An overview of health information management education in Saudi Arabia

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ABSTRACT

Background: In Saudi Arabia, Health Information Management (HIM) programs are established in universities and colleges that offer studies at the Bachelor's and Master's level.

Purpose: The main objective of this study was to assess the different HIM programs available in Saudi Arabian universities and colleges, in terms of the names of the programs, year of establishment, and other specific differences between them. Another objective was to have input for the establishment of future HIM degrees across Saudi Arabia.

Methods: A descriptive cross-sectional study was conducted to investigate the number, date of establishment, and location of HIM programs available in Saudi Arabian universities and colleges. In this retrospective study, information was collected from the Ministry of Education and updated online websites of universities and colleges.

Results: A total of 81 universities and colleges across Saudi Arabia were reviewed for the availability of Health Information Management (HIM) programs. Out of the 81 reviewed institutions, 16 had at least one HIM program available. 6 programs were established in private colleges and 10 were in public universities. In terms of the level of education, all of the 16 institutes were offering Bachelor's degree programs; and, 5 of them were offering a Master's degree program.

Conclusions: HIM undergraduate programs in Saudi Arabia are better established than postgraduate programs. The adequacy of HIM programs in Saudi Arabia can only be judged by a careful analysis of the HIM alumni job placement and workforce needs. The results of this research can be useful to predict the workforce needs to ensure an adequate supply of highly skilled HIM professionals in Saudi Arabia. In this regard, it would be important to systematically monitor trends in healthcare technology and the healthcare industry to identify the level and types of skills required by these professionals.

1. Introduction

Health Information Management (HIM) is the heart of any healthcare organization. Hospitals and other healthcare facilities are obligated to have a system to complete, protect, and ensure the availability of high-quality health information. The American Health Information Management Association (AHIMA) defined health information management as "the practice of acquiring, analyzing, and protecting digital and traditional medical information vital to providing quality patient care. It is a combination of business, science, and information technology [1]." In the context of this study, the term HIM will be based on this definition.

Health Information Management (HIM) profession plays a critical role in the continuity of care, reimbursement, decision making, research, and evaluating existing services to improve the quality of patient care

[2]. Therefore, HIM professionals need to integrate a variety of competencies to manage health information effectively; these competencies include data management and statistics, familiarity with medical terminology, coding skills, information technology, information management, and leadership skills [3]. According to Hasanain et al., the need for specialized professionals to manage health information has encouraged universities around the world to establish the HIM profession [4]. This area of expertise is particularly new in Saudi Arabia.

The HIM degree programs have been established in many countries worldwide during the past decade [5–7]. The program emerged originally from the medical record management profession. Modernizing the job title 'Medical Record Librarians' was a significant step to leverage the specialty [5]. Moreover, medical record technicians are vital staff in any healthcare organization and the education and practices have been

evolving for decades to cope with the changes. Bennet believed that the transformation from medical librarian to health information manager was based on the rapid development of the health information technology sciences [8].

The evolution of technology and the change from paper medical records to electronic medical records has had a huge influence on the HIM profession [3]. Different majors have been established to serve this purpose, such as health information management, health informatics, health information technology, and health information systems. Due to the various HIM education tracks, it has been difficult to follow up with the number of graduates [5].

To cope with the rapidly changing healthcare industry and overcome obstacles, the Saudi Ministry of Health considered this topic as one of the main entities for the national health transformation program. "Transform Health" is the main national transformation program that aims to be achieved in 2020 [9]. The initiative focuses on two central goals. The first goal is to establish a center of excellence that develops health information systems that can be used in healthcare education. The second goal is to provide integrated electronic services that enable beneficiaries to easily access medical services. To achieve these goals, the Kingdom of Saudi Arabia needs to be equipped with highly qualified health information management professionals to work in collaboration with stakeholders to achieve this initiative by 2020.

