Monitoring Performance Indicators in Primary Health Care: An Analysis Across All Regions of Brazil

Monitoramento dos Indicadores de Desempenho na Atenção Primária: Uma Análise em Todas as Regiões do Brasil

Monitoreo de los Indicadores de Desempeño en la Atención Primaria: Un Análisis en Todas las Regiones de Brasil

RESUMO

Objetivo: Analisar os indicadores de desempenho da Atenção Primária à Saúde (APS). **Método:** Comparou-se dados dos períodos pré-implantação (2018–2019) e pós-implantação (2021–2022) do Programa Previne Brasil (PPB), avaliando os efeitos sobre os desfechos de saúde. A análise abrangeu as regiões brasileiras. **Resultados:** Houve aumento dos indicadores na APS em todas as regiões, como consultas de pré-natal (até +149,6% no Sudeste), testagem para sífilis/HIV (até +219,0%), atendimento odontológico a gestantes (até +213,2%), acompanhamento de hipertensos (até +927,4%) e diabéticos (até +490,4%), porém não se traduziram em melhores desfechos, aumentando o baixo peso ao nascer (até +9,6%) e a prematuridade (até +7,2%), enquanto houve queda na sífilis congênita (até –57,0%), na AIDS em menores de um ano (até –61,5%) e na morbidade por doenças circulatórias e diabetes. **Conclusão:** O PPB funcionou como catalisador e que, apesar dos avanços no acesso, permanecem desafios relacionados a condições preveníveis.

DESCRITORES: Financiamento dos Sistemas de Saúde. Atenção Primária à Saúde. Políticas, Planejamento e Administração em Saúde.

ABSTRACT

Objective: To analyze performance indicators of Primary Health Care (PHC). **Method:** Data from the pre-implementation (2018–2019) and post-implementation (2021–2022) periods of the Previne Brasil Program (PBP) were compared, assessing effects on health outcomes. The analysis covered all Brazilian regions. **Results:** There was an increase in PHC indicators across all regions, including prenatal consultations (up to +149.6% in the Southeast), syphilis/HIV testing (up to +219.0%), dental care for pregnant women (up to +213.2%), follow-up of hypertensive patients (up to +927.4%) and diabetic patients (up to +490.4%). However, these gains did not translate into better outcomes, with increases in low birth weight (up to +9.6%) and prematurity (up to +7.2%), while reductions were observed in congenital syphilis (up to –57.0%), AIDS in children under one year (up to –61.5%), and morbidity from circulatory diseases and diabetes. **Conclusion:** The PBP acted as a catalyst and, despite advances in access, challenges related to preventable conditions remain.

DESCRIPTORS: Health System Financing. Primary Health Care. Health Policy, Planning and Management.

RESUMEN

Objetivo: Analizar los indicadores de desempeño de la Atención Primaria de la Salud (APS). **Método:** Se compararon datos de los períodos preimplementación (2018–2019) y posimplementación (2021–2022) del Programa Previne Brasil (PPB), evaluando sus efectos sobre los desenlaces en salud. El análisis abarcó todas las regiones de Brasil. **Resultados:** Se observó un aumento de los indicadores de APS en todas las regiones, como consultas de control prenatal (hasta +149,6% en el Sudeste), pruebas de sífilis/VIH (hasta +219,0%), atención odontológica a gestantes (hasta +213,2%), seguimiento de pacientes hipertensos (hasta +927,4%) y diabéticos (hasta +490,4%). Sin embargo, estos avances no se tradujeron en mejores desenlaces, con incrementos del bajo peso al nacer (hasta +9,6%) y de la prematuridad (hasta +7,2%), mientras que se registraron reducciones de la sífilis congénita (hasta –57,0%), del SIDA en menores de un año (hasta –61,5%) y de la morbilidad por enfermedades circulatorias y diabetes. **Conclusión:** El PPB actuó como catalizador y, a pesar de los avances en el acceso, persisten desafíos relacionados con condiciones prevenibles.

DESCRIPTORES: Financiamiento de los Sistemas de Salud. Atención Primaria de la Salud. Política, Planificación y Gestión en Salud.

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INTRODUCTION

The Brazilian public health system, the Unified Health System (SUS), was established on the principles of universality, equity, and comprehensiveness. Its funding is tripartite in nature, shared among the federal government, the states, and the municipalities, pursuant to Article 198, Paragraph 1, of the 1988 Federal Constitution. The network that comprises the SUS is extensive and encompasses both health interventions and services. It includes primary, intermediate, and high-complexity care, urgent and emergency services, hospital care, health surveillance activities and services, and pharmaceutical care [1]. Primary Health Care (PHC), as the entry point and coordinating center of the Health Care Networks (RAS), must organize and coordinate care, resolving approximately 80% of the population's health problems [2]. Historically, PHC financing has shifted from a model based exclusively on per capita transfers, calculated based on municipal population size, to a system that also incorporates variable components linked to installed capacity, such as the number of Family Health Teams (FHTs) [3]. This transition reflects the need to promote greater efficiency in resource allocation and to ensure that access translates into effective outcomes in disease prevention and control [4,5].

