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The Family Health Strategy: expanding access and reducing hospitalizations due to ambulatory care sensitive conditions (ACSC)

Luiz Felipe Pinto [1]
Ligia Giovanella [2]

Abstract *Since its creation in 1994, the Family Health Program has become the main strategy for changing care models and increasing access to the first contact service of the Unified Health System (SUS). A little more than ten years later, in 2006 the program was transformed into the Family Health Strategy (FHS) within the National Policy on Primary Care (PNAB). This article evaluates the effects of the implementation of the FHS over the last two decades in Brazil, demonstrating the access provided and the trends in ambulatory care sensitive conditions (ACSC). This is an ecological, time series study with secondary data referring to the number of family health teams that were established and the number of hospital admissions due to ACSC in the SUS from 2001-2016. The results show a 45% reduction of the standardized ACSC rates per 10,000 inhabitants, from 120 to 66 in the period 2001-2016. Although it was not possible to isolate the specific effects of primary care, it is quite plausible that this reduction in ACSC rates is linked to the progress of FHS coverage in Brazil, especially in terms of improved follow-up of chronic conditions, improved diagnosis and easier access to medicines.*

Key words *Primary health care, Family health, Brazil, Ambulatory care sensitive conditions*

[1] Departamento de Medicina de Família e Comunidade, Faculdade de Medicina, Universidade Federal do Rio de Janeiro. Rua Laura Araújo 36/2º, Cidade Nova. 20211-170 Rio de Janeiro RJ Brasil. felipepinto.rio2016@gmail.com
[2] Escola Nacional de Saúde Pública, Fiocruz. Rio de Janeiro RJ Brasil.

Introduction

The federative political system of Brazil is made up of three spheres of government (union, state and municipal), all of which are defined by the Federal Constitution (1988) as entities with administrative autonomy and without hierarchical linkage. There are 26 states and the Federal District, as well as 5,570 municipalities.

Federalism, as it currently exists in Brazil, has characteristics that are notable for their impact in the area of health. The first is the importance attributed to municipalities, which are considered to be federative entities with a high degree of responsibility regarding the implementation of public policies. There is a huge difference between these municipalities in terms of population size; demographic density; access to transport; social, economic and political development; as well as tax collection capacity, all of which imply different arrangements in terms of public health policies[1]. The second characteristic is the fact that Brazilian federalism is still "under construction"; throughout history it has been marked by periods of authoritarian centralism and re-democratization, which has given rise to new constitutional attributes for municipal entities.

Over the last three decades the fundamental principles that shape health care (universality, equity and comprehensiveness), which were initially expressed in the health reform movements and were incorporated into the Brazilian Constitution (1988) and the Unified Health System (SUS) legislation, have produced changes in health practices, particularly primary healthcare.

At the end of the 1980s, as a result of the struggles for re-democratization in Brazil and the conquest of political and social rights, the Brazilian health system underwent a structural reform and changed from a Bismarckian social insurance model that covered less than 50% of the population to a National Health Service-style Beveridgean model with the creation of the Unified Health System (SUS). As a result of intense social activity (the Health Movement), health was enshrined as "a right of all and a duty of the state" in the 1988 Constitution.

Health is the right of all and a duty of the state. It is guaranteed by social and economic policies aimed at reducing the risk of disease, and by universal and equal access to actions and services designed to promote, protect and restore health[2].

Hitherto, the right to health care had been restricted to the section of the population linked to the formal, urban, labor market, which compulsorily contributed to social security through a contribution rate that was proportional to salary. Due to the high levels of informality within the Brazilian labor market, this type of social insurance coverage covered less than 50% of the population. The remainder were excluded from health care; in extreme cases they had to use philanthropic services and were treated as indigent. With the creation of the national health system (SUS), which is funded from fiscal resources, access became universal and a right inherent to citizens, regardless of status in the labor market.