In Saudi Arabia, health information management programs are established at universities and colleges that offer Master's and/or Bachelor's degrees. In this paper, the term "HIM programs" includes health information management, health informatics and health management programs. This study will evaluate the different HIM educational programs in Saudi Arabia, in terms of year of establishment, name, and other specific differences between the programs. The study will also provide input for the establishment of future HIM degrees across Saudi Arabia.

2. Methods

This research was a retrospective cross-sectional study design. Information was gathered from all Saudi universities and colleges through their online websites. A list from the ministry of education including all universities and colleges was used, as well as other available online updated lists.

A total of 81 universities and colleges across Saudi Arabia were reviewed for the availability of a Health Information program according to the definition given by AHIMA [1]. All universities and colleges established in Saudi Arabia were reviewed.

Data used in this study was available online, so ethical approval was not required to gather information for this study.

A descriptive analysis was conducted to analyze the numbers and locations of the available Health Information Management programs in Saudi Arabia, along with their establishment date.

3. Results

Out of the 81 reviewed institutes across Saudi Arabia, 16 had at least one HIM program. 6 institutes were private colleges and 10 were public universities (Table 1 and Table 2). In terms of the level of education, all of the 16 institutes were offering Bachelor's degree programs. However, 5 out of the 16 institutes were also offering a Master's degree program

Table 1
Distribution of HIM programs in Colleges and Universities.

Type	HIM available		HIM not available		Total
	No.	%	No.	%	
Colleges	6	37.5%	14	22%	20
Universities	10	62.5%	51	78%	61
Total	**16**	**100%**	**65**	**100%**	**81**

Table 2
Distribution of HIM program in private and public institutes.

Type	HIM available		HIM not available		Total
	No.	%	No.	%	
Private	6	37.5%	24	37%	30
Public	10	62.5%	41	63%	51
Total	**16**	**100%**	**67**	**100%**	**81**

(Table 3).

As shown in Table 3, some institutes provided more than one program either with the same or different educational level. The table also shows that there are clear differences between the HIM programs with regard to their affiliation with the academic college. Three programs were affiliated to business colleges (College of Administration and Financial Sciences, College of Business Administration, and Faculty of Economics and Administration). However, the majority, 13 out of 16, were affiliated to health colleges (College of Public Health & Health Informatics, College of Public Health, College of Public Health and Tropical Medicine, College of Allied Health Sciences, College of Applied Medical Sciences, College of Applied Sciences, College of Health Science, and Medical College). The first HIM program was established at the King Faisal University in 2003 and the last program was instituted at the University of Hafr Al-Batin in 2018.

The differences between the programs are not only related to their affiliation but also with the names of the programs which reflect their scope. A wide range of different names have been used, as shown in Table 3. Six of the programs included the term technology, system, or informatics in their title, and around nine programs included the term management or administration in their title.

Regarding the distribution of HIM programs in Saudi Arabia, Table 3 shows that the distribution is uneven geographically and they tend to be concentrated in the most populated and accessible areas of the Kingdom. Six institutes are in the central region, five institutes are located in the eastern province, four in the western region, and two programs are offered in the southern region.

4. Discussion

The results of this study indicated that the number of higher education institutes that provide degrees in Health Information Management (HIM) continues to increase in Saudi Arabia. Today, there are 16 higher education institutes that offer these studies in different universities and colleges in this country (Tables 1 and 2). Public institutes began to offer HIM programs first, and private institutes have since joined this movement. According to Asiri, during the early years of the 20th century, there were many serious movements towards creating a national e-health framework, which encouraged leading universities and colleges in Saudi Arabia to establish HIM programs [10].

HIM education in Saudi Arabia is dominated by undergraduate studies (Table 3). The data collection revealed that only five master's degree programs were established in Saudi Arabia, four of which were in health management, and one in health informatics. HIM postgraduate education is also still underdeveloped in other countries such as Canada and China [6,11].

