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Oral Health Policy in Brazil: changes and ruptures during the period 2018-2021

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Abstract *This study analyzed the implementation of Brazil's National Oral Health Policy during the period 2018-2021, covering institutional actions, implementation of public dental services, results achieved, and federal funding. We conducted a retrospective descriptive study using documentary analysis and secondary data obtained from institutional websites, government information systems, and reports published by dental organizations. The findings show a significant reduction in funding between 2020 and 2021 and declining performance against indicators since 2018, such as coverage of first dental appointments and group supervised tooth brushing, which stood at 1.8% and 0.02%, respectively, in 2021. Federal funding dropped in 2018 and 2019 (8.45%), followed by an increase in 2020 (59.53%) and decrease in 2021 (-5.18%). The study period was marked by economic and political crises aggravated by the COVID-19 pandemic. This context influenced the functioning of health services in Brazil. There was a sharp reduction in performance against oral health indicators, while performance in primary health care and specialized care services remained stable.*

Key words *Health policy, Monitoring, Oral health, Dental care*

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Introduction

Created in 2003, the National Oral Health Policy (PNSB) ushered in a new approach to oral health in Brazil. Otherwise known as "*Brasil Sorridente*" or "Smiling Brazil", the main focus of the policy was the expansion of oral health teams (OHt) in primary health care (PHC) services and the organization of specialized care (SC) through the creation of specialist dental centers (CEOs) and regional dental prosthesis laboratories (LRPDs) in 2004. Other priorities included health promotion, such as group procedures and water fluoridation, and oral health surveillance, through periodic epidemiological surveys and the creation of collaborating centers with universities, whose main role was the assessment of CEOs and fluoridation monitoring[1,2].

Oral health service provision and coverage increased between 2003 and 2006 and remained stable during the periods 2007-2010 and 2011-2014, followed by a more restrictive political environment after the impeachment of president Dilma Rousseff in 2016[2,3]. Between 2016 and 2018, during the Temer administration, political and economic instability and fiscal austerity measures, notably the approval of Constitutional Amendment 95/2016 freezing public spending until 2036, had a direct impact on the funding of the country's public health system, *o Sistema Único de Saúde* (SUS) or Unified Health System, and, consequently, oral health care services[4,5]. In addition, in 2017 the Ministry of Health published a new version of the National Primary Health Care Policy (PNAB), which, among other things, relaxed the rules governing the deployment of PHC teams[6]. During this period, there were also successive changes in the Ministry of Health's General Office for the Coordination of Oral Health Care (CGSB) and performance against PHC and SC indicators declined[2,3].

At the beginning of the Bolsonaro administration in 2019, the first health minister, Luiz Henrique Mandetta, defended a "strong and supportive private system" during his swearing-in ceremony speech[7]. In the same year, the Ministry of Health launched the *Programa Previne Brasil* ("Prevent Brazil Program"), setting new criteria for federal government funding of PHC based on the number of registered service users and performance[8]. Under these news rules, CEOs, OHts, and LRPDs remained in the strategic actions budget category. In line with electoral campaign proposals, which made reference only to maternal and child oral health, the only monitored oral health care indicator was the proportion of pregnant women receiving dental care delivered by OHts[8]. Basing funding on the number of registered service users poses a barrier to 100% population coverage and the fundamental principle of universality of the SUS[9]. These changes were influenced by the movement towards universal health coverage supported by the World Bank, which focuses on core primary services and private or public health insurance coverage to the detriment of public universal healthcare systems[10].

The monitoring of the implementation of these changes to PHC and health funding was set to begin in 2020, a year marked by the coronavirus pandemic[11]. In March 2020, the Ministry of Health announced that there was widespread community transmission across the country[12] and the CGSB issued a technical note recommending the suspension of scheduled dental appointments, maintaining only emergency services[13]. Preliminary analyses show that there was a significant reduction in SUS dental procedures during this period[14,15]. The reorganization of health services in response to the pandemic, focusing on hospital treatment to the detriment of PHC, also contributed to this reduction[15,16]. The health crisis continued throughout 2021, which saw the start of the COVID-19 vaccination campaign[17]. With the onset of the pandemic, the requirement to comply with the new funding rules established by the *Programa Previne Brasil* was pushed back[18,19], meaning that federal funding was transferred in full in 2020 and 2021, irrespective of the number of registered service users and performance[18,19].

