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Human resources in dentistry geographical distribution in Brazil and Colombia: Comparative analysis from the perspective of historical institutionalism

Distribuição dos recursos humanos em odontologia no Brasil e na Colômbia: Análise comparativa sob a perspectiva do institucionalismo histórico

Distribución de recursos humanos en odontología en Brasil y Colombia: Análisis comparativo desde la perspectiva del institucionalismo histórico

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Duber Ignacio Osorio Bustamante
ORCID: https://orcid.org/0000-0002-2789-6105
Universidad de Antioquia, Colombia
E-mail: duber.osorio@udea.edu.co
Daniel Felipe Patiño Lugo
ORCID: https://orcid.org/0000-0003-4030-4255
Universidad de Antioquia, Colombia
E-mail: felipe.patino@udea.edu.co
Fernanda Campos de Almeida Carrer
ORCID: https://orcid.org/0000-0003-3745-2759
Universidade de São Paulo, Brazil
E-mail: fernandacsa@usp.br

Abstract
The Human Resource in Health constitutes one of the six core components of health systems, playing a crucial role in realizing the right to health and ensuring access and service quality. Additionally, institutional frameworks within each country, encompassing laws, decrees, political systems, and health system characteristics, exert a significant influence on HRH and, specifically, in Human Resources in Dentistry (HRD). Both Brazil and Colombia experienced neoliberal reforms in the 1990s, introducing new institutions within the existing model and altering the social, political, and economic dynamics of each country. This study aims to examine the impact of institutional arrangements stemming from the 1990s neoliberal reforms in Brazil and Colombia on HRDs, focusing on geographic distribution. Employing a comparative analysis and adopting a historical institutionalism perspective, the research relies on a methodology involving multiple case studies with embedded units. Results reveal that the neoliberal reforms represented critical junctures reshaping the social and economic policies of both nations. In this context, the reforms influenced wealth distribution in both countries, subsequently impacting the unequal geographical distribution of HRD. These effects were closely tied to factors such as labor flexibility and the unregulated, unplanned expansion of dentistry courses. These elements initiated positive feedback loops, characterized by path dependence and increasing returns, which have contributed to the institutionalization and persistence of these phenomena within the state and have become entrenched in HRDs over time.
Keywords: Human resources in health; Human resources in Odontology; Comparative politics; Historical Institutionalism; Brazil; Colombia.

Resumo
Os Recursos Humanos em Saúde (RHS) constituem um dos seis componentes principais dos sistemas de saúde, desempenhando um papel crucial na concretização do direito à saúde e garantindo acesso e qualidade nos serviços. Além disso, estruturas institucionais de cada país - leis, decretos, sistemas políticos e características dos sistemas de saúde - exercem uma influência significativa nos RHS e especificamente nos Recursos Humanos em Odontologia (RHO). Brasil e Colômbia passaram por reformas neoliberais nos anos 1990, introduzindo novas instituições dentro do modelo existente e alterando as dinâmicas sociais, políticas e econômicas de cada país. O objetivo deste estudo é examinar o impacto dos arranjos institucionais decorrentes das reformas neoliberais dos anos 1990 no Brasil e na Colômbia sobre os RHOs, com foco na distribuição geográfica. Utiliza-se uma análise comparativa com perspectiva do institucionalismo histórico e um método de estudos de caso múltiplos com unidades incorporadas. Os resultados revelam que as reformas neoliberais representaram momentos críticos que moldaram as políticas sociais e econômicas de ambas as nações. Tais reformas influenciaram a distribuição de riqueza em ambos os países, impactando posteriormente a distribuição geográfica desigual dos RHOs, com efeitos ligados à flexibilização do trabalho e à expansão desregulamentada e não planejada de cursos de odontologia. Esses elementos iniciaram ciclos de

retroalimentação positiva, dependentes das trajetórias iniciadas e efeitos de retornos crescentes, institucionalizando-se e enraizando-se com o tempo no Estado e nos RHO.
Palavras-chave: Recursos humanos em saúde; Recursos humanos em odontologia; Política comparada; Institucionalismo histórico; Brasil; Colômbia.

Resumen

Los Recursos Humanos en Salud (RHS) constituyen uno de los seis componentes básicos de los sistemas de salud, desempeñando un papel crucial en la realización del derecho a la salud y en la garantía del acceso y la calidad de los servicios. Asimismo, los marcos institucionales de cada país: leyes, decretos, sistemas políticos y características de los sistemas de salud, ejercen una influencia significativa en los RHS y específicamente en los Recursos Humanos en Odontología (RHO). Brasil y Colombia experimentaron reformas neoliberales en los años 1990, introduciendo nuevas instituciones al modelo existente y alterando la dinámica social, política y económica de cada país. El objetivo de este estudio es examinar el impacto de los arreglos institucionales derivados de las reformas neoliberales de los años 90 en Brasil y Colombia sobre los RHO, centrándose en su distribución geográfica. Se emplea un análisis comparativo con perspectiva del institucionalismo histórico y un método de estudios de caso múltiples con unidades embebidas. Los resultados revelan que las reformas neoliberales representaron coyunturas críticas que reconfiguraron las políticas sociales y económicas de ambas naciones. Dichas reformas influyeron en la distribución de la riqueza en ambos países, repercutiendo posteriormente en la distribución geográfica desigual del RHO, efectos ligados a la flexibilización laboral y a la expansión no regulada ni planificada de cursos de odontología. Estos elementos iniciaron procesos de retroalimentación positiva, procesos dependientes de las trayectorias iniciadas y efectos de rendimientos crecientes, institucionalizándose y arraigándose con el tiempo en el Estado y en los RHO.
Palabras clave: Recursos humanos en salud; Recursos humanos en Odontología; Política comparada; Institucionalismo histórico; Brasil; Colombia.