Higher education of HIM in Saudi Arabia began with the establishment of the Health Information Management and Technology (HIMT) program in 2003 at King Faisal University, currently known as the Imam Abdulrhaman Bin Faisal University. The program's main goal was to graduate qualified professionals who fulfill the need for health information specialists in Saudi hospitals [12]. Although Saudi Arabia's formal start to education in Health Information Management was quite late in comparison with the rest of the world, the number of graduate programs that can prepare professional leaders in this field is increasing rapidly [13,14].

The HIM programs go by different names in Saudi Arabia and in

Table 3
Distributions of university and college with type and number HIM degree provided.

University	College	Name of HIM program	Degree	Establishment year	Location
Al-Ghad International Medical Science Colleges	College of Applied Medical Sciences	Health Management	BSc	2009	Najran, Eastern, Madinah
Almaarefa College	College of Applied Sciences	Health Information Systems	BSc	NA	Riyadh
Batterjee Medical College	Medical College	Healthcare Administration	BSc	2006	Jeddah
Buraydah College	College of Applied Medical Sciences	Health Information Management	BSc	NA	Al-Qassim
Imam Abdulrahman bin Faisal University	College of Public Health	Health Information Management and Technology	BSc	2003	Eastern
Jazan University	College of Public Health and Tropical Medicine	Health Information Management and Technology	BSc	2011	Jazan
King Abdulaziz University	Faculty of Economics and Administration	Executive Master of Health Services Management & Hospitals	MSc	2009	Jeddah
King Saud bin Abdulaziz University for Health Sciences	College of Public Health & Health Informatics	Health Information Systems	BSc	2005	Eastern
		Master of Health Informatics	MSc	NA	Eastern
		Health System and Quality Management	MSc	NA	Riyadh
		Health Information Systems	BSc	NA	Riyadh
King Saud University	College of Business Administration	Health Administration Department	MSc	NA	Riyadh
Qassim University	College of Public Health & Health Informatics	Health Informatics	BSc	2011	Al-Qassim
		Health Management	BSc	2011	Al-Qassim
Saad College of Nursing and Allied Health Sciences	College of Allied Health Sciences	Health Information Management	BSc	2015	Eastern
Saudi Electronic University	College of Health Science	Health Informatics	BSc	2011	All
Umm Al-Qura University	College of Public Health & Health Informatics	Health Information Management and Technology	BSc	2011	Mecca
University of Hafr Al-Batin	College of Applied Medical Sciences	Health Information Management and Technology	BSc	2018	Hafr Al-Batin
University of Hail	College of Public Health and Health Informatics	Health Services Management	BSc	2009	Hail
		Health Informatics and Information Management	BSc	2009	Hail
Taif University	College of Administration and Financial Sciences	Master of Hospital Management and Health Services	MSc	NA	Taif

NA indicates "Not Available".

different parts of the world. These names may include: Health Information Management (HIM), Health Information Administration (HIA), Health Information Technology (HIT), Health Informatics (HI), Medical/Health Informatics (M/HI), Health Information Systems (HIS), Applied Health Information Science (AHIS), Health Information Management and Technology (HIMT), and other combinations of names [10, 15]. These programs overlap in curricula, but they have different emphases [16,17]. Some focus on HIM, others focus on HI, and still, others maintain a balanced focus on HIM and M/HI. Most of the mentioned names are widely used in Saudi Arabia and other countries, including the United States, China, Canada, and Australia [6, 15, and [18]].

Other names are less commonly used such as the applied health information science program offered by Conestoga College in Canada [15]. Furthermore, although there are four Saudi universities that offer HIMT programs, the University of Wisconsin in the United States is the only university outside of Saudi Arabia that offers a program with the same name [19].

Due to the evolution of technology and its role in managing health information and improving the delivery of healthcare services, it was imperative for HIM programs needed to include health information technology to ensure the viability of the profession [20]. Several programs have reflected this fact in their names (i.e., HIMT to indicate that HIT is a substantial element of the program). Many factors might explain decisions related to the various and frequent changes of the program names. These factors include rebranding to attract more students and address low enrollment, to better reflect the nature of the program, or to improve the visibility of programs [21].

