Electronic Hospital Information System (e-HIS) Challenges at Al-Rajhy Liver Hospital

Samia Khalaf Mohamed [(1)], Hala Ramzy Youssef [(2)], Soad Ahmed Ghallab [(3)], Karima Hosny Abdelhafez [(4)]
(1) Nursing fellow, Assiut University Hospital, Assuit University,
(2) Nursing Administration, Faculty of Nursing Assuit University,
Corresponding author: Dr. Karima Hosny Abdelhafez
E-mail: hosnyk@aun.edu.eg

Abstract

Background: Many health organizations started to embrace e-HIS, where this embracing process is still facing challenges from different sides. First concern of these is technical and the human challenges which complicate the implementation of e-HIS as well as the training of healthcare professionals on using such systems. **Aim of study**: To determine technical and human challenges perceived by e-HIS users at Al-Rajhy Assiut University Hospital for Liver. **Research design**: An exploratory descriptive design. **Setting:** Al-Rajhy Assiut University Hospital. **Subjects:** All users of the e-HIS (n= 250). **Tool:** Personal and professional characteristics data sheet and challenges of implementing of e-HIS questionnaire. **Results:** the highest percent of studied subjects agreed that there are no manuals or guidelines for using HIS records and the using e-HIS creates administrative problems for users, creates legal problems, and lack of awareness of the importance& benefits of using e-HIS **Conclusion**: For technical challenges of implementing e-HIS, there are no manuals or guidelines for using e-HIS records, no standards for data entry and / or retrieval. There were many human challenges are facing them as e-HIS creates administrative & legal problems and add more professional responsibilities. There were highly statistical significant difference among physicians employees and human challenge of implementing e-HIS**,** while there was statistical significant difference between nurses and challenges of implementing e-HIS. **Recommendation:** Developing e-HIS guidelines manuals for all users. Arranging continues training workshops for users e-HIS.

Keywords: electronic Hospital Information System, Technical Challenges, Human Challenges.

Introduction

Electronic health information systems (e-HIS) are currently regarded as a most important component of the healthcare system (HIS), this importance comes from their role in managing all patient data and other comprehensive medical data; documenting all medical services that have been provided to the patient such as investigations, diagnoses, treatments, follow up reports and crucial medical decisions. **(Ismail, et al., 2012).**

In addition, e-HIS offers a number of opportunities, including the ability to reduce costs associated with record-keeping, automate the sharing of information among providers, cut down on office visits to receive test results and hospital admissions, coordinate services, and improve quality of care. Traditional paper-based medical records are bulky and difficult to maintain, so these issues can be easily addressed by implementing e-HIS. **(Jha et al., 2018)**

Despite the advantages that hospital information systems offer to the healthcare business, the disappointment rates in health IT projects are truly addresses a main challenge for health care system**.** There are delays in adopting and implementing hospital information systems in most hospitals due to lack of a national HIS. **(Ajala, 2015)**

The e-HIS challenges incorporate technical and the human challenges which might muddle the execution of e-HIS plus the training of healthcare providers on using these systems. Among the major human challenges are lack of IT infrastructure; lack of basic IT skills/ knowledge; and financial issues/ constraints; are identified as the major challenges that prevent developing countries from successfully implementing e-HIS. **(Akor & John-Mensah 2016)**

There are technical challenges such as inadequate physical space to keep records for a large number of patients, and a longer time for retrieval of patient information. Additionally, the records of many patients who are registered with multiple healthcare providers are never

shared with other doctors, laboratories, or hospitals. Since then, information fragments, causing patient care disruption, delay, and error. (**Aanestad, et al., 2017)**

Strategies for the successful implementation of electronic system should include engaging healthcare professionals and providing strong organizational support to them prior to and during the implementation activities. The healthcare team's level of acceptance of e-HIS may rise as a result of these two factors, which could reduce resistance and negative attitudes. (**Dansky, 1999)**

Significance of the study

The introduction of e-HIS considered initiatives to transform existing paper-based information systems in most teaching healthcare institutions in developing countries has usually been a difficult process of change, often faces with resistance and several challenges such as lack of adequate resources (poor financial resources), rough infrastructural development, inadequate skills and knowledge at a local level to handle new systems and technologies**. (Ojo and Popoola 2015)**

The requirements and challenges of e-HIS are totally different from those of the developed world. The developing world faces many of health problems that threaten the lives of millions of people, where lack of technical infrastructure and trained, experienced healthcare team are considered significant challenges to mounting up treatment for diseases and improve healthcare, so it is very essential to identify and manage such challenges according to their priorities. **(Catherine, 2015)**

Aims of the study

The aim of this study was to determine technical and human challenges perceived by e-HIS users at Al-Rajhy Assiut University Hospital for Liver.

