported pain at the dentist. Pain 2008 Jul;137(2):389-394.