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ORIGINAL ARTICLE

Need of Dental Prosthesis in Older People and the Offer of Specialized Care in the Unified Health System, Brazil

Maria Augusta Bessa Rebelo[1], Danielle Tupinambá Emmi[2], Fernando José Herkrath[3], Gabriela de Figueiredo Meira[4], Paulo Sávio Angeiras de Goes[5], Mario Vianna Vettore[6]

[1]Professor, Faculty of Dentistry, Federal University of Amazonas, Manaus, AM, Brazil.
[2]Professor, Faculty of Dentistry, Federal University of Pará, Belém, PA, Brazil.
[3]Researcher, Leônidas & Maria Deane Institute, Fiocruz Amazônia, Manaus, AM, Brazil.
[4]Master in Dentistry, Federal University of Amazonas, Manaus, AM, Brazil.
[5]Professor, Federal University of Pernambuco, Recife, PE, Brazil.
[6]Professor, University of Sheffield, Sheffield, England.

Author to whom correspondence should be addressed: Maria Augusta Bessa Rebelo, Universidade Federal do Amazonas, Faculdade de Odontologia, Av. Ministro Waldemar Pedrosa, 1539 - Praça 14, Manaus, AM, Brazil. 69.250-500. Phone: 55 92 3305-4907. E-mail: rebeloaugusta@gmail.com.br.

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Abstract

Objective: To analyze the offer of dental prosthesis by Centers of Dental Specialties (CEO) considering the need by individuals aged 65-74 years in state capitals and other regions of the country. **Material and Methods:** The study was conducted with data from the external evaluation of the Improving Access and Quality Program (AVE/PMAQ CEO) and with data from the SBBRASIL 2010 project. AVE / PMAQ CEO is an evaluative investigation using a cross-sectional research design, performed in all CEOs of Brazil, totaling 932 services evaluated. The analysis of data and distribution of CEOs that offered dental prosthesis was described by maps, using TabWin (DATASUS) and quantitative description of the following variables: need for total and partial dentures, CEO, Regional Prosthodontic Laboratories (RLDP), average monthly number of delivered prostheses and the proportion of capitals with RLDP, number of CEOs, RLDP and prostheses delivered per 100,000 inhabitants in state capitals and other regions. **Results:** Of the 5,570 municipalities in the country, 780 have CEO, mainly located on municipalities with larger populations. Most CEOs were located in the northeastern (38.3%) and southeastern regions of Brazil (36.2%) with the northern and mid-western regions presenting the lowest absolute number of units. Low offer of prostheses was observed, considering the high need of dentures, as well as an unequal distribution among Brazilian regions. A high percentage of older adults aged 65-74 years require total (74.6%) or partial (99.8%) prosthetic rehabilitation, more critical situation is observed in the northern and northeastern regions. **Conclusion:** The provision of dental services in CEOs is still limited and unevenly distributed, especially for PPR, compromising the universality and integrality of oral health care.

Keywords: Dental Prosthesis; Dental Health Services; Secondary Care.

Introduction

The oral health condition of the Brazilian adult and elderly population still reflects the actions of a previous model focused on emergency, curative, mutilating and non-resolutive practices that dominated the country for many years, negatively impacting the oral and systemic health of the population. Thus, there are a large number of partial or total edentulous individuals in Brazil, which results in an expressive accumulated demand for prosthetic rehabilitation [1].

Edentulism is characterized as a side effect of greatest severity of dental caries and advanced periodontal disease, and is directly related to masticatory problems, orofacial pain and social relationships, causing a direct impact on people's quality of life [2-4].

The last national survey of oral health, SB Brazil 2010, showed that in the age group from 15 to 19 years, 13.7% of the Brazilian population need dental prostheses, whereas, from 35 to 44 years, this percentage increases to 68.8 % and in the 65-74 age group, it reaches 92.7% of rehabilitation need [1], which indicates the progressive and cumulative nature of oral diseases and low access to specialized dental services [5].

In order to meet the prosthetic rehabilitation needs of the Brazilian population, the Ministry of Health through the National Oral Health Policy - *Brasil Sorridente* - started to finance, since 2005, Regional Dental Prosthesis Laboratories (LRPD), which aim to make total and partial dentures and / or coronary / intraradicular and fixed / adhesive dentures, which can be implanted in any municipality, regardless of population size [6].