The monitoring and analysis of the changes to the PNSB is performed by the Observatory for Health Policy Analysis, run by the Federal University of Bahia's Public Health Institute, using figures dating back to 2003. Monitoring considers four core components: institutional actions, implementation of public dental services, results achieved, and federal funding. The present study brings the systematic monitoring of oral health policy in Brazil up to date, focusing on the period 2018-2021.

Method

We conducted a retrospective descriptive study to assess institutional actions, implementation of public dental services, results achieved, and federal funding using documents and content

available on Ministry of Health websites and secondary data derived from information systems. Chart 1 describes the components analyzed and corresponding data sources.

The indicator "first diagnostic dental appointment coverage" was chosen as it represents the proportion of the Brazilian population who used primary dental care services, while the indicator "group supervised toothbrushing" represents group infection/caries prevention actions and provides an estimate of the proportion of the population who had access to toothbrushing with guidance/supervision from a dental professional, which is an indicator of changes in the care model[20,21].

The SC indicators a) and b) (Chart 1) refer to outpatient care delivered only by CEOs, representing procedures typically carried out by specialized services, which are referral points for primary dental care services. Indicator c) refers to outpatient care provided by dental prosthesis services (LRPDs).

To analyze funding, annual total funding data were inflation-adjusted to December 2021 using the National Consumer Price Index (IPCA) to allow for comparisons. The amounts were adjusted using the Central Bank official calculator (https://www3.bcb.gov.br/CALCIDADAO).

Due to funding changes, with federal transfers starting to be made in two block (capital investment and costs)[6], primary dental care funding data for 2018 and 2019 were obtained from the National Health Foundation website. Data on transfers made to SC services were not available. For 2020 and 2021, PHC and SC funding data were obtained from the primary care information portal *e-Gestor AB*, as the amounts on the FNS database refer only to capital investment in PHC.

Data from the years preceding 2018 are also presented for comparison purposes and to iden-

Chart 1. Description of the components of the PNSB analyzed by this study and corresponding data sources.

Component(s)	Description	Source(s)
Institutional actions	Federal level initiatives, especially those developed by the CGSB	Official Government Gazette, Official Ministry of Health websites
Implementation (service availability)	OHt availability in PHC Number of CEOs and LRPDs Primary dental care coverage	e-Gestor AB, SAGE, SAPS
Results (health service indicators)	PHC indicators: • First diagnostic dental appointment coverage; • Group supervised toothbrushing. SC indicators: a) absolute number of periodontal treatment procedures (gum graft - code 0414020081; gingivectomy by sextant - code 0414020154; gingivoplasty by sextant - code 0414020162; periodontal surgical treatment by sextant - code 0414020375). b) absolute number of root canal treatments (single-root permanent tooth filling - code 0307020061; two-root permanent tooth filling - code 0307020045; three-or-more-root permanent tooth filling - code 0307020053; root perforation sealing - code 0307020118); c) absolute number of dental prostheses (full upper-arch prothesis - code 0701070129; full lower-arch prothesis - code 0701070137; partial removable upper-arch prothesis - code 0701070099; partial removable lower-arch prothesis - code 0701070102; crown/fixed intra-root/adhesive protheses by element - code 0701070145).	DATASUS - SIA-SUS
Federal funding of the policy	Federal fund-to-fund transfers related to variable PAB oral health budget categories, SC and investment.	FNS, e-Gestor AB

Legend: CGSB (General Office for the Coordination of Oral Health Care); OHt (oral health team); PHC (primary health care); CEO (specialist dental center); LRPD (regional dental prosthesis laboratory); SC (specialized care); SAGE (Strategic Management Support Room); SAPS (Primary Health Care Department); SIA-SUS (SUS outpatient information system); PAB (Primary Care Threshold); FNS (National Health Foundation); code (SIA-SUS codes).

Source: Authors.

tify possible trends. The data were collected in February 2022 by a single researcher using Tab for Windows® (TABWIN) and exported to Microsoft Excel® (2007). The timeseries data were analyzed by service level (PHC and SC), showing the results achieved for each indicator (Tables 1 and 2).

Results and discussion

Changes to the PNSB during the Temer and Bolsonaro administrations

During the period 2018-2021, the number of dental surgeons (DS) registered in the Federal Council of Dentistry (CFO) increased by 20.1%, while the number of places on dentistry degree courses increased by 54.8% in private universities and 21.1% in public universities. Private universities therefore accounted for the largest share of the increase in places (Chart 2). This increase was influenced by the expansion of oral health services under the PNSB, beginning in 2004. Programs such as the student loan program, FIES, and "University for All Program" (PROUNI) contributed to the expansion of the private higher education sector, where the logic of capital and education as a commodity predominates[22].