Funding for primary health care has evolved over the past few decades: since the establishment of the Primary Care Floor in 1996, which included fixed components (per capita funding based on population and local vulnerabilities) and variable components (linked to strategic initiatives such as Family Health and Community Health Agents) [6]. In 2019, the federal government introduced the Previne Brasil Program (PBP), which established a new financing model for PHC. Under this system, part of the transfer to municipalities is contingent on the results achieved through a set of performance indicators monitored and evaluated within Family Health teams. The performance-based payment component, one of the four pillars of federal financing, represents an innovative strategy that seeks to incentivize improvements in the quality of services provided [5,7].

In April 2024, the Ministry of Health instituted a new methodology for federal co-financing of PHC through Ordinance GM/MS No. 3,493/2024. This regulation revoked the previous model and introduced significant changes to the financing structure, maintaining performance-linked incentives and incorporating a quality component. This change aims to strengthen the Family Health Strategy (ESF) and improve the quality of services provided in PHC. The new co-financing methodology consists of three main components: (i) a fixed component for maintaining Family Health (eSF) and Primary Care (eAP) teams; (ii) a territorial linkage and monitoring component; and (iii) a quality component. Despite their recent implementation, the new indicators are currently being reformulated; for this reason, the PBP indicators will be

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used as the subject of this study.

The systematic use of monitoring and evaluation of performance indicators in PHC is essential for identifying gaps, improving service quality, and guiding health actions at the local level. Studies show that, when linked to incentive mechanisms, financing programs can significantly expand the population's access to health services and lead to improvements in clinical outcomes [8,9]. Thus, the reformulation of evaluation parameters, through the inclusion of indicators that measure the effectiveness of care practices and encourage good practices, is essential for strengthening PHC and promoting public health. This study aims to

The performance-based primary health care (PHC) financing model has emerged as a strategy that drives changes in care practices by encouraging teams to meet agreed-upon targets while simultaneously promoting expanded access to health services. The main objective of this study is to analyze two aspects related to the monitored indicators: first, to verify whether their results have promoted expanded access; and second, to assess whether this expansion has positively impacted the quality of care provided, based on an analysis of the results of associated indicators that reflect the health conditions linked to each thematic area. The aim is thus to understand which aspects are essential for structuring the new indicators, so as to guide teams in fostering good practices in the care of the monitored priority groups, inducing improvements and quality in care, and enhancing the effectiveness of PHC.

METHODS

Study Design

This was a nationwide ecological epidemiological study using secondary data and reported in accordance with the *Strengthening the Reporting of Observational Studies in Epidemiology* (STROBE) guidelines.

Ethical Considerations

This ecological study was submitted for review by the Research Ethics Committee (CEP) of the State University of Campinas (UNICAMP), Piracicaba School of Dentistry (FOP), in accordance with Resolution No. 466/12 of December 12, 2012, of the National Health Council and complementary resolutions (240/97, 251/97, 292/99, 303/2000, 304/2000, 340/2004, 346/2005, and 441/2011). However, since secondary data from public databases were used for analysis, this study was exempt from CEP review, in accordance with CEP Official Letter 09/2023.

Outcome Measurement and Data Source

This study analyzed the performance-based payment incentive component of the PBP, which consists of seven indicators; of these, five were the focus of the study. In addition, associated health status indicators directly linked to the PBP indicators studied were defined and evaluated. The evaluation period covered the pre-implementation (2018–2019) and post-implementation (2021–2022) phases of the program; the year 2020 was excluded due to the impact of the COVID-19 pandemic on the results of these indicators. Data were collected from all regions of the country—North, Northeast, South, Southeast, and Central-West—for both periods. Initially, the results of the PBP performance indicators were collected for the pre- and post-implementation periods; an annual average was calculated for each indicator, considering the results of the three four-month periods; and finally, an assessment was made to determine whether there was a trend toward improvement over the years. Subsequently, data on associated health condition indicators were also collected for the period pre- and post-implementation. Using these two sets of results, a comparative assessment was conducted for the pre- and post-implementation periods, enabling an analysis of the changes that occurred in response to the program.

The PBP indicators tabulated and evaluated were: Indicator 1: Proportion of pregnant women who had at least six prenatal visits, with the first occurring by the 20th week of pregnancy; Indicator 2: Proportion of pregnant women who underwent testing for syphilis and HIV; Indicator 3: Proportion of pregnant women receiving dental care; Indicator 6: Proportion of people with hypertension who had a consultation and their blood pressure measured during the semester; Indicator 7: Percentage of diabetics who requested a glycated hemoglobin test [10] . Indicator 4, Cytopathological examination coverage; and Indicator 5: Vaccination coverage in 1-year-old children against DTPa, Hepatitis B, Haemophilus influenzae type b, and inactivated polio; respectively, were not evaluated due to a lack of sufficient time to analyze the impact on the population's health conditions. The associated health status indicators were: associated indicator 1: Proportion of live births with low birth weight; associated indicator 2: Proportion of live births with congenital syphilis; associated indicator 3: Number of diagnosed cases of AIDS in children under 1 year of age; associated indicator 4: Proportion of preterm births; associated indicator 5: Morbidity due to circulatory system diseases; associated indicator 6: Number of hospitalizations for conditions treatable in primary care (diabetes-related morbidity).

