

Association of Oral Health Teams implantation with collective actions and extractions in Paraná State, Brazil

Paula Mayumi Siqueira (<https://orcid.org/0000-0001-5421-0247>)¹
 Josely Emiko Umeda (<https://orcid.org/0000-0003-1106-4344>)¹
 Raquel Sano Suga Terada (<https://orcid.org/0000-0003-1344-9870>)¹
 Amanda Fonquete Giolet (<https://orcid.org/0000-0002-4387-1733>)¹
 Juliana Squizzato Leite (<https://orcid.org/0000-0001-7084-7467>)²
 Moacir Paludetto Junior (<https://orcid.org/0000-0002-3039-6611>)³
 Cacilda Castelo Branco Lima (<https://orcid.org/0000-0002-2977-6035>)⁴
 Mitsue Fujimaki (<https://orcid.org/0000-0002-7824-3868>)¹

Abstract *This article aims to monitor the indicators of outpatient production of Dentistry and to evaluate the association of collective action and extraction indicators with the number of Oral Health Teams (OHT) between 2006 and 2015 in Paraná. In this longitudinal ecological study, consolidated secondary data were analyzed (collective actions of supervised brushing-SB, topical application of fluoride-TAF, fluoride mouthwash-FM, oral examination for epidemiological purposes-OE and extractions of permanent teeth-EX) from the Ambulatory Information System (SIA-SUS) and OHT numbers from the National Registry System of Health Establishments. Descriptive analyzes and Pearson's correlation were performed, with significance level of $p < 0.05$. It was verified the increase of the OHT implantation over time and a strong positive correlation with collective procedures of SB ($r = 0.78$; $p = 0.007$) and FM ($r = 0.76$; $p = 0.011$) and moderate negative correlation with EX ($r = -0.53$). It was concluded that the evaluated indicators showed that the implementation of Oral Health Teams may have contributed to changes to the healthcare model, with an increase in preventive collective procedures and reduction of tooth loss in Paraná.*

Key words *Preventive Dentistry, Health Status Indicators, Public Health*

¹ Departamento de Odontologia, Universidade Estadual de Maringá. Av. Mandacarú 1550, Parque das Laranjeiras. 87083-240 Maringá PR Brasil. mayumi.siqueira2312@gmail.com

² Universidade Estadual de Ponta Grossa. Ponta Grossa PR Brasil.

³ Secretaria Municipal de Saúde de Arapongas. Arapongas PR Brasil.

⁴ Departamento de Patologia e Clínica Odontológica, Universidade Federal do Piauí. Teresina PI Brasil.

Introduction

Knowledge about the population and their oral condition is fundamental for the development of proposals for actions suited to the needs of different population groups. The importance of evaluating the application of resources and their impact on the population's health will lead to the development of specific strategies and regulations to monitor the quality and effect of attention in primary health care¹. The planning must prioritize prevention and health promotion actions, therefore monitoring and evaluation are tools for this purpose. However, monitoring of ambulatory production indicators in Dentistry associated with the implementation of Oral Health Teams in the state of Paraná has not yet been widely studied and disseminated.

Therefore, health information systems are the tools available for assisting with planning for improvement of the epidemiological indexes of diseases. In the Unified Health System (SUS), the Outpatient Information System (SIA) and the Primary Care Information System (SIAB)², which have been gradually replaced by e-SUS³, are important management tools that enable the services to be monitored and evaluated, thereby contributing to the decision making process. Thus, it has become necessary to use data from the available information systems to enable proper planning of health actions⁴⁻⁸, integrated with the budgetary reality, with the goal of improving the services⁹.

The Primary Care Indicators Pact is a negotiation tool used by managers at the municipal, state and federal levels and establishes the annual goals to be achieved according to the previously agreed indicators, with the aim of improving primary health care and consequently, the population's health¹⁰. In the study by Teixeira *et al.*¹¹, the number of dental procedures performed in a municipality in Rio Grande do Sul from 2000 to 2007, was evaluated using data obtained from the Ministry of Health. An increase in the number of basic individual procedures and first consultation was observed, with a relative reduction in the proportion of tooth extractions, resulting from the expansion of dental services according to free demand¹⁰. In another study by Baldani *et al.*¹², socioeconomic conditions were related to the provision of dental services in 399 cities in Paraná from 1998 to 2005, resulting in the expansion of dental services, as well as providing the municipalities, which had the worst so-

cioeconomic indicators, with a higher amount of resources, demonstrating the importance of monitoring SIA-SUS data to reorganize the provision of health services according to local needs. However, few studies^{5,13-16} in the literature have demonstrated the changes that occurred in the production of collective activities and reduction in the number of tooth extractions after the implementation of the Oral Health Teams (ESB) in the Family Health Strategy.

