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Impact of changing the financing model of primary health care for municipalities in the state of Minas Gerais, Brazil

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Abstract *The article analyzes the financing of primary health care in municipalities in the state of Minas Gerais before and after the institution of the Previne Brasil Program. This is a descriptive cross-sectional study with a quantitative approach, based on secondary data from 853 municipalities in Minas Gerais, with disaggregated analysis by health macro-region. Financing data from 2018 to 2022 were collected. It was found that the federal transfer based on the weighted capitation represented an increase in resources in relation to the Fixed Basic Care Floor. In contrast, the payment for performance and the incentive for strategic actions were worse in terms of the amount of resources transferred in relation to the National Program for Improving Access and Quality of Primary Care and the Variable Primary Care Floor, respectively. The Previne Brasil Program is still being implemented by the Ministry of Health and has undergone several changes since its creation. It is suggested the returned to the Family Health and Expanded Family Health and Primary Care teams funding, as well as incorporating more vulnerability criteria into the weighted capitation and rethinking the municipal financial transfer based on indicator targets.*
Key words *Financing, Primary health care, Health management*

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Introduction

Introduced by the federal government in 1998, the *Piso da Atenção Básica* (PAB), or primary care baseline funding, had two components: fixed PAB, calculated based on the population of the municipality; and variable PAB, allocated to municipalities developing priority strategies and programs[1,2].

In 2011, following the implementation of the National Program for Improving Primary Care Access and Quality (PMAQ-AB), a specific resource was allocated for investment in primary health care (PHC) structure[3]. The program was a federal government initiative aimed at extending coverage and improving the quality of PHC. The PMAQ-AB also introduced a culture of evaluation to PHC and was one of the largest pay-for-performance programs in the world at this level of care[3-6].

In November 2019, the federal government introduced a new PHC funding model, *o Programa Previne Brasil* (Prevent Brazil Program), replacing the PAB and PMAQ-AB[7]. The program initially consisted of three components: weighted capitation, pay-for-performance and incentives for strategic actions[7]. Weighted capitation is a resource transfer mechanism in which funding is based on the number of people registered in health teams, weighted according to the municipality's socioeconomic characteristics, demographic profile and geographical classification. Weighted capitation establishes the potential number of people registered according to the typology of the municipality and affiliated health team, where potential coverage differs from that recommended by the 2017 National Primary Care Policy (PNAB)[8]. Pay-for-performance is based on health team performance according to seven indicators that make up the "end synthetic indicator" (ESI), which is used to define the amount of funding received by the municipality. Incentives for strategic actions are a varying amount transferred to municipalities that develop specific actions and programs, and thus similar to variable PAB[7].

Previne Brasil was inspired by funding models in Australia, Canada, Spain, the Netherlands, Norway, New Zealand, Portugal, Sweden and the United Kingdom[5]. Capitation is often used in combination with other payment models and has been shown to be an efficient population-based method for care delivery, health promotion and disease prevention. Studies show that the pay-for-performance model modestly improves process indicators in the short term but has a limited effect in the long term and on health outcomes[9-12].

Since the program's introduction, Previne Brasil has undergone several changes, including deferral of the full implementation of the weighted capitation and pay-for-performance components to cushion short-term impacts during the funding model transition process. In addition, the program's introduction coincided with the health crisis sparked by the Covid-19 pandemic[5,13]. In 2022, the government added a fourth component: population-based financial incentives, comprising a fixed amount defined according to the population living in the municipality. This per capita amount was transferred to municipalities during the transition period (up to 2021) to mitigate potential funding reductions[7].

The aim of this study was to analyze PHC funding in municipalities in the state of Minas Gerais before and after the introduction of the Previne Brasil Program. The Ministry of Health expected that the new model would generate financial gains for municipalities that managed to register the entire population in PHC services and meet performance targets. However, it is argued that certain areas find it difficult to meet these targets, leading to funding reductions[6,9]. Furthermore, Previne Brasil's resource distribution criteria do not take into account sociodemographic differences across the country's health regions and regional disparities[14].

Given that the program is relatively new, few studies have evaluated the impact of funding model changes. To the best of our knowledge, this is the first study to characterize resource transfers to municipalities in Minas Gerais before and after the introduction of the Previne Brasil Program.