In the thirty years since the introduction of the SUS, primary healthcare, as well as the entire health system, underwent profound changes. In the 1980s, prior to the implementation of the SUS, there was no national primary healthcare policy, only segmented coverage and fragmented care. Medical care based on social insurance provided emergency services and outpatient care with no definition of a gatekeeper role; there was a lack of general practitioners or specialists in family or community medicine, together with a strong emphasis on specialized care. Rural workers were partially covered by FUNRURAL, through the hiring of third parties, which were generally philanthropic hospitals ('Santas Casas'). In rural areas in the north and northeast of the country, small SESP Foundation,mixed units linked to the Ministry of Health offered some services to control endemic diseases. Few municipalities provided health services: in general, only emergency services were offered. A significant segment of the population lacked health cover; they were treated as indigent, were dependent upon philanthropic hospitals and lacked access to primary care services.

From the mid-1980s onwards, limited services based on primary care were developed in municipalities in conjunction with universities. A rationalized, healthcare program aimed at promoting the integration of individual social security services with the public health services of states and municipalities was developed within the Integrated Health Actions Strategy (AIS). This resulted in the subsequent formation of community-orientated programs – the Community Health Agents Program (PACS) and then the Family Health Program (PSF) – which were prototypes for a national primary care policy. This policy gradually began to reflect the aspirations of the WHO[3] report "Primary Healthcare, Now More Than Ever", which urged all governments to reflect on the need to think about changes that could translate into integration between the

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principles of primary healthcare and the expectations of citizens. These included the following transformations: in terms of universal public coverage; in the provision of services that were organized based on the needs and expectations of people; and in public policies that ensured healthier communities based on more inclusive models of leadership.

Since its inception in 1994, the PSF has gradually become the main strategy for expanding first contact access and changes in care models. A little over ten years later, as the guiding axis of the SUS, it was transformed into the Family Health Strategy, as set out in the National Primary Care Policy (PNAB) in 2006, which was later revised in 2011 and 2017[4-6].

The aim of this article is to evaluate the effects of the implementation of the Family Health Strategy over the last two decades in Brazil, highlighting the improvements in access and the trends in hospitalizations due to ambulatory care sensitive conditions (ACSCs).

The Family Health Strategy: the path to a national primary healthcare policy

After the enactment of the Federal Constitution of 1988 and Law No. 8,80/90, municipalities had a more important role in the development of health actions and services. This initially occurred with the creation of the Community Health Agents Program (PACS), notably in the northeast of Brazil (Ceará and Pernambuco) and later, through the Family Health Program (PSF),Family Health Teams (ESFs) were established throughout Brazil. Each team consisted of a general practitioner, a nurse, one or two nursing technicians, and four to six community agents. Initially, each ESF was responsible for up to 4,500 people but in time that number decreased to 4,000 and then 3,000. Those agents who were responsible for endemic diseases, who were already active in campaigns to combat the dengue mosquito, only developed health surveillance actions from the 2010s, with the encouragement of the Ministry of Health to integrate these actions together with the ESFs[7,8].

Over the years, it was necessary to organize the basis of the health system, and the PSF came to be recognized as having a structuring role that was defined as the "family health strategy". On March 28, 2006, the Ministry of Health, then under the management of José Gomes Temporão, published Order No. GM/648, which is considered to be the historical benchmark for the national consolidation and expansion of the Family Health Strategy. The afore mentioned legislation was intended to reorganize primary health care in Brazil through the National Policy on Primary Healthcare (PNAB), altering and repealing dozens of orders that had been previously issued. Subsequently, two further revisions of the PNAB were published by the Federal Government, one in 2011 and another in September 2017. In 2008, in order to expand the scope of primary healthcare actions and services, Family Health Support Centers (NASFs) were implemented; the latter comprised health professionals from different areas and specialties[9,10].

With the decentralization of the public health system, Brazilian municipalities gradually became responsible for the healthcare of their inhabitants, which represented huge changes from the institutional, managerial, political and financial points of view. Each Brazilian municipality had to create a managerial structure (Municipal Health Department) to implement health services, even in places where previously there had not been even a single health unit, as well as participating in healthcare financing. This process has been completed, and today more than 5,500 Brazilian municipalities are responsible for the primary health care of their inhabitants and, in partnership with state health secretariats and other municipalities in their region, for specialized and hospital care.