Regardless of the reasons behind the different HIM programs' names, the lack of a unified name—particularly in Saudi Arabia—presents a challenge to the development of professional identity. This can impact how stakeholders understand the profession and thus the job placement and employment of HIM graduates [6,22].

It is pertinent to indicate that in the context of this research, the identification of universities and colleges that have undergraduate and

graduate programs in HIM in Saudi Arabia has been based on the definition of the HIM proposed by the American Health Information Management Association, AHIMA (AHIMA, A. H. I. M. A., 2002) [1]. The names of these programs are displayed in Table 3. When carefully analyzing the titles of these programs (Health informatics and information management, Health services management, Health information management and technology, Healthcare administration, Executive master of health services management & hospitals, Health informatics, Health information systems, Health management, Health information management, Master of health informatics, Health system and quality management, Health administration department, Master of Hospital Management and Health Services), it can be observed that several combinations of words related to the previous AHIMA definition appear in the titles.

The academic homes for HIM programs differ in Saudi Arabia (Table 3) and other countries. In Saudi Arabia, similar to the United States, Canada, and India, the majority of HIM programs are housed in health-related schools [23–25]. However, in the United States and Canada, HIM programs can also be housed in the faculty of computer sciences [24,26]. Health Information Management programs also have other academic homes, such as business and economics schools in Saudi Arabia, Germany, the Netherlands, and South Korea [27]. It is expected that different academic homes for HIM programs may influence these programs' curricula, degree titles, alumni placements, and professional licensure or certification. A study that examined sports management education in the United States suggested that when programs have distinct academic homes, it can have an impact on their curricula design; for instance, programs offered by the school of business will include more courses that are related to business compared to those offered by the college of health and human services [28]. Another study that compared six interior design programs located within different academic homes (architecture, fine arts, and human ecology) found slight differences in their curricula, while there was a notable difference in alumni job placement [29]. Regarding this issue, different academic

homes for interior design programs shaped curricula requirements to determine a range of different degree titles [29]. Thus, more research is needed to investigate how the departmental location of health information management programs can impact these programs in different ways.

HIM scholars agree that there is a need to up-skill professionals for this discipline to become visible and viable [5]. In 2017, one study analyzed 456 HIM-related job postings in the United States to examine future workforce needs, and the authors found that there is a need for HIM professionals with baccalaureate and master's degrees to fulfill jobs that require mid-to master-level skills [30]. This is expected with the increased challenges facing the healthcare industry, especially advancements in technology, the rise of big data, and the increased complexity of the healthcare system [3].

In Saudi Arabia, several factors have triggered the need for well-educated and trained HIM professionals. One major factor is the implementation of the electronic health record (EHR). Globally, recording patient health information electronically began in the 1960s [31]. The first EHR system in Saudi Arabia was launched in 1988 to help healthcare systems to provide better services and to meet the demands of health organizations [4]. HIM professionals who are experts in dealing with different types of data play a key role in the shift from paper to EHR information structure [32]. Also, the Ministry of Health indicated in the national e-health strategy that the availability of skilled professionals in healthcare information technology is a global challenge [9].

An additional factor that has triggered the need for well-educated and trained HIM professionals is the introduction of Vision 2030. To manage change and achieve the desired goals of the National Transformation Program 2020, which will eventually contribute to Vision 2030, the MoH has strict plans to increase the percentage of Saudi citizens who have a unified digital medical record from 0 to 70% by 2020 [9]. The Saudi Ministry of Health mentioned health records and information technology professionals along with other healthcare providers and stakeholders are important actors in this situation [33]. Therefore, investment and expansion of a well-educated workforce, and technology in healthcare can grant a successful transformation.

