



"USAGE OF HEALTH INFORMATICS IN SAUDI MEDICAL INSTITUTION AND ITS IMPLICATIONS".

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Abstract

This research aimed to identify Usage of health informatics in Saudi medical institution and its implications, the research relied on the descriptive analytical approach, and a questionnaire was used to collect data from the target group consist of (80) reviewers of government hospitals in Riyadh, who were chosen randomly, a questionnaire was used to collect data from the study sample, the questionnaire consisted of (15) indicators to measure the level of health informatics services in health institutions in the Kingdom of Saudi Arabia. The result showed that showed that the general level of the study sample's estimates on the indicators of health informatics in Saudi medical institution and its implications was (3.62), with a medium degree as a hole from the point view of the study sample, Table (1) also showed that (3) Indicators ranked in a high degree of appreciation, and (12) Indicators ranked in medium degree of appreciation, the sample's levels of estimates on indicators of health informatics ranged between (2.86-3.74), with standard deviations between (0.82 -98).

Keywords: Health informatics, Saudi medical institution.

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I. Introduction

The activation of health informatics systems is one of the main issues in health institutions because of its important role in healthy life, health informatics systems play a scientific role for workers in the health sector, in applying health informatics systems, remote health informatics management systems in hospitals, in addition to telemedicine treatment, electronic medical file, and health technical knowledge management systems.

Health informatics is focused on the science of how to use data, information and knowledge to improve human health and the delivery of health care services, according to the American Medical Informatics Association "AMIA". As the digital age results in the collection and availability of far more health-related data than ever before, health informatics professionals apply "principles of computer and information science to the advancement of life sciences research, health professions education, public health and patient care (Ancker & Bakken, 2019).

Health informatics is a field of science and engineering that aims at developing methods and technology for the acquisition, processing, and study of patient data, which can come and modalities, such as electronic health records, diagnostic test results, medical scans, therefore usage of information technology to improve human health, in order to reduce the gaps between current healthcare practices and societal goals for better health and healthcare quality, because health equity as one of these societal goals a point underscored by this Journal of the American Medical Informatics Association Special Focus Issue (Abdel Qadir, 2020).

The healthcare industry has converged towards healthcare which presents an integration of assisted technologies like Internet-of-Things (IOT), big data, and artificial intelligence (AI) to support the medical operations and has automated the health operations at massive scales. With personalization and emergence of digital wellness, the healthcare which would assure customized disease control, virtual and emotive care, assisted living, virtual clinics, and remote monitoring (Mbunge & Muchemwa, 2021).

Healthcare 5.0 would integrate the diverse technologies of Industry 4.0, with disruptive technologies like fifth-generation (5G) and beyond networks, unmanned aerial vehicle (UAV) monitoring, UAV logistics (of health centers), augmented and virtual reality, and nanotechnology. On the downside, the amount of generated data in healthcare has been massive, and

thus proper techniques are required to maintain the collection of generated data among the medical stakeholders. Electronic medical records (EMRs) can convey ninety solve the problem of collecting data. According to (Groves, 2018). In 2005, usage of EMR was only 30 per cent by hospitals and office-based physicians, which increased to more than 50% for physicians and nearly 75% for hospitals in 2011 (Vishwa & Pronaya, 2020).

Health care is of utmost importance today, as the number of patients and diseases continue to rise, preserving a person's health records is important in order to accurately handle potential health needs. The prime challenges in storing the health care data are availability of data: The constant flow of data is an essential requirement of the healthcare sector, as it is crucial for patient treatment (O'Neill & Tabish 2018).

A continual flow of data is often affected by the failures in the hardware components, due to the malfunctioning of the storage components. , but these kinds of interruption are hardly accepted in the medical field as it results in major losses such as patients', life as well as money. The next issues is the (ii) elasticity: the huge flow of data requires enormous of storage facility and the it often necessary to expand the storage space whenever new data's are to be stored and it must also be taken care that the alteration in the storage space made is not affecting the previously existing information's, so it becomes necessary to keep up the elasticity to elude the issues in properly maintain the data, and finally the (iii) proper functioning: It is necessary to see to that the stored data are kept secure and given only to the authenticated persons at a minimal response time and cost (Hassan, 2018).

The present situations of the medical industry with enormous information's about the patients are maintained as "electronic health records" as it minimizes the time- intense labors and the costly techniques in observing the entire medical record of the patient, maintaining , properly delivering them by enabling a ubiquitous access as it is empowered by cloud. Cloud services provide the infrastructure needed at a lower cost and higher quality, when used in the healthcare sector, cloud computing reduces the expense of storage, processing and upgrading, with greater performance and quality (Mbunge & Muchemwa, 2021).

