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Middle East and North African Health Informatics Association (MENAHIA):

A New Opportunity for the Region

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Summary

During the 2018 IMIA General Assembly (GA) held on Oct 2018 in Sri Lanka, a new organization, the Middle East and North African Health Informatics Association (MENAHIA) was established as a regional non-governmental organization to promote Health Informatics in the region. Health Informatics activities in applications, education, and research have been growing in the Middle East and North African region for many years. Over the past year, health informatics initiatives within the region focused on the education sector and the workforce. The need to enhance the education delivery and methods is essential in promoting Health Informatics in the region as well as establishing master programs in many countries within the region.

This paper provides an overview of the variety of initiatives that are occurring in the region and are endorsed by MENAHIA.

Keywords

Saudi Arabia, Pakistan, Jordan, United Arab Emirates, Morocco, Kuwait, Oman, Bahrain, Health Informatics, and the Middle East

Introduction

To recognize the importance of Health Informatics as a discipline and its increasing role in modern healthcare delivery, the Middle East and North African Health Informatics Association (MENAHIA) was established in the 2018 International Medical Informatics Association (IMIA) General Assembly held in Colombo. Sri Lanka. Saudi Arabia, Pakistan, Jordan, United Arab Emirates, and Morocco joined forces and became the founding members establishing MENAHIA [1-2]. These countries have national eHealth, Health Informatics or medical informatics associations with official membership in IMIA. Other countries in the region (e.g., Kuwait), who are supportive of MENAHIA and its goals, are either working on establishing their national societies or have a representative within IMIA. The MENAHIA region is active in the Health Informatics domain especially in the Arabian Gulf region.

MENAHIA is working on establishing working groups to promote Health Informatics in the region in a variety of aspects. We are living in an era of easy access to information due to the revolution of the Internet. The healthcare domain has important information that is difficult for the teachers/instructors to teach to students and professionals. Therefore, a new education degree, a teaching methodology that can prepare the students and future professionals to apprehend this enormous amount of knowledge is needed in the region. Recent advances in technology like Artificial Intelligence, data

analytics, machine learning, 3D printing, nanotechnology, and their influence in healthcare warrant a robust and integrated educational and developmental program, which allows our current and future healthcare professionals to be equipped with the technology tools to deliver healthcare efficiently and effectively.

Furthermore, identifying the competencies that are needed for the workforce is important to link the education programs with the job market. A study has been initiated in five countries to shed some light on this topic.

Design a Competencies-based Health Informatics Education Program for the Region

Health Informatics is a relatively new domain and has proven essential in improving healthcare through applying Information Technology (IT) for health. Health Informatics enables healthcare personal / professionals to apply technology effectively and to organize information to improve healthcare outcomes, especially patient well-being and care. Furthermore, Health Informatics can improve healthcare outcomes by providing data analytics and keeping information current. Health Informatics also contributes to safer health systems and improved quality in hospitals. The World Health Organization (WHO) states that 1 out of 10 patients is harmed while in a hospital, and the 3rd leading cause of death in the United States of America are preventable medical errors. There is ample evidence that patients, who are connected to hospitals and healthcare professionals through any technological tools, are safer patients.

Advancements made in the health technology have led to the invention of several tools that enhance patient safety by providing novel opportunities to engage and empower patients and thereby promoting patient-centered care [24]. Examples include:

1. Patient (Personal) Health Records: By giving information regarding patient history, medications, procedures, and diagnosis, the patient health record enables care coordination and uncovers diagnostic and medication errors [8, 9, 10]. Additionally, it empowers patients for self-care [8].
2. Remote Home Healthcare: Technology use has enabled remote patient monitoring to enhance home healthcare and providing an opportunity for patients to shorten hospital stays. Home health care reduces mortality, readmission [17, 18], hospital-acquired infections [19, 20, 21], hospitalization length, and emergency admissions [22].
3. Telemedicine: Use of telemedicine has strengthened the remote home healthcare of the patient and can play an essential role in patient safety by detecting and preventing problems related to treatment between hospital visits, decreasing medications errors, monitoring adverse events [13, 14, 15], and promoting communication between the health providers and patients [16].
4. Mobile Apps and Devices: The ubiquity of mobile phones and smartphones today as well as sensor-enabled medical devices linked to mobile phones has opened up new opportunities to improve health care and patient safety by facilitating patient engagement by enabling self-care, improving treatment adherence, and detecting warning signs early [11, 12]. This has further enhanced the concept of remote home healthcare.
5. E-educational content: Educational content available through the electronic medium provides a means for educating patients to proactively participate in their healthcare journey by participating in preventive practices, self-care, and medication compliance as communication of health-related information plays a crucial role in protecting patients from harm [5, 6, 7].
6. Alert Notifications: Automated alerts used in remote monitoring devices provide real-time notifications regarding adverse events or abnormal vital sign readings to patients and their providers and enable timely identification of complications and triggering of interventions [23].