The number of OHts in the Family Health Strategy (FHS) increased by 13.4%, while the number in PHC decreased by 11.3%, along with a reduction in OHt population coverage (-6.57%). The number of CEOs rose by 3.2% between 2018 and 2021. However, the number of CEOs decreased slightly during the Bolsonaro administration due to the closure of some facilities and population coverage remains very low. The number of LRPDs increased by 65.3% over the period (Chart 2).

During the Temer administration, the CGSB was headed by Lívia Maria Almeida Coelho de Souza. The office remained without a coordinator during the first four months of the Bolsonaro administration, eventually being headed by the dental surgeon Rogéria Cristina Calastro de Azevedo (for 12 months), followed by the events manager Vivaldo Pinheiro Guimarães Júnior (one month), the dental surgeon Caroline José Martins dos Santos (15 months), and the dental surgeon Wellington Carvalho, who took up the post in December 2021[23]. Dental organizations protested against the appointment of Guimarães Júnior because he was not a dental surgeon and had no experience of dentistry[23]. Reports in the national media suggested that the appointment was political and blatantly failed to consider technical criteria[24]. It is worth mentioning that the CGSB was led by the same person during the period 2003-2015. The successive changes in leadership made since October 2015 generated instability in the national coordination of oral health policy, resulting in interruptions in both funding and the implementation of certain components, such as the dental extension program *GraduaCEO*, launched in 2014[25]. The Dilma administration did not give the same priority to oral health as Lula's government and the issue dropped off the agenda during Temer's term, which was marked by fiscal austerity and the promotion of privatizations in the health sector[25]. As Narvai[5] underlines, despite the maintenance of oral health services, the political rupture that resulted in the ousting of President Dilma Rousseff in 2015 completely undermined the PNSB created in 2003.

The Temer administration based its counter-reform measures on a number of documents – including "*Agenda Brasil*" (08/2015), "A Bridge to the Future" (10/2015), and "*A Travessia social*" or "The Social Crossing" (04/2016) – all of which defended the commodification of health care, emphasizing popular health insurance plans[7]. In his swearing in ceremony speech, the then Minister of Health Ricardo Barros mentioned that it was necessary to "reduce" the SUS and rethink universal access to health care, claiming that country did not have the financial capacity to support a public health system and defending popular health insurance plans[7]. In 2017, the new version of the PNAB was published without the approval of the National Health Council. A series of criticisms were levelled at the text by specialists, health managers and workers, public health organizations, and social movements who defended the country's health reform[26]. The literature highlights that the changes undermine the FHS model and threaten many of the achievements made in PHC in Brazil over the last two decades[26]. In the same year, the Temer administration published the report "Brazil Health Coalition: an agenda to transform the health system", which proposed the construction of a new health system for the country, with strong private sector involvement dating back to 2014[7].

At the end of the Temer administration, the main institutional actions related to oral health were the changes to the funding of CEOs and LRPDs, which were incorporated into PHC funding, the launch of the national oral health

Chart 2. Labor market and professional training, availability of public dental services, and institutional actions during the Temer (2018) and Bolsonaro (2019-2020) administrations.

