

The effect of municipalization in the Brazilian hospital system: the small-sized hospitals

Luciana Reis Carpanez (<https://orcid.org/0000-0002-5107-2595>)¹

Ana Maria Malik (<https://orcid.org/0000-0002-0813-8886>)¹

Abstract Hospital care accounts for part of increased health care costs. Countries have adapted their public policies to the hospital sector, focusing on larger centers, after studies of the 1990s have shown that hospitals with less than 200 beds have reduced efficiency. A total of 6,787 hospitals in Brazil were recorded in 2017, 62.3% of which had less than 50 beds. This study evaluated the National Policy for Small-sized Hospitals (PNHPP) published in 2004, and its impact on the Brazilian hospital sector. Twelve of the 27 states adhered to the PNHPP. In the absence of policies to induce the establishment of a networked hospital system, favoring comprehensive actions, the municipalization pulverized hospital care. Municipal managers believed that this was the best path to meet health needs. The number of municipal hospital units increased and their size was reduced, reaching a mean capacity of 50 beds per hospital. The reversal of this scenario involves policies that induce the qualification of hospital care until the understanding that the almost 5,000 small-sized hospital units in the country are a broad set to be studied, subdividing it into smaller groups, with different specialties.

Key words Hospitals, Hospital legislation, Hospital size, National health policies

¹ Centro de Estudos em Planejamento e Gestão em Saúde (FGVsaude), FGV-EAESP. Av. 9 de Julho 2029/11º, Bela Vista. 01313-902 São Paulo Brasil. lucianacarpanez@gmail.com

Introduction

Health expenditure has increased significantly and led countries with universal access to reform their systems, with the aim, among others, of reducing costs. According to the World Health Organization (WHO)¹, the mean worldwide rate of gross domestic product (GDP) health spending was around 10% in 2014 and has grown by 10% from 2003 to 2013. African countries have the lowest average spending (around 3 to 5%) and were the only ones showing a downward trend. The U.S. is the country with the highest mean health expenditure, with 15% of GDP in 2003 and 17% in 2013. Brazil used 7% and 10% of its GDP on health actions in 2003 and 2013, respectively, spending R\$ 147 billion in 2004 (6.9% of GDP). The percentage of individual health expenditure reaches 11% of mean income², and up to 5% of patients can be driven into poverty by using health services. Among health expenditure, hospital care is responsible for the most significant increase in costs.

Studies³ show that of the total increases, around 18% was due to higher hospital costs. About US\$ 126 billion could be saved with improved health service efficiency. In 2010, the WHO² described the top ten causes of inefficient health services, two of which are unnecessary hospital admissions and longer than desired length of stay, and low utilization of hospital infrastructure/inappropriate hospital size.

In the last two decades (2000 to 2018), between half and two-thirds of all national health expenditure was incurred by hospital services. Canadian⁴, Swiss⁵, and German⁶ studies show that hospital services are costly due to inefficiencies, whether due to excessive hospitalizations and days of unspecified stay, or underutilization of infrastructure. In OECD countries, life expectancy could be increased by up to two years if health services were more efficient⁷, by reducing (1) the delay in citizens' access to health services, and (2) length of service use by citizens.

Although several studies show that improving the efficiency of the hospital complex should be a goal of governments, hospitals are shown as fundamental structures in all health systems, performing most of the secondary (early diagnosis and immediate treatment) and tertiary (disability prevention and rehabilitation) prevention actions. Understanding and studying hospital systems can provide insights to improve the efficiency, efficacy, and effectiveness of health actions, as well as planning in health system actions.

In the Brazilian case, 6,787 hospital health facilities⁸ were available on December 2017, of which 62.3% had less than 50-bed capacity. In 2004, a national policy focused exclusively on them^{9,10} was implemented. The literature shows that hospitals with less than 200-bed capacity do not reach economies of scale and hardly achieve their economic and financial sustainability¹¹⁻¹³. This paper aims to analyze how the Brazilian hospital subsystem has conformed historically, with particular attention to small-sized hospitals, and analyze the National Policy for Small-sized Hospitals (PNHPP) and the results it achieved.

Brazilian small-sided hospitals

Hospitals have existed since the earliest civilizations, but their aims and conformation have changed over the centuries. Until the Middle Ages, they were organizations linked to religious orders, with social assistance and health care functions. In the seventeenth century, with the emergence of National States, medical and social assistance separated, leaving only the first function to hospitals^{14,15}. The gradual development of the field of health knowledge has been observed over the following centuries, with the creation and elaboration of new technologies, generating specificities and specialties.

