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

Strengthening Health Informatics Ecosystems in the Region and Beyond

Dari Alhuwail[1], Eiman Al-Jafar[2], Riyad Alshammari[3], Najeeb Al-Shorbaji[4], Osama El Hassan[5], Zaid Al-Hamdan[6], Abdulwahhab Alshammari[7], Luis Fernandez Luque[8], Salim AL Salmi[9], Adel Taweel[10], Khalid AlKhalifa[11], Mowafa Househ[12], Dena A. Al Thani[12]

[1] Department of Information Science, College of Life Sciences, Kuwait University, Kuwait; Health Informatics Unit, Dasman Diabetes Institute, Kuwait; Kuwait Health Informatics Association, Kuwait
[2] Department of Health Informatics and Information Management, College of Allied Health, Kuwait University, Kuwait; Kuwait Health Informatics Association, Kuwait
[3] Health Informatics Department, College of Public Health and Health Informatics, King Saud bin Abdulaziz University for Health Sciences, Riyadh, Saudi Arabia; King Abdullah International Medical Research Center, Riyadh, Saudi Arabia; Ministry of the National Guard- Health Affairs, Riyadh, Saudi Arabia; Saudi Health Informatics Association
[4] eHealth Development Association, Amman, Jordan
[5] Health Informatics & Smart Health Department, Dubai Health Authority, Dubai, UAE
[6] Jordan University of Science and Technology, Irbid, Jordan
[7] Health Informatics Department, College of Public Health and Health Informatics, King Saud bin Abdulaziz University for Health Sciences; King Abdullah International Medical Research Center, Ministry of the National Guard Health Affairs, Riyadh, Saudi Arabia
[8] Qatar Computing Research Institute, Hamad bin Khalifa University, Qatar
[9] Associate Deanship for Health Information Management, Oman College of Health Sciences, Ministry of Health, Oman
[10] Department of Computer Science, Birzeit University, Birzeit, Palestine
[11] Supreme Council of Health, Bahrain
[12] Information and Computing Technology Division, College of Science and Engineering, Hamad Bin Khalifa University, Qatar

Summary

Over the years, Health Informatics initiatives in the Middle East and North African region have been thriving with a number of different educational, scientific, professional, and technological developments taking place. Within the past year, Health Informatics initiatives in the region have focused on the educational and capacity building efforts. This regional report provides an overview of the wide spectrum of initiatives and developments that are taking place within the region which are supported by the Middle East and North African Health Informatics Association (MENAHIA).

Keywords

Bahrain, Jordan, Kuwait, Morocco, Oman, Pakistan, Palestine, Saudi Arabia, United Arab Emirates, Qatar, Health Informatics, Middle East, North Africa

Introduction

Since its inception in 2018 [1], the society members and health informatics professionals of the Middle East and North African Health Informatics Association (MENAHIA) have made several contributions to the field of health informatics in the region. These efforts targeted building capacity and workforce development, working with local governments on building national health informatics strategies, promoting health informatics research and education, as well as cultivating grassroots efforts in establishing health informatics associations in the region. Recently, the results of the first MENAHIA elections were announced at the Kuwait Digital Health Conference in December 2019; the following individuals were elected into their respective positions: Dr. Najeeb Al-Shorbaj (president-elect), Dr. Dari Alhuwail (vice-president-elect), and Dr. Osama El Hassan (treasurer-elect). We showcase some of the important milestones achieved and highlight the progress in the region to achive MENAHIA's vision and mission.