Literature reports have confirmed the capacity of primary healthcare (PHC) strategies to favor the improvement of health and equity, and to provide greater efficiency of services and lower costs within health systems[11-13].

According to Starfield[11], PHC is based on four essential attributes and three derived attributes. The essential attributes are as follows:

(1) first contact access: accessibility and use of the same health service as a source of care for each new problem, or new episode of the same health problem, with the exception of medical emergencies;

(2) longitudinality: the existence of a continuous source of care, as well as its use over time. The relationship between the population and its source of care should be reflected in an intense interpersonality that expresses mutual trust between service users and health professionals;

(3) comprehensiveness: a wide range of services that are available and provided by the primary care service; comprehensive care actions from the point of view of the biopsychosocial character of the health-disease process, as well as

promotion, prevention, cure and rehabilitation actions, even though some may not be offered within PHC units, thus including referrals to focal medical specialties, hospitals, etc.

(4) coordination: presupposes continuity of care, either through care provided by the same professional, or by means of medical records, as well as the recognition of problems addressed in other services and their integration into the overall care of patients. The provider of primary care must be able to integrate all patient care.

The three attributes derived from PHC are as follows: (1) family orientation: in assessing individual needs for comprehensive care it is important to consider the family context and its potential for care, as well as threats to health, including the use of tools for family health promotion; (2) community orientation: the recognition of community health needs through epidemiological and direct contact data; their relationship with the latter, as well as the joint planning and evaluation of services; (3) cultural competence: the adaptation of the provider (teams and health professionals) to the special cultural characteristics of a population to facilitate relationships and communication. In Brazil, PHC as defined by Starfield is represented by the Family Health Strategy.

In 2006, the PNAB adopted family health as a strategy, strengthening changes in the care model, establishing multiprofessional teams with a preferential entrance and coordinated network care; the latter perhaps represented the most significant innovation. Health systems that have an organized "entry point" that is anchored in a solid network strengthened by primary care tend to produce better results[14]. This gatekeeping role has been highlighted by various authors[15] as an important strategy for hierarchizing systems, as well as ensuring greater effectiveness. Since the 1960s, some countries have experimented with this concept: the basic health unit (UBS) is the obligatory entry point for the system, serving as a filter for access to services provided by specialists and constituting the first hierarchical level of the health system. In Brazil, primary care is also characterized by the definition of a population ascribed to a geographically delimited territory. This is different from European countries, which work with lists of service users per doctor and nurse, although there is some considerationof where service users live and their geographical proximity to a UBS.

Materials and Methods

This is an ecological, time series study, with secondary data referring to the number of family health teams that were established and the numbers of hospital admissions due to ambulatory care sensitive conditions (ACSC) in the SUS, as defined by Alfradique et al[16]. The microdata were obtained from the Primary Care Information System (SIAB) from 1998 to 2017, and from the Hospital Information System (SIH) (reduced files from the Authorized Hospital Admissions (AIH) from 2001 to 2016, which are available on the Ministry of Health DAB/SAS and DATASUS/SE websites. The AIH microdata incorporated the 12 monthly files per year for the 27 units of the federation (UF), i.e. a total of 12 months x 16 years x 27 UFs = 5,184 files. These were aggregated and used to generate the final database, which referred to approximately 187 million hospitalizations.

The coverage of registered users considered an average of 3,450 people per family health team, as was used by the Ministry of Health in its monthly historical monitoring panel of the established teams. The Brazilian ACSC list[16] was used. The ACSC hospitalization rates were calculated per 10,000 inhabitants and compared to the non-ACSC rates in selected geographical units (total Brazil, state capitals, interior of Brazil, municipalities with less than 20,000 inhabitants, and the five most populous state capitals). The population estimates for the municipalities were those that are calculated annually by the IBGE. We used data from the IBGE demographic census (2010) by age group as the standard population. In addition, the ACSC ratios were compared to total hospitalizations in the year for: (i) the total Brazilian population, (ii) distribution by gender and (iii) distribution by age group.