Thus, the objective of this study was to monitor outpatient production indicators in Dentistry and to evaluate the association of collective action and tooth extraction indicators with the number of Oral Health Teams implemented in the State of Paraná from 2006 to 2015.

Materials and methods

This was a longitudinal ecological study, using secondary public domain data, consolidated between 2006 and 2015, in the 399 municipalities of Paraná, Brazil. It was used information relative to access and primary oral health care services, characterized by the indicators. The data collection phase was carried out by means of consultations on the website of the SUS Computer Department (DATASUS) of the Ministry of Health, to collect the following data:

- SUS Outpatient Information System (SIA-SUS): Collective Action of Fluoride Mouthwash (BF) - code 03011038 (until 2007) and code 0101020023 (from 2008); Collective Action of Supervised Dental Brushing (ES) - code 03011020 (until 2007) and code 0101020031 (from 2008); Topical Fluoride Application (ATF) - code 03011046 (until 2007) and code 0101020015 (from 2008); Collective Action of Oral Examination with Epidemiological Purpose (EB) - code 03011058 (until 2007) and code 0101020040 (from 2008) and Permanent Teeth Extraction (EXO) - code 03041026 (until 2007) and code 0414020138 (from 2008);

- National Registry of Health Establishments (CNES): oral health teams deployed per year.

- Brazilian Institute of Geography and Statistics (IBGE)¹⁷: estimated population of the State of Paraná by year.

Municipalities that did not provide any information were excluded. After obtaining the secondary data, the outpatient production indicators in Dentistry were calculated using the formula below:

$$\text{Annual production indicator} = \frac{1,000 \times \text{Number of procedures performed in the year}}{\text{Estimated population in the year}}$$

The coverage of the Oral Health Teams (ESB) was calculated using the formula below¹⁸:

$$\text{ESB coverage} = \frac{\text{Number of ESB} \times 3,000 \times 100}{\text{Estimated population in the year}}$$

Statistical analysis

Data processing and statistical analysis were performed using the Statistical Package for the Social Sciences (SPSS® for Windows, version 20.0, Armonk, NY, USA: IBM Corp). Descriptive statistics of all variables was performed. The Shapiro-Wilk test was used to assess the normal distribution of variables. The variables showed normal distribution ($p > 0.05$): BF (0.734), ES (0.589), ATF (0.372), EB (0.003), EXO (0.588).

Pearson's correlation was performed to verify the associations between the mean years of the indicators of ambulatory procedures (BF, ES, ATF, EB, EXO) and the coverage of oral health teams. The level of statistical significance adopted was $p < 0.05$.

The level of similarity between the variables ESB, EXO, ATF, BF and ES was analyzed using the multivariate analysis technique by the method of grouping variables (Cluster). In addition, the multivariate analysis technique by the principal component method was used to complement the information obtained by the Cluster method.

Results

The values of indicators referring to BF, ES, EB, ATF and EXO are shown in Table 1. It was possible to observe an increase in all indicators of ambulatory procedures (BF increase of 57.15%, ES increase of 98.36%, ATF increase of 30.98%, EB increase of 108.11%), except for extraction (reduction of 37.09%). Over the years there has been a decline in EXO procedures, especially after 2011. The EXO indicator was 43.86 in 2006 and in 2015 it decreased to 27.59 (Table 1). The hypothesis of a possible interference in the reduction of EXO due to increase in population cannot be considered, since the other indicators (BF, ES, ATF and EB) showed increased values, considering that the same population denominator was used for calculating the indicators, according to the respective years included in the study. The

population of the State of Paraná did not show divergent growth peaks, as they were represented by gradual increases, ensuring that the values obtained from the indicators were not affected by this variable.

The number of ESB in the State of Paraná, showed a gradual increase in the period between 2006 and 2015, reaching 1,286 teams in 2015 (Graph 1). The increase in the number of ESB improved coverage of the population in the State, which began with a situation of 25.33% of population coverage in 2006, and rose to 34.56% in 2015.