Data from all Brazilian states were collected using publicly available secondary data from the Primary Care Health Information System (SISAB), accessible at: https://egestorab.saude.gov.br/ and in the TABNET/TABWIN health information system, available at: https://datasus.saude.gov.br/.

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Statistical Analysis

To analyze the PBP indicator, an annual average was calculated for the three four-month periods to obtain the annual result for each indicator. The percentage changes in the indicators for each region and state were evaluated by comparing the average values from the pre- and post-implementation periods, allowing for an analysis of the changes that occurred in response to the program. Subsequently, the results of the indicators associated with health conditions were calculated for all regions of the country and the state. Finally, a comparative analysis of the results of both indicators was conducted, enabling an analysis of the impact on the population's health conditions.

RESULTS

Table 1 and Figure 1 present data on the indicator *"Proportion of pregnant women with at least six prenatal visits, with the first occurring between the first and twelfth weeks of gestation,"* by region of Brazil, from 2018 to 2022. An increase in this proportion was observed in all regions of the country following the implementation of the PBP (2021–2022 period). The increase in the proportion of pregnant women with at least six prenatal visits ranged from 45.4% in the North to 149.6% in the Southeast. It is noted that in the Southeast region, which showed the highest growth, the average proportion increased from 15% in 2018–2019 to 37.5% in 2021–2022. Meanwhile, in the North region, the increase was from 24.6% on average to 35.8%.

The data for the associated indicator *"Proportion of live births with low birth* weight" are presented in Table 1 and Figure 1. Contrary to expectations, despite the considerable increase in the proportion of pregnant women with at least six prenatal visits, there was an increase in the proportion of live births with low birth weight in all regions of the country. The increase in the proportion of live births with low birth weight ranged from 5.4% in the South to 9.6% in the North. It is observed that in the Southeast region, despite a 146.6% increase in the proportion of pregnant women with at least six prenatal visits, there was a 7.0% increase in the proportion of live births with low birth weight, rising from 8.9% in the 2018–2019 period to 9.5% in the 2021–2022 period.

Figure 1. Maps showing the percentage changes in the "Proportion of pregnant women who had at least six prenatal visits, with the first occurring by the twelfth week of gestation" (A) and in the "Proportion of live births with low birth weight" (B) in 2021–2022 compared to 2018–2019.

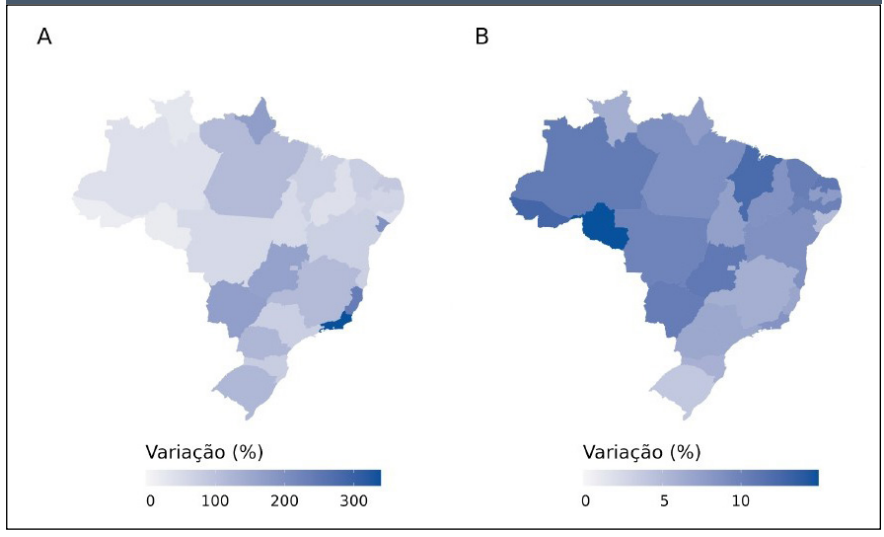

Table 1. Previne Brasil indicator "Proportion of pregnant women who have had at least six prenatal visits, with the first occurring by the twelfth week of pregnancy" and associated indicator "Proportion of live births with low birth weight," for the period 2018–2022 across Brazil's regions.

Indicator	Year	Region				
		North	Northeast	South	Southeast	Midwest
Proportion of pregnant women with at least six prenatal visits, with the first visit occurring up to the 12th week of gestation	[1]2018-2019	24,6	25,9	23,6	15	21,5
	[2]2021-2022	35,8	44,6	48,5	37,5	44,3
	Variation (%)	45,4	72,1	105,4	149,6	105,8
Proportion of live births with low birth weight	[1]2018-2019	7,7	7,8	8,6	8,9	8,4
	[2]2021-2022	8,4	8,5	9	9,5	9,2
	Variation (%)	9,6	8,8	5,4	7	9,1

[1] Before the implementation of the Previne Brasil Program; [2] After the implementation of the Previne Brasil Program.

