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Medical Education and Training Governance: A comparative study of Brazil and Canada

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Abstract

National health workforces rely increasingly on national health education and training governance, which has gained international attention. This study compares medical education and training governance models in Brazil and Canada, using the dimensions of strategic and policy vision, stakeholder engagement, intelligence, and legislation and regulation. Although both countries have federal governments, they have different approaches to governance, resulting in noticeable differences in meeting their medical education and training demands. Canada has a stable institutionalized framework that relies on decentralization through provincial and non-governmental stakeholders to manage its medical education and training. In contrast, Brazil's federally centralized medical education regulation has resulted in a fragmented and incoherent system due to shared responsibility between its Ministries of Education and Health. This comparative analysis provides insight into the importance of effective governance in addressing the challenges faced by national health workforces.

Keywords - Medical training. Medical education governance. Brazil medicine. Canada medicine. Healthcare.

Introduction

In the next few years, the world is projected to experience a shortage of 10 million healthcare workers, mainly in low- and lower-middle-income countries, due to inadequate training infrastructures, low salaries in healthcare fields, lack of motivation among potential workers, and challenges in secondary education systems, according to the World Health Organization (WHO, 2022). Despite prioritizing health education and training as a Sustainable Development Goal, Burdick and Dhillon (2020) noted a scarcity of inter-contextual research on the regulation of health workforces and accreditation of institutions that train them, which is crucial for achieving Goal 3 of the SDG to provide universal health coverage, especially in remote and vulnerable areas.

Brazil has recently made progress in medical education and training, with the country boasting the highest density of physicians in its history and a significant increase in the number of medical schools and vacancies. However, despite the privatization and decentralization of medical education, vacancies remain concentrated in larger cities, and there is still a shortage of doctors in underserved areas. Therefore, efforts are needed to strengthen medical education and training governance and practices to address inequities in physician distribution.

To contribute to the international discourse on national approaches to medical education and training, this article offers a comparative analysis of the governance of medical education in Brazil and Canada, which have similar healthcare challenges but different healthcare system structures, organizational roles, and healthcare workforce characteristics. The article proposes an analytic framework for inter-contextual evaluations of national medical education and training approaches and comparisons among them. The article reviews the theoretical

framework underlying the approach, describes the methodology, presents the results, and discusses the findings.

Theoretical Framework

The concept of governance provides a broad theoretical grounding for the study. To clarify how governance is therein applied, we begin by specifying the terms of public governance and then consider how it is applied in more focused terms for medical education and training.

Public Governance

Governance involves the creation of structures and processes that generate strategic policies that satisfy the shared interests of all stakeholders (BLANCHET *et al.*, 2017; PAPANICOLAS *et al.*, 2022). In the public arena, governance involves participation and collaboration among stakeholders, including the mechanisms for accountability to recognize their individual and shared interests and responsibilities in governance outcomes (OSBORNE, 2006; TORFING; TRIANTAFILLOU, 2013).

Viewed as a component within the broad scope of public governance, governance of healthcare and its sub-domain, medical education and training, offers a vivid example of the complexities within many governance arrangements. As with most governance structures, healthcare governance requires a legal framework that clearly sets the objectives of the governance approach, multi-level coordination among governmental and non-governmental actors, and, typically, complex financial arrangements that involve intricate blends of public and private resources (EMERSON, 2018; WILSON, 2004; PAPANICOLAS *et al.*, 2022; THOMAS *et al.*, 2020). These governance characteristics, as they apply to the healthcare governance subdomain of medical education and training in Brazil and Canada, are considered in the current study.

In addition, our analysis involves four categories of governance factors based on the work of Blouin *et al.* (2018) and Squires *et al.* (2020): i) strategic and policy vision; ii) stakeholder engagement; iii) intelligence, and iv) legislation and regulation (BLOUIN *et al.*, 2018; SQUIRES *et al.*, 2020).

Medical Education and Training Governance

Medical education and training comprises three components—undergraduate medical education (UME), postgraduate studies, and continuing education—to maintain, develop, or

improve medical care capabilities, typically within the confines of regulatory requirements (SWANWICK, 2018). In some areas (such as clinical training) these components share governance stakeholders and the resources they control, while in other areas they have separate stakeholders and resources (AKDEMIR *et al.,* 2020).

