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The Management of Work and Education in Brazil's Unified Health System: thirty years of progress and challenges

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Abstract *This article presents a historical analysis of work management and education in the healthcare field over the three decades since the creation of Brazil's Unified Health System (SUS, acronym in Portuguese). Using the sociology of professions as a frame of reference, it addresses the following topics: the health labor market; trends in healthcare employment; the healthcare workforce; and the regulation and dynamics of undergraduate programs in the health field. It analyzes each of the moments that characterize the area, from the pre-SUS period to the present day. The period has witnessed the following: a boom in health schools, largely in the private sector; an overall increase in the level of education of health professionals , an increase in regional inequity; an alarming increase in distance learning programs; an imbalance between labor supply and demand; the expansion of installed capacity; the municipalization of health employment; an increased focus on multiprofessional teams; and an increase in precarious work and informal contractual relationships and deterioration of pay levels.*

Key words *Unified Health System, Work management, Education, Labor market*

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The sociology of professions and the world of work in healthcare: introductory notes

Modern society is a society of professions, given that the majority of human activities require some degree of professionalization. To a large extent, the concepts of health, disease, sanity or insanity, and even order or disorder, are defined in the theoretical constructs of corporations. It can be said that healthcare is a fully professionalized field.

The first studies of professions, undertaken by Carr-Saunders and Wilson in the 1930s, "described aspects common to professions like, for example, commitment to the ideal of service, altruism, and collectivity orientation, to which the existence of organized and specialized work can be added. An occupation becomes full-time dedication and a complex system of self-regulation and standardized training in specialized schools tending towards the autonomy of the profession and pursuit of the preservation of a labor market monopoly"[1].

It is a fact that professional markets began to emerge during the Industrial Revolution as part of the consolidation of the capitalist system, which required new specialized areas. The presence of science in both industry and social life changed the cognitive bases of the social division of labor. Within this context, health took on major importance, for being a sector that provides individual and collective services of major importance to society.

Authors such as Martin Oppenheimer, Marie R. Haug, Magali Sarfatti Larson, John Mckinlay and Joan Arches, Eliot Freidson, Andrew Abbott, Maria Helena Machado, Sábado Nicolau Girardi, Edmundo Campos Coelho, Lilia Blima Schraiber and Cristiana Leite Carvalho, have analyzed changes in cognitive bases, level of professional autonomy and forms of employment in the labor market. These studies fall within the theoretical and methodological framework of the sociology of professions in three core lines of analysis that seek to understand and reconceptualize the changes traditional and emerging professions are going through: proletarianization, deprofessionalization and rationalization.

In the 1970s, Donnangelo, a pioneer in the study of profession and the world of work, paved the way for research involving health workers, who number 3.5 million working in Brazil's Unified Health System (*Sistema Único de Saúde* - SUS)[2-4].

Shortly afterwards studies of education and training began to emerge, encompassing not only doctors and nurses, but also occupations requiring a high school diploma and less than a high school education. Notable authors in this area who have helped to unravel the complexities of the health sector include Gastão Campos, Jairnilsom Paim, Sérgio Rego, Carmem Teixeira, Célia Pierantoni, Ricardo Ceccim,Laura Feuerwerker, Paranaguá de Santana, Paulo Buss, Tania Nunes, and Ana Luiza Stiebler.

To understand the complexity of the labor market in health it is necessary to examine aspects such as the form of employment of health workers, formal and informal employment, occupied posts, the trend towards working multiple jobs at the same time, working conditions and their effects on worker health, and continuing education and training and its consequences for individual and collective work processes.

Thus, the management of work and education in healthcare "has deserved the attention of managers and institutions that seek to tailor their objectives to the needs of service users. Thinking of work management as a policy means thinking strategically, assuming that the basic requirements for valuing health professionals and their work are fulfilled, such as: career, pay, type of employment relationship and worker protection, ongoing negotiation of health workplace relationships, staff capacity building and continuing education and training, humanization of work quality, adequate working conditions, and professional ethics"[1].

Given the complexity of this market, for the purposes of this study we adopt the following definitions: health professionals– people with specific healthcare training or qualifications, whether or not they are working in the sector; health workers– people directly or indirectly involved in healthcare within the health sector; SUS workers– health professionals or workers involved in healthcare in SUS institutions[5].

