interface
comunicação, saúde, educação
https://www.interface.org.br
eISSN 1807-5762

Articles

Management of teaching-service integration in medical schools in Paraná, SP, Brazil

A gestão da integração ensino-serviço nas escolas médicas do Paraná, PR, Brasil (resumo: p. 20)

La gestión de la integración enseñanza servicio en las escuelas médica del Estado de Paraná, PR, Brasil (resumen: p. 20)

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Addressing the challenges of complex networks resulting from teaching-service integration requires new management models. The aim of this study was to analyze the management of teaching-service integration (TSI) in medical schools in the State of Paraná. We conducted a qualitative exploratory, descriptive, and explanatory cross-sectional study using data from semi-structured interviews with medical school administrators and public health managers divided into five core themes: concepts, practices, determining factors, modes and processes of evaluation, and characteristics of TSI management. Integration configures a policy management network in which practices result in management processes that are unable to deal with its intrinsic complexities, hindering the improvement of evaluation systems, compromising appropriate education and training, and overburdening the health system. Understanding these networks is crucial for promoting medical education that transcends the medical school and meets the evolving needs and demands of public health services.

Keywords: Medical education. Teaching-service-community integration. Policy management networks. Public education policy.

Zarpelon LFB, Batista NA. Management of teaching-service integration in medical schools in Paraná, SP, Brazil. Interface (Botucatu). 2022; 26: e220435 https://doi.org/10.1590/interface.220435

Introduction

Teaching-service integration (TSI) is a collective action integrating students, academic staff, and health care professionals aimed at improving the quality of health care, achieving excellence in professional education and training, and promoting workforce development[1]. Effective TSI contributes to the transformation and enhancement of health education and training, in-service training, and care practices[2].

Integration is forged by articulating political, social, and economic processes. Educators and researchers were already talking about TSI in the 1950s; however, it was only in the 1970s that Brazil underwent numerous transformations in the fields of health and education.

Two important early movements were community medicine, concerned with preventing disease and including marginalized groups by encouraging community participation, and faculty-service integration, which incorporated teaching into health services by creating placement programs in health centers and hospitals. However, these initiatives did not lead to a shift in the hospital-centric approach to education and fragmented practice across many specialties, with advances only being witnessed with the introduction of more wide-ranging, integrated, and focused initiatives[3].

At the end of the 1970s and beginning of the 1980s efforts were made to encourage multi-department and multi-professional participation in faculty-service integration projects with the support of the Kellogg Foundation[4-6]. Although a move in the right direction, towards education and care tailored to evolving population health needs, much still remained to be done.

Major changes took place in the 1980s and 1990s after the birth of the country's public health service – the Brazilian National Health System (SUS) setting a system focused on comprehensiveness, humanized care, and health promotion against the prevailing model and making the qualification and commitment of health professionals a vital part of the consolidation of the new system.

In the 1990s, "UNI projects", "a new initiative for the education of health professionals: union with the community", became the main focus of attention. Representing the conjunction of three isolated movements that were already underway (TSI, primary health care, and community outreach), this initiative laid the foundations for university-service-community relations[3,4].

Although these movements made some advances, the challenges of incorporating comprehensiveness and humanization into care practices persisted due to problems institutionalizing this approach or difficulties sustaining the driving forces of change; or more often than not, a combination of these two factors[3,7].

A new movement known as the *Rede UNIDA* emerged in 1997, bringing together researchers and educators from the faculty-service integration and UNI movements. Adopting a network-based approach, the movement sought to enhance capacity for change, developing capacities collectively by sharing knowledge and power. The *Rede UNIDA* brought together people, projects, and institutions committed to promoting change in education and training, professional development, and to building an equitable and effective health system with strong public participation[3,7].

Against the backdrop of health reform, the creation of the SUS in 1988, the 1996 National Education Guidelines and Framework Law (LDB), and the first National Curriculum Guidelines for Undergraduate Health Courses (DCN) in 2001, various TSI experiences have promoted closer links between academic institutions and health services, seeking to reorganize teaching and health care and develop permanent education actions. However, several challenges remain, including, above all, the sharing of goals and objectives between these two worlds.

It can be observed that reforms have focused more on education plans than health practices, resulting in the development of innovative experiences by public universities aimed at promoting a shift in the traditional model of medical education[8]. These experiences have also demonstrated the need to forge new links between teaching and services.

With the creation of the Department of Management of Work and Education in Health (SGTES) in 2003, the establishment of the National Permanent Health Education Policy (PNEPS) in 2004, and the subsequent launch of a number of joint programs by the ministries of health and education aimed at expanding TSI to other areas such as nursing, nutrition, and physiotherapy, the Ministry of Health began to share the responsibility for health education and training, including the organization of human resources and work management.