Research Questions

1- What are the technical and human challenges of e-HIS as perceived by it's users?

Subjects & Method

Study Design

An explorative descriptive research design was used in this study.

Study setting

The present study carried out - at Al-Rajhy Assiut University Hospital for Liver at the following units (general ward, intensive care unit, critical care unit, endoscopic unit, operating room, outpatient clinics, laboratory, and radiology).

Study Subjects

The study subjects included all users of the e-HIS, (n= 250) categorized as follows; physicians (n=20), staff nurses (n= 200) and employees (n=30) from admission office, personnel employment department, and a financial personnel department.

Study tool:

Tool consists of 2 parts:

Part (1): Personal and professional characteristics data sheet.

It was designed by the researchers to collect data about study subjects as; age, gender, marital status, educational qualification, current job title, years of experience, duration of use electronic records system by each categories in hospital.

Part (2): Challenges of implementing of e-HIS questionnaire .

It was developed by **Yoon et al (2012).** It consists of 27 items comprised 2 main domains as follows; technical challenges of implementing of e-HIS (14 items). And human challenges of implementing of e-HIS (13 items). Asking respondents to indicate agreement or disagreement with the statement measured on a three point Likert-scale; (**1)** disagree, (**2)** neutral, and (**3)** agree.

Scoring system:

The scores of the items were summed-up and divided by the number of items, giving the mean score. These scores were converted into a percent score. Then the mean and standard deviations of the scores were computed.

2- Administration design

An official permission had been obtained from the medical director of AL- Rajhy

hospital to collect the necessary data from all users of hospital information system; also the oral consent permission will be obtained from all users of EHIS to participate in the study.

- **Validity and reliability**

To achieve the criteria of trustworthiness of the tools of data collection in this study, validity of tool was revised and validated for their face validity by five experts in the field of study, three assistant professor of Nursing Administration Department – Faculty of Nursing – Assuit University and lecturer of Nursing Administration Department – Faculty of Nursing –Minia University and a professor of IT unit-Faculty of Information Technology-Assuit University. Accordingly the modifications required already done by researcher.

The reliability of the data collection tool was assessed through measuring their internal consistency by Cronbach Alpha Coefficient test, and it was proven test **(0.785)**.

- **Pilot study:**

A pilot study was done to ensure the feasibility, applicability, clarity and reliability of the study tool. It included 10% of total number as follows (2 physicians, 3 employees, and 20 staff nurses) and the necessary modification was done. The e-HIS users participating in the pilot study were included in the study because the data gathered from it was analyzed and no changes were made to the study tool.

Ethical Consideration

- Approvals were taken from ethical committee of Faculty of Nursing of Minia University.
- The purpose of this study was explained to all participants and oral consent taken from the participants in the present study.
- Confidentiality of data, voluntary participation and right to refuse to participate in the study will be emphasized to subjects.

3-Operational design

This phase took about 2 months from March to April 2021 for reviewing the available literatures concerning the topic of the study; translation of the assessment tools from English to Arabic was done.

Accordingly, modifications were done and the final form was developed.

Data collection phase:

The data was gathered through a self-administered questionnaire, during which the researcher met with e-HIS users, explained the study's goals, and solicited their involvement. After receiving oral agreement from each participant, the researchers explained the questionnaire to them. The questionnaire took around 30 minutes to complete, and the data gathering process lasted about 4 months. May to August 2021.

4- Statistical design:

The data were reviewed, prepared for computer entry, coded, analyzed and tabulated. Descriptive statistics (i.e., frequencies, percentage, mean standard deviation, etc.) was done using computer program SPSS version 25. It is considered * significant when P- value were less than 0.05 or ($P< 0.05$). Finally, data were analyzed by using suitable tests via the computer.