Regulation of Health Work

Another crucial question in relation to the labor market, especially in healthcare, is the regulation of work, which corresponds to public (or policy) intervention in the market. Regulation of work constitutes a set of extra-market rules, norms, habits, and regulations imposed over specific social and economic activities, while professional regulation has specific features, with an

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institutional apparatus made up of principles, norms and laws governing professional practice, which means that the profession is able to maintain a monopoly, or practical monopoly, over that practice, constituting self-regulating peer structures that are granted public authority to oversee practice[6].

The regulation of work involves four actors: a) the Legislative Branch, responsible for promulgating the laws that regulate professions; b) the Executive Branch, which defines the form and extent of regulation; c) and the Judicial Branch, which decides whether regulations are constitutional according to the judicial and legal frameworks and customs of societies; d) and regulated agents, who participate in the definition and implementation of regulations and sometimes question them. Dussault[7] adds the concept of social regulation, or the involvement of civil society in the regulatory process.

However, in the present-day world, where the majority of workers are salaried orsubject to environmental and managerial constraints, they are increasingly unable to carry out their activities fully, without interference. These management mechanisms are aimed at increasing productivity and efficiency and reduce operational costs.

On the other hand, by means of their professional councils, health professions have increasingly resorted to judicial decisions in jurisdictional disputes with other health professions. The corporatist apparatus, including the education system, plays a decisive role in defining the level of supply of specialized labor and in setting professional quality standards. The control of supply ends up being more of a power play between those who supply their labor power and those who demand it. Also on the topic of regulation, professional ethics has become a central theme in the sphere of disputes and jurisdictional competition.

Health Education

Health work is laden with subjectivity and is essentially relational. It brings together technologies during the healthcare process, requiring high quality education and training, continuing education and training, and specific skills and competencies to meet the demands of the health labor market.

The planning of workforce education and training is one of the functions of the SUS. It seeks to address problems related to health education, such as training for health professionals in primary healthcare that is sensitive to family and community health needs.

Certain problems related to healthcare education and training remain unsolved because "the education and training of professionals who work or will work in the system continues to be inadequate"[1]. In addition there is a gap between "teaching and reality and pedagogical aspects" and an expansion in the provision of health education by the private sector[8]. After almost 30 years since the creation of the SUS, major challenges remain in developing an integrated approach to care focusing on health promotion and prevention. High quality education and training are therefore essential for delivering quality care and should be underpinned by the social determinants of health, the health needs of the general population and vulnerable groups, and local and regional epidemiological profiles, and involve practical experiences tailored to local reality incorporated into the degree syllabus from the outset of the course.

Working across different levels of care, especially primary care, requires a wide range of practical skills and knowledge in areas related to health management, ranging from family and community care to the management of the social determinants of health and their impacts in the health region in which the professional is working, imposing new situations that must be faced on a daily basis[9].

Numerous health courses have been created in the wake of sectoral health policies and programs that increased the number of posts in the SUS: nursing and doctor posts created by the Family Health Strategy (ESF, acronym in Portuguese); dentist posts created by the *Programa Brasil Sorridente* (the smiling Brazil Program) and Dental Specialty Centers; and physiotherapist, social workers, physical educator posts in Family Health Support Centers.

The number of face-to-face courses for the 14 health professions defined by the National Health Council (Resolution Nº 287, 10/8/1998) increased by 506% between 1995 and 2015, from 1,032 to 5,222. The percentage increase in the number of courses in selected areas was as follows: biomedicine - 3.071.4%; nutrition -866.7%; physiotherapy -788.9%;social services -468%; veterinary medicine -439%; psychology -387%; physical education -241.4%; occupational therapy -200%; speech therapy - 125.7%; and biological sciences - 103.2%[10].

Between 1992 and 2016, the number of face-to-face medicine, nursing, dentistry, and pharmacy courses increased from 80 to 279 (348.7%), 107 to 962 (899%), 85 to 299 (351.7%), and 50 to 515 (1,030%), respectively (Graph 1)[11-13].