Results

The expansion of access to primary care in Brazil can be seen through the large increase in the number of family health teams in the last 20 years; according to data from the Department of Primary Care this number increased from 2,054 in July 1998 to 41,619 in October 2017. If one considers the same criteria, i.e. that a team is responsible for an average of 3,450 people, the coverage of people registered by the ESF in this period increased from 4.4% (seven million Brazilians) to about 70% (143 million). It is note-

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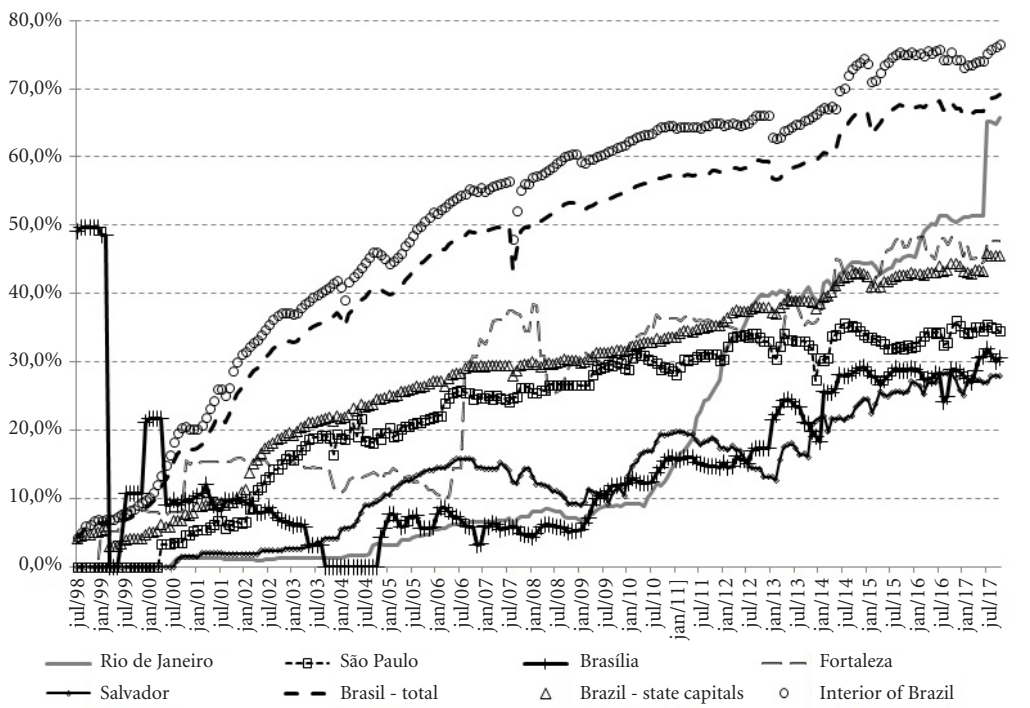
worthy that the coverage in municipalities in the interior of the country increased from 4.4% to 76.5% in the same period, while in the state capital cities there was an increase from 4.2% to 45.5%. These estimates are in line with the results of a populational survey carried out by the National Health Survey in 2013, which found ESF coverage of 56.2%, a year in which 35,000 ESFs were introduced in Brazil[17].

The analysis of the five most populous state capital cities in Brazil reveals differing trajectories. Of these cities, Brasília was the first Brazilian capital to have widespread coverage of people registered by the PSF in 1998;this was referred to as "Health at Home" in the city. However, in the 2000s it ceased to be a priority for the Federal District Government and it was only from 2009 onwards that coverage started to increase again; by the end of 2017 it had not reached the same levels of coverage as at the end of the 1990s (Graphic 1).

On the other hand, in the municipality of Rio de Janeiro, there were very few family health teams until 2008. Since then, as some authors have pointed out[19,20], due to the Primary Healthcare Reform under two municipal governments (2009-2012 and 2013-2016), which considered this area to be a priority, the number of teams (1,243) and the proportion of people covered by the ESF (which reached values of around 70%) even surpassed the figures for the city of São Paulo (1,213 teams and 35% coverage), which remained almost stagnant in the same period. The city of Salvador presented cycles of expansion of coverage in the periods 2005-2008; 2009-2012 and, most recently, 2015-2017. In the city of Fortaleza there was also a trend of increasing cycles, with an emphasis on the period 2006-2008.