1. Introduction

Human resources for health (HRH) are an essential component of health systems, encompassing both social and technical aspects. Together with service delivery, health information systems, access to essential medicines, financing, and leadership/governance, HRH forms the foundational building blocks of a robust healthcare system (World Health Organization, 2010). HRH plays a vital role in realizing the right to health and ensuring access to high-quality healthcare services (Monsalve Ortiz et al., 2013).

Furthermore, the specific needs of HRH in terms of quantity, organization, distribution, and quality are determined by the context and characteristics of each health system (OTHS Colombia-Ministerio de Salud y Protección Social de la República de Colombia, 2015).

Institutional arrangements for HRH, including human resources in dentistry (HRD), have a significant impact on various aspects such as geographical distribution, practice, and training. These arrangements are shaped by the prevailing political-administrative structures or networks within a country, often manifested in laws concerning professional regulation (Dussault Gilles & Dubois Carl-Ardy, 2003; Otálvaro Castro et al., 2019; Pucca et al., 2015).

The political and historical processes that have taken place in Brazil and Colombia over the years affected HRD. Notably, the political constitutions enacted in the late 1980s and early 1990s in Brazil and Colombia respectively, brought about new social, political, and economic perspectives (Constituição da República Federativa do Brasil 53 ed, 2018; Constitución Política de Colombia 1991, 1991). Consequently, reforms were introduced in their healthcare systems, altering the approaches to dental practice; higher education systems, and labor regulations with a clear market or liberal orientation (Oliveira & Morais, 2016; Otálvaro Castro et al., 2019; Pucca et al., 2015).

The impact of these institutional arrangements, encompassing laws and decrees, implemented since more than two decades, continues to shape the HRD landscape in both countries. The long-term effects of these arrangements significantly influence HRD and ultimately impact the effective realization of the right to health for the population in Brazil and Colombia.

This study aims to examine the impact of institutional arrangements that emerged during the critical juncture of the liberal reforms in the 1990s in Brazil and Colombia on human resources in dentistry (HRD). Specifically, the study will focus

on evaluating the influence of these arrangements on geographical distribution. The analysis will be conducted through a comparative approach and will be framed within the theoretical perspective of historical institutionalism. By exploring these factors, the study aims to provide insights into the effects of liberal reforms on the HRD landscape in both countries.

2. Methodology

This is a qualitative research study employing a multiple case study design, focusing on two cases: Brazil and Colombia. Specifically, the study examines the institutional arrangements resulting from the liberal reforms of the 1990s in both countries. Each case incorporates one unit of analysis: the geographical distribution of Human Resources in Dentistry (HRD).

We used Mills' method of agreements and differences as a basis for systematically excluding "rival" hypotheses in the comparative analyses of small N studies (Mahoney, 2007) and, in the same vein, assists in case selection. The difference-in-differences method is employed to identify conditions or factors that may influence or correlate with different outcomes across the cases (Lieberson, 1991). This approach allows us to investigate why two countries with similar characteristics may yield different outcomes in the chosen areas of inquiry. Conversely, the method of agreements is utilized when outcomes are similar or identical in both cases, aiming to identify constant conditions across the instances studied (Lieberson, 1991). This approach helps us understand why two countries with differing characteristics may produce comparable outcomes (Lieberson, 1991).

Considering the hypothesis that Brazil and Colombia possess distinct health systems and types of states, but exhibit similar outcomes regarding geographical distribution, low salaries, poor working conditions, and the dominance of private training institutions for HRD, we aim to explore the underlying reasons for these similar outcomes. In this regard, we propose that the liberal reforms implemented during the 1990s serve as the constant factor that unifies these cases.

Each case and its embedded unit were examined in-depth, providing a comprehensive description of the case and explaining the relevance of the phenomenon under investigation: the influence of the liberal reforms of the 1990s on HRD geographical distribution in the two countries.

The findings from each case were then compared and contrasted with the information from the other individual case. Finally, a comparative analysis was conducted to elucidate the underlying mechanisms and reasons behind the observed patterns and trends within the object of study.

The collected information was systematically organized and analyzed, adopting a comparative approach guided by the theoretical perspective of historical institutionalism.

Lastly, the collaboration between the research teams of Colombia and Brazil provides a valuable opportunity for knowledge exchange and learning. By conducting a multiple case study encompassing both countries, we seek to maximize insights into the subject of our investigation.

Data Collection

The data collection involved a review of databases, books, gray literature, journals, and other digital or physical resources. Specific keywords were used in Spanish and their Portuguese and English equivalents to ensure comprehensive coverage. The keywords were: human resources in dentistry, health policies, geographical distribution, Brazil, Colombia, policies, types of state, forms of government, health systems, state reforms, liberal reforms, 1990s, labor reforms, and health system reforms. DO and FC defined the search terms. DO conducted the search, while FC supervised and provided feedback on the process.

To gain insights into the perspectives of key actors, five semi-structured interviews were conducted with individuals

involved in human resources in dentistry in both Brazil and Colombia. The interviews were developed by DO and took place online via the Google Meet platform, with each session lasting approximately 45 minutes. Audio and video recordings were made after obtaining informed consent from the participants.