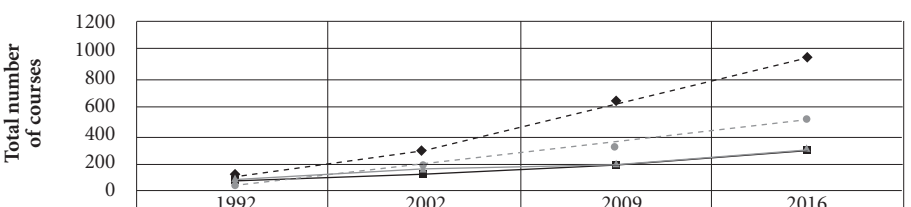
It is also important to note significant changes in the higher education market related to the health field. The number of courses provided by the private sector increased from 538 (52.1% of all courses) in 1995 to 4,105 (79% of a total of 5,222 courses) in 2015, dominating areas such as nursing, physiotherapy, psychology, nutrition, and biomedicine. Regional disparities in the supply of courses decreased slightly over the period, with the Southeast Region accounting for 51.9% of courses in 1995 and 45.4% in 2015 and significant growth in the proportion of courses provided in the Northeast Region from 15% to 20.3%, respectively[10,12].

The 2016 Higher Education Census[13] shows that the Southeast Region accounts for 42.3%, 41.9%, 38.1%, and 43.9% of private medicine, nursing, dentistry, and pharmacy courses respectively (Graph 2). There is a clear correlation between trends in workforce demand and the provision of higher education, with the Southeast having both the highest number of posts and courses, while the North Region accounts for a low number of courses and jobs in healthcare.

A worrying trend in higher education is distance learning, initially used as a pedagogical strategy to reinforce content delivered in the classroom or as mandatory activities to complement the curriculum. With the liberalization of higher education and the rapid expansion of private higher education, courses such as nursing, physical education, biomedicine, biological sciences, nutrition, and social services have begun to be provided in a distance learning format, threatening the quality of care. In this respect, it is important to note that courses such as nursing and physical education should provide "a solid theoretical basis and the development of skills acquired through practicing techniques, highly vulnerable points of distance learning"[10].

In 2016, there were 115 distance learning courses (six nursing, 34 physical education, one biomedicine, 45 biological science, one nutrition, and 28social services), 61.74% (71) of which were provided by private institutions. Of the 34 courses provided by the public sector, 30 were in biological sciences, 13 physical education, and one social services[13].

The 1990s, considered a "lost decade" for health workers due to the effects of neoliberal policies relaxing the rules governing employment protection and limiting the rights of workers[14], witnessed the intensification of the process of privatization of higher education and the commodification of higher education. The growth of private education was largely due to the expansion of higher education stimulated by the Guidelines and Bases for Education Law (*Lei de Diretrizes e Bases para a Educação*- LDB), created in 1996, which led to an increase in the number of university places in large urban areas through



	1992	2002	2009	2016
Nursing	107	285	641	962
Medicine	80	115	177	279
Dentistry	85	159	188	299
Pharmacy	50	187	319	515

Graph 1. Number of face-to-face medicine, nursing, dentistry, and pharmacy courses in Brazil between 1992 and 2016.

Source: Adapted from Haddad et al.[11]; Pierantoni et al.[12]; the Anísio Teixeira National Institute of Educational Studies and Research (INEP, acronym in Portuguese)[13].

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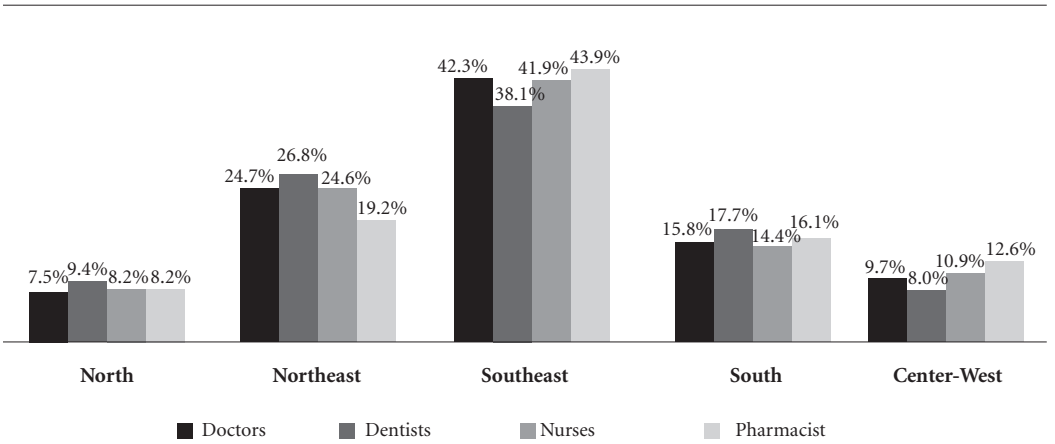


Graph 2. Percentage of higher education health courses by professional area and geographical region in 2016.