The SB Brasil 2010 epidemiological data regarding the use and need for prosthesis [1] led to the elaboration of Ordinance 1825 / GM / MS, of August 2012, which proposed the increase of federal financial incentives to expand the supply of LRPD, as well as to increase the production of dental prostheses [6], ratifying the expansion of access to specialized services, as the goal of the *Brasil Sorridente* program. However, despite the expansion, distribution and access to this service, there are still many macro-regional inequalities [7]. The Unified Health System (SUS) legislation emphasizes the importance of epidemiological indicators as guiding principles for health planning, which would provide more structured units to offer SUS services to macro regions that present worse oral health indicators. However, different political and financial issues can lead to losses in the implementation of these units, leading to inequalities among macro-regions in the provision of resources, accreditation, structure and access to services [7].

The aim of this study was to evaluate the offer of dental prosthesis by Centers of Dental Specialties (CEO) considering the need for prosthesis by people aged 65-74 years in state capitals and other regions of the country.

Material and Methods

Study Design

This is a retrospective study with sectional data regarding the need for dental prosthesis in older adults aged 65-74 years obtained from the SB Brasil Project 2010 and information from VII and VIII modules of the external evaluation instrument of the National Program for Improving

Access and Quality of Centers of Dental Specialties (AVE / PMAQ-CEO), in 2014, concerning dental prostheses. AVE / PMAQ-CEO was based on the Donabedian Quality Assessment model for health services and programs [8].

Structure, Process and Prosthesis Need

The following variables of the PMAQ-CEO collection instrument were used: existence of a Prosthesis Laboratory in the CEO, type of prosthesis offered and how many dental prostheses have been delivered on average per month. The epidemiological measures used in the SBBrasil 2010 Project included the need for partial and total prosthesis in the upper or lower arch, obtained by clinical examination.

Data Analysis

The distribution of CEOs that offered dental prosthesis was described through maps, built in the TabWin software (Datasus). The number of CEOs, LRPD, average monthly number of prostheses delivered and the proportion of state capitals with LRPD, number of CEOs, LRPD and prostheses delivered per 100,000 inhabitants in state capitals and other regions were also described. Maps with the monthly delivery of total prosthesis (PT) and partial removable prosthesis (PPR) in state capitals adjusted by the percentages of prosthesis need were also generated. The prevalence and 95% confidence interval (95% CI) of the need for prostheses in the elderly for the states' regions and capitals were estimated. The need for prosthesis was also estimated for the state capitals with and without LRPD and for those who delivered PPR and PT. Comparisons between proportions were performed by means of confidence intervals. Analyses were performed in the IBM SPSS Statistics software, version 21.0, considering the complex sampling plan and sample weights.

Results

Of the 5570 municipalities in the country, 780 had CEOs in 2014. Of these, 505 declared to deliver PT and 358 declared to deliver PRR. Figure 1 shows the distribution of these municipalities in the country.

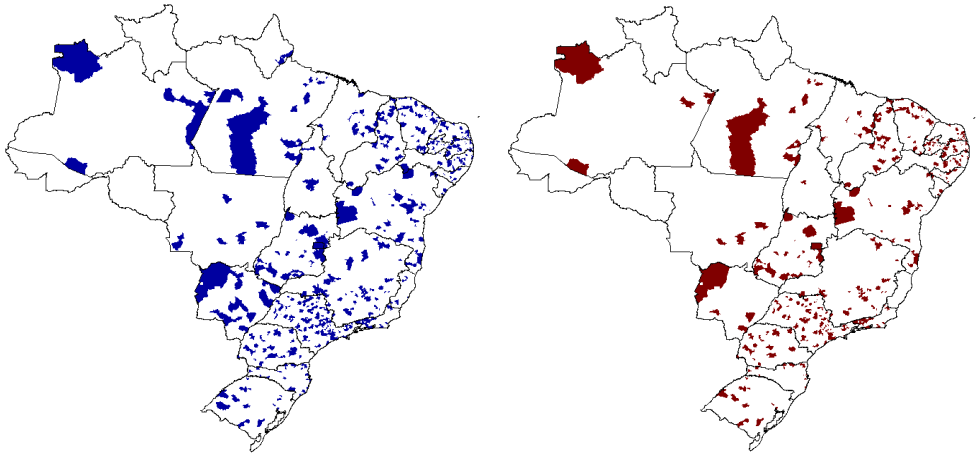

Figure 1. Municipalities with CEO that offered total prosthesis (in blue, n = 505) and partial removable prosthesis (in red, n = 358).

