

REVIEW

Strategic management in clinical simulation centers: A systematic review in the Latin American

Dirección estratégica en centros de simulación clínica: una revisión sistemática en el contexto latinoamericano

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ABSTRACT

Introduction: strategic management in higher education institutions, particularly in the field of Health Sciences, has gained increasing importance in Latin America to strengthen educational quality. In this context, clinical simulation centers emerge as key environments that require strategic frameworks for sustainable planning, management, and accreditation.

Objective: to analyze how strategic direction, planning, and development are expressed in higher education in Health Sciences in Latin America, and their applicability to clinical simulation centers.

Method: a systematic literature review was conducted, focusing on scientific articles published between 2018 and 2025, using the Scopus and PubMed databases. Priority was given to academic articles and documents from Latin American countries.

Results: the analyzed articles reveal a variety of strategic approaches applied in higher education institutions in health and clinical simulation centers. Common elements were identified, such as planning, management, leadership, quality, and strategic evaluation all essential for institutional improvement.

Conclusions: strategic management in clinical simulation centers in Latin America requires adaptive frameworks grounded in organizational planning and development. Coherence between institutional vision, leadership, and evaluation is key to building sustainable and context-sensitive accreditation models.

Keywords: Strategic Management; Strategic Planning; Strategic Development; Clinical Simulation Centers; Higher Education in Health Sciences.

RESUMEN

Introducción: la dirección estratégica en instituciones de educación superior, especialmente en el campo de las Ciencias de la Salud, ha cobrado una importancia creciente en América Latina como vía para fortalecer la calidad educativa. En este contexto, los centros de simulación clínica se perfilan como escenarios determinantes que requieren marcos estratégicos para su planificación, gestión y acreditación sostenibles.

Objetivo: analizar la dirección, planificación y desarrollo estratégico de la educación superior en ciencias de la salud en América Latina, y su aplicabilidad a los centros de simulación clínica.

Método: se realizó una revisión sistemática de literatura científica centrada en artículos publicados entre 2018 y 2025, en las bases de datos de Scopus y PubMed. Se priorizaron artículos y documentos académicos publicados provenientes de países latinoamericanos.

Resultados: los artículos analizados muestran diversos enfoques estratégicos aplicados en instituciones de educación superior en salud y centros de simulación clínica. Se identificaron elementos comunes como planificación, gestión, liderazgo, calidad y evaluación estratégica, esenciales para la mejora institucional.

Conclusiones: la dirección estratégica en centros de simulación clínica en América Latina exige marcos adaptativos basados en planificación y desarrollo organizacional. La coherencia entre visión institucional, liderazgo y evaluación es decisivo para construir modelos de acreditación sostenibles y contextualizados.

Palabras clave: Dirección Estratégica; Planificación Estratégica; Desarrollo Estratégico; Centros de Simulación Clínica; Educación Superior; Ciencias de la Salud.

INTRODUCTION

The transformation of higher education in health sciences currently requires a strategic vision that allows institutions to adapt, anticipate, and lead emerging changes. The growing complexity of the healthcare environment, the need for innovative training responses, and the imperative to ensure quality in educational processes are challenges that demand coherent, sustainable, and evidence-based strategic management and planning. In this context, clinical simulation centers have emerged as the core for developing professional competencies, objective evaluation of clinical performance, and continuous improvement of training processes.^(1,2)

Strategic management, understood as a comprehensive process that articulates mission, vision, institutional objectives, and concrete actions aimed at achieving sustainable results, is positioned as a tool that guides organizational development in medical education.⁽³⁾

Several studies highlight that incorporating strategic planning models enables institutions to establish clear growth paths, strengthen their institutional positioning, and respond more effectively to the quality standards required in the academic and healthcare fields.^(4,5,6) Particularly in the case of clinical simulation centers, this strategic perspective is even more relevant, given their functional complexity, their need for constant technological updating, and their coordinating role between teaching, research, and educational accreditation.⁽⁷⁾