Methods

We conducted a descriptive quantitative cross-sectional study of Minas Gerais' 853 municipalities, grouped into 14 macro health regions[15]. Funds transferred to the municipalities before and after the introduction of the Previne Brasil Program were compared to determine the extent to which the program resulted in PHC funding reductions. Counterfactual analyses were also performed considering the amounts that would have been transferred if the program had been fully implemented.

Despite design differences between the two funding models, we assessed each Previne Bra-

sil component separately, carrying out the following analysis with PAB and PMAQ-AB: 1) Fixed PAB x weighted capitation; 2) PMAQ-AB x pay-for-performance; 3) variable PAB x incentives for strategic actions; and 4) overall funding.

The first analysis encompasses only changes related to the transfer of fixed component federal funds. During the model transition period (2020 to August 2021), weighted capitation was calculated based on the potential number of registered people according to the number of existing health teams. From September 2021 onwards, capitation was calculated based on the actual number of registered individuals. The analysis included actually transferred weighted capitation funds, excluding any additional funding received from the population-based financial incentives component in 2020, 2021 and 2022 to cushion impacts during the model transition process.

Two analyses were undertaken to assess the pay-for-performance (P4P) component: 1) funds actually transferred in 2020, 2021 and 2022 under the P4P component relative to transfers made under PMAQ-AB in 2019. In 2020/2021, payments were calculated based on the assumption that all municipalities had met 100 per cent of the performance targets. In the first four-month period of 2022, payment calculations were based on actual performance against the prenatal consultations and prenatal exams indicators and the assumption that 100% of the remaining targets had been met. In the following four-month periods, the indicators dental consultations for pregnant women, cervical screening and vaccination were added; 2) simulation of the estimated funding during the period 2020 to 2022 calculated based on overall performance according to the ESI relative to transfers made under PMAQ-AB in 2019.

The third set of analysis compares actual funding provided under the incentives for strategic actions component in 2020, 2021 and 2022 relative to amounts transferred under the variable PAB in 2018 and 2019. The period of analysis for this component was therefore 2018 to 2022. The comparison of years prior to the Previne Brasil Program (2018 and 2019) was included to determine whether municipalities were already experiencing funding reductions due to non-adherence to programs and strategic actions before the introduction of the program.

The analysis of overall funding includes the total amount of federal funds transferred to PHC. Comparisons were made between 2018 and 2022, considering two scenarios: the first comparing actual transfers under all components; the second considering performance against the ESI excluding additional funding provided during the model transition period (simulation). The analysis of 2022 excludes deductions for exceptional transfers made by the federal government for hydrometeorological disasters in the state[16].

We used the financial reports "*Pagamento AB*" (primary care payments) and "*Pagamento APS*" (primary health care payments), available on the Ministry of Health's primary care information platform *e-Gestor Atenção Básica* (e-Gestor AB) (https://egestorab.saude.gov.br/paginas/acessoPublico/relatorios/relPagamentoIndex.xhtml).

Data on the amount of funding that each municipality received for PHC were extracted for the period before (2018 and 2019) and after (2020, 2021 and 2022) the introduction of the Previne Brasil Program. These monthly figures were added together to obtain the annual amount received by each municipality. The year 2018 was used as a baseline due to the availability of reports in the public domain. The data on funds transferred under the fixed PAB refer to amounts received by the municipalities in 2018 and 2019, according to Ordinance 3947 (28 December 2017)[17]. The data were stored, processed and analyzed using Microsoft Excel 365®. Further details on methodological procedures, the database and definition of the variables can be found at https://github.com/FinanciamentoAPS/analise-mudanca-financiamento-aps.

The macro health regions were characterized according to municipal population size and Municipal Human Development Index (MHDI)[18]. For each health region, we calculated the weighted mean MHDI, where the weighting factor was municipal population as a share of the total population of the macro health region.

Results

This section is structured according to the four simulations: fixed PAB x weighted capitation; PMAQ-AB x pay-for-performance; variable PAB x incentives for strategic actions; and overall funding.

Fixed PAB x weighted capitation

Table 1 shows the percentage of municipalities experiencing funding cuts by macro health

region when weighted capitation is compared to fixed PAB. Mean MHDI and population is also presented.

