

Original Research Article

Oral health profile of schoolers attended at the Pediatric Dentistry Clinics of the Federal University of Uberlândia

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Abstract

Introduction and Objective: To characterize the socioeconomic profile, the need for dental treatment of children from zero to 12 years of age attended at Pediatric Dentistry Clinics. **Material and methods:** We evaluated 552 dental records and verified the child's birth date, frequency of procedures performed according to tooth type and number of appointments. **Results:** The results showed that 265 (48.01%) children were females and 287 (51.99%) males, with a mean age of 4 years (± 7.5). Of the total, 168 (30.43%) were from families with family income of 1 to 2 minimum wages. A total of 279 (50.54%) children were attended in 2009, 123 (22.29%) in 2010, 150 (27.17%) in 2009/2010. There were 3,350 visits, where 1,833 teeth (1,447 deciduous and 386 permanent) were treated. Of the total number of procedures performed (946), 620 were preventive and 1,326 curative procedures. There was a difference between the preventive and curative procedures performed. **Conclusion:** It was concluded that most of the children attended were infants and preschool children, belonging to families with low socioeconomic status and the deciduous dentition received the greater number of curative procedures.

Introduction

Untreated dental caries in children has been considered the 10th most prevalent disease in the world, affecting about 621 million children [15]. In industrialized countries, it affects between 60% and 90% of preschoolers, and is very prevalent in several Asian and Latin American countries [19, 24]. In Brazil, dental caries is considered an important public health problem [20].

According to the Oral Health Epidemiological Survey conducted in 2010, at 5 years of age, a Brazilian child has, on average, 2.43 teeth with caries experience, with predominance of the carious component, which is responsible for more than 80% of the index. At 12 years of age, they have on average 2.07 teeth with caries experience [4].

The epidemiological literature is rich in evidence that there is a large inequity about tooth decay. It is demonstrated that children of a low socioeconomic group, present a higher disease severity, than those at a higher socioeconomic level [8, 9].

A country with high unemployment, low per capita income, and health indicators in alarming levels, such as Brazil, most of the population depends on the public health system, which is not adequate to meet the required demand [10]. This prevents the population to have access to the practices of prevention, early detection, and treatment of dental caries, generating an influx of patients who seek urgency services in dental care [2, 10].

Pediatric Dentistry, in its particular way of care for children, must be able to act precisely on the children's needs, as well as recognize the profile of the patient who is being treated, understand their family environment, and how it can affect the health-sickness process [21].

Consequently, health services may have an available, adequate, and comprehensive planning with information on the real situation of the population [18]. For this, the best methodology is the investigation of specific groups, which aims to identify and analyze the demand, investigate elements related to the perception of health status of the population, characterizing the demographic profile, as well as identify the main treatment needs for which the health sector should be prepared to be decisive [7].

Therefore, in order to set goals, plan and offer the patient a better care and maintenance of the

treatment performed, the aim of this study was to evaluate the socioeconomic profile and the needs of dental treatment of children attended in the Clinics of Pediatric Dentistry, School of Dentistry of Federal University of Uberlândia within a period of two years.

Material and methods

After the approval by the Committee for Ethics in Research (#544/10), this retrospective study was conducted with all dental records of children aged between zero and 12 years treated in the Pediatric Dentistry Clinics for 2 years.

The data were collected from the data sheet used in the initial appointment of the child, in which information regarding child identification, as well as socioeconomic status was collected. The child identification comprised: gender; age; place of residence; family structure – nuclear (traditional family – mother, father, and their biological or adoptive descendants) or non-nuclear (single parent family). In addition, we collected data related to the socioeconomic condition (number of family minimum wages), the frequency of procedures performed for each child, and the curative and preventive procedures for each tooth according to the dentition (deciduous and permanent) and the number of visits.

In the methodology adopted, only the procedure performed was evaluated, and this was determined after the dental clinical examination based on dmft. Preventive treatments for each tooth was the topical application of fluoride (gel and varnish) and the pits and fissures sealants. We considered curative treatment the restorative treatment (amalgam, composite resin, and glass ionomer cement restoration), restoration of anterior teeth (celluloid matrix crown) and posterior teeth (stainless steel crowns), the pulp therapies (direct pulp protection, pulpotomy, and pulpectomy), and dental extractions. Any other type of treatment was considered as other procedures.