Together with education institutions (EIs), the SUS began to play a bigger role in the conception, planning, and development of TSI, increasing funding and participating in the management of actions, projects, and programs.

Law 12871 (22 October 2013), which created the More Doctors Program, set new standards in medical education and training, introducing student placements in SUS services in the early stages of degrees, increasing the percentage of placements in primary care, and broadening training to include management and health education, emphasizing the importance of effective TSI.

TSI has thus become a dialectical relationship in which each sector should shape and be shaped by the other. This can be illustrated by Figure 1, with the red circles highlighting the main landmarks in this process.

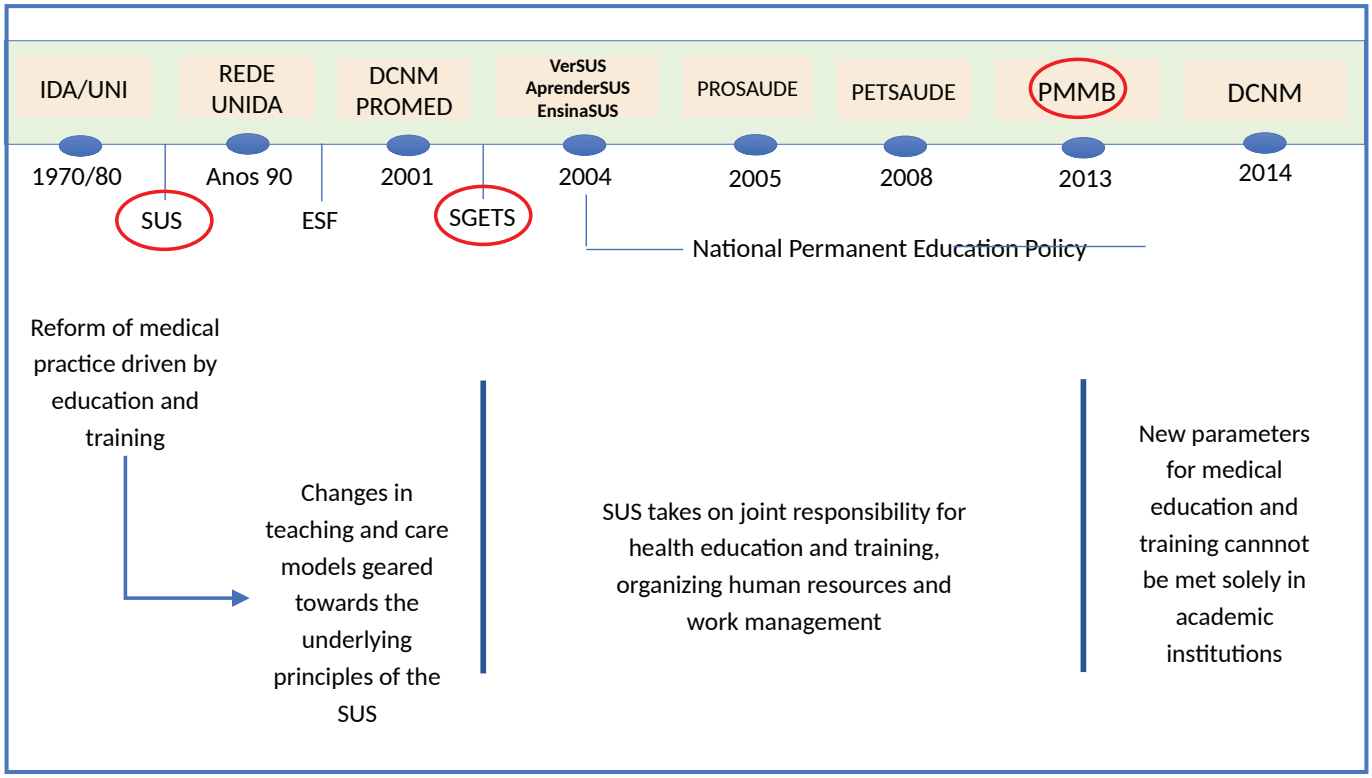

Figure 1. Interrelationships between national health policy and professional education and training policies.

Viewed from this perspective, integration should take on common meanings and the resulting experiences should produce gains for both institutions, which in turn requires dialogue in favorable spaces with the participation of all in the pursuit of greater stability. SUS managers and medical school administrators therefore play a pivotal role in this process.

At new levels, these relationships clearly make up a policy network[9], as defined by Börzel:

> [...] a set of relatively stable relationships which are of a non-hierarchical and interdependent nature linking a variety of actors who share common interests with regard to a policy and exchange resources to pursue these shared interests acknowledging that co-operation is the best way to achieve common goals. (p. 2)

Far from simple, the management of these networks poses administrative challenges, including negotiation and consensus-building, the clear definition of operational rules, counterpart funding, and the development of collective decision-making processes. In polycentric structures such as TSI, decision-making, planning, and evaluation require new approaches, which are often overlooked[10].