A total of 198 municipalities (23.2%) experienced funding cuts in 2020, 188 of which did not receive funding under the weighted capitation component because they did not have Family Health teams (eSF in Portuguese) and Primary Care teams (eAP in Portuguese), making it impossible to calculate the potential number of registered individuals. The macro health region with the highest percentage of municipalities experiencing funding cuts was the East (49.0%), followed by the North (43.0%) and Steel Valley (40.0%). The regions with the lowest percentage of municipalities experiencing funding cuts were the West (9.4%), Northwest (12.1%) and South (12.3%). The regions with the lowest percentage of municipalities experiencing funding cuts are those with the highest mean MHDI, while those with higher percentages (above 25%) tend to have smaller populations (less than 900,000). In 2021 and 2022, only 4 and 2 municipalities, respectively, experienced funding cuts. These improvements in 2021 and 2022 are due to increases in the number of health teams and the percentage of the population registered in these years compared to 2020.

PMAQ-AB x pay-for-performance

This analysis considered two scenarios: 1) actually transferred funds; and 2) assuming payments were made based on performance according to the ESI.

Table 2 shows the percentage of municipalities experiencing funding cuts by macro health region.

A total of 448 (52.5%) and 478 (56.0%) municipalities, respectively, experienced funding cuts in 2020 and 2021. The situation was worse in 2022, when funding started to be based on ESI performance, with 533 (62.5%) municipalities experiencing a reduction in funding. The percentage of municipalities experiencing funding cuts was high (above 30%) across all macro health regions in 2020, 2021 and 2022. The highest percentages were found in the Northeast (84.2%), West (77.4%), North (74.4%) and Northern Triangle (74.1%). It is worth noting that the MHDI in the Northeast and North regions is lower than the state mean (Table 1).

The results of the simulation based on performance according to the ESI reveal an even worse picture, showing that 89.3, 91.8 and 65.9% of municipalities would have faced reductions in funding in 2020, 2021 and 2022, respectively (Table 3). All municipalities in the Northeast and Northern Triangle regions would

Table 1. Percentage of municipalities by macro health region experiencing funding cuts when weighted capitation (2020, 2021 and 2022) is compared to fixed PAB.

Macro health region	Number of municipalities	Mean MDHI	Population	Weighted capitation 2020 x fixed PAB 2019 (%)	Weighted capitation 2021 x fixed PAB 2019 (%)	Weighted capitation 2022 x fixed PAB 2019 (%)
Center	101	0.757	6,727,252	13.9	0.0	0.0
Center South	51	0.723	798,326	25.5	0.0	0.0
Jequitinhonha	31	0.646	408,352	22.6	0.0	0.0
East	51	0.673	693,209	49.0	0.0	0.0
East South	53	0.671	699,214	30.2	0.0	0.0
Northeast	57	0.625	835,346	21.1	0.0	0.0
Northwest	33	0.720	714,167	12.1	0.0	0.0
North	86	0.673	1,700,450	43.0	0.0	0.0
West	53	0.727	1,313,161	9.4	0.0	0.0
Southeast	94	0.725	1,693,470	21.3	0.0	0.0
South	154	0.729	2,842,451	12.3	1.3	0.6
Northern Triangle	27	0.760	1,327,105	22.2	0.0	0.0
Southern Triangle	27	0.748	806,172	22.2	3.7	3.7
Steel Valley	35	0.720	853,248	40.0	2.9	0.0
Total	853	0.725	21,411,923	23.2	0.5	0.2

Source: Authors.

have faced reductions in 2021. The region that would have had the lowest percentage of municipalities facing funding cuts was Steel Valley (74.3% in 2020, 80.0% in 2021 and 34.3% in 2022). There is no clear relationship between these percentages and MHDI and macro health region population.

The improvement in 2022 reflects improved municipal performance against indicators in response to program implementation. Despite this improvement, more municipalities would have faced funding reductions if P4P-ESI had been fully implemented.

Table 2. Percentual of municipalities experiencing funding cuts by macro health region when pay-for-performance (2020, 2021 and 2022) is compared to PMAQ-AB (2019).