In the case of UME, differences in governance approaches between Brazil and Canada are clearly discerned. Brazil, for instance, firmly centralizes national policy direction both in terms of UME diffusion across public sectors, including healthcare, education, and social services, and the manifestation of its medical program content. This contrasts with Canada, wherein UME is not clearly defined in terms of national governmental policy but is produced through collaboration among sub-national government and non-governmental actors, resulting in a *de facto* national policy direction (NOVATO *et al.,* 2022; WORLEY *et al.,* 2004; MEHTA *et al.,* 2020).

The current study applies the four governance factors mentioned earlier to assess in greater detail these overarching differences in medical education and training approaches. Starting with the two nations' starkly different legal frameworks, we should expect to find consequential evidence of Canada's minimalist, decentralized national legal framework contrasted with that of Brazil's complex centralized legal direction. In terms of their strategies and policy visions for medical education and training, it is likewise reasonable to expect that Brazil's approach should result in distinct differences in policy. Clarifying the stakeholders and the roles they play in each subject nation helps us understand how medical education and training governance decisions are made, how responsive they are to domestic needs and international normative influences, and the competitive positions of Brazil and Canada in the international marketplace in terms of both education and training and the physicians they produce. Lastly, the different ways that Brazil (through centralized information management systems) and Canada (through decentralized methods) collect and utilize information regarding national health needs and medical resource deployment can be analyzed in terms of how this collection impacts responses to medical education and training supplies and demands (NORCINI; MCKINLEY, 2007; HAN *et al.,* 2019; SANTOS JÚNIOR *et al.,* 2021; NOUSIAINEN *et al.,* 2020).

Methods

Brazil and Canada were selected for comparison in this study for several reasons, namely: (1) they are both federal states that govern vast areas with diverse populations; (2) both are obligated to provide constitutional or statutory guarantees of universal access to health; (3) both

use multiple public and private forms of healthcare organizations and modes of delivery; (4) both utilize varied combinations of public, non-governmental, and private funding for healthcare; and, (5) both present different approaches to the regulation and provision of medical education and training.

To operationalize our comparative analysis of the Brazilian and Canadian medical education and training governance models, we used a qualitative study approach (KODATE, 2010; PETERS *et al.,* 2018). The evidence gathered for our study of the Canadian system was originally presented in our report produced for Brazil's Ministry of Health (CRUMPTON; ROCHE, 2021). That report is cited here rather than the primary sources from which it drew its evidence. The evidence used to support the descriptions and analyses included in this study is primarily based on secondary analyses of electronic documentation available through the websites of organizations that are involved in or otherwise provide information directly related to the governance of Canadian and Brazilian medical education and training. This includes a variety of governmental agencies that provide contextual descriptive analyses concerning demographics, national health outcomes, and other matters. For Brazil these sources were discovered via simple and advanced searches for articles and scientific essays in the following bibliographic databases: PubMed, Web of Science, Google Scholar, Scientific Electronic Library Online (SciELO), and Virtual Health Library (BVS). In addition, websites and public institutions, such as the Ministry of Health and subordinate agencies, class councils, associations, and organizations directly involved with medical education in the country were also explored. The study also makes use of international sources and research on medical education and training that are involved in conceptualizing or regulating the same.

The Cases Considered

Brazil

The Ministry of Education in Brazil is responsible for regulating the standards of medical education and training in the country. Its National Curriculum Guidelines of Brazil, enacted in 2001 and updated in 2014, emphasize humanistic, generalist, ethical, critical, and reflective education and training, with an emphasis on primary care (NOVATO *et al.,* 2022).

The Ministry has also introduced policies and programs intended to improve the capacity and capability of Brazil's physician workforce. Central among these is the Education Program for Health Work (PET-Saúde), which emphasizes the practical training of physicians. The program includes a training model that pairs groups of students with tutors in hands-on environments. Medical schools are not required to participate in the PET-Saúde, but those that

do receive financial assistance from the federal government (FARIAS-SANTOS; NORO, 2017; FREIRE *et al.,* 2019).