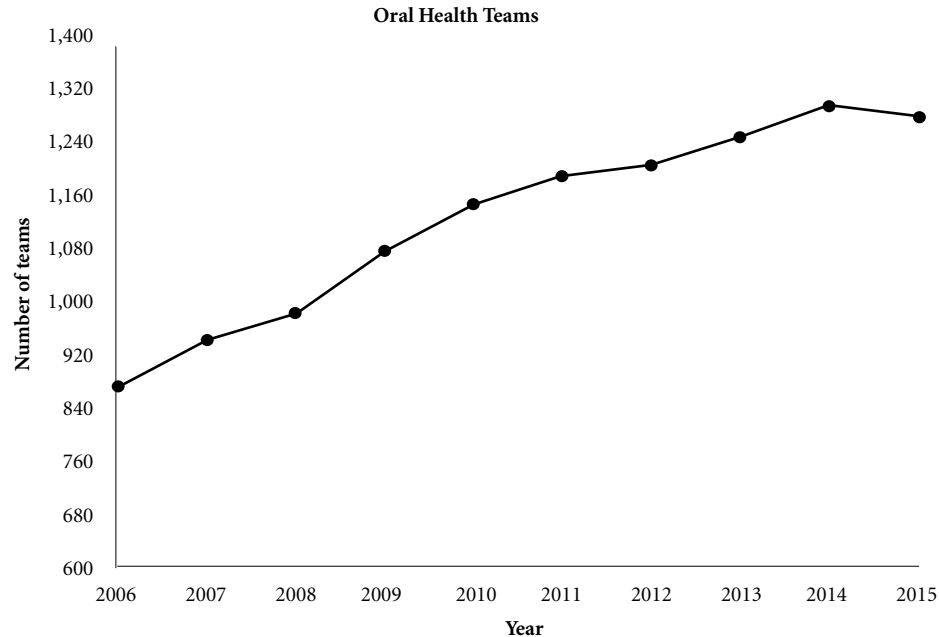
By means of Pearson's Correlation, it was possible to establish a correlation of the indicators of collective procedures and tooth extraction with the indicator of oral health teams, as shown in Chart 1. There was a negative correlation between EXO and BF ($r = -0.61$), between EXO and ESB implanted ($r = -0.53$); and between EXO and ES ($r = -0.43$). Whereas there was a strong positive and significant correlation of ESB with the collective procedures of ES ($r = 0.78$; $p = 0.007$) and BF ($r = 0.76$; $p = 0.011$), a moderate positive and significant correlation between BF and ES ($r = 0.69$; $p = 0.027$) and low correlation between EXO and ATF ($r = 0.31$) (Chart 1).

In the multivariate analysis using the Cluster method, it was possible to observe that the EXO procedure showed greater similarity with ATF

Table 1. Historical series of indicators for fluoridated mouthwash (BF), supervised brushing (ES), topical fluoride application (ATF), oral examination for epidemiological purposes (EB) and extraction of permanent teeth (EXO) in the State of Paraná, from 2006 to 2015.

Year	Indicator				
	BF	ES	ATF	EB	EXO
2006	393.56	219.46	21.51	9.31	43.86
2007	466.76	376.46	28.30	12.66	42.14
2008	416.29	378.32	36.80	15.92	55.71
2009	365.64	348.15	32.88	18.69	60.47
2010	458.07	395.12	37.73	17.26	46.62
2011	608.92	508.61	35.96	55.23	50.90
2012	532.37	463.92	29.54	13.12	47.06
2013	515.68	415.13	26.67	31.59	33.16
2014	548.07	655.19	35.97	19.40	27.62
2015	618.48	435.33	28.16	19.38	27.59

Source: Elaborated by the authors. Consultation in the Ambulatory Information System of SUS (SIA-SUS) for the construction of the indicators.



Graph 1. Implementation of Oral Health Teams in the State of Paraná, from 2006 to 2015.

Source: Elaborated by the authors. Consultation in the National Register of Health Establishments (CNES) to obtain the number of Oral Health Teams (ESB).

Chart 1. Pearson correlation matrix between the procedure indicators of fluoridated mouthwash (BF), supervised brushing (ES), topical fluoride application (ATF), oral examination for epidemiological purposes (EB) and extraction of permanent teeth (EXO) with the indicator of Oral Health Teams (ESB) implemented in the period between 2006 and 2015.

