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Implementation of dental specialty centers: a descriptive analysis of the current status in the Brazilian territory

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ABSTRACT

This study aimed to assess the current implementation status of Dental Specialty Centers (*Centros de Especialidades Odontológicas* - CEO) in Brazil. The sample included CEOs implemented up to November 2015 in the 27 Brazilian federative units. Data were obtained directly from the database of the Informatics Department of the Brazilian Unified Health System, according to the National Registry of Health Facilities (NRHF) of Dental Specialty Centers of all Brazilian regions. Primary care data were also collected from the cities with implemented CEOs, including coverage status of the Family Health Strategy (FHS) and number of Oral Health Teams (OHT) I and II, at 2 collection periods (January 2006 and November 2015). There were 1019 CEOs implemented in Brazil, which were unequally distributed among the Brazilian states, with prevalence of implementation of CEOs type II (n=503, 49.4%). The statistical analysis showed significant difference between the three types of CEO (I, II, and III) and the variables of coverage rate (FHS) and number of teams (OHT I, OHT II) at both data collection periods. Although presenting an evolutionary aspect in the implementation of CEOs, the implementation of medium-complexity care in Brazil is disorganized.

Key words: healthcare, secondary healthcare, oral health, policies of dental specialty centers.

INTRODUCTION

From the beginning of the Brazilian Unified Health System, one of its great challenges is operationalization. Thus, in 1994 the Ministry of Health created the Family Health Program (FHP), aiming to reorganize practices with priority actions for health protection and promotion of individuals, families, and communities (Baldani et al. 2015, Carneiro and Martins 2015). It is currently named Family Health Strategy and it aims to consolidate the principles established in the Brazilian Constitution of 1988, reclaiming the figure of the family doctor and focusing on multi- and interdisciplinary work (Aerts et al. 2004, Farias and Sampaio 2011). The

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Dental Surgeon (DDS) was inserted in this proposal only a few years later, in 2000, with the creation of Oral Health Teams (OHT), which allowed adopting a more active posture for primary oral health, representing a new scenario to extend the provision of dental care in Brazil (Antunes and Narvai 2010).

Currently, achieving integrality has been a major challenge for the Brazilian Unified Health System, with the implementation of secondary care. The main strategy adopted for specialized care in oral health was the creation of the National Oral Health Policy (NOHP) - "Smiling Brazil Program" (*Programa Brasil Sorridente*), launched in 2003 (Coordenação Nacional de Saúde Bucal 2014), which aims to leverage the accessibility of specialized dental care, assisting actions for the promotion, prevention, and recovery of the oral health of Brazilians (Lourenço et al. 2009, Aquilante and Aciole 2015).

Among the several lines of action included in the NOHP, the creation and implementation of Dental Specialty Centers (*Centros de Especialidades Odontológicas* - CEO) stands out. Its main objective is to maximize and qualify the coverage of medium-complexity actions in public oral healthcare, especially in the fields of diagnosis and detection of mouth cancer, periodontics, minor oral surgery, endodontics, and care for patients with special needs (Coordenação Nacional de Saúde Bucal 2014).

Dental Specialty Centers (CEOs) are medium-complexity health facilities (secondary care) registered at the National Registry of Health Facilities (NRHF). The CEOs may be classified in type I (three dental chairs), type II (four to six dental chairs), and type III (at least seven chairs). The CEOs should run for 40 hours a week, and the number of professionals varies according to the type of CEO, as well as the monthly production goal according to the subgroup of procedures of the Outpatient Information System of the Brazilian Unified Health System (SIA/SUS). Currently, Decree n. 599/GM (Brasil 2006) and Decree n. 600/GM (Brasil 2006b) regulate the implementation and financing of these specialized health units.

The implementation of a CEO depends on establishing a partnership among the city claiming interest in having the center, the State, and the Federal Government, whereas the latter is in charge of the financial transfer of part of the resources required for the operation in the form of incentives for implementation and costing passed on by the Ministry of Health (Brasil 2013). The transfer of resources regarding monthly incentives of CEOs is directly linked to the minimum monthly production determined in a specific decree (Brasil 2011a).