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On the other hand, an increase was observed in the proportion of pregnant women tested for syphilis and human immunodeficiency virus (HIV) (Table 2 and Figure 2) between the periods. The increase ranged from 68.7% (Northern region) to 219.0% (Southeastern region). In the Southeast region, the proportion increased from 14.7% in the 2018–2019 period to 46.9% in the 2021–2022 period, while in the North region, it increased from 38.5% to 65.0%. The North region had the highest proportion of pregnant women undergoing testing in all years evaluated. In 2018, 34.7% of pregnant women in the North region underwent testing for syphilis and HIV, compared to 11.4% in the Southeast region. Furthermore, in 2022, 68.7% of pregnant women in the North region underwent testing, compared to 52.6% in the Southeast region.

Data for the indicator *"rate of live births with congenital syphilis per 1,000 live* births" showed a decline in all regions of the country, as shown in Table 2 and Figure 2. The decline in the rate of live births with congenital syphilis ranged from 43.0% (Northern region) to 57.0% (Central-Western region). It is also noted that in every year, the Southeast region had the highest rate of live births with syphilis, ranging from 11.4% in 2018 to 5.5% in 2021.

There was also a decline in the number of diagnosed cases of Acquired Immunodeficiency Syndrome (AIDS) among children under one year of age, with decreases ranging from 25.3% in the Northeast region to 61.5% in the Midwest region, as shown in Table 2 and Figure 2. In the Northeast region, the average number of cases decreased from 4.2% in the 2018–2019 period to 3.1% in the 2021–2022 period, while in the Midwest region, it decreased from 1.6% to 0.6%. The Southeast region had the highest average rate of cases in all years, decreasing from 13.2% in 2018–2019 to 7.8% in 2021–2022.

Figure 2. Maps showing the percentage changes in the "Proportion of pregnant women tested for syphilis and HIV" (A), in the "Rate of live births with congenital syphilis per 1,000 live births" (B), and in the "Number of diagnosed cases of AIDS in children under 1 year of age" (C) in 2021–2022 compared to 2018–2019.

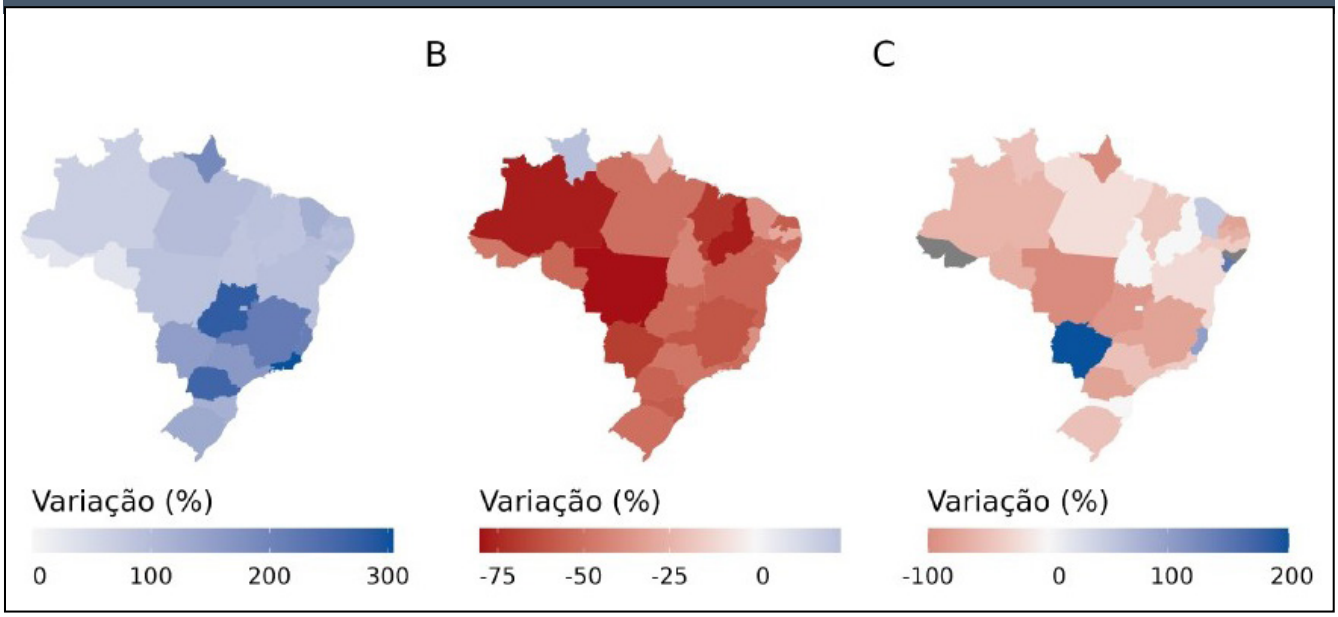

Table 2. Previne Brasil Indicator "Proportion of pregnant women tested for syphilis and HIV" and Associated Indicators "Rate of live births with congenital syphilis per 1,000 live births" and "Number of diagnosed AIDS cases in children under 1 year of age," from 2018 to 2022 across Brazil's regions.

