

Original Article

Access to Dental Services among 6-to-12-Year-Old Children in Brazil: An Exploratory Study Based on the National Household Sample Survey, 2008

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Abstract

Objective: To analyze the access and use of dental services among 6-to-12-year-old children in Brazil. **Material and Methods:** A cross-sectional study was conducted based on micro-data from the National Household Sample Survey carried out by the Brazilian Institute of Geography and Statistics in 2008. A total of 48,854 children were included and confidence intervals of 99% (CI 99%) were considered for the prevalence rates of the outcomes. The statistical significance of differences was analyzed using these intervals, level of 1%. **Results:** A total of 79.3% (CI 99%: 79.3%-79.3%) of children had been to the dentist at least once in their lives. A total of 62.1% (99% CI: 62.1%-62.1%) of children from families earning up to one quarter the monthly per capita household income and 95.5% (99% CI: 95.4-95.5) of those from families earning two or more times the minimum wage were among the 25,161 children that had been to the dentist in the previous year. Regarding region of residence, 68.2% (CI 99%: 68.2%-68.2%) of children from the northeastern region of the country and 89.5% (CI 99%: 89.5%-89.6%) of those from the southern region had been to the dentist. **Conclusion:** A considerable number of Brazilian children had never been to the dentist by the year 2008. In addition, individuals living in the southern region and from families with greater monthly household income were among those who had already been to the dentist. These data provide evidence for guiding public policies and actions aimed at minimizing the lack of dental follow up among Brazilian children.

Keywords: Health Inequalities; Public health; Child; Health services accessibility; Oral health.

Introduction

Oral health is of utmost importance in the quality of life of all individuals. In this context, dentistry has evolved from a curative focus of oral health to a more dynamic view of the health-disease process determinants. Impacts in this change in attitude lead to early measures and strategies in dental care to prevent and / or reduce the consequences of the main problems that affect the oral health of the population [1].

The concept of "access to health services" has the broader meaning of representing the degree of match between health needs, demand and utilization of health services. It implies the access to the health system without physical, financial or other obstacles [2]. It has been recommended that the ideal age at first dental visit is between 6 and 12 months at the time of eruption of the first primary tooth [3,4]. This statement is justified by the importance of early dental care, which is related to education, exchange of experiences and life and performance of preventive procedures.

The parameters of healthcare coverage for the Unified Health System (SUS), used by the Ministry of Health for the planning of dental resources are of one dental visit every two years up to two dental visits per year and according to the guidelines of the National Oral Health Program, the access to the system should occur at six months of age. Nevertheless, a significant portion of the population does not use dental services at the recommended frequency. The National Household Sample Survey (PNAD), conducted in 2003, revealed that 15.9% of Americans (27.9 million people) had never undergone a dental appointment. When considering the population of children and adolescents, it was found that 81.8% of children less than five years and 22.1% in the age group 15-19 years had never visited the dentist [5]. From the point of view of access to dental services, the SUS is an agent of great importance, but still with a proportionately small role [6].

Consequently, the reality of Brazil is alarming regarding the oral health of the child population. In 1986, the decayed, missing and filled teeth (DMFT) index in Brazil for children aged 12 years was 6,7 [7]. This index showed a significant decrease in the following ten years, in 1996, reaching 3 [7], to 2.78 in 2003 [5] and 2.1 in 2010 [8]. The target set by the WHO for the year 2000 was 3, but it is still far from first-world countries such as the UK (0,9) [9].

Surveys like these are important because they allow, from a perceived need, the organization of public policies for the promotion of health in order to inform and drive the population to early dental care [1]. Also, they allow the identification of inequalities in access to health services, supporting the proper planning of oral health programs through government agencies [10].

Thus, the aim of this study was to describe the access and utilization of dental services in Brazil among children aged 6-12 years according to sociodemographic variables, as well as the frequency and local demand for dental care and the form of financing among children that had have used dental services based on data from the 2008 National Household Sample Survey.

Material and Methods

This is a cross-sectional study from the National Household Sample Survey conducted by IBGE (Brazilian Institute of Geography and Statistics) in 2008, which featured a special supplement on health.