The management of these networks has received little attention and research in this area has traditionally focused on intraorganizational situations, which differ from interorganizational structures in several crucial aspects. Networks are made up of actors, resources, perceptions, and rules[11], all of which are key elements to be considered in network management.

This study investigated TSI in the State of Paraná based on the perceptions of education and SUS managers, focusing on modes and processes of evaluation and the characteristics of management, thus gaining an insight into these actors' concepts and practices, and the factors determining integration. We believe that the findings can make an important contribution to research in the field of health education and training.

Methods

We conducted a qualitative exploratory, descriptive, and explanatory cross-sectional study of the management of TSI in medical schools in Paraná between August and December 2019.

The study included health regions with at least two medical schools that offer complete training cycles. We chose to interview medical school administrators and health managers as these professionals are best placed to provide insights into the workings of TSI in their institutions.

The study was undertaken in the hubs of the State of Paraná's four largest health regions, encompassing nine medical schools (75% of the schools providing complete training cycles), including public, non-profit, and private institutions.

We interviewed nine school administrators, the regions' four municipal health secretaries and three regional health directors, and a member of the Paraná State Teaching-Service-Community Integration Committee (CIESC).

The data were collected using a questionnaire devised to obtain information on participant characteristics and semi-structured interviews divided into five core themes based on the guiding questions of the study: concepts, practices, determining factors, modes and processes of evaluation, and characteristics of TSI management

Invitations to participate in the study were sent to the selected study participants' work email together with an informed consent form, the interview guide, and the letter of approval of the study protocol from the research ethics committee. The interviews were held in a location designated by the participants. Each interview was recorded and lasted between 25 and 40 minutes. At the beginning of the interview, the interviewer collected the signed informed consent form and form authorizing the use of the recorded material, asked once again whether there were any questions about the study, explained that the participant could withdraw from the study at any time, and reiterated the commitment to confidentiality of the collected information.

The interviews were analyzed using Bardin's thematic approach to content analysis, involving the following three stages: pre-analysis, selection of units of analysis, and categorization. The latter was non-a priori as the categories emerged totally from the participants' answers. ATLAS.ti® was used to facilitate data storage, management, and recovery.

The study protocol was approved by the research ethics committee (CAAE 15095219.1.0000.5505) after receiving approval from the Federal University of Sao Paulo's research ethics committee (application 0643/2019).

Results and discussion

The following participant characteristics warrant highlighting: the high prevalence of managers/administrators with *sensu stricto* training (82%) and the average time spent in the position (3.7 years). Having *sensu stricto* training appeared to facilitate the establishment of links between services and academia and length of time spent in the position (0.5 to 12 years, most participants less than 5.6 years) seemed to hamper the institutionalization of integration, which still depends largely on the personal characteristics of managers. These data are shown in Frame 1.

Frame 1. Characteristics of the study participants.

POSITION	AGE	SEX	DEGREE	SPECIALITY	MSc	PhD	LENGTH OF TIME IN POSITION (years)
COURSE COORDINATOR	47	M	MEDICINE	ONCOLOGY	YES	YES	1.5
COURSE COORDINATOR	39	F	MEDICINE	FAMILY COMMUNITY MED	YES	NO	1.5
COURSE COORDINATOR	61	F	MEDICINE	GYNECOLOGY/OBSTETRICS	YES	YES	1.5
COURSE COORDINATOR	60	F	MEDICINE	DERMATOLOGY	YES	NO	4
COURSE COORDINATOR	58	F	MEDICINE	GASTROENTEROLOGY	YES	NO	3.5
COURSE COORDINATOR	55	M	MEDICINE	ENDOCRINOLOGY	YES	YES	4
COURSE COORDINATOR	64	F	MEDICINE	PEDIATRICS	YES	YES	2
ASSISTANT COURSE COORDINATOR	54	M	MEDICINE	PEDIATRICS	YES	NO	2
COURSE COORDINATOR	64	M	MEDICINE	CARDIOVASCULAR SURGERY	YES	YES	11
MINICIPAL HEALTH SECRETARY	57	F	NURSING	PUBLIC HEALTH	YES	NO	2.5
DIRETOR SECRETARIA DE SAÚDE	53	F	NURSING	SUS MANAGEMENT	YES	NO	2
MINICIPAL HEALTH SECRETARY	40	M	MEDICINE	NEUROINTENSIVE CARE	NO	NO	2.8
MINICIPAL HEALTH SECRETARY	36	M	PHYSIOTHERAPY	NO	NO	NO	0.75
MEMBER OF CIESC	62	F	NURSING	PUBLIC HEALTH	YES	YES	12
REGIONAL HEALTH DIRECTOR	57	F	NURSING	PUBLIC HEALTH	YES	YES	0.5
REGIONAL HEALTH DIRECTOR	57	F	NURSING	SUS MANAGEMENT	YES	NO	11
REGIONAL HEALTH DIRECTOR	34	M	PEDAGOGY	NO	NO	NO	1