The health care model in which hospitals became the great regulating center of the system occurred in the twentieth century when they were appreciated for their vast technological assets¹⁶⁻¹⁸. This was mainly boosted by the elaboration and disclosure of the Flexner Report¹⁷, which purported that the best direction to improve medical education conditions would be the overspecialization and categorization of services. Although widely criticized (it evaluated 155 medical schools in 180 days without a standardized assessment instrument, based solely on physical inspection of schools through visits lasting between half a day and one full day), this document shaped the medical education system of the twentieth century and, consequently, the organization of health systems. The report stated that the study of medicine should be concretely focused on the disease, and should not consider the social and collective aspects of the illness process, adopting a positivist stance and pointing knowledge produced through the scientific method, with observation and experimentation¹⁷ as the only adequate knowledge.

This organizational development towards overspecialization of the early decades of the

twentieth century in countries such as the U.S. and Great Britain was enhanced by the increasing technological complexity. Initially, over-specialization and technological incorporation led to a significant increase in hospital costs. More recently, as from the early 2000s onwards, both enabled reductions in hospitalization time, intervention needs and a tendency to de-hospitalize^{19,20}. Hospital costs continue to grow, but some authors claim that this occurs at a lower rate²¹.

In Brazil, overspecialization was only felt in the 1970s. Until then, Brazilian hospitals were the seat of work of medical and nursing professionals, who used clinical propaedeutics more than tests and equipment²². From this decade on, Brazilian hospitals began to import more sophisticated technologies and became centers of expertise. The largest hospitals at the time were those with the most diagnostic and therapeutic resources, and were divided into hospitals of IN-AMPS, public at the federal level (usually specializing in specific diseases such as leprosy and tuberculosis), and the rare university hospitals. The other, smaller hospitals in small urban centers generally had one to two specialties among the primary clinics (medical clinic, general surgery, obstetrics, and pediatrics) and served well to a still predominantly rural population^{22,23}.

The most significant hospital expansion occurred in Brazil (Graph 1) in the 1970s, with a 79.9% increase in the total number of hospitals. The expansion of hospital services continued in the following decades but at lower rates (19.1% in the 1980s, 7.22% in the 1990s, and 0.9% between 2000 and 2010)²⁴.

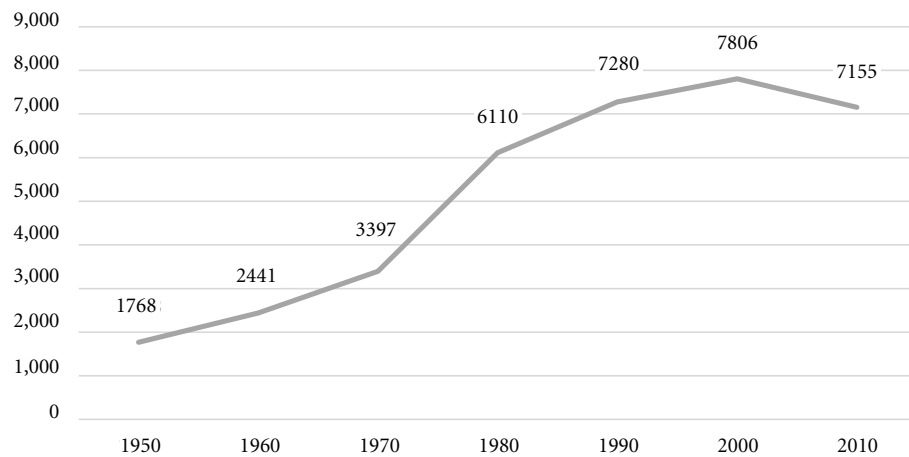
The significant increase in the number of hospitals in the 1970s came at the expense of private, usually nonprofit hospitals (an increase of 68% between 1970 and 1980), as shown in Graph 2. These are the *Santa Casa de Misericórdia* hospitals, widespread in all regions of the country, whose model was instituted in Brazil through Portuguese colonization. In 1980, the increased number of hospitals occurred at the expense of a higher number of public hospitals. In 1980, there were 6,110 hospitals, of which 19.9% were public and 80.1% private. Hospitals hiked to 7,280 in 1990, of which 30% were public and 70% private (67% increase in public hospitals)²⁴.

Private hospitals built in the 1970s had an average of 69.1 beds and low technological density (Graph 3). For the population and epidemiological characteristics of the time, when the population was predominantly rural, and most hospitalizations were due to infectious diseases,

such hospitals still met the demands sufficiently. In the following decades, this hospital model of few specialties and low technological complexity was maintained in most of the country, but the population and epidemiological conditions were not stable. In the early 1980s, the Brazilian population became predominantly urban, and diagnoses related to urban violence and population aging hiked from the 1990s onwards. Aggravating the inequities of the system, the new, mostly municipal, public hospitals opened since 1990 had, on average, 50 beds and the low technological complexity pattern of private hospitals of the 1970s²³. An opposing movement to that of 1970 occurred, and most public hospitals were no longer being run by the federal government, but managed by the municipality, and became the smallest in the country concerning beds and technological density.