Categories analyzed	Temer	Bolsonaro		
	2018	2019	2020	2021
No of DSs, dental courses, places [a]	DSs: 298,876 Courses: 385 (66 public and 319 private) Places: 67,761 (6,443 public and 61,318 private)	DSs: 317,604 Courses: 470 (66 public and 404 private) Places: 80,130 (5,780 public and 74,350 private)	DSs: 333,220 Courses: 548 (65 public and 483 private) Places: 76,297 (5,093 public and 71,204 private)	DSs: 358,952 Courses: 596 (65 public and 531 private) Places: 82,085 (5,093 public and 76,992 private)
Availability of public dental care [b]	OHt/FHS: 28,050 OHt/PHC: 8,616 Population coverage: 52.71% CEOs: 1,139 LRPDs: 1,970	OHt/FHS: 28,991 OHt/PHC: 8,181 Population coverage: 52.97% CEOs: 1,175 LRPDs: 2,076	OHt/FHS: 29,391 OHt/PHC: 6,647 Population coverage: 51.06% CEOs: 1,173 LRPDs: 2,884	OHt/FHS: 31,821 OHt/PHC: 7,118 Population coverage: 46.14%: CEOs: 1,174 LRPDs: 3,256
Head of the General Office for the Coordination of Oral Health Care [c]	Lívia Maria Almeida Coelho de Souza	January to April 2019 - without coordinator; Rogéria Cristina Calastro de Azevedo (05/2019)	Rogéria Cristina Calastro de Azevedo (up to 05/2020) Vivaldo Pinheiro Guimarães Júnior (06/2020 to 07/2020) Caroline José Martins dos Santos (08/2020)	Caroline José Martins dos Santos (up to 11/2021); Wellington Mendes Carvalho (12/2021)
Institutional actions [d]	CEOs and LRPDs funded with PHC resources from January 2018; Creation of working group to develop hospital dentistry strategies in the SUS; Ministerial orders suspending payments and disaccrediting OHts, UOMs, CEOs and LRPDs with information absent in the SISAB or irregularities in relation to the new PNAB (2017); Publication of the book "Oral health under the Unified Health System" with updated guidelines; *Projeto SB Brasil 2020*.	Creation of *Programa Previne Brasil* and changes to the funding and evaluation of PHC; Publication of Manual for making dental prostheses using the microwave polymerization technique and Oral health survey in Maputo (Cooperation between the Brazilian and Mozambique ministries of health); Presidential veto of Bill 34/2013, which would have made dental care mandatory for hospitalized patients.	Publications about COVID-19 (operations and guidance on the organization of oral health services); Financial incentives for the reorganization of facilities and risk reduction; Accreditation and financial incentives for part-time OHts (20 and 30h) and *Programa Saúde na Hora* (health on time program); 10% increase in OHt funding (Mod I and II); Public hearing about *SB Brasil 2020*.	Creation of an advisory technical board in the SAPS; Changes in the registration of PHC teams in the CNES and creation of the INE, monitoring and evaluation; Ministerial orders issuing new OHt funding rules, changes in deadlines for the implementation of new *Previne Brasil* rules; Technical norms for LRPDs updated; Public hearing "Guidelines for clinical practice in primary care - Dental Treatment for Pregnant women"; Inclusion of closest dental services function in the "*Conecte SUS*" app; Updated guidelines on dental treatment on the SUS and COVID-19.

DS = dental surgeon; OHt = oral health team; FHS = family health team; PHC = primary health care; CEO = specialist dental center; LRPD = Regional Dental Prosthesis Laboratories; UOM = Mobile Dental Unit; SISAB = Primary Health Care Information System; PNAB = National Primary Health Care Policy; CNES = National Registry of Health Care Facilities; INE = National Team Identifier.

Source: [a] CFO (2018; 2019; 2020; 2021); *Sistema e-MEC* (2018; 2019; 2020; 2021); [b] *Sistema e-Gestor*, Ministry of Health; [c] Official Government Gazette (2018; 2019; 2020; 2021); [d] Ministry of Health (official websites). Primary Health Care Department (SAPS).

survey, *Projeto Saúde Bucal Brasil 2020*, and the publication of the book "Oral health in the SUS", which updated *Caderno 17 da Atenção Básica Saúde Bucal* (Primary oral health care guidance

Table 1. Number of oral health teams (OHt), estimated OHt in FHS population coverage (%), estimated SC and PHC population coverage (%), number of first dental appointments, coverage of first dental appointments (%), number of group supervised toothbrushing, coverage of group supervised toothbrushing (%) in Brazil during the period 2003-2021.

Year	Oral health teams[a]	OHt in FHS population coverage (%)[b]	SC and PHC population coverage (%)[b]	Absolute Nº 1st dental appointments	Coverage 1st dental appointments (%)[c]	Absolute Nº group supervised toothbrushing[c]	Coverage group supervised toothbrushing (%)[c]
2003	6,170	-	-	21,298,352	11.8	-	-
2004	8,951	-	-	20,618,072	11.3	-	-
2005	12,603	-	-	21,901,287	11.8	-	-
2006	15,086	-	-	22,142,231	11.8	39,476,016	1.8
2007	17,508	29.89	46.19	22,378,902	11.8	52,934,420	2.3
2008	19,280	33.29	49.46	26,843,628	14.0	57,693,648	2.5
2009	20,626	34.61	49.84	27,156,753	14.0	60,304,340	2.6
2010	21,999	36.53	50.84	26,043,708	13.3	63,527,864	2.7
2011	23,076	38.35	52.71	29,449,468	14.9	62,504,333	2.6
2012	23,586	38.89	53	26,395,480	13.2	54,380,251	2.3
2013	24,131	39.38	52.87	29,526,595	14.7	53,246,037	2.2
2014	25,327	39.84	52.47	27,093,617	13.4	57,151,878	2.3
2015	25,891	40.27	52.13	29,925,575	14.6	50,543,350	2.1
2016	25,827	39.93	51.67	21,661,874	10.5	37,078,584	1.5
2017	27,082	41.21	51.94	17,285,242	8.3	29,556,869	1.2
2018	28,050	42.14	52.71	10,157,447	4.9	16,892,877	0.7
2019	28,991	43.07	52.97	9,053,373	4.3	12,604,942	0.5
2020	30,606	44.95	56.11	3,555,070	1.7	1,491,899	0.06
2021	31,821	46.14	56.61	3,765,250	1.8	604,337	0.02