Overall, medical education and training in Brazil requires six years of full-time theoretical and practical—classroom and clinical—activities. Although the medical education and training system does not require medical school graduates to complete a residency, many Brazilian physicians choose to do so. Brazilian residency programs last three years and are regulated and accredited by the National Medical Residency Committee (OECD, 2021; SCHEFFER *et al.,* 2020b). In addition to advocating for increased opportunities to access undergraduate medical education, the "More Doctors Program" (PMM), discussed later in this article, initiated efforts to expand Brazil's medical residency programs (SANTOS JÚNIOR *et al.,* 2021).

Canada

As with many countries, including Brazil, physician density in Canada is generally higher in urban areas than in rural areas (OECD, 2022a). Although 20% of Canada's population live in rural areas, only 8.0% of all physicians, 9.4% of family physicians, and 3% of specialist physicians practice in rural areas (SHAH *et al.,* 2020). Thus, consistent with Brazil, a physician supply problem in Canada involves recruiting doctors to and retaining them in underserved areas. Canada educates and trains physicians in 17 publicly supported medical faculties that operate UME and postgraduate medical education (PGME) programs while expending an exceptional level of public funds to do so. Although no comparative studies exist regarding what nations spend to educate and train their doctors, we can make inferences based on national health expenditures and commitments to higher education. Recent evidence shows that Canada ranks fifth among OECD nations on per capita expenditures for healthcare (OECD, 2022b), with substantial inter-source/inter-sectoral investments in medical education and training.

However, while the federal, provincial, and territorial governments provide funding to Canadian universities, provinces and territories provide almost four times more support for post-secondary education (PSE) (36.3% of total funding) than the federal government (9.7%). Among the private forms of PSE income, student tuition and fees represent the largest source of non-governmental funding (29.3% of total funding). Other private sources of university income include university business activities (10.3%), non-governmental grants and contracts (6.3%), university investments (4.8%), and individual and organizational donations (3.7%) (CAUBO, 2020). Again, although there is a lack of information regarding specific commitments to medical education and training within Canada's PSE funding profile, it can be

reasonably assumed that it aligns with the country's general commitment to healthcare expenditures.

The contemporary Canadian approach to educating and training medical doctors is a product of the collective actions of three national entities that guide medical education: the Association of Faculties of Medicine of Canada (AFMC), the Canadian Medical Association (CMA), and the Royal College of Physicians and Surgeons of Canada (Royal College). Collectively, these non-governmental organizations represent the core of Canada's medical education and governance approach. The AFMC comprises the nation's 17 medical faculties, while the CMA and Royal College represent Canada's physicians. The AFMC provides the governance framework for UME, while the Royal College does so for PGME. These organizations educate and train Canada's physicians via a set of self-regulation mechanisms that govern such matters as UME and PGME program accreditations, the development and operation of curricular content, the assessments of medical students' and postgraduate doctors' educational and training progress, and determinations of qualification to practice as physicians and/or medical specialists.

Medical faculties, however, do exercise substantial freedom to translate national level guidance provided by these institutions into their individualized curricula. Nevertheless, they are subservient and held accountable to the collective self-governing oversight mechanisms. Thus, the collective conceptualization of Canada's approach to medical education and training is developed by the national governing organizations and is suggestive of the competency and behavioral characteristics that medical program graduates are expected to demonstrate. Moreover, the broad agreement across medical faculties to accept this governance approach is reflected in similarities among their operational and curricular content that are enforced through the AFMC's national accreditation process (CRUMPTON; ROCHE, 2021).

Analytic approach

To describe and compare the Canadian and Brazilian approaches to medical education and training governance we collected secondary data from medical faculty records, government reports, records from nongovernmental organizations, relevant laws, and a variety of sources found in our review of the international literature that considers this area. In the case of Canada, we largely drew upon evidence from our earlier published report (CRUMPTON; ROCHE, 2021) and categorized it according to the established dimensions of governance as represented in Table 1. In our subsequent analysis we apply these dimensions to assess and compare the Brazilian and Canadian approaches to the governance of medical education and training.

