Dental emergencies in a university pediatric dentistry clinic: a retrospective study

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Declaration of Interests: The authors certify that they have no commercial or associative interest that represents a conflict of interest in connection with the manuscript.

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Received for publication on Jul 06, 2011
Accepted for publication on Oct 31, 2011

Abstract: A significant number of children visit a dentist for the first time due to emergency situations. However, little is known regarding the prevalence, etiology, and treatment provided for children at emergency dental visits. This study aimed to evaluate the profile of children attending a dental school emergency clinic, the reasons for seeking dental care, and the treatment provided. Records of 270 patients who attended an emergency clinic during 2010 were analyzed, and 253 were selected. Demographic, diagnostic, and procedural information was collected. The mean child age was 7.8 years. For 208 children (82%), pain was the main reason for the emergency visit. Nearly 79% of the visits were due to caries, and the most frequently required treatment was endodontic intervention (31.22%). Of the decayed teeth, 61.70% were primary posterior teeth and 31.9% permanent posterior teeth. Pain caused by dental decay was the most frequent chief complaint. A large number of children were brought to the dentist with complaints that had started long before, for which over-the-counter medications had been used.

Descriptors: Pain; Pediatric Dentistry; Dental Care; Emergencies; Dental Caries.

Introduction

The recommendation that a child's first dental visit should occur during the child's first year of life has had a significant effect on dental disease prevention,[1] with long-term benefits for the child. Nevertheless, a significant number of children have limited access to dental services,[2] and parents often take their children to the dentist only when a problem becomes serious and causes discomfort or pain. A significant number of the patients who come to the emergency clinic are children.[3,4] It has been reported that 25.7% of the children visit a dentist for the first time due to emergency situations.[3]

Emergency visits can be defined as the care of patients who present oral problems that interfere in their lives or with organ function.[3] Patients who require urgent dental care generally present severe dental and facial pain that is not controllable by over-the-counter preparations, as well as dental and soft-tissue acute infections, uncontrollable dental hemorrhage, dental trauma, or rapidly increasing facial swelling.[5] Studies have shown that most emergency visits result from dental decay.[6-8]

Due to the described signs and symptoms, the emergency visits can

represent an uncomfortable situation for both patient and professional. It is important that the dentist possess sufficient knowledge to make quick decisions, to relieve pain and discomfort, especially when dealing with children. Some studies have addressed the situations that most often lead children to seek emergency care. However, most of them were performed in hospital settings and only a few in universities. Thus, this study aimed to describe the profile of children seeking treatment for a dental emergency at a dental school in Pelotas, RS, Brazil, as well as their reasons for seeking dental care and the treatment provided.

Methodology

The project was approved by the Human Research Ethics Committee of the Federal University of Pelotas (215/2011). All parents signed an informed consent form prior to consultation, authorizing their child's participation in the studies as well as any treatment.

Two authors reviewed the emergency records of 270 patients who attended the emergency clinic of the Pelotas dental school of the Federal University of Pelotas during the two semesters of 2010. Incomplete files with respect to diagnosis and treatment, and those with illegible information, were excluded. Pelotas is located in southern Brazil and has nearly 327.000 inhabitants.[9] According to the 2001 census, 73% of its inhabitants belong to social classes D and E, 23% to classes B and C, and 4% to class A.

The following information was collected:

- demographics (age, gender);
- the main complaints reported by parents/children (pain, bleeding, trauma, ectopic eruption/exfoliation problems, soft-tissue lesions, and dental caries);
- the diagnosis (dental decay, dental trauma, soft-tissue lesions, exfoliation and eruption problems, and malocclusion); and
- the treatment performed (restoration, endodontic procedures, extractions, medical evaluation/referral, oral hygiene instructions, follow-up, medication, splinting).

Also, the attitudes adopted by the parents before the child was taken for dental emergency services were categorized as follows:

- had no previous attitude;
- had taken the child to another dentist previously;
- had taken the child to a doctor/emergency room; or
- had given the child over-the-counter drugs.

If a drug had been given, it was categorized as analgesic/anti-inflammatory, antibiotics, or 'other'. Information on the month of the visit, the accompanying person, the place of residence, the problem's duration, and the affected teeth was also collected. Only the first treatment was thought valuable, except when subsequent visits were necessary for the same complaint.

The data were numerically coded and entered into a computer equipped with Stata 10.0 software (Stata Corporation, College Station, USA). Summary statistics were calculated to include frequencies, percentages, and means where indicated. Fisher's exact test was used to assess the significance of differences ($p < 0.05$).