Recent literature shows a growing concern for the need to define strategic guidelines that integrate leadership, quality management, systemic thinking, institutional projection, and curriculum adaptation.^(8,9) Furthermore, studies from Latin America and other regions of the developing world agree that, although clinical simulation has expanded globally, gaps still exist in strategic planning, operational sustainability, and alignment with international accreditation standards.^(10,11,12)

This research is based on the premise that strategic management not only optimizes resources and aligns institutional actions but also acts as a catalyst for organizational change, promotes pedagogical innovation, and consolidates accreditation processes. Its purpose is to analyze the direction, planning, and strategic development of higher education in health sciences in Latin America, as well as its applicability to clinical simulation centers. The following guiding questions guide it: What are the most relevant concepts, components, and dimensions associated with strategic management in higher education institutions in health sciences? What documented experiences exist regarding strategic planning applied in clinical simulation centers, and what are their main results? What are the common elements, best practices, and challenges that allow for the establishment of a strategic model applicable to the reality of clinical simulation centers in Latin America?

METHOD

This research is part of a systematic review of an exploratory and integrative nature, based on the PRISMA 2020 methodological model.⁽¹³⁾

Sources of information

The search was conducted in the Scopus and PubMed databases, of studies published between 2018 and 2025. Priority was given to original, verifiable, open-access articles from Latin American countries.

Search strategy

The search strategy used was as follows, considering their appearance in the title, abstract, and keywords: (“strategic management” OR “strategic planning” OR “strategic direction”) AND (“higher education” AND (“health sciences” OR “medical education”)) AND (“clinical simulation” OR “simulation center” OR “simulated education”) AND (“Latin America” OR “South America” OR Argentina OR Brazil OR Chile OR Colombia OR Mexico OR Peru OR “Central America”) AND (“best practices” OR “case studies” OR “strategic model” OR “challenges”)

Eligibility criteria

Table 1. Inclusion and exclusion criteria used		
Criterion	Included	Not included
Type of document	- Original scientific articles - Published academic documents	Non-academic publications (opinion essays, editorial notes, etc.)
Time period	Between 2018 and 2025	Studies published prior to the selected time period.
Subject	That directly or indirectly address at least one of the following areas: strategic management; institutional planning; accreditation; educational management; clinical simulation. In the context of higher education	Works focused exclusively on other areas (e.g., basic education or areas unrelated to clinical simulation or higher education)
Type of evidence	- Studies with empirical evidence (quantitative, qualitative, or mixed) - Theoretical analyses relevant to the conceptual framework of the study	- Studies with poor methodological rigor - No substantial contribution to the theoretical framework or no relevance to the research objectives
Access and availability:	- Texts available in full access - Published in Spanish, English, or Portuguese	- Pay-access texts. - Published in languages other than those selected
Publication source	From verifiable and academically recognized sources, including peer-reviewed publications	Documents without peer review or from sources not academically recognized