Indicator	Year	Region				
		North	Northeast	South	Southeast	Midwest
Proportion of pregnant women who underwent syphilis and HIV tests	[1]2018-2019	38,5	31,7	21,9	14,7	24,5
	[2]2021-2022	65	63,4	56,4	46,9	58,5
	Variation (%)	68,7	99,8	157	219	138,5

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Ratio of live births with syphilis Congenital per 1,000 live births	[1]2018-2019	6,7	9,3	8,5	11,2	7
	[2]2021-2022	3,8	4,5	3,9	5,5	3
	Variation (%)	-43	-51	-53,7	-50,7	-57
Number of diagnosed cases of AIDS in children under 1 year of age	[1]2018-2019	3,2	4,2	5,3	13,2	1,6
	[2]2021-2022	1,6	3,1	2,8	7,8	0,6
	Variation (%)	-51,1	-25,3	-46,9	-41,5	-61,5

[1] Before the implementation of the Previne Brasil Program; [2] After the implementation of the Previne Brasil Program.

Table 3 shows a substantial increase in the proportion of pregnant women receiving dental care in 2021–2022 compared to 2018–2019 across all regions of the country. The increase in the proportion of pregnant women ranged from 141.9% in the South to 213.2% in the Southeast. In the Southeast region, the proportion of pregnant women receiving dental care increased from 11.3% to 35.5%. The Northeast region had the highest proportion in all years, rising from an average of 19.0% in 2018 to an average of 59.6% in 2022.

The increase in the proportion of pregnant women receiving dental care did not result in a decrease in the preterm birth rate, as shown in Table 3. It is noted that the preterm birth rate increased nationwide, ranging from a 3.2% increase in the North to 7.2% in the Northeast. The Northern region of the country had the highest preterm birth rate in all years, rising from an average of 11.7% in 2018 to an average of 13.0% in 2022.

Table 3. Previne Brasil indicator "Proportion of pregnant women who received dental care" and associated indicator "Preterm birth rate per 100 live births" for the period 2018–2022 across Brazil's regions.

Indicator	Year	Region				
		North	Northeast	South	Southeast	Midwest
Proportion of pregnant women who received dental care	[1]2018-2019	13	20,3	17,1	11,3	11,8
	[2]2021-2022	35,6	50,9	41,4	35,5	36,7
	Variation (%)	174,3	150,6	141,9	213,2	211
Preterm birth rate per 100 live births	[1]2018-2019	12,4	10,7	11	10,7	11,1
	[2]2021-2022	12,8	11,5	11,5	11,2	11,9
	Variation (%)	3,2	7,2	4,1	5,1	6,7

[1] Before the implementation of the Previne Brasil Program; [2] After the implementation of the Previne Brasil Program.

A substantial increase was observed in the proportion of individuals with hypertension who had consultations and had their blood pressure measured during the six-month period. The percentage increase during the evaluated periods ranged from 245.7% in the Central-West region, where it rose from 4.4% to 15.1%, to 927.4% in the Northeast region, where it rose from 1.8% to 18.1%, as shown in Table 4.

Regarding the indicator associated with morbidity from circulatory system diseases, it can be noted that the North, Northeast, and South regions experienced a decline during the evaluated period, ranging from a 5.2% decrease in the South region to a 76.4% decrease in the North region. The Northeast region, which showed the highest growth in the proportion of hypertensive patients with medical consultations and measured blood pressure during the semester (927.4%), experienced a 61.0% decrease in morbidity due to circulatory system diseases. Meanwhile, the Southeast and Central-West regions saw increases in morbidity due to circulatory system diseases of 149.5% and 34.4%, respectively, between the periods of 2018–2019 and 2012–2022 (Table 4).

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Table 4. Previne Brasil indicator "Proportion of people with hypertension who had a consultation and blood pressure measured in the six-month period" and associated indicator "Number of hospitalizations for conditions treatable in primary care (morbidity due to circulatory system diseases)" from 2018 to 2022 in the regions of Brazil

Indicator	Year	Region				
		North	Northeast	South	Southeast	Midwest
Proportion of individuals with hypertension who had a consultation and blood pressure measured during the semester	[1]2018-2019	2,9	1,8	4	2,2	4,4
	[2]2021-2022	15,6	18,1	16,4	13,8	15,1
	Variation (%)	431,7	927,4	311,1	524,5	245,7
Number of hospitalizations for primary care–sensitive conditions (morbidity due to diseases of the circulatory system)	[1]2018-2019	28.003,40	61.483,20	65.966,80	42.323,50	12.280,20
	[2]2021-2022	6.601,90	23.987,70	62.552,70	105.602,40	16.507,80
	Variation (%)	-76,4	-61	-5,2	149,5	34,4

[1] Before the implementation of the Previne Brasil Program; [2] After the implementation of the Previne Brasil Program.