The National Household Sample Survey includes information on characteristics of homes and residents. From the 1998 National Household Sample Survey, every five years, the Ministry of Health sponsored the inclusion of an additional module for updated information based on population and national coverage on access and utilization of health services, including dental services [2].

The 2008 National Household Sample Survey¹¹ has national coverage; it is a cross-sectional study by means of a probability sample of households obtained in three stages: primary units - municipalities; secondary units - census tracts; and tertiary units - households (private households and housing units in collective households). In all, 391,868 people were interviewed in 150,591 households across all units of the federation through a structured questionnaire, and for the reference period of 365 days, between September 28, 2007 and September 28, 2008, the study population was composed of 48,854 individuals who, at the time of the interview for the 2008 National Household Sample Survey, aged 6-12 years.

The selection of the age group 6-12 years was due to the fact that it corresponds to the period of mixed dentition, when children exchange deciduous teeth by permanent teeth. The oral environment constantly changing due to dental changes, increasing number of dental surfaces, use of braces and tooth crowding common at this time of life, make periodic visits to the dentist even more important in this period.

Thus, the dental appointment was considered as dependent variable of this study, based on variable v3349 database PNAD 2008¹¹ on the question about the last time the respondent went to the dentist. The 2008 PNAD questionnaire presented five possible answers to this question "When did (...) go to the dentist for the last time?", Namely: (1) "less 1 year"; (2) "1 year to less than 2 years"; (3) "2 years to less than 3 years"; (4) three years or more years "; and (5) "never been to the dentist."

Independent variables were:

- a) Related to the sociodemographic characteristics of children: sex (male or female), age (6, 7, 8, 9, 10, 11 or 12 years), race (white, yellow or black, mulatto or Indian), per capita household income (up to $\frac{1}{4}$ minimum wage, more than $\frac{1}{4}$ to $\frac{1}{2}$ minimum wage, $\frac{1}{2}$ to 1 minimum wage, more than 1 to 2 minimum wages, more than 2 to 3 minimum wages, more than 3 to 5 minimum wages or more than five minimum wages), schooling of household head (0-4, 5-8 or 9 or more years of school), region of residence (Northern, Northeastern, Southeastern, Southern or Midwestern) and household (urban or rural);
- b) For children who received dental care within one year preceding the interview, related variables were described to the form of financing for dental services: service covered by some health insurance (yes or no), payment for dental visit (yes or not), attendance by SUS (yes, no or do not know);

c) For children who had searched health services in the two weeks before the interview, reasons (disease, dental problems, or other preventive care) were described, and for those who had sought dental care, where they had sought the care (clinic or health center, dental office or other - doctors' offices, emergency rooms or emergencies, hospitals, clinics or offices of companies or unions).

Analyses were performed using Stata software, version 10, taking into account the National Household Sample Survey sampling design, thus, weight, strata and primary sampling units were specified, all variables provided by IBGE.

The prevalence rates of the outcomes studied were calculated. Confidence intervals of 99% (CI 99%) were also calculated for the coefficients. Statistical significance of differences was analyzed using these intervals, level of 1%.

This study was conducted with data obtained from secondary sources (National Household Sample Survey). The databases provided by IBGE did not allow the identification of research subjects, thus ensuring anonymity. Studies conducted by IBGE such as the National Research by Household Sample are made by the Brazilian government to plan public policies and follow all ethical principles for research with human beings internationally required.

Results

Demographic and socioeconomic characteristics of 48,854 children included in the sample are shown in Table 1. It was observed that the distribution of gender and age was similar. There was a predominance of black, brown or Indian children (59.1%). Approximately 77.5% of children live in households with per capita household income of up to 1 minimum wage and 39.2% of family heads had 4 years of schooling. According to the region of residence, 34% of children live in the Northeastern, 25.7% in the Southeastern, 16.1% in the Northern, 13.1% in the Southern and 11.1% in the Midwestern regions of Brazil and 81.2% of these households are in urban area.