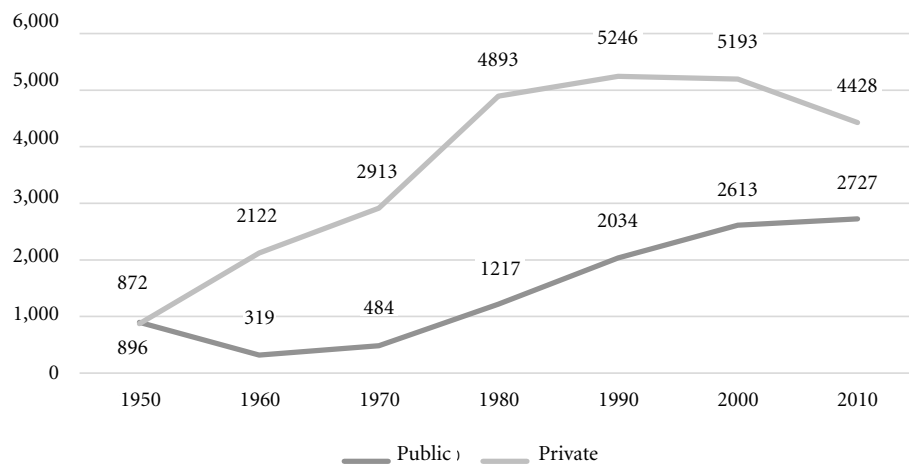
In the 1990s, international studies showed that small hospitals are not efficient due to difficulties in scale and scope^{11,12}. The authors showed that the higher the volume of care, the better the quality of care provided. These studies argued that small hospitals were those with less than 200 beds, while in Brazil, the only classification model used since 2002 is that of Ordinance No 2.224 of the Ministry of Health (MS), although this Ordinance was revoked in 2003²⁵. Among other features, this one classified hospitals with less than 50 beds as Small-sized Hospitals (HPP). These studies continued in the 2000s, by adding that while the existence of small-sized hospitals should be inhibited, on the other hand, the number of hospitals cannot be reduced much as this leads to lower population access to these services. That is, regarding public health policies, the equalization between efficiency and access must be strongly considered¹⁴.

Such studies generated a wave of hospital mergers, acquisitions, and closures in the late first decade of the 2000s in the U.S., Canada, and European countries, aiming at the best balance between increased efficiency and continued access^{26,27}, and this was not observed in Brazil. In this period, around 60% of the national hospitals had less than 50 beds but corresponded to only 18% of the total beds in the system. Also, they were inefficient in the indicators of occupancy rate, mean length of stay, and mean Hospital Admission Authorization (AIH) value. Once the problem was identified, the Ministry of Health launched, in 2004, the National Policy for Small-sized Hospitals (PNHPP), which only became significant in 2006, when most states adhered to



Graph 1. Total number of hospitals, Brazil, 1950-2010.

Source: Brazilian Institute of Geography and Statistics (IBGE), 2017.

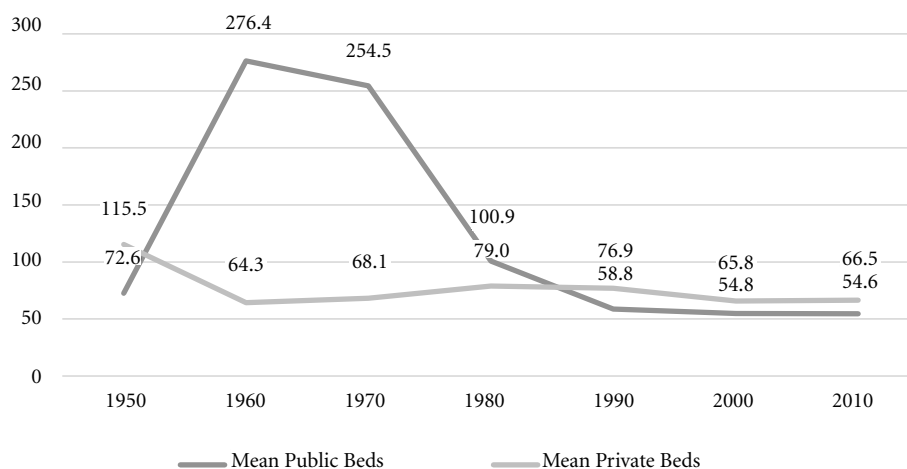


Graph 2. Total number of hospitals, by maintenance unit, Brazil, 1950-2010.