Results

In total, 270 files were analyzed, 253 of which (93.7%) were included. Children's ages ranged from 1 to 16 years, and their mean age was 7.8 (SD = 6.4). One hundred and thirty-one (51.79%) were male, and 122 (48.21%) were female. Most children were accompanied by their mothers (78.80%), 10% by their fathers, and 11.20% by others. Most children came from distant suburbs (67.59%), 22.13% lived near the university, and 10.28% came from other towns. October was the month with the highest number of visits (47). No visits were registered in February, since this month corresponds to the school vacation period in Brazil, when the infant clinic does not offer emergency services. Children needing treatment were treated at another emergency clinic during this month, and the data were not available.

The chief complaint reported by parents that prompted them to seek emergency service for their children was assessed (Figure 1). For 208 children (82.03%), pain was the main cause of the emergency

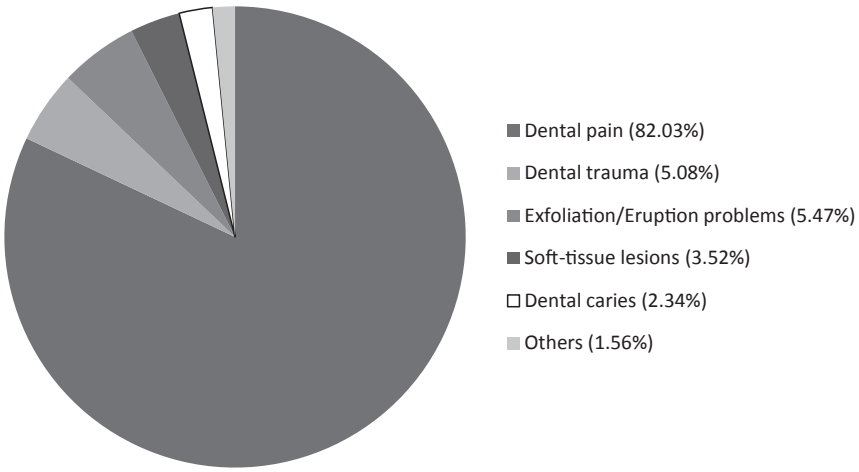

Figure 1 - Reasons for seeking dental emergency services, according to the parents. Pelotas/2010 (n = 253).

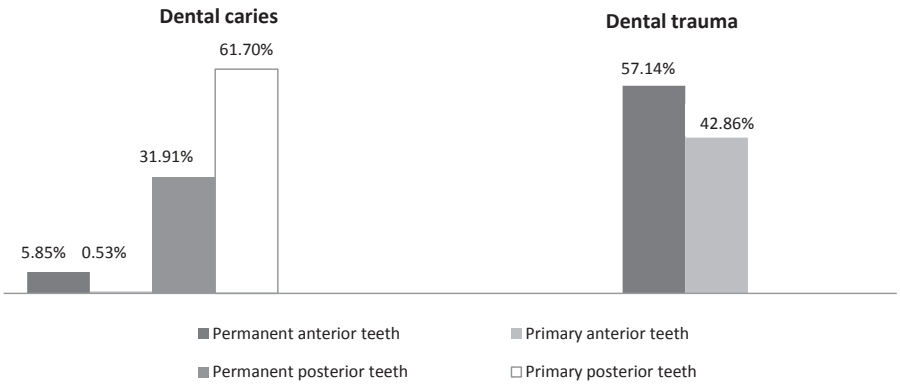

Figure 2 - Frequency of teeth affected by dental caries and by dental trauma. Pelotas/2010.

visit. Others reasons given were dental trauma, exfoliation/eruption problems, soft-tissue lesions, and dental caries.

Table 1 shows the numbers of emergency visits by main problem according to the clinical examination and the types of intervention chosen. Nearly 79% of the clinical visits were due to caries, and the most frequently required treatment was endodontic intervention, which includes coronal opening and dressing. Exodontics procedures were needed for 24 (9.48%) children, 14 of whom had residual roots.

Table 2 shows the distribution of children according to age and diagnosis. There were no differences regarding the cause of the emergency visit among the different age groups ($p > 0.05$).

Figure 2 shows the frequency of affected teeth among children presenting with symptoms arising as a result of dental caries and dental trauma. When differences among tooth groups were compared, posterior teeth were significantly more affected by dental caries ($p < 0.001$), and anterior teeth were more affected by dental trauma ($p < 0.001$).