Variables	ESB r	BF r	ES r	ATF r	EB r	EXO r
ESB	1	0.76*	0.78*	0.31	0.43	-0.53
BF	0.76*	1	0.69*	0.10	0.55	-0.61
ES	0.78*	0.69*	1	0.55	0.40	-0.43
ATF	0.31	0.10	0.55	1	0.32	0.31
EB	0.43	0.55	0.40	0.32	1	0.05
EXO	-0.53	-0.61	-0.43	0.31	0.05	1

r=Pearson correlation coefficient; *p<0.05.

Source: Elaborated by the authors.

(65.46%) in comparison with the other indicators, as shown in the dendrogram of Figure 1. The highest degrees of similarity were observed between ESB and ES with a value of 89.17%; and

both were shown to be similar (84.49%) to BF (Figure 1). In addition, multivariate analysis was performed using the principal component analysis method, showing positive and negative correlations between the variables BF, ES, ESB, ATF and EXO, as shown in Graph 2. In the analysis of the factors, the determinant of the matrix was 0.030, the KMO statistic was 0.66 and the Bartlett test showed 0.011.

Discussion

Longitudinal studies in public health are important tools for planning public policies in order to improve the quality and impact of health care on the population¹³. According to the Ministry of Health, epidemiological data and territorial information should be used to support planning. In addition, indicators should be monitored and evaluated to qualify actions¹⁹. There are some studies in the literature^{4-6,11,13-15,20,21}, which have monitored and evaluated outpatient dental procedures presented in the official information systems of the Ministry of Health; however, studies that associated the implementation of

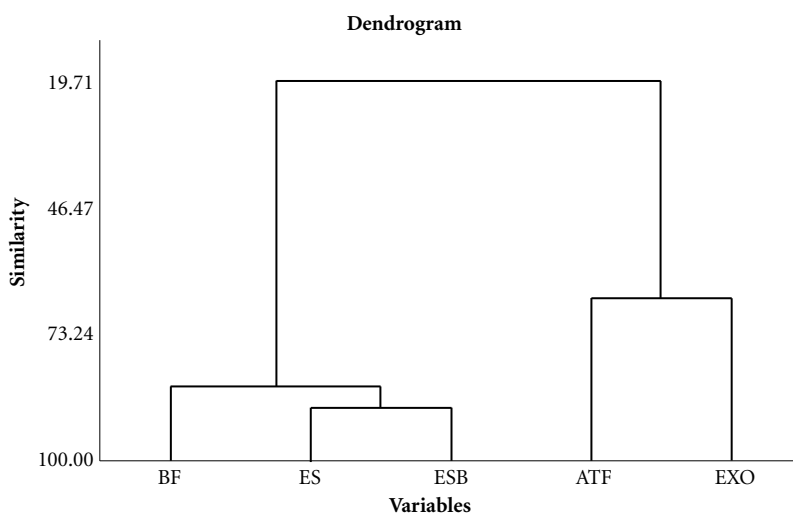
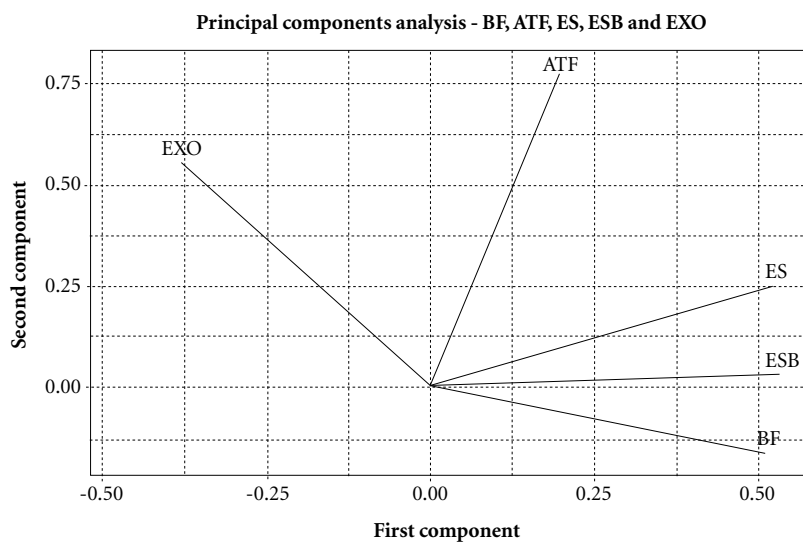


Figure 1. Dendrogram of the relations between the variables BF, ES, ESB, ATF and EXO.

