CSP CADERNOS DE SAÚDE PÚBLICA
REPORTS IN PUBLIC HEALTH

Impacts of the 2017 Brazilian National Primary Care Policy on public primary health care in Rio de Janeiro, Brazil

Os impactos da Política Nacional de Atenção Básica de 2017 sobre a atenção primária pública no Rio de Janeiro, Brasil

Impactos de la Política Nacional de Atención Primaria 2017 en la atención primaria pública en Río de Janeiro, Brasil

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Abstract

In 2017, in a scenario of financial restrictions caused by an economic crisis in Brazil, a new primary health care policy promoted changes in the way different primary health care models were prioritized and implemented, with possible negative effects on the access to primary health care. This study aims to investigate if the 2017 Brazilian National Primary Care Policy (PNAB) negatively affected the primary care organization based on the Family Health Strategy (FHS) model and on the access to public primary care services in the city of Rio de Janeiro. The annual averages and the pre- and post-2017 averages of 15 variables were analyzed to identify possible trend breaks in 2017. A Bayesian structural time series model was used to determine the differences between actual and predicted post-2017 averages of each variable. The data were obtained via the Brazilian Health Informatics Department (DATASUS). The annual average of family health teams was 1,179.9 teams, in 2017, and 788.8 teams in 2020, while the annual average of equivalent family health teams was 163.6, in 2017, and 125.4, in 2020. The actual post-2017 average of 989.3 family health teams (p = 0.004) was 16.7% lower than the predicted post-2017 average of 1,187.4 teams. In total, 62.6% and 40.5% of the population in Rio de Janeiro were covered by the FHS in 2017, and 2020, respectively. The provision of public primary care services decreased after 2017. Results show a deterioration of the FHS in Rio de Janeiro after 2017 and no increase in the traditional primary care model. Access to public primary care services reduced in the same period.

Family Health Strategy; Health Services Accessibility; Health Care Reform; Health Policy; Primary Health Care

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Introduction

Since the creation of the Brazilian Unified National Health System (SUS) in 1988, primary care has been the main gateway to the public health system and a cornerstone to ensure health care access to most of the Brazilian population who lack private health insurance and rely on SUS to receive medical care. Before 2017, national policies ensured the expansion of public primary health care through the prioritization of the Family Heath Strategy (FHS) model, which proved to be a successful approach in improving several public health indicators. According to Macinko et al. [1], the expansion of the FHS in Brazil was associated with the increase in access to public health care, the improvement of the quality of public health services, and the reduction of morbidity and mortality of conditions targeted by primary care programs, among several other benefits. Rodrigues et al. [2] (p. 24) describe the FHS as *"an efficacious, efficient, and effective way of providing quality primary health care"*.

However, in September 2017, the Brazilian Federal Government enacted a new Brazilian National Primary Care Policy (PNAB) that represented a rupture in the national strategy, which had been implemented over the past three decades. Previous national policies ensured federal funding and financial incentives exclusively destined to the expansion and maintenance of family health teams to stimulate municipal governments to prioritize the FHS [3]. However, the 2017 PNAB shifted away from the prioritization of this model and created provisions that also ensured financial incentives to traditional primary care, a model considered less effective than the FHS [4]. This raised several concerns among public health professionals and institutions nationwide. After the enactment of the new policy, the Brazilian Public Health Association (Abrasco), the Brazilian Center for Health Studies (Cebes), and the Sergio Arouca National School of Public Health, Oswaldo Cruz Foundation (ENSP/Fiocruz) released a joint statement denouncing the risk of deterioration of the family health model in Brazil [5]. The general concern was that the 2017 policy would jeopardize the advances obtained through the expansion of the FHS over the past 30 years [5,6].

One of the main differences between the FHS and the traditional primary care model is the composition of the teams. In the FHS model, the teams are composed of one primary care physician, one nurse, one nurse assistant, and enough community health workers to cover 100% of the population of the coverage area. Each team is responsible for 3,500 to 4,500 patients and each community health worker must not be responsible for more than 750 patients. All team members must work 40 weekly hours [3]. Traditional primary care teams are also composed of primary care physicians, nurses, and nurse assistants. However, the number of these professionals in each team and the number of weekly working hours may vary. Another significant difference is that the presence of community health workers in traditional teams is optional and there is no limit to the number of patients each community health worker can be responsible for. Traditional primary care teams can be considered equivalent to family health teams provided that the sum of weekly working hours for physicians and nurses equals 40 (for each professional category).