Transcriptions of the interviews were prepared and subjected to inductive-deductive content analysis by DO and FC.

Compliance with ethical standards

This project was carried out after approval of an amendment submitted to the FOUSP ethics committee under CAE number 92350418.1.0000.0075.

3. Results and Discussion

3.1 Brazil

Political-administrative context

Brazil, a federal presidential republic with a bicameral and multiparty system (17), spans an expansive territory of 8,510,345.538 km2. As of August, the census 2022, according to the Brazilian Institute of Geography and Statistics - IBGE, stands 203.062.512, inhabitants (Brasil, s/f). The current political constitution dates back to 1988 and emerged from a significant social mobilization. The political-administrative organization is composed of autonomous entities, including the Union, the States, the Federal District, and the Municipalities, as outlined in the Constitution (Constituição da República Federativa do Brasil 53 ed, 2018). Geographically, Brazil is divided into five major regions: North, Northeast, South, Southeast, and Center-West. It encompasses 26 states and 5,570 municipalities (IBGE, s/f).

According to the World Bank classification, Brazil falls into the category of Upper-Middle-Income Economies, characterized by a gross national income per capita ranging from $4,096 to $12,695 (World Bank, 2020). As of the second quarter, the unemployment rate stands at 14.1% according to data from IBGE (Brasil, s/f).

South and Northeast regions displayed relatively high population densities, while the Midwest and North regions had comparably lower densities (Brasil, 2010; Pena, 2014). IBGE data indicates that Brazil's GDP is primarily concentrated in the Southeast and South regions, specifically in São Paulo, Rio de Janeiro, Minas Gerais, Rio Grande do Sul, and Paraná (Brasil, 2018). For instance, among the 5,570 municipalities in Brazil, the wealthiest 100 municipalities accounted for 55% of the national GDP, revealing a significant concentration of wealth in the country (Campos, 2020).

Health System

The 1988 Federal Constitution of Brazil recognizes health as a fundamental right and the responsibility of the State. It emphasizes the importance of social and economic policies to reduce disease risks and provide universal access to healthcare services (17). The constitution establishes the Unified Health System (SUS) principles such as decentralization, comprehensiveness, prevention-focused care, and community participation (Constituição da República Federativa do Brasil 53 ed, 2018; Lei Organica da Saúde no 8.080 1990, 1990; Lei N° 8.142, de 28 de Dezembro de 1990, 1990; Decreto No 7.508, de 28 de Junho de 2011, 2011, p. 75).

Law 8080 of 1990 serves as the organic law for the SUS. According to this law, the SUS incorporates federal, state, and municipal public institutions responsible for quality control, research, and the production of inputs, medicines, and health equipment (Lei Orgânica da Saúde no 8.080 1990, 1990). Additionally, the law stipulates that the private sector can participate in the Unified Health System on a complimentary basis. For instance, in situations where resources are inadequate to ensure coverage of the population in a specific area, the SUS may utilize services offered by the private sector in accordance with the

provisions of the law (Lei Orgânica da Saúde no 8.080 1990, 1990).

Oral health services are included in the SUS. They encompass primary, secondary, and tertiary levels of care within a web of attention, with specialized care provided free of charge to the entire population. In 2023, oral health, previously known as the 'Smiling Brazil' program, transitioned into a national health policy (Lei 4572, 2023).

90´s Neoliberal reforms

Between the 1950s and 1980s, Brazil pursued development policies focused on strengthening local industries, seeking international autonomy, and relying on state intervention for economic growth (Melo, 2012). These approaches faced criticism from advocates of liberal perspectives, both nationally and internationally, who emphasized the benefits of market liberalization (Melo, 2012).

During the 1980s, as Brazil underwent a democratic transition after decades of dictatorship, the country engaged in debates between the Brazilian Democratic Movement Party (BDMP) and pro-liberal national businessmen (Melo, 2012). This discussion remained inconclusive until the end of José Sarney's government in 1989 when developmentalist thinking lost ground with the departure of Finance Minister Dilson Funario in 1987 (Melo, 2012). Consequently, in the 1990s, Brazil adopted a series of reforms aligned with neoliberalism, aiming for social and economic development.

Fernando Collor de Mello's presidency (1990-1992) marked a significant shift away from developmentalist principles and initiated rapid trade opening and financial liberalization (Melo, 2012). The National Privatization Program (NPP) was established in 1990, becoming the primary instrument for privatization in Brazil (Lei 8031, 1990; Melo, 2012). The NPP aimed to reposition the Brazilian state in the economy and gradually withdraw it from economic activities, particularly in consumer goods and production (Lei 8031, 1990; Melo, 2012). During Collor's short tenure, 18 state-owned companies were sold to the private sector (Melo, 2012).

Between 1990 and 1994, import tariffs were reduced by about 50 percent, leading to increased competition for domestic firms (Amann & Baer, 2002). As a result, the Brazilian economy experienced gains in technical and technological efficiency, pressuring local companies to modernize their production processes (Melo, 2012).

Itamar Franco took over as president in 1992 (1992-1994) and continued the NPP (Melo, 2012). His Finance Minister, Fernando Henrique Cardoso, won the 1994 election with the Real Plan, which helped control inflation. During Cardoso's administration (1994-2002), efforts were made to increase privatization further, granting more power through Law No. 9.491, which expanded the Privatization Program (Melo, 2012).