Source: Elaborated by the authors.



Graph 2. Multivariate analysis using the principal component method, showing positive and negative relations between the variables BF, ES, ESB, ATF and EXO.

Source: Elaborated by the authors.

ESBs with access to care, the performance of collective actions and extractions using data from SIA-SUS^{5,13-16} are scarce. So far, it has not been possible to find longitudinal studies that sought

to analyze the impact of the implementation of Oral Health Teams (ESB) on the performance of collective actions and reduction in the number of tooth extractions in the State of Paraná.

The incorporation of the dentists into the Family Health Team took place through Ordinance No. 1,444/2000 of the Ministry of Health²², emerging as a strategy for strengthening Primary Care, which is based on the establishment of territories, control of oral diseases and their epidemiological impact in the medium and long term²³. In this study, a progressive increase of 47.1% in the implementation of ESB in Paraná was found from 2006 to 2015. These data corroborated the findings in studies by Antunes and Narvai²¹, which demonstrated a significant growth of ESB throughout Brazil since 2000. In another study by Oliveira *et al.*¹⁴ in the State of Ceará, the authors also found an increase, with a high coverage of 77.5% of the population by the ESBs in 2007. Access to the Family Health Strategy (ESF) has been prioritized by some States and is desirable, in view of the changes in the care model and incorporation of ESB to be associated with the increased use of Dental service in SUS¹⁶. In addition, the increase in the number of ESBs in the municipalities would facilitate the population's access to health promotion, prevention and educational activities, since a greater number of professionals working in the ESF could lead to a reduction in the demand for outpatient and specialized procedures over time. Thus, the ESB, together with the multidisciplinary team working with comprehensive care in its territory, could interfere in social, environmental, economic and emotional factors, and facilitate access to dental services and actions promoting general and oral health. However, despite the increase in ESB in Paraná, coverage by ESBs is still low, demonstrating a great potential for expansion to be developed in the State.

According to the guidelines of the National Oral Health Policy¹⁹, the preventive and collective activities of the ESB bear 15% to 25% of the workload; these actions are dedicated to the diagnosis of the territory and planning of actions, focusing on the family and the community. These activities aim to control oral diseases such as caries, periodontal disease and oral cancer, and to educate the population to acquire good health habits. In our study, an increase in collective actions (BF, ES, ATF and EB) over the years was found. These findings were in line with the studies conducted in Santa Catarina²⁰, municipalities in the south of Brazil¹⁰ and in all municipalities of Brazil^{15,16} at different times of analysis. Almeida and Ferreira²⁴ emphasized that unlike individual activities, actions in population groups were significant in the ESF, breaking with the office

barriers and the traditional model focused on individualism and curativism. These authors also found that the collective action ES was the most frequently registered in Natal in 2006, in the State of Rio Grande do Norte, followed by ATF. In the present study, the most preventive collective activities registered at SIA-SUS in Paraná were the BF and the ES, in the years 2006 to 2015. This can be explained by the fact that Paraná has a State Fluoride Mouthwash Program that was created in 1980 (State Decree 3,046/1980), consisting of the State providing 1 gram sachets of Sodium Fluoride that are sent to city halls for distribution in municipal and state schools. Currently, the association of mouthwashes with supervised brushing has been suggested to make this preventive measure more effective.

With regard to the EXO indicator, in this study a reduction of 37.1% in 9 years was found, dropping from 43.9 in 2006 to 27.6 in 2015. Similarly, Peres *et al.*²⁵, performed a comparative analysis between SB Brasil 2003²⁶ and SB Brasil 2010²⁷, and verified a reduction in the number of missing teeth from 0.96 to 0.40 in adolescents, and from 13.5 to 7.4 in adults. Celeste *et al.*¹⁵ also observed a decrease in trends of tooth extraction rates in a study conducted in municipalities across Brazil from 1994 to 2007. To the contrary, some studies have demonstrated an increase in the EXO rate in municipalities with higher coverage by ESB, which was expected at the beginning of the implementation of the program, in view of the needs accumulated over the years¹⁰. Corrêa and Celeste¹⁶ found an increase of 74.1% in tooth extractions in all municipalities throughout the country between 1999 and 2011, a fact that could be explained by the increased use of public dental services in Brazil. In addition, higher rates of tooth extraction were found in municipalities with worse socioeconomic indicators, indicating a high disease burden at an advanced stage, when there was no access to treatment^{14,20}.