The financial incentives to traditional primary care teams brought by the new policy gave flexibility to local health departments to use federal funding according to their own criteria to promote primary health care, especially in a scenario of financial constraints. Since 2014, Brazil has been facing a severe economic crisis that decreased financial resources for the public health system, among other consequences [7]. In 2016, the Brazilian National Congress passed a Constitutional Amendment abolishing the minimum federal budget to be allocated to the public health system, which was guaranteed by the Constitution [8]. In this scenario, the flexibility brought by the 2017 policy represented a tool for local health departments to face an environment of scarce resources. In practice, however, it could also represent an incentive for local governments to expand and prioritize the traditional primary care model in detriment of the FHS. Since the FHS requires more human resources to assist smaller populations, the traditional model has always been regarded as a cheaper alternative. However, it was only after 2017 that it turned into a viable and more interesting alternative due to the financial incentives ensured by the new policy, even though these incentives were still smaller than the ones provided to the FHS.

This was especially true for municipalities that were most affected by the ongoing economic crisis such as Rio de Janeiro, one of the cities that has been suffering considerably with the financial constraints that took place since 2014. One of its most dramatic consequences was the reduction of financial resources for the public health system [9,10]. The monthly average of public health expenditure

in the city of Rio de Janeiro from 2015 to 2020 was BRL 438.6 million (USD 84.2 million), 27.3% less than the monthly average of health expenditure from 2012 to 2014.

As a strategy to cope with the reduction of financial resources, the local health department seized the opportunity presented by the new national policy, and promoted a large reform in the local primary care system in 2018. According to the health department's planning, the reform had three main objectives [11]: (i) to improve the quality of public primary care services in Rio de Janeiro without reducing primary care coverage (coverage is defined as the percentage of the total population of the city of Rio de Janeiro with access to public primary health care); (ii) to avoid the risk of the local government not paying debts to creditors and; (iii) to apply the lean methodology to optimize public health care management.

The second objective is exposing the goal of mitigating the negative effects of the economic crisis per se. Another relevant piece of information is that local government had the intention of reorganizing the primary care system without decreasing the percentage of the population covered by public primary care services. However, this reassurance was not enough to prevent criticism from many public health experts who claimed that the reform would decrease access to public primary care. These claims were largely based on the health department's plan to transform several family health teams into traditional primary care teams. According to the plan, the traditional primary care teams – considered equivalent to family health teams – would be responsible for populations of up to 16,000 people and could either have community health workers or not, depending on the characteristics and necessities of the local population [11]. It is plausible to think thus that this new arrangement could reduce access to public primary care services, since primary care teams that once assisted populations of up to 4,000 people would be responsible for populations 4 times larger after the reform. Moreover, the absence of community health workers in traditional teams could create an even worse problem. Community health workers play a key role in building successful partnerships with local communities. Current evidence shows the importance of community health workers in facilitating and improving access to primary care services, especially for ethnic minorities and underprivileged communities [12,13,14].

Considering the changes brought by the 2017 PNAB, this study aimed to investigate its possible effects in public primary health care resources, coverage, and services in the city of Rio de Janeiro. The hypothesis is that the reform that took place after the enactment of the new policy had deteriorating effects on each of these three dimensions, ultimately reducing access to public primary health care. Since the FHS model was implemented and expanded much later in Rio de Janeiro than in other Brazilian cities, we consider particularly relevant to investigate the potential effects of this policy in the city. According to Lima [15], less than 10% of the population of Rio de Janeiro was covered by the FHS in 2009, while almost 50% of the Brazilian population was covered by this model. In a city that already had a late implementation of the FHS, any negative effects caused by the 2017 policy could critically affect the access to public primary health care.

Methods

Data collection

To assess the effects of the 2017 PNAB in the primary health care system in Rio de Janeiro, 15 dependent variables were selected and grouped into the following categories that reflect three dimensions of the public primary health care system: primary care human resources, primary care coverage, and primary care services. For each variable, monthly data were collected from January 2010 to November 2020 via the Brazilian Health Informatics Department (DATASUS; https://datasus.saude.gov.br). All variables were specific to the city of Rio de Janeiro and to the local public primary health care system, except for the percentage of live births with 7 or more prenatal visits, which is based on prenatal visits provided in all levels of care, not just primary care.

To ensure consistency in data collection, the data were redownloaded from DATASUS on two separate occasions and no differences were identified between the original and the recollected data. There was no missing data on any of the fifteen variables included in the study.

Variables of interest

• **Primary care human resources**

The three variables represent quantitative measures of human resources available in the public primary care system in Rio de Janeiro – the total number of family health teams, total number of community health workers, and total number of the equivalent of family health teams in the city of Rio de Janeiro in each month.

• **Primary care coverage**

The three variables represent percentages of the total population of the city of Rio de Janeiro with access to public primary health care. Public primary health care coverage represents the percentage of the total population with access to either FHS or the traditional primary care model. FHS coverage represents the percentage of the total population with access to the FHS model. Community health workers coverage represents the percentage of the total population with access to community health workers by any of the two models. These variables are based on estimates of the population of the city of Rio de Janeiro in each month and were available in DATASUS.

• **Primary care services**

These variables were organized into three subcategories.