Graphic 1. Evolution of the coverage of people enrolled in the Family Health Strategy in Brazil(total) and in the five most populous state capitals (1998-2017).

Source: DAB/SAS/Ministry of Health[18], from the number of created teams. It was assumed that an ESF had an average of 3,450 registered people. For the population data, population estimates for the middle of the year from the IBGE and demographic censuses of 2000 and 2010 were used.

Hospitalizations due to ambulatory care sensitive conditions (ACSCs)

There are several indicators designed to evaluate the effectiveness and implementation of primary care policies in a country. Of these, the indicator of hospitalizations due to ambulatory care sensitive conditions (ACSC) was initially described in the literature by Billings et al.[21] In Brazil, it was validated by the Ministry of Health in the late 2000s, establishing a Brazilian list with twenty groups of health conditions which, if adequately treated by primary care, would avoid hospitalizations[17].

In Brazil, the historical trend in the period 2001-2016 indicates a reduction in the standardized rate of hospitalizations due to ACSCs (from 120 to 66 admissions per 10,000 inhabitants, a 45% reduction). This was also observed in the average for the state capitals (which had a reduction of 24.0%) and in municipalities in the interior of Brazil (a reduction of 48.6%). In terms of the five most populous state capitals, it is noteworthy that in the city of Rio de Janeiro there was a decrease from 48 to 30 hospitalizations per 10,000 inhabitants, i.e. a reduction of 37.7%.

The same standardized rates were calculated for non-ACSC hospitalizations. When the two rates were compared there were larger reductions in the period under consideration for ACSCs, with the exception of the cities of Salvador (31.3% increase for ACSCs, especially from 2011) and São Paulo (increase of 20.5%) (Table 1).

Regarding the weight of each of the groups that compose the health situations classified as ACSCs, cardiovascular and cerebrovascular conditions (groups 10 to 13) are highlighted because when added together they accounted for 25% of the total, remaining practically unchanged in the period in question in relation to the whole of Brazil. These were followed by asthma (which decreased from 15% to 5%) and diseases of the lower airways (from 12% to 8%). It is noteworthy that ACSC rates declined sharply in the period in question in relation to hospitalizations due to asthma (76.6%), gastroenteritis (66.5%) and cardiovascular and cerebrovascular diseases (57.3%) (Table 1).

Analyzing the proportion of ACSCs in relation to the total hospitalizations by gender, a decline was observed over the years, with higher values for males (18% to 14%) compared to females (14% to 11%). In terms of age groups, there was unique, cyclicar behavior for children aged up to nine years, with proportions in relation to the total, which alternated between 19% and 23% during the period in question. This behavior can be explained by the effects of the winter months (non-tabulated data), in which increased cases of asthma, bacterial pneumonia and diseases of the lower airways are observed.

For the subsequent age groups the proportions decreased considerably up to the age group of 30-39 years. From the age of 40, a progressive trend of decreasing values was observed. For example, for those aged 80 and over the values reduced from 50% to 35% in the period 2001-2016 (Graphic 2).

Discussion

The presented results show a reduction in the hospitalization rate for all the analyzed health conditions, with a greater reduction in ACSCs (45%) than non-ACSCs (22%), indicating a decline and negative correlation between the ACSC rate and the level of ESF coverage during the period 2001-2016. Although it was not possible to isolate the effects of primary healthcare, it is quite plausible that the reduction in the number of hospitalizations due to ACSCs is related to the increased level of ESF coverage in Brazil, especially in terms of improvements in the follow-up of chronic conditions, diagnosis and access to medicines. Over the last few years, several authors have reported high hospitalization rates due to ACSCs in Brazilian cities, especially in cities where there were lower levels of ESF coverage; this was due to difficulties associated with access to the health system or its performance[22-24].