Source: Brazilian Institute of Geography and Statistics (IBGE), 2017.

the policy. More recent national and subnational studies published in the 2010s show that the scenario is maintained, even after a decade²⁸⁻³⁰, in which small-sized Brazilian hospitals had low occupancy rates and mostly admitted people with

PHC-sensitive illness. Therefore, such hospitalizations could be avoided, with improved efficiency and cost reduction if primary care, per se, was more resolute.



Graph 3. Mean number of hospital beds, by maintenance unit, Brazil, 1950-2010.

Source: Brazilian Institute of Geography and Statistics (IBGE), 2017.

Methods

The research consisted of two phases, the first one to build the theoretical framework, and the second, to analyze the National Policy for Small-sized Hospitals.

In the first phase, it analyzed the primary legislation of organization of the Unified Health System (Federal Constitution, Laws, Decrees and Ordinances), its influence on the hospital sector and its links with primary care. The research sites were from the Ministry of Health (Saúde Legis), the Federal Senate and the Government's Official Gazette (DOU). The keywords used were "Small-sized Hospitals". The origin of norms was not indicated (norms issued by any Ministry of Health body, secretariats, or units were analyzed). Initially, 1,580 regulations were found between 1988 and 2017. In this research, records of Saúde Legis were found to be incomplete for publications between 2002 and 2007 (the norms are described in their titles, but access to their full-text was not possible).

Thus, the research was complemented in the sites of the Senate and DOU, with the analysis of 237 other legislations that were not in the Ministry of Health site. Two of these 237 legislations were included in the analysis. In the end, 1,817 norms were analyzed, but only 21 were included in the study, among them the central SUS

construction norms, such as Laws N° 8.080 and 8.142, the NOBs and NOAS, the Health Pact legislation, and Presidential Decree N° 7.508 of 2011. Most of the regulations not included in the study addressed the release of financial resources. The regulations were evaluated from a qualitative perspective, to understand how the historical construction of the current scenario occurred, and mainly aimed to enrich the discussion of the results found in the second research phase. The evaluation variables were: categorization of the regulation (law, ordinance, decree, normative instruction, and others), issuing body of the standard, impact on hospital care, impact on small-sized hospitals, encouraging the construction of care networks, comprehensive care, municipalization, and the participation of federative units.

The second phase consisted of the analysis of the National Policy for Small-sized Hospitals and its norms and legislations. All five structuring ordinances of the policy and the twenty adherence ordinances of the federative units described in the results were studied. The variables of analysis of the federation units' adherence ordinances were the date of issue, the time interval between the publication of the adherence ordinance and the publication of the structuring ordinances, the federative units that adhered to the policy and the number of small-sized hospitals considered.

Results

The PNHPP was published by Ordinance MS N° 1.044 of 2004. According to the normative text, it aimed to adapt the organization model and the funding to incorporate the HPPs into the care networks and improve resolution and quality of their actions. The PNHPP presupposed the voluntary adherence of states and municipalities, provided they had hospitals with 5 to 30 beds, located in municipalities of up to 30,000 inhabitants with more than 70% coverage by the Family Health Strategy. Registration in the Policy required the HPP to adjust its care profile, with pediatric, obstetric and medical clinic care, and also perform minor surgeries, attend oral health and urgencies and emergencies. It also presupposed the qualification of the management of these hospitals, as well as their incorporation into the bed regulation mechanisms of the SUS. The expected hospitalization needs would be considered in 5% of the population per year, as well as maintaining 80% occupancy rates with a mean stay of 5 days to calculate the number of beds that each PPH should have. The ordinance defined the assignment of all federated entities, as well as the agreement in the intergovernmental bodies (Bipartite and Tripartite Interagency Committees – CIB and CIT), the elaboration of a work plan to be approved by the Health Care Secretariat (SAS), the preparation of semiannual reports evaluating the work plans and results achieved, as well as the training of local municipal and hospital managers by members of the states and the Ministry of Health.

Besides the organization of the implementation and evaluation processes, the ordinance changed the financing model. For these services, the funding would no longer be by production (issuance of Hospital Admission Authorization – AIH), but by global budget and fund-to-fund transfer. The federal level would cover half the value, the other half being the counterpart of the states. The final paper states that “the accreditation by the SUS of any hospital with less than 30 beds, as well as the investment to build them from the publication of this Ordinance” is prohibited.