(a) Adults' health: number of primary care home visits per 1,000 inhabitants, number of adult primary care medical visits per 1,000 adults, and number of adult primary care nurse visits per 1,000 adults.
(b) Children's health: number of primary care pediatric medical visits per 1,000 children, number of primary care pediatric nurse visits per 1,000 children, and number of vaccine doses for children under 1 year of age.
(c) Women's health: number of primary care prenatal visits per live birth, percentage of live births with seven or more prenatal visits, and number of primary care Pap smear exams per 1,000 women between 25 and 64 years of age.
Rate variables were estimated by the authors using population estimates in the city of Rio de Janeiro in each year available in DATASUS for the age range corresponding to the service. For the purposes of this study, people aged 15 years or older were categorized as adults and people aged under 15 years were categorized as children. This classification agreed with the population estimates that were available in DATASUS. No estimates were available for the population of children under 1 year of age, in DATASUS; thus, the variable of vaccine doses for this population was kept as an absolute measure. Data on medical and nurse visits were collected separately according to professional group category. Data on prenatal visits were collected simultaneously for both nurses and doctors. Data on home visits did not include visits by community health workers (only higher education professionals).

Data analysis

Data analysis was performed as a two-step process. In the first step, the monthly values of each variable were used to estimate annual averages, which were then plotted into line graphs. For each variable, the percentage differences between the average of the period before September 2017 and the average of the period after September 2017 were also estimated and a t-test was performed to assess the statistical significance of these differences. The goal of the first step of the analysis was to identify possible trend breaks after the enactment of the new policy in 2017.

The second step consisted of a statistical analysis applying a Bayesian structural time series model using the *Causal Impact* package in R (http://www.r-project.org). To assess the effects attributable to the new policy, null hypothesis that the comparison between the actual and the predicted averages after September 2017 for each variable would show no statistically significant difference was tested. September 21st, 2017 (the date of the enactment of the new policy) was set as the intervention date in

the model. Predictions were estimated based on data pre-September 21st, 2017. No covariates were used in the model. Rstudio (https://www.rstudio.com) was used for both steps of the analysis.

Results

Trends: annual averages

- **Primary care human resources**

Annual averages of family health teams and community health workers increased from 2010 to 2017, but decreased remarkably after that year (Figure 1). In 2017, the annual averages of family health teams and community health workers in the city of Rio de Janeiro were respectively 1,180 teams and 6,538 community health workers. In 2020, these averages decreased to 789 family health teams and 3,636 community health workers. The annual averages of the equivalent to family health teams maintained a decreasing trend throughout the whole time series, with no discernible change after 2017. The annual average of equivalent family health teams was 164 teams in 2017, and 125 teams in 2020.

- **Primary care coverage**

For all three variables, annual averages increased from 2010 to 2017, but decreased after that year (Figure 2). In 2017, an average of 71.1% of the total population in Rio de Janeiro was covered by public primary health care. In 2020, this average decreased to 46.9%. The same happened to the other two variables in this category. In 2017, the percentages of the total population that were covered by FHS and community health workers were 62.6% and 57.8%, respectively. In 2020, these averages decreased to 40.5% and 31.1%, respectively.

- **Primary care services: adults' health**

Similar to what happened to most variables of the previous categories, the adult health metrics such as annual average of home visits increased from 2010 to 2017, but plunged after that year (Figure 3). The average of home visits was 2.47 visits per 1,000 inhabitants in 2017. In 2020, it decreased to 0.04 visits per 1,000. The same happened to medical visits (Figure 3) and nurse visits; in 2017, the averages were respectively 54.1 and 32.6 visits per 1,000 adults, while in 2020 the averages were 0.2 visits per 1,000 adults for both variables.

