

Seeking Standards of Health Informatics Education in Saudi Arabia

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Abstract: *As an initial step towards diversifying Saudi Arabia economy, the kingdom is focusing on the development and improvement of all public services through technology especially the health sector to meet the standards of the western world. We discuss the progress of the health informatics education globally with the main focus on the Kingdom of Saudi Arabia. For this purpose, we survey all academic institutions with their levels of education and found that only 9% of the 109 academic institutions offered specific programs in Health Informatics. While we focus on Saudi Arabia, we also gather information on courses per AMIA identification for Saudi academic institutions.*

Keywords: *AMIA, Education, Health Informatics, Saudi Arabia.*

I. INTRODUCTION

The professions of healthcare are composed of a vast and growing number of fields, many of which are ever-evolving and increasingly interdisciplinary. The broad efforts of the span of healthcare require a complex conglomeration of skills and knowledge that both generate and utilize a staggering network of biomedical data for the study, research, analysis, and administration of the maintenance and improvement of our quality of life. The undertaking of the management and leveraging of these resources has led to the developing, interdisciplinary field of Health Informatics [1-2]. Such is the ambiguity and breadth of this collection of fields that they have been referenced in practice and literature by many names and broken down by several organizations into a spectrum of subcategories in an attempt to classify their many faces, particularly regarding standards of education.

From these observations, we shift our focus to the Kingdom of Saudi Arabia (KSA) and obtaining education in Health Informatics by illuminating the current state of affairs, understanding the troubles being faced, and posing a perspective that could have broader implications. This study could prove enlightening to those wishing to understand the challenges being faced in the KSA with the implementation of nationwide standards of education in Health Informatics, whether they be students or prospects seeking education and accreditation, researchers tracking the progress of development of the fields of Health Informatics, or administrators seeking status and guidance for understanding and addressing the current state of affairs. Additionally, per the KSA Vision 2030 initiative, development of educational programs in Health Informatics fits squarely in the purview of the eHealth strategy of the Ministry of Health (MOH).

Revised Manuscript Received on November 08, 2019.

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II. RELATED WORK

Several studies have already begun exploring the Saudi health informatics education context. Noor [3] has recently showed the lack of using technology in healthcare in KSA. With regard education, Altwaijiri and Aldosari [4] published a paper proposing the creation of a master's program adaptation based on the programs of three universities in the USA, Canada, and Australia. While this effort was a notable and organized attempt at developing health informatics programs for a single university, the approach taken was one of wholesale adoption and adaptation of targeted foreign programs rather than identifying and weighing specific core competencies for robust development and future-proofing. Four other works [5-8] have demonstrated the importance of health informatics in learning and decision-making but without focusing on the development of specific health informatics programs. Asiri [9] published a brief overview of some health informatics programs offered by Saudi educational institutions and attempted to address the challenges faced in the KSA and the international community as health informatics education is improved. These efforts to address and advise based on current research are laudable, though there is still much room for other perspectives and no definitive solutions have yet surfaced. Fortunately, awareness is growing. Fallatah [10] published a work focusing on the need for collaboration and teamwork as a part of inter-professional education (IPE) in order to prevent medical errors and promote the advancement of healthcare in the KSA. This interdisciplinary and collaborative aspect of healthcare education, already well-recognized in the west, is beginning to make its way into the curricular programs of the KSA.

III. METHOD

Public resources were used whenever possible so as to replicate the experience a layperson seeking knowledge through government resources, official websites, and information officially or tangentially published on the public internet, and direct email and voice communications with those officially involved with the administration of the programs and courses. A sample was collected consisting of information gathered for programs and courses from 109 colleges and universities located throughout the KSA,



including public, private, and military schools. For those schools found to have specific programs in Health Informatics, the availability of course offerings per the AMIA recommendations [11] were also examined

IV. RESULTS AND DISCUSSION

Only 10 of the 109 academic institutions surveyed openly offered programs specific to Health Informatics with most of them being bachelor’s programs. Programs related to medical coding appeared to have a disproportionate prevalence. This is likely because medical coding is considered a certification path rather than only a course offered within a curriculum. Taking a look at those 10 programs sheds some light on the similarities of the curricula of these programs with regards to AMIA and IMIA recommendations; it was found that on average each program offered half of the 22 courses, though which courses of the 22 varied considerably by program with only 6 of the courses being offered in 7 or more programs. The minimum number of the 22 courses offered by any program was 3 while the maximum number offered by any program was 20. These minimal and maximal cases were extreme outliers with all remaining numbers of courses being heavily centered between 7 and 14.

Table 1 demonstrates the list of courses along with an indication of how many of the 10 universities offer each course

Name of course	Occurrences out of 10 universities
Introduction to Health Informatics	5
Public Health Informatics	6
Electronic Health Records	5
Coding System	7
Research Methodology	8
Epidemiology	8
Biostatistics	7
Data Mining	3
Data Warehousing	3
Decision Support System	5
System Analysis and Design	5
Computer Programming	4
Database Management Systems	7
Information Security	6
Human Computer Interaction	1
Health Promotion and Education	4
Global Health	3
Legal and Ethics in Health Informatics	9
Health Economics	4
Interdisciplinary Perspectives	1
Organization Behaviors	5
Leadership in Healthcare	2

The breadth of competencies that fit into the interdisciplinary fields of Health Informatics is vast and often difficult to specifically-label as pertinent to Health Informatics. The nature of Health Informatics, particularly regarding education, is still being decided and is ever evolving. In this study, it was found that only 9% of the 109 academic institutions surveyed in the KSA offered specific programs in Health Informatics. Also, there does not currently exist an extensive amount of

published literature regarding the state of Health Informatics education in the KSA.

Despite efforts of standardization of accreditation at the international level per the IMIA of which the KSA is a member via the Saudi Association for Health Informatics (SAHI), the effects of such standardization require prioritization and time. As Health Informatics is an ever-evolving collection of fields, skills, and knowledge, it is necessary for the institutions of education to be constantly vigilant and maintain being apprised of current best practices. This observation was also supported by the lack of published literature regarding Health Informatics programs in the KSA. Hopefully, the information gathered and surveyed of existing curricula and programs will put similar awareness and focus on the state of Health Informatics education.

V. CONCLUSION

While standardization efforts have been made at the international level for identifying and classifying core competencies of Health Informatics at the graduate level, this is an ongoing process due to the relative newness as the defined conglomeration of fields and disciplines as well as the ever-changing skills and knowledge associated with managing and maintaining the well-being of humanity. The general lack of information and specifics to Health Informatics found from surveying 109 universities and colleges in the KSA owed partly to incomplete or missing descriptions of courses and programs on websites and other materials available to the public. It was not usually apparent within which department or program to search and attempts to contact departments for additional information were often misleading and inconclusive. If improvement is to be made, there needs to be prioritization and focus at the national and academic levels, especially researching and understanding developing core competencies of Health Informatics. Out of the 109 institutions surveyed, only 10 offered specific programs in Health Informatics with those programs only offering half of the 22 courses identified by AMIA on average.

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