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Original Article

Emergency Dental Care of Children and Adolescents in Basic Health Unit and Emergency Care Unit

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Abstract

Objective: To evaluate the factors related to the dental emergency care of children and adolescents in Basic Health Units (UBS) and Emergency Care Units (UPA) affiliated with the public dental network of Curitiba, Brazil. **Material and Methods:** Cross-sectional study that evaluated 1,012 emergency cases in individuals aged up to 17 years old and with a permanent record in the Unified Health System of Curitiba. Demographic data of individuals and of services were taken from electronic medical records. Statistical analysis was performed using the chi-square test and chi-square test for linear trend ($\alpha = 0.05$), estimating the prevalence ratio (PR) (95%CI). **Results:** Of the total of emergency cases, 68.2% and 31.8% were of children and adolescents, respectively. UBS accounted for 89.7% of the cases while UPA represented 10.3%, and 12.2% of the treatments were characterized as first access to the system. Adolescents used UPAs for emergency care more often than children (PR = 1.84; 95%CI: 1.28-2.64). Among children, those with more than 1 year since the last appointment used UPAs for emergency care more often (PR = 1.86; 95%CI: 1.09-3.17). Adolescents for whom emergency care was characterized as first access to the system used UPAs more often (PR = 2.16; 95%CI: 1.04-4.46). The proximity between the UBS of origin and the UPA was associated with greater UPA utilization by both groups. **Conclusion:** UBSs accounted for most of the dental emergency treatments. Children and adolescents with a poorer connection with UBSs and those who lived near an UPA had a higher prevalence of UPA utilization for emergency care.

Keywords: Pain; Oral Health, Healthcare System; Child; Adolescent.

Introduction

Since 2003, with the advent of the Smiling Brazil Program, oral health has been on the list of priorities of the Brazilian federal government [1]. This initiative is an integral part of the National Policy on Oral Health [2], which seeks to broaden and qualify oral healthcare at all levels, including highly complex treatments [3]. One of its basic principles is to give immediate priority to patients presenting with pain, infection, and suffering.

National Policy on Oral Health also recommends that the oral health work process be organized so as to guarantee emergency treatment in the primary health care setting and guarantee complementary care in other health facilities (emergency care unit, emergency departments, and hospitals) [3].

This public network of dental emergency services is quite important given the high prevalence of oral disorders in the Brazilian population [4], which are more often than not chronic [5], but likely to become acute.

Children and adolescents deserve special attention. In Brazil, the most recent epidemiological survey into oral health revealed that almost 25% of the interviewed individuals complained of toothache in the last 6 months and that the last time approximately 15% of the respondents went to see a dentist because of pain. The survey also showed greater utilization of public dental services by children and adolescents [4]. In the pediatric population and among adolescents, toothache is associated with important limitations on activities of daily life and with a strongly negative impact on quality of life [6-9].

Emergency dental care by the Unified Health System (SUS) in Curitiba is provided either at Basic Health Units (UBS) or at Emergency Care Units (UPA). UPAs operate as intermediate health facilities between UBSs and hospitals, are an integral part of the SUS emergency network and, through local and regional demand based on epidemiological and assistance aspects, they can offer treatment for dental emergencies [10]. In this treatment modality, the dental procedures usually performed in children consist mainly of pulp therapies and provisional restorations [11,12]. UBSs are linked to the healthcare network, in which primary healthcare team works as close as possible to people's homes, and are characterized by a contiguous territory and an affiliated population with which they establish a connection and co-responsibility, ensuring the maintenance of health strategies and longitudinality in healthcare. Primary care of medical and dental emergencies is a characteristic of work processes in healthcare [13].

Although primary healthcare should be preferably provided at UBSs [13], some dental emergencies among children and adolescents have been referred to UPAs. Therefore, the aim of the present study was to assess the factors associated with the treatment of dental emergencies in children and adolescents seen at public UBSs and UPAs affiliated with SUS in Curitiba.

By evaluating these aspects, it will be possible to devise actions in a more appropriate manner for strengthening connections and co-responsibility, even among those who seek dental care at UPAs.