Soranz[25] analyzed this issue in relation to the city of Rio de Janeiro after the widespread expansion of ESF coverage from 2009-2016 and observed, *it is expected that with high levels of coverage, good physical structure, well-trained professionals and organized work processes, primary care will have better results and will be able to solve patients' problems by avoiding unnecessary hospitalizations, i.e. clinical management in PHC would prevent the development of certain diseases to stages in which hospitalization is necessary.*

The use of ACSCs as a measure of PHC effectiveness could have its scope expanded to include individual characteristics, services and socioeconomic variables. Mendonça[26] observed that better quality scores in this area have the effect of reducing hospitalization rates due to chronic conditions, and in elderly women. He concludes his study by demonstrating that socioeconomic

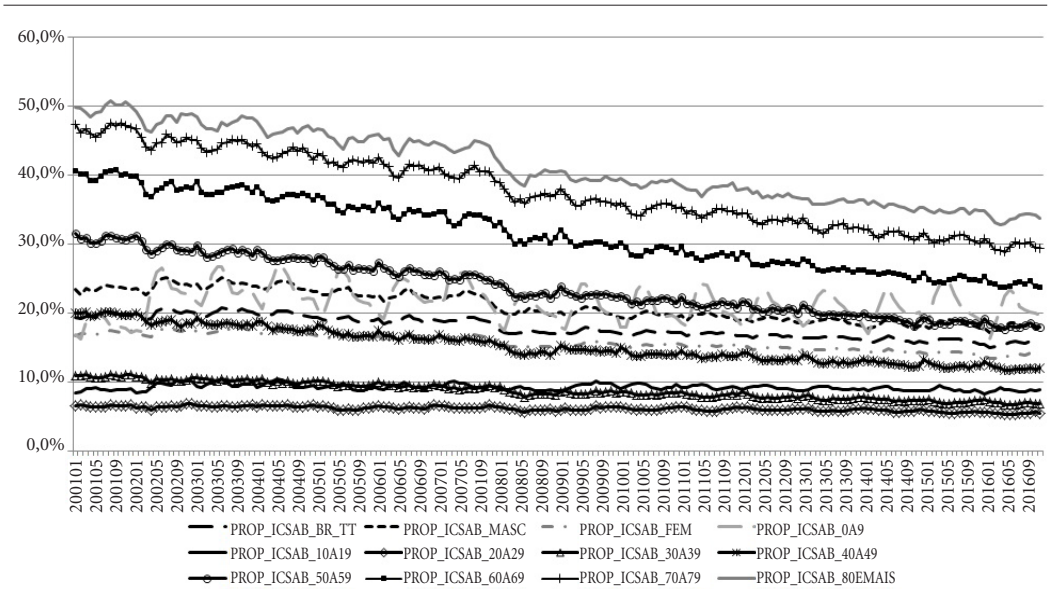
Table 1. Distribution of standardized rates of hospitalizations due to ambulatory care sensitive conditions (ACSC) and non-sensitive conditions (non- ACSC) per 10,000 inhabitants by year, geographic units and selected groups, Brazil (2001-2016).