The analysis the interviews resulted in 27 categories grouped into five core themes: concepts, practices, determining factors, modes and processes of evaluation, and characteristics of TSI management. These categories and their respective meanings are shown in Frame 2.

Frame 2. Categories that emerged from the manager interviews.

AREA	CATEGORY	DESCRIPTION
CONCEPTS	Process that improves education and training	The integration of education and training into services widens learning opportunities and tailors learning to the student's future professional needs
	Process that contributes to the development of the SUS	It allows the health system to influence the education and training of future human resources, ensuring they are committed to underlying principles and guidelines, improving practices, and increasing technical and scientific output
	Process that broadens the development of competencies	Integration facilitates the development of interprofessional, leadership, and management competencies, as well as technical and care skills
	Process that drive the formation of a policy management network	The presence of 3 or more legally autonomous organizations that cooperate to achieve common goals driven by a public policy encompasses several phenomena attributable to networks
	Process that drives changes in the curriculum	The needs arising from government, health system or community demands related to integration drive curriculum changes
	Process that promote social responsibility on the part of the school	The ties established commit schools to improving community living conditions, facilitating the development of social accountability policies
PRACTICES	Practice tailored to care	Biomedical care practices resulting from predominant curricular demands are rare in non-care settings such as health management or surveillance
	Practice conditioned by reality	As TSI takes place in real-life settings, integration promotes a practice determined by the evolving daily needs of services and communities
	Practice developed by aligning academic interests	Practices are based more on satisfying the needs and interests of academia and less on cooperation to achieve common goals
	Practice conditioned by counterpart contributions	Integration relationships are determined by available counterparts, promoting different practices in the same catchment area depending on the different counterparts offered/demanded
	Practice influenced by dichotomies of the policy management networks	Integration relations express paradoxes that are common to policy management networks, including competing interests, the singularities of participating entities, and overlap between personal and interinstitutional relationships
	Practice poorly institutionalized	Practices are piecemeal, lack clearly defined policies and permanent funding, are not a priority for managers, and often lack staff
DETERMINING FACTORS	Degree of local alignment to national health and education policies	Capacity of schools and services to align projects that are understood and accepted by all staff with national guidelines and the lack of capacity of central guidelines to meet/recognize local needs and specific characteristics
	Interinstitutional recognition of complementarity	Recognition of common objectives, demands, and outcomes and the need for mutual support between participating entities at all levels of the institutional hierarchy
	Professionalization of teaching activities	Permanent professional training and development for teachers and preceptors in teaching activities and management of educational programs
	Level of institutionalization of integration	Expressed in the institutions' policy priorities, capacity to meet guidelines, low level of dependence on specific and temporary actions, people, and sustained funding
	Processes for managing the integration of those involved	Operational characteristics of intraorganizational governance and joint management of the integration process (interorganizational)
	Legal framework for integration	Capacity of regulatory norms to encompass all aspects involved in complex integration relationships, minimizing antinomies
	Singularities of the participating services	Intrinsic characteristics of the services where integration takes place (infrastructure, level of care, location, quality of care, care strategy)
MODES AND PROCESSES OF EVALUATION	Evaluation of integration poorly institutionalized	Poor systematization of evaluation in the routines of schools and services. Evaluation is inconsistent, lacks feedback, and make a limited contribution to decision-making by managers. Existing processes are weak and mainly perception-based
	Lack of specific integration indicators	Lack of specific integration process and outcome indicators. When there are indicators, they are generally linked to regulatory or production processes in practice settings. Indicators are not monitored
	Poor systematization of structural conditions available for integration	Structural conditions of participating practice settings (physical infrastructure, human and financial resources) poorly systematized
	Lack of organizational structure for evaluation	Evaluation performed separately by each participating entity. There are no specific shared evaluation structures
MANAGEMENT CHARACTERISTICS	Management does not view teaching-service integration as a network	Governance processes do not address the network's characteristics and needs (interorganizational), despite some elements being identified by the participating entities
	Lack of structure for the management of integration	There is no specific shared management structure capable of dealing with the complexity of the process. Management is performed by each institution's general structures
	Management has limited capacity for dealing with antinomies	Regulatory framework for integration has real or apparent antinomies (unforeseen, conflicting or unclear situations) that management has not always been able to address
	Lack of suitable contractualization instruments	Contracts do not encompass all process interfaces and the entire spectrum of actions, fail to clearly explain responsibilities and objectives, and do not include all hierarchical levels of those involved

The TSI management processes were analyzed as a phenomenon that emerges from the everyday practice of the schools and services and not restricted to a set of management techniques or the organizations' internal relations.