It is important to mention that the foundation of the Saudi Central Board for Accreditation of Healthcare Institutes (CBAHI, n.d.) had a great impact on the growing need for HIM professionals in 2001. The CBAHI offers accreditation certificates to healthcare organizations that comply with the set of standards ensuring quality healthcare services. HIM graduates are best suited to become healthcare quality professionals. This is due to the nature of their comprehensive education, training, and experience in areas related to the improvement of healthcare services. Therefore, HIM graduates can participate effectively in the accreditation process by collecting evidence, analyzing data, and making informed decisions [34].

As the demand for highly educated and skilled HIM professionals is increasing, this factor puts huge stress on universities and colleges to prepare their students for the job market. The limited number of postgraduate programs has big implications on the level of skills acquired by HIM professionals, the development of the profession, and the type of job positions or roles that HIM professionals can assume in the health sector [11].

This research, however, is subject to several limitations. First, since the data was collected solely online, the overall reliability of the data might be in question, and some data might be unintentionally missing. This raises the concern of selection bias, possibly leading to an under or overestimation of our findings. Yet, the data was collected from the Ministry of Education's official website, and, therefore, we do not believe that potentially missing some data (likely of minor importance) will have significantly influenced the final results. Second, variability in the HIM program names was also considered to be a limitation in this study. The name variability might have contributed to missing some information during the data collection phase. Third, the research was conducted in 2018, and some newer programs may have been

established; however, no new published information was found in a recent search conducted in 2020. This fact represents a restriction of this study. Fourth, the lack of information on the number of graduates and sources of employment is another limitation of this research. Fifth, the absence of information about the efficiency of graduates at the job level is an additional restriction of this study. It is worth mentioning that despite the lack of accurate information on this topic, this study can help to visualize the labor market needs because it shows an overview of the number of universities and colleges offering HIM studies in Saudi Arabia. Sixth, another important limitation of this study was that no information was found on the topics covered by each course and their distribution among the different undergraduate and graduate HIM institutions in Saudi Arabia. Showing this information would have been useful to get an idea of the programmatic content of the courses offered in the HIM area in this country.

5. Conclusion

HIM undergraduate programs in Saudi Arabia are better established than postgraduate programs. The adequacy of HIM programs in Saudi Arabia can only be judged by a careful analysis of the HIM alumni job placement and workforce needs. The results of this research can be useful to predict the workforce requirements to ensure an adequate supply of highly skilled HIM professionals in Saudi Arabia. In this regard, it would be important to systematically monitor trends in healthcare technology and the healthcare industry to identify the level and types of skills required by these professionals.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

References

[1] AHIMA AHIMA. What is health information? 2002. Available from, https://www.ahima.org/careers/healthinfo.
[2] Safian SC. Factors influencing students to enroll in health information management programs. Perspectives in Health Information Management 2012;9(1).
[3] Fenton S, Low S, Abrams K, et al. Health information management: changing with time. Yearb Med Inform 2017;26(1):78–83.
[4] Hasanain R, Vallmuur K, Clark M. Progress and challenges in the implementation of electronic medical records in Saudi Arabia: a systematic review. Health Informatics- An International Journal (HIIJ) 2014;3(2).
[5] Al Kiyumi R, Walker S, Tariq A, FitzGerald G. Health information management professionals [present circumstances and future expectations. In: Paper presented at the 1st national conference on HIM and IT. India: Hyderabad; 2015.
[6] Hu D, Sun Z, Li H. An overview of medical informatics education in China. Int J Med Inf 2013;82(5):448–66.
[7] Urquhart C, Chambers M, Connor S, et al. Evaluation of distance learning delivery of health information management and health informatics programmes: a UK perspective. Health Inf Libr J 2002;19(3):146–57.
[8] Bennett V. Health information management workforce - when opportunities abound. Health Information Management Journal 2010;39(3):4–6.
[9] Arabia KoS. National transformation program 2020. Available from, http://vision2030.gov.sa/sites/default/files/NTP_En.pdf; 2016.
[10] Asiri H. Challenges of the health informatics education in the Kingdom of Saudi Arabia: what stands in our way? Journal of Health Informatics in Developing Countries 2014;8(1).
[11] Abrams K. Leadership and health information management in Canada [disertation]. University of Regina. Canada; 2016.
[12] University IABF. Health information management and technology department. Available from, https://www.iau.edu.sa/en/colleges/college-of-public-health/departments/health-information-management-and-technology-department; 2019.
[13] Jaspers M, Gardner R, Gatewood L, et al. The international partnership for health informatics education: lessons learned from six years of experience. Methods Inf Med 2005;44(1):25–31.
[14] Nicholson L. Education of health record/health information management professionals in the United Kingdom. Available from, https://library.ahima.org/doc?oid=57599#.XVGswpMzbBl; 2004.
[15] Gibson C, Dixon B, Abrams K. Convergent evolution of health information management and health informatics. Appl Clin Inf 2015;6(1):163. 1.