Health Informatics consists of three essential elements, which are information, technology, and people. An education program needs to cover the three elements. Health Informatics education is essential for healthcare professionals to advance their understanding and comprehension of information technology in the field of healthcare and prepare for the transition of healthcare to the technology era.

Health Informatics education programs can serve as a liaison to healthcare professionals, information technology specialties, and non-health care professionals in the usage of new computer technology / Information and Communication Technology (ICT). A graduate of the Health Informatics program will be able to address Information Technology/ICT issues and advance in their professions as a leader in the healthcare Information Technology field [3, 35].

The purpose of the Health Informatics program is to unveil the state of the art health information technology systems and applications to the learners focusing on data gathering and analysis for health. A graduate of the program will be competent in the following:

- Understanding the healthcare system in the region, disease management, and health care processes, and medical terminology.
- Demonstrating advanced understanding of the performance and procedure of information technology infrastructure, best-practice of implementing and utilization of healthcare IT systems with the importance of privacy and security for patients' data.
- Showing the ability in acquiring, processing, integrating, managing, and analyzing health data.

The program needs to respond to the following issues:

1. Making the Health Informatics career paths recognized by the government and private sectors.
2. Bringing together diverse stakeholders from the private and government sectors to participate in the design and implementation of the program.

The eHealth Workforce Initiative

The MENA region has been identified as having the highest growth and potential in healthcare globally. In the Gulf Cooperation Council (GCC) region, the overall demand for healthcare services is anticipated to increase by 240% over the next 20 years, according to a study by McKinsey [4]. GCC countries are also witnessing a massive shift towards Universal Health Coverage and Value-based Care, which entails creating thousands of jobs to operate and maintain the required information intensive insurance systems. Due to the immense need to increase efficiency and improve both service quality and patient safety, the digital transformation of the healthcare system has become an imperative and is no longer an option. However, the essential piece of any successful healthcare ecosystem is its workforce.

The changing ecosystem requires a robust and sustainable supply of highly skilled professionals, who are proficient not only in the core skills of their specialty or domain but also in eHealth/Health IT and are able to use, integrate, and optimize digital services. These eHealth-skilled professionals include classical clinical roles such as nurses, doctors, technicians, and pharmacists; administrative positions including data analysts, health information management (HIM) staff, clinical coders, revenue cycle billers, and administrative support; and new eHealth roles such as health informaticians, patient engagement specialists, and chief medical and nursing information officers [3].

The GCC Taskforce on Workforce Development in Digital Healthcare (ZIMAM) was established in February 2016 to highlight and promote the importance of developing a regional framework for eHealth Workforce Development. The Taskforce brings together Healthcare providers, government healthcare strategists, and educational institutions to actively participate in realizing such a framework. As a kick-off measure, the task force decided to design and implement a comprehensive survey to understand the status, trends, and needs of the eHealth workforce in the GCC region and to highlight existing gaps.

The survey was conducted between December 2018 and January 2019. The questionnaire was designed as a cross-sectional study of the GCC current and future eHealth. There were two main versions of the questionnaire: one directed at representatives from healthcare organizations and a second directed at individual respondents. Targeted organizations included related ministries, healthcare regulatory bodies, academic institutions, vendors, and healthcare providers. The individual respondents were recruited from the following groups: Students; future and current healthcare workers including clinicians, administrative, technical, and revenue cycle management/medical coding staff, and educators.

Some countries in the Region have taken serious efforts to establish master's degree programs in health and biomedical informatics. These include the Faculty of Medicine at the Ain Shams University in Egypt, the Department of Biomedical Engineering of the German Jordan University, the Department of Information Technology of the Jordan University of Science and Technology, and the King Mohammed VI School of Health Sciences, Casablanca, Morocco. It is expected that these universities will launch their programs next October. The Master's program in Casablanca was developed in a collaboration with the US National Library of Medicine. A certificate program will be launched this academic year at the National School of Public Health in Rabat, Morocco, following a request of the Ministry of Health to meet the need for health informatics professionals to participate in the implementation of a large national program for telemedicine. Earlier, the School of Medicine of the Hassan II University in Casablanca established a department of Medical Informatics. In Morocco, the discipline of Health Informatics was accepted as a university discipline and as a medical specialty in 2008. The first residents graduated in 2014, however, finding adequate positions proved difficult. The Health Informatics degrees were just taking off in 2018 when the Telemedicine application decrees were published.