The prevalence of prosthetic need in individuals aged 65-74 years showed a great variation among state capitals, being higher in Salvador (99.8%) and lower in Vitória (69.6%). The greatest need for PPR was observed in Salvador (81.7%), being lower in Porto Velho (53.4%). Regarding PT, the greatest need was observed in Porto Velho (51.5%) and the lowest in Porto Alegre (12.4%) (Table 1).

Table 1. Estimated (95% CI) need for prosthesis, partial removable denture (PPR) and total prosthesis (PT) in the age group 65-74 years, by Brazilian capitals, 2010.

Capital	Need for Prosthesis	Need for PPR	Need for PT
Porto Velho	98.0 (93.0-99.4)	53.4 (42.6-63.8)	51.5 (40.4-62.5)
Rio Branco	96.9 (90.7-99.0)	54.7(42.1-66.7)	47.1 (36.0-58.5)
Manaus	97.9 (92.2-99.5)	68.9 (59.4-77.0)	36.1 (29.5-43.3)
Boa Vista	99.1 (93.6-99.9)	62.2 (53.6-70.0)	47.3 (38.6-56.1)
Belém	97.5 (93.9-99.0)	62.0 (52.9-70.2)	39.0 (30.3-48.5)
Macapá	99.3 (95.6-99.9)	73.6 (62.8-82.1)	34.6 (25.2-45.3)
Palmas	89.6 (78.3-95.4)	63.0 (49.0-75.1)	35.4 (23.5-49.4)
São Luiz	88.7 (79.1-94.2)	57.0 (47.0-66.4)	35.1 (25.5-46.0)
Teresina	96.4 (86.3-99.1)	62.3 (52.7-71.0)	38.6 (28.8-49.4)
Fortaleza	92.5 (82.0-97.1)	63.0 (52.5-72.4)	36.4 (26.2-48.1)
Natal	94.2 (89.2-97.0)	74.8 (65.2-82.4)	28.4 (20.3-38.1)
João Pessoa	92.3 (79.1-97.5)	59.0 (47.1-69.9)	36.9 (27.4-47.6)
Recife	94.0 (86.2-97.5)	58.7 (49.0-67.8)	40.2 (30.9-50.2)
Maceió	89.6 (80.9-94.6)	62.7 (52.4-72.0)	31.5 (21.5-43.6)
Aracajú	93.2 (84.7-97.2)	74.0 (66.1-80.6)	24.1(16.3-34.0)
Salvador	99.8 (98.4-100.0)	81.7 (75.3-86.8)	25.4 (18.1-34.4)
Belo Horizonte	86.9 (77.1-84.3)	64.6 (55.4-72.8)	28.1 (20.1-37.7)
Vitória	69.6 (49.5-84.3)	48.4 (36.4-60.6)	22.4 (12.9-36.2)
Rio de Janeiro	82.7 (71.1-90.3)	55.7 (47.6-63.5)	31.4 (24.4-39.4)
São Paulo	95.1 (83.8-98.6)	75.8 (63.5-84.9)	23.2 (16.5-31.7)
Curitiba	86.8 (68.8-95.2)	69.9 (56.9-80.3)	22.6 (14.9-32.8)
Florianópolis	81.1 (70.8-88.4)	65.2 (57.3-72.4)	25.2 (18.2-33.8)
Porto Alegre	74.6 (60.0-85.2)	64.0 (50.3-75.7)	12.4 (6.0-23.8)
Campo Grande	95.4 (88.0-98.3)	72.2 (58.0-83.0)	25.9 (16.1-39.0)
Cuiabá	92.9 (83.2-97.2)	63.3 (50.4-74.5)	35.3 (23.2-49.6)
Goiânia	88.3 (78.1-94.1)	58.8 (49.7-67.4)	34.2 (24.6-45.2)
Brasília	83.1 (64.4-93.0)	57.6 (42.0-71.8)	30.6 (19.1-45.1)

Table 2 describes the number of CEOs, LRPD, average number of total and partial removable dentures delivered per month in capitals and regions of the country and the indicators per 100,000 inhabitants. A total of 325 CEOs had LRPD, distributed in 299 municipalities. Approximately 22,653 total dentures and 10,070 removable partial dentures are delivered per month in the country.