Data on the proportion of individuals with diabetes who had medical appointments and requested glycated hemoglobin tests during the semester were also analyzed, showing a substantial increase in all regions of the country (Table 5 and Figure 3). The increase ranged from 147.6% in the South to 490.4% in the Northeast. In the Northeast, this proportion increased from 3.9% to 22.9% after the PBP. However, this considerable increase in glycated hemoglobin tests was not reflected in diabetes-related morbidity (number of hospitalizations for conditions sensitive to primary care), according to the results presented in Table 11 and Figure 5. In the North region, for example, despite a 458.3% increase in the proportion of individuals with appointments and glycated hemoglobin tests ordered during the semester, there was a 5.9% increase in the number of hospitalizations for conditions sensitive to primary care (diabetic morbidity). The Southeast region had the highest number of diabetes-related hospitalizations in all years evaluated; however, its results showed a decline in these hospitalizations in the post-program period. The decline occurred in all other regions of the country for this associated indicator.

Figure 3. Maps showing the percentage changes in the "Proportion of people with diabetes who had a consultation and had their glycated hemoglobin tested during the semester" (A) and in the "Number of hospitalizations for conditions treatable in primary care (Diabetes Morbidity)" (B), in 2021–2022 compared to 2018–2019.

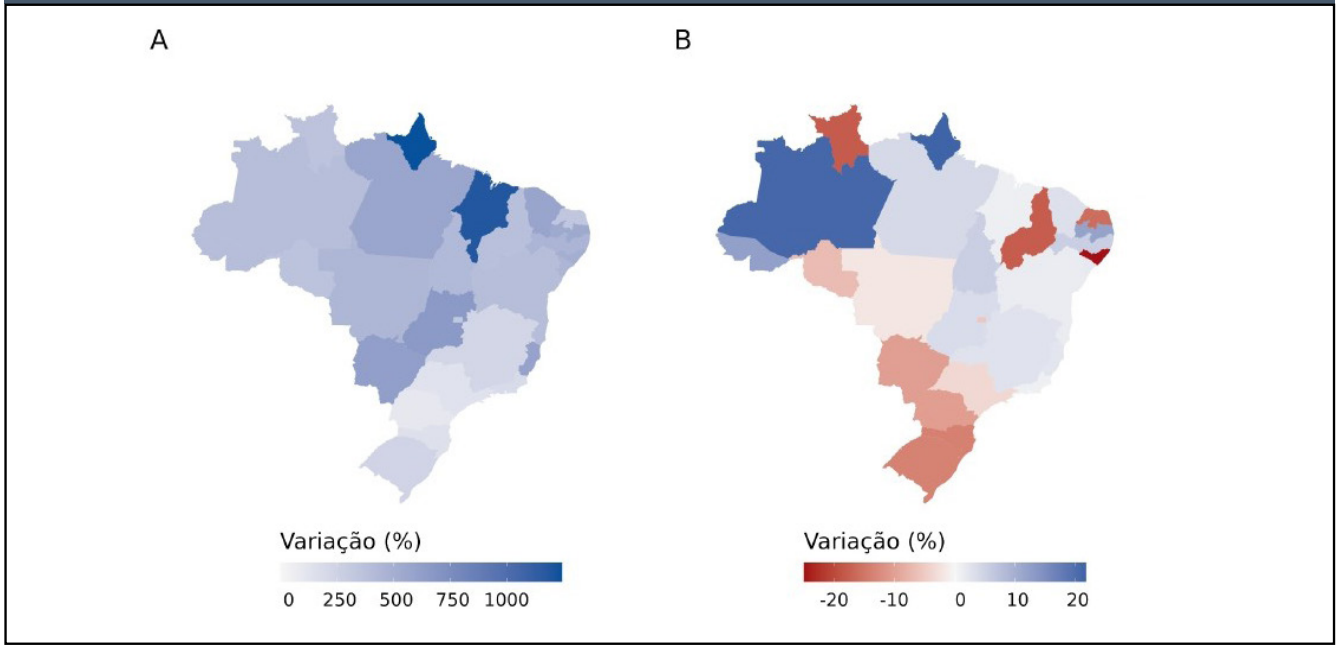

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Table 5. Previne Brasil Indicator "Proportion of people with diabetes who had a consultation and had a glycated hemoglobin test ordered in the semester" and Associated Indicator "Number of hospitalizations for conditions treatable in primary care (Diabetes Morbidity)", from 2018 to 2022 in the regions of Brazil

Indicator	Year	Region				
		North	Northeast	South	Southeast	Midwest
Proportion of individuals with diabetes who had a consultation and a glycated hemoglobin requested during the semester	[1]2018-2019	3	3,9	8,2	4,8	2,2
	[2]2021-2022	16,9	22,9	20,2	16,8	12,8
	Variation (%)	458,3	490,4	147,6	251,3	481,1
Number of hospitalizations for primary care–sensitive conditions (diabetes-related morbidity)	[1]2018-2019	1.962,10	4.799,40	6.839,00	12.068,80	2.307,20
	[2]2021-2022	2.078,10	4.757,80	5.986,80	12.017,00	2.254,50
	Variation (%)	5,9	-0,9	-12,5	-0,4	-2,3

[1] Before the implementation of the Previne Brasil Program; [2] After the implementation of the Previne Brasil Program.

