



Original Article

Access to Oral Health Services in Areas Covered by the Family Health Strategy, Paraíba, Brazil

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Abstract

Objective: To evaluate access to oral health services and associated factors in areas covered by the Family Health Strategy. **Material and Methods:** This is a population-based study with a systematic random sample of 759 individuals aged ≥ 06 years of a municipality in northeastern Brazil. Data on socio-economic and demographic conditions, tooth pain severity in the last six months and issues related to access to oral health services were collected. Data were analyzed using Pearson's chi-square test and Poisson regression analysis, considering 5% significance level. All tests were performed using the Statistical Package for Social Sciences software (SPSS) version 18.0. **Results:** 61.7% of individuals had access to dental services, 53.5% of them in the public sector. Through Poisson multivariate regression, individuals more likely to have full access were students (PR: 3.085, 95% CI 1.75-5.43), adolescents (PR: 2.297, 95% CI 1.30-4.04), adults at reproductive phase (PR: 2.127, 95% CI 1.24-3.62) and those with toothache in the last six months (PR: 1.314, 95% CI 1.08-1.59). Illiterates and individuals with up to complete elementary school were associated with lower likelihood of having full access to oral health services. **Conclusion:** More than half of the sample had access to oral health services, being higher in the public sector than in the private sector. Having full access to oral health services was associated in the multivariate model with age, education and toothache in the last six months.

Keywords: Access to Health Services; Oral Health Services; Health Promotion.

Introduction

The concept of access to health services is complex and relates to the perception of health needs and the conversion of these needs into demands and these into use. It presents the broad meaning of representing the degree of match between the user and the health system, i.e., it refers to the match between the characteristics of the service offered and the expectations and needs brought by the patient [1,2]. For others, it involves guarantee of access to the health system or the use of goods and services considered socially important, without physical, financial or other obstacles [3].

Therefore, access to health involves many aspects of socio-economic and cultural origin that go beyond health care and are linked to the political structure of each country. Access to health care relates to living conditions, nutrition, housing, income and education [4].

Considering studies evaluating access to health services, the model proposed by Andersen and Newman [5] has been the most widely applied. In this model, the use of services is dependent on individual determinants grouped in predisposing factors, enabling factors (facilitators) and health needs.

The model of Andersen [6] indicates the existence of a relationship between these three factors so that predisposing factors influence enabling factors and health needs represent the most proximal determinant of use of health services. Thus, the influence of access in the use of health services is mediated by individual factors, namely: predisposing factors (sociodemographic variables, individual's attitudes and opinions); enabling factors (family income, health insurance and access to a regular source of care); and health needs (health conditions perceived by individuals or diagnosed by health professionals) [7,8].

Empirical evidence of the use of oral health services is scarce. Studies found in literature have been developed by the Brazilian Institute of Geography and Statistics in partnership with the Ministry of Health (National Household Sample Survey - PNAD / IBGE) [9] and have evaluated the access and use of dental services. The systematic collection and defined periodicity of information such as the PNAD health supplement constitutes an important tool to support the formulation and evaluation of health policies, as occurs in many developed countries [10].

Considering that there are few studies evaluating the access / use of oral health services in Brazil after the implementation of the National Oral Health Policy (Oral Health in the Family Health Program, *Brasil Sorridente* and Dental Specialties Center), this study aimed to analyze access and factors associated with oral health services in areas covered by the Family Health Strategy (FHS) with oral health coverage.

Material and Methods

Study Area

This cross-sectional study was conducted in the city of Campina Grande, PB, Brazil, with a population of approximately 405,072 people and HDI of 0.72 [11]. According to the Regionalization City Plan, this city is the center of one of the 12 micro-regions and a health pole for the State of

Paraíba, with 101 FHS teams, which correspond to coverage of 88% and of these, 51 (51.5%) have oral health teams.

Study Population

The study sample was representative of the population included in the Family Health Strategy (FHS) with Oral Health Team (OHT) in urban areas, in the period from July to December 2008.