However, the reduction in employment opportunities in the industrial sector resulted in increased inequality (Amann & Baer, 2002). Industrial wages rose, but the total industrial employment declined due to layoffs resulting from privatization and the introduction of labor-saving technology (Amann & Baer, 2002). The industrial restructuring process contributed to unequal wealth distribution, as higher wages were granted to a shrinking pool of workers while many displaced workers ended up in low-paid and insecure service sectors (Amann & Baer, 2002). The privatization of state-owned enterprises favored a select group of large domestic and foreign investors instead of a broader public offering of shares (Amann & Baer, 2002).

Despite reducing inflation, the liberal reforms of the 1990s did not lead to high rates of economic growth or significant improvements in income distribution and poverty levels (Amann & Baer, 2002).

At the end of the 1990s, Law 9491 of 1997 replaced Law 8.031 of 1990 and outlined the National Privatization Program (NPP) with the National Privatization Council (NPC) as the highest decision-making body, directly subordinated to the President of the Republic (Lei 9491 de 1997, 1990). The council's purpose was to recommend companies, public services, and financial institutions for inclusion or exclusion from the privatization program (Lei 9491 de 1997, 1990).

Human Resources in Dentistry (HRD)

Regarding geographical distribution as of November 2023, Brazil had 403.026 general dentists and 135.379 specialists registered with the Federal Council of Dentistry (CFO), equating to one dentist for every 592 inhabitants (Conselho Federal de Odontologia-Brasil, s/f). However, compared to the recommended ratio of one dentist per 3,500 inhabitants, there seemed to be an excess of dental professionals, particularly in the private sector (Cascaes et al., 2018). But this data must be analyzed in the light of the evident geographical distribution disparities, with high concentrations of dentists in Brazilian capitals, especially in the Southeast region (205,801/ 51.06% of the total number of dentists registered in the country in 2023), while the North and Northeast faced a shortage of dental professionals (Cascaes et al., 2018; Conselho Federal de Odontología-CFO, s/f; Morita et al., 2020; San Martin et al., 2018).

Key interviewed actors are also aware that dental surgeons are concentrated in large cities, mainly in the South and Southeast regions, with deficiencies in the North, Midwest, and inland regions of the states. There are even differences in the cities:

"we have a distribution that is more dense in the capitals and in the Southeast and South regions in the second place and there is a greater health gap in the North and in the Midwest region" B2

"just talking about capitals, inland we see an immense discrepancy in all regions, in all states, this was very clear, there is a great concentration in the capitals and less concentration in the interior" B3

According to key actors, geographical distribution of dentists is also accompanied by the distribution of wealth in the territory, it is, places with greater wealth have a higher concentration of dentists and greater availability of access to services as mentioned (55) :

"then we will see both access to professionals in some places and lack in others, a very expressive inequality and this inequality accompanies a little the distribution of Brazilian GDP" B1

"[There is] a problematic distribution, absolutely following the distribution of wealth, which also reinforces the inequality of access to dental services, quite different in the richest regions and the poorest regions of the country." B1

"we see that states and regions have lower HDI [Human Development Index] , less concentration of income, job opportunities, for the dentist and for the dentist's family (...) this also happens in the state of São Paulo, for example, in peripheral places, places that do not have such a great social condition" B3

But, there are relationships between geographical distribution and the distribution of training institutions. By 2020, 544 dentistry courses were identified, it was found that the largest number of courses is in the Southeast and South regions, which together constituted 52% of the total number of courses offered in the country, the North region had the smallest number of courses (Morita et al., 2020). 75% were from the private sector (Cascaes et al., 2018; San Martin et al., 2018). Standardized and up-to-date data were difficult to find.

"Brazil likely has the highest number of dental courses on the planet, with more than 570 dentistry courses, which is enormous and exacerbates the inequality in the distribution of professionals." - B1

In the North region, we have very few dental courses, as well as in the Midwest. Therefore, these (...) factors combined contribute to the geographical distribution of human resources and dental courses (...)" - B2

But it seems that the expansion of public services has helped to overcome the difficulties with geographical distribution. Some of the moments referenced as important or relevant are “Pro-Saúde” and the decision of the National Health Council to open courses in strategic regions:

"*We had two moments that seem important to me. The first one was a decision by the National Health Council to prioritize the opening of new dental schools in the North, Midwest, and to some extent in the Northeast, based on the Gross*

Domestic Product and Human Development Index from some time back. The second was Pro-Saúde, which aimed at restructuring education and also gave priority to schools that joined this program but were also in regions with a scarcity of human resources." - B2

"The Pro-Saúde program was conceived in 2005/2006 and began operating in 2007. Its intention was to address the discrepancy between professional education and the needs of the Brazilian population, particularly in dentistry, by bringing education closer to the services provided by the Unified Health System (SUS). While it worked and facilitated this connection, it was not entirely effective for all courses. Some courses progressed more in this direction than others." - B2

3.2 Colombia

Political-administrative context

Colombia is a unitary, decentralized, and presidential republic with a bicameral and multi partisan system. It spans 1,141,748 km2, and projections from the National Administrative Department of Statistics (DANE) for 2023 estimated the Colombian population at approximately 52.215.503 inhabitants (DANE, s/f-c). Regarding population distribution, 77.1% reside in urban areas, 7.1% in populated centers, and 15.8% in dispersed rural areas, as indicated by the 2018 census data (DANE, s/f-b). Major urban zones are concentrated in the central and western parts of the country, while departments with lower population density are found in the eastern regions (DANE, s/f-b).