Figure 1

Annual averages of primary care human resources in Rio de Janeiro, Brazil, from 2010 to 2020.
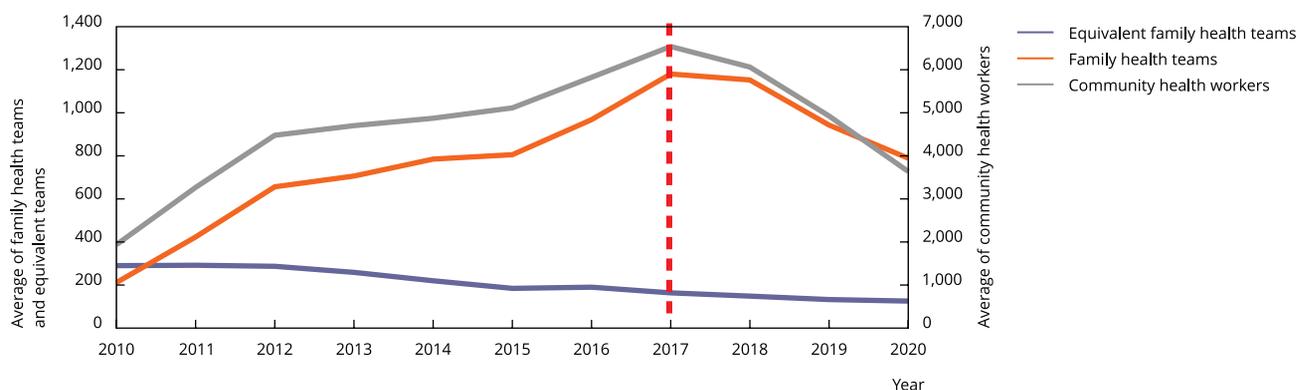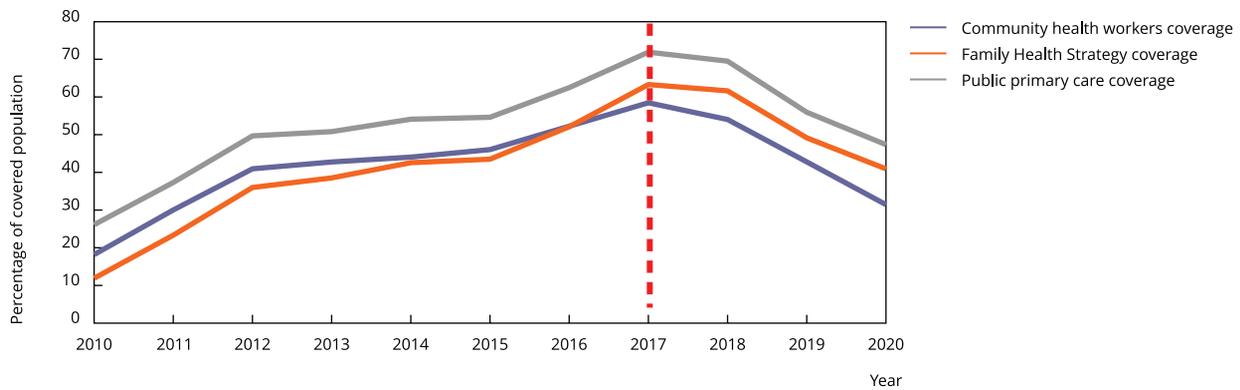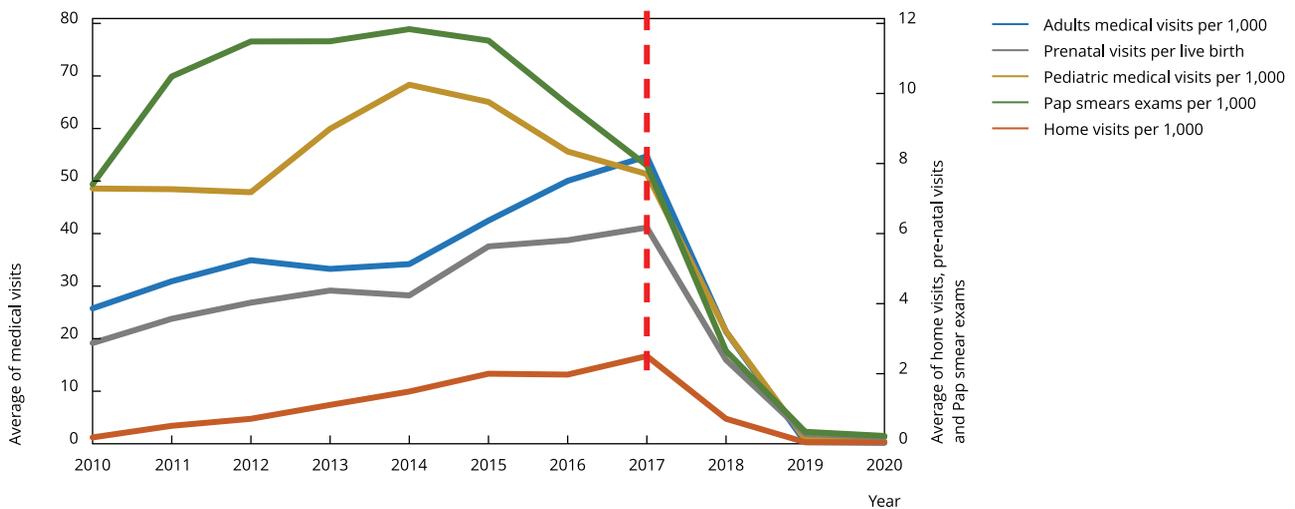
Figure 2

Annual averages of primary care coverage in Rio de Janeiro, Brazil, from 2010 to 2020.

Figure 3

Annual averages of primary care services in Rio de Janeiro, Brazil, from 2010 to 2020.