Source: The Anísio Teixeira National Institute of Educational Studies and Research (INEP, acronym in Portuguese)[13].

the creation of new universities and the *interiorização* of education, or the expansion of higher education to smaller towns and cities.

Although planning of workforce education and training is the responsibility of the SUS, the rapid growth of private education has gone against health legislation and National Health Council regulations. Despite health education management policies created in recent decades, the education and training of SUS workers still faces a number of challenges, including: the predominance of the Flexner model in the majority of curriculums, with training centered on a hospital-based approach and specialties favoring the hegemonic paradigm of cure over and above community-based health care; health professionals, particularly nurses, doctors and dentists, do not receive in-depth training oriented towards primary care, which hampers understanding and the planning and organization of the work process and the effective delivery of humanized care; academic staff, particularly doctors and dentist, generally have little experience of working in the SUS and health promotion; rapid growth in private education and distance learning without adequate state control and regulation of education and training standards, signalling the need for certification exams for membership of professional councils; and continuing regional disparities in the number of university places, which directly affects the availability and distribution of health professionals in different areas.

As certain authors have suggested, schools should constantly monitor needs in relation to the health-disease-care-work process[8] and adapt degree courses and continuing education and development programs accordingly, while the Ministry of Health and National Health Council should reassume their role in the planning of workforce education and training.

Health Work

In parallel with the municipalization of the health system, Brazil experienced unprecedented growth in the number of municipalities, from 3,974 at the end of the 1980s (the second phase of expansion) to 4,491 in 1990, 5,561 in 2000, and 5,570 today. It is worth mentioning that in the middle of the 1950s Brazil had only 2,468 municipalities and that this number reached 4,235 in 1963 (the first phase of expansion). In 50 years the number of municipalities therefore grew by 226%.

Three important observations should be made in relation to the expansion of the number of municipalities in Brazil:

- First, 88% of municipalities have a population of up to 50,000, supporting the idea that there has not been sustainable growth, but rather expansion;

- Second,5.6% of the municipalities with a population of over 100,000 account for 46.5% of the country's population, while half of all municipalities regardless of size account for a little over 8% of Brazil's population (Graph 3).

- Thirdly, there are major disparities in the number of posts across regions in the four main care professions (Table 1). For example, in the North Regions doctor, dentist, nurse, and pharmacist posts only account for 3.9%, 5.2%, 7%, and 7.9%, respectively, of the overall number of posts for each respective profession in the country, compared to 53%, 49%, 45.9%, and 46%, respectively, in the Southeast. In this respect, it is important to mention that the North Region comprises eight states covering 45% of Brazil's total land area, while the Southeast covers 10.9% and is the most developed region in the country.

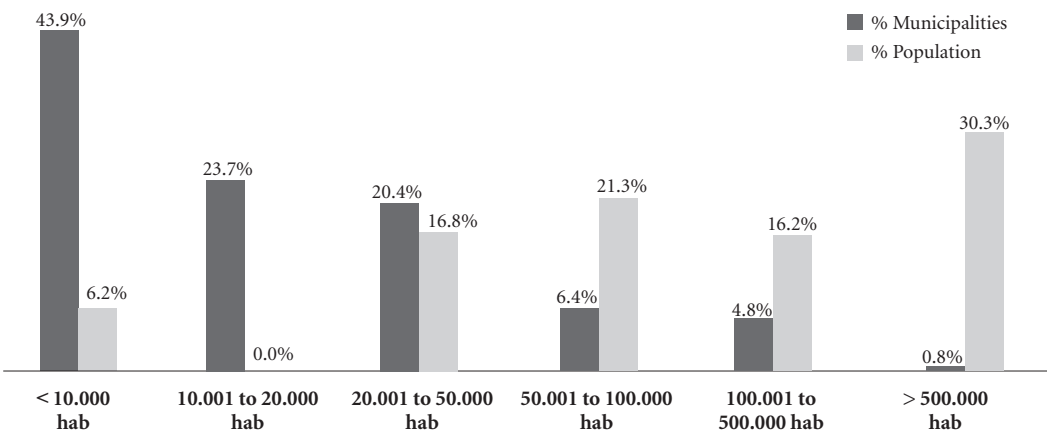
The Labor Market

IBGE data from the 1980s, the so-called pre-SUS period, show that there were 18,489 health establishments and 573,629 jobs in healthcare: 47,038 at the municipal level and 96,443 and 122,475 at the state and federal level, respectively. The health labor market was made up of 197,352 posts requiring a degree, 111,501 technician and assistant posts, and 264,776 posts requiring less than a high school education. Health teams were bipolarized, being made up of doctors and a larger number of nursing assistants.