Macro health region	Number of municipalities	P4P 2020 x PMAQ-AB 2019 (%)	P4P 2021 x PMAQ-AB 2019 (%)	P4P 2022 x PMAQ-AB 2019 (%)
Center	101	43.6	48.5	52.5
Center South	51	39.2	39.2	49.0
Jequitinhonha	31	54.8	67.7	71.0
East	51	66.7	51.0	60.8
East South	53	52.8	49.1	56.6
Northeast	57	59.6	77.2	84.2
Northwest	33	54.5	57.6	60.6
North	86	68.6	66.3	74.4
West	53	54.7	67.9	77.4
Southeast	94	53.2	61.7	71.3
South	154	46.8	53.2	58.4
Northern Triangle	27	66.7	74.1	74.1
Southern Triangle	27	33.3	33.3	40.7
Steel Valley	35	45.7	31.4	31.4
Total	853	52.5	56.0	62.5

Source: Authors.

Table 3. Percentage of municipalities facing funding cuts (simulation) by macro health region when pay-for-performance-ESI (2020, 2021 and 2022) is compared to PMAQ-AB (2019).

Macro health region	Number of municipalities	P4P-ESI 2020 x PMAQ-AB 2019 (%)	P4P-ESI 2021 x PMAQ-AB 2019 (%)	P4P-ESI 2022 x PMAQ-AB 2019 (%)
Center	101	84.2	90.1	60.4
Center South	51	86.3	86.3	51.0
Jequitinhonha	31	87.1	87.1	71.0
East	51	90.2	96.1	64.7
East South	53	92.5	96.2	62.3
Northeast	57	91.2	100.0	87.7
Northwest	33	90.9	84.8	60.6
North	86	95.3	98.8	76.7
West	53	96.2	96.2	77.4
Southeast	94	96.8	97.9	75.5
South	154	84.4	84.4	60.4
Northern Triangle	27	96.3	100.0	74.1
Southern Triangle	27	85.2	85.2	51.9
Steel Valley	35	74.3	80.0	34.3
Total	853	89.3	91.8	65.9

Source: Authors.

Variable PAB x incentives for strategic actions

Table 4 shows the percentage of municipalities that experienced reductions in financial incentives compared to the previous year when variable PAB is compared to incentives for strategic actions.

The results show that the percentage of municipalities experiencing funding reductions increased up to 2021 across almost all macro health regions. Reductions were observed before the program was implemented (2019 vs 2018), when funding was based on variable PAB. In 2019, 50% of municipalities in the Center, East, Northwest, North, West, South, Northern Triangle and Southern Triangle experienced funding reductions relative to 2018. The percentage of municipalities experiencing reductions in financial incentives for strategic actions during the funding model transition period remained high, especially in 2021 relative to 2020. The situation improves in 2022, with only 31 municipalities (3.6%) experiencing reductions compared to the previous year. In this year, none of the municipalities in the Jequitinhonha, East South, Northern Triangle and Southern Triangle macro regions experienced funding reductions compared to 2021. The regions with the highest percentage of municipalities experiencing reductions were the Center (7.9%) and North (7.0%). It should be noted that financial incentives for physical activity were added to this component in 2022, partly contributing to an increase in funding.

Overall funding before and after the Previne Brasil Program

Table 5 presents two scenarios. Scenario 1 shows the percentage of municipalities experiencing funding reductions based on funds actually received. The percentage of municipalities experiencing funding cuts in 2019 relative to 2018, before the introduction of the Previne Brasil Program, was more than 50% in eight macro health regions. The macro regions with the highest percentage of municipalities experiencing reductions were the Southern Triangle (77.8%) and Northern Triangle (74.1%).

In 2020, based on overall funding received, including additional funding during the model transition period, only four municipalities, located in the East, South and Southern Triangle regions, experienced reductions in overall funding. The impact on PHC funding was lower in 2020 than 2021 due to the deferral of certain program components. In 2021, more than 80% of municipalities in the state experienced funding reductions compared to 2020, even when additional funding during the model transition period is included. This percentage reached

Table 4. Percentage of municipalities experiencing reductions in financial incentives by macro health region when variable PAB is compared to incentives for strategic actions in 2019, 2020, 2021 and 2022.