Its 1991 proclaimed Political Constitution established a social state of law. The political-administrative organization encompasses departments, districts, municipalities, and indigenous territories, with autonomy within constitutional and legal limits (Constitución Política de Colombia 1991, 1991). Colombia comprises 32 departments, 1125 municipalities, and 5 districts (MDE) (Colombia.co, s/f). In 2020, the World Bank reported Colombia's GDP per capita as $5332 (World Bank, s/f). Based on 2022 DANE data, 54.8% of GDP was concentrated in Bogotá D.C. and departments like Antioquia and Valle del Cauca, reflecting a pattern where higher population density departments in the central and western regions have the highest GDP concentration. Conversely, Amazonas, Vaupés, and Vichada, located in the eastern part of the country and characterized by lower population density, exhibit the lowest percentage of Colombia's GDP (DANE, s/f-a). The World Bank classifies Colombia as an "Upper-Middle-Income Economy," with a gross national income per capita between $4,096 and $12,695 (World Bank, 2020).

Health System

The 1991 political constitution defined health and environmental sanitation services as public services, the responsibility of the State, organized in a decentralized manner, according to levels of care, and involving community participation (Constitución Política de Colombia 1991, 1991).

Regarding its healthcare system, the General System of Social Security in Health-GSSSH It was defined by Law 100 of 1993 and is based on a mixed insurance model. Affiliation to the GSSSH is achieved through a subsidized scheme (for individuals without the ability to pay) or a contributory scheme (for those with the ability to pay) (Ley 100 del 1993, 1993). In 2008 and 2015, the T760 sentence and the Statutory Health Law or Law 1751 respectively, were enacted, with the objective of guaranteeing the fundamental right to health, regulating and establishing its protection mechanisms (Congreso de la república de Colombia, 2015). Thus, in Colombia, health is considered an individual and collective right (Congreso de la república de Colombia, 2015; T-760-08 Corte Constitucional de Colombia, 2008; Otálvaro Castro et al., 2019).

Oral health is included in the Colombian health system. The GSSSH regulations define policies for individual oral care. The Health Benefits Plan covers a wide range of services of general and specialized care including preventive care,

diagnostic aids, emergency treatment, and various dental procedures (Otálvaro Castro et al., 2019).

90´s Neoliberal reforms

The onset of neoliberal reforms in Colombia can be traced to the government of Virgilio Barco (1986-1990), during which a series of market-opening reforms were initiated (Martinez Alvarez, 2015). These policies were further advanced under the administration of César Gavaria Trujillo (1990-1994) (Martinez Alvarez, 2015), during which a package of neoliberal economic and political reforms prescribed by the International Monetary Fund (IMF) were implemented. These reforms facilitated trade liberalization, reductions in public spending, and the privatization of state-owned enterprises (Martinez Alvarez, 2015).

As a result, these reforms triggered a process of state restructuring through privatization, deregulation, and liberalization (Martinez Alvarez, 2015). In this period, labor reform was undertaken with the enactment of Law 50 of 1990 (Ley 50 de 1990, 1990). In 1991, Colombia's Political Constitution was promulgated (Constitución Política de Colombia 1991, 1991), followed by the issuance of Law 30 of 1992 concerning higher education (Ley 30 de Diciembre 28 de 1992, 1992), and the subsequent creation of the General System of Integral Social Security (which includes healthcare, pensions, and occupational risks) through Law 100 of 1993 (Ley 100 del 1993, 1993).

These policy decisions institutionalized trade liberalization within the framework of the neoliberal model in the Colombian state. A proactive privatization policy was initiated as part of the Structural Adjustment Program (SAP), aimed at altering the structure of the Colombian economy (Martinez Alvarez, 2015).

The process began with the opening of trade to international capital and goods flows, which accelerated and expanded during the administration of César Gaviria. This gave rise to a process of structural opening, characterized by economic policies impacting labor, finance, taxation, exchange rates, and tariffs. This occurred in a context of workforce outsourcing, informalization, precarization, flexibility, and mobility among Colombian workers (Martinez Alvarez, 2015). Consequently, the role of the State shifted from providing goods and services to assuming regulatory functions (Martinez Alvarez, 2015).

In this context, the limited capacity of the formal public and private economy to absorb workers within the model left individuals with limited opportunities, pushing them towards informal and outsourced employment (Martinez Alvarez, 2015).

Human Resources in Dentistry (RHO)

For July 2020, a total of 48,616 dental professionals were registered with the ReTHUS system in Colombia, signifying approximately one dentist for every 1,074 inhabitants (Ministerio de Salud-Gobierno de Colombia, 2020). Considering the benchmark of one dentist per 3,500 inhabitants, an excess of dental professionals in Colombia becomes apparent. Likewise, a notable concentration of dentists is observed in large and medium-sized cities, with approximately 70% situated in 6 departments or states out of a total of 32, with the highest density observed in Bogotá D.C. (Ministerio de Salud-Gobierno de Colombia, 2020). As in Brazil, standardized and up-to-date data were difficult to find.

From the perspective of key actors, neoliberal reforms have influenced Human Resources in Dentistry (HRD) in interconnected aspects. Geographical distribution issues are accompanied by other aspects such as labor flexibility, service provision dynamics, care, and training:

"The political constitution, despite its liberal underpinnings in democratic culture, ultimately leans towards neoliberalism, particularly in education and healthcare. This significantly affects the training of healthcare professionals, especially dentists, impacting their geographic distribution, labor dynamics, and the rise of private education due to neoliberal influences, a trend seen across Latin America and neighboring countries like Brazil." C1

"Initially, considering that we are in the context of neoliberal reforms, it is true that these reforms are implemented in Latin America under the principles of the Washington Consensus, which also implies an exercise of labor flexibility in the issue of human resources for health and also in health systems, service delivery (...) leading to a segmentation in care." - C2.