Epidemiological data shown in the results of the SB Brasil 2010 proved the importance of CEOs as strategies for maximizing the access to secondary care and increasing the resolubility of primary oral healthcare (Brasil 2011b). Thus, this study aimed to assess the current status of the implementation of CEOs in Brazil, verifying the association with data from the organization of the primary care network of the cities, such as coverage rate of the Family Health Strategy (FHS) network and the Oral Health Teams (OHT).

MATERIALS AND METHODS

TYPE OF STUDY AND ETHICAL CRITERIA

This is a descriptive, quantitative, and cross-sectional study, which used data from the implementation of dental specialty centers in Brazil. Public domain secondary data with no involvement of human beings were used, so there was no need for submitting the project to the Human Research Ethics Committee.

SAMPLE CHARACTERIZATION AND STUDY DESIGN

The sample of the present study included CEOs implemented up to November 2015 in Brazil, comprising twenty-seven (27) federative units,

considering twenty-six (26) states and one (1) Federal District (Acre, Alagoas, Amapá, Amazonas, Bahia, Ceará, Distrito Federal, Espírito Santo, Goiás, Maranhão, Mato Grosso, Mato Grosso do Sul, Minas Gerais, Pará, Paraíba, Paraná, Pernambuco, Piauí, Rio de Janeiro, Rio Grande do Norte, Rio Grande do Sul, Rondônia, Roraima, Santa Catarina, São Paulo, Sergipe, and Tocantins).

First, data on the implementation of CEOs were collected. The structure characteristics taken from the service were city assisted and type of Dental Specialty Center (Type I, II, or III). These data were collected directly from the database of the Informatics Department of the Brazilian Unified Health System, according to the National Registry of Health Facilities of all Brazilian regions.

Next, primary care data were also collected from the cities with implemented CEOs. The variables for characterizing the cities with CEOs were coverage status of the Family Health Strategy - FHS (coverage rate of the Family Health Strategy), which were collected in January 2006 and November 2015, and the same procedure was performed for Oral Health Teams (OHT) within the FHS (number of OHT I and OHT II by city and population coverage of oral health teams in the FHP - in percentage), in January 2006 and November 2015. The month of January 2006 was selected considering a period of approximately 10 years from the current period. Population size data were obtained by consulting the Brazilian Institute of Geographical Statistics (IBGE) domain.

DATA ANALYSIS

Data obtained were tabulated for the Excel program, version 2010 (Microsoft Corp., United States). Statistical analyses performed in the SPSS software version 13 were descriptive exploratory, presenting ratios, tables, and the Kruskal-Wallis non-parametric statistical test, at 5% significance level for the comparison between the type of CEO implemented and the population coverage rate of the FHS and number of OHT implemented.

RESULTS

Table I shows population data of the Brazilian regions and the number of CEOs. Up to November 2015, there were 1019 CEOs implemented in Brazil, unequally distributed among the Brazilian states. Thus, the Brazilian states with higher implementation are São Paulo (n=193), followed by Minas Gerais (n=91), Ceará (n=88), Bahia (n=78), and Rio de Janeiro (n=70). The states with lower implementation were Roraima (n=1), Amapá (n=3), Acre (n=3), Tocantins (n=7), and Sergipe (n=9).

Regarding the type of CEO, from the total of 1019 implemented, 397 (39%) are type I, 503 (49.4%) are type II, and 119 (11.7%) are type III.

Figure 1 shows the percentage means of the FHS coverage and the number of OHT I and II, by type of CEO at both collection times (January 2006 and November 2015). Thus, regarding the population coverage rates, the Family Health Strategy presented, in January 2006, means of 63.4% in locations where CEOs type I were implemented, 51.8% for CEOs type II, and 46.1% for CEOs type III. In November 2015, these rates were 81.7% in locations where CEOs type I were implemented, 59.3% for CEOs type II, and 64.4% for CEOs type III.

Regarding the implementation of Oral Health Teams (OHT), in January 2006, there were an average of 5.1 OHT I in locations where CEOs type I were implemented, 8.2 for CEOs type II, and 18.9 for CEOs type III. In November 2015, these rates were 12.4 OHT in locations where CEOs type I were implemented, 28.6 for CEOs type II, and 40.1 for CEOs type III. For OHT II, in January 2006, there was an average of 0.6 OHT II in locations where CEOs type I were implemented, 1.6 for CEOs type II, and 1.8 for CEOs type III. In November 2015,

TABLE I
Population data of the Brazilian regions and the number of CEOs.