Material and Methods

Study Design and Population Selection

This was a cross-sectional study. All individuals aged up to 17 years who received emergency dental care in the public oral health network of Curitiba, Brazil, in April 2014 were selected. The oral health network established for emergency care is made up of 108 UBSs and three UPAs distributed into nine regional administrative units.

Only individuals with a permanent register in the electronic patient record system (e-health) of the Municipal Health Secretariat of Curitiba were included in the study.

Data Collection

The data were obtained from the e-health, which includes information on the whole oral health network linked to the primary healthcare program run by the Municipal Health Secretariat of Curitiba. The type of health facility (UBS or UPA) was used as dependent variable. The following information was obtained from the electronic patient records: sex, age, UBS in which the patient is registered (UBS of origin), regional administrative unit, history of previous dental care in the municipal health network, type of care provided in previous appointment (last dental appointment), and time of last dental appointment.

The type of care provided in previous appointment was dichotomized into elective or emergency. The time of last dental appointment was dichotomized into equal to or less than 1 year and more than 1 year. Age groups were categorized into children (up to 11 years and 11 months old) and adolescents (those older than 12 years). History of previous dental care in the municipal oral health network took into consideration whether the emergency care was the first one or not. The regional administrative units were grouped as having or not an UPA.

Statistical Analysis

The data were tabulated and organized to be processed by the SPSS® Statistics software (version 20.0; IBM SPSS Inc., Chicago, IL, USA). The association between type of health facility and the other covariables was assessed by the chi-square test, except for distance, which was analyzed by the chi-square test for linear trend. The prevalence ratio with the respective 95% confidence interval was included in the analysis. The significance level was set at 5%.

The distance between the patient's place of residence and the nearest UPA was determined by Google Maps (www.googlemaps.com), which provided the walking distance between the UBS of origin and the UPA, categorizing it as equal to or less than 3 km, from 3 to 7 km, and greater than or equal to 7 km.

Ethical Aspects

This study was approved by the Research Ethics Committee of the Universidade Federal do Paraná (Protocol no. 39323514.3.0000.0102).

Results

A total of 1,012 emergency cases (690 children and 322 adolescents) were treated in the oral health network of the Municipal Health Secretariat of Curitiba. The overall mean age was 9.5 years (SD= 4.7). The mean age of children was 6.8 years (SD=2.8) while that of adolescents was 15.3 years (SD=1.7). Of the total sample, 89.7% of emergency treatments were carried out at UBSs and 10.3% at UPAs. Emergency care was provided at UPAs for 14.9% of the adolescents and for 8.1% of the children. With respect to the history of dental care, 10.91% of the cases were treated as an emergency in their last appointment. The prevalence of UPA utilization for emergency care was 84% more frequent among adolescents than among children ($P=0.001$) (Table 1).

Table 1. Frequency distribution of children and adolescents treated at an emergency dental service according to sociodemographic variables, type of previous dental care, and type of health facility. Curitiba, Brazil, 2014.

Variables		Type of Health Facility				Total	p*	PR*	95%CI	
		UPA		UBS						
		n	%	n	%					
Age group	Adolescents	48	14.9	274	85.1	322	0.001	1.84	1.28	2.64
	Children	56	8.1	634	91.9	690		1		
Sex	Female	57	10.7	475	89.3	532	0.629	1.09	0.76	1.58
	Male	47	9.8	433	90.2	480		1		
Distance between UBS and UPA	Up to 3 km	52	20.9	197	79.1	249	> 0.001	4.99	2.91	8.53
	From 3 to 7 km	36	9.4	345	90.6	381	0.003	2.26	1.27	4
	> 7 km	16	4.2	366	95.8	382		1		
Presence of UPA in the regional administrative of origin	Yes	41	14.3	245	85.7	286	0.008	1.65	1.14	2.39
	No	63	8.7	663	91.3	726		1		
Emergency as 1st access to oral health services	Yes	12	9.8	111	90.2	123	0.839	0.94	0.53	1.67
	No	92	10.3	797	89.7	889		1		
Previous dental care**	Emergency	14	14.4	83	85.6	97	0.162	1.47	0.86	2.49
	Elective	78	9.8	714	90.2	792		1		
Last dental appointment**	> 1 year	35	12.4	247	87.6	282	0.169	1.32	0.89	1.96
	Up to 1 year	57	9.4	550	90.6	607		1		

*Chi-square test. Significant results at 5% in boldface. ** Considering only those who had already received dental care in the oral health network of the Municipal Health Secretariat of Curitiba. PR=Prevalence ratio; CI= Confidence interval.