The data were collected and tabulated by a calibrated examiner and submitted to statistical analysis. To determine the association between the variables studied, the Chi-Square test and the Correlation Coefficient of Spearman were applied with significance level of $p < 0.05$.

Results

The sample was weighed about sex, composed of 287 (51.99%) males and 265 (48.01%) females, with a mean age of 4 years (± 7.5). The distribution in absolute values and percentages according to age and sex of the sample studied is shown in table I. There was no statistically significant difference between the sex of the children and the experience of dental caries ($\chi^2=2.53$).

Table I - Age and sex in absolute values and percentages

Sex	Age (years)			
	0 to 3	3 to 6	6 to 9	9 to 12
Female	114 (48.30%)	136 (61.81%)	12 (14.63%)	3 (21.42%)
Male	122 (51.69%)	84 (38.18%)	70 (85.36%)	11 (78.57%)
Total	236 (100.0%)	220 (100.0%)	82 (100.0%)	14 (100.0%)

About the place of residence, most children, 528 (95.46%), was born and residing in Uberlândia, the other children came from neighboring cities. The analysis of results showed that children residing in the neighboring cities had a statistically higher frequency of tooth decay than those residing in Uberlândia ($\chi^2=12.90$).

In the present study, 45.0% and 38.0% of the children belonged to families with family structure nuclear and non-nuclear, respectively, and in 17.0% this information was not included on the dental record. When comparing the variables family structure and caries experience, no statistically significant difference was observed between both variables ($\chi^2= 0.08$).

As for the socioeconomic condition, 10 (1.81%) families survived with up to one minimum wage, 164 (29.71%) with one to two minimum wages, 107

(19.40%) with two and three minimum wages, 52 (9.40%) with three to five minimum wages, 5 (0.91%) above five minimum wages and in 214 (38.77%) this information was not included on dental records.

3,350 visits occurred for two years, an average of 6.06 visits per child. 279 (50.54%) children attended in the 1st year of collection, 123 (22.29%) children attended in the 2nd year, and 150 (27.17%) children received care in two years evaluated, totaling an average of 276 visits per year.

Table II displays the frequencies of experience of dental caries according to the age groups. 176 (74.58%) children in the age range between zero and 3 years old were free of caries. It was possible to observe a positive correlation between the variables age and experience of dental caries, noting a progressive increase of children presenting the disease with increasing age.

Table II - Experience of caries in relation to age in absolute values and percentages

Caries experience	Age (years)			
	0 to 3	3 to 6	6 to 9	9 to 12
Present	60 (25.42%)	141 (64.1%)	60 (73.2%)	11 (78.5%)
Absent	176 (74.58%)	79 (35.9%)	22 (26.8%)	3 (21.5%)
Total	236 (100.0%)	220 (100.0%)	82 (100.0%)	14 (100.0%)

1,442 professional prophylaxis and 884 fluoride topical applications were delivered, each child received more than one of these procedures over the 2 years, resulting in an average of 2.61 prophylaxes and 1.60 fluoride topical applications

per child. The large number of professional prophylaxis is due to the existing Protocol of Pediatric Dentistry Clinics, on the accomplishment of this procedure before the clinical examination and any other procedure.

Data were collected from 15,456 teeth, among these, 1,833 (11.86%) required some type of treatment. There were 1,946 procedures, being 1,447 in deciduous and 386 in permanent teeth, the same tooth may have been subjected to more than one procedure. Of all the procedures performed, 1,559 (80.11%) were in the deciduous dentition and 387 (19.89%) in the permanent dentition. Tables III and IV show the absolute values and percentages of preventive and curative procedures made in accordance with the teeth (deciduous and permanent). There were statistically significant differences between the frequencies: the highest frequencies were related to the preventive procedures on the permanent teeth. In the deciduous teeth, the highest frequencies were related to the curative procedures.