Table 2. Prosthesis need, number of CEO, LRPD and number of prostheses delivered per month, by region capitals.

Capital (UF)	Need for Prosthesis	Need for PPR	Need for PT	Number of CEOs	Number with LRPD	Number of PT (month)	Number of PPR (month)	CEO /inhab	LRPD /inhab	PT month /inhab	PPR month /inhab	Pop 65-74
Porto Velho (RO)	98,0	53,4	51,5	3	0	0	0	29,5	0,0	0,0	0,0	10.161
Rio Branco (AC)	96,9	54,7	47,1	2	1	0	0	21,6	10,8	0,0	0,0	9.255
Manaus (AM)	97,9	68,9	36,1	3	0	60	0	6,6	0,0	131,7	0,0	45.553
Boa Vista (RR)	99,1	62,2	47,2	1	0	0	0	16,2	0,0	0,0	0,0	6.181
Belém (PA)	97,5	62,0	39,1	6	0	15	10	11,0	0,0	27,5	18,3	54.632
Macapá (AP)	99,3	73,5	34,6	2	1	75	0	22,0	11,0	823,8	0,0	9.104
Palmas (TO)	89,6	62,9	35,3	1	1	60	0	22,4	22,4	1342,6	0,0	4.469
Northern region (capitals)	97,6	63,3	39,6	18	3	210	10	12,9	2,2	150,7	7,2	139.355
Northern region (inner state)	96,8	50,3	50,4	42	18	1018	356	11,9	5,1	288,5	100,9	352.876
Northern region	97,0	54,4	47,0	60	21	1228	366	12,2	4,3	249,5	74,4	492.231
São Luiz (MA)	88,7	56,9	35,0	3	1	44	0	9,1	3,0	132,8	0,0	33.137
Teresina (PI)	96,4	62,3	38,6	2	0	0	0	7,0	0,0	0,0	0,0	28.403
Fortaleza (CE)	92,5	63,1	36,4	5	3	202	247	5,1	3,0	204,8	250,4	98.632
Natal (RN)	94,2	74,8	28,4	3	0	10	0	8,9	0,0	29,7	0,0	33.703
João Pessoa (PB)	92,3	59,0	37,0	5	2	260	80	16,0	6,4	833,5	256,5	31.194
Recife (PE)	94,0	58,8	40,2	4	2	185	105	5,4	2,7	247,8	140,6	74.671
Maceió (AL)	80,6	62,7	31,5	2	2	0	0	6,0	6,0	0,0	0,0	33.219
Aracajú (SE)	93,2	74,0	24,1	1	0	0	0	4,7	0,0	0,0	0,0	21.332
Salvador (BA)	99,8	81,7	25,4	6	0	0	0	5,9	0,0	0,0	0,0	101.051
Northeastern region (capitals)	94,4	67,0	33,4	31	10	701	432	6,8	2,2	154,0	94,9	455.342
Northeastern region (inner state)	97,7	51,7	52,2	326	131	7328	3531	17,1	6,9	384,7	185,4	1.904.829
Northeastern region	95,8	60,7	41,1	357	141	8029	3963	15,1	6,0	340,2	167,9	2.360.171
Belo Horizonte (MG)	86,9	64,5	28,0	1	1	0	15	0,8	0,8	0,0	12,1	123.481
Vitória (ES)	69,6	48,3	22,4	1	1	80	0	6,3	6,3	502,7	0,0	15.915
Rio de Janeiro (RJ)	82,7	55,7	31,4	17	2	45	25	4,5	0,5	11,8	6,6	381.223
São Paulo (SP)	95,1	75,9	23,2	25	9	426	224	4,6	1,6	78,1	41,1	545.545
Southeastern region (capitals)	87,4	63,6	28,1	44	13	551	264	4,1	1,2	51,7	24,8	1.066.164
Southeastern region (inner state)	95,5	55,0	44,8	293	92	7529	3232	8,7	2,7	222,8	95,7	3.378.910
Southeastern region	92,8	57,9	39,2	337	105	8080	3496	7,6	2,4	181,8	78,6	4.445.074
Curitiba (PR)	86,8	69,8	22,6	2	1	110	0	2,5	1,2	134,9	0,0	81.557
Florianópolis (SC)	81,1	65,2	25,2	3	0	50	0	15,2	0,0	252,5	0,0	19.799
Porto Alegre (RS)	74,6	64,0	12,4	4	1	100	60	4,7	1,2	118,0	70,8	84.716
Southern region (capitals)	79,1	66,2	16,2	9	2	260	60	4,8	1,1	139,7	32,2	186.072
Southern region (inner state)	89,8	66,5	29,9	107	26	3314	1453	7,6	1,8	234,7	102,9	1.412.027
Southern region	87,5	66,4	27,0	116	28	3574	1513	7,3	1,8	223,6	94,7	1.598.099
Campo Grande (MT)	95,4	72,2	25,9	2	1	116	0	6,0	3,0	345,9	0,0	33.533
Cuiabá (MS)	92,9	63,3	35,3	5	1	84	100	26,3	5,3	442,3	526,6	18.991
Goiânia (GO)	88,3	58,8	34,1	3	2	80	8	5,6	3,8	150,3	15,0	53.225
Brasília (DF)	83,1	57,6	30,6	9	2	5	5	10,4	2,3	5,8	5,8	86.280
Mid-western region (capitals)	88,4	62,4	30,4	19	6	285	113	9,9	3,1	148,4	58,8	192.029
Mid-western region (inner state)	97,4	54,2	53,0	43	24	1457	619	10,4	5,8	352,3	149,7	413.556
Mid-western region	94,8	56,6	46,4	62	30	1742	732	10,2	5,0	287,7	120,9	605.585

