

Decay prevalence in preschool children from public educational institutions with and without dental care

Prevalência de cárie em pré-escolares de escolas públicas com e sem assistência odontológica

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ABSTRACT

Objective: To evaluate the prevalence of dental decay in 5-year children, enrolled in schools, with (DC) and without dental care (NDC).

Methods: DMFT index was used to assess caries. Family status were collected from parents.

Results: Mean DMFT was 1.64 (57.3% free of caries). Less decayed teeth and more restored teeth were observed in DC ($p < 0.05$). DC children have more access to dental services, although most parents had difficulty in taking them to a public service. Family incomes of up to 3 minimum wages have lower information about dental caries.

Conclusions: DC did not influence the prevalence of tooth decay in children, but it significantly reduced dental treatment needs.

Keywords: Dental caries; Pre-schoolchildren; Dental care for children; Public assistance.

RESUMO

Objetivo: Avaliar a cárie dentária em crianças de 5 anos, matriculadas em escolas com (CD) e sem dentista (ND).

Métodos: CPOD foi usado para avaliar a cárie. O status familiar foi informado pelos pais.

Resultados: O CPOD médio foi de 1,64 (57,3% livre de cárie). Menos dentes cariados e mais dentes restaurados foram observados nas CD ($p < 0,05$). As crianças de CD têm mais acesso aos serviços odontológicos, embora os pais tenham dificuldade para leva-los ao atendimento. Famílias com renda de até 3 salários mínimos possuíam menor informação sobre cárie dentária.

Conclusões: Dentista na escola não interferiu na prevalência de cárie dentária, mas reduziu a necessidade de tratamento odontológico.

Palavras-chave: Cárie dentária; Crianças pré-escolares; Atendimento odontológico para crianças; Assistência pública.

INTRODUCTION

Dental caries is still considered an international public health challenge, especially amongst young children^{1,2}. Early childhood caries (ECC) is a serious chronic disease that starts early in child's life, progressing quickly and normally becoming an untreated disease. Caries experience on deciduous dentition is the strongest predictor of caries in the permanent dentition, which may indicate that the oral environment will be favorable for the disease development during the eruption of permanent teeth³⁻⁴. This disease has a strong impact on the quality of life of the child and its family⁵. ECC requires treatment to remove infection and preventive and educative measures to avoid future disease occurrences^{4,6}. It is common to assume that dental treatment leads to dental caries index reduction. However, studies have shown that dental service impact on caries prevalence is less important than family factors, habits and lifestyle to promote oral health maintenance^{4,7}.

Data of the Brazilian Oral Health Survey (*SB Brasil*)⁸ carried out in 2010 revealed that 5-year-old children had an average of 2.43 caries-affected teeth and less than 20% were treated at the time of the exam. It was also noted that 46.6% of the children were caries free, a percentage below the World Health Organization goal for 2010, set in 90%.

The present study aimed to enlarge the discussion about the importance of the dental services in public preschools and their contribution to the reduction of dental treatment need among 5-years-old children enrolled in such schools, and to describe the family profile of the surveyed students.

METHOD

This is a cross-sectional observational study that was approved by the Human Research Ethics Committee of the Universidade do Sagrado Coração (n. 851.137), and was conducted in a Brazilian city, Bauru, located in the central-west region of São Paulo state, having an estimated population of 364,562 inhabitants, a territorial area of 667,684 km², and an elevated HDI (0.8010)⁹. The municipality has fluoride public water supply since 1975¹⁰.

Fourteen Municipal Early Childhood Education Schools, having dental service (dental clinic, a dentist offering educational/preventive and curative services) (DC) (n=6) or not (NDC) (n=8) participated in this study. The target population was composed of pre-schoolchildren and their legal guardians. An Informed Consent Form, containing detailed explanations about the research, was signed by guardians of children from the participating preschools.

Initially, 695 5-years-old children were selected, all of them enrolled in the previously mentioned preschools during the last year. At the end of the study, the population totalized 511 children (253 boys and 258 girls). Children whose guardians did not authorize their participation and/or did not answer the questionnaire and those who missed class at the day of the exam were excluded.

The questionnaire was elaborated to address the access to dental services, the literacy on oral health and the socioeconomic status of the families. It comprised 11 questions. These questions were based on the SB Brasil 2010 questionnaire (Brazilian Oral Health Survey)⁸.

Examiner was calibrated evaluating a total of 26 pre-school children on a given date and her evaluations were repeated after 15 days. Kappa mean values obtained was 0.85, considered good for the calibration step. Clinical exams, performed in accordance to the WHO guide for DMFT index, occurred at the preschools' yards, under natural light and a hand-held flashlight, with a WHO-IPC probe¹¹. The exam position was obtained with the child laid down on a table and the examiner sited behind child's head. The note-taking assistant was positioned next to the examiner. Codes and diagnosis criteria used to evaluate the dental caries followed the recommendation of the World Health Organization (1997), adapted by the Projeto SB Brasil¹². Besides the dental caries experience, treatment needs were also observed, following the criteria recommended by the World Health Organization.