In our study, there were 2 phases of different behaviors: an increase in the EXO indicator in the years 2006 to 2011, and after that period, a progressive reduction until 2015. In the first years there possibly was an increase in access to and care for a pent-up demand of patients with the need for more complex procedures. In the following years, the drop in the number of tooth extractions could have been a reflection of the performance of the ESB that may have accumulated experiences and bonds with the population. It is not possible to attribute these explanations for the reduction in the number of tooth extractions

cannot be attributed to the variables studied only, since several other factors could interfere in the profile of the data presented, such as the number of professionals hired and training they underwent, local policies, implementation of the oral health care network in Paraná²⁸, among other actions.

Considering that the reduction in permanent tooth extractions seemed to be one of the most relevant impacts of the performance of the ESB; in other words, the ESB was able to interfere in the health-disease process in order to preserve the teeth, the findings of the present study pointed to a favorable scenario in the State of Paraná. It is known that there is a mismatch between the production of knowledge through scientific research and its implementation in the daily practice of health services, resulting in a delay of over 10 years²⁹. Thus, it is likely that the change in the work process will occur according to the understanding of the professionals, who can make the necessary internal (mental models) or external (practical) changes immediately or more slowly. Therefore, the construction of historical series can help with understanding the phenomena that occur in the population, since they modulate the variables over time, and are able to reveal the trends and the slow and natural process of change. Certainly, macro and micro policies directly interfere in this journey, and since 2011, the State of Paraná has sought to strengthen Primary Care through the Program of Qualification for Primary Health Care (APSUS)³⁰, including oral health. This qualification of the entire multidisciplinary team in Paraná may also have contributed to the findings of this study.

The results of this study showed a strong positive correlation between ESB and the collective procedures of ES and BF. A negative correlation with extraction, demonstrated that the increase in the number of dentists in the ESB may have contributed to the increase in the number of collective procedures performed, and consequently, to the reduction in extractions. These findings were in agreement with those of Palmier et al.⁵ who reported that the implementation of ESBs contributed to the favorable results of coverage indicators, dental procedures and reduction in tooth extractions in the 52 municipalities of Vale do Jequitinhonha. Whereas in the study of Marques et al.¹³, positive correlations were found between the first consultation and extraction ($r=0.65$), number of ESBs and first consultation ($r=0.75$), and ESB and extraction ($r=0.66$), in the Metropolitan Region of Curitiba in 2012. These

authors carried out the work in the same State of the present study, however, in a period of 1 year; this did not make it possible to perform a wide temporal analysis that would allow verification of marked changes in the behavior of the indicators. In the study by Oliveira et. al.¹⁴, a positive correlation was found between tooth extractions and individual basic dental actions ($r=0.85$) in the state of Ceará between 2001 and 2007. This analysis differs from the present study, since the association did not occur with the implementation of oral health teams, but was related to basic individual dental procedures.

It is necessary to consider that although the data collected in this study was obtained from official sources of the Ministry of Health's Information System, they may be susceptible to possible notification failures, because the guidelines in the SIA-SUS manuals are not always understood and followed properly. The systems are still fragmented, which makes it difficult to access the data, because changes in the codes and descriptions of the procedures are determined by the current management.

Therefore, there may be some inconsistencies in the values of the indicators between the years included in the study; for example, such as in the EB values observed in the years 2011 and 2013. However, it is important to consider that Ordinance 2,488, which approved the National Primary Care Policy³¹, was published in 2011. This ordinance established the reviewed guidelines and standards for the organization of Primary Care, Family Health Strategy (ESF) and Community Health Agents Program (PACS). Coincidentally, it was the year in which the over-launches at SIA occurred, which may have reflected greater performance of EB by health professionals, and may have caused the discrepancy in relation to previous years. Although there was a drop in EB launches in 2012, which resulted in a reduction in the indicator of the mentioned year. In subsequent years, the increase in this indicator was noticeable and it remained higher when compared with the years prior to the publication of the above mentioned Ordinance. Thus, the Ordinance may have been a milestone in encouraging the performance of outpatient procedures, in addition to being a positive factor not only in oral examinations but in the procedures of supervised brushing and fluorinated mouthwashes. Another factor that should be considered is that the State of Paraná underwent a process of reorganization of Primary Care, with training of oral health professionals being provided in the period

between 2011 and 2014. New basic guidelines of the State Oral Health Policy were established in 2014, and were subsequently reissued in 2016²⁸.