- **Primary care services: children's health**

Pediatric medical visits (Figure 3) and pediatric nurse visits presented similar results; in 2017, the averages were 50.7 and 46.5 visits per 1,000 children respectively; in 2020, however, they critically decreased to 0.4 and 0.5 visits per 1,000 children, respectively. The annual average of vaccine doses for children under 1 year old decreased from 92,553 vaccine doses in 2017, to 69,076, in 2020.

- **Primary care services: women's health**

Prenatal visits followed the pattern of adults and pediatric visits and presented a notable reduction after 2017 (Figure 3). The annual average of primary care prenatal visits decreased from 6.1 visits per live birth, in 2017, to 0.2 visits per live birth, in 2020. Pap smear exams also had a pronounced reduction in the annual averages after that year (Figure 3), decreasing from 7.85 Pap smear exams per 1,000 women aged 25 to 64, in 2017, to 0.22 exams in 2020. The percentage of live births with seven or more prenatal visits, however, presented only a small reduction after 2017, decreasing from 80.2% of live births with seven or more prenatal visits, in 2017, to 77.8%, in 2020.

Trends: pre- and post-2017 averages

Table 1 shows the percentage differences between the averages of the periods before and after September 2017 for each variable. For all variables of the primary care resources and primary care coverage categories, the post-2017 averages were higher than pre-2017 averages, with percentage differences ranging from 8.7% (community health workers coverage) to 41% (family health teams). Only for the equivalent family health teams was the post-2017 average lower than the pre-2017 average, with a relative difference of -42.3%.

Every variable in the primary care services category, except from percentage of live births with 7 or more prenatal visits, had post-2017 averages lower than pre-2017 averages, with relative differences ranging from -86.9% (Pap smear exams) to -26% (vaccine doses for children under 1 year of age). The percentage of live births with 7 or more prenatal visits was the only variable in this category that had a post-2017 average 12.5% higher than the pre-2017 average. All percentage differences were statistically significant, except for community health workers coverage.

Table 1

Differences between averages of the periods before and after September 2017 of each variable. Rio de Janeiro, Brazil.

Primary care human resources, coverage, and services	Pre-2017		Post-2017		Percentage difference	t test
	Average	SD	Average	SD		
Equivalent family health teams	238.2	51.1	138.0	14.0	-42.1	*
Family health teams	701.5	278.8	989.3	165.3	41.0	*
Community health workers	4,532.4	1,356.8	5,079.0	1,107.6	12.1	**
Family health coverage	37.7	14.6	51.6	9.3	36.9	*
Community health workers coverage	40.6	11.8	44.2	10.2	8.7	***
Public primary care coverage	49.7	13.0	58.7	10.0	18.2	*
Home visits	1.3	0.9	0.4	0.7	-70.6	*
Medical visits – adults	37.6	10.8	10.6	19.8	-71.9	*
Nurse visits – adults	25.7	8.6	6.5	11.4	-74.9	*
Medical visits – children	55.5	11.6	10.5	19.6	-81.1	*
Nurse visits – children	50.1	21.3	9.2	17.6	-81.7	*
Vaccine doses – children under 1 year old	96,299.2	20,743.1	71,238.0	25,881.4	-26.0	*
Prenatal visits	4.5	1.2	1.4	2.3	-68.3	*
Percentage of live births with 7+ prenatal visits	71.1	5.3	80.0	1.9	12.6	*
Pap smear exams	10.3	3.2	1.4	2.3	-86.9	*

SD: standard deviation.

* $p < 0.001$;

** $p < 0.05$;

*** $p > 0.05$.

Causal impact analysis

Primary care human resources: the actual post-2017 average of family health teams was 989.3 teams, -16.7% (95% confidence interval – 95%CI: -27; 5) lower than the predicted post-2017 average of 1,187.4 teams (p = 0.004). The actual post-2017 average of community health workers was 5,079.0 workers, -22% (95%CI: -31; 12) lower than the predicted average of 6,509.0 workers for the same period (p = 0.001). For the number of equivalent family health teams, the percentage difference between actual and predicted post-2017 averages for this variable were -14.8% (95%CI: -38; 11), a difference that was not statistically significant.

• **Primary care coverage**

All variables had actual post-2017 averages lower than the predicted averages. The percentage differences between actual and predicted averages ranged from -23.3% (95%CI: -32; -13) for community health care workers coverage (p = 0.001) to -17.9% (95%CI: -26; -8) for public primary health care coverage (p = 0.001).

• **Primary care services**

All variables had actual post-2017 averages lower than the predicted post-2017 averages. Pap smear exams had the highest percentage difference between actual and predicted averages. The actual post-2017 average was 1.4 Pap smear exam per 1,000 women aged 25 to 64, 86.9% (95%CI: -99; -74) lower than the predicted average of 10.3 exams per 1,000 (p = 0.001). Percentage of live births with seven or more prenatal visits had the lowest percentage difference (-0.01% with 95%CI: -3; 4) and this difference was not statistically significant (Table 2).