Thirty years after the creation of the SUS[17], Brazil has 200,049 health establishments and 3,594,596 jobs in healthcare. In 2017, the public sector at municipal level had 1,649,074 jobs in healthcare, while at state and federal level there were 463,720 and 96,491, respectively. Health teams have become multiprofessional, being made up of nurses, dentists, doctors, pharmacists, nutritionists, physiotherapists, social workers, and psychologists, among others, as well as a larger number of technicians and assistants. The health sector has 1,104,340 posts requiring a degree, 889,630 technician and assistant posts, and 317,056 posts requiring less than a high school education[18].Currently Brazil has 453,428 doctors[19], 484,530 nurses[20], 300,000 dentists[21], and 203,600 pharmacists[22].

Table 2 shows installed capacity growth in the pre-SUS and SUS periods.

While on the one hand we can be proud the hugeness of the SUS in terms of installed capacity – number of health establishments (outpatient facilities and hospitals), beds and jobs in healthcare, with over 3.5 million workers working in multiprofessional, qualified and specialized teams–, on the other the sector continues to



Graph 3. Percentage of municipalities by population size and as a percentage of total population.

Source: Adapted from the Brazilian Institute of Geography and Statistics' (IBGE, acronym in Portuguese) Demographic Census Estimates/Municipal Social Indicators-2002[15] and the 2017 Medical-Health Care Survey[16].

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grow and generate new posts. However, structural problems exist, including a number of work management challenges: gaps between demand and supply; shortfall of professionals in small towns and rural, sparsely populated areas isolated from large urban centers; increase in precarious work (A significant proportion of health workers face precarious employment conditions); and outsourcing of health services and skilled workers (doctors, nurses, technicians, etc.).

The International Labor Organization (ILO) lists six interrelated dimensions of precariousness: 1) labor market insecurity due to the lack of employment opportunities; 2) employment insecurity caused by inadequate protection in the case of dismissal; 3) work insecurity caused by the lack of definition of the limits of activities or lack of qualifications; 4) insecurity in relation to health or physical integrity due to the poor condition of facilities and poor working environment; 5) income insecurity, due to low pay and scant prospects for improvement; 6) insecurity in relation to representation when workers do not feel protected and represented by their union[1].

Management of Work and Education Policy: Progress, Setbacks, and Challenges

The central premise of management of work and education policy is that workers play a key role in ensuring that the SUS is effective and efficient. Workers are viewed as protagonists of

Table 1. Doctor, dentist, nurse, and pharmacist posts by region - Brazil, 2017.

Profession	North		Northeast		Southeast		South		Center-West		Total	
	N. abs	%	N. abs	%	N. abs	%	N. abs	%	N. abs	%	N. abs	%
Doctor	39,389	4.0	174,381	17.7	520,265	52.9	181,191	18.4	68,631	7.0	983,857	100
Nurse	19,124	7.0	69,070	25.2	125,936	45.9	40,189	14.7	19,772	7.2	274,091	100
Dentist	7,659	6.0	30,878	24.3	57,737	45.5	20,931	16.5	9,720	7.7	126,925	100
Pharmacist	2,553	7.9	6,309	19.6	14,953	46.5	5,656	17.6	2,675	8.3	32,146	100

Source: Ministry of Health National Health Establishments Register (CNES, acronym in Portuguese), December 2017[17].

Table 2. Installed capacity of Brazil's health system – 1980/1992/2002/2009/2017.

Installed Capacity	1980	1992	2002	2009	2017
Establishments	18,489	49,676	67,612	94,070	200,049
Public	10,045	27,092	38,373	52,021	82,169
Private	8,444	22,584	29,239	42,049	117,880
Beds	509,168	544,357	471,171	443,888	436,812
Public	122,741	135,080	146,319	119,062	167,540
Private	386,427	409,277	324,852	324,826	269,272
Jobs	573,629	1,438,708	2,180,598*	3,078,518	3,594,596
Public	265,956	735,820	1,193,483	1,703,050	2,209,285
Federal	122,475	113,987	96,064	117,932	96,491
State	96,443	315,328	306,042	382,733	463,720
Municipal	47,038	306,505	791,377	1,203,085	1,649,074
Private	307,673	702,888	987,115	1,375,468	1,385,311
Professions					
Doctors	146,091	307,952	466,110	636,017	983,857
Nurses	15,158	41,501	88,952	163,099	274,091
Dentists	16,696	41,509	56,995	94,136	126,925
Pharmacists	4,630	6,908	28,670	39,988	32,146

Source: Institute of Geography and Statistics' (IBGE, acronym in Portuguese) Demographic Census Estimates/Municipal Social Indicators1980, 2002, 2009, and 2017[23]; Ministry of Health National Health Establishments Register (CNES, acronym in Portuguese), December 2017[17].