The prevalence of dental appointment throughout life was 79.3% (CI 99%: 79.3;79.3) among children aged 6 to 12 years (Table 2). On the other hand, a considerable proportion (20.7%, CI 99%: 20.6;20.7) had never been to the dentist. Considering the distribution of variable dental appointment in life according to sociodemographic characteristics of children, it was found that the prevalence was slightly lower among boys 78.6% (CI 99%: 78.5;78.6) than among girls 80.1% (CI 99%: 80.1;80.1). There was a gradual increase in the percentage of children who had dental appointment with increasing age. After 6 years, the prevalence was 64.1% (CI 99%: 64.0;64.2), while at the age of 12, the prevalence was 86.8% (CI 99%: 86.8;86.9). The prevalence of dental appointment throughout life was higher among white or yellow children (85.4%, CI 99%: 85.4;85.5) than among black, mulatto or Indian children (74.6%, CI 99%: 74.6;74.6). The prevalence of dental appointment was higher among children living in households with higher per capita monthly income and whose parents had higher schooling. Among children living in households with up to one quarter of per capita household income, 62.1% (CI 99%: 62.1;62.2) had been to the dentist before, vs. 95.5% (CI 99%: 95.4;95.5) living in households with per capita monthly income of two minimum wages.

Regarding the educational level of family head, even among those with four years of schooling, 69.1% (CI 99%: 69.1;69.1) of children had been to the dentist against 89.8% (99%CI: 89.7;89.8) of those living in households whose family head had 9 or more years of schooling. As for the region of residence, 68.2% (CI 99%: 68.2;68.2) of children living in the Northeastern region had consulted a dentist, while in the Southern region, 89.5% (CI 99%: 89.5;89.6) had consulted a dentist. In addition, the prevalence of dental appointment in life was higher among children living in urban areas (83.1%, CI 99%:83.0;83.1), compared to those living in rural areas (63.8%, CI 99%: 63.8;63.9) (Table 2).

Table 1. Absolute and relative frequencies (%) related to the socioeconomic characteristics of children (6-12 years) sampled. Brazil, 2008.

Variable	Frequency	
	n	(%)
Sex		
Male	25,067	51.3
Female	23,787	48.7
Age (years)		
6	6,271	12.8
7	6,474	13.3
8	7,104	14.5
9	7,225	14.8
10	7,178	14.7
11	7,203	14.7
12	7,399	15.2
Ethnicity		
Caucasian or Asian descent	19,950	40.9
Mulatto, African descent or indigenous	28,859	59.1
<i>Per capita</i> monthly household income		
Up to ¼ minimum wage	10,200	21.4
More than ¼ to ½ minimum wage	13,711	28.8
More than ½ of 1 minimum wage	13,019	27.3
More than 1 to 2 minimum wages	6,859	14.4
More than 2 minimum wages	3,873	8.1
Family head educational level(years of study)		
0 to 4	19,055	39.2
5 to 8	13,177	27.1
9 or more	16,340	33.7
Region of residence		
Northern	7,888	16.1
Northeastern	16,601	34.0
Southeastern	12,546	25.7
Southern	6,422	13.1
Midwestern	5,397	11.1
Area of residence		
Urban	39,681	81.2
Rural	9,173	18.8

Note: Authors' calculations based on microdata from the National Household Sample Survey, conducted by the Brazilian Institute of Geography and Statistics (IBGE), 2008.

Table 2. Prevalence (%) of dental appointment throughout life among children (6-12 years), according to sociodemographic variables, Brazil, 2008.

Variable	Prevalence (%)	CI 99%*
Sex		
Male	(78.6)	78.5;78.6
Female	(80.1)	80.1;80.1
Age (years)		
6	(64.1)	64.0;64.2
7	(71.8)	71.7;71.9
8	(76.8)	76.7;76.9
9	(81.5)	81.5;81.6
10	(85.2)	85.2;85.3
11	(85.8)	85.8;85.9
12	(86.8)	86.8;86.9
Ethnicity		
Caucasian or Asian descent	(85.4)	85.4;85.5
Mulatto, African descent or indigenous	(74.6)	74.6;74.6
Per capita monthly household income		
Up to ¼ minimum wage	62.1	62.1;62.2
More than ¼ to ½ minimum wage	74.8	74.8;74.9
More than ½ of 1 minimum wage	84.9	84.9;85.0
More than 1 to 2 minimum wages	91.3	91.3;91.3
More than 2 minimum wages	95.5	95.4;95.5
Family head educational level(years of study)		
0 to 4	69.1	69.1;69.1
5 to 8	81.6	81.6;81.7
9 or more	89.8	89.7;89.8
Region of residence		
Northern	72.0	72.0;72.1
Northeastern	68.2	68.2;68.2
Southeastern	86.0	86.0;86.0
Southern	89.5	89.5;89.6
Midwestern	85.0	84.9;85.0
Area of residence		
Urban	83.1	83.0;83.1
Rural	63.8	63.8;63.9
Total	79.3	79.3;79.3

