Access of Children to the Oral Health Service

Moimaz SAS, Saliba O, Lima DP, Joaquim RC, Rovida TAS, Garbin CAS

Department of Infant and Social Dentistry, Araçatuba Dental School, Univ Estadual Paulista - UNESP, José Bonifácio Street, 1193 - Araçatuba, SP, Brazil.

Abstract

Background: Dental caries still affect a considerable proportion of children, however the epidemiological profile of oral diseases is changing, social inequalities cause different disease patterns. The same problems occur for the use of services, which damage those who are more susceptible to oral diseases in numerous ways.

Aim: To verify the association between the variables: socioeconomic condition, oral health and access to dental services providing oral health care for preschool children.

Methods: The study population consisted of 2,759 children up to 6 years-old. The clinical exams followed the World Health Organization (WHO) criteria. The data were collected using a self-applied questionnaire, answered by the carers of children, with questions about socioeconomic variables and access to dental services.

Results: In terms of social class, a majority of the subjects came from the middle socioeconomic level (babies, 84.7%; children, 82.8%). Babies who had caries, 48.4% and 67.2% of the children that had decayed teeth had access to dental service. There was a association between the variables: the reason for the last dental appointment and the parent's perception of the treatment need of their children (babies p=0.0004 and children p<0.0001); the parent's perception of the treatment need of their children and the oral health condition (babies p=0.0008 and children p<0.0001); access to dental services and oral health condition (babies p=0.0021 and children p<0.0001). Conclusion: The majority of the population studied sought care from public dental service and was from the middle class.

Key Words: Oral health, Child, Dental caries

Introduction

In many countries, socioeconomic health levels have been found to be independent of the nature, coverage, and efficiency of the national health care system. The socioeconomic levels are also reflected in the conditions of access and the quality of the services offered [1]. Scientific studies have demonstrated that individuals with low social economic levels have less access to oral health services [2,3].

Dental caries still affect a considerable proportion of children however the epidemiological profile of oral diseases is changing, as evidenced by the reduced prevalence and severity of caries in some developed countries it should be emphasized that these improvements have occurred unequally across the national populations [4-7]. In spite of the progress made in oral health prevention and treatments, there continues to be inequalities [8]. Social inequalities cause different disease patterns. The same problems occur for the use of services, which damage those who are more susceptible to oral diseases in numerous ways [9].

The last epidemiological survey of oral health in Brazil, conducted in 2010, showed an improvement in the dental condition of the overall population, though it is still not at a satisfactory level. The results indicate that there has been a 17% reduction in deciduous tooth decay in 5-years-old children. The decayed-missing-filled teeth (dmf-t) caries index value for Brazilian 5-years-old, which in 2003 was 2.8, progressed to 2.3 by 2010. However, 80% of these teeth were not treated, showing a lack of access to adequate dental services. The children of 12 years-old have obtained a reduction of 26% in the decayed-missing-filled (dmf-t) caries index, when went from 2.8 in 2003 to 2.1 in 2010, giving Brazil one of the lowest dmf-t index values for this age group in South America-with only Chile (dmf-t = 1.9) performing better [10,11].

These data are influenced by cultural and political issues in addition to the characteristics of the health care system [12]. Therefore, the access to dental services is directly related to a population's perception of the importance of oral health, in addition to other factors, such as fear of pain, the need for treatment, and aesthetics [13].

Although the importance of oral health is well recognized in Brazil, an important part of the Brazilian population does not have access to dental services [14]. Parents' socioeconomic status and attitudes influence their children's standard of oral hygiene [15]. It is essential to emphasize that during childhood the new knowledge and habits are acquired and in the future, they can influence health standards and behavior [16]. Some studies in the area of access to health services have been published, Yet there is still little research about access to oral health services in Brazil [6,17]. For this reason, this study aimed to evaluate the association between socioeconomic conditions, access to dental services, and the oral health situation of young children in a city of São Paulo state, Brazil. Because it is believed, that socioeconomic status influences access to dental care and oral health.

Methodology

A cross sectional epidemiological study was performed in 0 to 6-years-old male and female children who lived in Araçatuba during 2010. Araçatuba is a city in São Paulo state, Brazil with 181,618 inhabitants. The income per capita is approximately

Corresponding author: Suzely Adas Saliba Moimaz, Department of Infant and Social Dentistry, Araçatuba, School of Dentistry, University of Estadual Paulista, UNESP, José Bonifácio Street, 1193 - Araçatuba, SP, Brazil, 16015-050; Tel: 55-18-3636-3249/ Fax: 55-18-3636-3332, e-mail: sasaliba@foa.unesp.br

US$ 7,355.00/year, the child mortality rate is 10.29/100, and the Human Development Index is 0.848. Since 1972, the city has added 0.6 to 0.8 mg/l fluoride to the public water supply.