Table 2

Results of the causal impact analysis with absolute and percentage differences between actual and predicted post September 2017 averages of each variable. Rio de Janeiro, Brazil.

Primary care human resources, coverage and services	Predicted post-2017 average	Actual post-2017 average	Absolute difference	95%CI	Percentage difference	95%CI	p-value
Equivalent family health teams	161.9	138.0	-23.9	-60.8; 18.6	-14.8	-38, 11	0.117
Family health teams	1,187.4	989.3	-198.1	-317.49; -60.7	-16.7	-27; -5	0.004
Community health workers	6,509.0	5,079.0	-1,430.0	-1,987; -782	-22.0	-31; -12	0.001
Family health coverage	63.0	51.6	-11.4	-17.8; -4.1	-18.1	-28; -7	0.002
Community health workers coverage	57.6	44.2	-13.4	-18.4; -7.6	-23.3	-32; -13	0.001
Public primary care coverage	71.5	58.7	-12.8	-18.9; -5.8	-17.9	-26; -8	0.001
Home visits	2.6	0.4	-2.2	-2.7; -1.7	-85.4	-103; -67	0.001
Medical visits – adults	54.9	10.6	-44.3	-51.4; -37.4	-80.7	-94; -68	0.001
Nurse visits – adults	35.6	6.5	-29.1	-34.0; -23.8	-81.8	-95; -67	0.001
Medical visits – children	55.7	10.5	-45.2	-49.6; -40.4	-81.2	-89; -72	0.001
Nurse visits – children	51.7	9.2	-42.6	-50.7; -34.2	-82.3	-98; -66	0.001
Vaccine doses – children under 1 year old	95,447	71,238	-24,209.0	-31,979; -16,339	-25.4	-34; -17	0.001
Prenatal visits	5.9	1.4	-4.5	-5.1; -3.9	-76.1	-86; -65	0.001
Percentage of live births with 7+ prenatal visits	80.1	80.0	0.0	-2.6; 2.9	-0.01	-3; 4	0.495
Pap smear exams	10.3	1.4	-8.9	-10.2; -7.6	-86.9	-99; -74	0.001

95%CI: 95% confidence interval.

Discussion

From the 15 variables selected in this study, 13 presented a trend break after the enactment of the 2017 PNAB. Their annual averages showed a remarkable decrease after 2017 and the actual averages for the period from 2017 to 2020 were considerably lower than the averages that would be expected for the same period in the absence of the new policy. The only two exceptions were the number of equivalent family health teams and the percentage of live births with seven or more prenatal visits. For these variables, trends of their annual averages presented no statistically significant changes between the predicted and the observed values post-2017.

Our results indicate important deleterious effects in public primary health care resources, coverage, and services in the city of Rio de Janeiro after the enactment of the 2017 PNAB, configuring a substantial reduction in access to public primary health care for the local population. The results suggest that the rearrangement of the local primary care system that took place after 2017 did not sustain the same levels of primary care resources prior to the enactment of the new policy. The decrease in human resources promoted by this reform may have led to the decrease in primary care coverage and services identified in this study. Further investigation should be conducted to evaluate if the reduction in coverage and services resulted exclusively from the reduction in resources or if other factors might have contributed to it.

The clear decrease in the number of family health teams after 2017 in Rio de Janeiro reinforces the understanding that the new policy deprioritized the FHS model. However, the expectation that it would also stimulate an uptake in the traditional primary care model was refuted by the results of this study. Despite the federal financial incentives, the number of equivalent family health teams in Rio de Janeiro kept decreasing after 2017. Thus, the reform that followed the enactment of the new policy seemed to have had a double negative effect in the public primary care system in Rio de Janeiro: it not only actively reduced the number of family health teams (FHS model), but was also incapable of increasing the number of equivalent family health teams (traditional primary care model).

This double negative effect is reflected in the decrease of the percentage of the population covered by public primary health care. Despite the initial assumption that only the FHS coverage would drop after the enactment of the new policy, results show an overall decrease in public primary health care coverage in Rio de Janeiro – this includes both models (FHS and traditional primary care). This is an unequivocal indication that the local government was not able to meet one of the goals of the reform, which was to maintain primary care coverage levels.

The decrease in primary health care services delivered by the public health system in the city of Rio de Janeiro after 2017 becomes even more worrisome when we consider the concomitant decrease in the percentage of the population covered by private health insurance during this period. According to the Brazilian National Regulatory Agency for Private Health Insurance and Plans (ANS), from 2015 to 2019, 3 million people lost private health insurance coverage in Brazil due to the economic crisis [16]. This phenomenon increased the number of people in Rio de Janeiro and in other parts of the country that relied on the public health system to receive health care. Therefore, to ensure primary health care access to this larger population, the local government would have to increase the percentage of the population covered by public primary health care. However, the results of this study show that primary care coverage went in the opposite direction.

