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Empowering the Digital Health Workforce in Latin America: Perspectives from a Health Informatics Master's Program in Argentina

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Abstract. The Health Informatics Master's Program at Hospital Italiano de Buenos Aires (EMIS-HIBA), launched in 2017, addresses the growing need for skilled professionals in health informatics. This study describes the program, characterizes its student population, and evaluates its alignment with current standards. Key findings reveal gender disparities, with lower female enrollment, and a strong national footprint, with most students from Argentina. The transition to a fully online format in 2023 enhancing accessibility and addressed the need for flexible learning, although retention and graduation rates remain areas for improvement. The curriculum aligns closely with IMIA recommendations but underscores the importance of balancing technical and clinical content. These findings inform strategic program improvements, including continuous curriculum updates, increased female participation, and expanded international outreach. This analysis contributes to understanding the challenges and opportunities in health informatics education and highlights the value of adaptable educational models in fostering a skilled digital health workforce.

Keywords. Health Informatics Education, Digital Health, Program Evaluation, Workforce development

1. Introduction

The rapid evolution of health informatics (HI) underscores the growing intersection of healthcare and information technology, driven by advancements in digital health and the imperative to harness data for improved health outcomes. Over recent decades, HI matured, highlighting the urgent need for professionals capable of designing, implementing, and evaluating health information technologies (1,2).

Educational and professional institutions worldwide have updated competency frameworks to address the evolving demands faced by healthcare professionals. These

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revisions are crucial for fostering a workforce capable of integrating emerging digital tools into clinical practice. The IMIA's 2023 update highlighted the need for comprehensive skill sets across various domains, including the core principles of informatics, data science, and health services (2,3).

Despite these advancements, challenges remain, including varied adoption across countries and the continuous evolution of informatics roles. Addressing these issues requires a dynamic competency development and cross-sectoral collaboration (1–3), essential for aligning educational programs with global needs and strengthening HI education. This paper aims to describe the Health Informatics Master's program at Hospital Italiano de Buenos Aires (EMIS-HIBA), characterize the student population enrolled since its inception, and assess the program´s alignment with IMIA 2023 standards.

2. Background and Program Overview

The EMIS-HIBA was launched in 2017, with the goal of integrating informatics with healthcare to train multidisciplinary professionals. Initially designed as a two-year program combining online and in-person classes, it primarily targeted graduates from healthcare and related fields. In 2023, the curriculum shifted to a fully online model, offering students to tailor their learning experience through 15 core courses and specialized elective pathways, including software engineering, translational informatics, public health informatics and clinical informatics reflecting current industry demands (Figure 1).

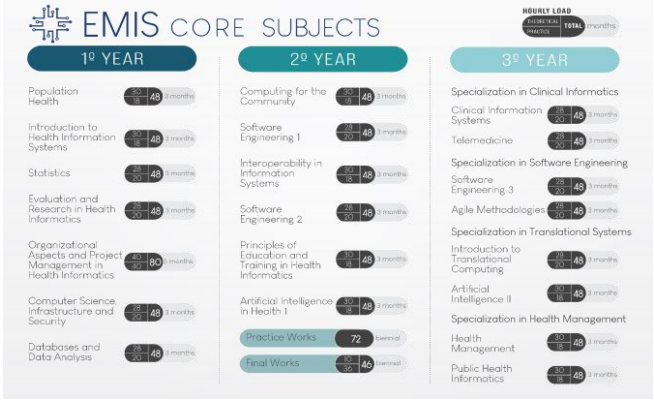


Fig. 1. EMIS curricula description

3. Results

The analysis of 572 participants in the EMIS-HIBA program from 2018 to 2024 revealed key trends (Table 1). Most participants were male (59.1%), and the mean age increased significantly over time (37.97 ± 12.18 years, p=0.006). Medicine was the most represented discipline (50.5%), followed by Health Sciences (20.5%) and Computer

Science (16.1%), with significant disciplinary differences over the years (p<0.001). Most students were from Argentina (77.6%), with 18.7% from other Latin American countries, highlighting the program's regional influence (p<0.001). Completion rates stood at 38.5%, while 34.1% of participants were still ongoing, which is consistent given the inclusion of the most recent cohorts. Dropout rates peaked at 40.3% in 2021, coinciding with the COVID-19 pandemic, but later decreased significantly (p<0.001).