The present study was conducted with data relative to the 399 municipalities of Paraná, consisting of relevant regional information, which may be noted in the results of public policies adopted in the State in recent years, in addition to assisting in the planning of future actions by managers and researchers. Further studies are needed to better understand the phenomena analyzed in this study; and to complement the data relative to socioeconomic variables, oral health conditions, professional work processes, among

others, and enable assessment of factors associated with the impacts of implementing ESB in Paraná or in other parts of Brazil.

Conclusion

Thus, it was concluded that the implementation of the Oral Health Teams may have contributed to the increase in collective actions and reduction in the number of tooth extractions in the State of Paraná. The implementation of ESB in the State of Paraná is an expanding process, with potential for growth.

Collaborations

PM Siqueira and JE Umeda worked on data collection, statistics, and final drafting. RSS Terada and M Fujimaki worked on the research conception and determining the methodology to be applied. JS Leite, AF Giozet, and M Paludetto Junior conducted the literature search to write the introduction and discussion. CCB Lima assisted with statistical analysis and proofreading.

Acknowledgements

This study was funded by grants from the Coordenação de Aperfeiçoamento de Pessoal de Nível Superior - Brazil (CAPES) - Financing Code 001 and Programa Nacional de Cooperação Acadêmica (PROCAD) 2013/CAPES.