DISCUSSION

Table 1 and Figure 1 show an increase in prenatal visits across all regions of the country; however, this increase did not result in a decrease in the number of live births with low birth weight, as the number of live births with low birth weight actually rose in 2021 and 2022. The increase in the proportion of pregnant women with adequate prenatal care in all regions following the implementation of the PBP suggests improved access to prenatal services. However, the concurrent increase in the proportion of low-birth-weight infants, despite the rise in prenatal visits, indicates that factors beyond the frequency of visits may influence birth outcomes [11].

Although prenatal care coverage has increased in Brazil, the rate of low-birth-weight newborns remains high—a paradox that points to the need to improve the quality of care. Systematic reviews emphasize that the impact of prenatal care on birth weight is not automatic and depends on the effectiveness of the interventions implemented [12,13]. In fact, a recent Brazilian study showed that pregnant women with prenatal care considered effective had a significantly lower chance of having low-birth-weight babies (adjusted OR = 2.56) [14]. This indicates that specific interventions, and not just an increase in the number of visits, are crucial for improving neonatal outcomes.

Evidence-based practices that can be adopted in primary health care have been shown to reduce the risk of low birth weight, such as: supplementation and adequate maternal nutrition; screening for and treatment of gestational infections; psychosocial and behavioral support; and high-quality comprehensive care. The way prenatal care is conducted is crucial. Shared care (doctor + nurse) and a patient-centered approach increase adherence to maternal guidelines [15]. Each visit should include a complete medical history, measurement of gestational weight, blood pressure, and guidance on risk signs, in accordance with Ministry of Health manuals [16]. It is worth noting: simply increasing the number of visits does not guarantee a reduction in low birth weight; it is the presence of these key interventions that makes the difference. The literature shows that, without quality, high coverage does not translate into better birth weights [12,17].

In summary, prenatal care practices focused on adequate nutrition (iron/folic acid and multiple micronutrient supplementation, nutritional counseling), on the screening/treatment of gestational infections, and on psychosocial support for pregnant women—when implemented with quality in primary health care—have been shown to reduce low birth weight [14,15,18–20]. Only in this way will the expansion of prenatal care coverage translate into a real improvement in birth weight outcomes.

The results of the rapid testing indicator for pregnant women, as shown in the representative map (Table 2 and Figure 2), reveal a notable increase in the number of pregnant women tested for syphilis and HIV, suggesting that screening efforts have improved under the new PBP funding model—a fact evidenced by the increase in the indicator across all regions of the country. In contrast, analysis of the associated indicator—the ratio of live births with congenital syphilis—reveals a consistent reduction across all regions, with variations ranging from -43 (North) to -57 (Central-West). Similarly, the assessment of the number of diagnosed AIDS cases in children under 1 year of age showed a reduction of -61.5 following the implementation of the monitoring strategy. According to Donabedian, outcome indicators directly reflect the impact of health interventions, allowing for the demonstration of the positive effects of the practices adopted. These findings reinforce the premise that, although process indicators directly influence outcomes, it is the outcome indicators that confirm

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the effectiveness of interventions.

The expansion of rapid syphilis and HIV testing in PHC prenatal care, as recommended by the Ministry of Health—which advises serological testing at least in the 1st and 3rd trimesters and at delivery—substantially increased the detection of pregnant women infected [21]. This increase allows for early treatment, which in theory should reduce vertical transmission. In fact, studies show that the greater the number of pregnant women diagnosed, treated, and reported, the greater the likelihood of a decrease in the incidence of congenital syphilis [22]. A national study demonstrated that the implementation of surveillance tools during prenatal care (such as specific forms) raised the percentage of pregnant women receiving appropriate treatment from 33.3% to 80%, increased partner treatment (from 33.3% to 68.8%), and significantly reduced reactive titers in newborns [23] .

Despite these initiatives, the incidence of congenital syphilis in Brazil remains high, at 10.3 cases per 1,000 live births in 2022, indicating that testing alone is not sufficient [24] . A similar situation is observed with HIV: although appropriate management with antiretroviral therapy (ART) has reduced vertical transmission to near-zero levels [25] , approximately 13.5% of pregnant women with HIV had not yet received ART in 2022 [14] . Thus, in addition to expanded testing, it is essential to ensure timely initiation of treatment. In the case of syphilis, this means immediate treatment with benzathine penicillin, the only effective therapy capable of crossing the placenta [22] . Active management of sexual partners is also essential: presumptive treatment with a single dose of benzathine penicillin is recommended for all exposed partners, even before laboratory confirmation [26] . "Partner *prenatal* care," recommended by the Ministry of Health, guides the testing and management of the male partner as early as the first visit [16], and is supported by robust evidence: cohort studies show that treating the partner reduces the risk of congenital syphilis by approximately 40% [27].

Furthermore, maintaining mandatory reporting of syphilis in pregnant women and congenital syphilis is essential for tracking cases at the population level and guiding control strategies [28]. In summary, in addition to expanding testing, best practices for reducing vertical transmission include rigorous prenatal monitoring, ensuring appropriate treatment for pregnant women and their partners, and systematically recording these interventions. This reinforces the need to revise current indicators, incorporating process metrics—such as treatment initiation, partner treatment, and clinical follow-up—into the assessment of syphilis and HIV control in maternal and child health care.