The emergence of new universities led to a substantial increase in dental professionals. This resulted in an oversupply of dentists, particularly in urban areas (...) This change in distribution was driven not only by educational factors but also by shifts in the healthcare model. The emphasis moved from a public interest in healthcare to a profit-driven approach, leading to a reconfiguration of workforce distribution (...) This disproportionately affected urban areas, as dentists sought more lucrative markets.C1

Colombian key actors also appointed concentration of HRD in large cities or in the most profitable places, associating HRD geographical distribution to distribution of the "commercial chain":

"(...) the majority of dentists are concentrated (...) particularly within what is referred to as the "commercial chain." (..) As one moves further from the center, the density of professionals diminishes, given that these locales do not fall within the purview of the commercial chain. Consequently, the distribution of dentists is focalized in areas characterized by heightened commercial activity." C1

"In terms of geography, there is a clear concentration of professionals, particularly in the cities of Medellín, Cali, and Bogotá. We demonstrated this (...) by conducting approximately 2700 surveys, with about 500 respondents residing in Bogotá before graduation, and 700 after graduation." C2

Hence, regions characterized by heightened economic activity appear to exert greater appeal to Human Resources in Dentistry (HRD), thereby resulting in diminished accessibility to oral health services in other locales.

"This is where dentists gravitate, as it is where, so to speak, the financial transaction and exchange of goods occur. Health transforms into a commodity and, as such, is offered. I believe this distribution adheres to these patterns throughout the Colombian territory." C1

"The mandatory social year is being eliminated.The mandatory social service, as the name implies, was obligatory. That's why I say that people stayed for at least one year, but there were those who stayed longer, and the resources were allocated according to those needs, especially in rural areas, particularly in municipalities outside the major urban centers."C1

"However, Antioquia and Medellín exhibited the highest concentrations. This implies that dispersed populations have limited access to dental care, further hindering the effective realization of the right to oral health care". C2

Based on the gathered information, the influence of neoliberal reforms conducted in Brazil and Colombia on the field of dentistry is evident, specifically within the category examined in this study, it is, the geographic distribution.

In this context, the theoretical tools provided by historical institutionalism offer insights for analyzing and comprehending this phenomenon. Additionally, the proposed comparative approach enables an exploration of decision-making processes and political developments concerning human resources in dentistry within the frameworks of the described reforms in both Brazil and Colombia.

In accordance with the methodological path of multiple case studies presented in this work, a description of each case (Brazil and Colombia) will be presented, articulating the "how" and "why" the neoliberal reforms of the 1990s influenced the distribution of human resources in dentistry in both countries.

3.3 Brazil

In light of the gathered data, the influence of neoliberal reforms carried out in Brazil and Colombia on the field of dentistry is clear.

In this context, the social and economic reforms under the perspective of 1990s neoliberalism, spearheaded by Fernando Collor de Mello's government (1990-1992) and realized through Law 8.031 of 1990, which established the National Privatization Program (PND), can be regarded, drawing upon historical institutionalism theory, as a critical juncture. This era of significant changes has conditioned subsequent political, social, and economic developments (Hacker, 1998; Pierson, 2000).

Initially, these institutional changes were introduced through displacement, completely revoking established norms and generating new institutions, along with a set of new regulations (Mahoney & Thelen, 2010). This can be observed within the 1988 federal constitution and the healthcare sphere through the establishment of a new healthcare system (in the federal constitution and Law 8080 of 1990) (Constituição da República Federativa do Brasil 53 ed, 2018; Lei Orgânica da Saúde no 8.080 1990, 1990). Subsequently, and employing the terms elucidated by Thelen and Mahoney in the institutional change theory (Mahoney & Thelen, 2010), the subsequent years and decades witnessed the introduction of laws, decrees, and comprehensive regulations that gradually transformed Brazilian institutions, embedding the institutional arrangements created within the framework of the neoliberal model (Amann & Baer, 2002; Lei 8031, 1990; Lei 9491 de 1997, 1990; Melo, 2012).

These changes affected the social, political, and economic dynamics of the country, with ripple effects extending to the dynamics pertaining to human resources in dentistry. The aforementioned assertion is grounded in the fact that these implemented reforms occurred within a context of high social interdependence, where training, labor practices, wealth distribution, and population dynamics are intertwined.

Thus, the critical juncture of the 1990s reforms engendered a series of effects on HRD, which are expounded upon in the ensuing paragraphs.

Building on the aforementioned, it becomes evident that the reforms initiated in the 1990s led to the creation of organizational forms, labor practices, and a broader framework encompassing educational institutions, private oral health plans, and a comprehensive regulatory framework. This matrix engendered positive feedback loops (increasing returns), facilitating their continuity over time and rendering shifts in the established dynamics progressively intricate.

In a vast country like Brazil, the distribution of population and wealth is markedly uneven. Despite the neoliberal model's proposition to address social and economic difficulties and inequities, decisions taken have exacerbated unequal wealth distribution (Amann & Baer, 2002). This is manifest in data pertaining to population and GDP concentration, with a clear focus in the Southeast region, while the Central-West and North regions exhibit lower concentration in both population and GDP (Brasil, 2018; Campos, 2020; IBGE, s/f, 2010; Pena, 2014; World Bank, s/f).

