

Dental fear and anxiety among children and their caregivers

Medo e ansiedade dental em crianças e seus cuidadores

Marília Gerhardt de Oliveira^{1*}, Roberta Alencastro Ávila², Roberta Rossi de Carvalho e Silva², Fernando Vacilotto Gomes, João Feliz Duarte de Moraes⁴, João Batista Blessmann Weber⁵

¹PhD, Lecturer and Researcher, Hospital Cristo Redentor, Grupo Hospitalar Conceição. Ministry of Health, Porto Alegre, Brazil. ²DDS, Private Practise, Pontifícia Universidade Católica do Rio Grande do Sul (PUCRS), Porto Alegre, RS, Brazil. ³MSc, Departamento de Cirurgia e Ortopedia, Universidade Federal do Rio Grande do Sul (UFRGS), School of Dentistry, Porto Alegre, RS, Brazil. ⁴PhD, Departamento de Matemática Pura e Aplicada, PUCRS, School of Mathematics, Porto Alegre, RS, Brazil. ⁵PhD, Departamento de Odontologia Preventiva e Social, PUCRS, School of Dentistry, Porto Alegre, RS, Brazil

Abstract

Introduction: Dental treatment is an experience that elicits fear and anxiety in most people, and particularly in children. This fear is the first step to be overcome in the search for a satisfactory dentist-patient relationship. **Aim:** of this research was to assess fear and anxiety among children and their caregivers when faced with dental treatment and identify the main reasons behind these behaviors. **Methodology:** About 200 questionnaires consisting of nine multiple-choice questions and one open-ended question, to obtain additional information, were administered to male and female patients aged 4 to 13 years who were treated at a university pediatric dentistry clinic and to their respective caregivers. **Results:** show only one-third of children reported fear of the dentist. Pain, needles, and anesthesia were the main reasons behind their feelings of fear. Over 70% of interviewed children reported having experienced tooth pain at least once, which reinforces the importance of painful experiences as being associated with dental fear in a portion of these patients. **Conclusion:** that although dental fear was uncommon among caregivers, approximately one-third of children reported fear of the dentist, associated with perceived pain or needle phobia.

Key words: Dental Anxiety. Fear. Child. Questionnaires. Caregivers.

Resumo

Introdução: Tratamento dentário é uma experiência que provoca medo e ansiedade na maioria das pessoas, e em particular em crianças. Este medo é o primeiro passo a ser vencido na busca de uma relação dentista-paciente satisfatória. **Objetivo:** avaliar o medo e a ansiedade de crianças e seus respectivos cuidadores frente a um atendimento odontológico e identificar quais são os principais motivos que levam a esses tipos de comportamentos. **Metodologia:** Cerca de 200 questionários foram aplicados contendo 9 questões de escolha simples e 1 questão aberta de livre expressão, objetivando obter informações adicionais, em pacientes com idades entre 4 e 13 anos, de ambos os gêneros, que estavam em atendimento nas clínicas de odontopediatria da faculdade, assim como seus respectivos cuidadores. **Resultados:** mostram apenas 1/3 das crianças referem ter medo do cirurgião-dentista, sendo dor, agulha e anestesia os principais motivos desse sentimento de medo. Mais de 70% das crianças entrevistadas relatam já ter sentido dor de dente pelo menos uma vez, o que reforça a importância da experiência dolorosa vinculada ao medo do dentista de uma parcela destes pacientes. **Conclusão:** apesar do medo do dentista ser pouco frequente entre os cuidadores, aproximadamente 1/3 das crianças relatou o medo do cirurgião-dentista associado ao sentimento de dor ou à agulha.

Palavras-chave: Ansiedade ao Tratamento Odontológico. Medo. Criança; Questionários. Cuidadores.

INTRODUCTION

The experience of pain and trauma during dental treatment plays an important role in the development of dental fear and anxiety in most people, particularly children.¹⁻³

Some children are able to cope well with potentially stressful situations, such as a visit to the dentist; others, however, are more vulnerable to their fears and impulses. Therefore, certain degree of apprehension on the part of the child is to be expected, but when

fear and anxiety are disproportionate, they may hinder dental care.^{4,5}

Fears are commonly encountered during childhood and adolescence. Fear is often considered an essential, inevitable emotion, which enhances the fight-or-flight response when one is faced with a dangerous situation. Thus, it is normal for children to be fearful of new and threatening situations or unpleasant situations that may have harmed them in the past.⁶

Talking to caregivers may play a valuable role in the planning of paediatric dental care, as caregivers are often able to predict the child's ability to cope with the