[a] Data from 2003 to 2006: total FHS Mod I and Mod II. Data from 2007 to 2021 refer to total FHS oral health (attached to FHS team), available in the "History of Coverage/Oral health Coverage" section. Data from 2003 to 2021 refer to December. [b] Data for December available in the "History of Coverage/Oral health Coverage" section. [c] Data from January to December available in the SIA-SUS database.

Source: Authors, based on the *e-Gestor* AB and SIA-SUS databases, Ministry of Health. Data collected on 12/08/2021 and updated on 10/02/2022.

manual: 17)[27]. This book was produced during the Dilma administration, but publication was interrupted by the crisis in the federal government and instability in the CGSB between 2015 and 2016 and resumed by Lívia Souza in 2017[25]. Payment of oral health services was suspended and some services were disaccredited, justified by lack of information on the Primary Health Care Information System (SISAB) and/or irregularities in relation to the PNAB (2017) (Chart 2).

One of the first measures taken by the Bolsonaro administration in 2019 was the creation of the *Programa Previne Brasil*, which changed funding criteria and PHC evaluation systems and abolished national programs for improving access and quality geared towards primary care and CEOs (PMAQ-AB and PMAQ-CEO), created in 2011. Although the effects of abolishing the PMAQs need to be better understood, studies highlight the results achieved by the programs and draw attention to the adverse effects of discontinuing these initiatives[28,29].

Fund-to-fund transfers to municipal governments started to be made on a capitation basis, based on the number of service users registered in the FHS and other primary care services or on performance[8,19]. With the onset of the pandemic, most of these changes only came into force in the second semester of 2021[18]. According to the creators of *Previne Brasil*, the program would increase funding, improve access, and promote equity in health resource allocation, arguing that more resources would be transferred to health teams working with socially and economically vulnerable groups and poorer municipalities in remote areas[30]. However, emphasis is placed on PHC and a shift towards increasingly limited primary care services, guided by the "univer-

Table 2. Total number of CEOs, LRPDs, root canal treatments, periodontal treatments, and dental protheses provided in public dental services in Brazil in the period 2003-2021.

Year	Nº of CEOs	Nº of LRPDs	Nº root canal treatments	Nº of periodontal procedures	Nº dental protheses provided
2003	-	-	405,697	188,888	79,023
2004	100	-	425,156	199,598	87,082
2005	336	36[a]	430,485	208,302	52,467
2006	498	152[a]	477,183	265,860	55,427
2007	604	274[a]	592,759	328,243	92,029
2008	674	298[a]	527,474	403,330	143,814
2009	808	327[a]	598,708	289,970	141,274
2010	853	678[b]	676,375	287,364	178,609
2011	882	808[b]	678,126	294,908	292,976
2012	944	1,351[b]	685,531	309,822	394,329
2013	988	1,465[b]	683,141	285,757	461,525
2014	1,030	1,955[b]	674,643	329,737	600,065
2015	1,034	1,770[b]	676,444	377,649	624,818
2016	1,072	2,349[c]	635,686	374,891	663,700
2017	1,115	2,520[c]	556,149	450,765	632,907
2018	1,139	2,666[c]	592,132	337,267	720,321
2019	1,175	2,863[c]	642,021	341,248	822,982
2020	1,173[d]	2,997[c]	296,655	211,363	505,116
2021	1,174[e]	3,256[c]	379,774	235,522	618,005

[a] Souza, 2013[53]. [b] Data collected in November 2018: http://sage.saude.gov.br/. [c] Data collected in February 2022: https://datasus.saude.gov.br/informações-de-saúde-tabnet/. [d] Data collected in March 2021: https://aps.saude.gov.br/ape/brasilsorridente/cidadesatendidas. [e] Data collected from presentation made by the General Office for the Coordination of Oral Health Care (https://www.youtube.com/watch?v=bK2GCxvL3cA).