To calculate the sample size, the formula of comparison of two proportions was used, with 80% power to detect differences with 1.5 odds ratio and 2.0% error. The prevalence of access in previous studies was used as a parameter for calculation [12,13]. Minimum sample of 626 individuals was calculated, with increased 20% for possible losses and refusals and 20% to enhance the study effect, so, the total sample required for this study was 752 individuals. The sample selection technique was multistage, following the census sectors flow (1st stage) → households → individuals, considering areas covered by the FHS.

Census sectors based on information from the CD-ROM [14] of Campina Grande and the Estatcart software version 2.0, with results of the 2000 census universe [15] were used. For this research, the sampling technique adopted was based on that used by IBGE in its National Household Sample Survey [9]. Thus, of the 342 census sectors distributed in 06 health districts in the city of Campina Grande, 02 census sectors per health district were randomly selected, totaling 12 sectors covered by the FHS with OHT in urban areas.

Inclusion criteria were: participant should be enrolled in the Family Health Unit of the district of residence and be above 06 years of age.

Intra-examiner calibration was performed through a pilot study with 31 subjects from two census sectors, who were re-interviewed in the period between two days and one week after the first application of the questionnaire using the Spearman and Pearson's correlations for ordinal variables, with values ranging from 0.45 to 0.75 and application of the Kappa test for dichotomous variables, obtaining value of 0.44 (moderate agreement).

Data Collection

Data were collected through structured interviews. Initially, the research objectives were explained and the Informed Consent Form was signed. Aspects of the socio-economic and demographic conditions, tooth pain severity in the last six months and issues related to access to oral health services were addressed during the interview. For individuals aged 6-10 years, the information requested was answered by parents or guardians.

The research instrument used was constructed from previous forms [9,16]. The evaluation of access to oral health services was established from individuals who responded have visited the dentist within two years prior to data collection. Considering the debate around the concept of use / access to health services, a new variable was established from this variable, which considered in

addition to the use of dental services, measured by the previous variable, participation in health promotion activities, such as taking part in meetings, lectures on oral health, have received some tooth brushing kit, have been instructed regarding tooth brushing or use of fluoride, or have received a home visit from a dentist, oral health technician or community health worker addressing self-care issues in oral health or both situations (promotion actions and use of dental services).

Data Analysis

For the Poisson Regression Analysis, the dependent variable - Access to Oral Health - was dichotomized into "had no access to or obtained partial access" and "had full access". Data were presented by descriptive and inferential statistics (chi-square test), adopting 5% significance level. The bivariate and multivariate Poisson regression analysis with robust variance was used to determine the association between the dependent variable, obtaining full access to oral health services and independent variables (demographic, socioeconomic and health needs).

A hierarchical approach procedure was used in the multivariate regression model to select variables that reached $p < 0.20$ in the bivariate analysis, as well as variables considered epidemiological determinants (sex). The analysis was performed on two levels, from distal to proximal determinants: (1) demographic and socioeconomic and (2) health needs in the adjusted analysis of the final regression model ($\alpha < 0.05$). All tests were performed using the Statistical Package for Social Sciences (SPSS) version 18.0.

Results

The final sample consisted of 759 respondents, with loss of 2.2%. Most were female (79.7%) and the age ranged from 06 to 89 years, with mean age of 35.45 years. With regard to marital status, 48.9% were married / common-law marriage and 51.1% were single, divorced / separated and widowed. As for education, 74% had less than seven (07) years of schooling or no schooling.

Participants were predominantly low-income, that is, when income was individually investigated (only the respondent's income), 37.7% had individual income up to 01 minimum wages (MW) (R\$ 415.00 at the time of the survey), and only 2.5% of respondents had income of 03 minimum wages or above. The question about income did not apply to underage individuals (19.6%). When assessing family income, more than half the sample (66.5%) had family income of up to 01 MW, and for 4.6%, family has no income or did not answer this question. It is noteworthy that only 36.1% of participants were enrolled in any minimum income program.

When asked about perceived oral health, 54.3% reported poor oral health, i.e., oral health was "more or less" or "poor." Regarding satisfaction with the appearance of teeth, 42.4% considered themselves "dissatisfied." As for the presence of toothache ever in life, 80% responded positively to the question, and of these, 170 (28%) felt it in the last six (06) months. The severity of this pain was mainly characterized as "very painful" (46.5%).