Corresponding / Correspondente: Marília Gerhardt de Oliveira Av. Visconde do Herval, 725- Ap. 404 B CEP: 90130-151 Porto Alegre, RS, Brazil E-mail: gerhardtoliveira@gmail.com

situation such as dental treatment, particularly when the child has already had negative experiences during prior dental care.⁷ This also enables the dental surgeon to allay fear and anxiety by choosing a way to deal with each of these emotions during the child's first visit.⁸

Fear and anxiety appear to decrease with increasing age, due to the progressively greater number of experiences with dental care. Therefore, these feelings are most common in the youngest children, due to immaturity and lack of ability to understand and manage this situations.^{5,9-11}

Dental anxiety usually has its origin in tales of unpleasant dental treatment experiences during childhood, which are then reflected in adult life.¹² Due to these experiences, many caregivers may in fact be responsible for their children abstaining from dental care and developing fear and anxiety toward dental treatment.

In light of the importance and repercussions of child fear and anxiety and dental treatment and the influence of caregivers in this context, the objective of this study was to assess dental care and anxiety among children treated at the paediatric dentistry clinics of the Pontifícia Universidade Católica do Rio Grande do Sul, School of Dentistry in Porto Alegre, Brazil, and their caregivers.

METHODOLOGY

This study was assessed and approved by the Pontifícia Universidade Católica do Rio Grande do Sul Research Ethics Committee (CEP-PUCRS) with protocol number 06/03479.

The study universe consisted of 200 boys and girls between the ages of 4 and 13 who were treated at the paediatric dentistry clinics of the Pontifícia Universidade Católica do Rio Grande do Sul School of Dentistry and their respective caregivers, who had chaperoned them to their dental appointments.

Data were collected by the authors through previously developed questionnaires, administered by means of a standardized face-to-face interview at the clinic waiting room, between May 2010 and March 2011.

Children and their respective caregivers were recruited randomly. They were invited to take part in the study after being informed of its objectives and methods. The study sample only comprised children and caregivers who agreed to complete the questionnaire and provided written informed consent for study participation. Caregivers signed informed consent forms for themselves and for their children, whereas children signed informed assent forms.

Both the caregiver and child questionnaires consisted of nine multiple-choice questions and one open-ended question designed to collect any additional information the respondents might find relevant. The caregiver questionnaire collected data on parameters such as name, address, age, family income, marital status, educational attainment, telephone and e-mail, number of children, and nature of kinship with the child. The child questionnaire asked only for name and age.

The results of the multiple-choice questions were tabulated in Microsoft Excel® (Office 2007 for Windows, Microsoft Corporation®) spreadsheets and analysed using descriptive statistics (percentage of answers for each item).

RESULTS

The mean age of child respondents was 9 years (range, 4-13 years), and that of caregivers, 38 years (range, 19-76 years). Family income ranged from 1 to 10 reference Brazilian minimum wages (US\$290.00); mean monthly income was one minimum wage, thus characterizing the sample as consisting predominantly of low-income families.

Most caregivers (64.5%) were legally married and only 10% had a higher education. The sample therefore consisted predominantly of formal nuclear families with low levels of head of household educational attainment.

Results for children and their caregivers are summarized in Tables 1 and 2 respectively.

Table 1 – Results of the child questionnaire

Are you afraid of the dentist?	Yes.	59	29.5%
	No.	141	70.5%
If so, why?	I'm afraid of it hurting.	12	20.3%
	Because everyone says it hurts.	8	13.6%
	Because I'm afraid of the noise.	2	3.4%
	Because it's always hurt when I've gone before.	5	8.5%
	Because I'm afraid of needles.	22	37.3%
	Because I'm afraid of having my teeth out.	10	16.9%
What happens if you don't take care of your teeth?	My mother will be mad at me.	15	7.5%
	I'll get a toothache.	37	18.5%
	Nothing happens.	6	3.0%
	The cavity bug will eat away my teeth.	142	71.0%