Table III - Preventive and curative procedures in the deciduous and permanent teeth in absolute values and percentages

Procedures	Deciduous teeth	Permanent teeth	Total
Topical application of fluoride	29 (1.49%)	3 (0.15%)	32 (1.64%)
Pit and fissure sealant	287 (11.2%)	301 (16%)	588 (30.22%)
Restoration Class I	554 (28.47%)	44 (2.26%)	598 (30.73%)
Restoration Class II	218 (11.20%)	15 (0.77%)	233 (11.82%)
Restoration Class III	28 (1.44%)	0 (0.00%)	28 (1.44%)
Restoration Class IV	29 (1.49%)	6 (0.31%)	35 (1.80%)
Restoration Class V	20 (1.03%)	1 (0.05%)	21 (1.08%)
Preventive restoration	15 (0.77%)	4 (0.21)	19 (0.98%)
Stainless steel crowns	69 (3.54%)	5 (0.26%)	74 (3.80%)
Celluloid matrix crown	37 (1.90%)	0 (0.00%)	37 (1.90%)
Direct pulp protection	4 (0.21%)	0 (0.00%)	4 (0.21%)
Pulpotomy	36 (1.85%)	0 (0.00%)	36 (1.85%)
Pulpectomy	91 (4.68%)	0 (0.00%)	91 (4.68%)
Endodontic treatment	0 (0.00%)	5 (0.26%)	5 (0.26%)
Dental extraction	110 (5.65%)	1 (0.05%)	111 (5.70%)
Interim Therapeutic Restoration (IRT)	17 (0.87%)	0 (0.00%)	17 (0.87%)
Containment	15 (0.77%)	2 (0.10%)	17 (0.87%)
Total	1.559 (80.11%)	387 (1%)	1.946 (100.0%)

Table IV - Numerical and percentage distribution of preventive and curative procedures in deciduous and permanent teeth

Teeth dt/PT	Procedures						Total	
	Preventive		Curative		Other			
51/11	2 (0.13%)	2 (0.52%)	86 (5.52%)	9 (2.33%)	4 (0.26%)	0 (0.00%)	92 (5.91%)	11 (2.85%)
52/12	1 (0.06%)	1 (0.26%)	55 (3.53%)	2 (0.52%)	5 (0.32%)	0 (0.00%)	61 (3.91%)	3 (0.78%)
53	0 (0.00%)	-	27 (1.73%)	-	0 (0.00%)	-	27 (1.73%)	-
54/14	21 (1.35%)	1 (0.26%)	105 (6.74%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	126 (8.09%)	1 (0.26%)
55/15	51 (3.27%)	2 (0.52%)	89 (5.71%)	0 (0.00%)	1 (0.06%)	0 (0.00%)	141 (9.04%)	2 (0.52%)
16	-	69 (67%)	-	15 (3.88%)	-	0 (0.00%)	-	84 (21.70%)
17	-	1 (0.26%)	-	0 (0.00%)	-	0 (0.00%)	-	1 (0.26%)
61/21	1 (0.06%)	2 (0.52%)	94 (6.03%)	4 (1.03%)	4 (0.26%)	0 (0.00%)	99 (6.35%)	6 (1.55%)
62/22	1 (0.06%)	0 (0.00%)	53 (3.40%)	3 (0.78%)	4 (0.26%)	0 (0.00%)	58 (3.72%)	3 (0.78%)
63	0 (0.00%)	-	24 (1.54%)	-	2 (0.13%)	-	26 (1.67%)	-
64/24	24 (1.54%)	1 (0.26%)	95 (6.09%)	0 (0.00%)	1 (0.06%)	0 (0.00%)	120 (7.69%)	1 (0.26%)
65	59 (3.78%)	-	92 (5.90%)	-	1 (0.06%)	-	152 (9.74%)	-
26	-	71 (67%)	-	18 (4.65%)	-	0 (0.00%)	-	89 (18.25%)