The argument articulated in the preceding paragraph lays the initial groundwork for comprehending how and why neoliberal reforms have influenced and continue to influence HRD even after over two decades. This is due to the dynamics of the free market affecting wealth distribution, facilitating the establishment of private dentistry courses and contributing to an increased number of professionals seeking regions of greater affluence into the commerce chain.

Consequently, a parallel phenomenon is observed concerning the geographic distribution of HRD, whereby a pronounced concentration is evident in the Southeast region, while lower concentrations are observed in the Central-West and North regions, aligned with their respective levels of affluence and wealth (Cascaes et al., 2018; San Martin et al., 2018). These findings align with the research conducted by San Martin et al. and Figueirêdo et al. (Figueirêdo Júnior et al., 2019; San Martin et al., 2018).

In this vein, the institutionalization of the free market model has also affected professionals, the general public, and

institutions themselves, justified through the lens of path dependence theory (Pierson, 1993, 2000).

One of the effects expounded upon in literature pertains to social identity, particularly that of dentists, who, as reported, in various instances evolve into sellers of products or services. This has been driven, in some cases, by the influence of technology introduction and large private enterprises (generally due to market liberalization and competition). This dynamic has engendered artificial needs not always aligned with people's health, leading to unfair practices that compromise health and contribute to professional disunity (De et al., 2013).

Conversely, in another segment of the profession, specifically within the public sector, the introduction of oral health care and professionals within the family health team in the Unified Health System (SUS) and the National Oral Health Policy in the early 2000s (Figueiredo, 2011; Portaria no 267 do 6 de março de 2001, 2001; Portraria n° 648 de 28 de março de 2006, 2006; San Martin et al., 2018) has expanded employment opportunities for dentists, with SUS emerging as the largest employer of dentists in Brazil (San Martin et al., 2018). However, political decisions taken in the context of labor practice flexibility have permeated the public sector, leading to diverse forms of recruitment, hiring, and dentist remuneration within the public system (Cayetano, 2019).

This complex interplay of policies engenders reinforcement effects, as political decisions stemming from neoliberal principles create learning and coordination effects among professionals and organizations (in this case, the employer-employee relationship). Both entities recognize, accept, or are compelled to operate within the established economic context, fostering the generalization or "normalization" of certain processes (contractual, salary-related).

In summation, the neoliberal reforms of the 1990s have conditioned the dynamics of HRD. This influence is substantiated by the establishment of labor and educational norms or rules, generating social identities and organizational processes that, collectively, form an interdependent network reinforcing its stability over time.

3.4 Colombia

The analytical framework applied in the case of Colombia closely parallels the narrative observed in the Brazilian context.

Firstly, the critical juncture is described, which, in this case, also corresponds to the neoliberal reforms of the 1990s, followed by their subsequent implications for the field of human resources in dentistry (HRD). These aspects are examined through the lens of historical institutionalism theory.

The period of neoliberal reforms in Colombia, deepened during César Gavaria Trujillo's administration (1990-1994) and framed within the Structural Adjustment Program (SAP), is identified as the critical juncture. The process of adopting the free-market model unfolded gradually through layering, with different laws aligned with the neoliberal model introduced across various regulatory areas in Colombia. These included labor reforms under Law 50 of 1990, educational reforms under Law 30 of 1992, and changes in social security through Law 100 of 1993 (pertaining to health systems, pensions, and labor risks) (Ley 50 de 1990, 1990; Ley 30 de Diciembre 28 de 1992, 1992; Ley 100 del 1993, 1993).

These realms, once again, are intricately linked to human resources in dentistry. The effects of these reforms on HRD are delineated in the ensuing paragraphs.

Regarding geographic distribution, it has been revealed that both population and GDP are concentrated in major cities within the central-western region of the country (such as Bogotá D.C., Antioquia, and Cali), while regions in the eastern part of the country have lower population and GDP concentrations (DANE, s/f-b, s/f-a). A similar pattern emerges in the distribution of human resources in dentistry. According to the presented data, dentists are concentrated in precisely the same areas, underscoring a clear imbalance in the distribution of dental professionals. This phenomenon aligns with the findings of

Otálvaro et al. (2019) (Otálvaro Castro et al., 2019).

This situation could be attributed to increased product and service flows within the free-market context, combined with wealth concentration in major cities (DANE, s/f-b, s/f-a). This, coupled with the concentration of dentists, who in the private sector engage in temporary work and multi-employment conditions, fosters coordination effects and cost fixation. These dynamics, along with factors like access to goods and services, family and personal training opportunities, and the absence of geographic distribution policies, establish an environment conducive to remaining in larger cities—where the money is—thus reinforcing conditions such as temporary employment and multi-employment (Ministerio de Salud-Gobierno de Colombia, 2020; Otálvaro Castro et al., 2019).

Through labor flexibility in Colombia, supported by Law 50 of 1990, the aim was to facilitate job creation by simplifying hiring processes, including the introduction of fixed-term temporary contracts and contracts for professional services. However, these new forms of employment have directly impacted HRD. Organizational structures and coordination effects have been established, maintaining the prevailing economic dynamics. This has led to the creation of temporary jobs with low wages, inadequate labor guarantees, and control exerted by private clinics and practices. These dynamics have engendered a subordinate, dependent, and unstable work relationship, sometimes leading dentists to be perceived as "product vendors" and "cheap labor" (Jaramillo Delgado & Gómez B, 2006; Otálvaro Castro et al., 2019).