Source: Authors, based on data collected between January and December from the SIA-SUS database, Ministry of Health. Data collected on 12/02/2022.

sal health coverage" approach proposed by the World Bank, which seeks to prioritize the poorest in the face of scarce resources[8].

The debate within the field of public health is ongoing. Studies highlight the prevalence of the concept of "SUS for the poor", going against the principle of universality, with increasing involvement of the private sector to the detriment of health care reform or even flexible health reform, in which the SUS has been implemented with concessions to the original proposal and constantly underfunded and "downgraded"[7,9,26].

With the onset of the COVID-19 pandemic in 2020, it was initially recommended to suspend oral health services. However, the Ministry of Health continued to transfer resources to enable the delivery of urgent and emergency services by the SUS[12]. Guidance and technical notes on the provision of oral health services in the context of COVID-19 were issued and funding was provided for adaptations and modifications to health facilities[13].

In 2021, changes were also made to the registration of PHC teams in the National Registry of Health Care Facilities (CNES), with the creation of the National Team Identifier (INE). Thereafter, PHC funding began to be allocated on a team/facility basis. The normative instrument that created the INE claims that INE-based transfers provide health managers with greater access to information[31]. However, these changes need to be subjected to monitoring and evaluation.

Finally, at national level, President Bolsonaro vetoed Bill 34/2013, which would have made dental care mandatory for hospitalized patients. Dental organizations, including the CFO, Interstate Dental Federation, and National Dental Federation, issued statements opposing the veto[32].

Maintenance of implementation and decline in performance

There was an 18.44% rise in the number of OHts during the period 2018-2021. An addition-

al 1,615 teams were created in 2020, an increase of 5.57% in relation to 2019. This increase is partially explained by the accreditation of 1,800 part-time OHts (20/30 hours per week) in 272 municipalities[33]. Population coverage of oral health care services in the FHS reached 46% in 2021. The population coverage of primary dental care increased from 52.71% in 2018 to 56.11% in 2020, remaining stable in 2021 (56.61%) (Table 1). The number of CEOs remained stable at around 1,100 facilities between 2014 and 2017, followed by an increase of 3.1% between 2018 and 2021. The number of LRPDs rose by 22.1% during the period 2018-2021 (Table 2).

The Ministry of Health claimed that the introduction of flexible working hours for PHC teams gave municipalities greater autonomy in service organization and improved efficiency and performance. However, health experts, managers, and health councils warn of the underlying market and privatization intentions of *Previne Brasil*, posing a serious threat to achievements in community-based family health care[34].

Monitoring of OHts in the FHS revealed that 6.7% of Brazil's municipalities had reduced the number of teams 21 months after the publication of the new PNAB (2017). Reductions were highest in the South and Northeast and in large cities with higher levels of social inequality[35]. These reductions may lead to a subsequent reduction in access to oral health services, especially among those who most need care[35]. Other studies have shown inequalities in oral health care provision across Brazil, with populations in more socially and economically disadvantaged municipalities being more exposed to excessive tooth extraction due to the lack of integrated oral health programs[36].

Despite an increase in service availability and the stability of OHt population coverage throughout the period, performance against PHC indicators has declined since 2015 (Table 1). The findings reveal poor access to individual dental care, health promotion and infection/caries prevention, and comprehensive health care under the SUS. In addition, there was a decline in performance against most public dental service indicators between 2011 and 2019[3,37].

The COVID-19 pandemic has had a significant negative impact on dental care, especially when it comes to the public system. There was a sharp decline in performance against PHC indicators between 2019 and 2020, the first year of the pandemic. This may be largely due to the suspension of scheduled dental appointments and disruption of group oral health initiatives, with services being reduced to urgent care from the middle of March by the National Health Surveillance Agency (ANVISA)[38] and Ministry of Health[39]. The CFO requested the Ministry of Health to suspend scheduled appointments in both public and private services and to implement more rigorous biosecurity measures in the private system[40]. Various different situations were witnessed. There are reports of municipalities in which health managers pressured for a return to scheduled appointments in public services, despite lack of evidence[41]. Others delayed the return of OHts, claiming poor working conditions and lack of resources for compliance with biosafety measures, including the high cost of PPE[40].

The effects of the pandemic on access to primary dental care services may lead to an increase in a historically suppressed demand for dental treatment, a decline in oral health status, deterioration in oral diseases, especially dental caries and early-stage periodontal problems, and delays in the diagnosis of mouth cancer, with a consequent increase in mortality. It is worth highlighting that the deterioration of caries, the leading oral health problem in Brazil, is considered a key causal factor for pain and tooth loss[42], making the strengthening and expansion of prevention and care actions all the more necessary.