Region	State	Population*	CEOs	
			n	%
North	Acre (AC)	803.513	3	0.3
	Amapá (AP)	766.679	3	0.3
	Amazonas (AM)	3.938.336	12	1.2
	Pará (PA)	8.175.113	33	3.2
	Rondônia (RO)	1.768.204	9	0.9
	Roraima (RR)	505.665	1	0.1
	Tocantins (TO)	1.515.126	7	0.7
	Total	17.472.636	68	6.7
Northeast	Alagoas (AL)	3.340.932	23	2.3
	Bahia (BA)	15.203.934	78	7.7
	Ceará (CE)	8.904.459	88	8.6
	Maranhão (MA)	6.904.241	29	2.8
	Paraíba (PB)	3.972.202	62	6.1
	Pernambuco (PE)	9.345.173	49	4.8
	Piauí (PI)	3.204.028	29	2.8
	Rio Grande do Norte (RN)	3.442.175	25	2.5
	Sergipe (SE)	2.242.937	9	0.9
	Total	56.560.081	392	38.5
Southeast	Espírito Santo (ES)	3.929.911	10	1.0
	Minas Gerais (MG)	20.869.101	91	8.9
	Rio de Janeiro (RJ)	16.550.024	70	6.9
	São Paulo (SP)	44.396.484	193	18.9
	Total	85.745.520	364	35.7
Midwest	Distrito Federal (DF)	2.914.830	11	1.1
	Goiás (GO)	6.610.681	35	3.4
	Mato Grosso (MT)	3.265.486	11	1.1
	Mato Grosso do Sul (MS)	2.651.235	17	1.7
	Total	15.442.232	74	7.3
South	Paraná (PR)	11.163.018	52	5.1
	Rio Grande do Sul (RS)	11.247.972	26	2.6
	Santa Catarina (SC)	6.819.190	43	4.2
	Total	29.230.180	121	11.9

*Population estimated by the Brazilian Institute of Geographical Statistics for 2015.

these rates were 3 OHT II in locations where CEOs type I were implemented, 11.9 for CEOs type II, and 6.8 for CEOs type III.

When data were analyzed by Kruskal-Wallis non-parametric test ($p<0.05$) for the comparison of the three types of CEO in the variables of coverage rate and number of teams, the results presented in Table II show statistically significant difference between the type of CEO and coverage rate of the FHS at both data collection times. This result was repeated when the type of CEO was compared to the implementation of OHT type I and II.

DISCUSSION

For a long time in Brazil, public assistance in oral health was restricted to primary care. Aiming to implement OHT, the federal government established financial incentives, considering that dental professionals are not part of the primary team of the Family Health Strategy. Thus, the National Oral Health Policy instituted in 2004 helped promoting changes and incentives to reorganize oral healthcare (Coordenação Nacional de Saúde Bucal 2014). The access to primary care has been improving over time, but ensuring the access to secondary and tertiary care is essential to guarantee the principle of integrality (Goes et al. 2012). Hence, the implementation of CEOs has allowed leveraging integrality in oral health, structuring adequate reference and counter-reference systems in secondary and tertiary care levels (Coordenação Nacional de Saúde Bucal 2014). The present study allowed measuring the implementation of CEOs in Brazil, whereas up to November 2015 there were 1019 CEOs implemented, showing an increasing implementation of these services when compared to data published by a previous study (Cortellazzi et al. 2014), which found 774 CEOs from 2004 to 2009, distributed in 704 cities of all Brazilian regions. The same concordance is observed