Study selection process

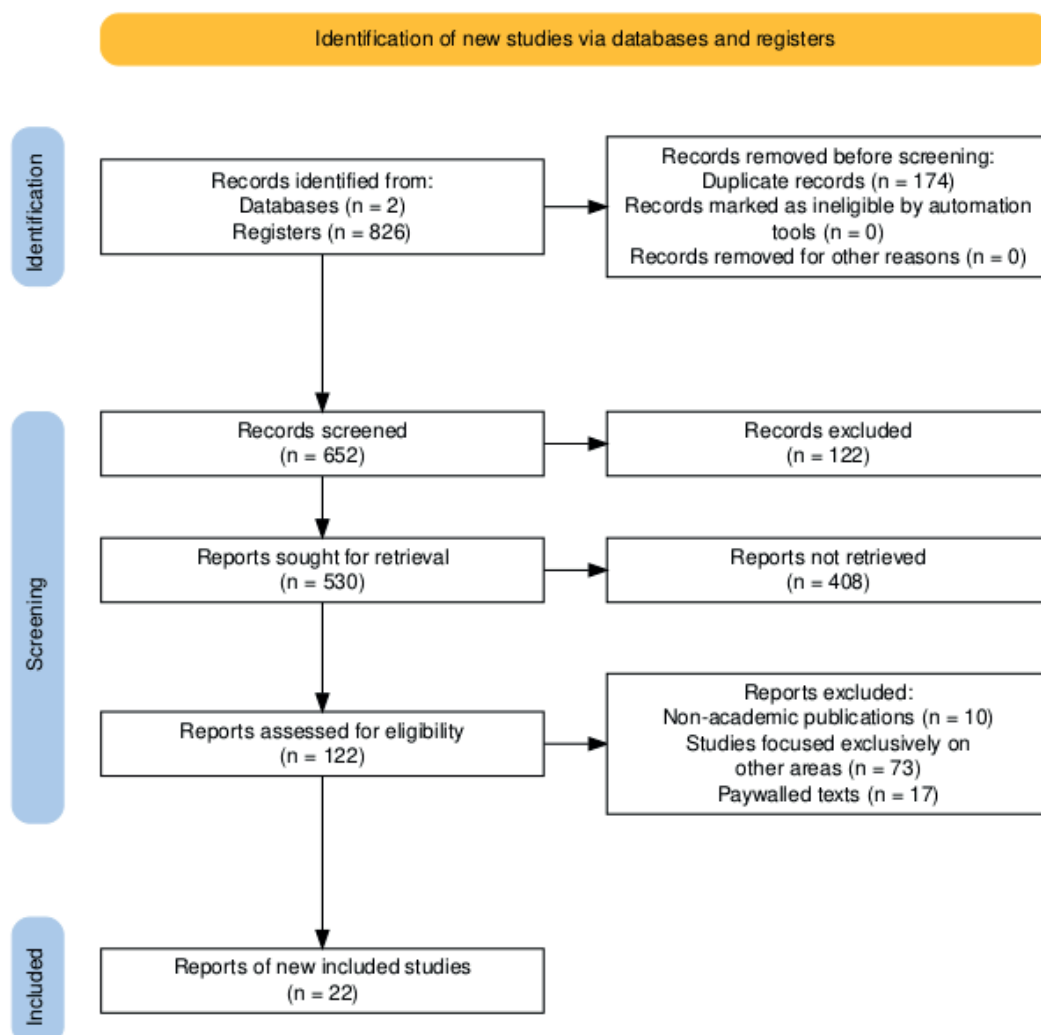


Figure 1. Study selection diagram

The article selection process is illustrated in figure 1 and was developed in accordance with the guidelines of the PRISMA 2020 method.⁽¹³⁾ Initially, a total of 826 records were identified through a structured search of the Scopus and PubMed databases. In the initial screening, 174 duplicate records were removed, reducing the number of documents to 652. These were screened by title and abstract to exclude those that did not address topics relevant to the study's subject. As a result, 530 articles were discarded because they did not respond to the topic under investigation. Subsequently, 122 articles proceeded to the eligibility criteria assessment stage. During this phase, 100 articles were excluded for failing to meet one or more of these criteria. Finally, 22 studies met all the requirements and were selected for inclusion in the review. These documents form the basis for the analysis and synthesis of results in this research.

Data extraction process

The data extraction process was carried out in a systematic and structured manner, once the final selection phase of the studies included in the review had been completed. The objective of this stage was to compile key information from each document for subsequent analysis and synthesis, based on the study's guiding questions. To ensure the consistency and traceability of the process, a data extraction matrix was designed and applied uniformly to the 22 selected studies. The extraction was performed independently by two researchers to minimize bias and ensure the reliability of the process. Any discrepancies in the interpretation or coding of the data were resolved by consensus, and where necessary, a third reviewer was consulted.