Macro health region	Number of municipalities	Variable PAB 2019 x 2018 (%)	Strategic actions 2020 x variable PAB 2019 (%)	Strategic actions 2021 x 2020 (%)	Strategic actions 2022 x 2021 (%)
Center	101	53.5	71.3	97.0	7.9
Center South	51	41.2	66.7	98.0	2.0
Jequitinhonha	31	25.8	67.7	100.0	0.0
East	51	58.8	88.2	96.1	3.9
East South	53	45.3	73.6	96.2	0.0
Northeast	57	28.1	64.9	100.0	3.5
Northwest	33	51.5	72.7	100.0	9.1
North	86	55.8	84.9	97.7	7.0
West	53	54.7	75.5	100.0	1.9
Southeast	94	47.9	73.4	97.9	3.2
South	154	53.9	77.9	93.5	1.3
Northern Triangle	27	74.1	81.5	96.3	0.0
Southern Triangle	27	77.8	55.6	92.6	0.0
Steel Valley	35	40.0	62.9	100.0	8.6
Total	853	50.4	74.2	97.1	3.6

Source: Authors.

Table 5. Percentage of municipalities experiencing cuts in overall funding in 2019, 2020, 2021 and 2022 by macro health region.

Macro health region	Number of municipalities	Scenario 1 – funds actually transferred				Scenario 2 – simulations		
		2019 x 2018 (%)	2020 x 2019 (%)	2021 x 2020 (%)	2022 x 2021 (%)	2020 x 2019 (%)	2021 x 2020 (%)	2022 x 2021 (%)
Center	101	53.5	0.0	93.1	20.8	14.9	84.2	6.9
Center South	51	41.2	0.0	92.2	9.8	27.5	70.6	5.9
Jequitinhonha	31	25.8	0.0	90.3	6.5	19.4	67.7	3.2
East	51	58.8	2.0	88.2	9.8	47.1	47.1	0.0
East South	53	45.3	0.0	100.0	17.0	30.2	71.7	3.8
Northeast	57	28.1	0.0	100.0	14.0	21.1	80.7	5.3
Northwest	33	51.5	0.0	93.9	15.2	12.1	81.8	6.1
North	86	55.8	0.0	98.8	9.3	43.0	57.0	1.2
West	53	54.7	0.0	100.0	9.4	7.5	92.5	5.7
Southeast	94	47.9	0.0	98.9	20.2	21.3	80.9	8.5
South	154	53.9	0.6	83.8	18.2	13.0	77.9	5.2
Northern Triangle	27	74.1	0.0	88.9	11.1	22.2	70.4	3.7
Southern Triangle	27	77.8	7.4	92.6	18.5	29.6	74.1	11.1
Steel Valley	35	40.0	0.0	94.3	8.6	37.1	57.1	0.0
Total	853	50.4	0.5	93.4	14.8	23.3	73.9	4.9

Source: Authors.

100% in the East South, Northeast and West regions. In 2022, the situation began to improve, with only 14.8% (126) of municipalities experiencing funding cuts compared to 2021. Percentages were highest in the Center (20.8%) and Southeast (20.2%). Once again, no relationship was found between these results and MHDI and macro health region population.

Scenario 2 (simulation) shows the percentage of municipalities that would have faced reductions in overall funding if the additional components had not been included and pay-for-performance had been calculated based on the ESI.

In 2020, 199 (23.3%) municipalities would have faced funding reductions, with rates being highest in the East (47.1%) and North (43.0%) macro regions. In 2021, 630 (73.4%) municipalities would have faced funding reductions relative to 2020, with rates being highest in the West (92.5%) and Center (84.2%) regions. In 2022, only 42 (4.9%) municipalities would have faced funding cuts relative to 2021, with rates being highest in the Southern Triangle (11.1%) and Southeast (8.5%) regions. This simulation shows that municipalities would find it difficult to adapt to program rules, resulting in higher reductions in funding over the years. The results suggest that municipalities began to adapt to the rules in the third year after program introduction (2022).