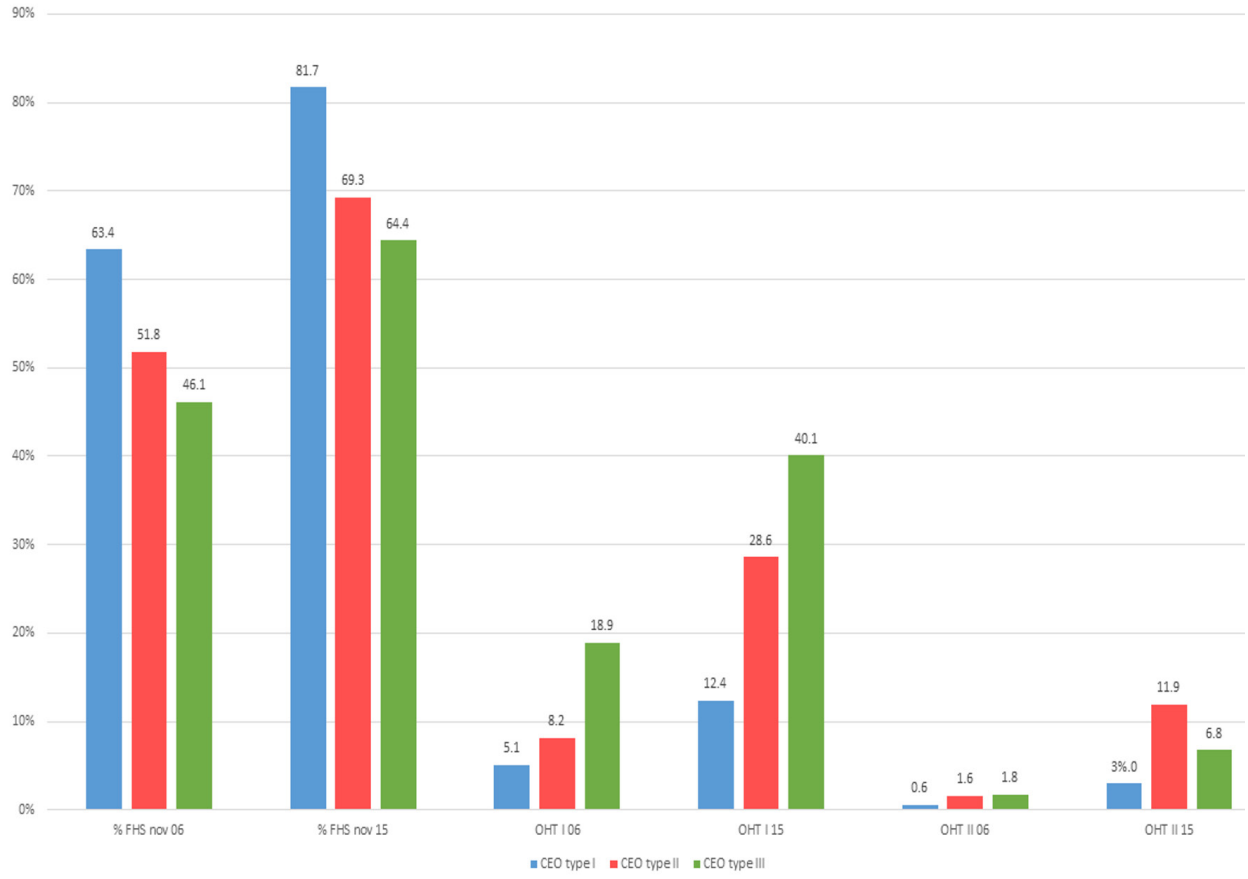

Figure 1 - Percentage means of the FHS coverage and the number of OHT I and II, by type of CEO at both collection times (January 2006 and November 2015).

regarding the type of CEO, with prevalence of CEOs type II (49.4%; n=503).

Considering the geographic totality of the country, data from the present study indicate great disparity in the implementation of CEOs in the different Brazilian regions and states, considering that most CEOs implemented up to November 2015 were found in the Northeast (38.5%) and Southeast (35.7%) regions, and a great portion of these (18.9%) is located in the state of São Paulo. The demographic density, although it is not a legal parameter for the installation of a CEO, also showed great disparity, and the higher number of CEOs implemented is not necessarily found in the most populous regions. It is worth noting that the decrees regulating the CEOs do not define a CEO/inhabitant relation, possibly because of the limited resource of the Ministry of Health for implementing new centers. The results found in this study confirm previous results (Cortellazzi et al. 2014), which found 38.50% of CEOs implemented in the Northeast, 36.56% in the Southeast, 12.79% in the South, 6.33% in the Midwest, and 5.81% in the North regions of Brazil. The same authors (Cortellazzi et al. 2014) also mentioned that the cities with implemented CEOs were rather heterogeneous regarding population level, ranging from 4,629 inhabitants in small cities to 11,253,503 inhabitants in large cities.