Data were recorded in EXCEL spreadsheets. Chi-Square and Mann Withney tests was performed for the comparison between DC and NDC, considering 5% level of significance.

RESULTS

DMFT index values were closely related for DC (1.65) and NDC (1.63), with no statistical difference ($p=0.8972$). Percentages of the DMFT index components for DC and NDC are presented in Table 1. The statistic Chi-square test failed to show a significant difference for both school types studied ($p=2.87$). Table 2 describes the number and percentage of the deciduous teeth evaluated. The Chi-square test was applied to carious teeth, restored without caries, lost by caries and no statistical significance was shown ($p=1.907$).

Table 1.

DMFT index components for children from DS and NDS schools in Bauru, SP, Brazil (2014).

Dental Care	DMFT index components (Σ)	Children (N)	DMFT index
With	444	269	1.65
Without	395	242	1.63
TOTAL	839	511	1.64

Subtitle: Mann Whitney Test: $p>0.05$

Table 2

Deciduous teeth evaluated: Number and percentage of carious teeth, restored with or without caries, and lost by caries. Data from Bauru, SP, Brasil (2014)

Dental Care		Healthy	Carious	Restored with caries	Restored Without caries	Lost by caries	Total of evaluated teeth
With	N	4682	220	9	207	8	5126
	%	91.35	*4.28	0.17	*4.04	*0.16	52.30
Without	N	4278	306	8	79	2	4673
	%	91.54	*6.55	0.17	*1.70	*0,04	47.70
TOTAL	N	8960	526	17	286	10	9799
	%	91.44	5.37	0.17	2.92	0.10	100

* Values submitted to the Chi-square test: $p=1.9072E-16$

Percentage of children free from caries from DC (60.2%) was higher than those from NDC (54.1%). The same way, lesser children had caries experiences from DC (39.8%) compared to NDC (45.9%), although not significant statistical difference was

found (*Chi-square* test, $p=0.16454$). Total treatment need for DC (4.48%) was lower compared to NDC (6.72%), as shown in Table 3. Qui-squared analysis showed a statistically significant difference ($p=1.21E-06$).

Table 3.
Number and percentage of carious, restored, and lost teeth. Data from Bauru, SP, Brasil (2014)

Dental Care	Cariouso		Restored		Lost	
	N	%	N	%	N	%
With	229	51.6	207	46.6	8	1.8
Without	314	79.5	79	20	2	0.5
TOTAL	543	64.7	286	34.1	10	1.2

Subtitle: *Chi-square* test: $p < 0.0001$

Table 4 shows the number of teeth in need of dental treatment and also the distribution of these teeth according to the type of treatment: restoration of one face, restoration of two or more faces, pulp treatment and restoration, and extraction. It is noted that the percentage of teeth in need for restoration of a face for schools with dental care (55.02%) was higher compared to schools

without dental care (49.68%). For the need of restoration of two or more faces, the percentages were similar between schools. Higher percentages of need of pulp treatment and tooth extraction were observed in children from schools without dental assistance. The Chi-Square statistical test showed a significant difference between the values ($p = 0.035058$).

Table 4.
Number and percentage of teeth in need of dental treatment according to the type of need and dental care. Data from Bauru, SP, Brazil. (2014)

Dental Care		Dental treatment need				Lost	Total
		Restorative	2 ou mais faces	Pulp Treatment and restorative			
With	N	126	96	3	4	229	
	%	55.02	41.92	1.31	1.75	100	
Without	N	156	129	9	20	314	
	%	49.68	41.08	2.87	6.37	100	
TOTAL	N	282	225	12	24	543	
	%	51.93	41.45	2.2	4.42	100	

Subtitle: *Chi-square* test: $p < 0.05$

A total of 269 of the respondents were from DC and 242 were from NDC. Most guardians believed their children needed dental treatment, but they haven't suffered from toothache in the last six months, and that their children had already visited a dentist's office. There was no significant difference between the two school groups for these questions ($p > 0.05$).

For 34.94% of the children from DC, the school clinic was the place of the last dental appointment. A higher percentage of private assistance was observed among the children from NDC, with statistically significant difference ($p < 0.001$). Clinical exams and teeth cleaning were the main reasons why guardians took their children to a dentist's visit from DC (37.91%) and NDC (31.81%), res-

pectively ($p>0.05$). Scheduling appointments in a public service was the biggest difficulty reported by parents from DC (47.96%) and NDC (52.09%). Most parents of children from DC (81.43%) and NDC (51.23%) responded that child learns to brush the teeth at school, with a significant difference between school groups ($p<0.0001$).

Most guardians from both groups confirmed that they have little knowledge about tooth caries, 58.37% in DC and 61.57% in NDC, without a significant difference ($p>0.05$). There was a significant difference in the oral health orientation received by parents at school, with higher levels for DC (49.07%) compared to NDC (32.64%) ($p<0.001$).