Bahrain: Building a National Health Data Dictionary (NHDD)

After publishing the first NHDD in 2017, the Bahrain national health data dictionary committee, supervised by the Supreme Council of Health (SCH), has completed the revision of the initial document and released version 2 in June 2019. This edition reflects the progress of the national digitalization transformation. The NHDD continues to be the bases for the National Electronic Medical Repository (NEMR) as well as the National Health Insurance Information System (NHIIS), two of the systems that comprise the SEHATI Universal health coverage transformation program in the kingdom of Bahrain. The importance of the second version comes after extensive testing of NEMR with real data, as well as the continues discussions around the insurance scheme implementation and the associated electronic claim system. The consensus of all healthcare organizations on the structure and the information exchange mechanism plays an important role in orchestrating the interrelationship between all these organizations that make up the National Healthcare Insurance ecosystem. When coordinated well the cohesive system will provide executives and decision-makers the vital information needed to streamline the functioning and continued service of the program. Several teams from key organizations within the Bahraini government and the healthcare sector, in general, have been brought together to deliver this key document. Ahead is an exciting system rollout phase and the NHDD will play a major role as a key integration milestone that continues to grow with the project.

Jordan: Cybersecurity and Health Data

Jordan has made major progress this year in terms of data privacy and confidentiality as the Parliament approved this year the Cybersecurity Law which was endorsed by His Majesty the King [2]. The Law included 19 clauses defining cyberspace, cybersecurity, data, information, information systems, networks and other related terms. The work on the Law followed the 2012 "National Information Assurance and Cyber Security Strategy (NIACSS)" [3]. The strategy aims to provide a strong foundation to secure the National IT Infrastructure and should provide a secure and trusted computing environment for all IT-related infrastructure throughout all identified national priorities herein. The main purpose of the NIACSS is to give structure, involve, and empower all concerned organizations to more effectively secure computer networks they own, operate, control, or interact with. Under the Law [2], a National Centre for Cybersecurity will be established with the aim of building a national effective structure for cybersecurity to safeguard the national security and the safety of individuals, properties and information. Presently, the Law does not specify the health sector as one of the more sensitive and vulnerable sectors in society. Clause 8 of the Law, however, indicated that ministries, government agencies, official, public, and private institutions are obliged to (i) follow all policies, standards and control measures issued by the Centre according to this Law and the regulations and procedures issued based on it; (ii) Provide the Centre with the necessary information to enable it to perform its duties according to the laws; (iii) Inform the Centre on any incident that may threaten cybersecurity or related to cyberspace and to do all necessary actions to avoid that. Currently, there is no national health data protection law in Jordan to protect patients' health data. However, certain general and specific requirements relating to the storing of patients' records and the security and protection of the confidentiality of patient personal medical information are in place.

Kuwait: Cultivating a Thriving National Digital Health and Informatics Ecosystem

The Kuwait Health Informatics Association (KHIA) had gone through a major transformation and under its new leadership elected in 2019 has set a clear direction in taking a lead in enhancing the field of Health Informatics in the State of Kuwait. With the support of MENAHIA, KHIA's was able to become a recognized society member in the International Medical Informatics Association (IMIA); The approval was awarded during the annual assembly of IMIA, Lyon France in late August 2019. KHIA also is playing a key role in supporting the Ministry of Health (MoH) in its digital transformation across the nation through the participation of its members in national-level committees tasked with building a national digital health and informatics strategy. The Association also was a strategic partner and helped organize the first Digital Health Conference held in Kuwait in December 2019. The Association has also been active in building a skilled health informatics workforce and educating healthcare professionals through conducting public lectures and workshops with local and international experts. The Association continues to support these efforts through empowering higher education institutions (e.g. Kuwait University) and participating in regional conferences (e.g. Gulf Cooperation Council (GCC) Taskforce on Workforce Development in Digital Healthcare Conference).