Tabla 1. Summary of general and stratified descriptive statistics by cohort

	Overall	2018	2019	2020	2021	2022	2023	2024	p
N	572	92	64	64	72	82	76	59	
Sex = male (%)	338 (59.1)	50 (54.3)	32 (50.0)	41 (64.1)	48 (66.7)	47 (57.3)	43 (56.6)	37 (62.7)	0.479
Age (mean (SD))	37.97 (12.18)	39.29 (8.69)	39.72 (9.95)	39.20 (7.63)	36.38 (16.07)	36.20 (14.76)	38.18 (6.68)	44.67 (11.24)	0.006
Profession (%)									<0.001
Computer Sciences	85 (16.1)	20 (27.4)	13 (22.0)	11 (17.7)	12 (17.6)	6 (8.1)	3 (4.1)	5 (8.5)	
Health Sciences	108 (20.5)	13 (17.8)	14 (23.7)	16 (25.8)	6 (8.8)	23 (31.1)	17 (23.0)	12 (20.3)	
Medicine	289 (54.7)	31 (42.5)	24 (40.7)	32 (51.6)	42 (61.8)	38 (51.4)	49 (66.2)	38 (64.4)	
Other	46 (8.7)	9 (12.3)	8 (13.6)	3 (4.8)	8 (11.8)	7 (9.5)	5 (6.8)	4 (6.8)	
Status (%)									<0.001
Dropout	133 (23.3)	19 (20.7)	15 (23.4)	15 (23.4)	29 (40.3)	21 (25.6)	19 (25.0)	2 (3.4)	
Completed	220 (38.5)	64 (69.6)	38 (59.4)	40 (62.5)	34 (47.2)	4 (4.9)	0 (0.0)	0 (0.0)	
Graduated	24 (4.2)	7 (7.6)	4 (6.2)	0 (0.0)	2 (2.8)	2 (2.4)	0 (0.0)	0 (0.0)	
Ongoing	195 (34.1)	2 (2.2)	7 (10.9)	9 (14.1)	7 (9.7)	55 (67.1)	57 (75.0)	57 (96.6)	
Nationality (%)									<0.001
Argentina	444 (77.6)	80 (87.0)	49 (76.6)	45 (70.3)	51 (70.8)	67 (81.7)	59 (77.6)	42 (71.2)	
Latin America	107 (18.7)	11 (12.0)	14 (21.9)	19 (29.7)	21 (29.2)	15 (18.3)	6 (7.9)	11 (18.6)	
Other	21 (3.6)	1 (1.1)	1 (1.6)	0 (0.0)	0 (0.0)	0 (0.0)	11 (14.4)	6 (10.2)	

3.1 Comparison between IMIA knowledge domains and EMIS subjects

The analysis of the EMIS-HIBA program indicates substantial alignment with the IMIA recommendations, particularly in the domains of core biomedical informatics, data science, and health management (Figure 2). The distribution of core subjects in EMIS-HIBA program closely corresponds to IMIA´s standards (41% vs 40%). However, the analysis revealed a lower representation of health science subjects (11% vs 15%) and a greater emphasis on computer science subjects (22% vs 15%).

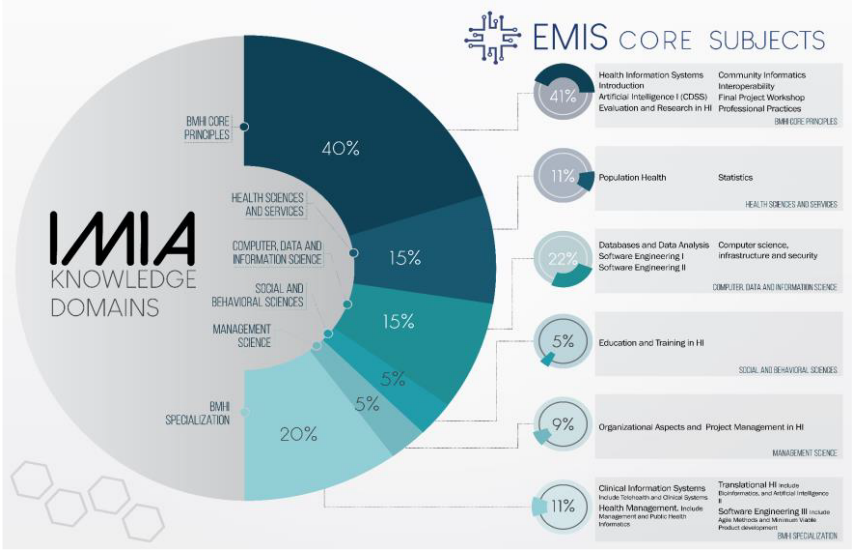


Figure. 2. Knowledge Domains IMIA 2023 and EMIS comparison

4. Discussion

The demographic analysis of the EMIS-HIBA program highlights its strong local impact, with most students originating from Argentina and fewer from other Latin American countries. While this underscores the program's national relevance, it also reveals opportunities for expanding regional engagement through targeted outreach and marketing efforts.

Gender disparities in enrollment, with fewer women participating, reflect broader trends in technology fields and warrant further exploration to understand their implications for workforce diversity and gender representation in health informatics (4). The program's appeal to mid-career professionals emphasizes the importance of flexible structures that accommodate working learners, a common feature of health informatics education globally (3,5).

Although the transition to a fully online format enhanced accessibility, retention and graduation challenges remains. The highest dropout rate in 2021, likely influenced by the COVID-19 pandemic, and the overall low graduation rate indicate a need for strategies to better support student progression and completion. These challenges align with issues faced by similar programs and require attention to ensure sustainability and long-term impact (6).

The curriculum aligns closely with IMIA 2023 standards, emphasizing technical competencies such as data science and computer science. However, the lower proportion of health sciences suggests the need for a better balance between technical and clinical content to meet the multidisciplinary demands of health informatics.

These findings provide valuable insights for strategic decisions aimed at improving student retention, updating curricula to remain relevant in a rapidly evolving field, and pursuing EMIS-HIBA´s international accreditation to strengthen its regional impact.

5. Conclusion

The EMIS program provides a scalable model for effective training, addressing regional needs while maintaining international alignment. By emphasizing multidisciplinary approaches and practical skill development, the EMIS program can play a pivotal role in building a competent digital health workforce capable of addressing future public health challenges in the region.

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