Emergency care was characterized as first access to the system in 12.2% of the cases (123/1,012) – 14.9% for children and 6.6% for adolescents.

The distance between the UBS of origin and the nearest UPA was significantly associated with the type of health facility both in the general sample and among children and adolescents. Thus, the closest the UBS of origin and the UPA were from each other, the largest the preference of UPA for emergency care (Tables 1, 2 and 3).

The last appointment registered in the oral health network system was associated with the type of health facility, but only among the children. Eighty-six percent of the children who had been treated in the oral health network of the Municipal Health Secretariat of Curitiba for more than 1

year sought UPAs for emergency care compared to those who had been treated 1 year before or less than 1 year before ($P=0.023$) (Table 2).

Table 2. Bivariate analysis of type of health facility and the assessed covariates for children aged up to 11 years. Curitiba, Brazil, 2014.

Variables		Type of Health Facility				Total	p*	PR*	95%CI	
		UPA		UBS						
		n	%	n	%					
Sex	Female	26	7.5	321	92.5	347	0.547	0.86	0.52	1.42
	Male	30	8.7	313	91.3	343		1		
Distance between UBS and UPA	Up to 3 km	29	17.9	133	82.1	162	> 0.001	5.82	2.73	12.41
	From 3 to 7 km	19	7.1	249	92.9	268	0.029	2.3	1.03	5.17
	> 7 km	8	3.1	252	96.9	260		1		
Presence of UPA in the regional administrative of origin	Yes	16	8.6	169	91.4	185	0.756	1.09	0.63	1.9
	No	40	7.9	465	92.1	505		1		
Emergency as 1st access to oral health services	Yes	6	5.8	97	94.2	103	0.356	0.68	0.3	1.55
	No	50	8.5	537	91.5	587		1		
Previous dental care**	Emergency	7	11.3	55	88.7	62	0.408	1.38	0.65	2.93
	Elective	43	8.2	482	91.8	525		1		
Last dental appointment**	> 1 year	20	12.9	135	87.1	155	0.023	1.86	1.09	3.17
	Up to 1 year	30	6.9	402	93.1	432		1		

*Chi-square test. Significant results at 5% in boldface. **Considering only those who had already received dental care in the oral health network of the Municipal Health Secretariat of Curitiba. PR=Prevalence ratio; CI= Confidence interval.

A statistically significant difference in the type of health facility used for emergency care was observed only among the adolescents – those whose emergency treatment was the first access to the public dental network of Curitiba and those who had already received dental care before. Adolescents for whom emergency care was the first access to the oral healthcare system went 2.16 more often to an UPA than those who had already been treated before (Table 3).

Table 3. Bivariate analysis of type of health facility utilized for dental emergency care and the assessed covariates for adolescents aged 12 to 17 years. Curitiba, Brazil, 2014.

Variables		Type of Health Facility				Total	p*	PR*	95%CI	
		UPA		UBS						
		n	%	n	%					
Sex	Female	31	16.8	154	83.2	185	0.279	1.35	0.78	2.34
	Male	17	12.4	120	87.6	137		1		
Distance between UBS and UPA	Up to 3 Km	23	26.4	64	73.6	87	< 0.001	4.03	1.89	8.59
	From 3 to 7 Km	17	15.0	96	85.0	113	0.028	2.29	1.03	5.11
	> 7 Km	8	6.6	114	93.4	122		1		
Presence of UPA in the regional administrative of origin	Yes	25	24.8	76	75.2	101	0.001	2.38	1.42	3.98
	No	23	10.4	198	89.6	221			1	
Emergency as 1st access to oral health services	Yes	6	30.0	14	70.0	20	0.05	2.16	1.04	4.46
	Não	42	13.9	260	86.1	302			1	
Previous dental care**	Emergency	7	20.0	28	80.0	35	0.268	1.53	0.88	3.16
	Elective	35	13.1	232	86.9	267			1	
Last dental appointment**	> 1 year	15	11.8	112	88.2	127	0.37	0.77	0.42	1.38
	Up to 1 year	27	15.4	148	84.6	175			1	

*Chi-square test. Significant results at 5% in boldface. **Considering only those who had already received dental care in the oral health network of the Municipal Health Secretariat of Curitiba. PR=Prevalence ratio; CI= Confidence interval.