RESULTS AND DISCUSSION

Characteristics of the selected studies

Table 2 presents the 22 studies selected for the systematic review, which cover a range of topics including strategic management and planning, accreditation, educational management, and the implementation of clinical simulation in higher education institutions within the health sciences. The documents primarily originate from Latin American countries, including Peru, Brazil, Mexico, Colombia, Chile, and Uruguay, with some complementary contributions from Spain made in collaboration with Latin American institutions.

Table 2. Description of the selected sample of articles that form the basis of the study

No.	Author(s) / Year	Title	Main topic	Country / Region	Type of Document
1	Aranzamendi et al. ⁽¹⁴⁾	Accreditation of clinical simulation centers in Peru	Accreditation of clinical simulation in Peru	Peru	Institutional technical report
2	Palacio Acero ⁽¹⁵⁾	Fundamentals of strategic management	Fundamentals of strategic management and leadership	Colombia	Academic article
3	Macías et al. ⁽¹⁶⁾	Strategic planning and its impact...	Organizational strategic planning and management	Ecuador	Academic article
4	Huerta-Riveros et al. ⁽¹⁷⁾	Strategic management, information systems, and quality.	Strategic university management and quality	Chile	Academic article
5	Nunes et al. ⁽¹⁸⁾	Best practices for nursing directors in clinical simulation laboratories	Analyzes good practices in healthcare simulation mentioned by nurses who manage simulation laboratories.	Brazil	Academic article
6	Fonseca et al. ⁽¹⁹⁾	Description of the main tools for the strategic process in an organization	Theory and practice of strategic management	Mexico/Spain	Academic article
7	Palacios ⁽²⁰⁾	Strategic planning, a functional tool within organizations	Key processes for strategic management	Costa Rica	Academic article
8	Armijo-Rivera et al. ⁽²¹⁾	Characterization of simulation centers and programs in Latin America ...	Describes the organization, structure, and perceived quality of 149 simulation centers; suggests initiating accreditation processes	Latin America	Academic article
9	Moreno et al. ⁽²²⁾	Development of clinical simulation programs and their importance in the accreditation of simulation centers	Clinical Simulation Program at an Ecuadorian University	Ecuador	Academic article
10	Rojo et al. ⁽¹¹⁾	Simulation as a tool to facilitate change in healthcare organizations	Clinical simulation is useful for promoting innovation strategies by facilitating the adaptation of professionals and patients to change.	Chile	Academic article

Table 2. Description of the selected sample of articles that form the basis of the study

No.	Author(s) / Year	Title	Main topic	Country / Region	Type of Document
11	Anilema al. ⁽²³⁾	et Clinical simulation in nursing: challenges, strategies, and opportunities for skills development.	Clinical simulation effectively improves nursing education and professional training.	Dominican Republic	Academic article
12	Boletti et al. ⁽²⁴⁾	Clinical education as an effective teaching-learning strategy for nursing professionals and students:	Use of clinical simulation as an educational strategy for the training of nursing professionals and students	Brazil	Academic article
13	Fraga-Sastrias et al. ⁽²⁵⁾	Latin American consensus on the competencies of simulation educators.	Results of the initial phase of the Simulation Educator Assessment and Certification Project	Latin America	Academic article
14	Turrubiates & Olivares ⁽²⁶⁾	Evaluation of Clinical Simulation Centers based on a quality model	Current status of clinical simulation centers, using a self-assessment tool designed based on the educational process	Mexico	Conference
15	Araújo et al. ⁽²⁷⁾	Virtual simulation in nursing education in Latin America and the Caribbean: a bibliometric study	Maps the evolution of virtual simulation in nursing in Latin America	Latin America	Academic article
16	Schuelter al. ⁽⁸⁾	et Clinical simulation management: a proposal for best practices and process optimization	Proposes best practices for managing simulation centers efficiently, which are key to successful strategic management.	Brazil	Academic article
17	Almuiñas al. ⁽²⁸⁾	et Evaluation of strategic planning in higher education institutions in Cuba. Methodology used and results obtained.	Evaluation of strategic planning in higher education institutions	Cuba/Latin America	Academic article
18	Almuiñas al. ⁽²⁹⁾	et University accreditation and institutional evaluation	Comparative studies in the fields of accreditation and institutional evaluation	Latin America	Academic article
19	Cortés et al. ⁽³⁰⁾	Accreditation of simulation centers and programs: a necessity	Recommends the use of SWOT analysis and the design of a strategic plan with short-, medium-, and long-term objectives to promote training, evaluation, and research activities	Mexico	Institutional report
20	Hernández & Olvera ⁽³¹⁾	Exploring excellence in simulation: accreditation experience	Experience of the accreditation process for a simulation center	Mexico	Academic article
21	Rojas ⁽³²⁾	Strengthening quality and certification processes and procedures in the clinical simulation laboratory	Synthesis of evidence on improvements to processes in a clinical simulation laboratory	Colombia	Institutional report
22	M a c h u c a - Contreras et al. ⁽³³⁾	et Creation and psychometric properties of a self-perception instrument for assessing the quality of simulation programs and centers in Latin America	Presents a validated tool for centers to evaluate their internal quality and promote a strategic approach to curriculum integration, training, research, and quality standards	Latin America	Academic article