The object of study in the area of administration was management, based on the assumption that management is not limited to the organizations' internal social relations or a set of planning and control techniques, methods, and/or tools, but rather, and first and foremost, a phenomenon that is born of society, with society, and for society: a social contract and practice that should be legitimized and recognized by all enclaves involved[12].

Managers' concepts of teaching-service integration

The analysis of the interviews identified 79 context units (CU) and 150 recording units (RU), considered meaning units, which were analyzed and grouped into six categories.

The concepts of education managers (EM) and SUS managers (SM), understood as the comprehension of an object resulting in the elaboration of notions that drive actions, reproduce the potentialities of TSI processes for both systems.

The improvement of education and training that is effectively integrated into the health care network, development of competencies beyond those possible in traditional education and training institutions, impetus to drive curriculum changes capable of satisfying real health needs based on training tailored to reality, and the effective development of the social responsibility of schools are common visions among the managers, demonstrating that TSI is a powerful strategy for fulfilling potential in all these areas at the same time.

> Students go to the [health] center from the beginning [...] looking at that context has helped professional education and training a lot [...] the people, where they live, the issues in that health region, violence, trafficking [...] all the care actions with the population [...] it provides student with a picture of the health system (SM4)

> Since all practice is integrated, it considers the professional's specific competencies [...] that which we have in common, common competencies, general competencies, [...] that which everyone develops in their uniprofessional approach, because it is a general competence (EM10)

Increasing student immersion in social settings helps ensure that professional education and training is consistent with the guiding principles of the SUS, broadens understanding of multiple determinants of health, propels the community to seek their rights, and develops care, education, management, research, and interprofessional skills, fostering system changes and the reorientation of curriculums[13-16].

Two other aspects also warrant highlighting. The first concerns the incontestable role that TSI plays in the development and maintenance of the SUS, a result that was strongly emphasized by the managers.

> The arrival of the group of students and researchers in the service has made me review my practice and my practice is going to be questioned and I am going receive criticism of the way I'm doing my job and I need to study, update myself [...] to be able to do this job that meets both teaching and service needs (SM5)

> Our presence (of the school) has had a major impact, especially around the city [...] there are either no or few doctors, there is a total lack of specialties [...] we brought doctors. (EM11)

The second refers to the understanding that TSI relations, in their intended form, constitute a policy that should be managed and implemented by a network made up of all levels of management of the SUS, service providers, and medical schools.

> It's a challenge for various reasons. Because the needs of the university are one thing, the needs of the manager are another, those of the user are another, and those of the workers in that unit are another (SM12)

> It's really important in teaching-service integration that the service understands that it participates not only in execution, but also in planning. So when the service is involved from the proposal design, planning (stage), you ensure that it contributes in a more effective and integrated manner to the execution and evaluation of that which is implemented (EM10)

The improvement of care engendered by a broader vision of disease and illness, enhancement of living conditions, innovations in health care, improvements in the quality of health professionals, and the sensitization of workers to collaborative working are binding effects of TSI that are fundamental for the consolidation of the health system[2,16,17].

This consolidation and governance of integration requires operational sustainability, political will, intersectoral articulation, and new technological arrangements. The results of integration are boosted when it based on shared management strategies that lead to co-responsibility across the segments involved, resulting in the democratization of the process[15,18,19].

Teaching-service integration practices

Despite consistent coherent concepts among the actors involved in integration processes, be it those from the present study or the reviewed literature, practices still hark back to the times before the law that created the More Doctors Program, characterized by standards based on specific, piecemeal integration programs stimulated by inductive central-level policies or exclusively restricted to the schools' search for spaces for practical training involving the offer of counterpart funding.

With these practices schools do not provide health accountability and services do not participate in education decision-making, denoting outcomes derived from the satisfaction of unilateral needs.

> The school sees the internship field as a place to address academic demands and the internship field sees training as cheap labor (SM16)

These practices are strongly influenced by the demand for and availability of counterpart funding and resources requested and offered by different entities, conditioning outcomes and generating unequal practices in unique settings.