Oman: Artificial Intelligence in Breast Cancer Detection

The Omani MoH and the Ministry of Technology & Communications (MTC) launched the actual implementation phase of the 'Artificial Intelligence (AI) in breast cancer detection' at the Royal Hospital. The decision was taken after a pilot study was conducted by MoH, Information Technology Authority (ITA), Microsoft, and ScreenPoint to employ AI in diagnosing breast cancer. The successful pilot encouraged MoH to circulate the system in five tertiary care hospitals around Oman to provide the necessary early healthcare to the diagnosed women [4]. AI had a 96% success rate in diagnosing breast cancer in five hospitals. Breast cancer is most of the common diseases as it represents 24.4 percent of all

registered cancer incidents in Oman and 11.6% of the total diagnosed cancer cases worldwide. Currently, more than 200 new cases of cancer are diagnosed annually in Oman and the number is expected to rise to 975 cases by 2040 [5]. Statistical reports show that five specialists can handle 49,920 mammograms annually. It has been predicted that when the system is fully operational, the number of cases being handled will increase to 99,840 annually. Moreover, the treatment costs will decrease significantly from OMR 26,000 to OMR 3,000, which means there will be a total saving of OMR 2.3 million for every 100 cases [5,6]. According to MoH and the ITA, the project will measure the efficiency of the system and the possibility of circulating it around Oman hospitals. The circulation will be done through integration with the MoH Health Information System (Al Shifa) and the digital screening system.

Palestine: Health Informatics Developments

Health informatics and eHealth applications have increasingly been gaining momentum in Palestine in the last five years. Several initiatives have been started by and in academia, government and industry to address different digital health needs [7–11]. Academic projects, some funded by the EU, have developed curricula to teach health informatics at both undergraduate and postgraduate levels[9,10,12–14], which have been accredited and implemented for teaching, where the first graduates are expected in 2018/2019. The implemented undergraduate programs were designed to integrate health informatics skills as part and in current health and IT curricula with the aim of making it as an integral part of health and IT professions, rather than an optional addition to it [15]. The Ministry of Health in Palestine has organized the first eHealth conference, June 2019, as the first conference that aimed to define the eHealth development strategy. The conference resulted in a number of strategic development plans that widen and accelerate eHealth meaningful use and define potential approaches for eHealth implementation in various governmental health organizations. This came to build on the relatively successful implementation of the Palestinian national electronic health record systems (EHRs) in 14 governmental hospitals. The next phase is to implement the use of EHRs in family clinics, planned for next year. Additionally, the WHO Palestinian National Institute of Public Health (PNIPH) has developed an electronic registry for neonatal clinics [16]. This serves local and remote family clinics to support neonatal care.

Qatar: Developing a Health Informatics Ecosystem

Qatar is working on developing its health informatics ecosystem to address the national 2015 e-health vision which is "to improve the overall health in Qatar and deliver healthcare of the highest standard by providing the public, patients, and clinicians with appropriate and timely information."[17] A number of initiatives are taking place in Qatar to achieve the national e-health vision. On the educational side, Hamad Bin Khalifa University (HBKU), College of Science and Engineering (CSE), has recently introduced two health informatics postgraduate programs: (i) Master of Data Analytics in Health Management (2018) and (ii) Master of Information Systems in Health Management (2019). Each program aims to develop different health informatics skill sets to meet the growing demand for system analysts and health data analysts in the growing healthcare sector. For research, a number of joint research projects are being launched in collaboration with HBKU's Qatar Computing Research Institute (QCRI) and CSE with the involvement of local stakeholders such as the Ministry of Public Health, Hamad Medical City, Sidra Hospital and other local and international partners with the goal of harnessing the power of artificial intelligence in the diagnosis and treatment of patients relating to a number of national priority healthcare needs such as mental health, chronic disease and people with special needs [18]. The research and industry collaborations are focused on technology transfer that will lead to the development of digital health startups in Qatar that can be scalable regionally and internationally. In October 2019, Qatar University hosted a round table discussion with key Qatari health informatics stakeholders from academia, government, and industry to discuss the evaluation of digital transformation in healthcare. Other initiatives are being explored that include developing a Qatari Health Informatics Association, supporting the strong and existing Nursing Informatics community, as well as creating a community of like-minded health informatics individuals through social media to exchange information related to health informatics in Qatar.