Funding received by muncipalities in the state of Minas Gerais based on actual transfers (scenario 1) amounted to R$3,185,427,187.42 in 2020, R$2,513,627,902.39 in 2021 and R$2,694,921,751.22 in 2022, representing a reduction of 15% in 2022 compared to 2020. The amounts based on the simulation (scenario 2) would have been R$2,561,703,572.45 in 2020, R$2,233,507,914.45 in 2021 and R$2,503,931,917.66 in 2022, representing a reduction in 2021 compared to 2020 and upturn in 2022.

Complete data in Scielo Data repository: https://doi.org/10.48331/scielodata.GVD8TU.

Discussion

The results reveal changes in funding for PHC across a significant number of municipalities in Minas Gerais due to the implementation of the Previne Brasil Program. However, the results also show that 50% of municipalities had already experienced funding reductions before program implementation (2019 vs. 2018). The findings also show that transition mechanisms (addi-

tional funding and deferral of the implementation of the weighted capitation and pay-for-performance components) were important to cushion funding reductions at the beginning of the program. Without these mechanisms, there would have been greater reductions in federal funding for PHC across several municipalities. Over the years, many municipalities have been able to improve performance against indicators, especially patient registration, demonstrating their capacity to respond[19]. As a result, the proportion of municipalities experiencing funding reductions decreased across all macro health regions over the study period. However, the reductions experienced by certain municipalities are worrying, especially considering situations such as the Covid-19 pandemic. Initially, the pandemic impacted the implementation of the Previne Brasil Program, and the Ministry of Health deferred the introduction of certain components to mitigate possible funding reductions[13]. On the other hand, social isolation led to a reduction in demand for care for non-respiratory chronic diseases, which may have had an impact on performance indicators[20].

Few studies have investigated the impacts of this change to the PHC funding model[13,14,19,21-25]. Our findings show a marginal change in funding between the PAB (before 2020) and Previne Brasil (from 2020). The weighted capitation component (plus the population-based financial incentives) accounts for 53% of funding provided under the Previne Brasil Program, while fixed PAB plus family health strategy funding represented 52% of the PAB. P4P and incentives for strategic actions account for 7% and 40% of funding, while PMAQ-AB and variable PAB correspond to 11% and 37%, respectively. These results include additional transfers made under the transition rules, which remained in place up to 2022, hampering the analysis of amounts actually received by municipalities under program rules[21].

For most municipalities, weighted capitation is more financially advantageous than the equivalent component of the previous model (fixed PAB), even when additional funding is not taken into account. This reflects the capacity of municipalities to respond to program criteria and higher per capita funding under weighted capitation (R$50.50 per registered individual, which can increase to up to R$131.30 when weighting criteria are adopted, compared to a maximum of R$28.00 per inhabitant under the fixed PAB). While funding under the fixed PAB is calculated based on the overall population, municipalities have shown a high capacity for registering their population[19].

The main criticism of weighted capitation is that the component is not consistent with the principle of universality because it restricts funding to the registered population and creates a condition for funding that did not exist before[9,16,26]. By transferring an amount based on the overall population of the municipality, fixed PAB is consistent with the principle of universal healthcare[3,9]. Funding volatility caused by the need to register the population and program rules can hinder health planning and limit the implementation of health actions and services[19].

Mandatory registration can pose a barrier to access to health services, especially in more populous municipalities or those encountering administrative and technical difficulties[23]. However, barriers to access were not identified in the literature, as most municipalities were able to register their population to ensure the transfer of federal funds. There was a significant increase in the registered population in 99.9% of the municipalities in Minas Gerais in 2021[19]. With the addition of a fourth component to the program (population-based financial incentives), which ensures a fixed amount based on the overall population, PHC funding returns to the principle of universality.

A study in São Paulo city and Manaus compared federal funding for PHC under the weighted capitation component in 2020 to funds received under the fixed PAB in 2019. Considering funds actually received in 2020 and the extension of transmission measures, São Paulo experienced a 2.5% reduction in funding, while Manaus received an increase. Without the transition measures, both capitals would have experienced a reduction in funding of 60% and 31%, respectively[13].

When compared to PMAQ-AB, the implementation of the P4P component led to a reduction in funding for most municipalities. This ultimately leads to a reduction in service capacity and impairs performance against targets, as shown by a previous study in Minas Gerais[19]. It is important to highlight that P4P is not additional funding, unlike PMAQ-AB, which was an additional transfer to affiliated health teams.