In addition to a reduction in the number of first scheduled dental appointments due to the suspension of services, the findings also show a significant reduction in urgent dental care during the first four months of the pandemic, suggesting that urgent cases were not received by the public health system[14]. This reduction may also have been influenced by the different forms of organization of urgent care, lack of PPE, and changes in patient behavior, with less individuals seeking dental services[14].

There was an 80% reduction in coverage of group supervised toothbrushing in 2020 and 2021 in relation to previous years. These findings reveal an acceleration in the pace of reduction of health promotion and infection/caries prevention actions, which had shown a downward trend over the last 10 years (Table 1). These actions were strongly affected in the first two years of the pandemic, mainly due to social distancing measures, including the interruption of collective oral health initiatives and suspension of face-to-face teaching at schools, most of which implemented in the middle of March[43].

Teaching remained online until May 2021 in most public schools in Brazil and all state schools

provided hybrid teaching, with a mix of face-to-face and online classes, or 100% face-to-face classes up to November 2021[44].

Despite these limitations, some teams managed to develop health educations actions, albeit on a smaller scale, via the School Health Program using digital tools[45].

It is important to highlight however that digital inequalities, such as lack of equipment or skills, poor internet access, or connectivity problems, exacerbate inequality in education and access to health promotion and disease prevention[46].

There was an increase in the number of root canal treatments and dental prostheses produced in 2018 (6.5% and 13.8%, respectively). These indicators of SC also showed an increase in 2019, together with periodontal treatments (8.4%, 14.3%, and 1.2%, respectively). The increases in 2019 (Table 2) may be related to an external evaluation carried out under the PMAQ-CEO in the same year. In many municipalities the evaluation resulted in the overhaul of health services, hiring of health workers, adoption of self-evaluation instruments, and increases in team productivity[47].

In 2020, percentage reductions were higher than in the last 18 years (2003 to 2020) for both SC and PHC indicators. The number of root canal treatments, periodontal treatments, and dental prostheses produced dropped by 53.8%, 38.1%, and 38.9%, respectively, in relation to 2019. Dental care delivered in CEOs consists of scheduled specialist appointments referred by PHC services and was therefore impacted by the suspension of scheduled appointments[39]. Progress on vaccine rollout, the return of services, and maintenance of funding and investment in service modifications and adaptations to comply with biosecurity standards are factors that contributed to an increase in these procedures in 2021.

The services provided by LRPDs were either reduced or suspended during the first year of the pandemic. This is because, while prosthetic repairs are considered to be urgent, procedures are primarily scheduled, and patients requiring this type of service are predominantly older persons and therefore a risk group[39].

The service that saw the largest reduction in number of procedures among the SC indicators in the first year of the pandemic was root canal treatment. Urgent dental consultations did not decrease in the same proportion as urgent procedures. One factor that may explain this is that dentists use pharmacological approaches to manage pain to avoid surgical procedures and aerosol production[48]. This may also partially explain the reduction in the number of root canal treatments.

Federal funding of the policy: changes and setbacks

The inflation-adjusted amount of federal funding transferred to state and municipal governments showed an overall increase between 2003 and 2012, *oscillating thereafter between* periods of increasing and decreasing funding up to 2017 and followed by a fall in 2018 and 2019. The amount grew once again in 2020, followed by another fall in 2021. It is worth noting that the amount allocated in 2012 was the highest since the origin of the PNSB (Table 3).

The proportion of funding allocated to PHC between 2020 and 2021 increased by 3.2%, while the share allocated to SC fell by 3.2%. The share of funding allocated to PHC was constantly higher since 2003. Data on federal transfers to CEOs and LRPDs in 2018 and 2019 were not available (Table 3).

Other studies show that nominal funding and spending on infrastructure and human resources increased between 2003 and 2020. Fund-to-fund transfers also showed an upward trend between 2003 and 2010, remaining stable thereafter between 2011 and 2018[3,4]. Narvai[5] underlines that there was a significant reduction in federal funding, with the amount in 2018 being 58.3% lower than the annual average over the period 1995-2002. It is worth noting that, up to 2017, funding for the PNSB was divided into three blocks administered by the FNS (PHC, Medium and High Complexity, and Management) and subdivided into specific budget categories[4]. Another block (Investment) was destined to the implementation of services and acquisition of dental equipment and tangible assets[4]. In 2018, federal transfers started to be made in two blocks (capital and operating expenses)[4], which may partially explain the lack of data on SC funding in 2018 and 2019 in the FNS database.