* Confidence interval of 99%; Note: Authors' calculations based on microdata from the National Household Sample Survey, conducted by the Brazilian Institute of Geography and Statistics (IBGE), 2008.

Table 3 shows the frequencies of categories related to the form of funding of dental services among 25,161 children who had received dental visit within one year preceding the interview. The first column shows that in Brazil, 54.7% (CI 99%: 54.7;54.8) of dental services were performed by SUS (Unified Health System), 69% (CI 99%: 69.0;69.0) did not pay any fee for dental services, and only 11% of patients were seen by health plans. As for the consultation by SUS, the highest frequencies were observed in the Northeastern (68.2%, CI 99%: 68.1;68.2) and Northern regions (62.0%, CI 99%: 61.8;62.0), while the lowest prevalence was observed in the Southeastern region (46.0%, CI 99%: 46.0;46.0). On the other hand, the Southeastern region had the highest proportion of visits through health plans (12.2%, CI 99%: 12.1;12.2) and the Midwestern region showed the highest proportion of paid attendances, with 40.2% (CI 99%: 40.1;40.3). In turn, the Northeastern region had the highest proportion of free dentistry (80.1%, CI 99%: 80.0;80.1) and only 19.9% (CI 99%: 19.8;20,0) of families paid for dental services (Table3).

Table 3. Frequencies (%) in categories related to the form of funding of dental services among children (6-12 years) who had received dental care within one year preceding the interview. Brazil and macro-regions, 2008.

Variable	Brazil (CI 99%)	Northern region (CI 99%)	Northeastern region (CI 99%)	Southeastern region (CI 99%)	Southern region (CI 99%)	Midwestern region (CI 99%)
The last time I went to the dentist was covered by some health insurance						
Yes	11.0 (10.9;11.0)	9.5 (9.4;9.6)	9.4 (9.4;9.5)	12.2 (12.1;12.2)	11.1 (11.0;11.1)	11.0 (11.0;11.1)
No	89.0 (89.0;89.1)	90.5 (90.4;90.6)	90.6 (90.5;90.6)	87.8 (87.8;87.8)	88.9 (88.9;89.0)	89.0 (88.9;89.1)
Paid some amount for dental appointment						
Yes	31.0 (31.0;31.1)	22.5 (22.4;22.6)	19.9 (19.8;19.9)	37.1 (37.0;37.1)	33.6 (33.5;33.7)	40.2 (40.1;40.3)
No	69.0 (69.0;69.0)	77.5 (77.3;77.6)	80.1 (80.1;80.2)	62.9 (62.9;63.0)	66.4 (66.3;66.5)	59.8 (59.7;59.9)
The service was covered by SUS						
Yes	54.7 (54.7;54.8)	62.0 (61.8;62.0)	68.2 (68.1;68.2)	46.0 (46.0;46.1)	54.7 (54.6;54.8)	48.3 (48.1;48.4)
No	44.7 (44.7;44.7)	36.7 (36.6;36.8)	31.1 (31.0;31.2)	53.5 (53.5;53.6)	44.8 (44.7;44.9)	51.4 (51.3;51.5)
Do not know	0.6 (0.6;0.6)	1.3 (1.3;1.4)	0.7 (0.7;0.7)	0.5 (0.4;0.5)	0.5 (0.5;0.5)	0.3 (0.3;0.4)

* Confidence interval of 99%; Note: Authors' calculations based on microdata from the National Household Sample Survey, conducted by the Brazilian Institute of Geography and Statistics (IBGE), 2008

