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Predictors of dental visits for routine check-ups and for the resolution of problems among preschool children

ABSTRACT

OBJECTIVE: To estimate the prevalence of dental visits among preschool children and determine the factors associated with using dental services.

METHODS: A cross-sectional study was conducted with 1,129 five-year-old children from the Pelotas Birth Cohort Study in Pelotas (Southern Brazil) 2004, from September 2009 to January 2010. Use of dental services at least once in the child's life and the reason for the child's first dental visit were recorded. The categories assigned for the first dental visit were: routine check-up, resolution of a problem, or never saw a dentist. The oral examinations and interviews were performed in the children's homes. Socioeconomic aspects and independent variables related to the mother and child were analyzed using multivariable logistic regression.

RESULTS: The prevalence of dental visits (both categories combined) was 37.0%. The main predictors for a routine visit were higher economic status, mothers with more schooling, and mothers who had received guidance about prevention. Major predictors for a visit because of a problem were having felt pain in the previous six months, mothers with higher education level, and mothers who had received guidance about prevention. Approximately 45.0% of mothers received information about how to prevent cavities, usually from the dentist. Children of mothers who adhered to health programs were more likely to have had a routine dental visit.

CONCLUSIONS: The rate of preschool visits to dental services was lower than the rate for medical appointments (childcare). In addition to income and education, maternal behavior plays an important role in routine visits. Pain reported in the last six months and a high number of teeth affected by tooth decay, independent of other factors, were associated with visits for a specific problem. It is important to integrate oral health instruction into maternal and child health programs.

DESCRIPTORS: Child, Preschool. Dental Offices, utilization. Socioeconomic Factors. Dental Health Services. Oral Health Education, Dental. Comprehensive Health Care.

INTRODUCTION

Studies on dental health visits among preschool children are rare, and most of the studies come from high-income countries.[9,10,13,15,20] Studies conducted in middle- or low-income countries, such as Brazil,[11,17] Mexico,[14] and the Phillippines,[4] investigated different outcomes, including the following: Has

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the child visited the dentist at least once? Has the child seen a dentist in the last 12 months for any reason or for prevention purposes? Therefore, it is difficult to compare these studies, and they show wide variation in the prevalence of dental visits.

Research based on data from the National Survey of Sampled Households (PNAD) showed an increase in the percentage of Brazilian children aged four and under who had gone to the dentist at least once (from 14.3% in 1998 to 18.1% in 2003).[18] Despite this improvement, the proportion of preschool children who have received dental services is quite low.

One reason for the low utilization of dental services is policy related. Until the Unified Health System was created, public policies for oral health prioritized dental care for school-age children (aged six to 14), leaving the other population groups with access only to emergency care.[16] Greater attention was given to curative procedures for permanent teeth. Today, dental services still focus on children with permanent teeth,[19] and little attention is given to preschool children.[3,6,19,21]

Oral health in preschoolers depends on their guardians, who need to supervise brushing, monitor eating habits,[6] and understand that dental check-ups can help to maintain oral health.[12] Because hygiene, nutrition, and doctor visits tend to be family practices, it is important to consider the guardians' habits: Parents' attitudes about oral health can influence children's development of positive oral health behaviors.[3]

Mothers with higher levels of education, families with higher incomes, and those with dental insurance were more likely to use oral health services for their preschool children.[7,13,17,22] Other factors related to the primary caregiver, such as behaviors, beliefs, state of health, and using general health and dental services, have been little studied.

The goal of this study was to estimate the prevalence of oral health visits among preschool children and to identify the factors that are associated with such visits.