The reduction of the percentage of the population covered by community health workers also stands out as a relevant result. These professionals play a crucial role in building successful partnerships between communities and primary care providers and their importance in ensuring access to primary health care is well-stablished in the literature [12,13,14]. Therefore, the decrease observed in community health care coverage after 2017 might have contributed considerably to an overall decrease in access to public primary health care.

Our results show an alarming reduction in primary care services in Rio de Janeiro after 2017 targeting different age groups and subpopulations. The decrease in household visits raises special concern since this type of service is predominantly provided at the primary care level and targets a highly vulnerable population (generally older patients, chronically ill, with low mobility or other special conditions). In general, other levels of care lack the resources to provide similar services that could compensate for the decrease in home visits at the primary care level. Conversely, this is what

possibly happened with maternal health services. Secondary health care providers may have partially absorbed the demand for prenatal care after 2017, which could explain how the percentages of live births with seven or more prenatal visits were kept high, despite the steep decrease in the number of primary care prenatal visits in the same period. This could be an evidence of the resilience of the local public health system, especially in areas that have been historically prioritized by public authorities like maternal health [17,18]. However, this should be confirmed by additional research. The possible negative consequences of this extra burden for the secondary level of care need to be assessed to allow for the proper management of the available resources.

Such an impressive decrease in the level of public primary care services after 2017 may lead to long-term consequences on the health of the population of Rio de Janeiro, especially to lower socio-economic groups and underprivileged communities who are the main recipients of public primary health care. This could ultimately contribute to the growth of social inequities already so salient in Rio de Janeiro. Future investigation should be conducted to assess a possible deterioration of morbimortality indicators after the enactment of the 2017 PNAB, with especial attention to conditions targeted by primary care prevention programs.

The results presented in this study are specific to the city of Rio de Janeiro and are not necessarily representative of other cities or regions in Brazil. Despite the new guidelines implemented with the 2017 PNAB that could stimulate health departments to prioritize the traditional primary care model in detriment of the FHS, local governments remained autonomous to decide whether to adopt such guidelines. Furthermore, the results also show a deterioration of the overall public primary health care system in Rio de Janeiro, not just of the FHS model. Thus, we cannot presume that public primary health care systems in other cities or regions would necessarily present a similar deterioration after 2017.

The effects of the economic crisis in Brazil must also be considered when interpreting the results in this study. It is natural to assume that the economic crisis seen since 2015 diminished financial resources and funds available to the public health system nationwide and in the city of Rio de Janeiro. Thus, the decrease in primary care human resources, coverage and services might have been somewhat influenced by the economic crisis. The causal impact analysis results presented in this study suggest a remarked association between this decrease and the 2017 policy. However, due to the intertwined nature of this policy, the 2015 economic crisis, and austerity measures that took place since then [8], further investigation is necessary to discern the role of each of these factors. One possibility is to use an economic cofactor in a future causal impact analysis.

Due to data availability, it was only possible to include in the study data from January 2010 to November 2020; thus, the post policy period consisted of roughly 3 years of data, whereas the pre policy period had roughly 8 years. Once more data are available, it would be beneficial to extend the time period analyzed in future studies to evaluate if the observed trends will be sustained over time.

We were unable to validate the data collected via DATASUS. Procedure codes that were used in this study were considered as the most appropriate to represent the selected variables. However, other codes not captured by this study could also be representative of some these variables, which may have implications in the interpretation of results. Nonetheless, it is unlikely that the data obtained through DATASUS and used in this study presents any relevant inconsistencies. DATASUS is the official source of data pertaining to the Brazilian public health system, and it is widely used as a reliable source of information for public health research in Brazil.

Considering the results presented by this study, public authorities should reassess the results of the reform of the public primary care system in Rio de Janeiro and consider its unintended consequences to public health care delivery. Careful reevaluation and planning should be undertaken to avoid any setbacks to the recent history of successful growth of public primary health care in the city. Special attention must be given to underprivileged communities, which are the ones most affected by the lack of access to health care. The long-term negative effects on the health of these populations should be evaluated. Local government should also investigate the reasons why the reform of the primary care system failed to keep the same levels of public primary care coverage prior to 2017. They should also consider that, in the long term, the possible savings obtained due to the reform might be outweighed by future health expenditures at other levels of care. The 2017 policy guidelines should be reviewed at the national level; especially in the regions that showed a dramatic rupture from previous

policies, possibly compromising the successful achievements obtained in the past two decades by the prioritization of the FHS.

Conclusion

The public investments and successful growth of public primary health care from 2010 to 2017 in Rio de Janeiro, especially due to the FHS model, promised to be a turning point in a decades-long history of chronic deterioration of the public health system. However, these expectations were frustrated by the tremendous decrease in access to public primary health care seen in the city after the enactment of the 2017 PNAB. The policy led to a reform in which FHS resources decreased considerably. Consequently, the percentage of the population with access to public primary health care reduced significantly after 2017, such as did the provision of several primary care services.