Table 1. Dimensions of analysis to compare medical education and training governance in Brazil and Canada

Dimensions	Description	Background
Strategic and Policy Vision	This assesses the capacity to develop and follow a coherent vision for the future of medical education and training governance and the effectiveness of its translation into regulatory requirements that reflect clearly elaborated strategies and policies. It involves strategic planning, execution by affected intersectional participants in the policy area, and a meaningful evaluation process.	Herbert, Busing, and Nasmith, 2021, Nurakynova, 2018, Warwick-Booth *et al.*, 2019, Papanicolas *et al.*, 2022
Stakeholder engagement	This considers the ability of stakeholders to effectively participate in decision-making processes involving medical education and training governance. Stakeholders include educational institutions, nongovernmental educator and medical practitioner organizations, government organizations, and civil society. It involves the delineation of roles and relationships among stakeholders and their effective applications.	Herbert, Busing, and Nasmith, 2021, Warwick-Booth *et al.*, 2019, Papanicolas *et al.*, 2022
Intelligence	This involves the capacity of the governance approach to create and manage intelligence in terms of data collection and management to conduct analysis to inform decisions on medical education and training.	El Morr and Ali-Hassan, 2019, Saxena *et al.*, 2018, Papanicolas *et al.*, 2022
Legislation and Regulation	This assesses the adequacy of the governance system's provision of a legal framework to regulate medical education and training. It involves the capacity to create legislative and administrative regulatory guidance and enforce compliance by actors in the medical education and training system.	Chekijian *et al.*, 2018, Van der Velden *et al.*, 2010, Papanicolas *et al.*, 2022

Source: The authors

Results

Strategic and Policy Vision

Brazil

Created in 2003, Brazil's central institutional actor guiding the Unified Health System's (SUS) approach to medical education and training is the Secretariat for Management of Work and Education in Health (SGTES). SGTES establishes education and training requirements based on values associated with primary care, the health-disease process, and the integration the interests of higher education institutions (HEIs), health service providers, and the community (OECD, 2021). SGTES has been responsible for formulating policies and regulations aimed at the management, education, training, and qualification of health professionals (ANDERSON, 2019; FRANÇA; MAGNAGO, 2019).

In 2004, the National Policy for Permanent Education in Health (PNEPS) was created to frame medical education and training by providing necessary structures and guidelines. These guidelines were represented as regulations published by the Ministry of Health in 2007. PNEPS outlines characteristics expected in medical education and training, including teaching, management, care, and social control. The policy provides an expectation that the processes of medical education and training take into account local health realities through adaptive teaching, work organization, and involvement of community interests. Key to maintaining the efficacy of this approach is continuous monitoring and reassessment to ensure adequate contextualization reflecting the nation's diverse localized needs (FREIRE *et al.*, 2019).

Within SGTES, the agency responsible for formulating and implementing medical education and training policy is the Health Education Management Department (DEGES). It is responsible for technical, financial, and operational cooperation with state, municipalities, and other policy actors including training facilities, health education organizations of social movements, and other entities involved in medical education, training, continuing education, and public engagement (OECD, 2021).

Canada

Canada has developed a coherent national vision regarding the structures, processes, values, norms, and outcomes the nation seeks to realize through its medical education and training programs. While its national and local governments can generally be classified as agnostic on these characteristics of medical education and training, a strategic approach created by national non-governmental entities representing self-governance by medical faculties and physicians has created a powerful set of governing institutions that prominently promote and enforce these characteristics (CRUMPTON; ROCHE, 2021).

Canada has established an accreditation approach that is universally applicable to medical programs throughout the nation. It has clearly delineated standards for the design and operation of medical UME education and PGME training. These are enforced in a standardized manner by national non-governmental regulatory bodies, whose authority and methods are recognized and consistently adhered to by all Canadian medical faculties. Standards identified by the national regulatory bodies have been integrated into the medical education and training design and operational approaches of Canada's medical schools (CRUMPTON; ROCHE, 2021).