Fundamentals and components of strategic management in higher education in health sciences in Latin America

Strategic management, in its broadest sense, is a systematic and continuous process through which organizations formulate, implement, and evaluate decisions that enable them to achieve their long-term objectives, adapting to changing environments and managing their resources efficiently. When applied to higher education institutions related to health sciences, this perspective becomes a crucial tool for enhancing academic quality, organizational sustainability, and the social relevance of their educational activities.

Theoretical foundations agree that strategic management is an integrative process, comprising different interrelated phases: environmental analysis, strategic formulation, implementation, evaluation, and feedback.⁽³³⁾ This process involves articulating the institutional mission with a shared vision, identifying organizational values, and clearly defining measurable and achievable strategic objectives.⁽²⁵⁾ From this perspective, strategic management is not limited to a planning document, but constitutes a way of thinking, leading, and managing, guided by organizational transformation and innovation.

One of the key elements identified in the literature is strategic leadership. This type of leadership is characterized by its ability to generate meaning, mobilize human and material resources, manage uncertainty, and guide the organization toward excellence and sustainability.⁽²⁶⁾ In the university context, it has been shown that the exercise of strategic leadership promotes alignment between institutional purposes, public education policies, and the demands of the environment.⁽³⁴⁾ The figure of the strategic leader thus becomes a catalyst for change and a guarantor of organizational coherence.

Another central component is strategic planning. This is understood as the formal stage of strategic management, where goals are set, strengths, weaknesses, opportunities, and threats (SWOT analysis) are analyzed, and strategic routes are designed to fulfill the institutional mission.⁽³¹⁾ In higher education institutions in the health sector, strategic planning makes it possible to project the sector's training demands, anticipate curricular changes, optimize the management of teaching and technological resources, and promote accreditation and continuous improvement processes.⁽⁹⁾

The strategic management component, in turn, refers to the operational capacity to execute and sustain strategic decisions over time. It involves managerial skills, a coherent organizational structure, integrated information systems, and evaluation mechanisms that enable evidence-based decision-making.⁽⁹⁾ The literature agrees that, without adequate strategic management, even the best plans can fail in their implementation.⁽²⁵⁾ That is why many authors highlight the importance of adaptive capacity, organizational innovation, and collaborative work as pillars of effective strategic management.