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Teeth dt/PT	Procedures						Total	
	Preventive		Curative		Other			
71/31	1 (0.06%)	0 (0.00%)	11 (0.71%)	0 (0.00%)	1 (0.06%)	1 (0.26%)	13 (0.83%)	1 (0.26%)
72	0 (0.00%)	-	7 (0.45%)	-	1 (0.06%)	-	8 (0.51%)	-
73	2 (0.13%)	-	9 (0.58%)	-	0 (0.00%)	-	11 (0.71%)	-
74/34	20 (1.28%)	2 (0.52%)	116 (7.44%)	0 (0.00%)	1 (0.06%)	0 (0.00%)	137 (8.78%)	2 (0.52%)
75/35	45 (2.90%)	1 (0.26%)	96 (6.16%)	0 (0.00%)	1 (0.06%)	0 (0.00%)	142 (9.12%)	1 (0.26%)
36	-	69 (67%)	-	17 (4.39%)	-	0 (0.00%)	-	86 (22.21%)
81/41	1 (0.06%)	0 (0.00%)	12 (0.77%)	0 (0.00%)	0 (0.00%)	1 (0.26%)	13 (0.83%)	1 (0.26%)
82	0 (0.00%)	-	7 (0.45%)	-	0 (0.00%)	-	7 (0.45%)	-
83	0 (0.00%)	-	17 (1.09%)	-	1 (0.06%)	-	18 (1.15%)	-
84/44	35 (2.25%)	2 (0.52%)	113 (7.25%)	0 (0.00%)	3 (0.19%)	0 (0.00%)	151 (9.5%)	2 (0.52%)
85/45	52 (3.34%)	1 (0.26%)	103 (6.61%)	0 (0.00%)	2 (0.13%)	0 (0.00%)	157 (10.08%)	1 (0.26%)
46	-	79 (51.1%)	-	13 (3.36%)	-	0 (0.00%)	-	92 (23.77%)
Total	316 (20.27%)	304 (78.55%)	1.211 (77.70%)	81 (20.93%)	32 (2.03%)	2 (0.52%)	1.559 (100.0%)	387 (100.0%)

dt: deciduous teeth; PT: permanent teeth

Discussion

The characterization of the patient profile and the identification of the needs of treatment are fundamental in planning and evaluation of health services [7]. Therefore, this retrospective study, evaluated data from 552 dental records of children from zero to 12 years of age to obtain knowledge on the profile and dental treatment needs of the patients attending in the clinics of Pediatric Dentistry. The used methodology was chosen due to the low cost, ease of access to data and contain a several information about a single individual and their social context. According to the literature, other studies [2, 8, 11, 12, 21] also used similar methodology. However, the number of dental records evaluated in the present study was higher than those of the sample of studies that used the same methodology [2, 7, 11, 21].

In the present study, the sample was weighed about sex, 51.99% and 48.01% of males and females, respectively and the average age was of 4 years (± 7.5), which was different from other studies [2, 12, 17, 21], in which the mean age was higher ranging from 7.6 to 8.66 years. The data from the present study were collected from elective visits, and other studies traced the profile from urgency care [12, 17].

Most children, 528 (95.46%), was born or lived in Uberlândia. The results showed that the children residents in nearby cities had a higher frequency of tooth decay than those residents in the Uberlândia. These results can be justified by the presence of the School of Dentistry in the city of Uberlândia, where early and quality dental care

is offered to children in the early childhood. In addition, Uberlândia has fluoridated water, which is considered an important public health measure, and can be regarded as the most effective method of controlling tooth decay, when considered the health scope [5].

The family structure can significantly affect the caries experience [25], however, in this study it was found that there was a greater number of families with nuclear structure (45.0%), but there was no relation with the caries experience. These results are corroborated by the findings found by Sujlana and Pannu [22], in which it was observed that 66.0% of the sample belonged to the structure of the nuclear family and this variable also did not influence the experience of the child's caries. These authors have justified this lack of association between the variables, because regardless of family structure, the parents invest time and effort in caring for the children. Another study assumes that the existence of family rearrangements (non-nuclear structure) are obstacles to the dental health care of children in the first years of life [16].

The families of this present study showed a low socioeconomic level. This is a condition representing a large part of the Brazilian population and a recognized risk factor for dental caries, since the prevalence of dental caries is significantly worse for this group [3, 8, 9]. Results similar to those of this present study were found in other studies in the literature [2, 7, 11, 21]. However, we highlight the important role of the Pediatric Dentistry Clinics of Federal University of Uberlândia in offering free dental care, preventive and curative treatment, from zero to 12 years of age, accompanying the child

during all stages of dental development, especially at the time of increased risk of dental caries.

Although there has been a global decline in dental caries in childhood, the disease remains a serious public health problem in Brazil and in most parts of the world [8, 15, 20] with the polarization of the disease in the less privileged groups of the society [3]. This question still manifests itself in a critical way in other specific age groups, as for example children at early childhood [6], which is considered to be the greatest risk of involvement by the disease [22].