Considering the population estimate of 9,501,160 inhabitants aged 65-74 years for 2014 and the need for total prosthesis (38.3%) and partial removable prosthesis (59.3%) in the country, it would be necessary approximately 13 years to supply the total prosthesis demand for this population and 47 years to supply the removable partial prosthesis demand (Table 3), assuming that all prostheses made were intended for the age group under study and the service was offered only in specialized care. A trend towards equity in the relationship between prosthesis need and the existence of LRPD by regions was identified. The southern and southeastern regions, which presented lower prosthesis need percentages, also presented less availability of laboratories. The northern and mid-western regions, which presented the greatest needs for total prosthesis, were also those that presented the highest rates of monthly delivery of these prostheses. The same was observed for the northern and northeastern regions, when only capitals were evaluated. However, for the delivery rate of partial removable prosthesis, no equal offer of the service in relation to the need was observed. Eight capitals did not deliver PT and 16 did not deliver PPR.

In addition, some capitals in the northern and northeastern regions, with high prosthesis needs do not offer any service in the specialty. The distribution of the monthly delivery rates of total prosthesis and partial removable prosthesis in the capitals of the country, adjusted by the prosthesis need percentages, is illustrated in Figure 2, showing the inequality in the service provision among state capitals, as well as the lower supply of partial removable prosthesis in the CEOs of these municipalities.

Table 3. Years to supply the total prosthesis and partial removable prosthesis demand, according to the prevalence of need and the average number of prostheses delivered.

Region	Population in 2014 65-74 years	Years to supply the demand for PPR	Years to supply the demand for PT
Northern	492.231	16	61
Northeastern	2.360.171	10	30
Southeastern	4.445.074	18	61
Southern	1.598.099	10	58
Mid-western	605.585	13	39
Brazil	9.501.160	13	47