* Includes administrative posts.

practices and knowledge and subjects and agents capable of transforming their works pace during the individual and collective work process.

It is therefore assumed that the basic requirements for valuing health professionals and their work are fulfilled, including: *Plano de Cargos, Carreiras e Salários* (PCCS),or career and salary progression plans; employment relationship with social protection; work discussion and negotiation spaces; continuing education and training; and humanization of the quality of work.

Briefly speaking, the history of human resource policy in the health sector "pre-SUS" can be divided into three periods: a) 1967-1974: marked by incentives to promote degree-level education and training; private sector employment growth; an increase in the number of doctor and nursing assistant posts, reinforcing the bipolar nature (doctor/nursing assistant) of health teams; and a focus on the hospital-based approach and specialization; b) 1975-1986: characterized by a greater role of the public sector in the provision of outpatient and hospital services and training of technical staff and their incorporation into health teams; and c) 1987 –1990: characterized by structural changes towards health reform marked by the decentralization of care and the professionals that make up the services[14].

Thirty years after the health reform that resulted in the creation of the SUS, progress and setbacks in relation to management of work and education policy can be grouped into three distinct moments:

1) 1990 to 2002 - a moment of *human resources antipolitics* characterized by the abandonment of PCCS, an increase in precarious work, demobilization of the union movement (the National Negotiating Table created in 1993 by the National Health Council was deactivated in the same year by the federal government), cuts in training and development in the SUS, and an explosion of health schools. This period was also marked by disrespect and devaluation of health workers and is hence know as the "lost decade" for SUS workers.

2) 2003 to2015 -a moment of *management of work and education policy,* characterized by a return to the principles laid out in the constitution, which states that health, and therefore health workers, are public goods. Major positive changes in policy culminated in the creation of the Department of Management of Work and Education in Healthcare (*Secretaria de Gestão do Trabalho e da Educação na Saúde* – SGTES) within the Ministry of Health in 2003. During this period a framework for the planning and development of the SUS workforce was developed encompassing the following policies and measures: the National Policy for Continuing Education in Healthcare; *Aprender SUS* (learn SUS); *Projeto Vivências e Estágios na Realidade do SUS- VER-SUS*(the experiences and internships in the reality of the SUS project); *Pró-Saúde* (pro health); *PET Saúde*; *Telessaúde*; *UNASUS*; reactivation of the National Negotiating Table; *Programa de Desprecarização do Trabalho no SUS* (the "deprecarisation" of work in the SUS program); the Chamber of Labor Regulation; the National Policy for the Promotion of SUS Workers' Health; *Programa de Qualificação e Estruturação da Gestão do Trabalho e da Educação no SUS– ProgeSUS* (program for enhancing and structuring the management of work and education in the SUS);and the Mercosur Permanent Health Work Forum. More recently, in 2013, the *Programa Mais Médico*s (more doctors program) was created, providing doctors for remote and isolated areas across the country, thus improving access to health services in these areas.

3) The final moment, which began in the middle of 2016and goes up to the present day, is a period in which *people in Brazil risk losing their fundamental rights* -the right to health, workers' rights, and the right to pay, stability, a pension, etc, - and a period of deregulation of professional training policy, privatization, etc. It marks a return to human resources antipolitics advocated in the neoliberal times of the 1990s.

A period of political tensions and clashes between SUS managers (public and private) and workers lies ahead on account of the possible loss of the priority and essentiality of health as a citizens' right and a duty of the state. Such a threat against this constitutional premise endangers the maxim of policies built over the last three decades: health and health workers are public goods pertaining to the SUS.

The challenges faced by the SUS relating to the management of work and education are innumerous and require the reorganization of workers in their unions, society, and public participation in order to protect the progress and achievements made in the 30 years since the creation of the SUS.

Collaborations

MH Machado and FRG Ximenes Neto participated in the design and delineation of the study, writing and critical revision of the intellectual content, approval of the final version of the manuscript.

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