METHODS

We conducted a cross-sectional study of 1,129 preschool children in Pelotas, Southern Brazil, from September 2009 to January 2010. Pelotas has a population of 327,778 *Instituto Brasileiro de Geografia e Estatística* (IBGE – Brazilian Institute of Geography and Statistics, 2010[a]). During this period, municipal public dental services comprised 52 dentists located in 38 Basic Health Units (UBS) and five schools with six dentists. There were no dental assistants. According to the Regional Council of Dentistry in the state of Rio Grande do Sul, (Southern Brazil)[b] Pelotas was fourth in the state for number of dentists (630). The dental service provided in the city is limited to basic dental care. The public water supply has been fluoridated since 1962. Other prevention and health promotion programs are intermittent, and there are no dental programs formally conducted by the city's Department of Health.

The study was based on a sample of 1,303 children born between September and December 2004 who participated in a birth cohort study. The follow-up rate was 86.6%. Details of the cohort study's methodology are described in another publication.[2] Six of the children interviewed refused the oral exam.

The sample was defined to include various oral health outcomes, and each outcome was weighted *a posteriori*. For this calculation, we used the prevalence of at least one dental visit in the child's life (37.0%) and the size of the final sample (n = 1,129). We used exposure frequencies ranging from 10% to 50% and the minimum necessary values to detect differences between groups, which were calculated with 80% certainty at 95% -confidence level. The prevalence ratios used to detect minimal differences were between 1.3 and 1.4, with exposure frequencies ranging from 10% to 50%.

We tested the process with 14 mothers who had children aged 3 to 7 years in a UBS. After the test, questions were modified to improve understanding.

The children were interviewed and examined by dentists and graduate students from the Universidade Federal de Pelotas Dental School (UFPel). The theoretical and practical training for the questionnaire lasted 12 hours with mothers who used the pediatric dentistry clinic at the university.

Training for the clinical exam included a theoretical-practical component and was performed with the aide of a specialist as gold-standard. We used the DMF index, which measures caries in primary teeth and the affected area (OMS, 1997)[c], and intra-class correlation was used to assess the diagnostic repeatability of the obtained values. The results of each examiner were compared to the standard, and the smallest value was 0.97.

The clinical exams and interviews (with the guardians/mothers) were performed in the homes. We will use the word "mother" to designate all caregivers because they represented more than 90.0% of respondents. For the

[a] Instituto Brasileiro de Geografia e Estatística. Dados do Censo 2010 publicados no Diário Oficial da União do dia 04/11/2010. [cited 2011 Aug 20]. Available from: http://www.censo2010.ibge.gov.br/dados_divulgados/index.php

[b] Conselho Federal de Odontologia. Sistema de Cadastro: relatórios do CRO: Rio Grande do Sul: CD-Cirurgião-Dentista's pelos municípios com a respectiva população. 2011 [cited2011 Aug 20]. Available from: http://www.crors.org.br/legislacao/[www.crors.org.br]tm.pdf

[c] World Health Organization. Oral health survey: basic methods. 4. ed. Geneva; 1997.

exam, we used properly sterilized dental mirrors and ballpoint periodontal probes, along with headlamps to help with lighting. We met the biosecurity measures recommended by the World Health Organization (WHO, 1997).

We examined the prevalence of dental service visits at least once in the child's life. We specifically examined the first dental visit. This visit was categorized according to the purpose of the visit (routine check-up or resolution of a problem). We considered all routine visits to be check-ups with the goal of prevention. A visit for resolution of a problem was the result of some sign or symptom in the teeth/gums and was connected to the caregiver's perceived need for treatment. The third group included children who had never seen a dentist.

The impact of independent and historical variables on the outcome was explored. The socio-demographic variables included were: sex of the child (male or female); skin color reported by the child's mother (white, black, brown, or other); mother's education level when the child was born (in years of study: ≤ 4, 5 to 8, 9 to 11, or ≥ 12); economic level measured by the National Economic Indicator (IEN)[1] (categorized in quintiles); and age of mother when the child was born (in years: 13 to 19, 20 to 29, or ≥ 30).