Neoliberal reforms and the opening up of new private dentistry courses have given rise to new organizations, work processes, and training practices within these institutions. Consequently, the number of dental schools and graduates has expanded. Authors like Otálvaro et al. (Otálvaro Castro et al., 2019) assert that policies related to human resource education and dental professional practice do not result from a process of planning and social consultation. Instead, they are subject to the spontaneous forces of the market.

In conclusion, neoliberal reforms have exerted and continue to exert influence on human resources in dentistry in Colombia. The critical juncture of 1990s reforms, institutionalized through laws governing education, the social security system (including healthcare), and labor practices, shapes and reinforces dynamics such as employment flexibility, uneven distribution of dental professionals, and education planning. These dynamics are driven by coordination effects and learning processes embedded within the free-market framework.

3.5 Common outcomes related to HRD in both countries after 90´s neoliberal reforms

Brazil and Colombia exhibit evident differences in terms of territory size and population, as well as their type of state structure (Brazil being federal and Colombia a decentralized unitary republic).

However, they share certain characteristics related to their institutional configuration, specifically in terms of their form of government, parliamentary systems, and party structures (both being presidential, bicameral, and multi-party systems, respectively). This similarity extends to the economic context as well, as per the World Bank classification, where both countries are categorized as upper-middle-income economies.

As outlined in the results, the critical juncture of neoliberal reforms implemented in the 1990s in both countries set the trajectory for future social and economic policies. This facilitated the creation and introduction (through trade liberalization) of a series of market dynamics that align with the established economic model, leading to an increasingly prominent role of the private sector. This process of positive feedback demonstrates how neoliberal reforms have conditioned subsequent political outcomes (path dependence) and influenced the configuration of healthcare systems.

Influential political decisions regarding the geographic distribution of dental human resources include the introduction of The Mandatory Social Year (MSY) in Colombia, which once required dental professionals to spend at least one year

practicing in rural areas, has now been restricted to a minimal number of available placements (Otálvaro). In Brazil, the National Oral Health Policy and Pro Saúde contributed to improving the geographic distribution of dental human resources, especially through the presence of dentists in the public system. Approximately 30% of Brazilian dentists were employed by the Unified Health System (SUS) in 2019.

In Brazil and Colombia alike, the neoliberal model has become institutionalized in laws structuring healthcare systems, labor practices, and education, affecting HRD geographical distribution.

The availability of updated and standardized information related to human resources posed a challenge in obtaining results in both Brazil and Colombia. This situation was also highlighted in the work of Cayetano et al. (2019), where the authors noted that the lack of standardized and updated data is a "significant gap" in the international field, particularly exacerbated in Latin America.

Finally, all these political reforms created a context that involves organizations, contractual forms, labor practices, and wealth distribution patterns that together form a matrix. This matrix, in turn, generates positive feedback for its continuity over time. Thus, even decades after their implementation, the neoliberal reforms of the 1990s continue to influence human resources in dentistry, affecting geographical distribution of them in both countries

4. Conclusion

Regarding the political-administrative contexts of each country, including their healthcare systems, geographical and population differences have been identified, along with distinct types of states. However, from an economic and political standpoint, both countries share characteristics such as their type of government, parliamentary and party systems, economic levels according to the World Bank and neoliberal reforms. Concerning healthcare systems, both exhibit traits of mixed systems.

Human resources in dentistry (HRD) in both countries share similar characteristics in terms of geographical distribution. Unequal distribution of dentists, following wealth distribution patterns, is evident in both cases.

Standardized and updated information on HRD is crucial for effective training and oral health professional distribution planning in both countries.

The reforms implemented in the 90s, characterized by processes of trade liberalization, privatization, and reduced public expenditure in both nations, affected wealth distribution and consequently the geographical distribution of Human Resources in Dentistry (HRD), as these phenomena occurred within an interconnected societal context.

Key stakeholders' perspectives align with literature findings concerning human resources in dentistry. In both countries, a correlation between neoliberal reforms and the current status of HRD has been identified, particularly in areas such as labor flexibility, training and unequal geographic distribution.

Based on the presented information, it has been possible to identify how and why the liberal reforms of the 1990s, in both Brazil and Colombia, have influenced HRD geographical distribution.

A relationship between labor practices, education, and geographical distribution has been identified.

The influence of the liberal dynamics implemented in the 1990s can be discerned as follows:

The reform periods in both Brazil and Colombia can be recognized as critical junctures, marked by significant changes occurring in the 1990s, significantly impacting social, economic, and political dynamics and wealth distribution in subsequent years.

These decisions have paved "paths" or "trajectories" (path dependence) that shaped the development and actions of HRD in the field of geographical distribution but being related to labor practice and training in both countries.

Consequently, the enduring effect of unequal wealth distribution from the 1990s remains evident today. The unequal distribution of population and income (economic capacity) is linked to the distribution of training institutions and human resources in dentistry in both countries. This situation functions as a feedback loop (increasing return), generating complementary organizational structures that, in turn, can give rise to new complementary institutions and so forth, maintaining it through the years, explaining how and why these reforms are still having an impact on HRD after almost 30 years.

Recommendations

Following the findings of this study, further investigation into these phenomena using alternative theoretical models could enhance analyses and provide tools for understanding from perspectives that delve deeper into the role of ideas, policy transfer processes, and the influence of interest groups in managing HRD within the context of neoliberal reforms impacting dentistry. Models such as the three i+3 could be particularly relevant in this context.

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