The sample consisted of children 0-6 years old, from all public preschools in Araçatuba (n = 57) were enrolled (n = 7058). The tests were conducted during the year August and October 2010. In this study, parents and/or carers of children needed to sign an Informed Consent Forms and they had to correctly fill out the questionnaire. Only those were excluded whose parents' failure to provide informed consent, absence from the preschool on the day of examination or refusal of the oral examination.

The final sample consisted of 2759 children. The study population was divided into two groups: babies of 0–3 years-old (n=766) and children of 4–6 years-old (n=1993).

The clinical exams were performed by five teams of dental surgeons following the diagnostic criteria recommended by the World Health Organization (WHO) [18]. Biosecurity precautions were adopted to protect the researchers and examination participants. The examinations were performed in schoolyards under natural light at a standardized time of day, utilizing a dental mirror and the Community Periodontal Index (CPI) probe developed by the WHO. In addition, the examiners were previously calibrated through the consensus technique (Kappa = 0.842). The socioeconomic data were collected through a self-administered questionnaire, answered by the carers of children, with open and closed questions about access to dental services and variables relating to gender and age of the young children, and socioeconomic conditions of the family. To determine economic class, we used the Standard Criterion for Brazil 2008, as proposed by the Brazilian Association of Research Firms (ABEP) [19]. This classification takes into account the amount of movable and chief of years of family education. Has five categories of description (A1, A2, B1, B2, C1, C2, D and E), in descending order, where A1 is the highest class and are the most disadvantaged.

The questionnaire answers were analyzed using Bioestat software, version 5.3. The questionnaire answers were analyzed using Bioestat [19] software, version 5.3. For the statistical analysis, the eight socioeconomic levels, devised by the ABEP [20], were regrouped in quartiles in the following way: A1, A2 and B1 as the High Economic Level (H); B2, C1 and C2 as the Middle Economic Level (M), D and E as the Low Economic Level (L). For the different types of dental treatments, we did a regrouping of the categories to divide them into preventive treatments (prevention) and curative treatments (pain, extraction, treatment, etc.) We divided the types of dental service into public and private (plan or agreement, private dental appointment, etc.). The same occurred with the satisfaction of the health services (regular and bad). We used the Chi-Square test and Fisher's Exact test with a significance level of 5% to verify associations between the variables.

The Research Ethics Committee of the Araçatuba Faculty of Dentistry, Universidade Estadual Paulista, Brazil (hearing FOA 01577/2010) approved the research, according to the Helsinki declaration and Nuremberg Code, respecting the National Health Council's Research Norms for human subjects (Res. CNS 196/96) [21].

Results

A detailed sociodemographic profile of the study population is provided in *Table 1*. Briefly, a total of 2,759 minors involved in the study, including 1,384 (50.2%) girls and 1,375 (49.8%) boys. Slightly more than one-quarter (27.8%) of the study sample were placed in the babies and the remaining 72.2% were placed in the children. In terms of social class, a strong majority of the subjects in both groups came from the middle socioeconomic level (babies, 84.7%; children, 82.8%). The oral health status of the population was good, 82.6% of the babies didn´t have teeth with caries and 58.8% of the children were free of caries (*Table 1*). The average dmft index value was 0.53 for the babies and the average dmft value was 1.53 for the children.

As shown in *Table 2*, 66.4% of the babies' parents and 73.7% of the children's parents believed that their children

***Table 1**. Sociodemographic distribution of 0–3-years-old babies and 4–6-years-old children enrolled in the study.*

Variable	Babies		Children	
	n	%	n	%
Gender				
Male	390	50.9	1016	50.9
Female	376	49.1	993	49.1
Total	**766**	**100**	**1993**	**100**
Socioeconomic level				
Class A1	-	-	-	-
Class A2	4	0.5	13	0.6
Class B1	30	4	71	3.6
Class B2	183	24	407	20.3
Class C1	281	36.7	743	37.2
Class C2	183	24	507	25.3
Class D	77	10.1	213	10.6
Class E	6	0.3	23	1.5
No response	2	0.4	16	0.9
Total	**766**	**100**	**1993**	**100**
Oral health condition				
With tooth decay	133	17.4	821	41.2
Free of caries	633	82.6	1172	58.8
Total	**766**	**100**	**1993**	**100**