Dental fear and anxiety among children and their caregivers

<i>How often should you see the dentist?</i>	<i>Once a year.</i>	41	20.5%
	<i>Twice a year.</i>	35	17.5%
	<i>Three times a year.</i>	63	31.5%
	<i>Only when I have a toothache.</i>	31	30.5%
<i>How often should you brush your teeth?</i>	<i>Only when I get up in the morning.</i>	5	2.5%
	<i>Only after lunch.</i>	6	3.0%
	<i>Only after I've eaten sweets.</i>	1	0.5%
	<i>Always after I eat.</i>	188	94.0%
<i>Have you ever had a toothache?</i>	<i>Yes.</i>	145	72.5%
	<i>No.</i>	55	27.5%
<i>Has anyone ever told you bad things about the dentist?</i>	<i>Yes.</i>	49	24.5%
	<i>No.</i>	151	75.5%
<i>Who?</i>	<i>My mother.</i>	8	16.3%
	<i>My father.</i>	3	6.1%
	<i>My brothers or sisters.</i>	9	18.4%
	<i>My grandmother.</i>	3	6.1%
	<i>A friend.</i>	26	53.1%
<i>Have you ever been threatened with going to the dentist after doing something wrong?</i>	<i>Yes.</i>	18	9.0%
	<i>No.</i>	182	91.0%

Table 2 – Results of the caregiver questionnaire

<i>Are you afraid of the dentist?</i>	<i>Yes.</i>	43	21.5%
	<i>No.</i>	145	72.5%
	<i>I'm terrified.</i>	12	6.0%
<i>When was the last time you saw a dentist?</i>	<i>Less than one year ago.</i>	144	72.0%
	<i>Over one year ago.</i>	56	28.0%
<i>Why did you last see a dentist?</i>	<i>Because I had a toothache.</i>	72	36.0%
	<i>For a check-up.</i>	97	48.5%
	<i>Because I had a broken tooth.</i>	31	15.5%
<i>Have you talked to your child about what dental treatment would be like?</i>	<i>Yes.</i>	140	70.0%
	<i>No.</i>	60	30.0%
<i>When did you first take your child to the dentist?</i>	<i>Age 0-6 months.</i>	6	3.0%
	<i>Age 6-12 months.</i>	13	6.5%
	<i>Age 12-24 months.</i>	11	5.5%
	<i>Age 24-36 months.</i>	27	13.5%
	<i>After age 36 months.</i>	130	65.0%
	<i>This is the first time.</i>	13	6.5%
<i>How often do you take your child to the dentist?</i>	<i>Every 3 months.</i>	53	26.5%
	<i>Every 6 months.</i>	116	58.0%
	<i>Only when they have a toothache.</i>	18	9.0%
	<i>This is the first time.</i>	13	6.5%
<i>You take your child to the dentist whenever he or she has a toothache?</i>	<i>Yes.</i>	154	77.0%
	<i>No.</i>	4	2.0%
	<i>Only when I'm sure it's serious!</i>	42	21.0%
<i>Do you help your child brush his or her teeth?</i>	<i>Yes.</i>	79	39.5%
	<i>No.</i>	68	34.0%
	<i>Sometimes.</i>	39	19.5%
	<i>I only check to see if they're clean.</i>	14	7.0%
<i>You take your child to follow-up appointments?</i>	<i>Yes.</i>	198	99.0%
	<i>No.</i>	2	1.0%

Item 10 in both questionnaires was an open-ended question designed to obtain additional information, but it did not yield relevant additional data from any of the respondents.

DISCUSSION

Analysis of children's responses highlights the importance of the relationship between dental care and pain.

Even though only one-third of children reported fear of the dentist, most that did manifest such feelings were afraid of potentially experiencing pain (or were afraid of needles, ultimately due to the painful nature of infiltration anaesthesia). This is consistent with the findings of Baier et al.,¹³ Nicolas et al.,¹⁴ and Brogårdh-Roth et al.¹⁵ reported that only 20 to 24.3% of children were afraid of the dentist, and that children who did manifest dental fear were 2.4 times more likely to display negative behaviours during dental treatment.

According to Howard and Freeman,¹⁶ ten Berge et al.,¹⁷ Lee et al.,¹⁸ Nakai et al.,¹⁹ and Rantavuori et al.,²⁰ the highest levels of anxiety were elicited by the "pain" of anaesthesia or injection.

In a study of 5480 children conducted by Nuttall, Gilbert, and Morris,²¹ approximately 3/4 of the sample were considered to be affected by dental anxiety. Most of the other children were considered anxious, but not to the point of avoiding dental visits.

The results of this study reinforce the importance of the connection between painful dental-related experiences and potential failure of proper tooth care, with respect to the pain-generating condition that is dental caries.

Anxious children are more prone to severe dentition issues as compared to age-matched children who were not considered anxious.²¹

Nuttall, Gilbert, and Morris²¹ note that children who display very high anxiety levels are more likely to undergo dental extractions or restorations due to treatment refusal. Furthermore, according to Nicolas et al.¹⁴ and Tickle et al.,²² children with severe tooth decay are significantly more anxious than those with healthy teeth, and those who have already undergone dental extractions are twice as likely to exhibit dental anxiety.