The Canadian approach to governing medical training can be challenged based on an important criterion identified by the WHO (2013) and the World Medical Association (WMA,

2017) for national medical education and training regimes: the lack of a national health education plan and its integration into a broader national health strategy. Canada does not have a comprehensive national health strategy. While the Canadian government has identified strategies and initiatives in areas of health, such as diabetes, environmental impacts on health, and First Nations and Inuit health, it does not have an overarching national strategy that concerns all areas of health, including the education and training of physicians (HEALTH CANADA, 2021). However, over the past decade the AFMC, through its Future of Medical Education in Canada (FMEC): A Collective Vision for MD Education Project, has developed a national vision for the future of medical education and training. While the FMEC recommendations do not carry the authority of law, the study indicates that they have been taken seriously by Canadian medical schools and integrated into the planning and operation regimens of their medical education and training programs. The effects of the FMEC, however, are limited in that its recommendations only apply to UME and not to postgraduate/residency training (CRUMPTON; ROCHE, 2021).

Stakeholder Engagement

Brazil

In the Brazilian context, there is a concentration of and prevalence of participation among governed actors in decisions related to medical education and training. As previously mentioned, the Federal Constitution of 1988 established the Unified Health System (SUS) as the organizer of the training of health professionals (BRASIL, 1988). In joint action, the Ministries of Education and Health are responsible for organizing the training process of health professionals, in alignment with the National Institute of Educational Studies and Research Anísio Teixeira (INEP). The Ministry of Education is also responsible for the evaluation instruments in the medical inpatient courses (DIAS *et al.,* 2018) and it has the final word on opening schools, curriculum content, and rules for professional licensing.

Other actors are also involved in deliberative and advisory councils, such as the National Health Council (CNS), an external body to the executive power formed by medical corporations' and health services companies' representatives (BICA; KORNIS, 2021). The National Council of Education (CNE) is responsible for elaborating the national curriculum guidelines implemented in Brazilian medical courses in universities, university centers, and colleges.

The Federal Council of Medicine (CFM) and the Regional Councils of Medicine (CRMs), created by the federal government, are responsible for health professionals'

accreditation and ethical controls in medical practice (BICA; KORNIS, 2021; CFM, 2022). However, the CFM and the CRMs follow the requirements established by the MEC without regulatory power over professional training and licensing.

Even with decision-making concentrated in the federal government, other entities exert influence on medical education and training in Brazil through public instances to elaborate educational policies. They are the Brazilian Association of Medical Schools (ABEM), the Brazilian Association of Higher Education Supporters (ABMES), the Brazilian Medical Association (AMB), the National Federation of Doctors (Fenam), and the Brazilian Family and Community Society (SBMFC), among others (DIAS *et. al.*, 2018; BICA; KORNIS, 2021). Another actor recently inserted into the Brazilian medical education and training scenario is the Agency for the Development of Primary Health Care (Adaps), characterized as an autonomous social service established by Decree No. 10.283/2020. Adaps' main purpose is to provide professionals to vulnerable and underserved regions through the Doctors in Brazil Program, which is also responsible for the qualification and continuing education of program professionals (BRASIL, 2020).

Canada

The Canadian medical education and training governing framework involves complex multi-level relationships among a set of self-regulating non-governmental and provincial governmental actors: the CMA, Royal College, the AFMC, the Medical Council of Canada (MCC), the Canadian Residency Matching Service (CaRMS), the Canadian Federation of Medical Students (CFMS), the Resident Doctors of Canada (RDC), individual medical faculties, and provincial and territorial Medical Regulatory Authorities (MRAs).

Canada's medical education and training community, including its governing organizations, its medical faculties on a collective and individual basis, and its physicians have all embraced and sought to actualize a common vision of competency-based and patient- and community-oriented medical education, training, and practice. As reflected in the system's coherent vision and strategies in this area of health policy, this complex arrangement of stakeholder engagement has generally worked well (CRUMPTON; ROCHE, 2021).

Intelligence

Brazil

In 2020, the Health Education Mapping System (SIMAPES) was established by the Ministry of Health as an intelligence and data-driven approach to health education and training

management improvement. SIMAPES was established to introduce innovation in the organizational, procedural, and technological characteristics of health education and training in Brazil. It is intended to support the formulation of guiding policies for the education, training, development, distribution, regulation, and management of health workers, in support of SGTES's mission. A central objective of SIMAPES is to identify the most effective pathways for educating and training all health professionals that result in their sufficient numbers and high-quality practice capabilities (MINISTÉRIO DA SAÚDE, 2021). One of SIMAPES's innovations involves a management platform that systematizes, integrates, and makes accessible research-supported health education data to facilitate analysis and decision-making via search engines for health area managers (MINISTÉRIO DA SAÚDE, 2021). The systematization of information provided by SIMAPES is intended to help overcome the challenges associated with Brazil's size and population diversity, and to facilitate the coordination needed for the nation's functional approach to federalism in the area of health education. The system also informs SGTES's decision-making and regulation development (MINISTÉRIO DA SAÚDE, 2021).