Among respondents, 62.3% used dental service for care related to their own oral health during the past two years and, in most cases, considered the care received very good (21.4%) and

good (49.5%) (Table 1). When asked whether oral health needs had been fully met, about 74% reported being "satisfied", "very satisfied" or "fully satisfied".

To investigate the demand for dental services, 6.3% of respondents have never visited the dentist and 31.9% had performed the last visit to the dentist for three years or more. Regarding the type of service used, the percentage of individuals seeking public dental service (53.5%) was higher than those seeking private dentists or health plans / health insurance (45.5%). Of those who used the public service, only 9.5% had access to the PSF dentist, while 44% used public dental service in other sectors, such as health centers, Basic Health Units, Dentistry Schools, University Hospital, others free of charge services, such as mobile carts, political campaigns. Therefore, the percentage of individuals who had access to dental services in the last two (02) years was 61.7%, and 45.5% of this access occurred in the private sector, even with high pain severity, as found in the survey, the public sector responded only with a difference of just over 8% compared to the private sector with regard to access to dental services (53.5%).

Table 1. Frequency and percentage of independent and dependent variables.

Variables	Total	
	N	%
Use of Dental Services		
Yes	473	62,3
No	286	37,7
Evaluation of Service Received		
Very good	101	21,4
Good	234	49,5
Regular	49	10,4
Poor	18	3,8
Very poor	8	1,7
Not informed	63	13,3
Last Visit to the Dentist / Access to Dental Services		
Less than 1 year	353	46,5
1 to 2 years	115	15,2
3 or more years	242	31,9
Never been to the dentist	48	6,3
Not informed	1	0,1
Dentist Usually Used (service type)*		
Private or health plan / insurance	326	45,5
Public at PSF	68	9,5
Public others	316	44,0
Do not know, do not remember	6	0,8

*For this variable, in addition to the 2.2% losses obtained in the sample (17 subjects), 5.5% (43 individuals) with non-response rate were calculated.

As for access to lecture or meeting where topics on oral health were focused, 53.1% reported participation. Of the respondents, 31.6% had received tooth brushing kit (toothpaste and / or brush), or educational material (folder), or, had participated in some fluoride topical application activity (FTA). As for the home visit (HV), 82.7% had never received the visit of a Community Health Agent (CHA), and also by the Oral Health Assistant (OHA), or by the Dentist (CD) that were related to guidelines on Oral Health care. Variables "Age"; "Marital Status", "Education" and "Income" were associated to oral health access ($p < 0.05$) (Table 2).

Table 2. Frequency, percentage and p value of independent variables compared to access to Oral Health Public Services.