Also, in 2004, the Secretariat of Health Care of the Ministry of Health (SAS) issued Ordinance N° 287, which defined the financing amount for each bed registered in PNHPP. This amount was R\$ 1,473.00 per month, based on the mean value of AIHs issued by HPPs in 2003 (below the mean value of AIHs in the country – R\$ 2,196.00 – and

the mean value of AIHs for infectious and parasitic diseases – R\$ 1,876.99, values of the time). This ordinance also defines that HPPs cannot have budget allocations below R\$ 10,000.00/month.

The first ordinance (N° 1.044 of 2004) stated that the work processes would be organized by another ordinance, to be issued later by SAS. This standard was not published until eight months later, on February 2005 (Ordinance N° 94 of 2005) and established the mechanisms for the implementation and operationalization of the PNHPP. It defined that the adherence of the states would only occur through the Term of Adherence and the Work Plan and that the latter would be carried out as per the model defined by SAS. The flow was as follows: the state health secretariats sent to SAS the State Term of Adherence, the list of municipalities and hospitals that would be part of the PNHPP and the Work Plan. Upon examination of such documents, SAS would issue a technical opinion. If favorable, states should forward to SAS the same work plans approved by three bodies: Municipal and State Health Councils and the CIB. The contractualization between the local SUS manager and the provider would occur at this stage. The approval would only occur with the publication of a specific Ordinance for each State in the DOU, after the approval of all documents by the CIT. An opportunity was given for full or partial adherence (for all eligible hospitals).

Finally, SAS published Ordinance N° 852 also in 2005, four months after Ordinance N° 94. Such rules altered the inclusion criteria of HPPs. What had been defined by Ordinance N° 1.044 from 2004 was in force, but initially ineligible hospitals could be included at the discretion of state and municipal managers. The most crucial point of this new regulation, which interfered in what was defined by Ordinance N° 1.044, was the possibility of building and registering hospitals with less than 30 beds, as long as they were considered relevant to the system by the State Health Secretariat. If the biggest initial gain of PNHPP had been to suspend the opening of such small facilities, this was partially lost with this new policy.

Only one more PNHPP structuring ordinance was published in 2006 (SAS Ordinance N° 1.955) dealing with specific HPPs for the Legal Amazon area. The only changes in the eligibility criteria were the need for hospitalization (for 6% of the population per year instead of 5%), and the possibility of registering hospital services located in municipalities with less than 70% cover-

age of the Family Health Strategy, provided that the municipal manager would commit to adjusting this parameter in their work plans.

Many other ordinances were published beside the structuring ordinances of the Policy concerning the adherence of states, as listed in Chart 1. One could observe that adherence of states decreased in the historical series (6 states joined the PNHP in 2005, 3 in 2006, 2 in 2007, and 1 in 2009). Also, only revisions of previous adherence occurred in the last years (from 2011 to 2013), with the inclusion of new hospitals. Of the 12 states that joined, six are from the Northeast, two from the North, one from the Midwest, one from the Southeast, and two from the South. For a policy that was intended to be national, the adherence of only 12 states from 27 federative units can be considered small. Also, most adherents were in the states of the North and Northeast.

The PNHP was issued before the regulations inducing regionalization, such as the Health Pact and Presidential Decree N° 7.508 of 2011 and even before the National Hospital Care Policy, issued at the end of 2013. On September 28, 2017, Ordinance N° 1.044 of 2004, which established the PNHP, was incorporated by the Consolidation Ordinance N° 2¹⁰. In other words, despite being revoked in its single norm (Ordinance N° 1044 of 2004), the PNHP is still valid, in this other consolidated normative “address”, even based on different paradigms of the following policies and not considering regionalization.

Finally, it is noteworthy that, although the NOAS in 2001 and 2002 already show the importance of regionalization in reducing inefficiencies and duplication of services, the PNHP does not stick to this and understands that HPPS are spaces for discussion only by states and municipalities, without the presence of the mesoregional level.

Discussion

Since the creation of the SUS, through the Federal Constitution of 1988, institutional arrangements, intergovernmental relations, and power struggles have been strongly influenced and unbalanced with each edition of a Ministerial Ordinance, Presidential Decree or new Law aimed at the organization of the sector³¹. These norms showed incremental characteristics, in all their editions, in order to spearhead the stepwise establishment of a national health system that respected the constitutional principles and guidelines. These

principles and guidelines were provided by the Eighth National Health Conference in 1986, with strong decentralizing and social protection bias. Currently, while the road ahead is long, the SUS is structured, with a better definition of the roles of each federated entity, with intergovernmental articulation bodies, ensuring the principles and guidelines of universal access, political-administrative decentralization, and municipalization.