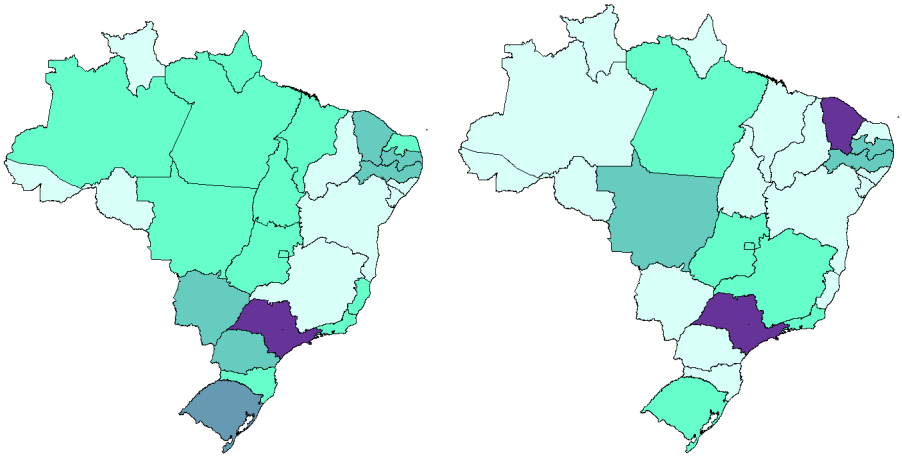

Figure 2. Monthly rates of delivery of total prosthesis and partial removable prosthesis in state capitals adjusted by prosthesis need percentages.

Municipalities in the inner portion of regions present higher prosthesis delivery rates, despite the lower need for partial removable prosthesis. The percentages of need for total prosthesis were also higher in these municipalities. In addition, when the proportion of capitals with CEOs with LRPD was considered, the northern (43%) and northeastern (56%) regions were underprivileged compared to the others, despite having the highest prosthesis need percentages.

In the evaluation of prosthetic need estimates according to the characteristics of units of state capitals, a significant difference was found in the general prosthesis need in the country and in the northeastern region. Capitals without LRPD presented greater prosthesis needs than those with the laboratory. The northeastern region also showed a significant difference in the need for PPR and in the need for PPR and PT in both arches, with a tendency towards inequity for PPR and equity in relation to PT. In general, the trend of punctual estimates was toward inequality, especially for those in need in both arches and the need for PPR, except for the southeastern region (Table 4).

Discussion

The prevalence of edentulism in the elderly population in Brazil [1] is one of the highest in the world [9]. The severity of tooth loss in these individuals expresses the accumulation of the most prevalent oral diseases (caries and periodontal disease) and its major sequelae. On the other hand, the findings of this study show the low supply of prostheses considering the high percentage of need for partial removable and total prosthesis as well as an unequal distribution among the Brazilian macro-regions in the offer of these services. The need for prosthesis indicates both their absence when they are needed as well as an assessment of the need for replacement. A high percentage of individuals aged 65-74 years need total or partial prosthetic rehabilitation, with a more critical situation in the northern and northeastern regions, a situation similar to results of the 2003 national oral health survey [1].

Important geographical differences in the number of municipalities with CEOs that offer the service of prostheses (total and partial removable) were observed. This offer is concentrated on municipalities with larger population sizes and higher HDI-M [10]. In addition, the number of prostheses delivered is incipient in relation to the demand and geographical disparity. Therefore, the need to reduce regional inequalities and the advancement of prosthetic rehabilitation in 65-74 year olds remains a challenge, as pointed out by SB Brasil 2010 [1], which has not yet been addressed.

The tendency to equity suggested in the ecological analysis may conceal a selective universalization process, as suggested in literature [11]. The literature suggests that access barriers to specialized care continue to exist for the most vulnerable groups, including the elderly population [11,12]. It is expected that these groups also represent the more complex cases, because they present worse general oral health conditions [13,14].

Table 4. Need for prosthesis according to the availability of a regional dental laboratory and the service offer in capitals, Brazil.