Variables related to maternal behavior were: (a) pattern of dental service visits (regular: yes or no); (b) at least seven prenatal consultations (yes or no); and (c) adequate childcare (yes or no). We defined regular visits for the mother with the following question: "How would you define your visits to the dentist?" (I never go to the dentist; I go to the dentist when I have pain or when I have a problem with my teeth or gums; I go to the dentist sometimes, whether I have a problem or not; I go to the dentist regularly. The last two options signify regular use). The variable "adequate childcare" was based on the Ministry of Health's schedule for consultations,[d] which recommends at least three visits at three months, five visits at six months, seven visits at 12 months, and nine visits at 24 months.

Behavior and health variables related to the child were: mother has received instruction about how to avoid cavities in children (yes or no); provider of instruction (doctor, dentist, nurse, school teacher, relative, or other); age when the child began to brush his/her own teeth (before 36 months, 37 to 60 months, or still receives help); attends day care (yes or no); is afraid of going to the dentist (yes or no);has had oral pain in the last six months (yes or no); has had a cavity (tertile of DMF); mother's perception of child's oral health (very good, good, regular, poor, or very poor); and mother perceives need for treatment (yes or no).

A double-entry system was used during fieldwork using the program EpiInfo, version 6.04d, which corrected errors and inconsistencies. The information was transferred to the statistical program Stata, version 11, to perform the analyses.

To control the quality of the interviews, we interviewed 15% of the sample with an abbreviated questionnaire. A kappa value of 0.92 was obtained, which gives us confidence in our results.

Simple and relative frequencies of the outcome categories were described. Multinomial logistic regression was used in a crude analysis, which was adjusted to estimate the Odds Ratio (OR). The reference category was never having gone to the dentist.

The adjusted analysis was performed based on a conceptual model with two levels: the first level contained socioeconomic and demographic variables, and the second included the mothers' and children's health and behaviors. When analyzing the variables in the second level, we controlled for the other variables in that level and for the first level variables. All of the variables with $p \leq 0.2$ (in the crude analysis) were included in the adjusted analysis.

This project was approved by the Ethics Committee of the Faculty of Medicine at the Federal University of Pelotas (OF.101/09). The participants were informed that they could choose whether they wanted to participate in the interview, not to participate, or participate in part of it. The interview and the oral exam were performed after the parents/guardians signed the consent form.

RESULTS

We interviewed 1,129 mothers of 1,303 selected children, with an 86.6% follow-up rate. Among the children, 37.0% had gone to the dentist at least one time; 67.2% of these were older than 24 months when they went, and 51.7% did not have dental caries. The average DMFT index (which measures decay in primary teeth) was 1.9, and the average DMFS was 4.1 (n = 1,123). The average DMFS increased to 11.8 (n = 357) in the last tertile of cavity/decay occurrences. The decay component corresponded to 94.0% of the DMFS values.

Routine dental visits and visits for resolution of a problem had higher rates among wealthier mothers with higher levels of education (Table 1).

The rate of routine dental visits was two times higher among children who had followed the recommended

[d] Ministério da Saúde, Secretaria de Políticas de Saúde. Saúde da criança: acompanhamento do crescimento e desenvolvimento infantil. Brasília (DF); 2002 [cited 2011 Aug 20]. (Série Cadernos de Atenção Básica, 11. Série A. Normas e Manuais Técnicos, 173). Available from: http://bvsms.saude.gov.br/bvs/publicacoes/crescimento_desenvolvimento.pdf

Table 1. Dental service visits among five-year-old children from 2004 birth cohort according to demographic, socioeconomic and health behavioral characteristics,Pelotas, Southern Brazil, 2010.