Regarding the dimensions of strategic management, the review reveals a series of recurring components: (1) the political dimension, which refers to the legitimacy of the institutional project and its articulation with the environment; (2) the organizational dimension, linked to internal structure, institutional culture, and governance systems; (3) the academic dimension, which relates to the training model, curriculum policies, and knowledge management; (4) the operational dimension, associated with the administration of human, financial, and technological resources; and (5) the evaluative dimension, which integrates monitoring, quality assurance, and accountability processes.^(18,23)

In the specific case of health sciences education institutions, strategic management has proven decisive in promoting pedagogical innovation processes, implementing technologies such as clinical simulation, coordinating with academic networks, and adhering to international quality standards.⁽⁸⁾ This need becomes more evident when scenarios are dynamic, uncertain, and in high demand for social response, as demonstrated by the Latin American experience in the post-pandemic context.⁽²²⁾

In summary, the concepts, components, and dimensions of strategic management reviewed in this paper demonstrate its multidimensional nature, its coordinating role between institutional vision and daily practice, and its transformative potential to consolidate more solid, adaptable, and education-oriented universities. These theoretical foundations will serve as the basis for analyzing their applicability in clinical simulation centers, exploring how these principles can be operationalized in highly specialized educational settings.

Models and approaches to strategic planning and development applied to higher education institutions in health in Latin America.

The planning and execution of strategic management in higher education institutions in the health sciences in Latin America have been addressed in the literature as a multifaceted process that responds to both global transformations in the field of education and the specific demands of each country's health systems. This articulation between the university context and the health environment has shaped the way institutions formulate, implement, and evaluate their strategies, revealing multiple approaches, varying levels of maturity, and differing organizational capacities to operate under a sustainable strategic framework.

The studies reviewed indicate that strategic planning, when undertaken in a comprehensive and participatory manner, significantly contributes to enhancing educational quality, improving institutional efficiency, and consolidating pedagogical innovation processes.^(23,25) In this regard, one common characteristic found in successful Latin American experiences is the design of strategic plans that incorporate measurable objectives, compliance schedules, assignment of responsibilities, and evaluation mechanisms that provide feedback on the process.^(9,31)

The implementation of these plans, however, faces challenges associated with organizational culture, the availability of human and financial resources, and the leadership capacity to mobilize the academic community toward a shared purpose.^(26,34) Some universities have chosen to integrate their strategic plans into national regulatory frameworks for higher education and health. In contrast, others have developed their own strategic

management models with an emphasis on curricular innovation, sustainability, and community engagement.⁽²²⁾

A relevant aspect that emerges from the analyzed articles is the tendency to link strategic planning with self-assessment and institutional accreditation processes, particularly in health-related degree programs. This has allowed many institutions to redefine their vision, optimize internal processes, and align their academic offerings with the needs of the national health system.⁽⁸⁾ Likewise, strategic planning has been key to promoting the development of new infrastructure, such as clinical simulation centers, whose implementation requires a long-term vision and effective coordination among multiple institutional actors.^(9,25)

In terms of the methodologies used to approach planning, various models have been identified, ranging from traditional approaches, such as SWOT analysis, to the incorporation of prospective methods, systemic thinking, and scenario planning.⁽¹¹⁻³³⁾ Some studies highlight the use of Balanced Scorecards and other performance management tools as means of linking strategic objectives with performance indicators.⁽³¹⁾ These instruments have proven helpful in guiding operational decisions and monitoring progress toward the achievement of institutional goals.

Despite these advances, the literature also highlights frequent limitations in the execution of strategic management, including a lack of continuity between administrative periods, a weak evaluation culture, and inadequate development of managerial skills among management teams.^(18,25) These limitations impact the sustainability of strategies and diminish the effectiveness of plans in driving actual organizational transformation.

In general, experiences with strategic planning and implementation in higher education in health in Latin America show significant progress in terms of institutionalization, methodological clarity, and articulation with public policies. However, challenges remain, particularly in generating a strong strategic culture, strengthening academic leadership, and consolidating monitoring and evaluation systems that enable timely and effective feedback on the process.

Based on this analysis, it is clear that the planning and execution of strategic management in health sciences universities in the region cannot be understood as an isolated exercise, but rather as a continuous and collective process aimed at ongoing improvement. These choices will be decisive in analyzing their concrete applicability in clinical simulation centers, a space where strategic management can become the backbone of educational quality, innovation, and sustainability.