Variable	Need for Prosthesis (CI95%)	Need for PPR (CI95%)	Need for PPR 1 arch	Need for PPR 2 arches	Need for PT (CI95%)	Need for PT 1 arch	Need for PT 2 arches
Brazil							
Has LRPD							
Yes	87.4 (82.8-90.8)*	63.4 (58.9-67.7)	37.5 (32.8-42.4)	21.5 (18.5-24.9)	28.4 (24.6-32.5)	16.2 (13.4-19.4)	7.8 (6.4-9.6)
No	97.6 (96.3-98.5)*	71.7 (67.4-75.7)	37.7 (32.6-43.1)	27.8 (22.6-33.7)	32.1 (28.1-36.4)	17.6 (14.3-21.4)	8.3 (6.4-10.7)
Delivers PPR							
Yes	-	63.1 (58.3-67.6)	37.5 (32.6-42.8)	21.2 (18.0-24.8)	-	-	-
No	-	70.5 (66.8-74.0)	37.4 (33.1-41.9)	27.3 (23.2-31.8)	-	-	-
Delivers PT							
Yes	-	-	-	-	28.8 (25.0-32.8)	16.9 (14.1-20.1)	7.5 (6.1-9.3)
No	-	-	-	-	29.4 (25.1-34.0)	13.3 (10.8-16.3)	10.0 (7.5-13.3)
Northern							
Has LRPD							
Yes	96.6 (93.4-98.2)	64.0 (56.4-71.0)	32.7 (27.0-38.8)	24.1 (19.2-29.9)		25.7 (20.0-32.3)	6.8 (4.1-11.1)
No	97.7 (95.4-98.9)	63.2 (57.0-69.1)	40.3 (36.1-44.7)	17.9 (13.3-23.7)		23.7 (17.7-30.9)	10.9 (7.9-14.7)
Delivers PPR							
Yes	-	62.0 (52.9-70.3)	42.0 (36.3-47.8)	16.5 (10.3-25.5)	-	-	-
No	-	64.8 (59.3-70.0)	36.3 (31.4-41.5)	21.2 (17.1-25.9)	-	-	-
Delivers PT							
Yes	-	-	-	-	37.8 (31.8-44.1)	41.2 (36.9-45.6)	9.4 (6.6-13.2)
No	-	-	-	-	49.0 (42.4-55.7)	27.2 (21.1-34.3)	14.9 (10.4-20.9)
Northeastern							
Has LRPD							
Yes	92.4 (88.2-95.2)*	60.6 (55.2-65.8)*	32.2 (26.5-38.4)	23.1 (19.3-27.4)	37.2 (31.6-43.0)	17.5 (13.4-22.4)	14.3 (10.3-19.7)*
No	97.7 (95.7-98.8)*	77.3 (72.8-81.3)*	35.9 (28.4-44.3)	34.5 (28.0-41.5)	27.3 (22.3-32.9)	13.7 (10.7-17.3)	6.7 (4.5-9.9)*
Delivers PPR							
Yes	-	60.6 (54.2-66.7)*	32.7 (25.9-40.3)	22.3 (17.8-27.4)*	-	-	-
No	-	73.5 (69.1-77.4)*	34.5 (28.6-41.0)	32.7 (27.3-38.6)*	-	-	-
Delivers PT							
Yes	-	-	-	-	36.9 (31.4-42.8)	17.5 (13.5-22.5)	13.6 (9.5-19.1)
No	-	-	-	-	27.9 (22.8-33.6)	13.7 (10.6-17.4)	8.0 (5.6-11.4)
Southeastern							
Has LRPD							
Yes	87.4 (80.6-92)	63.6 (57.1-69.6)	36.8 (30.5-43.6)	22.5 (18.3-27.4)	28.1 (22.9-34.0)	16.9 (13.1-21.4)	6.9 (5.2-9.2)
No	-	-	-	-	-	-	-
Delivers PPR							
Yes	-	63.8 (57.2-69.8)	36.9 (30.4-43.8)	22.6 (18.3-27.5)	-	-	-

No	-	48.4 (36.3-60.7)	31.2 (21.7-42.6)	15.9 (9.6-25.4)	-	-	-
Delivers PT							
Yes	-	-	-	-	28.1 (22.5-34.5)	17.5 (13.5-22.3)	6.4 (4.6-8.9)
No	-	-	-	-	28.1 (20.0-37.8)	10.1 (6.0-16.7)	12.2 (7.2-19.8)
Southern							
Has LRPD							
Yes	79.1 (68.1-87.0)	66.2 (56.2-74.9)	48.7 (38.2-59.3)	14.2 (10.4-19.1)	16.1 (10.5-23.9)	9.1 (5.7-14.0)	3.9 (2.0-7.4)
No	81.1 (70.6-88.5)	65.2 (57.1-72.6)	42.0 (33.7-50.9)	13.9 (8.1-22.9)	25.2 (18.1-33.9)	9.9 (5.8-16.4)	6.0 (2.6-13.0)
Delivers PPR							
Yes	-	64.0 (50.1-75.9)	50.2 (35.3-65.0)	12.0 (7.7-18.3)	-	-	-
No	-	69.8 (56.9-80.1)	46.1 (35.0-57.6)	17.9 (12.0-25.9)	-	-	-
Delivers PT							
Yes	-	-	-	-	16.2 (10.6-23.9)	9.1 (5.8-13.9)	3.9 (2.0-7.4)
No	-	-	-	-	-	-	-
Mid-western							
Has LRPD							
Yes	88.4 (80.0-93.5)	62.4 (54.0-70.0)	38.4 (31.2-46.1)	19.6 (13.0-28.4)	30.4 (23.7-38.0)	16.6 (11.9-22.6)	9.4 (6.4-13.6)
No	-	-	-	-	-	-	-
Delivers PPR							
Yes	-	58.5 (48.6-67.7)	37.5 (29.3-46.3)	16.0 (11.5-21.8)	-	-	-
No	-	72.2 (57.9-83.1)	40.8 (26.7-56.6)	28.7 (12.1-53.9)	-	-	-
Delivers PT							
Yes	-	-	-	-	30.4 (23.7-38.0)	16.6 (11.9-22.6)	9.4 (6.4-13.6)
No	-	-	-	-	-	-	-