Lee et al.¹⁸ and Wogelius, Poulsen, and Sorensen showed²³ that the prevalence of dental anxiety decreases with advancing age, and that children who have had positive experiences with dental care and contact with a dentist at least once are also less anxious.

In a study conducted by de Jongh et al.²⁴, 73.1% of highly anxious individuals reported having experienced at least one traumatic incident over the course of their lives; traumatic healthcare experiences were particularly prevalent. Locker, Poulton, and Thomson²⁵ show that 72.7% of individuals with high-level dental anxiety had a diagnosis of one or more psychological disorder; however, conduct disorders, social phobia, simple phobia, and alcoholism were more prevalent among highly anxious patients than

among non-anxious individuals.

Our findings clearly provide evidence of the positive impact of oral health teams in the Brazilian population, as shown by extremely positive indicators such as: two-thirds of interviewed children not being afraid of the dentist; approximately two-thirds of children being aware that they will develop cavities if they do not receive periodic dental care; most children reporting that one, two, or even three dental visits a year are required; and 94% of children claiming that brushing their teeth after meals is important.

According to Nicolas et al.¹⁴ children who have had a positive experience during at least one dental visit are less fearful than other children, regardless of age and gender. Tickle et al.²² showed that irregular, symptom-related visits are also a major factor associated with dental anxiety. Likewise, Brill²⁶ found a slight difference in child behaviour during dental restorative treatment from the first visit to the second visit, even though these differences were not statistically significant.

A study by Poulton et al.²⁷ showed that individuals who do not visit a dentist regularly are twice as likely to develop dental fear.

As found in our sample, where 99% of caregivers claims to take children to their follow-up appointments, Baier et al.¹³ showed that 89% of children had attended at least one dental visit during the preceding year, 7% had never seen a dentist, and 4% had had their last dental visit more than one year before. Young patients view dental visits as the path to good oral health, which decreases anxiety.²⁸ This is a very important finding, as it shows the commitment of children and their caregivers to the quality of their oral health.

CONCLUSIONS

The findings of the study allowed us to conclude that most caregivers have good awareness of the importance of child oral health and are not afraid of dentists themselves. The interviewed children showed very good knowledge of the relationship between failure to take proper care of their teeth and development of dental caries. However, the majority of patients had experienced toothache, which may be associated with the fact that approximately 1/3 of these children exhibited dental fear, usually associated with the anaesthetic needle or with the possibility of pain.

Acknowledgments

All authors have made substantive contribution to this study, and all have reviewed the final paper prior to its submission. The authors declare no conflict of interest.

REFERENCES

1. MINEKA, S.; OEHLBERG, K. The relevance of recent developments in classical conditioning to understanding the etiology and maintenance of anxiety disorders. *Acta Psychol.*, Amsterdam, v. 127, n. 2, p. 567-580, 2008.