Discussion

Even though emergency care was provided mainly at UBSs, the use of UPAs increased among adolescents, especially among those who sought the system for the first time. It could also be noted that for a significant share of emergency care of children it was the first time they went to a dentist in a public health service. Moreover, the closer proximity between the UBS of origin and the UPA led to a larger use of UPAs for emergency dental care, both by children and adolescents.

These findings were consistent with those of several studies that demonstrated that adolescents have a higher prevalence of use of services essentially characterized as an emergency for a dental problem when compared with children [14,15]. Emergency care of adolescents at UPAs can be considered a unique opportunity for their connection with the health system as there is a decrease in the search for health services during adolescence [16] and as the presence of toothache is associated with a higher demand for dental care [17]. However, the poor integration between UPAs and UBSs [18] could be a major barrier to the referral of adolescents to oral healthcare teams in the primary health system.

As pointed out by two other studies conducted in the USA – one that assessed emergency care at a university health center and one that investigated into Medicaid beneficiaries, first access of children to oral health systems due to a dental emergency shows a remarkable rate [19,20]. Several parents/legal guardians seek first dental care for their children when they spot a problem [21,22] and there have been reports that children with worse oral health have a higher prevalence of first access to the health system during emergency care than those with a better oral health status [20]. This could be associated with the lack or insufficient number of efficient health prevention and promotion actions for a significant share of the pediatric population, especially for those children from low-income families who tend to have less access to oral healthcare [21,22] and who, in their first contact with the health system, receive care that is targeted at meeting their spontaneous demand.

A study that assessed children and adolescents who required some intervention during a dental emergency at U.S. hospitals and universities revealed that many of the patients had been treated previously through this health system less than 1 year before [6]. This finding is similar to the ones obtained in the present study, which indicated that several children and adolescents had received emergency care during their last dental appointment. This could be associated with unequal access to regular dentists [21-23], since the main problem related to toothache [8,24-27] and to the use of emergency services [11,28,29], the so-called dental caries, is a disease that can be easily prevented and treated when it is diagnosed early on during primary health care. Another important aspect concerns the type of intervention made at UPAs, as such interventions are predominantly palliative [11] and decayed teeth are left untreated, which could quickly lead to a new acute or infectious event.

Children requiring emergency care who have a history of infrequent dental appointment at UBSs are more likely to be seen at UPAs. This fact should be carefully analyzed, especially among

preschool children, because when they receive care at an UPA they might not be submitted to procedures that relieve their pain right away [11], allowing pain to persist and interfere with daily activities such as playing, eating, sleeping, and going to school [6,8,9]. Children whose last dental appointment occurred more than 1 year before should be monitored by primary oral healthcare team, thus reducing their use of UPAs.

According to a study conducted in a dental emergency service in Piracicaba, State of São Paulo, Brazil, the demand for this type of service was not influenced by the presence of oral healthcare teams in the region where patients lived, and individuals from socially underprivileged regions were the ones who used this service more often [30]. The present study showed that children and adolescents who lived closer to UPAs used these health facilities more frequently in case of dental emergencies. Since the procedures performed at UPAs can also be carried out at UBSs [29,30], aspects related to easy access, such as living nearby or having different working hours, may be associated with the higher demand for UPAs by children and adolescents, especially those from low-income families. Therefore, UPAs could be contributing to reducing unequal access to oral healthcare services.

Conclusion

UBSs accounted for most dental emergency treatments. Children and adolescents with a poorer relationship with UBSs and living close to UPAs ended up going to UPAs more often for emergency care. Unequal access or barriers to healthcare should be taken into consideration when planning dental emergency services for children and adolescents in the public health system.

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