> We managed to bring professionals [...] including not only doctors, as often the center needs other professionals... "I need someone to manage..." "I need an X-ray technician and have no way of hiring one" [...] that facilitates things a lot (EM11)

While the identification of needs and possibilities by both sectors can be positive, challenges such as asymmetrical power relations, resistance to working together resulting in disjointed and unplanned actions, distance between teaching and services, singularities that lead to varying degrees of commitment, and lack of willingness and recognition of the value of integration can hamper the development of effective practice[16,20-22].

Since practices are mainly focused on individualized biomedical care and services are generally not very proactive when it comes to TSI, schools primarily seek care settings.

This limits the effectiveness of integration, as there is little demand for non-health care settings, despite their considerable contribution to the objectives set out in the education and training guidelines.

> We also offer placements in non-health care settings, management, and surveillance, but there is less demand (SM8)

As education plans focus predominantly on the biomedical model of health care, practices are still often centered around cure and the doctor figure, where care is productivity-oriented, fragmented, and technical. TSI tends to be detached from political and social processes contributing on a smaller scale to the permanent education and satisfaction of other types of professionals in health teams[16,23].

Regarding integration practices, it is evident that the singularities of the participants and conflicting interests regularly override common goals. This is a common paradox in policy management networks and the failure to recognize this factor and poor management severely limit the integration process.

> This is a private school, so we have a financial relationship with other services [...] we pay to be in certain settings (EM1)

> Private schools can exchange services [...] renovate a health center [...] for a preceptor [...] pay the (salary of) the health center nurse or doctor (EM6)

The low level of mutual commitment to common integration goals can lead to poorly institutionalized practices that are dependent on the understanding of the people who occupy leadership roles and lack permanent funding. This can give rise to inconsistent practice and failure to deliver the desired results.

> A municipality in which we have built a lot in eight years, we signed the Organizational Contract for Public Teaching-Health Action. When the mayor changed, when the opposition took power, everything that was done in the previous administration was labelled as bad, regardless of whether it was good or bad (EM7)

Practices that are negotiated with every change of administration, adherence, to a greater or lesser degree, to inductive policies, or even the pendular nature of the integration policy, which is marked by advances and setbacks dictated by incumbent political group, illustrate the role personal relationships play in conditioning these relations and demonstrate that piecemeal stimuli are not enough to transform education and training and health practices[19,24,25].

Factors determining teaching-service integration

The determining elements of these relations can either facilitate or hinder TSI, depending on their relationship with management processes. When they include the intrinsic characteristics of a policy management network – horizontality, polycentricity, and interdependence – they contribute to the development of TSI, and vice versa.

Local capacity to align projects and actions with central guidelines, represented by the development of education and care plans in line with these guidelines understood and accepted by all staff, are considered decisive factors for the success of TSI.

> [...] the teachers were in their outpatient specialty clinics when the guidelines arrived [...] this was a difficulty and remains so for some, understanding where the student will have to learn [...] we go outside (the school); so it's going outside (the school) that is difficult (EM3)

The combination of various federal policies (work management, health education, and the expansion of primary care) and synergistic actions at locoregional level, including greater adherence to the National Curriculum Guidelines for Undergraduate Health Courses, has helped strengthen teaching-service integration[26].

Permanent organic relations between schools, services, and multi-stakeholder forums and long-term investment in relevant institutions is necessary to avoid discontinuity of integration processes[2,23].

Effective implementation of TSI requires willingness on the part of the actors involved to assume new roles. Given that TSI is a process that involves teaching in real-world practical settings, joint professional development is essential to ensure that health workers and academic staff acquire the right mix of competencies.

> Education and training of preceptors and academic staff training [...] I am a medical professor, but I am a doctor first and foremost. Most of us don't have, didn't have, or are looking for more solid teacher training. Education is an area for us and our experience here shows me that it's an unknown area (EM1)

Challenges for consolidating TSI include the fact that staff are underprepared for teaching and professional practice, the lack of staff to supervise students with attitudes that serve as an example for future professionals, poor access to databases and research, and the need to redefine and value the role of the preceptor[17,18,20,23,27-30].

Strategies that promote the constancy of integration actions, increasing the incorporation of teaching into services, committing institutional actors to process outcomes rather than just their own institutional goals, planning and agreeing long-term processes, and including public participation, increase the degree of institutionalization of TSI and make implementation easier.

Management processes that address the complexity of integrated systems, provide good communication mechanisms, clearly explain roles, promote joint planning of actions and adequate financial support, contain a support structure, and are capable of dealing with antinomies are key elements of integration processes.

> The city council health department was not created to be a placement setting [...] it became one only recently [...] as we have a lot of institutions [...] it's difficult to understand how it works (SM12)

For effective engagement between education institutions and health services – defining joint objectives, demands, and expectations, and establishing formal partnerships to ensure that academic staff and health professionals actively participate in health service planning and in the education process – it is important to consider all aspects of local management and governance. This engagement in turn requires complex mediation due to the singularities and contradictions present in this relationship[19,22,23,30].