Variable	Total		Dental Service Use					
			Routine		Resolve a problem		Never went	
	n	%	n	%	n	%	n	%
Gender (1,129)							p = 0.5*	
Male	590	52.3	101	17.1	125	21.2	364	61.7
Female	539	47.7	85	15.8	103	19.1	351	65.1
Skin color (1,128)							p <0.001*	
White	751	66.6	156	20.8	149	19.8	446	59.4
Brown	222	19.7	16	7.2	46	20.7	160	72.1
Black	139	12.3	12	8.6	28	20.1	99	71.3
Other	16	1.4	2	12.5	5	31.3	9	56.2
Mother's schooling (1,106) (years)							p <0.001*	
4 or under	144	13.1	5	3.5	23	16.0	116	80.5
5 to 8	445	40.2	46	10.3	88	19.8	311	69.9
9 to 11	394	35.6	71	18.0	84	21.3	239	60.7
> 12	123	11.1	53	43.1	30	24.4	40	32.5
Economic level – IEN (quintiles) (1,129)							p <0.001*	
Q1 – poorest	264	23.4	21	8.0	43	16.3	200	75.7
Q2	235	20.8	19	8.1	52	22.1	164	69.8
Q3	247	21.9	37	15.0	49	19.8	161	65.2
Q4	183	16.2	32	17.5	39	21.3	112	61.2
Q5 – richest	200	17.7	77	38.5	45	22.5	78	39.0
Mother's age (years) (1,128)							p <0.001*	
19 or under	214	19.0	26	12.2	53	24.8	135	63.0
20 to 29	544	48.2	73	13.4	108	19.9	363	66.7
30 or more	370	32.8	87	23.5	67	18.1	216	58.4
Mother regularly uses dental services (1,128)							p <0.001*	
No	655	58.1	68	10.4	119	18.2	468	71.4
Yes	473	41.9	118	25.0	109	23.0	246	52.0
Mother had seven prenatal appointments (1,052)							p <0.001*	
No	276	26.2	26	9.4	49	17.8	201	72.8
Yes	776	73.8	148	19.1	167	21.5	461	59.4
9 Childcare appointments at 24 months (1,115)							p <0.001*	
No	345	30.9	32	9.3	53	15.4	260	75.3
Yes	770	69.1	151	19.6	173	22.5	446	57.9
Received information about prevention (1,128)							p <0.001*	
No	619	54.9	35	5.7	86	13.9	498	80.4
Yes	509	45.1	151	29.7	142	27.9	216	42.4
Attends daycare (1,128)							p <0.001*	
No	604	53.5	61	10.0	117	19.4	426	70.6
Yes	524	46.5	125	23.9	111	21.2	288	54.9

To be continued

Table 1 continuation

Variable	Total		Dental Service Use: Routine		Resolve a problem		Never went	
	n	%	n	%	n	%	n	%
Age at which child began to brush teeth alone (months) (1,129)							p <0.001*	
Before 36 months	307	27.2	29	9.5	58	18.9	220	71.6
Between 37 and 60	306	27.1	34	11.1	51	16.7	221	72.2
Still receives help	516	45.7	123	23.8	119	23.1	274	53.1
Fear of going to the dentist (1,094)							p <0.001*	
No	775	70.8	158	20.4	165	21.3	452	58.3
Yes	319	29.2	26	8.2	62	19.4	231	72.4
Felt pain in last six months (1,115)							p <0.001*	
No	931	83.5	173	18.6	153	16.4	605	65.0
Yes	184	16.5	12	6.5	72	39.1	100	54.4
Tertile of caries (dmfs) (1,123)							p <0.001*	
1	580	51.7	130	22.4	65	11.2	385	66.4
2	186	16.6	33	17.7	41	22.0	112	60.3
3	357	31.8	22	6.2	121	33.9	214	59.9
Perception of child's oral health (1,125)							p <0.001*	
Very good	294	26.1	77	26.2	46	15.7	171	58.1
Good	584	51.9	93	15.9	95	16.3	396	67.8
Regular/ Bad/Very bad	247	22.0	16	6.5	87	35.2	144	58.3
Mother perceived need for treatment (1,129)							p <0.001*	
No	428	38.1	84	19.6	63	14.7	281	65.7
Yes	695	61.9	101	14.5	163	23.5	431	62.0

* Chi-square test for heterogeneity
IEN: National Economic Indicator
DMFS: Indicator of caries experience in the surfaces of primary teeth

routine visits and mothers who had more than seven prenatal consultations.