Applicability of strategic management in clinical simulation centers: opportunities, challenges, and projections in the Latin American context

The applicability of the strategic development approach in clinical simulation centers in Latin America has been progressively recognized as a structural necessity to ensure their sustainability, pedagogical impact, and alignment with the quality standards required by international frameworks. Analysis of the experiences compiled in the literature suggests that, although there are differences in the level of strategic implementation between countries and institutional contexts, the principles of strategic management are highly relevant and transferable to the field of clinical simulation.^(24,25)

First, it has been documented that many simulation centers were initially developed as isolated initiatives, driven by individual leadership or short-term institutional support. However, the lack of strategic planning from the outset has led to difficulties in terms of orderly growth, financial sustainability, and academic consolidation.^(25,34) In response to this, strategic development approaches have enabled the rethinking of simulation centers as organizational units with a clear mission, vision, strategic objectives, operational structure, and evaluation mechanisms.

One of the main contributions of strategic development applied to these centers is the ability to align their educational purposes with the broader institutional plans of universities, coherently articulating simulation-based training with the curricular objectives of Health Sciences degrees.⁽⁸⁾ In this way, clinical simulation ceases to be a peripheral or complementary strategy. It becomes a central component of competency-based teaching, objective evaluation of clinical performance, and the development of non-technical skills such as communication, leadership, and decision-making.^(9,31)

Studies also show that a strategic approach fosters the development of more efficient internal management models, characterized by clarity in the roles of the teaching and technical teams, standardized operating procedures, effective resource management, and continuous improvement processes. This has been particularly important in centers that have sought accreditation processes, both nationally and under the standards of the Society for Simulation in Healthcare (SSH), which requires documented evidence of compliance with strategic objectives, learning outcomes, safety, sustainability, and governance.⁽¹¹⁾

Likewise, strategic planning has enabled the definition of appropriate leadership profiles for these centers, selecting coordinators with organizational vision, planning skills, and the ability to articulate simulation in alignment with institutional priorities. Strategic leadership is identified as a critical success factor in ensuring the center's progressive advancement, its internal and external positioning, and its articulation with academic and professional networks.^(7,18)

From a sustainability perspective, strategic development has enabled the design of mixed financing strategies, community outreach projects, and inter-institutional partnerships that reinforce the center's functional and financial autonomy. It has also promoted the development of evaluation systems based on performance indicators, which enable the measurement of the center's activities' impact on student training, faculty development, and institutional management.⁽³⁴⁾

Finally, it is worth noting that the applicability of strategic development in simulation centers extends beyond technical and managerial considerations to encompass a profound ethical and educational component.⁽³⁵⁾ Through strategic planning, these spaces become guarantors of students' right to learn in safe environments, patients' right not to be exposed to avoidable errors during the training process, and institutions' commitment to academic excellence and continuous improvement.^(9,24)

The application of strategic development in clinical simulation centers has proven not only viable but also necessary for their consolidation as pillars of modern medical training. This integration requires long-term vision, management skills, curricular alignment, and a quality-oriented organizational culture. The evidence reviewed allows us to affirm that strategy is the framework that transforms a simulation center from a technical laboratory into an ecosystem of learning, innovation, and institutional leadership.

CONCLUSIONS

The applicability of the strategic approach in clinical simulation centers requires a systemic and integrative vision that articulates both the educational and healthcare dimensions. This vision must consider the participation of both internal and external actors, as well as the establishment of inter-institutional alliances aimed at fostering an organizational culture committed to quality and academic excellence.

In this sense, it is reaffirmed that strategic development cannot be conceived as a one-off or short-term action, but rather as a continuous and deliberate process that demands leadership, sustained institutional commitment, and specialized training in educational management from the teams responsible for running these centers. Ultimately, in the Latin American context, the consolidation of clinical simulation centers does not depend exclusively on infrastructure or technological availability. Their sustainability lies fundamentally in the institutional capacity to think, plan, execute, and evaluate based on a clear, ethical, and transformative educational purpose that responds to the real needs of the environment and promotes continuous improvement in the training of health professionals.

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The authors declare that there is no conflict of interest.

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