Canada

The management of intelligence as it pertains to the need for and provision of medical education and training in Canada can be characterized as an effort combining public and private resources. Data regarding national and subnational health services and needs are collected by the federal government through a combination of platforms provided by the Canadian Institutes of Health Research (CIHR), Health Canada, the Public Health Agency of Canada, and Statistics Canada (Canada, 2023). Data concerning the characteristics of medical education and training are primarily collected and made available by the AFMC (AFMC, 2023).

However, the translation of this intelligence on medical service needs into the provision of medical education and training suffers from an element of fragmentation and incoherence in Canada. As this translation is largely left to the individual medical faculties and provincial governments to do, the faculties tend to interpret the need for medical services into curricular design and delivery while provincial governments are left to interpret the need for medical services in terms of the funding they provide to universities and their medical faculties for medical education and training (CRUMPTON; ROCHE, 2021).

Legislation and Regulation

Brazil

The offer of medical courses in Brazil is regulated by a 2013 law that established the PMM. Recent studies indicate that PMM is the nation's most important policy concerning the prioritization and provision of SUS's physician education and training (PINTO *et al.,* 2019; OECD, 2021; NOVATO *et al.,* 2022). By establishing rules for offering UME courses, PMM also regulates private institutions and defines in which cities medical courses can be created and which institutions can offer course vacancies (BRASIL, 2013). To illustrate, in 2019, the Doctors for Brazil Program was created to increase the provision of medical services in underserved and vulnerable areas of the country. The program was intended to encourage the training of specialists in family and community medicine as part of Primary Health Care (APS) component of SUS (BRASIL, 2019; MELO NETO; BARRETO, 2019).

Canada

The governance of medical education in Canada reflects the nation's overall approach to the regulation of the practice of medicine, wherein medical faculties of medicine and physicians collectively self-regulate. When the government is directly involved, it is primarily at the provincial/territorial level, while the federal government plays an indirect role related to financial support for medical schools and individual students and practitioners (CRUMPTON; ROCHE, 2021).

Thus, the approach to the governance of medical education and training that has evolved in Canada includes a complex set of relationships among the various non-governmental stakeholders involved, including national organizations of medical faculties and physicians, individual schools of medicine, individual physicians, medical students, and medical residents. It affords the nation's 17 medical schools substantial independence to design and operate their undergraduate medical education and postgraduate training in residency programs. However, this independence is limited by standards and monitoring regimes exercised collectively by the non-governmental regulatory bodies operated by physicians and medical schools. The examination and certification of the adequacy of training of medical graduates and residents is also performed by national non-governmental organizations, whose findings are used by provincial and territorial regulatory agencies to grant, monitor, and renew licenses to practice medicine within their jurisdictions (CRUMPTON; ROCHE, 2021).

Discussion

The comparative results of our application of this analytic approach are presented in Table 2. The central dichotomy that it elucidates between the Brazilian and Canadian approaches to

governing medical education and training involves the roles of governmental actors. While Brazil centralizes policy-making and regulation through governmental organizations, in Canada the *de facto* public policy and a regulatory framework has been left to medical faculties and organizations of physicians to develop and manage on a collective basis, with the national and subnational governments left to play marginal roles.

In terms of stakeholder engagement, while decision-making and actualization of medical education and training governance in Brazil is concentrated among agencies of the federal government, in Canada governance in this area of the healthcare system involves vertical and horizontal collaborations among an array of nongovernmental actors and provincial governments.