Children whose mothers reported regular dental visits had a rate 2.5 times higher for routine visits than children whose mothers did not go to the dentist regularly.

A greater number of visits for a dental problem was observed among children who had felt pain in the last six months (39.1%), who belonged to the tertile that was most affected by caries (33.9%), and who had mothers who classified their child's oral health as regular, poor, or very poor (35.2%).

With the exception of the child's sex, all of the variables in the first level of the model were significantly associated with routine visits and visits to resolve a problem, compared with children who had never gone to the dentist (Table 2).

Feeling pain in the last six months, belonging to groups less affected by tooth decay, and the mother's perception of the child's oral health were variables associated with both outcomes, although in opposite ways. The perception of good or very good oral health was associated with routine dental care, and the perception of regular, poor, or very poor oral health was associated with visits for a dental problem. Children who received help brushing their teeth or had attended daycare had a greater chance of going to the dentist for a routine visit or because of a problem. Identifying that the child needed oral care was associated with going to the dentist to resolve a problem.

Excluding income and education, previous instruction about prevention was the variable most strongly associated with going to the dentist for a routine visit or for a problem (OR 9.9 and 3.8, respectively).

Routine visits for children were positively associated with maternal behaviors, including at least seven prenatal appointments, adequate childcare, and regular dental visits. Routine visits were at least 2.5 times higher for children whose mothers had these characteristics than for the reference group (Table 2). Similarly, taking children to the dentist to resolve a problem was more prevalent among mothers with adequate health treatment (daycare, pre-natal health, and frequent dental visits).

The following variables remained associated with routine dental visits in the adjusted analysis (Table 2): mother with higher education and economic status, mother regularly uses dental services, mother received information about prevention, child received help brushing teeth, adequate childcare, and the child is not afraid of going to the dentist. The group that belonged to the intermediate tertile of caries showed a higher likelihood of routine dental visits compared to the most affected group.

After adjustment, the characteristics associated with visit to resolve a problem were: higher income, higher level of mother's education, mother who received information about prevention, adequate childcare, and pain felt by the child within last six months. The tertile with the lowest incidence of caries showed the lowest likelihood of going to the dentist for a problem. The same result was observed for the younger mothers compared to mothers who were 30 years of age or older.

Less than half of the mothers received guidance about how to prevent caries in children (Table 2). Dentists provided guidance in 67.9% of these cases, doctors in 17.5%, and nurses in 1.2% (Figure).

DISCUSSION

During infancy, the mother usually decides whether the child needs to attend health services. Our results contribute to knowledge about this phenomenon, considering that there are few studies about children under five years of age. This study was conducted in a medium-sized city that has a favorable ratio of dentists to inhabitants (approximately 1:520). However, there are economic, cultural, and organizational barriers that can impede access to oral health services. In 2009, five-year-old children in Pelotas showed on average 1.9 primary teeth affected by caries. Half of the children had not been affected by caries, a value slightly less than the estimated national average in 2003.[e] Regarding the percentage of caries that had not been treated, the value we found was higher than the national average, indicating that the majority of teeth affected by disease go untreated. The sample had a high response rate, the events were measured accurately, and the data from exams and interviews were controlled.

This study examined a birth cohort, which allowed us to collect information about variables tied to the early life of the subjects. This avoids possible biases linked to the difficulty of measuring these events and provides better information.

The prevalence of children who had been to the dentist at least one time was 37.0%, which confirms the results of the limited national literature on the subject. In Canela (Southern Brazil),[11] the average prevalence for four-year-old children was 26.5%, and in Sobral (Northeastern),[17] for children aged five to nine years, the average prevalence was 50.9%. High-income countries show different situations, but they are similar to Brazil in some instances. Canada[9] and the United Kingdom[15] had rates of 94%. Spain[22] and Australia,[20] on the other hand, had rates of 28.5% and 24.0%, respectively.