Santos et al. [22]show that dental visits during pregnancy are essential for promoting health and preventing complications. Recent data show that the proportion of pregnant women who received dental care increased significantly throughout Brazil, ranging from 141 to 211 when comparing the periods prior to the program's implementation with subsequent years. However, the rate of preterm birth has also risen, despite some studies predicting a reduction, as shown in Table 3.

Although dental care during pregnancy is essential for oral health and maternal-infant well-being, its isolated influence on reducing preterm birth is limited; while dental care plays a crucial role in maintaining maternal health and overall well-being, preventing preterm birth requires a multifaceted approach. The lack of impact on reducing preterm birth rates points to the influence of complex underlying factors that go beyond oral health, affecting birth outcomes in an integrated manner. The substantial increase in pregnant women receiving dental care suggests expanded access to preventive services. Studies have shown that the oral health status of pregnant women may pose a risk for low birth weight and preterm birth, especially when a woman has periodontal disease [29]. Overall, addressing the multifaceted determinants of health and implementing integrated, patient-centered care approaches are essential to achieving sustainable improvements

on the population's health outcomes, suggesting that these indicators be revised.

Table 4 shows an increase in consultations and follow-up for hypertension, indicating improved detection and monitoring of this chronic condition. In all regions of the country, there has been an increase in the proportion of people with hypertension who have their blood pressure measured. However, while the indicator associated with morbidity from circulatory system diseases decreased in the North, Northeast, and South regions, an increase was observed in the Southeast and Central-West regions. These mixed findings raise questions about the effectiveness of hypertension management strategies, given that hypertension is one of the main risk factors for cardiovascular diseases, which account for a significant portion of morbidity and mortality in Brazil.

The significant increase in diabetes screening, evidenced by expanded access to medical consultations and the performance of glycated hemoglobin tests, reflects an improvement in the detection and monitoring of the disease across all regions of the country, with an increase of up to 458.3% in the North region. At the same time, the number of hospitalizations for primary care-sensitive conditions related to diabetes-associated morbidity decreased in all regions except the North (Table 5 and Figure 3).

In Brazil, diabetes mellitus is a significant public health problem, with

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an estimated prevalence of approximately 8.4% among adults, and associated complications, such as cardiovascular disease, kidney failure, and amputations, underscore the need for comprehensive treatment and preventive measures to reduce resulting morbidity and mortality. The rising prevalence of diabetes and hypertension poses significant structural challenges within public health systems, particularly in the context of disease management and prevention, according to Wehrmeister, Wendt, and Sardinha (2022) [30] . Despite improved screening efforts, the persistent burden of diabetes-related complications and cardiovascular morbidity underscores the need for comprehensive care approaches. The implementation of multidisciplinary teams in primary care settings, incorporating professionals such as dietitians and physical therapists, emerges as a crucial strategy for effectively addressing these chronic noncommunicable diseases. By integrating diverse specialties, these teams can provide care focused not only on medical interventions but also on lifestyle modifications crucial for disease management.

Furthermore, promoting community-level health promotion initiatives—such as neighborhood modifications to encourage physical activity—is essential in combating the rising prevalence of these conditions. By fostering a collaborative environment among healthcare providers and promoting healthy lifestyles, a multifaceted approach can enhance the effectiveness of diabetes and hypertension management, ultimately reducing associated morbidity and mortality rates.

Finally, it was observed that the impacts generated by the monitoring and evaluation of PBP indicators had a positive effect on indicators reflecting health outcomes; however, the need for implementation highlights that the inclusion of performance evaluation practices within healthcare teams was a key factor guiding the next step, now focused on the quality of care provided. It is suggested that the monitoring strategy include indicators that encourage the adoption of best practices, ensuring comprehensive follow-up in PHC and, consequently, promoting improved health conditions and quality of life.

CONCLUSION

Funding for primary health care, when accompanied by systematic performance monitoring, has proven essential for expanding access to health services and improving the management of specific health conditions. Analysis of the indicators shows that the PPB has had a positive impact on health outcomes, with consistent improvements across all regions of the country, although in some areas this progress has been less pronounced. These results indicate that the implementation of indicators served as a catalyst for the adoption of more effective intervention strategies, which still need to be consolidated.

Despite advances in access, significant challenges remain regarding highly preventable conditions, such as low birth weight, maternal mortality, congenital syphilis, and hospitalizations for conditions responsive to PHC. These findings underscore the need to improve monitoring and evaluation processes, integrating best practices that not only expand access but also ensure the effectiveness and quality of care provided.

Strengthening the capacity of PHC teams to identify problems, intervene effectively, and adopt evidence-based strategies is crucial for improving health outcomes. Studies indicate that integrated approaches—which combine continuous monitoring and professional training and go beyond simply measuring access to also assess the effectiveness of interventions—can lead to significant improvements in clinical outcomes.

Therefore, redefining evaluation parameters—by including indicators that measure and encourage the effectiveness of good care practices—is essential for identifying gaps and guiding more precise actions. This strategy is indispensable for improving health outcomes, enhancing the effectiveness of PHC, and strengthening the SUS, ensuring comprehensive care grounded in good practices.

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