Table 4 shows the frequencies of categories related to the form of funding of dental services among 25,161 children who had received dental care within one year preceding the interview, according to per capita household income. In families with income lower than or equal to one quarter minimum wage, only 2.3% (CI 99%: 2.2;2.3) of children had dental care covered by health plan; however, this prevalence increased to 26.8% (CI 99%: 26.7;26.9) when family income was greater than 2 minimum wages. Regarding payment for dental consultation, the group with less than one quarter minimum wage showed the lowest prevalence of paid attendances, with 9.6% (CI 99%: 9.5;9.6), however, the increased income levels also increased the prevalence of paid consultations, reaching 66.4% (99%CI: 63.3;63.5) in the group with higher income (more than two minimum wages). In relation to consultation by the NHS, 83.9% (CI 99%: 83.8;83.9) of children from families of income less than or equal to one quarter minimum wage were met by this system. As monthly income increased, the prevalence of visits by SUS decreased, whereas among children from families with higher income (more than two minimum wages), only 8% (99%CI: 7.9;8.0) of care was covered by SUS.

In assessing the demand for health services in the last two weeks among 48,854 children surveyed, 9.5% (CI 99%: 9.5;9.5) had sought dental care, 21.9% (99%CI: 21.8;22.0) of these for dental problem.

Among children who had sought dental care for two weeks prior to the interview, 57.8% (CI 99%: 57.6;57.9) sought dental care in the dental office, 33.9% (CI 99%: 33.8;34.1) at health center and

8.3% (IC99%: 8.1%;8.3%) searched dental care at doctors' offices, emergency rooms or emergencies, hospitals, clinics or offices of companies or unions.

Table 4. Frequencies (%) in categories related to the form of funding of dental services among children (6-12 years) who had received dental care within one year preceding the interview, according to per capita household income ranges. Brazil, in 2008.

Variable	$\leq \frac{1}{4}$ % (CI 99%)	$\frac{1}{4} \leq \frac{1}{2}$ % (CI 99%)	$\frac{1}{2} \leq 1$ % (CI 99%)	$1 \leq 2$ % (CI 99%)	> 2 % (CI 99%)
The last time I went to the dentist was covered by some health insurance					
Yes	2.3 (2.2;2.3)	4 (3.9;4.0)	8.8 (8.7;8.8)	19.5 (19.4;19.5)	26.8 (26.7;26.9)
No	97.7 (97.6;97.7)	96 (96.0;96.0)	91.2 (91.1;92.2)	80.5 (80.5;80.6)	73.2 (73.1;73.2)
Paid some amount for dental appointment					
Yes	9.6 (9.5;9.6)	15.4 (15.4;15.5)	29.0 (28.9;29.0)	46.8 (46.7;46.8)	66.4 (66.3;66.5)
No	90.4 (90.3;90.4)	84.6 (84.5;84.6)	71.0 (71.0;71.1)	53.2 (53.1;53.3)	33.6 (33.5;33.7)
The service was covered by SUS					
Yes	83.9 (83.8;83.9)	77.2 (77.1;77.2)	57.5 (57.5;57.6)	31.4 (31.3;31.5)	8.0 (7.9;8.0)
No	15.1 (15.0;15.1)	22.0 (21.9;22.0)	42.0 (42.0;42.1)	68.0 (68.0;68.1)	92.0 (92.0;92.0)
Do not know	1.0 (1.0;1.0)	0.8 (0.8;0.8)	0.4 (0.4;0.4)	0.6 (0.5;0.6)	0 (0.0;0.0)

* Confidence interval of 99%; Note: Authors' calculations based on microdata from the National Sample Household Survey (PNAD), conducted by the Brazilian Institute of Geography and Statistics (IBGE), 2008.

Discussion

The interest and concern with the provision of oral health services in Brazil have grown significantly in recent years. An example is the inclusion of the supplementary module to obtain updated population-based nationwide information on the access and utilization of health services, including dental services [2]. In a country with significant social and income inequalities, concern about health inequalities should play an important role [6]. Differences in the use of services and health disparity may reflect the availability of these services among different social groups, which is considered unacceptable and may explain social inequalities in indicators such as sickness and death [11]. The present study investigated the situation of access and utilization of dental services among children aged 6-12 years according to sociodemographic characteristics.