The present study identified the reasons for dental visits, and it is the first population-based study of preschool children in Brazil that distinguishes between different types of visits.

We observed inequalities in the use of dental services. The rate of visits was higher among children whose mothers were wealthier and more educated. This result reinforces estimates from other studies,[7,17,13,22] even in countries with fewer barriers in access to healthcare.[15] In the present study, this association was more evident for routine visits. Even after controlling for each variable, schooling and high income continued to be significant, suggesting the effect of purchasing power and information on the positive relationship between oral health and education.

The mother's behavior was found to be highly relevant, and this factor has not been studied in the literature. We observed that the group of mothers who took their children for a routine visit differed from other mothers. Regularly scheduling dentist appointments for themselves and helping their children brush their teeth were two common factors in the group of mothers who took their children for routine check-ups. This suggests that these mothers identify these behaviors as being important and try to encourage these self-care habits in their children.

Taking the child to the dentist for a routine visit was associated with preventive behavior in the past and with adhering to prenatal and childcare programs. Using childcare services was an important predictor for participating in preventive dental programs for children.[3]

Among the factors associated with dental visits, it is important to mention some differences related to the reason for the dental visit. Mothers who reported that their children felt pain in the last six months and children who had greater tooth decay were associated with visits to the dentist for resolution of a problem. Receiving information about preventing oral health problems was a factor strongly associated with both routine dental visits and visits to resolve a problem. Advice given to parents during dental visits can play a part in health promotion and disease prevention.[12]

[e] Ministério da Saúde, Secretaria de Atenção a Saúde, Departamento de Atenção Básica, Coordenação Nacional de Saúde Bucal. Projeto SB Brasil: condições de saúde bucal da população brasileira 2002-2003: resultados principais. Brasília (DF); 2004.

Table 2. Unadjusted and adjusted multinomial logistic regression to estimate the effects of socioeconomic, behavioral, and health characteristics on dental service visits among five-year-old children from the 2004 birth cohort. Pelotas, Southern Brazil, 2010.