Among children aged between zero and 3 years, 176 (74.58%) were caries-free, unlike the results observed in another study, in which 60.8% of the children between 2 and 3 years-old had experience of caries [11]. The low experience of this age group in the present study can be justified by the implementation of the Baby Clinics, in which the philosophy is that the first dental visit happens before the first year of life, providing an early dental care. Children above this age group, who did not receive early treatment and who needed curative treatment, were referred to the Pediatric Dentistry Clinic through the Urgent Care Unit, Basic Health Units and the Family Health Program.

The results of the SB Brazil 2010 showed a decrease of 18.0% and 25.0% of the experience of dental caries in children of 5 and 12 years respectively [4]. However, the present study observed that most of children in the age range of 3 to 6 years had caries experience and children aged from 9 to 12 years had the lowest caries experience.

The deciduous dentition was more affected by caries, considering the large number of curative procedures performed, these results agree with those reported by other studies [2, 13, 21]. The age group most affected by the disease was 3 to 6 years, disagreeing with the studies by Figueiredo *et al.* [12] in which the age group most affected was 7 to 12 years and the study by Ferreira *et al.* [11]. Although it has been observed that there was a greater amount of curative procedures performed in the deciduous teeth than in permanent teeth, the procedure of pit and fissure sealant was conducted in a large number of teeth 287 (14.75%). Unlike other studies [2, 12] which obtained a greater number of pulp therapies and tooth extractions performed in the deciduous teeth.

Dental caries was more prevalent in the maxillary than in the mandibular teeth, since the total number of curative procedures were 743 (59.77%) performed in the maxilla and 500 (40.22%) in the mandible, agreeing with the findings of Amorim *et al.* [2], in which the maxilla was also

the most affected when compared to the mandible. In the deciduous dentition, the teeth most requiring curative procedures were the mandibular primary first and second molars and the central incisors, which is consistent with the results of other studies [2, 21].

In permanent teeth, with respect to the types of procedures performed, there was a greater number of preventive procedures. 301 (15.47%) of pit and fissure sealant were performed, agreeing with the results found by Sommer *et al.* [20], where 95% of the permanent first molars were sealed. This can be justified considering the risk and the activity of dental caries in child, because when the first permanent molar is present in the oral cavity, the pit and fissure sealant is indicated in most cases. This approach is adopted based on scientific evidence, which indicates that the individual dental areas have different susceptibilities to tooth decay and this varies during the irruption [14]. Furthermore, a recent study showed that first molars partially erupted presented a higher risk of tooth decay than the molars in complete occlusion [26]. The posterior permanent teeth which received a higher amount of preventive and curative procedures were the maxillary and mandibular first molars, and those who least needed were the right maxillary premolar and second molar.

About other procedures, it was possible to observe a small number of procedures for Interim Therapeutic Restoration (n=17;0.87%) and that this procedure was performed only in the deciduous teeth. On the other hand, tooth splinting was performed in most of deciduous teeth 15 (0.77%), this can be explained by the high prevalence of trauma in the deciduous dentition, which occurs as very often due to the young age and falls.

We found negative correlations between income and family structure with the caries experience. In the age range from zero to 3 years, there were a greater number of children without caries experience (74.58%), and in the age ranges from 3 to 6 years, 6 to 9 years, and 9 to 12 years, there was a greater number of children with caries experience, 64.10%, 73.20% and 78.5%, respectively. Statistically significant differences were found between the frequency of preventive and curative procedures between the two dentitions, that is, in the deciduous dentition, the higher frequencies were concerning to restorative procedures, while in permanent teeth to preventive procedures.

Therefore, special attention should be given to the deciduous dentition, because the investigation of the oral health of pre-school children, pointing to treatment needs and towards conducting

educational-preventive action planning is of great importance, considering the high prevalence of dental caries in this age range [13]. The maintenance of preventive programs is necessary to promote and maintain oral health. In this way, the first visit happens before the first year of life and regular visits to the dentist are essential for preschoolers for to motivate and adopt a healthy life style, since it is in childhood that food habits and hygiene are incorporated [1].

Conclusion

According to the data obtained in the present study, it was observed that most children who received treatment belonged to families with low socioeconomic status. The experience of caries was higher in the age range of 3 to 6 years and, therefore needed a greater number of curative procedures. The deciduous dentition was more affected by caries, and more curative procedures were delivered, especially in the maxillary and mandibular 1st and 2nd molars, unlike the permanent dentition which was loss affected by dental caries and, therefore received more preventive procedures.

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