The World Health Organization (OMS, 2020) defines a computerized health informatics system as: the science that acquires, preserves, retrieves, and applies vital medical knowledge and

information with the aim of improving patient care, health education, research, and management. It also defined it as the integrated efforts to collect and process health data and transform it into information for use. In making decisions and implementing policies at all levels of health services in order to improve their effectiveness and efficiency (Al-Safadi & LAE, 2022)

It is concluded from the foregoing that computerized health informatics systems are a set of computer systems that are used to provide medical information for patients and auditors in particular, and for hospitals in general, through a set of procedures for data entry, processing and review, and the issuance of statistics and reports that help in making medical and administrative decisions (Zakaria & Yusof, 2016).

Thus, the term health informatics includes information that is of interest to patients, as well as health workers. It also includes information related to maintaining treatment, preventing and treating diseases, and making other decisions related to health and health care (Al-Ghazali, 2022).

It also includes information necessary to make decisions about various health services, which are It may be in the form of written or audio texts or video clips, and health information available on the Internet represents a wide field for health information (Alshri, 2020).

Which is one of the new sciences and unique applications that combine computer science on the one hand, and medical and health care sciences on the other hand, as a result of the convergence and continuous interaction between these two fields as it deals with the necessary computer resources, hardware, software, systems and methods (National Center for Health. 2020).

In light the of the Kingdom of Saudi Arabia's Vision 2030, the Saudi Ministry of Health sought to launch several health initiatives related to the National Transformation Program in order to create an integrated health system that accommodates all current and future health needs for all members of Saudi society, with these initiatives, the number of health informatics departments in health institutions has increased (Aldosari, 2020).

The informatics health system in the Kingdom of Saudi Arabia is witnessing a wide development at the health institutions, in technical and awareness levels, which made it one of the most interacting systems with health sector workers and health institution auditors, because of what this advanced system provides in terms of providing better service with high quality and speed, and became a direct impact on health community, at costs

commensurate with the allocations allocated to it, in addition to their suitability for living standards, and there was a possibility to use of information technology in the management of health data and the health system in all its components Health and service referrals in Saudi health institutions. In this research, researchers aimed to identify the level of health informatics services in health institutions in the Kingdom of Saudi Arabia (Alshri, 2020).

Previous Studies

The subject of electronic health informatics and the quality of health services is one of the important topics, the research conducted on this topic targeted health informatics systems, and the quality of health services in different health institutions to identify their impact on the quality of health informatics services. A number of studies have been reviewed, as the study by (Hassan, 2018), which aimed to identify the extent of the contribution of the computerized health informatics system to Enhancing the quality of health informatics service for a group of hospitals operating in the city of Mosul, Iraq. The results showed that there is a relationship between the computerized health informatics system and the quality of health informatics services, and that it contributes.

The study (Abdul Qader, 2020) aimed to identify the impact of health informatics systems in health care institutions in the city of Zawiyah, Libya, on the quality of health informatics services, and the results showed a relationship Correlation between health informatics systems with the quality of health informatics services.

A study of (Al-Ghazali, 2020) aimed to identify electronic health informatics systems and their role in improving the quality of health services at the Benghazi Medical Center. The research relied on the descriptive method through the questionnaire, and the results showed that there are a role for health informatics systems in improving the quality of health services, and in providing an electronic archiving system.

As for the study (Al Sulais & AlAmeel, 2021) aimed to examine the role of health informatics systems in improving health informatics services in Benghazi Hospital, and the results showed that most of the study sample saw that Respondents did not agree that the health informatics system does not contribute to improving health informatics services and improving health outcomes follow-up for patients.

A study by (Vishwa & Pronaya, 2022) aimed to identify the role of smart healthcare system in improving the patient's quality of life (Quoll),

where the records are being analyzed remotely by distributed stakeholders. It requires a voluminous exchange of data for disease prediction via the open communication channel, i.e., the Internet to train artificial intelligence models efficiently and effectively. The open nature of communication channels puts data privacy at high risk and affects the model training of collected data at centralized servers. To overcome this, an emerging concept, i.e., federated learning (FL) is a viable solution. It performs training at client nodes and aggregates their results to train the global model. The concept of local training preserves the privacy.

II. Statement of the Problem:

The health informatics system is used in health institutions to provide health services through communication with patients, or with those wishing to receive health service and this was evident in the field of informatics health services during the Corona pandemic, as it facilitated. The electronic applications carried out many services without patients suffering from attendance, and this was reflected positively on the system of health care as a whole.

The problem of this study was determined by answering the following question: What is the level of health informatics use in Saudi medical institutions?.

III. Significant of the study

The importance of this research emerges from the shift of Saudi health institutions towards the use of health informatics to provide various health services to the beneficiaries of these services. The researchers expect that the results of this research will help health institutions in improving health informatics services in various medical fields.

IV. Study Purpose

This study aimed to identify the level of health informatics services in health institutions in the Kingdom of Saudi Arabia.