On the intelligence dimension, Brazil's approach again relies upon governmental actors to produce a great deal of the data, which until recently, had not been effectively mobilized to support the governance of medical education and training. With the recent creation of SIMAPES, there is potential to more effectively integrate health system data into medical education and training policy-making and regulation. Canada utilizes an approach that involves a variety of federal agencies to produce data on medical needs and service provisions while a self-governing organization of the medical faculties produces data on medical education and training. A weakness in the Canadian approach involves its fragmented translation of medical needs into medical education and training provisions, which is left to the provinces to finance and the individual medical faculties to actualize.

Evidence on the legislation and regulation dimension also shows a clear dichotomy between the subject nations. In Brazil, policy-making and regulation of medical education and training is concentrated in the federal Ministries of Health and Education, but with low levels of coordination and collaboration between them. In contrast, Canada has developed a highly integrated approach involving participation among a variety of non-governmental actors representing the interests of the medical faculties, physicians, medical students, and graduate physicians, as well as the provinces and territories.

Table 2. Medical Education Governance in Brazil and Canada.

Dimensions	**Brazil**	**Canada**
Strategic and Policy Vision	1) There is no strategic vision for medical education and training governance, resulting in small-scale and fragmented initiatives among federal government agencies. 2) Competition rather than collaboration	1) Self-regulating non-governmental organizations of medical faculties and physicians have developed a coherent vision for UME and PGME that is translated into policy and a regulatory framework.

	characterizes the relationship between the Ministries of Education and Health, and between public and private providers of medical education and training. 3) Policy and operational evaluation processes are being developed by SIMAPES to link medical education and training to medical service provision needs.	2) Policy development concerning the regulation of licensure and medical practice has been decentralized to the provinces and territories.
Stakeholder engagement	1) There is a high concentration in the federal government. 2) Little collaboration exists between the Ministries of Health and Education, the primary government stakeholders. 3) There is a paucity of engagement with other stakeholders, such as the medical faculties and organizations of physicians.	1) Stakeholder engagement for medical education and training governance is very high. 2) The roles and relationships among non-governmental entities representing the interests of medical faculties, physicians, students, graduate doctors, and the provinces and territories are clearly delineated and coherent. 3) The effectiveness of this collaboration and policy and regulation coherence is reflected in consistency across medical faculties in terms of curricular content, operation and competency testing, and licensure practices.
Intelligence	1) There are large datasets in the Ministries of Health and Education regarding medical service needs and medical education and training provisions that are not effectively linked/integrated resulting in intelligence incoherence. 2) SIMAPES has been created to resolve this integration/incoherence problem.	1) The federal government provides data on medical needs and service provisions. 2) A non-governmental organization of medical faculties provides data on the characteristics of medical education and training. 3) An element of intelligence incoherence involves medical faculty translation of medical intelligence into medical education and training provisions and provincial governmental funding of such.
Legislation and Regulation	The medical education legislation and regulation documents are concentrated in just one law (MPP) from the Ministry of Health and some educational rules from the Ministry of Education. Therefore, the capacity to legislate and regulate is limited, due to the dependence on the national congress.	Medical education and training policy and regulation in Canada are decentralized to the provinces. However, policy direction is *de facto* left to a network of non-governmental actors representing the interests of physicians and medical faculties.

Source: The authors

Conclusions

The cases considered in the current study represent distinctly different approaches to national governance of medical education and training. While the Brazilian approach is centralized under the control of the federal government, it is also fragmented and incoherent in terms of roles played by the Ministries of Education and Health. Although the Canadian model is decentralized, with many non-governmental actors involved, through effective stakeholder engagement it has achieved a coherent vision for medical education and training with a strong policy and regulatory framework that has produced high medical faculty compliance.

This paper contributes to the international discourse on the governance of medical education and training by both establishing and implementing an analytic framework for describing and comparing national cases of such governance and demonstrating its utility through a specific comparison of two large federated states. More precisely, it demonstrates that such states can utilize very different strategies to address the medical service needs of vast territories with diverse populations.

The limitations of the study are obvious and challenge its generalization utility. Firstly, only two states are considered, and a novel analytic approach has been utilized. Future research should consider more countries with different national governing approaches. Similarly, researchers should also consider additional dimensions of analysis to offer a more complete picture of how countries govern the education and training of physicians. They should also add analyses of key outcomes and impact measures to determine the extent to which differences in governance approaches produce differences in the quantity and quality of medical services.

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