Saudi Arabia: Putting the Patient in the Focus of Care

The World Health Organization defines eHealth as a combination of the use of information and communication technologies for health [19]. The Saudi Arabian MoH developed an eHealth strategy to deliver several objectives and initiatives to focus on patient-centric care. Saudi Arabia has dedicated a huge investment for the development and deployment of e-Health applications and services [20]. The Saudi MoH has successfully implemented many e-Health services in 2019 (Facility and Individual Services) toward the support of the National E-Health Strategy [21]. The Saudi MoH implemented many service programs such as the health performance program and activated the Health Center 937. The Saudi MoH launched the E-Prescription system, which contributed to improving health services provided to citizens and raising the efficiency of performance in health facilities. The Saudi MoH launched the Central Appoint System (Mawid) to enable patients to book, cancel or reschedule a medical appointment in healthcare facilities. The Saudi MoH also created the e-health "Sehha" application, which provides solutions to enable indi-

viduals to receive audio-video medical consultations at their homes provided by MoH's specialists. These services and initiatives aim to improve access to health services and integrated health care provisions to following the highest international standards. Although the Health Center 937 was launched in 2019, the number of medical consultations reached at least 56,000 consultations per week. The number of beneficiaries of the appointment services reached nearly 11 million, in addition to spending more than 900 thousand electronic prescriptions via the E-Prescription system [22]. Furthermore, the application of the health performance program resulted in increasing the percentage of patients who received emergency service to 88%. Also, the health performance program decreased the patient's average waiting for an appointment in outpatient clinics to 17 days. The health performance program with mobile clinics also contributed to raising the percentage of coverage for gatherings remote health up to 84%. The Saudi MoH eHealth business strategy helps to achieve better healthcare outcomes, quality and improve resource performances.

United Arab Emirates: Accelerating Digital Healthcare Workforce Development

The overall demand for healthcare in the Gulf Cooperation Council (GCC) region is expected to surge by 240% over the next 20 years, according to a study by McKinsey [23]. Due to the immense need to increase efficiency and improve both service quality and patient safety, digital transformation of the healthcare system has become imperative and not an option. However, the beating heart of any successful healthcare ecosystem is its workforce. Therefore, securing 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 and health Information Technology (IT), is no longer an option. The only way to ensure the adequate supply of such talents is to develop a workforce development ecosystem that consists of industry academics, professional education, accreditation and government are of immense importance. The GCC Taskforce on Workforce Development in Digital Healthcare (ZIMAM), which was established in 2016 as an initial building block for such an ecosystem, has continued its steady efforts towards building a regional consensus on the importance of developing young local eHealth talents. Based on the outcomes and the insights of its survey on eHealth Workforce, ZIMAM's team has put forward developing eHealth career paths and continuous learning programs as first-class citizens in its strategy. The 2nd meeting of ZIMAM has achieved true success as it managed to gather 250 key participants. One of the core activities of the event namely, "the competency-based framework for eHealth career paths workshop" celebrated the unprecedented gathering of 40 experts representing 5 continents and 22 countries to develop regional-specific eHealth career paths. A qualitative research study was conducted to properly document the six different career paths that developed during the workshop. The six paths include health informatics, clinical informatics, nursing informatics, health information management, health information technology in addition to privacy and security.

Conclusion

Through its active members and their contributions, the newly established MENAHIA has achieved great progress. The Association will continue to strengthen the health informatics ecosystems in the region and beyond through empowering regional and national efforts targeting the promotion of health informatics research and education, assisting local governments in their health informatics endeavors, supporting capacity-building and workforce development, and cultivating grassroots efforts in establishing health informatics associations in the region.

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Correspondence to:
Dr. Dari Alhuwail
Department of Information Science
College of Life Sciences
Kuwait University
Kuwait
E-mail: dari.alhuwail@ku.edu.kw