According to secondary data from the National Household Survey conducted by IBGE in 2008 [12], 20.7% of Brazilians aged from 6 to 12 years old had never been to the dentist. This indicates that despite the indisputable importance of oral health and the efforts of the Ministry of Health since 2000 in the qualification process of health at the level of municipalities, including the oral health team in the Family Health Program (PSF) to benefit priority population groups, a large portion of the population still have no access to dental services [6,13,14,15].

By analyzing national data from the National Household Sample Survey carried out in 1998 [16] and 2003 [17], SB Brazil 2003 [5] and SB Brazil 2010 [18], it was observed that the percentage of children and teenagers who have never been to the dentist has diminished over the years, which may be the reflection of changes experienced by the labor market from the 1980, in which a tendency of agreements and affiliations in dental services was verified [19], making dental care more accessible to the population.

In relation to variables gender, age and skin color, there was a similar distribution of the different categories in relation to the dental appointment. Other researchers also found no significant difference in the prevalence of dental consultation in relation to gender; however, their sample consisted of individuals aged from 15 years [10]. For some scholars, female gender and older age increase the use of health services by the population [20]. In relation to skin color, black or indigenous people usually belong to groups of lower income and educational level and have unequal access to health services [21].

In this work, the prevalence of children who had undergone dental appointment increased as the per capita monthly household income increased. Low income seems to be a relevant factor in regard to the utilization of dental services, considering that unfavorable living conditions represent social barriers to the use services both due to the lack of financial resources as to the lack of knowledge and information about rights and importance of maintaining oral health [12,13].

In a study using data from the 1998 National Household Sample Survey [10], it was found that among individuals aged 15-19 years, there was a strong association between per capita income and access to dental services in the form of the gradient, i.e., as income decreases, the chance of never having been to the dentist increases. In particular, among those with per capita income below minimum wage, the chance of having never been to the dentist was about 4.5 times than that observed for groups with income less than two minimum wages.

Thus, as observed in this study in relation to variables of socioeconomic nature (per capita income and educational level), there seems to be a consensus that low socioeconomic level is directly related to increased deprivation of access to dental services [10,13,22].

Regarding the situation of households, it is possible that the population of the urban have easier access to dental services, considering these results and those of previously published work [6,10]. Often, the living conditions in the countryside and the unequal social structure make healthy choices difficult [23].

In this study, it was found that the Northeastern region showed the highest rate of free dental appointments and greater prevalence of visits by SUS. Other studies have shown that in this region, the vast majority of dental treatments is covered by SUS [13,14]. In another study [14] conducted with 970 children aged 5-12 years in the city of Recife, state of Pernambuco, northeastern Brazil, the vast majority from families with low income and educational level, it was found that 77.1% children had already been to the dentist and the dental services most wanted by the population investigated was the public service (64.0%).

Studies conducted in other countries also show that the availability and ease of access to dental services in certain regions interfere with the patterns of access and use of dental services [24]. In Brazil, although the Organic Health Law [25] advocates free and universal access to health services and actions, this was not the reality found in this work. Thus, regional variations in the supply of services and oral health programs at the state and municipal levels should be the subject of further and detailed investigations [10].

Considering the search for dental services in the last two weeks prior to the interview for the 2008 National Household Survey, the data are consistent with other studies that have characterized the essentially private nature of dental care in Brazil, since the vast majority of individuals who required oral health care services did it in private dental clinics [6,10]. This situation is similar to that observed in Austrália [21] where universal health care coverage excludes dental treatment; causing 80% to 90% of procedures to be directly funded by the patient to private dental care.

The limitations of this study are mainly related to methodological aspects of the National Household Sample Survey. Importantly, all data are analyzed from information provided by participants, either children's parents or guardians. Thus, the results of this study may be subject to information bias, resulting in underestimation or overestimation of prevalence presented. Another limitation of this study is the cross-sectional design, which does not allow inferences regarding causality, although the educational level usually remains stable throughout life, not being affected by the occurrence of disease and disability in adulthood, as with equities.