Variable	Unadjusted Analysis - OR (95%CI)		Adjusted Analysis - OR (95%CI)[a]	
	Routine[b]	Resolve problem[b]	Routine[b]	Resolve problem[b]
Level 1 (n = 1,105)				
Child's gender	p = 0.5		-	-
Male	1	1	-	-
Female	0.9 (0.6;1.2)	0.9 (0.6;1.2)	-	-
Child's skin color	p < 0.001		p = 0.2	
White	2.9 (1.5; 5.4)	1.2 (0.7;1.9)	1.7 (0.9;3.3)	1.0 (0.6;1.6)
Brown	0.8 (0.4; 1.8)	1.0 (0.6;1.7)	0.8 (0.4;1.8)	1.0 (0.6;1.7)
Other	1.8 (0.4; 9.5)	2.0 (0.6;6.3)	1.4 (0.3;7.8)	1.7 (0.5;5.5)
Black	1	1	1	1
Mother's schooling (years)	p < 0.001		p < 0.001	
4 or under	1	1	1	1
5 to 8	3.4 (1.3;8.8)	3.1 (1.2;8.1)	3.1 (1.2;8.3)	1.2 (0.7;2.0)
9 to 11	6.9 (2.7;17.5)	4.8 (1.8;12.7)	5.5 (2.1;14.5)	1.5 (0.8;2.6)
> 12	30.7 (11.5;82.3)	14.7 (5.1;42.5)	15.6 (5.4;45.1)	2.8 (1.3;5.8)
Economic level (quintiles)	p < 0.001		p = 0.01	
Q1 – poorest	1	1	1	1
Q2	1.1 (0.6;2.1)	1.5 (1.0;2.3)	0.8 (0.4;1.6)	1.4 (0.9;2.2)
Q3	2.2 (1.2;3.9)	1.4 (0.9;2.2)	1.4 (0.8;2.6)	1.3 (0.8;2.1)
Q4	2.7 (1.5;4.9)	1.6 (1.0;2.6)	1.4 (0.7;2.7)	1.4 (0.8;2.4)
Q5 – richest	9.4 (5.4;16.3)	2.7 (1.6;4.4)	2.8 (1.4;5.5)	1.9 (1.1;3.5)
Mother's age (years)	p < 0.001		p = 0.02	
13 to 19	1.0 (0.6;1.7)	0.8 (0.5;1.1)	0.7 (0.4;1.1)	0.6 (0.4;1.0)
20 to 29	2.1 (1.3;3.4)	0.8 (0.5;1.2)	1.0 (0.6;1.8)	0.6 (0.4;1.0)
30 or above	1	1	1	1
Nível 2 (n = 963)				
Mother's pattern of dental visits	p < 0.001		p = 0.06	
Visits based on necessity	1	1	1	1
Regular visits	3.3 (2.4;4.6)	1.7 (1.3;2.4)	1.7 (1.1;2.6)	1.3 (0.9;1.9)
Mother had more than 7 prenatal appointments	p < 0.001		p = 0.5	
No	1	1	1	1
Yes	2.5 (1.6; 3.9)	1.5 (1.0;2.1)	0.9 (0.5;1.6)	1.3 (0.8;2.0)
At least 9 childcare appointments at 24 months		p < 0.001	p = 0.008	
No	1	1	1	1
Yes	2.8 (1.8;4.1)	1.9 (1.3;2.7)	1.8 (1.0;3.0)	1.8 (1.2;2.7)
Received guidance about prevention	p < 0.001		p < 0.001	
No	1	1	1	1
Yes	9.9 (6.7;14.9)	3.8 (2.8;5.2)	8.4 (5.2;13.6)	3.8 (2.6;5.5)
Age that the child began brushing teeth alone	p < 0.001		p = 0.001	
Less than or equal to 36 months	1	1	1	1
From 37 to 60 months	1.2 (0.7;2.0)	0.9 (0.6;1.3)	1.0 (0.5;2.0)	0.8 (0.5;1.3)
Still receives help	3.4 (2.2;5.3)	1.6 (1.1;2.4)	2.4 (1.4;4.2)	1.4 (0.9;2.1)

To be continued

Table 2 continuation

Variable	Unadjusted Analysis - OR (95%CI)		Adjusted Analysis - OR (95%CI)[a]	
	Routine[b]	Resolve problem[b]	Routine[b]	Resolve problem[b]
Attends daycare	p < 0,001		p = 0,6	
No	1	1	1	1
Yes	3.0 (2.2;4.3)	1.4 (1.0;1.9)	1.2 (0.8;1.9)	1.1 (0.8;1.6)
Fear of going to the dentist	p < 0.001		p = 0.01	
No	1	1	1	1
Yes	0.3 (0.2;0.5)	0.7 (0.5;1.0)	0.5 (0.3;0.8)	0.7 (0.5;1.1)
Felt pain in last 6 months	p < 0.001		p < 0.001	
No	1	1	1	1
Yes	0.4 (0.2;0.8)	2.8 (2.0;4.0)	0.7 (0.3;1.7)	2.5 (1.6;4.0)
Tertile of tooth decay (dmfs)	p < 0.001		p < 0.001	
1	3.3 (2.0;5.3)	0.3 (0.2;0.4)	1.4 (0.8;2.9)	0.3 (0.2;0.4)
2	2.9 (1.6;5.1)	0.6 (0.4;1.0)	2.0 (1.0;4.2)	0.7 (0.4;1.2)
3	1	1	1	1
Mother's perception of child's oral health	p < 0.001		p = 0.2	
Very good	4.1 (2.3;7.3)	0.4 (0.3;0.7)	0.8 (0.4;1.9)	0.6 (0.3;1.1)
Good	2.1 (1.2;3.7)	0.4 (0.3;0.6)	0.8 (0.4;1.7)	0.6 (0.3;1.0)
Regular/ Bad/Very bad	1	1	1	1
Mother perceives need for treatment	p < 0.001		p = 0.06	
No	1	1	1	1
Yes	0.8 (0.6;1.1)	1.7 (1.2;2.3)	0.6 (0.4;1.0)	0.6 (0.4;1.0)

[a] Variables were controlled for upper levels and for each other.
[b] Reference category is "never went to the dentist," which isNot included in the table.