Geographic units/ selected groups	Type of hospitalization	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	Δ (2001/ 2016) (%)
Brazil	ACSC	119.9	119.4	118.0	113.8	106.0	102.4	95.4	81.3	84.3	84.2	82.0	78.2	73.8	71.5	69.9	66.0	-45.0
(total)	Non-ACSC	622.8	616.9	602.4	592.0	576.1	562.4	534.9	510.9	521.3	530.4	523.1	511.2	497.9	497.1	492.5	483.4	-22.4
Brazil	ACSC	72.7	72.4	77.6	77.4	73.4	71.1	67.7	55.5	58.7	60.4	60.5	59.4	57.5	54.8	56.2	55.2	-24.0
(capitals)	Non-ACSC	544.2	535.5	535.4	533.1	521.8	506.5	489.8	458.8	477.2	486.9	483.8	471.1	461.8	449.1	453.8	451.8	-17.0
Brasil	ACSC	135.2	134.7	131.2	125.7	116.7	112.6	104.3	89.6	92.5	92.0	89.1	84.4	79.2	76.9	74.3	69.4	-48.6
(interior)	Non-ACSC	648.1	643.3	624.2	611.3	593.9	580.7	549.3	527.5	535.3	544.7	536.2	524.5	488.1	513.1	505.6	494.4	-23.7
Brazil (municipalities	ACSC	161.0	161.0	153.8	148.1	138.6	134.3	125.1	107.7	112.3	112.8	107.6	100.0	95.6	95.2	93.1	86.0	-46.6
< 20,000inhabitants)	Non-ACSC	639.7	639.3	615.1	601.4	592.0	589.1	553.3	518.0	527.5	549.2	537.9	528.4	516.3	526.4	524.3	519.9	-18.7
Fortaleza	ACSC	101.9	95.3	98.0	100.9	92.2	86.0	91.2	71.0	76.7	72.0	72.3	62.5	70.5	69.9	73.5	73.8	-27.6
	Non-ACSC	660.6	652.5	657.6	662.0	668.4	628.0	617.1	539.6	536.0	527.4	513.8	487.3	504.6	503.5	503.4	501.3	-24.1
Salvador	ACSC	46.2	46.8	49.6	47.7	41.0	39.0	41.1	32.3	37.5	46.3	56.3	60.5	60.8	65.9	65.1	60.7	31.3
	Non-ACSC	586.3	567.0	560.4	534.5	523.7	494.2	468.5	378.0	395.8	497.1	517.6	505.2	471.2	469.1	470.8	457.6	-22.0
Rio de Janeiro	ACSC	47.5	38.7	42.3	45.1	43.9	42.8	43.7	32.0	36.0	39.8	38.1	35.0	33.3	29.5	34.7	29.6	-37.7
	Non-ACSC	440.1	394.9	380.0	379.4	349.9	323.0	333.6	287.5	300.3	292.2	304.7	296.8	309.6	304.0	339.8	302.1	-31.4
São Paulo	ACSC	45.8	54.2	67.3	67.4	68.1	67.8	67.0	53.1	57.4	59.6	61.2	58.3	56.1	54.7	53.9	55.2	20.5
	Non-ACSC	397.4	425.0	445.9	450.3	463.2	465.0	473.1	430.6	461.3	479.3	473.5	462.7	447.0	442.9	436.0	451.3	13.5
Brasília and satellite cities	ACSC	114.0	94.7	114.4	132.7	112.4	105.9	95.8	83.6	81.1	83.8	84.2	86.0	78.3	66.4	67.9	68.2	-40.2
	Non-ACSC	622.1	549.2	582.3	638.7	584.9	559.2	548.2	545.1	533.0	538.9	526.0	500.3	460.7	429.1	417.7	455.1	-26.9
Infectious gastroenteritis and complications	ACSC	4.3	5.1	4.8	4.4	4.3	4.3	4.0	3.2	2.8	2.9	2.3	2.2	1.9	1.8	1.5	1.5	-66.5
Asthma	ACSC	19.8	19.9	17.9	16.9	14.6	13.5	13.4	10.2	10.1	10.0	9.2	7.6	6.5	5.6	5.5	4.6	-76.7
Cardiovascular and cerebrovascular diseases	ACSC	35.3	33.9	33.8	32.1	30.6	29.4	25.5	21.7	21.8	20.7	20.4	19.7	18.1	17.2	16.1	15.1	-57.3

Source: The authors, based on analyzing the reduced, monthly AIH data available on the DATASUS/Ministry of Health website.

Note: The standardized rate considers the population resident in Brazilian by age group according to the IBGE demographic census (2010).

Key: ACSC = hospitalizations due to ambulatory care sensitive conditions (ACSC);Non-ACSC = hospitalizations due to non- ambulatory care sensitive conditions.



Graphic 2. Monthly evolution of the proportion of hospitalizations due to ambulatory care sensitive conditions(ACSC) by gender and age groups, Brazil (2001-2016).

Source: the authors,prepared from the reduced, monthly, AIH arquives for the period 2001-2016, extracted, analyzed and tabulated on the DATASUS/Ministry of Health website(http://www2.datasus.gov.br/DATASUS/index.php?area=0901&item=1&acao=25).