The challenge for policymakers in Brazil is to propose more general social and economic measures aimed at tackling social exclusion and complementary public health interventions aimed at the most vulnerable groups, both in the field of oral health promotion as under narrower dental assistance [27].

Access to dental assistance seems to reflect, among other things, the perception of the population about their oral health [28,29]. In this context, the increase in the use of preventive measures such as fluoridation of public water supply, collective oral health practices, use of toothbrush, dentifrice and health education, essential to improving the oral health conditions, must highlight the importance of dental care in reducing the suffering and seeking the recovery of health conditions [14].

Conclusions

- A considerable number of Brazilian children had never been to the dentist until the year 2008.
- There was a gradual increase in the percentage of children who had dental appointment with increasing age. In addition, most children who consulted a dentist were white, living in an urban area in the Southern, Southeastern and Midwestern regions of Brazil, belonging to families with higher monthly household income and family heads with higher schooling.

- The vast majority of individuals who required oral health services did it in private dental clinics, particularly in families with higher monthly income.
- These data generate evidence showing inequalities in access and utilization of dental services by children in Brazil and serve to guide the implementation of public policies and actions to minimize the lack of dental care among Brazilian children.

References

1. Kramer PF, Ardenghi TM, Ferreira S, Fischer LA, Cardoso L, Feldens CA. Utilização de serviços odontológicos por crianças de 0 a 5 anos de idade no município de Canela, Rio Grande do Sul, Brasil. *Cad Saúde Pública* 2008; 24(1):150-6.
2. Travassos C, Martins M. Uma revisão sobre os conceitos de acesso e utilização de serviços de saúde. *Cad Saúde Pública* 2004; 20 Suppl 2:S190-8.
3. Hashim-Nainar SM, Straffon LH. Targeting of the year one dental visit for United States children. *Int J Paediatr Dent* 2003; 13:258-63.
4. Rayner JA. The first dental visit: a UK viewpoint. *Int J Paediatr Dent* 2003; 13:269.
5. Brasil. Ministério da Saúde. Secretaria de Atenção à Saúde. Departamento de Atenção Básica. Projeto SB Brasil 2003: condições de saúde bucal da população brasileira 2002-2003: resultados principais/ Ministério da Saúde, Secretaria de Atenção à Saúde, Departamento de Atenção Básica. Brasília: Ministério da Saúde; 2004.
6. Bertoldi DA, Barros DJA. Desigualdade na utilização e no acesso a serviços odontológicos: uma avaliação em nível nacional. *Ciênc Saúde Coletiva* 2002; 74:709-17.
7. Narvai PC, Frazão P, Castellanos RA. Declínio na experiência de cárie em dentes permanentes de escolares brasileiros no final do século XX. *Odontologia e Sociedade* 1999, 1:25-29.
8. Roncalli AG. Projeto SB Brasil 2010 – Pesquisa Nacional de Saúde Bucal revela importante redução da cárie dentária no país. *Cad Saúde Pública* 2011; 27(1):4-5.
9. Pinheiro RS. Uso de serviços odontológicos entre os estados do Brasil. *Ciênc e Saúde Coletiva* 2006; 11(4):999-1010.
10. Manhães ALD, Costa AJL. Acesso a e utilização de serviços odontológicos no Estado do Rio de Janeiro, Brasil, em 1998: um estudo exploratório a partir da Pesquisa Nacional por Amostra de Domicílios. *Cad Saúde Pública* 2008; 24(1):207-18.
11. Giatti L, Barreto SM. Situação no mercado de trabalho e utilização de serviços de saúde no Brasil. *Ciênc Saúde Coletiva* 2011; 16(9):3817-27.
12. Pesquisa Brasil. Instituto Brasileiro de Geografia e Estatística. Pesquisa Nacional por Amostra de Domicílios 2008. Rio de Janeiro: IBGE; 2008. v. 29. [acessado 2011 mai]. Disponível em: <http://www.ibge.gov.br/home/estatistica/populacao/trabalhoerendimento/pnad2008/brasilpnad2008.pdf>.
13. Massoni ACLT, Vasconcelos FMN, Katz CRT, Rosenblatt A. Utilização de serviços odontológicos e necessidades de tratamento de crianças de 5 a 12 anos, na cidade de Recife, Pernambuco, Brasil. *Revista de Odontologia da UNESP* 2009; 38(2):73-8.
14. Noro LRA, Roncalli AG, Mendes Júnior FIR, Lima KC. A utilização de serviços odontológicos entre crianças e fatores associados em Sobral, Ceará, Brasil. *Cad. Saúde Pública* 2008; 24(7):1509-16.
15. Gomes KO, Reis EA, Guimarães MDC, Cherchiglia ML. Utilização de serviços de saúde por população quilombola do Sudoeste da Bahia, Brasil. *Cad Saúde Pública* 2013, 29(9):1829-42.
16. Pesquisa Brasil. Instituto Brasileiro de Geografia e Estatística. Pesquisa Nacional por Amostra de Domicílios 1998. Rio de Janeiro: IBGE; 1998. [acessado 2011 mai]. Disponível em: <http://www.ibge.gov.br/home/estatistica/populacao/trabalhoerendimento/pnad98/saude/analise.shtm>.
17. Pesquisa Brasil. Instituto Brasileiro de Geografia e Estatística. Pesquisa Nacional por Amostra de Domicílios 2003. Rio de Janeiro: IBGE; 2003. v. 24. [acessado 2011 mai]. Disponível em: <http://www.ibge.gov.br/home/estatistica/populacao/trabalhoerendimento/pnad2008/brasilpnad2003.pdf>.
18. Brasil. Ministério da Saúde. Secretaria de Atenção à Saúde. Departamento de Atenção Básica. Projeto SB Brasil 2010: Pesquisa Nacional de Saúde Bucal: Resultados Principais/ Ministério da Saúde, Secretaria de Atenção à Saúde, Departamento de Atenção Básica. Brasília: Ministério da Saúde; 2012.