***Table 2.** Distribution of the parent's perception of the treatment need of their children, tooth pain in the last 6 months, and access to dental care.*

Variable	Babies		Children	
	n	%	n	%
The parent's perception of the treatment need of their children				
Yes	509	66.4	1469	73.7
No	212	27.1	384	19.3
No response	45	5.9	140	7
Total	**766**	**100**	**1993**	**100**
Tooth pain in the last 6 months				
Yes	67	8.8	436	21.9
No	684	89.3	1532	76.9
No response	15	1.9	25	1.2
Total	**766**	**100**	**1993**	**100**
Had already been to the dentist				
Yes	286	37.4	1211	60.8
No	477	62.3	777	38.9
No response	3	0.3	5	0.3
Total	**766**	**100**	**1993**	**100**

needed some type of dental treatment. When asked if their children had experienced tooth pain in the last 6 months, 89.3% of the babies' parents and 76.9% of the children's parents said that their children didn't have tooth pain. The majority of the babies 62.3% never went to a dentist, although 60.8% of the children had already did some dental treatment (*Table 2*).

As detailed in *Table 3*, the babies between 36 and 48 months had more access to dental service (64.3%). These babies that had access to dental service, 51.9% were free of caries. This access was more common in the age groups of 5 years-old (37.3%) and 6 years-old (37.2%). The age group of 5 years-old (35.2%) and the age group of 6 years-old (29.7%) were free of caries. Only 65/133 (48.4%) of the babies (0-3 years-old) and 67.2% of the children (4-6 years-old) that had decayed teeth had access to dental service.

Among the participants of the research who had access to dental services, the large majority in both groups had sought care from the public service. According to the parents, the main reason for the last dental appointment was for prevention. The overwhelming majority of carers in both groups felt that the quality of treatment they had received was good (*Table 4*).

Our analysis of associations between the variables of socioeconomic status, satisfaction with services received, reason for the last dental appointment, location of treatment, access, and oral health condition revealed some similarities for the babies group versus the children group.

For the both groups the private service were more pleased (satisfaction with services received) than those who received public services (Babies p=0.0115*; Children p=0.0003). In two groups, the reason for the last dental appointment (Babies p=0.0233; Children p<0.0001), for the last visit local showed significant associations with both the satisfaction service received.

The association between the parent's perception of the treatment need of their children and others variables are shown in *Table 5*.

Socioeconomic status had significant associations with reason for the last dental appointment and the parent's perception of the treatment need of their children in the

Table 3. *Distribution of babies and children, by age, access to dental services, and their oral health status.*

Age	Already accessed dental services*				Free of caries				With tooth decay		Access to dental services with tooth decay	
	Yes		No		No		Yes					
	n	%	n	%	n	%	n	%	n	%	n	%
0 –l 12 months	4	1.4	11	2.3	-	-	16	2.5	-	-	-	-
12 –l 24 months	29	10.1	63	13.2	4	3	88	13.9	4	3	1	1.5
24 –l 36 months	69	24.2	158	33.1	27	20.3	201	31.7	27	20.3	6	9.3
36 –l 48 months	184	64.3	245	51.4	102	76.7	328	51.9	102	76.7	58	89.2
Total	**286**	**100**	**477**	**100**	**133**	**100**	**633**	**100**	**133**	**100**	**65**	**100**
4 years	308	**25.5**	298	38.3	198	24.1	410	35.1	198	24.1	107	19.4
5 years	452	**37.3**	295	38	334	40.7	414	35.2	334	40.7	230	41.6
6 years	450	**37.2**	185	23.7	289	35.2	348	29.7	289	35.2	215	39
Total	**1210**	**100**	**778**	**100**	**821**	**100**	**1172**	**100**	**821**	**100**	**552**	**100**

*Three parents (0.39%) did not respond to the question in the babies group and 5 parents (0.25%) did not respond to the question in the children group.

Table 4. *Distributions of parents' responses with respect to the type, reason for, and quality of the last dental appointment.*

Variable	Babies		Children	
	n	%	n	%
Last appointment				
Public service	203	70.9	898	74.2
Private	33	11.6	156	12.9
Agreement	25	8.8	80	6.7
Other	24	8.1	70	5.7
Not response	1	0.3	7	0.5
Total	**286**	**100**	**1211**	**100**
Reason for last appointment				
Prevention	200	69.9	587	48.4
Pain	16	5.6	180	14.8
Extraction	3	1.2	85	7.2
Treatment	29	10.1	234	19.3
Other	36	12.5	111	9.2
No response	2	0.7	14	1.1
Total	**286**	**100**	**1211**	**100**
Quality of treatment received during last appointment				
Good	259	90.6	1016	83.9
Regular	20	6.9	141	11.7
Bad	6	2.2	46	3.8
No response	1	0.3	8	0.6
Total	**286**	**100**	**1211**	**100**