One of the problems observed when analyzing SUS construction regulations between the 1980s and 2000s is that the federal government spent much energy in organizing the system and the PHC network, focus point of the new model, reducing its attention as to the organization of the system as a whole. In this period, no robust norms induce the organization of hospital units in an integrated and coordinated system. Since the federal government reduced its attention to the hospital subsystem, the municipal governments that gained new attributions within the system with the Federal Constitution understood that the construction of new hospitals, however small, was an adequate response to the expectations of the population and the SUS. Managers of subnational governments have been induced to construct primary care by the federal regulations and the funding generated from them, but still based many of their political decisions on paradigms of earlier, hospital-centric, physician-centered, secondary/tertiary/specialized-care models.

The great advantage of this historical construction was the relevant expanded access to both primary and hospital care. Perhaps the 1990s and 2000s could be defined as the decades when priority was given to access to previously unreachable health services. From the second half of the 2000s, publications began to identify the need for qualification of this access, especially in the case of hospital care^{23,32}. The federal government created policies based on these needs, and among them was the PNHP, object of this study. Many are the causes of the policy's lack of effectiveness, among them national dimensions and regional differences, the difficulty of articulating multiple stakeholders (three federated entities, hospitals of different legal natures and administrative spheres), the multiparty political system and its historical character of discontinuity of public policies with each change of government.

While in the 2000s developed countries such as the United States, Great Britain, and some other European nations concentrated hospital care, closing and merging small hospitals into larger

Chart 1. Ordinances (Portarias) issued by the Ministry of Health for States adherence to the National Policy for Small-sized Hospitals, 2005 to 2018.

Estado	Ordinance (Portaria) Gm/Ms No.	Date Of Signing	Date Of Publication In The D.O.U.
Ceará	853	07/06/2005	10/06/2005
Tocantins	1330	10/08/2005	12/08/2005
Sergipe	1539	05/09/2005	08/09/2005
Piauí	2149	08/11/2005	09/11/2005
Mato Grosso do Sul	2314	28/11/2005	29/11/2005
Paraná	2492	14/12/2005	15/12/2005
Pernambuco	6	06/01/2006	06/01/2006
Minas Gerais	539	16/03/2006	17/03/2006
Bahia	663	29/03/2006	30/03/2006
Rio Grande do Norte	2522	19/10/2006	20/10/2006
Pernambuco	87	10/01/2007	11/01/2007
Rondônia	88	10/01/2007	11/01/2007
Rio Grande do Sul	529	18/03/2009	20/03/2009
RS e Ceará	3319	29/12/2009	31/12/2009
Pernambuco, Ceará, Rondônia e Rio Grande do Sul	1998	19/08/2011	21/08/2011
Rondônia	1791	23/08/2012	24/08/2012
Pernambuco	3004	27/12/2012	28/12/2012
Pernambuco	3007	26/12/2012	28/12/2012
Pernambuco	1509	25/07/2013	26/07/2013
Pernambuco	1756	22/08/2013	23/08/2013

Source: Saúde Legis/MS and Government Official Gazette (D.O.U.).

ones, and pulverizing primary care^{7,27}, Brazil was going against the grain, pulverizing its hospital care to the edge of the system³³, which led, in 2018, the Brazilian hospital complex to be inefficient, poorly resolved, and of low technological density. Also, these hospitals are still centered on the hospital care model of the 1970s, of a poorly urbanized population and intended for the treatment of acute cases. They do not fit the current needs, in which the triple burden of diseases prevails (acute and chronic diseases and trauma)³².

Another point to consider is the very classification of hospitals by the number of beds. While the literature considers hospitals with less than 200 beds to be small-sized¹³, Brazil still follows an already revoked ordinance that defines as small those with less than 50 beds, as medium, those with 50 to 149 beds, as large, those with 150 to 299 beds, and as special size, those over 300 beds. Due to the different classification models used, the Brazilian public policies elaborated for the hospital sector run the risk of spending more resources with less return, as already widely dis-

cussed in the literature¹¹⁻¹³. If, on the one hand, some access is guaranteed, on the other hand, inefficient and poorly resolute hospital care is in place.

Finally, regardless of its production or efficiency, the installed capacity exists and is not negligible, as there are almost 5,000 hospitals with less than 50 beds in the country. Also, most of these services are located in small municipalities and play an essential role in the local economy, as direct employers and indirect job generators, by moving to so-called para-hospital activities (support services in general). Concerning health work, a reasonable contingent of professionals with specific and specialized knowledge is available. The reorganization of the Brazilian hospital complex, aiming at the efficiency, quality, and comprehensive care can and should use these resources²⁸. Some other countries with universal systems, such as Canada and Australia³⁴⁻³⁷, have reorganized their health systems, improving their efficiency and quality through the use of telemedicine, ensuring access by people from rural

and remote areas to specialized services and of high technological incorporation (such as neurosurgical and hemodynamic procedures). Ensuring access, comprehensive care, and quality of care, whether in primary or hospital care, should be the guiding principles of such policies.