A greater percentage of families had a monthly income between one and three minimum wages, both in DC (49.86%) and NDC (47.14%) ($p>0.05$).

Preschools with dentist care presented more access to dental services, although the majority of parents pointed out the difficulty of taking their children for dental treatment at the Health Centers. There was a low level of information from parents about dental caries and the most families belonged to social classes D and E, with monthly income of up to 3 minimum wages.

DISCUSSION

This study selected Municipal Early Childhood Education Schools with (DC) and without dental care (NDC), aiming to discuss the role of dentists in students' oral health. There was no statistical difference in DMFT means of schools with (1.65) and without (1.63) dentists, thus suggesting that dental service may not result in lower dental caries prevalence. Our results showed that 60.2% and 54.1% of 5-year-old children were caries free, in DC and NDC, respectively. Such data were above the SB Brasil 2010 survey: 46.6% for the whole country and 51.9% for the southeast region. Although results were better than the Brazilian average, they are still below the WHO goal set in 90%.

DMFT average presented similar results for both groups of schools. Despite of that, the index's components suggested a better oral condition for the children from DC, shown by the analysis of numbers of carious and obturated teeth. Also, a higher percentage of restored teeth could be observed among children from DC (46.6%) compared to the children from NDC (20%). The opposi-

te was registered for the carious teeth component that presented a higher percentage among children from NDC (79.5%) compared to the children from DC (51.6%). The dentist presence has dropped the stagnated proportion of non-treated carious teeth for 5-year-old children reported by the SB Brasil 2003 and 2010 (80%) and other studies¹³⁻¹⁶. Thus, analyzing the need of dental treatment, a higher percentage of treatment need was observed in children from NDC, and for both surveyed school groups, restorative procedures were required in most of the cases. These data are in accordance to other authors that have shown a predominance of less complex procedures necessities in deciduous teeth¹⁷⁻¹⁹.

A family profile was delineated by the questionnaire's answers. Most of the participating families have a monthly income of less than 3 Brazilian minimum wages, having three to five residents per house, and with guardians possessing little information about dental caries. Data is in accordance to the literature showing that children from public schools belong to families with a lower income and this may influence their caries experience, showing higher incidence and severity of such illness among children from public schools²⁰.

Effectiveness of curative measures was observed in children from DC, who had an easier access to dental treatment. Questionnaire have also corroborated to this find, in which the higher percentage of guardians of this group said that their children had their last dental appointment in the school's clinic. Despite of that, several children in DC did not receive dental service. It could be assumed that there was a rejected demand, maybe related to the fact that each dentist works only few shifts in each school, and that some parents don't authorize the dental treatment at school.

Results reveal that children from DC disseminate the knowledge acquired from dentists to their guardians, demonstrating the impact of the education in oral health. Bauru is a privileged city in terms of dental public services. It has several public general dental offices, a specialized public dental clinic and public emergency clinics and hospitals covered by the Brazilian Unified Health System (UHS). Besides that, three Dentistry Colleges offers free dental treatment for the community. Therefore, in theory, students who attend the NDC should not have difficulties to access other public providers of dental treatment. But in practical terms, only 20% of the teeth affected by caries were restored in chil-

dren from NDC. Great part of guardians responded that they had difficult to gain access to public dental treatments, due to the huge demand. Our results show that only a small part of the respondents was integrated to a private dental practice due to their low income.

School-based Dentist's practices produce many positive earnings for the children and public health. They create a bond between children and the professional, resulting in a trustful relationship where children accept the treatment and the guidance received. This reverberate to children's family, demolishing the stigmatized perception of the dental treatment as a painful procedure, increasing the knowledge of oral health and producing healthier families. Also, in terms of logistics, it is easier to remove children from their classrooms than to take them go to a dental clinic, which may force their guardians to have a sick leave from their professional activities. As most of the students attend the same school for several years, dentists have the conditions to keep track on children's oral health condition, treating or educating them when necessary.

These results clearly testify the indisputable role of preschool dentists in Bauru, treating and promoting oral health for the students and, thus, improving the life quality. Also, it was shown that, despite the public dental network, there are still a rejected demand for dental treatment. Altogether, these findings are relevant and serve as an alert to guide the reorientation of public policies to achieve global goals of oral health.

CONCLUSION

The dental caries prevalence in children enrolled in public preschools is low and not related to schools' dental service. Treatment need is significantly higher in preschools without dentists. Children from preschools with dentists proved to have more access to dental services.

Results of this work showed an important role of dentistry professionals working in preschools, promoting oral health and thus improving the quality of life of the assisted preschoolers. On the other hand, the study also showed that there is a considerable number of preschoolers in the municipality, who do not receive dental care and who have needs that are not being met. These findings are relevant and serve as a warning so that the competent authorities can guide public policies in such a way as to reduce inequalities in the oral health of children in municipal level.

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CONFLICT OF INTEREST

The authors have no conflict of interest to declare.

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