The singularities of education institutions and health services, including physical infrastructure and human resources, location, level of care and care strategy, and school demand, directly affect the establishment of integration.

Challenges include inadequate practice settings, insufficient preceptors, and the fact that general practitioners and academic staff lack training in student supervision are insufficiently prepared for in-service training[28,30].

Modes and processes of evaluation of teaching-service integration

The findings show that evaluation is fundamentally based on the perceptions of the actors involved in the process, generally satisfying their own interests and almost never focusing on the processes and outcomes of a cooperative strategy developed by entities seeking to fulfill the same objectives.

> Regarding evaluations, it's a qualitative impression [...] based on the perceptions of students, teachers [...] my series coordinator, my area coordinator, the teaching unit (EM1)

In addition to being weak and poorly institutionalized, the evaluation of TSI is commonly treated separately by the education institution and health service. It is also often restricted to methodologies delimited by specific programs, which are inadequate.

> There are small movements, like the one within community interaction [...] they do these small evaluations... each group does its (own) locality, but we have yet to create a systematic evaluation (EM11)

When used, indicators are limited to those contained in regulatory and external accreditation procedures, meaning they are insufficient to evaluate processes and specific outcomes of integration and of little use for informing decision making.

> I have control over the location, where they are, the shift, which health center. We distribute the health centers so that one institution in not in the same center as the other (SM12)

> Evaluation by the team from the Ministry of Education and Culture/Ministry of Health for course accreditation and maintenance. Evaluation by the State Department of Science and Technology (EM17)

Critical factors for sustaining TSI relationships include investment in monitoring and evaluation, the use of indicators to plan actions, and joint analysis of processes[29].

When referring to modes and processes of evaluation, the participants focused primarily on physical infrastructure, funding, human resources, and the services provided at the care setting. However, there is no systematic evaluation of these aspects, resulting in contradictory assessments of physical infrastructure in the same catchment areas.

> We have already reached our limit [...] to give you an idea, we have a municipal hospital where for some months now we have had to refuse placements, because it has reached its limit (SM12)

The lack of an evaluation team made up of staff from the participating entities and the fact that evaluation is not a priority for managers hampers the consolidation of an effective and efficient evaluation system.

TSI actions lack evidence that demonstrate their importance, by showing the advances that have been made for example, and the challenges that arise during the process. This clearly indicates that future calls for proposals need to include investment in monitoring and evaluation[25,29].

> We don't do evaluation. Because, you might say, demand is massive and this is, let's say, less of a priority (SM4)

Management/operational characteristics of teaching-service integration

The findings indicate that that every governance process is built around bilateral relationships established between participating entities, despite the fact that catchment areas include multiple actors who are often competing for the same resources.

The motives behind the establishment of integration relationships still stem from unilateral interests, which the parties seek to align in bilateral negotiations.

> Because that's how it is, each school looks at it like that: "Jeez, are you denying me that placement?" And so they don't see the bigger picture. [...] all the schools fight over the municipal maternity unit (SM8)

Defined in this way, as multilateral collectives, networks can become extremely complicated entities that require explanations that go far beyond the dyadic approaches traditionally discussed in organization theory and the literature on strategic management[31].

Despite the managers' strong belief that the established governance does not reach the limits that are essential for a system that induces the formation of a policy management network, the use of management processes that are more suited to networks is not considered

Guaranteeing the participation of all from the beginning of the process, joint planning, clear objectives, goals and roles, effective communication, and the formation of management committees to share decision-making and horizontally agree strategies are fundamental elements in the development of integration. Managing systems based on these premises is complex and requires specialized operating units and shared structures, which is not the rule in the systems investigated, in which integration demands are assessed exclusively by the placement provider.

> It's regulated by the department of health [...] we have a health education center that has a director [...] in this education center we already have a procedure, all the demands are sent there (SM4)

It is necessary to encourage internal communication at different levels of management in each institution and participating organization and create spaces for community participation in activities to overcome poor organization and transparency in agreements[30].

The involvement of both public and private entities, sharing resources under a tangled web of laws and regulations overseen by a wide range of enforcement agencies, adds considerable complexity to an already challenging field. The capacity of local managers to deal with existing antinomies was shown to be a decisive factor in the management of integration.

> In the middle of all this there are all these enforcement agencies that look, not necessarily favorably, at this interaction when we have private universities (SM12)

Agreement instruments provide little support for management processes. The likelihood of unworkable processes or unlikelihood of all necessary actions, the lack of clearly defined objectives, goals, and roles and responsibilities of those involved, and the weaknesses of the instruments before enforcement agencies demonstrate that, as a general rule, traditional agreements, which are easier to prepare, are less effective.