19. Freitas CHSM. Dilemas no exercício profissional da Odontologia: a autonomia em questão. *Interface – Comunic Saúde Educ* 2007; 11(21):25-38.
20. Silva ZPS, Ribeiro MCS, Barata RB, Almeida MF. Perfil sociodemográfico e padrão de utilização dos serviços de saúde do Sistema Único de Saúde (SUS), 2003 – 2008. *Ciênc Saúde Coletiva* 2011; 16:3807-16.
21. Coimbra CE Jr, Santos RV, Welch JR, Cardoso AM, de Souza MC, Garnelo L, et al. The First National Survey of Indigenous People's Health and Nutrition in Brazil: rationale, methodology, and overview of results. *BMC Public Health* 2013; 19:13:52.
22. Martins MD, Araújo RGD, Veloso NF. Avaliação das necessidades de tratamento odontológico de crianças de baixa renda. *J Bras Odontopediatr Odontol Bebê* 1999; 2:132-6.
23. Abreu MHNG, Pordeus IA, Modena CM. Representações sociais de saúde bucal entre mães no meio rural de Itaúna (MG), 2002. *Ciênc e Saúde Coletiva* 2005; 10(1):245-59.
24. Locker D, Ford J. Evaluation of an area-based measure as an indicator of inequalities in oral health. *Community Dent Oral Epidemiol* 1994; 22:80-5.
25. Brasil. Lei n°. 8.080, de 19 de setembro de 1990. Dispõe sobre as condições para a promoção, proteção e recuperação da saúde, a organização e o funcionamento dos serviços correspondentes e dá outras providências. *Diário Oficial da República Federativa do Brasil* 1990; 20 set.
26. Schwarz E. Access to oral health care – an Australian perspective. *Community Dent Oral Epidemiol* 2006; 34:225-31.
27. Narvai P, Frazão P, Roncalli A, Antunes J. Cárie dentária no Brasil: declínio, polarização, iniquidade e exclusão social. *Rev Panam Salud Pública* 2006; 19:385-93.
28. Sanders AE, Slade GD. Deficits in perceptions of oral health to general health in populations. *J Public Health Dent* 2006; 66:255-62.
29. Silva BDM, Forte FDS. Acesso a serviço odontológico, percepção de mães sobre saúde bucal e estratégias de intervenção em Mogi, PB, Brasil. *Pesq Bras Odontoped Clin Integr* 2009; 9(3):313-9.