References

- Souza AN. Monitoramento e avaliação na Atenção Básica no Brasil: a experiência recente e desafios para a consolidação. *Saude Debate* 2018; 42(1):289-301.
- Brasil. Ministério da Saúde (MS). *Manual técnico operacional SIA/SUS - Sistema de Informações*. Brasília: MS; 2010.
- Brasil. Ministério da Saúde (MS). *e-SUS Atenção Básica: Manual do Aplicativo ACS - Agente Comunitário de Saúde*. Brasília: MS; 2015.
- Barros SG, Chaves SCL. A utilização do Sistema de Informações Ambulatoriais (SIA-SUS) como instrumento para caracterização das ações de saúde bucal. *Epidemiol Serv Saude* 2003; 12(1):41-51.
- Palmier AC, Andrade DA, Campos ACV, Abreu MHNG, Ferreira EF. Indicadores socioeconômicos e serviços odontológicos em uma região brasileira desfavorecida. *Rev Panam Salud Publica* 2012; 32(1):22-29.
- Pereira CRS, Patrício AAR, Araújo FAC, Lucena EES, Lima KC, Roncalli AG. Impacto da Estratégia Saúde da Família com equipe de saúde bucal sobre a utilização de serviços odontológicos. *Cad Saude Publica* 2009; 25(5):985-996.
- Paula JS, Ambrosano GMB, Mialhe FL. The impact of social determinants on schoolchildren's oral health in Brazil. *Braz Oral Res* 2015; 29(1):1-9.
- Bueno VLRC, Cordoni Júnior L, Mesas AE. Desenvolvimento de indicadores para avaliação de serviço público de odontologia. *Cien Saude Colet* 2011; 16(7):3069-3082.
- Pucca Jr GA, Gabriel M, Araujo ME, Almeida FCS. Ten Years of a National Oral Health Policy in Brazil: Innovation, Boldness, and Numerous Challenges. *J Dent Res* 2015; 94(10):1333-1337.
- Fischer TK, Peres KG, Kupek E, Peres MA. Indicadores de atenção básica em saúde bucal: associação com as condições socioeconômicas, provisão de serviços, fluoretação de águas e a estratégia de saúde da família no Sul do Brasil. *Rev Bras Epidemiol* 2010; 13(1):126-138.
- Teixeira ND, Facchini LA, Castilhos ED. Avaliação da evolução da demanda de saúde bucal através do uso de sistemas de informação em saúde. *Rev Enferm Saude* 2011; 1(1):50-59.
- Baldani MH, Almeida ES, Antunes JLF. Equidade e provisão de serviços públicos odontológicos no estado do Paraná. *Rev Saude Publica* 2009; 43(3):446-454.
- Marques AB, Oneda G, Buffon MCM, Ditterich RG. Sistemas de informação como ferramenta de monitoramento das ações de saúde bucal na Estratégia Saúde da Família da região metropolitana de Curitiba-PR. *Rev Bras Pesq Saude* 2014; 16(1):82-89.
- Oliveira PMC, Menezes LMB, Santratin MVL, Almeida PC, Almeida MEL. Indicadores de saúde bucal da atenção básica no estado do Ceará: Análise crítica. *Cad ESP* 2011; 5(1):29-36.
- Celeste RK, Vital JF, Junger WL, Reichenheim ME. Séries de procedimentos odontológicos realizadas nos serviços públicos brasileiros, 1994-2007. *Cien Saude Colet* 2011; 16(11):4523-4532.
- Corrêa GT, Celeste RK. Associação entre a cobertura de equipes de saúde bucal na saúde da família e o aumento na produção ambulatorial dos municípios brasileiros, 1999 e 2011. *Cad Saude Publica* 2015; 31(12):2588-2598.
- Instituto Brasileiro de Geografia e Estatística (IBGE). *Projeção da população do Paraná de 2000-2030* [Internet]. [acessado 2016 out 20]. Disponível em: <http://www.ibge.gov.br>.
- Conselho Nacional de Secretários de Saúde (CONASS). *Indicadores: Cobertura de Equipes de Saúde da Família e de Saúde Bucal* [Internet]. [acessado 2016 out 26]. Disponível em: http://www.conass.org.br/guiainformacao/notas_tecnicas/NT6-Cobertura-ESF-e-ESB.pdf.
- Brasil. Ministério da Saúde (MS). Coordenação Geral de Saúde Bucal. *Diretrizes da Política Nacional de Saúde Bucal*. Brasília: MS; 2004.
- Fernandes LS, Peres MA. Associação entre atenção básica em saúde bucal e indicadores socioeconômicos municipais. *Rev Saude Publica* 2005; 39(6):930-936.
- Antunes JFL, Narvai PC. Políticas de saúde bucal no Brasil e seu impacto sobre as desigualdades em saúde. *Rev Saude Publica* 2010; 44(2):360-365.
- Brasil. Portaria nº 1.444, de 28 de dezembro de 2000. Estabelece incentivo financeiro para a reorganização da atenção à saúde bucal prestada nos municípios por meio do Programa de Saúde da Família. *Diário Oficial da União* 2000; 28 dez.
- Junqueira SR, Pannuti CM, Rode SM. Oral Health in Brazil—Part I: Public Oral Health Policies. *Braz Oral Res* 2008; 22(esp. 1):8-17.
- Almeida GCM, Ferreira MAF. Saúde bucal no contexto do Programa Saúde da Família: práticas de prevenção orientadas ao indivíduo e ao coletivo. *Cad Saude Publica* 2008; 24(9):2131-2140.
- Peres MA, Barbato PR, Reis SCGB, Freitas CHSDM, Antunes JLF. Tooth loss in Brazil: Analysis of the 2010 Brazilian oral health survey. *Rev Saude Publica* 2013; 47(3):78-89.
- Brasil. Ministério da Saúde (MS). Secretaria de Atenção à Saúde. Departamento de Atenção Básica. Coordenação Nacional de Saúde Bucal. *Projeto SB Brasil 2003. Condições de saúde bucal da população brasileira 2002-2003. Resultados principais*. Brasília: MS; 2004.
- Brasil. Ministério da Saúde (MS). Secretaria de Atenção à Saúde. Secretaria de Vigilância à Saúde. *SB Brasil 2010: Pesquisa Nacional de Saúde Bucal: resultados principais*. Brasília: MS; 2012.
- Secretaria de Estado da Saúde do Paraná. Superintendência de Assistência à Saúde. *Linha guia rede de saúde bucal*. Curitiba: SESA; 2016.
- Balas EA, Boren SA. Managing Clinical Knowledge for Health Care Improvement. *Yearb Med Inform* 2000; 1:65-70.
- Secretaria de Estado da Saúde do Paraná. *A Tutoria na Atenção Primária à Saúde*. Curitiba: SESA; 2018.

31. Brasil. Portaria nº 2.488, de 21 de outubro de 2011. Aprova a Política Nacional de Atenção Básica, estabelecendo a revisão de diretrizes e normas para a organização da Atenção Básica, para a Estratégia Saúde da Família (ESF) e o Programa de Agentes Comunitários de Saúde (PACS). *Diário Oficial da União* 2011; 21 out.

Article submitted 25/09/2018
Approved 06/04/2020
Final version submitted 08/04/2020

Chief editors: Romeu Gomes, Antônio Augusto Moura da Silva