> It's not all black or white [...] there is an umbrella agreement between the university and the municipality that includes everything but encompasses nothing. [...] it relies on being true to the word (EM6)

A suitable instrument for network management should include all actors in a single term and set out the requirements for agreement and implementation. In the present study, these requirements did not incorporate the day-to-day management of the systems, meaning that the organizational contracts in the investigated catchment areas were not workable.

> You have to prepare a single instrument, so you can imagine that it is difficult [...] you get it right on one side, while the other (says) "ah, but I but I want it too, I want it too" and then personal issues come into play [...] (EM11)

Despite the unanimous recognition of the difficulties involved in operationalizing organizational contracts, the Organizational Contract for Public Teaching-Health Action (COAPES) was seen to set out important elements of agreement: the "details", as one of the managers succinctly put it.

> It was a very rich experience, we took a year and a half to prepare it (the COAPES), that's what I say, preparation is easy, it's keeping the train moving that's the problem (SM8)

Network management is far from simple, which means that social programs and projects often fail, despite the good intentions of the actors involved[10].

Final considerations

The findings of this study clearly show that while TSI relations in the schools studied in Paraná are understood as management networks by managers, this is not reflected in practice.

Our results also demonstrate how the lack of a network-based approach to the management of integration processes gives rise to inadequate integration practices, hampers the improvement of evaluation systems, compromises appropriate education and training, and overburdens the health system.

In addition to regulatory aspects, the new requirements of medical education and training envision education that is centered on the health system. The management of this process, which brings together two highly complex socio-technical fields, calls for a shift from current predominantly intraorganizational management models towards new arrangements for interorganizational governance between schools and services. Understanding policy management networks is therefore of critical importance.

Study weaknesses include the fact that the data were derived from interviews with managers with temporary contracts. Strengths include the fact that the study encompassed practically all medical schools that offer complete training cycles in the State of Paraná, the inclusion of all types of schools (public, non-profit, and private institutions), and the fact that the institutions have been in existence for some time.

Authors' contribution

All authors actively participated in all stages of preparing the manuscript.

Conflict of interest

The authors have no conflict of interest to declare.

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Editor
Roseli Esquerdo Lopes
Associated editor
Pedro José Santos Carneiro Cruz

Translator
Philip Gradon Reed

Submitted on
04/01/22
Approved on
08/01/22

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Suportar a complexa rede resultante da integração ensino-serviço requer novos modelos de gestão. O objetivo deste trabalho foi analisar os processos de gestão da integração ensino-serviço nas escolas médicas do Paraná. É um estudo transversal, qualitativo, exploratório, descritivo e explicativo conduzido entre coordenadores de curso de Medicina e gestores do Sistema Único de Saúde (SUS). Os dados emergiram dos significados e explicações sobre o fenômeno, produzidos pela aplicação de entrevistas semiestruturadas em cinco eixos temáticos: concepções, práticas, determinantes, avaliação e gestão da integração ensino-serviço. A integração configura uma rede gestora de política cujas práticas resultam de processos gerenciais incapazes de atender às suas complexidades intrínsecas, inviabilizando o aprimoramento dos sistemas avaliativos, comprometendo a formação consentânea e sobrecarregando o sistema de saúde. O entendimento dessas redes é indispensável a uma educação médica que transcenda o aparato escolar e se baseie no Sistema Único de Saúde (SUS).

Palavras-chave: Educação médica. Integração ensino-serviço comunidade. Redes gestoras de política. Políticas públicas educacionais.

Dar soporte a la compleja red resultante de la integración enseñanza servicio requiere nuevos modelos de gestión. El objetivo de este trabajo fue analizar los procesos de gestión de la integración enseñanza servicio en las escuelas médicas de Paraná. Es un estudio transversal, cualitativo, exploratorio, descriptivo y explicativo realizado entre coordinadores del curso de medicina y gestores del Sistema Único de Salud (SUS). Los datos surgieron de los significados y explicaciones sobre el fenómeno, producidos por la aplicación de entrevistas semiestructuradas en cinco ejes temáticos: concepciones, prácticas, determinantes, evaluación y gestión de la integración enseñanza servicio. La integración configura una red gestora de política cuyas prácticas resultan de procesos de gerencia incapaces de atender sus complejidades intrínsecas, inviabilizando el perfeccionamiento de los sistemas de evaluación, comprometiendo la formación adecuada y sobrecargando el sistema de salud. El entendimiento de esas redes es indispensable para una educación médica que transcienda el aparato escolar y tenga como base el SUS.

Palabras clave: Educación médica. Integración enseñanza servicio comunidad. Redes gestoras de política. Políticas públicas educativas.