Table 5. *Association between of the parent's perception of the treatment need of their children and economic level, access to dental care, Reason for last appointment and dmft.*

Babies				**Children**		
	The parent's perception of the treatment need of their children		**p**	**The parent's perception of the treatment need of their children**		**p**
Economic Level	Yes	No		Yes	No	
High	135	70	0.1604	328	132	< 0.0001*
Middle	190	77		557	138	
Low	185	65		573	114	
Had already been to the dentist						
Yes	187	88	0.2720	876	250	0.0618*
No	321	124		591	134	
Reason for last appointment						
Prevention	117	73	0.0004*	370	177	< 0.0001*
Treatment	69	14		499	72	
dmft						
by caries experience	107	22	0.0016*	679	91	< 0.0001*
Freedom	396	182		788	294	

*Chi-square test ($p \leq 0.05$)

children group, but not the babies group. Access to dental services significant associations with oral health condition (Babies p=0.0021; Children p<0.0001).

There was no statistically significant association between the variables of satisfaction with services received and socioeconomic status, nor for the variables of the parent's perception of the treatment need of their children and access to dental services.

Discussion

The two groups in this study were similar in terms of gender and social class. Nevertheless, in 2008, Krammer's findings observed an increase in DMF-T index values with the increased of age [22]. This finding is likely due to an accumulation of sociobiological risks that continually act with advancing age as their progression come from factors that are not only social, but also nutritional and dietary [23,24].

While the majority of parents reported believing that their children need some type of dental treatment, the babies' parents searched for these services less than those of the 4–6-year-old children. We also observed that, among the babies who had used the services, the majority were 3-year-olds (36–48 months). However, the American Academy of Pediatric Dentistry (AAPD) recommends that the first dental appointment should occur earlier, between 6 months and 1 year of age, so that the dental care providers can identify risk factors for caries and promote health education at home [25].

An important issue of this situation is that among the babies who had caries, the majority did not have access to dental services; the treatment rate was substantially better in the children group than in the babies group. It should be noted that although the age of access to dental care was later in our study than in other studies, such as those performed by Kramer et al. and Barros & Bertoldi, the access rates in those studies (13% and 22.9%, respectively) were much lower than those obtained in the present research [14,22].

Since dental caries is avoidable, parents and/or caregivers should understand that their children's oral health is their responsibility and cannot be completely transferred to the oral health team; they play a fundamental role in the prevention and promotion of their children's health [26]. This suggests that dental surgeons restrict their services to the delivery of emergency care and caries treatment whereas it is clear from present study that parents expect that their children received preventive care also.

In relation to the carer's perception about tooth pain in children, the majority of guardians reported that their babies/children did not have any pain in the past 6 months. This perception may justify the large search on preventative dental services, which the early access to dental service provide a effective, efficient, and low-cost treatment Noro et al. results were distinct from ours as they founded that children's access to dental care is irregular, possibly due to dental emergencies or the emergence of specific problems that required attention [23,27].

We observed a high prevalence of access to public dental services, and the majority of the caregivers were satisfied with the services available, suggesting that these services are generally effective. There are significant association between the quality of service received and the location of the last appointment confirmed these data. This study found that the majority of the studied population searched for public dental services, because the research used a population of children enrolled in public schools. This study did not include children enrolled in private schools, where parents would be expected to be of a higher socioeconomic level and more likely to have access to private dental care.

A study performed by Mello et al. that was designed to examine the factors associated with caries in pre-school children in Recife, Brazil found that among those who sought for dental treatment from public services, most needed treatment to relieve pain and/or required emergency care related to caries [23]. However, the present observations that the majority of the parents believed that their children needed some kind of dental intervention despite the fact that a majority were free of caries (i.e. many had sought preventative care) indicates that the dental surgeon was only searched for curative treatments and emergencies. This study shown the opposite, the preventive treatments occurred exceeded the curative treatments.

In conclusion, our study indicates that among the families in our study population, which consisted of a majority of middle-class people whose children were free of caries, the type of dental service most utilized is public. Furthermore, our findings indicate that the quality of oral health of 0–3 year-olds and 4–6 year-olds depends not only on access to good dental treatment-which the local government should provide-but it is important to highlight that the carers should give more value to the deciduous tooth and the preventive dental treatment.

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