Conclusion

Most Brazilian hospitals have less than 50 beds, which, according to the literature, generates inefficiencies of scale and lower quality, both concerning organizational management and health production. They form a network that does not guarantee comprehensive health care, have poor communication with primary care, have a hard time referring patients to the tertiary hospital or specialized care and, in various regions, overlap actions with both PHC and hospitals located in adjoining municipalities. These services are many, scattered, consume large amounts of resources, and could ensure a higher return to the health system. The National Hospital Care Policy began the reorganization of the system, but more in-

depth discussions and actions are still required. The new organization of this network should be guided by the guarantee of access, comprehensive care, quality of actions, and system efficiency.

The reorganization of the hospital complex must take into account two key factors: (1) the interest of multiple actors, including those at the government level, to put this issue on the public policy agenda, with the ultimate goal of improving the efficiency and quality of health care actions provided by SUS, and (2) the understanding that the nearly 5,000 small hospitals in the country are not a homogeneous group. In a country with continental dimensions, with such marked regional disparities and the multiplicity of stakeholders present, this understanding enables the implementation of different actions for the different groups of small-sized hospitals to change the current scenario.

Finally, consciously or not, this is the scenario constructed in recent decades regarding the Brazilian hospital network. The following questions are (1) “what hospital care model do we want to have in Brazil henceforth?”, and (2) “what are we to do with existing installed capacity?”

Collaborations

LR Carpanez and AM Malik worked on the design, research, methodology and final writing of the article.

References

1. Organização Mundial de Saúde (OMS). *Public Spending on Health: A Closer Look at Global Trends*. Geneva: OMS; 2018.
2. Organização Mundial de Saúde (OMS). *Health systems financing: the path to universal coverage. World health report*. Geneva: OMS; 2018.
3. Pricewaterhousecoopers. *The factors fueling rising healthcare costs*. Washington: American Association of Health Plans; 2012.
4. Decoster C, Roos NP, Carriere KC, Peterson S. Inappropriate hospital use by patients receiving care for medical conditions: targeting utilization review. *Can Med Assoc J* 1997; 157(7):889-896.
5. Steinmann L, Zweifel P. On the (in)efficiency of Swiss hospitals. *Appl. Econ.* 2003; 35(3):361-370.
6. Herr A. Cost and technical efficiency of German hospitals: does ownership matter? *Health Econ.* 2008; 17(9):1057-1071.