Health Public Services.											
Variables	Access to Oral Health										p-value*
	No access		Promotion action access		Use of services / dental care		Full access to oral health actions		Total		
	N	%	N	%	N	%	n	%	n	%	
Sex											
Male	17	11.0	47	30.5	24	15.6	66	42.9	154	100	4.34
Female	76	12.6	146	24.1	130	21.5	253	41.8	605	100	0.227
Total	93	23.6	193	54.6	154	37.1	319	84.7	759	100	
Categorized age											
06-14 years	7	4.7	51	34.0	17	11.3	75	50.0	150	100	87.99
15-24 years	9	7.8	18	15.7	25	21.7	63	54.8	115	100	<0.001
25-49 years	35	11.6	52	17.2	79	26.2	136	45.0	302	100	
50-64 years	23	20.4	40	35.4	21	18.6	29	25.7	113	100	
65 years or more	19	24.1	32	40.5	12	15.2	16	20.3	79	100	
Total	93	68.6	193	142.8	154	93.0	319	195.8	759	100	
Marital status											
Single	23	7.9	80	27.6	48	16.6	139	47.9	290	100	40.00
Married	53	14.3	76	20.5	89	24.0	153	41.2	371	100	<0.001
Divorced	10	25.0	9	22.5	8	20.0	13	32.5	40	100	
Widowed	7	12.1	28	48.3	9	15.5	14	24.1	58	100	
Total	93	59.3	193	118.9	154	76.1	319	145.7	759	100	
Categorized individual income											
Not applied	6	4.0	50	33.6	17	11.4	76	51.0	149	100	40.58
Up to ½ MW+	23	15.1	40	26.3	33	21.7	56	36.8	152	100	<0.001
1 MW+	24	17.9	41	30.6	26	19.4	43	32.1	134	100	
2 MW+	1	7.7	3	23.1	2	15.4	7	53.8	13	100	
3 MW+ or more	2	10.5	5	26.3	4	21.1	8	42.1	19	100	
No income	37	12.7	54	18.5	72	24.7	129	44.2	292	100	
Total	93	67.5	193	158.4	154	113.7	319	260.0	759	100	
Categorized family income											
Up to ½ MW+	22	11.1	51	25.6	39	19.6	87	43.7	199	100	10.79
1 MW+	38	12.4	73	23.9	58	19.0	137	44.8	306	100	0.547
2 MW+	20	16.1	34	27.4	26	21.0	44	35.5	124	100	
3 MW+ or more	10	10.5	23	24.2	20	21.1	42	44.2	95	100	
No income	3	8.6	12	34.3	11	31.4	9	25.7	35	100	
Total	93	58.7	193	135.4	154	112.1	319	193.9	759	100	
Categorized education											
Illiterate	21	38.9	16	29.6	7	13.0	10	18.5	54	100	64.35
Up to elementary school	61	12.0	144	28.3	97	19.1	206	40.6	508	100	<0.001
Up to high school	8	4.7	30	17.6	44	25.9	88	51.8	170	100	
Higher education	3	11.1	3	11.1	6	22.2	15	55.6	27	100	
Total	93	66.7	193	86.6	154	80.2	319	166.5	759	100	
Minimum wage program											
Yes	27	9.9	75	27.4	48	17.5	124	45.3	274	100	5.33
No	66	13.6	118	24.3	106	21.9	195	40.2	485	100	0.149
Total	93	23.5	193	51.7	154	39.4	319	85.5	759	100	

*Using Pearson's Chi Square test. †Minimum Wage R\$ 415,00 at the time of the survey (2006-2008), Brazil.

In the bivariate analysis, independent variables age, education and toothache in the last six months were associated with achieving full access to oral health services (Table 3), and these variables, associated with sex and oral perception were incorporated in the multivariate model ($p < 0.20$). Thus, achieving full access to oral health services was associated in the multivariate model with age, education and toothache in the last six months. Individuals more likely to have full access were students (PR: 3.085, 95% CI 1.75-5.43), adolescents (PR: 2.297, 95% CI 1.30-4.04), adults at reproductive phase (PR: 2.127, 95% CI 1.24-3.62) and those with toothache in the last six months (PR: 1.314, 95% CI 1.08-1.59). However, illiterates and individuals with up to complete elementary school were associated with lower likelihood of having full access to oral health services ($p < 0.05$).

Table 3. Bivariate and multivariate Poisson regression models to obtain full access to oral health services and independent variables.