Most municipalities in Brazil are below target for the indicators that make up the ESI[14,21]. Poor municipal performance can partially be explained by the deferral of the P4P component, meaning that municipal governments limited efforts to develop actions aimed at meeting targets[27]. This funding model represents an addi-

tional management tool that emphasizes team productivity and focus on services, compromising the principle of integrality and the multidisciplinary and community-oriented approach to PHC[3,22,24].

Our results show reductions in funding under the incentives for strategic actions component when compared to variable PAB. The amount allocated from this component depends on the municipality's adherence to respective programs. The Previne Brasil Program excluded certain programs previously covered by the variable PAB and included new programs that require a long structuring process. Similar results were found by a study in São Paulo investigating the funding of two strategic programs: *Programa Saúde na Hora* (Timely Healthcare Program) and *Programa Informatiza* (Computerize Program). The authors reported a reduction in funding of R$18 million and R$12 million for each program, respectively, between 2020 and 2021[22].

The introduction of the Previne Brasil Program led to a reduction in specific funding for eSF, eAP and Family Health and Primary Health Care Expanded Support Centers (NASF-AB, in Portuguese). The absence of federal funding for these teams culminated in an increase in municipal government spending. Evidence shows that federal funding for eSF was insufficient to pay professional staff, requiring municipal governments to fill the shortfall[28]. Besides missing out on federal funding, unlike eSF and eAP, NASF-AB were not included in other components. Lack of federal funding for NASF-AB can limit coverage as these teams must be funded by the municipal government[26,29]. As a direct result of the withdrawal of specific funding for NASF-AB, the number of teams at national level decreased by 379 in 2020 and 2021[30].

The results show that overall funding was higher under the Previne Brasil Program than under the PAB for a significant number of municipalities in Minas Gerais. Similar results were found in a study of municipalities in the state of Rio de Janeiro. Overall funding for PHC in 2020 did not decrease in comparison with 2018 and 2019, following the deferral of the implementation of some of the components of the Previne Brasil Program[25].

The analysis of the spatial distribution of PHC funding shows that the Previne Brasil Program resulted in a redistribution of federal funding, allocating a larger amount of funding to rural and adjacent municipalities than to urban municipalities. More populous municipalities and those with lower per capita income received less funding after the introduction of the new model[21]. While most municipalities in the state of Minas Gerais have seen gains in funding with the introduction of the program, the funding reductions experienced by some municipalities are likely to compromise health care[31], especially in poorer municipalities, where PHC is funded almost entirely by the federal government[32].

Reductions in federal funding under the Previne Brasil Program could therefore have a detrimental effect on these municipalities' health systems. These figures may change when official statistics based on the 2022 demographic census are released, with preliminary results showing a slowdown in projected population growth. This reduction in population growth is unlikely to be uniform across municipalities, with some areas, especially smaller towns, experiencing a significant drop in population[33]. In addition, the results of 2022 demographic census point to an increase in the populations of specific groups, such as indigenous peoples, impacting PHC funding[34].

The following improvements could be implemented to enhance the Previne Brasil Program: 1) use of a broader definition for the indicators of vulnerability included in the weighted capitation component; 2) allowing municipalities to accumulate weighting criteria related to vulnerability indicators; 3) use of the P4P component to reward professional or team performance against a given set of indicators; and 4) the reintroduction of specific funding for eSF and NASF-AB.

Final considerations

At the end of 2022, the Previne Brasil Program had yet to be fully implemented by the Ministry of Health and had undergone several changes since its introduction. Program rules hamper operationalization and disregard regional differences, some of the principles of PHC and the importance of eSF and NASF-AB. Our findings show that weighted capitation was financially better than fixed PAB, while P4P and incentives for strategic actions were worse when compared to PMAQ-AB and variable PAB, respectively. The analysis of overall funding showed that the program was financially more advantageous for most municipalities in Minas Gerais. However, if the program had been implemented as initially planned, many municipalities would have faced funding reductions.

Collaborations

All authors contributed to the study design, data analysis and writing of the manuscript, and approved its content.

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