2. NEWTON, T. et al. The management of dental anxiety: time for a sense of proportion? **Br. Dent. J.**, London, v. 213, n. 6, p. 271-274, 2012.
3. AL-NAMANKANY, A.; DE SOUZA, M.; ASHLEY, P. Evidence-based dentistry: analysis of dental anxiety scales for children. **Br. Dent. J.**, London, v. 212, n. 5, p. 219-222, 2012.
4. GUSTAFSSON, A. et al. Child dental fear as measured with the Dental Subscale of the Children's Fear Survey Schedule: the impact of referral status and type of informant (child versus parent). **Community Dent. Oral Epidemiol.**, Copenhagen, v. 38, n. 3, p. 256-266, 2010.
5. GUSTAFSSON, A. et al. Dental behaviour management problems: the role of child personal characteristics. **Int. J. Paediatr. Dent.**, Oxford, v. 20, n. 4, p. 242-253, 2010.
6. CHAPMAN, H. R.; KIRBY-TURNER, N. C. Dental fear in children--a proposed model. **Br. dent. j.**, London, v. 187, n. 1, p. 408-412, 1999.
7. XIA, B.; WANG, C. L.; GE, L. H. Factors associated with dental behaviour management problems in children aged 2-8 years in Beijing, China. **Int. J. Paediatr. Dent.**, Oxford, v. 21, n. 3, p. 200-209, 2011.
8. JAAKKOLA, S. et al. Dental fear: one single clinical question for measurement. **Open Dent. J.**, v. 3, n. 1, p. 161-216, 2009.
9. KLINGBERG, G.; BROBERG, A. G. Dental fear/anxiety and dental behaviour management problems in children and adolescents: a review of prevalence and concomitant psychological factors. **Int. J. Paediatr. Dent.**, v. 17, n. 6, p. 391-406, 2007.
10. TOWNEND, E.; DIMIGEN, G.; FUNG, D. A clinical study of child dental anxiety. **Behav. Res. Ther.**, Oxford, v. 38, n. 1, p. 31-46, 2000.
11. FOLAYAN, M. O.; IDEHEN, E. E.; OJO, O. O. The modulating effect of culture on the expression of dental anxiety in children: a literature review. **Int. J. Paediatr. Dent.**, Oxford, v. 14, n. 4, p. 241-245, 2004.
12. GOUMANS, C.; VEERKAMP, J. S.; AARTMAN, I. H. Dental anxiety and behavioural problems: what is their influence on the treatment plan? **Eur. J. Paediatr. Dent.**, Carimate, v. 5, n. 2, p. 15-18, 2004.
13. BAIER, K. et al. Children's fear and behavior in private pediatric dentistry practices. **Pediatr. Dent.**, v. 26, n. 3, p. 316-321, 2004.
14. NICOLAS, E. et al. Factors affecting dental fear in French children aged 5-12 years. **Int. J. Paediatr. Dent.**, Oxford, v. 20, n. 5, p. 366-373, 2010.
15. BROGARDH-ROTH, S. et al. Dental fear and anxiety and oral health behaviour in 12- to 14-year-olds born preterm. **Int. J. Paediatr. Dent.**, Oxford, v. 20, n. 6, p. 391-399, 2010.
16. HOWARD, K. E.; FREEMAN, R. Reliability and validity of a faces version of the Modified Child Dental Anxiety Scale. **Behav. Res. Ther.**, Oxford, v. 17, n. 4, p. 281-288, 2007.
17. TEN BERGE, M. et al. Childhood dental fear in the Netherlands: prevalence and normative data. **Community Dent. Oral Epidemiol.**, Copenhagen, v. 30, n. 2, p. 101-107, 2002.
18. LEE, C. Y.; CHANG, Y. Y.; HUANG, S. T. Prevalence of dental anxiety among 5- to 8-year-old Taiwanese children. **J. Public Health Dent.**, Raleigh, v. 67, n.1, p. 36-41, 2007.
19. NAKAI, Y. et al. The Children's Fear Survey Schedule-Dental Subscale in Japan. **Community Dent. Oral Epidemiol.**, Copenhagen, v. 33, n. 3, p. 196-204, 2005.
20. RANTAVUORI, K. et al. Dental fear and oral health and family characteristics of Finnish children. **Acta Odontol. Scand.**, Oslo, v. 62, n. 2, p. 207-213, 2004.
21. NUTTALL, N. M.; GILBERT, A.; MORRIS, J. Children's dental anxiety in the United Kingdom in 2003. **J. Dent.**, Guildford, v. 36, n. 11, p. 857-860, 2008.
22. TICKLE, M. et al. A prospective study of dental anxiety in a cohort of children followed from 5 to 9 years of age. **Int. J. Paediatr. Dent.**, Oxford, v. 19, n. 4, p. 225-232, 2009.
23. WOGELIUS, P.; POULSEN, S.; SORENSEN, H. T. Prevalence of dental anxiety and behavior management problems among six to eight years old Danish children. **Acta Odontol. Scand.**, Oslo, v. 61, n. 3, p. 178-183, 2003.
24. DE JONGH, A. et al. Psychological trauma exposure and trauma symptoms among individuals with high and low levels of dental anxiety. **Eur. J. Oral Sci.**, Copenhagen, v. 114, n. 2, p. 286-292, 2006.
25. LOCKER, D.; POULTON, R.; THOMSON, W. M. Psychological disorders and dental anxiety in a young adult population. **Community Dent. Oral Epidemiol.**, Copenhagen, v. 29, n. 6, p. 456-463, 2001.
26. BRILL, W. A. Comparison of the behavior of children undergoing restorative dental treatment at the first visit versus the second visit in a private pediatric dental practice. **J. Clin. Pediatr. Dent.**, Birmingham, v. 25, n. 1, p. 287-291, 2001.
27. POULTON, R. et al. Determinants of early- vs late-onset dental fear in a longitudinal-epidemiological study. **Behav. Res. Ther.**, Oxford, v. 39, n. 7, p. 777-785, 2001.
28. MARSAC, M. L.; FUNK, J. B. Relationships among psychological functioning, dental anxiety, pain perception, and coping in children and adolescents. **J. Dent. Child.**, Chicago, v. 75, n. 3, p. 243-51, 2008.

Submetido em 28.04.2014

Aceito em 09.07.2014