V. The limits of the study

VI. Objective limits: identify the level of health informatics services in health institutions in the Kingdom of Saudi Arabia.

Human limits: health practitioners working in Saudi health institutions in ALriyad.

Spatial boundaries: Saudi health institutions in ALriyad.

VII. Research Methodology

Research design: The study adopted the descriptive approach, by using a questionnaire for data collection.

VIII. Study sample

The study sample consisted of (80) reviewers of government hospitals in Riyadh, who were chosen randomly.

Study questionnaire: . IX

A questionnaire was used to collect data from the study sample, the questionnaire consisted of (15) indicators to measure the level of health informatics services in health institutions in the Kingdom of Saudi Arabia. The validity and reliability coefficients were calculated for the study questionnaire.

X. Results

Results of study question: What is the level of health informatics use in Saudi medical institutions?.

To answer this question, the arithmetic means and standard deviations of the study sample's estimates on the indicators of health informatics in Saudi medical institution and its implications. The results are presented on table (1).

Table (1): The arithmetic means and standard deviations of the study sample's estimates on the indicators of health informatics in Saudi medical institution and its implications

Degree	S D	Means	Indicators	N	Rank
High	0.82	3.74	Ease of communication with those responsible for health informatics systems.	6	1
High	0.83	3.72	Health informatics systems improve health services.	3	2
High	0.86	3.72	Saudi Arabia is a country with an advanced technical infrastructure for health informatics services.	4	3
High	0.87	3.70	The technical support department responds to customers' inquiries quickly, improving the quality of health services.	2	4
Medium	0.92	3.65	Easy access to health informatics services	1	5

			applications.		
Medium	0.94	3.62	Continuously update health applications to match the volume of required health services.	7	6
Medium	0.98	3.52	Compatibility of health informatics systems with the requirements of work in health services.	5	7
Medium	0.96	3.23	Usage modern technologies to deliver the required health information in a timely manner.	8	8
Medium	0.97	3.21	Available health applications fit with business needs in health services.	14	9
Medium	0.98	3.12	Providing sufficient spaces for storing information in health services.	11	10
Medium	0.96	3.04		13	11
Medium	0.94	3.02	Ease of communication with all health informatics services units in an easy way via the Internet.	15	12
Medium	0.98	3.00	Availability of electronic records for patients and an electronic archiving system that improves the quality of health information services.	12	13
Medium	0.97	2.96	Provides electronic health and medical files for various health services.	9	14
Medium	0.98	2.86	The health informatics system handles the information of an unlimited number of patients.	10	15
Medium			The health informatics system supports automatic retrieval of information.		
Total	0.92	3.62	Medium		

Table (1) showed that the general level of the study sample's estimates on the indicators of health informatics in Saudi medical institution and its implications was (3.62), with a medium degree as a whole from the point view of the study sample, Table (1) also showed that (3) Indicators ranked in a high degree of appreciation, and (12) Indicators ranked in medium degree of appreciation, the sample's levels of estimates on indicators of health informatics ranged between (2.86-3.74), with standard deviations between (0.82 -98). Indicator No (6), which reads: "Ease of communication with those responsible for health informatics systems", ranked in first, with a mean of (3.74) and a high degree of agreement, indicator No (3) "Health informatics systems improve health services" ranked in second place, indicator no (10) "The health informatics system supports automatic retrieval of information", ranked at last with a mean (2.86) in a medium degree of agreement.

XI. Discussion:

The result showed that the general level of the study sample's estimates on the indicators of health informatics in Saudi medical institution and its implications was (3.62), with a medium degree as a whole from the point view of the study sample, Table (1) also showed that (3) Indicators ranked in a high degree of appreciation, and (12) Indicators ranked in medium degree of appreciation, the sample's levels of estimates on indicators of

health informatics Ranged between (2.86-3.74), with standard deviations between (0.82 -98).

Through the results of the research, it is clear that health institutions in the Kingdom of Saudi Arabia show great interest in health informatics, and this may be due to the health and technical progress that Saudi Arabia is witnessing with the launch of the Kingdom's Vision (2030), which emphasized the development of health informatics services for the Saudi society. The results showed that Saudi health institutions are working continuously to improve health informatics systems, but these health institutions are still required to provide more health services technically and electronically through health applications that are easy to use by the auditors of these health institutions.

This result is consistent with the results of the study of (Hassan, 2018) showed that there is a relationship between the computerized health informatics system and the quality of health informatics services, and that it contributes. And with study of (Abdul Qader, 2020) showed a relationship Correlation between health informatics systems with the quality of health informatics services. And with (Al-Ghazali, 2020) showed that there are a role for health informatics systems in improving the quality of health services, and in providing an electronic archiving system. And with study of (Vishwa & Pronaya, 2022). Showed that the health informatics system does not contribute to improving health informatics services and improving health outcomes follow-up for patients.

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