Table 3 shows the attitudes adopted by parents before taking their children to the dental emergency clinic. The parents of 123 children had given over-the-counter drugs before deciding on emergency attendance. In 96 cases (64%), analgesic/anti-inflammatory drugs had been given as pre-medication before attendance. Some parents had done nothing, whereas others had looked for a dentist, and some had consulted with a doctor before coming to the university clinic. When the parents were asked about the duration of the complaint, 33.65% answered for "over 30 days", while 14.42% answered "from one to three days" (Table 3).

Discussion

Emergency visits are one of the main reasons for parents to take their children to the dentist. Eliminating pain and avoiding emergency complications

Table 1 - Description of the diagnoses and the respective treatments chosen, Pelotas/2010 (n = 253).

Diagnosis	Treatment performed	n	%
Dental caries	Caries restoration	71	28.06%
	Endodontic procedures	79	31.22%
	Extraction	24	9.48%
	Medical evaluation/referral	16	6.32%
	Oral hygiene instructions/follow-up	5	1.98%
	Did not allow treatment	4	1.58%
	Total	199	78.64%
Soft-tissue lesions	Instructions/follow-up	6	2.37%
	Medical evaluation/referral	4	1.58%
	Medication	1	0.40%
	Total	11	4.35%
Dental trauma	Coronal opening and dressing	1	0.40%
	Extraction	2	0.79%
	Instructions and accompaniment/referral	8	3.15%
	Restoration	3	1.19%
	Splinting	1	0.40%
	Total	15	5.93%
Exfoliation/eruption	Extraction of deciduous tooth	11	4.35%
Problems	Instructions/follow-up	4	1.58%
	Medical evaluation/referral	5	1.98%
	Did not allow treatment	1	0.40%
	Total	21	8.31%
Malocclusion	Instructions/referral	2	0.79%

* Five (1.98%) children had no apparent alterations.

Table 2 - Distribution of children according to age and diagnosis, Pelotas/2010 (n = 253).

Diagnosis	Age (years)							
	1-3		4-6		7-9		≥ 10	
	N	%	n	%	n	%	n	%
Dental caries	22	88.00	57	82.61	68	73.91	52	77.61
Dental trauma	1	4.17	5	7.25	5	5.43	4	5.97
Soft-tissue lesion	2	8.33	2	2.90	2	2.17	5	7.46
Exfoliation/eruption problems	0	-	4	5.80	12	13.04	5	7.46
Malocclusion	0	-	0	-	2	2.17	0	-
No alteration	0	-	1	1.45	3	3.26	1	1.49
Total	25	100	69	100	92	100	67	100

are an important part of the pediatric dental practice. This descriptive study assessed the demographic and clinical characteristics of children attending an emergency dental service at a south Brazilian university. An assessment was carried out involving several factors, ranging from the attitudes adopted by parents before seeking the service to the treatment performed at the emergency department. Pain

Table 3 - Duration of main complaint and attitudes adopted by parents before seeking emergency care, Pelotas/2010 (n = 253)

Variable*	N	%
Duration of main complaint (days)		
• 1 to 3	30	14.42
• 4 to 7	48	23.08
• 8 to 30	60	28.85
• > 30	70	33.65
• Total	208	100
What was previously done		
• Nothing	40	19.61
• Taken to dentist	47	23.04
• Taken to doctor/emergency room	13	6.37
• Given over-the-counter drugs	104	50.98
• Total	204	100
Previous use of medication		
• Did not take	27	18.00
• Analgesic/anti-inflammatory drugs	96	64.00
• Antibiotics	27	18.00
• Total	150	100

* Values different from 253 are due to missing information.

was found to be the main complaint, and the main cause of this symptom was dental decay. The most frequently required treatment was endodontic procedures.

The primary posterior teeth were the most frequently affected by dental caries, being responsible for 116 (45.85%) out of 253 treated cases. The posterior teeth were also the most frequently affected in the permanent dentition. This is in agreement with results of previous studies involving children in a similar age range.[6,10] In this study, a higher proportion of children (92; 36.36%) were from 7 to 9 years old, and most of them had dental caries in primary posterior teeth. This is worrying, given the importance of these teeth in masticatory function and in preserving space for the successor teeth.

Dental caries evolves slowly, and its treatment is relatively simple when it is diagnosed at an early stage. However, when left untreated, it may lead to pulpitis and then to necrosis and subsequent swelling, fistulae, and diffuse cellulite.[3] In most cases, oral health preventive programs must address this evolution as well as develop community awareness on the importance of regular visits to the dentist. Preventive measures have the potential to significantly reduce the current number of emergency visits.