It is also possible to agree with other authors (Figueiredo and Goes 2009) who mentioned the need for changes in the regulations that rule

implementation and operation, and the provision of centers with monitoring and assessment mechanisms to ensure better quality of services for the population. Initial evidences (Chaves et al. 2010, 2011) in studies performed in the state of Bahia showed that the way national policy is implemented, organized, and managed locally is important to improve the use of services by the population that most need them.

The Family Health Strategy has been the most effective change in primary healthcare in Brazil, with the principles of the Unified Health System as main objectives. The results of this study show a coverage increase in all areas assessed (FHS, OHT I, and OHT II) between both periods analyzed (Figure 1), showing the increasing strengthening of primary care over the last 10 years.

However, when assessed individually, the variables of FHS, OHT I, and OHT II showed cities with implemented CEO that have no coverage rate of primary care (table II). This agrees with previous findings mentioning that work relations between primary care and medium- and high-complexity services are still rather precarious, especially in reference services, intersectoriality, epidemiological diagnosis, and the assessment of actions (Souza and Roncalli 2007). The National Oral Health Policy (*Brasil Sorridente*), which implements CEOs, has no description of obligatoriness to present a full Oral Health Team. However, because it is a secondary care service that provides dental expertise, it would be relevant to review this concept, since primary care organization is an essential factor for reorganizing health care provision - proposed by the Family Health Strategy. Hence, it seems there is an inversion of logic, considering that for a specialized care the more organized the primary care is, the better the service flow at the secondary level, corroborating authors (Pereira et al. 2009) who mention that oral health in the FHS has a positive impact in areas with higher FHS coverage.

When data were analyzed by Kruskal-Wallis non-parametric test ($p<0.05$) for the comparison of the three types of CEO in the variables of coverage rate and number of teams, the results presented in Table II showed statistically significant difference between the type of CEO and coverage rate of the FHS at both data collection times. This result was repeated when the type of CEO was compared to the implementation of OHT type I and II. It is worth noting that CEOs type III, with larger structure and higher production goals, are not fully implemented in cities where primary care presents higher coverage rates (FHS) and number of teams (OHT). This allows us to agree with a previous study (Araújo and Dimenstein 2007), which affirms that although there is a current tendency to expand

TABLE II
Comparision of the three types of CEO in the variables of coverage rate and number of teams (Kruskal-Wallis non-parametric test, p<0.05).

	CEO type I				CEO type II				CEO type III			
	Mean	Median	Min	Max	Mean	Median	Min	Max	Mean	Median	Min	Max
% FHS cov 06*	63.4	66.6	0	100	51.8	49.7	0	100	46.1	42.4	0	100
% FHS cov 15**	81.7	100	0	100	69.3	73.0	0	100	64.4	64.9	15	100
OHT I Jan/2006**	5.1	3	0	178	8.2	4	0	126	18.9	9	0	178
OHT I Nov/2015**	12.4	6	0	185	28.6	9	0	218	40.1	20	0	218
OHT II Jan/2006**	0.6	0	0	19	1.6	0	0	81	1.8	0	0	81
OHT II Nov/2015**	3.0	0	0	177	11.9	0	0	177	6.8	0	0	122

*statistically significant difference ($p<0.001$; $1\neq2$; $1\neq3$) **statistically significant difference ($p<0.001$; $1\neq2$; $1\neq3$; $2\neq3$). FHS = Family Health Strategy; OHT = Oral Health Team. Min = Minimum; Max = Maximum.

OHT in the FHS over the whole national territory, the inclusion of the dental surgeon in some cities is disorganized and unplanned by the management.

Hence, it is possible to agree with Farias and Sampaio 2011, who mention that (re)building the dental practice in the Brazilian Unified Health System requires more than extending the access network, whereas the latter is the initial mark for change.

The data from the present study corroborate previous evidences (Soares et al. 2015) on the need for reviewing the legal framework for the implementation of CEOs by readjusting criteria and rules. However, further researches are essential, especially the ones assessing the ability to comply with production and implementation goals, effectiveness of reference and counter-reference protocols, assessment of the quality of services provided, and level of user satisfaction.

CONCLUSIONS

The results presented in this study showed the implementation of 1019 CEOs up to November 2015. A great disparity was found among states and macro-regions of Brazil regarding implementation, as well as disparity between the implementation of secondary and primary oral healthcare, showing that despite the evolutionary aspect in the implementation of CEOs, the implementation of medium-complexity services is disorganized in Brazil.

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