7. Directorate General Economic and Financial Affairs (DG ECFIN). *Efficiency estimates of health care system*. Bruxelas: European Commission; 2015.
8. Cadastro Nacional de Estabelecimentos de Saúde (CNES). *Datasus: Cadastro Nacional de Estabelecimentos de Saúde* [acessado 2017 Mar 12]. Disponível em: <http://cnes.datasus.gov.br>
9. Brasil. Portaria nº 1.044, de 01 de junho de 2004. Institui a Política Nacional para os Hospitais de Pequeno Porte, utilizando um modelo de organização e financiamento que estimula a inserção desses hospitais de pequeno porte na rede hierarquizada de atenção à saúde, agregando resolutividade e qualidade às ações definidas para o seu nível de complexidade. *Diário Oficial da União* 2004; 01 jun.
10. Brasil. Portaria de Consolidação nº 2 de 28 de setembro de 2017. Consolidação das normas sobre as políticas nacionais de saúde do Sistema Único de Saúde. *Diário Oficial da União* 2017; 28 set.
11. Aletras V, Jones A, Sheldon TA. *Economies of scale and scope. Concentration and choice in health care*. London: FT Financial Times Healthcare; 1997.
12. Posnett J. The hospital of the future: Is bigger better? Concentration in the provision of secondary care. *BMJ* 1999; 319(7216):1063-1065.
13. Posnett J. Are Bigger Hospitals Better? In: Mckee M, Healy J, organizadores. *Hospitals in a Changing Europ*. Buckingham: Open University Press; 2002. p. 100-118.
14. Rosen G. *Da polícia médica à medicina social: ensaios sobre a história da assistência médica*. Rio de Janeiro: Edições Graal; 1979.
15. Foucault M. *Microfísica do Poder*. 27ª ed. São Paulo: Graal; 2013.
16. Canguilhem G. *O normal e o patológico*. 7ª ed. Rio de Janeiro: Forense Universitária; 2015.
17. Pagliosa FL, Da Ros MA. O relatório Flexner: para o bem e para o mal. *Rev Bras Educ Med* 2008; 32(4):492-499.
18. Bravo MIS, Andreazzi MFS, Menezes JSB. Organizações Sociais na atenção à saúde: um debate necessário. In: *Anais da VI Jornada Internacional de Políticas Públicas*; 2013, São Luis. p. 86-91.
19. Trindade, E. A incorporação de novas tecnologias nos serviços de saúde: o desafio da análise dos fatores em jogo. *Cad Saude Publica* 2008; 24(2):951-964.
20. Maldonado JMSV, Marques AB, Cruz A. Telemedicina: challenges to dissemination in Brazil. *Cad Saude Publica* 2016; 32(2):S1-S12.
21. Flodgren G, Rachas A, Farmer AJ, Inzitari M, Shepperd S. Interactive telemedicine: effects on professional practice and health care outcomes. *Cochrane Database Syst Rev* 2015; 9.
22. Ribeiro HP. *O hospital: história e crise*. São Paulo: Cortez Editora; 1993.
23. La Forgia GM, Couttolenc BF. *Desempenho Hospitalar no Brasil: em busca da excelência*. São Paulo: Singular; 2009.
24. Instituto Brasileiro de Geografia e Estatística (IBGE). *Estatísticas do século XX*. [acessado 2017 Maio 26]. Disponível em: <https://seculoxx.ibge.gov.br/populacionais-sociais-politicas-e-culturais/busca-por-temas/saude>
25. Brasil. Portaria nº 2.205, de 05 de dezembro de 2002. Estabelece o sistema de Classificação Hospitalar do Sistema Único de Saúde. *Diário Oficial da União* 2002; 05 dez.
26. Hollingsworth B. The measurement of efficiency and productivity of health care delivery. *Health Econ* 2008; 17(10):1107-1128.
27. Chisholm D, Evans DB. Improving health system efficiency as a means of moving towards universal coverage. *World health report: Background paper*. Geneva: World Health Organization; 2010.
28. Barbosa ACQ. Vínculos profissionais em hospitais de pequeno porte brasileiros. *Rev Adm Empres* 2017; 57(2):178-195.
29. Barretto LD, Freire RC. Tendências da atenção hospitalar no SUS da Bahia: uma análise de 2006 a 2009. *Rev Baiana Saúde Pública* 2012; 35(2):334-349.
30. Ramos MDA, Cruz LP, Kishima VC, Pollara WM, Lira ACO, Couttolenc BF. Avaliação de desempenho de hospitais que prestam atendimento pelo sistema público de saúde, Brasil. *Rev Saude Publica* 2015; 49(43):1-10.
31. Goulart de Andrade FA. Esculpindo o SUS a golpes de portaria... considerações sobre o processo de formulação das NOBs. *Cien Saude Colet* 2001; 6(2):292-298.
32. Mendes EV. As redes de atenção à saúde. *Cien Saude Colet* 2010; 15(5):2297-2305.
33. Brasil. Decreto nº 7.508, de 28 de junho de 2011. Regulamenta a Lei nº 8.080, de 19 de setembro de 1990, para dispor sobre a organização do Sistema Único de Saúde - SUS, o planejamento da saúde, a assistência à saúde e a articulação interfederativa, e dá outras providências. *Diário Oficial da União* 2011; 28 jun.
34. Owens B. Telemedicine on the rise but lagging in Canada. *CMAJ* 2018; 190(38):E1149-E1158.
35. Pichard-Jolicoeur A, Mbakop-Nguebou M, Dogba J, Labrie J, Tounkara FK, Fleet R. Literature review of telemedicine for trauma patients in rural areas. *CJEM* 2016, 18(S1):S113-S119.
36. Abimbola S, Li C, Mitchell M, Everett M, Casburn K, Crooks P, Hammond R, Milling H, Ling L, Reilly A, Crawford A, Cane L, Hopp D, Stolp E, Davies S, Martini S. On the same page: Co-designing the logic model of a telehealth service for children in rural and remote Australia. *Digit Health* 2019; 5:2055207619826468.
37. Comín-Colet J, Enjuanes C, Verdú-Rotellar JM, Linares A, Ruiz-Rodríguez P, González-Robledo G, Farré N, Moliner-Borja P, Ruiz-Bustillo S, Bruguera J. Impact on clinical events and healthcare costs of adding telemedicine to multidisciplinary disease management programmes for heart failure: Results of a randomized controlled trial. *J Telemed Telecare* 2016; 22(5):282-295.

Article submitted 20/11/2018

Approved 27/06/2019

Final version submitted 29/06/2019

Chief Editors: Romeu Gomes, Antônio Augusto Moura da Silva