Information about how to maintain healthy primary teeth through eating and hygiene habits can be carried out individually or collectively. In well-structured health systems, these subjects are addressed by a inter-professional healthcare team. Information about oral health is not only the dentist's responsibility but the responsibility of other health professionals who treat the mother and child. In the present study, 45% of mothers received information. Of these, less than 20% received information from other professionals.

Visits to health services are a result of many factors, such as the population's health needs, the availability or accessibility of service providers, and other factors related to the organization of the health system.[24] Both the organizational structure[19,21] and factors related to the mother's perception of dental services[8,23] are related to using of these services.

In Pelotas, as well as many other similar cities, oral health needs are addressed through the actions of individual assistance, collective action and intersectoral initiatives.[16] Dental caries in the population shows that health promotion and oral disease prevention programs should be maintained and improved in order to reduce its severity. There is a higher rate for routine visits among people with higher incomes and more schooling, who generally pay more for private services. For people who depend on the public health system, this rate could be higher, as approximately 70.0% of mothers adhere to prenatal and childcare health programs. Integrating information about oral health in these programs could result in a higher level of comprehensive care, increased

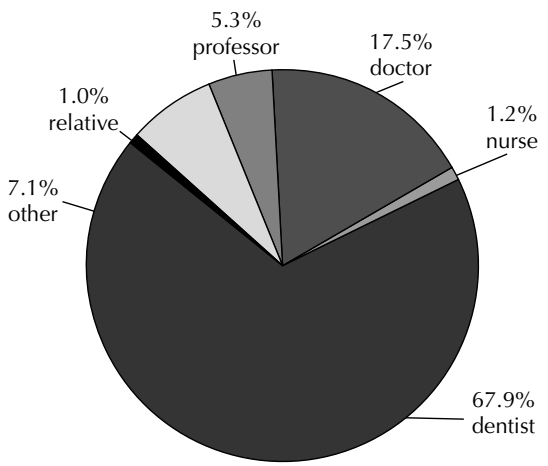

Figure. Individuals who provided oral health information to mothers of children in the 2004 birth cohort. Pelotas, Southern Brazil, 2010.

autonomy for caregivers, and motivation to use dental services for prevention. This is the responsibility of auxiliary staff in well-structured systems.

In Brazil, child health has been on the public policy agenda for decades, and we are close to achieving universal coverage for maternal and child care.[25] The number of cities without dental care assistance programs has decreased.[5] Dental care was relocated to the primary health care network, leading to greater integration of oral health actions in other programs.[5] However, it is very difficult to share knowledge and coordinate the interprofessional collaboration under an interdisciplinary approach within health programs. Integrating oral health actions into maternal-child programs can increase the rate of dental health visits, which has implications for improving oral health, reducing late diagnoses, and preventing the loss of teeth due to untreated caries.

The rate of dental service use among preschool children is 37.0%, which is lower than the rate for medical services (pediatric care). In addition to income and schooling, the mother's behaviors, including providing adequate childcare, regular use of dental services, receiving information about dental health for children, and helping children brush their teeth, also play an important role. Factors related to the child, such as having felt pain in the last six months and belonging to the tertile with the highest level of tooth decay, independent of other factors, were associated with dental visits to resolve a problem.

To raise the rate of routine dental visits, particularly among people with lower incomes and less schooling, it is important to educate mothers about oral health and diseases. In addition, it is important to provide auxiliary personnel for the appropriate running of the primary care units and the encouraging of regular dental visits.

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