Note: PROP_ACSC_BR_TT = proportion of hospitalizations due to to ambulatory care sensitive conditions (ACSC) in relation to total hospitalizations for all municipalities in Brazil. PROP_ACSC_MASC = proportion of male hospitalizations due to ambulatory care sensitive conditions (ACSC) in relation to the total number of male hospitalizations. PROP_ACSC_0-9 = proportion of hospitalizations due to ambulatory care sensitive conditions (ACSC) among children aged 0-9 years in relation to total hospitalizations for children aged 0-9 years, followed by all age groups.

vulnerability is strongly associated with the behavior of ACSC rates, thus reinforcing the importance of PHC in reducing iniquities, as well as serving the elderly and vulnerable population.

It is extremely important to discuss the factors that influenced the results observed in all the analyzed hospitalizations, especially those associated with the expansion of access to primary care, in order to develop qualification actions to be used by professionals working within family health teams, to continue reducing the number of ACSCs in Brazil, and to reduce costs for the entire health system.

One of the most important initiatives in this sense is the creation of residential programs in relation to medicine, and family and community nursing, as well as strengthening existing schemes. This initiative could be achieved through partnerships between municipal and state health departments and Brazilian universities. As some authors have pointed out[27,28], the implementation of primary healthcare in Brazil through the ESF has prioritized collective health competencies, particularly in small and medium-sized municipalities, which has not always resulted in comprehensive and remedial care or qualified clinical functions.

Although many problems remain in terms of the quality of care provided,as well as the unsatisfactory effectiveness of PHC attributes, in the last decade the expansion of family health coverage was accompanied by a number of associated actions that were designed to qualify care processes within PHC. These include the following: the National Program for the Improvement of Access and Quality of Primary Care (PMAQ-AB),which includes performance evaluation and financial incentives to improve quality; the UBS Requalification Program (Requalifica UBS), an important intervention to improve the infrastructure of UBSs; and the More Doctors Program (PMM), which sought to address the insufficiency and

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high turnover of emergency medical professionals and redirected medical training towards working in PHC[29]. The continuity of these programs, together with an emphasis on the implementation of the PMM related to medical education, is fundamental in order to improve and provide sustainability to the positive effects of the expansion of the ESF presented in this article.

It should also be remembered that the improvements in population health indicators during the last two decades are the result of complex processes and the synergistic results of a number of social policies implemented by the Lula and Dilma administrations, coupled with the expansion of ESF coverage (initiated in the 2000s), which have provided a significant reduction in poverty, with proven health effects[30].

Because of its comprehensive approach to individuals, its first contact service, longitudinality and coordination, as well as the fact that it incorporates technologies in a more economical manner and is less interventionist, PHC is recognized as the most adequate and effective response to the current trend of morbidity and mortality, especially in relation to the follow-up of patients with chronic diseases[3,31].

Continuing to improve the Brazilian PHC care model, the Family Health Strategy will contribute to greater health gains and more timely access to services for the Brazilian population. However, this model, is currently under threat. The National Policy on Primary Healthcare(PNAB, 2017)reduces the priority for the ESF, setting financial incentives for other types of core staff without the presence of community health agents, while hindering teamwork by setting workloads for professionals of only ten hours per week, thereby preventing the achievement of a robust, longitudinal, coordinated PHC; attributes which are crucial to guaranteeing comprehensive healthcare.

Merits and limitations of this study

One of the limitations of this study is the proportional analysis of the ACSC groups. Because diseases compete for a finite number of hospital beds (less than demand), the proportional reduction of a group may actually reflect the proportional increase in competing conditions. Therefore, we chose to compare the standardized ACSC x non-ACSC rates, demonstrating that, as a rule, there were higher gains during the analyzed period.

Another aspect is the internal validity of the study. The codification of the main diagnoses performed by the medical staff at the time of hospitalization may have been influenced by the clinical knowledge of that professional or by other organizational factors related to the management process of the unit in question.

The SIH-SUS data has variable coverage in the state capitals and represents fractions of the total hospitalizations, which vary according to diseases. It is necessary to consider the fraction of the population of the Brazilian state capitals, particularly the age group that incorporates the subgroup of selected diseases and that has health insurance. Furthermore, possible changes in the supply of SUS hospital beds during the period in question were not considered, which could have influenced hospitalization rates.

Collaborations

LF Pinto contributed with the design, scoping and data analysis. L Giovanella contributed with the discussion of the data, the write-up and the critical revision of the article.

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