Ultimately, the effects observed after the enactment of the 2017 PNAB exceeded even the most negative predictions of the deterioration of the FHS in Rio de Janeiro. A dramatic generalized deterioration of the public primary health care was observed, regardless of the model. Therefore, to avoid losing the achievements that took many years to be attained, local government should redirect its efforts to reestablish the growth trajectory of the public primary health care system, focusing on the FHS model that, despite the changes brought by the new policy, remains as the recommended priority model.

Future investigation should examine the possible effects of the decrease in access to public primary health care after 2017 on the health outcomes of the population of Rio de Janeiro. Similar investigations should be conducted to examine the effects of the 2017 policy in other cities and regions in Brazil.

Contributors

F. L. Garcia collaborated with the concept/design of the study, performed data collection and analysis and collaborated with the writing and review of the article. M. Socal collaborated with the study concept/design, data analysis and article writing and review.

Additional informations

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Resumo

Em 2017, dentro de um cenário de restrições financeiras provocadas por uma crise econômica no Brasil, uma nova política de atenção primária em saúde introduziu mudanças na maneira que diferentes modelos de atenção primária eram priorizados e implementados, com possíveis efeitos negativos no acesso à atenção primária. O estudo teve como objetivo investigar se a Política Nacional de Atenção Básica de 2017 teve impacto negativo sobre a organização da atenção primária baseada no modelo da Estratégia Saúde da Família (ESF) e no acesso aos serviços de atenção primária no Município do Rio de Janeiro. Foram analisadas as médias anuais e as médias pré- e pós-2017 de 15 variáveis para identificar possíveis quebras de tendência em 2017. Foi usado um modelo bayesiano de séries temporais estruturais para determinar as diferenças entre as médias pós-2017 reais e previstas para cada variável. Os dados foram obtidos do Departamento de Informática do SUS (DATASUS). O número anual médio de equipes de saúde da família foi 1.179,9 em 2017 e 788,8 em 2020, enquanto a média anual de equivalentes de equipes de saúde da família foi 163,6 em 2017 e 125,4 em 2020. A média pós-2017 real de 989,3 equipes de saúde da família (p = 0,004) foi 16,7% mais baixa que a média pós-2017 prevista, de 1.187,4 equipes. A cobertura da população do Rio de Janeiro pela ESF era 62,6% em 2017, caindo para 40,5% em 2020. A prestação de serviços públicos de atenção primária caiu depois de 2017. Os resultados demonstram a deterioração da ESF no Rio de Janeiro depois de 2017, sem nenhum aumento no modelo tradicional de atenção primária. O acesso aos serviços públicos de atenção primária diminuiu durante o mesmo período.

Estratégia Saúde da Família; Acesso aos Serviços de Saúde; Reforma dos Serviços de Saúde; Política de Saúde; Atenção Primária à Saúde

Resumen

En 2017, en un escenario de restricciones financieras causadas por una crisis económica en Brasil, la nueva política nacional de atención primaria promovió cambios, con el fin de que se priorizaran e implementaran diferentes modelos de atención primaria, con posibles efectos negativos en el acceso a la atención primaria en salud. El objetivo de este estudio fue investigar si la Política Nacional de Atención Primaria de 2017 tuvo un impacto negativo en la organización de la atención primaria, basada en el modelo de Estrategia de Salud Familiar (ESF), y en el acceso a los servicios públicos de atención primaria en la ciudad de Río de Janeiro. Se analizaron los promedios anuales y los pre- y post-2017 promedios de 15 variables para identificar posibles rupturas de tendencia en 2017. Se usó uno modelo Bayesiano estructural de series temporales para determinar las diferencias entre los promedios actuales y previstos post-2017 de cada variable. Los datos se obtuvieron mediante el Departamento de Informática del Sistema Único de Salud (DATASUS). El promedio anual de equipos de salud familiar fue 1.179,9 equipos en 2017 y 788,8 equipos en 2020, mientras que el promedio anual de los equipos equivalentes familiares fue 163,6 en 2017 y 125,4 en 2020. El promedio actual post-2017 de 989,3 equipos de salud familiares (p = 0,004) fue un 16,7% más bajo que el promedio previsto post-2017 de 1.187,4 equipos. El porcentaje de población en Río de Janeiro cubierto por la ESF fue 62,6% en 2017 y 40,5% en 2020. La provisión de servicios públicos de atención primaria se redujo después de 2017. Los resultados demostraron el deterioro de la ESF en Río de Janeiro después 2017 y no hubo incrementos en el modelo de atención primaria tradicional. El acceso a los servicios de atención primaria pública decayó en el mismo periodo.

Estrategia de Salud Familiar; Accesibilidad a los Servicios de Salud; Reforma de la Atención de Salud; Política de Salud; Atención Primaria de Salud