Variables	Access to Oral Health Services			Bivariate		Multivariate	
	No access / partial access	Full access		Not adjusted PR* (95% CI)	p-value	Adjusted PR † (95% CI)	
Level 1 - Demographic and socioeconomic characteristics							
Sex							
1- Male	88	57.1	66	42.9	0.815	1.025 (0.835-1.258)	0.136
2- Female	352	58.2	253	41.8		1.00	1.00
Categorized age [12]							
1- Students (06-14 years)	75	50.0	75	50.0	0.000	2.469 (1.549-3.934)	0.000
2- Adolescents and young adults (15-24 years)	52	45.2	63	54.8	0.000	2.705 (1.694-4.319)	0.004
3- Adults (25-49 years)	166	55.0	136	45.0	0.001	2.224 (1.411-3.505)	0.006
4- Adults (50-64 years)	84	74.3	29	25.7	0.389	1.267 (0.740-2.171)	0.307
5- Older adults (65 years or more)	63	79.7	16	20.3		1.00	1.00
Categorized education							
1 - Illiterate, did not know did not respond.	44	81.5	10	18.5	0.001	0.333 (0.173-0.641)	0.017
2 - Up to elementary school	302	59.4	206	40.6	0.081	0.730 (0.513-1.039)	0.015
3 - Up to high school	82	48.2	88	51.8	0.806	0.932 (0.645-1.345)	0.405
4 - Higher education	12	44.4	15	55.6		1.00	1.00
Health of teeth and mouth/ self-perception							
1- Excellent	13	40.6	19	59.4	0.103	1.342 (0.942-1.911)	0.172
2- Very good	23	59.0	16	41.0	0.730	0.927 (0.603-1.425)	0.627
3- Good	171	62.4	103	37.6	0.214	0.850 (0.657-1.099)	0.531
4- More or less	170	56.6	131	43.5	0.894	0.984 (0.771-1.255)	0.522
5- Poor	63	55.8	50	44.2		1.00	1.00
Tooth pain in the last six months							
Yes	72	42.4	98	57.6	0.000	1.536 (1.287-1.833)	0.006
No	273	62.5	164	37.5		1.00	1.00

*Unadjusted Poisson regression for obtaining full access to oral health services and independent variables. †Adjusted Poisson multivariate regression for obtaining full access to oral health services and demographic, socioeconomic and health needs variables, using hierarchical procedure.

Discussion

The model presented by Andersen and Newman [5] was used in this study for being widely known and extensively used in the analysis of health services. Some adaptations have been proposed, such as the influence of enrollment in minimum income programs and structural and conceptual characteristics of the Family Health Strategy (FHS) on access to health services.

This research aimed to evaluate the access and factors associated with oral health services in areas covered by the Family Health Strategy. It was found that just over half respondents had access to oral health services during the study period, and that among those who used the public sector, few have done in the dental service of FHS. In addition, private services accounted for much of accesses to oral health services, as also found in other population studies [7,9,17,18].

Despite efforts done by the insertion of the Oral Health Team in the Family Health Strategy aiming to expand access to health services from 2001, indicators used to assess the effectiveness of these services in terms of access / use have been contradictory, as confirmed in previous study [19]. PNAD data [9] showed that dental care strongly differs from medical care, with a high proportion of care paid by users and a small proportion funded by SUS [18]. As in studies on access to general health services [20,21], variables of predisposition and enabling / capacity contributed to explain access to oral health services in this work.

The Brazilian situation has shown that people who most need health services, belonging less privileged social groups, are less likely to use these services [22], which features a marked inequity situation in the use of health services. The association between "income" and access / use of oral health services found in this study has been confirmed in other studies [7,23].

Age was a factor strongly associated with access to oral health services, a fact already evident in other studies [7,18], reinforcing the theory that, with advancing age, there is a reduction in access of people to dental services. For some authors [18], this condition can be explained by the difference in the financing the service because, while in more advantageous groups, greater age provides more resources for the payment of care, in the poorest group, the advance in age eventually reduce the opportunity to access to the public system. Thus, this variable can be considered a confounding factor in the relationship access to oral health services and income.

Variable "minimum income program", i.e., variable that showed social protection connotation was not associated in this study. This finding corroborates the findings of a previous study [24], who showed that the access provided to the families covered by the FHS is not provided in equal manner as recommended by the doctrinal principle of SUS. The minimum income program did not provide access to oral health in the FHS of Campina Grande.

The results of this study suggest discussing the model being implemented in the Oral Health Attention to families included in areas of the Family Health Strategy of Campina Grande, as the growth (expansion) of the FHS in this city, as also in Brazil, along with oral health in the FHS, has occurred in a rapid and disorderly manner.

Conclusion

It was found that access to oral health services was carried out by a little more than half of people living in areas covered by the FHS in the city of Campina Grande, Brazil. The socio-demographic and economic factors associated with access to oral health services were age, education, marital status and income. Individuals more likely to achieve full access to oral health services were students, adolescents, adults at reproductive age and those with toothache in the last six months. Illiterates and individuals with up to complete elementary school were associated with lower likelihood of having full access to oral health services.

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