The inflation-adjusted data show that funding fell in real terms between 2012 and 2020, despite an increase in the Brazilian population from 193,946,886 to 211,755,692 in the same period.

PHC and SC funding data for 2020, when the new funding model came into force[49] and data started to be made available on the primary care information portal *e-Gestor AB*, are not available in the FNS database. Criticisms of *Previne Brasil* focus on the emphasis given to metric-based

Table 3. Total amount transferred with and without inflation adjustment, % transferred to primary care and specialized care between 2003 and 2021.

Year	Total amount for operational costs + capital: inflation adjusted (R$)	Total amount for operational costs + capital: gross amounts* (R$)	% PHC	% SC
2003	230,177,276.62	83,416,613.81	97.73	2.27
2004	522,504,848.92	203,062,073.39	95.35	4.65
2005	775,902,190.36	320,284,996.44	87.66	12.34
2006	1,002,141,316.08	426,161,502.08	85.49	14.51
2007	1,134,118,314.63	502,481,647.99	85.93	14.07
2008	1,161,201,056.01	547,346,491.89	86.23	13.77
2009	1,217,129,257.81	597,910,814.84	85.05	14.95
2010	1,301,109,095.20	675,185,342.66	87.98	12.02
2011	1,367,935,125.23	757,004,575.24	85.59	14.41
2012	1,551,026,481.70	905,826,003.84	86.44	13.56
2013	1,364,316,159.16	842,793,407.40	81.83	18.17
2014	1,391,646,755.75	916,032,147.30	78.79	21.21
2015	1,386,828,102.45	1,008,493,192.37	79.63	20.37
2016	1,408,831,538.27	1,096,080,098.47	80.44	19.56
2017	1,333,064,951.13	1,066,212,873.33	77.81	22.19
2018	650,996,883.47	541,746,947.93	100	**
2019	596,006,524.04	512,227,733.99	100	**
2020	1,546,795,998.59	1,386,677,958.71	64.08	35.92
2021	1,466,649,124.30	1,466,649,124.30	67.25	32.75

* From 2003 to 2019 - FNS; in 2020 and 2021, from e-Gestor AB. ** Amounts not available in the FNS database.

Source: Authors. Accessed in March 2022.

management mechanisms associated with an "operational SUS"[49].

The overall amount of federal transfers fell between 2020 and 2021, resulting in a reduction in funding of state and municipal governments, evidencing the bureaucratized defunding of the SUS[50]. It is important to highlight that a previous study analyzing municipal government spending on PHC also collected data on federal funding sources without considering municipal and/or state resources, understanding that the federal government plays a pivotal role in state and municipal health funding[51].

In this regard, state and particularly municipal governments encounter difficulties in funding oral health using their own resources due to a fall in municipal tax revenues and competing demands from other sectoral and intersectoral policies. Municipal governments have been the most affected by the public funding crisis since the 1990s. Both state and municipal governments therefore need complementary funding for PHC[52]. However, the amounts transferred by the federal government do not cover the real costs of services and municipalities therefore end up partially funding federal policies[52].

Final considerations

Our findings show that limited progress has been made in implementing oral health policy in Brazil, revealing a significant decline in performance against indicators between 2018 and 2021, a period marked by the pandemic, political and economic crisis, and a political shift towards privatization in the current government that runs counter to the guiding principles of the SUS.

The main limitation of this study is the use of secondary data, which are subject to lack of uniformity and underreporting. During the study period, changes and updates were made to data presentation and Ministry of Health information systems, resulting in data inconsistency. On the other hand, monitoring of the PNSB has contributed to the analysis of changes, ruptures, continuity, and new state responses to the population's oral health needs. Analysis contributes to man-

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ager decision-making processes, control, public participation, and the formulation or revamping of proposals in scenarios that are more favorable to the development and consolidation of the SUS. While the evidence reveals a gap between reality and expectations, the results achieved by the policy reinforce the need to join and align social forces to defend universal access to good quality public oral health care.

Collaborations

LPS Santos, AMFS Lima, and SCL Chaves participated in study conception and design, data collection, analysis, and interpretation, and in drafting the article and revising it critically for important intellectual content. DMOC Vilela, APPC Valente, and TRA Rossi participated in data collection and analysis and in drafting the article. The manuscript was read and approved by all authors and there are no conflicts of interest.

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