The Health Informatics Application Initiative

A major Health Informatics initiative, the British Medical Journal (BMJ) Clinical Decision Support Training Initiative was launched in 2018 in Jordan designed to detect, diagnosis, and manage infectious diseases. The implementation and sustainability of this decision support training initiative required building partnerships with all stakeholders including the Ministry of Health, Royal Medical Services, Electronic Health Solutions, and a wide range of Medical Schools and Postgraduate Centres, Hospital/ Healthcare Providers in the country [30].

The Electronic Health Solutions (EHS) launched its flagship health information exchange program in 2009, Hakeem. Hakeem is a national eHealth Program in Jordan. EHS continues to deploy the application in public hospitals, primary health care centers, and the Armed Forces Hospitals. The full deployment of the application is underway with the majority of health facilities already using it. The ultimate goal is to have all the facilities linked through a national health network allowing the patient's data to be accessible in any facility regardless of location or size. Physicians, pharmacists, medical technologists, and other clinicians can electronically access medical records of patients within participating health facilities in Jordan by merely entering the patient's national ID number.

EHS has adopted VistA system in its goal to leverage the Hakeem program in automating information exchange in the public health care sector in Jordan. VistA is an enterprise-wide information system used throughout the United States Department of Veterans Affairs (VA) medical system [31]. Private hospitals continue to be a challenge as they still use Hakeem in an uncoordinated, individual manner.

The Need for Telemedicine - The Jordanian and Moroccan Initiatives

Since the last Yearbook's report, eHealth activities in Jordan have been characterized as institutionalizing eHealth at the national level. Establishment of the eHealth Development Association (eHDA) in April 2018 was

the real milestone in eHealth in Jordan. After the announcement of the eHDA's birth, serious efforts by both the founding members and the eHealth professionals in the country were applied to increase membership and to implement national activities in collaboration with universities and other professional bodies [32]

The General Assembly (GA) of the International Medical Informatics Association (IMIA) voted eHDA as the national association of eHealth representing Jordan during its meeting in Colombo, Sri Lanka in October 2018. The President of eHDA attended the GA meeting as a representative of eHDA subsequently. eHDA was also voted by the Executive Board of the International Society of Telemedicine and eHealth (ISfTeH) as the Jordan national eHealth member in the Society.

eHDA signed a memorandum of Understanding (MoU) with the Jordan Library and Information Association (JLIA) aiming to enhance their collaboration to develop the medical libraries in hospitals and health sciences faculties. Improving quality of health information on the Internet has been one of the major concerns for consumers' health in Jordan [33]. Collaboration between eHDA, JLIA, and HON (Health on the Net) resulted in translation into Arabic and publication of the HON principles on the websites of the three organizations.

eHDA has facilitated efforts to provide telemedicine services to Palestinian refugees in Gaza by the Médicins Sans Frontières (MSF). MSF and the *United Nations Relief and Works Agency (*UNRWA) have negotiated the process. When this project is implemented it will be a major contribution to the health of people on Gaza through telemedicine services, which hopefully will improve the health situation and contribute to better medical services in Gaza [34].

In Morocco in the last decade, following a number of telemedicine pilot projects that didn't scale up, the Ministry of Health (MoH) plans to commit to a heavy investment in Telemedicine and e-Health, ranging from digital hospitals to the creation of telemedicine platform for the 12 regions of the Kingdom. Moroccan MoH has ambitions to gradually deploy telemedicine sites in 160 isolated municipalities covering 6.25% of the population by 2025. So far, telemedicine is already deployed in 6 sites chosen for their isolated and under-served situation. This was made possible on July, 2018, as Application Decrees, which formalize the launch of telemedicine by setting the terms and conditions of its practice, were first published.

Conclusion

MENAHIA is a new organization that was established in 2018. MENAHIA main goals include the promotion of Health Informatics education and research within the region. Many initiatives have been established, however, the focus of the MENAHIA for the next five years will be on education, telemedicine, and workforce development since they are of high importance to promote Health Informatics in the region.

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