[16] AHIMA. Global academic curricula competencies for health information professionals. Available from, https://www.hisi.ie/resources/Global_Health_Information_Curricula_Draft_for_Public_Comment_Final.pdf; 2015.

[17] Dorsey A, Clements K, Garrie R, et al. Bridging the gap. Appl Clin Inf 2015;6(2): 211–23.

[18] Butler-Henderson K. Health information management 2025. What is required to create a sustainable profession in the face of digital transformation? Australia: University of Tasmania; 2017.

[19] University of Wisconsin. Health information management and technology. Available from, https://himt.wisconsin.edu/?lead_source=UW-SPWebsiteReferral&utm_source=UW-SP&utm_medium=referral&utm_campaign=UW-SP; 2019.

[20] Marshall DL. A guide for restructuring and transforming health information management education in Barbados and other developing countries. The College of St. Scholastica. Minnesota; 2014. 2014.

[21] Alber J, Chaney D, O'Rourke T. What's in a name? changing names and challenges to professional identification. Am J Health Educ 2013;44(5):288–91.

[22] Tobbell D. Health informatics at Minnesota: the first fifty years. Tasora Books; 2015. Available from, https://books.google.co.ve/books/about/Health_Informatics_at_Minnesota.html?id=wn4ljgEACAAJ&redir_esc=y.

[23] Bhattacharya I, Das D, Kansal D. Health information management (HIM)-A review of education and research in India. Indian Journal of Higher Education 2013;4(2).

[24] Canada's Health Informatics Association. Health informatics education in Canada: landscape of an emerging academic discipline. Available from, https://www.academia.edu/11632747/Health_Informatics_Education_in_Canada_Landscape_of_an_emerging_academic_discipline; 2013.

[25] MacKellar B. The landscape of healthcare informatics programs in the United States: an updated survey. Paper presented at the Proceedings of the Information Systems Educators Conference ISSN; 2014. 2014.

[26] Hersh W. The health information technology workforce. Appl Clin Inf 2010;1(2): 197–212.

[27] West Jr D, Filerman G. International healthcare management education. 2011. Available from, https://cahme.org/files/CAHME-II-Report_FINAL_7-5-12.pdf.

[28] Jones D, Brooks D, Mak J. Examining sport management programs in the United States. Sport Manag Rev 2008;11(1):77–91.

[29] May B. Lessons in diversity: origins of interior decoration education in the United States. J Interior Des 2017;42(3):5–28.

[30] Marc D, Robertson J, Gordon L, et al. What the data say about HIM professional trends. Journal of AHIMA 2017;88(5):25.

[31] Alsahafi Y. Studies of EHR implementation and operation in different countries with particular reference to Saudi Arabia [disertation]. New Zealand: Massey University; 2012. Available from, http://hdl.handle.net/10179/4033.

[32] Zeng X, Reynolds R, Sharp M. Redefining the roles of health information management professionals in health information technology. Perspect Health Inf Manag 2009;16:6.

[33] MoH. Managing change. Available from, https://www.moh.gov.sa/en/Ministry/nehs/Pages/Managing-Change.aspx; 2011.

[34] Spath P. Fundamentals of health care quality management. New York: Brown-Spath & Associates .; 2009.