Despite the fact that dental trauma is a frequent cause of emergency attendance,[3,6] only a small percentage of children in this study attended the emergency center because of this, possibly because the dentistry school offers specialized service in dental trauma care. Thus, most trauma-affected children are immediately referred to this service. Of the 15 patients who presented with traumatic dental injuries, a higher proportion was boys and older children. According to the literature, dental trauma in school-age children is indeed associated with gender and age, with boys[11,12] and older children more frequently affected.[13]

Some of the complaints were due to causes that did not necessarily need immediate attention, such as problems with permanent tooth eruption and primary tooth exfoliation. There were also some patients just seeking oral evaluation or tooth extraction for orthodontic reasons. This is in agreement with results from a previous study on clinical care in which almost 15% of the children who sought treatment either had no major complaint or complained mainly about physiological events, such as permanent tooth eruption and primary tooth exfoliation.[8]

The preference for urgent dental appointments for non-urgent situations may reflect the "convenience" of using such appointments as a primary care source instead of regularly scheduled dental care.[3,14] Dental triage systems exist to prioritize patients who need immediate attention such that a delay could jeopardize their treatment or their health. The fact that patients often look for urgent dental appointments instead of regularly scheduled dental care indicates that the dental practitioner needs to develop a screening method to determine true dental emergencies, triaging urgent care and discerning which children really need urgent attention.[8]

In this study, an assessment was performed on how the various conditions diagnosed were managed. Caries restoration and endodontic procedures were the most frequently required treatments. The

treatments proposed were in accordance with those indicated for this type of service, eliminating pain and avoiding complications.[8] Five children did not allow dental treatment to be performed. It is possible that children appearing at a dental emergency clinic have limited dental experience. Such a demanding, perhaps painful, early or even first encounter with the dentist might be a fear-inducing dental factor.[15]

The duration of the problem presented by the patients raises concerns, since it can be a determining prognostic factor. For 34% of the children, the chief complaint was found to have started more than 30 days before the visit. In contrast, a study assessed the time lapse between luxation injuries in primary dentition and treatment. The authors found that most of the patients sought treatment after "1 day".[16] The delay in seeking treatment found in this study may be due to the fact that parents were unaware of the problem until it interfered with the child's quality of life, and luxation injuries are prone to cause bleeding and pain. Furthermore, the Dentistry School is a referral center in the town, so many of the children, including from other towns, who come to the dental emergency clinic have had previous dental consultation in places such as private practices and health care centers, with no definitive resolution of the problem. The fact that some children come from other towns and many live on the outskirts of town, far from the facility, contributes to this situation.

In total, 123 children were using medication when they came to the university. Of these, 104 children (84.55%) had received over-the-counter medications before the dental visit, and only 19 (15.45%) of them had prescriptions. Of these children, 27 (18.00%) were taking antibiotics. Reports in the literature show concern regarding the high rate of the use of antibiotics to manage urgent treatment of infections caused by caries.[5,17] Antibiotics were not prescribed at any dental visits, due to their limited indication for caries complications, when more localized measures should be provided.[18,19] However, other studies have shown that antibiotic prescription alone is a common treatment in emergency services.[5,7]

Despite the decline in dental caries prevalence and the efforts to improve the quality of oral health, most of the population, mainly those who do not have guaranteed dental assistance, seek dental treatment for the relief of pain and discomfort.[8] Various studies agree that the disease still accounts for the majority of dental emergencies in child patients.[8,20] In Brazil, only a few studies have assessed the demand for emergency care,[8] and this knowledge is based mainly on anecdotal information from clinicians.

It is recognized that children from low-income families tend to receive episodic or emergency dental care, while those from higher-income households will visit the dentist more regularly for preventive check-ups.[21] However, one of the limitations of this study is that no information on socio-economic conditions was collected. Further studies should assess the socio-economic profile of patients attending the dental emergency services and differences in dental service use between social classes.

Despite the decrease in caries occurrence, the present study showed that this disease is still a key cause of dental emergencies. It is expected that, over time, with a greater reduction in disease prevalence, this situation will change.

Conclusions

This study revealed that toothache due to dental caries was the most frequent complication and main source of patient complaints. A significant number of the emergency visits were due to caries in primary posterior teeth. A large number of children were brought to the dentist with complaints that had started long before and had used over-the-counter medication.

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