*Significant difference at 5% level.

The monthly prosthesis delivery rates in state capitals adjusted by the percentages of prosthesis need show that even among these municipalities, there is an unequal distribution in the service offer in the country, including within each macro-region. This inequality can also be confirmed by the proportion of CEOs with LRPD in state capitals in each region. There was also a trend towards inequity in the analysis of data from state capitals. Given the low availability, a priority in the provision of services to capitals with greatest need could contribute to the reduction of inequalities [15,16], which was not found. As a general trend, higher need percentages were observed in municipalities with CEOs without LRPD and did not deliver PT or PPR, especially for PPR and when the need in both arches was considered.

The low supply of public oral health services directed at the elderly population is a reflection of the historical absence of priority in the care of these individuals [12]. The literature suggests that younger individuals present greater ease in accessing specialized care and that the others would remain at the first level of care [11]. However, encouraging the inclusion of prosthetic rehabilitation in basic care does not allow us affirming that individuals not covered by secondary care, especially the most vulnerable, can count on this alternative. Lower proportions of primary care teams requesting dental prostheses were identified in the northern and northeastern regions. In these regions, the number of teams that developed actions to identify individuals with prosthetic needs was lower [17]. It was also identified that LRPDs are not distributed in the country according to epidemiological indicators of need [7].

A study carried out in Minas Gerais involving the oral health care network, described the concentration of CEOs in municipalities with better social indicators and showed that most of the specialized procedures were performed by primary care units [18]. The difficulty of CEOs in meeting the goals of outpatient production is also known [19,20]. A review on the specialties offered in CEOs has already been suggested, ensuring the inclusion of those that represent the greatest demands, such as endodontics and dental prosthesis. Other specialties should be included according to local and regional needs [19].

It is necessary to establish networks and care flows that organize dental services as part of the oral health network. At secondary level, relationships may also be less vulnerable when the LRPD is included in the CEO. Better organization of the public oral health care network is related to better access to secondary care. In networks with poorer organization, this demand can be absorbed by the private sector [11]. As the elderly, especially those with less education and income, face greater barriers to access services [12], the lack of organization of the care network does not contribute to minimizing existing inequalities.

Despite the inherent limitations of the study design, the use of population-based estimates and census information from CEOs make the results relevant to oral health policy makers. The difficulties in expanding supply in the neediest places can be translated into a lack of change in the health situation and in the quality of life of the elderly, who do not have the time to wait for some change. Considering the trend of tooth loss reduction, [21] the timing of structuring a suitable care

network in the dental prosthesis specialty to offer care to these individuals may remain without some effective solution. Priority should also be given to the most vulnerable areas, where basic care needs greater matrix support [17] and reduction in edentulism occurs more slowly [22]. In addition to the financial incentives for production range, the inclusion of care targets for LRPDs, currently focused only on basic procedures, endodontics, periodontics and surgery could also be relevant [23]. In addition, a qualitative evaluation of prostheses may be important, since high percentages of unsatisfactory prostheses have already been found in a group of CEOs evaluated [24].

Conclusion

The supply of dental services by CEOs is still restricted and unevenly distributed, especially for PPR, compromising the universality and integrality of oral health care. Inequities in the availability of oral services are present both at the macro-regional level and in each of the regions of the country. These inequities must be the object of effective public policies at all levels of SUS management, ensuring the training of human resources to be prepared to deal with this reality and adequate funding for health systems to reduce them.

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