Limitations of this study:

- The only restriction on current results is that they may only be applied to one teaching hospital because they were only done there. Future studies must to look into various hospitals.
- Health Information System is a wide issue and a lot of studies has been made in health sector. It is very broad field and needs comprehensive study and time to explore the different issues regarding implementation of HIS.

Results

Table (1). Depicted the personal data of studied subjects (physicians, nurses, and employees). High percent of physicians (60%) were males and married. Their mean age was (30.25) years old, while the mean year of experience was (9.25) and duration of electronic system used in hospital from 2-4 years. **T**he majority of them were females, married and graduated from technical institute, secondary school (95.5%, 69.0% and 60.5%) respectively. Their mean age was (27.11) years old, while the

mean year of experience was (8.76) and duration of electronic system used in hospital from 2-4 and >4 (59.5%, 27.5%). The highest percent of them were married, males, and had bachelor degree or higher (90.0%, 73.3% and 66.7%) respectively. Their mean age was (36.37), the mean years of experience was (15.20) and duration of electronic system used in hospital more than 4 years.

Table (2): Displayed the technical challenges of implementing e-HIS as perceived by studied subjects; the highest percent of them (physicians, nurses, and employees) agreed that there are no manual or guidelines for using e-HIS records (95.0%, 91.0%, and 73.3%) respectively. While all of physicians disagreed that the main difficult with HIS is data entry, data retrieval, the user interface language is difficult or not clears, and HIS are difficult to use because it is very complicated. Moreover; the highest percent of them disagreed that the computer terminal are slow, and communication networks are old and computer & networks have a lot of maintenance problems (95.0%, 95.0, and 85.5%) respectively.

The highest percent of nurses disagreed that the main difficult with e-HIS is data retrieval, data entry, and the user interface language is difficult or not clear (91%, and 90%). Also; the majority of them disagreed that communication networks are old, HIS are difficult to use because it is very complicated, it is difficult to train users to use HIS (89.5%, 86.5%, and 84.5%) respectively.

While**,** the high percent of employees (93.3%) disagreed that; the main difficult with e-HIS is data entry, data retrieval, and HISs are difficult to use because they are very complicated. Also; the majority of them disagreed that the communication networks are old, there is no maintenance/ technical support for hardware/ software, and it is difficult to train users to use HIS (86.7%, and 80.0%). And majority of them (73.3%) disagreed that the computer and networks have a lot of maintenance problems, and the computer terminal are slow.

Table (3) Clarified the human challenges of implementing e-HIS as perceived by studied subjects; the majority of physicians agreed that using HIS creates administrative problems for users, creates legal problems, and lack of awareness of the importance& benefits of using HIS (80.0%, and 70.0%). Also; the majority of them disagreed that lack of knowledge of using HIS, HIS decrease interaction between doctors and patient, lack of motivation to learn & train on using HIS, lack of time allowed to learn & train on using HIS and HIS slowdown work/ decrease productivity (70.0%, 65.0%, and 60.0%) respectively.

The majority of nurses agreed that there is lack of experience of using HIS, using HIS creates administrative problems for users, creates legal problems, and lack of awareness of the importance & benefits of using HIS (79.5%, 69.0%, 64.5%, and 62.0%) respectively. Also; above two third of them disagreed that the lack of time allowed to learn & train on using HIS, and HIS slow down work/ decrease productivity (65.5%, and 64.5%).

While the highest percent of employees disagreed that HIS slow down work/decrease productivity, lack of time allowed to learn & train on using HIS, and lack of awareness of the importance & benefits of using HIS (83.3%, and 80.0%). Also; most of employees disagreed that using HIS creates legal problems for users, HIS add more professional responsibilities, and lack of knowledge of using HIS (76.7% and 73.3%).

Figure (1): Showed the mean scores of challenges of implementing e-HIS by the studied subjects; All users of e-HIS (physicians, nurses, employees) facing more human challenges than technical challenges while using e-HIS (25.4, 28.24, 25.12) respectively.

Table (1): Personal and professional characteristics of studied subjects (n=250)

Items	Occupation					
	Physicians (n= 20)		Nurses (n= 200)		Employees (n= 30)	
	No.	%	No.	%	No.	%
Age: (years)						
< 25	0	0.0	79	39.5	0	0.0
25 - 30	12	60.0	78	39.0	6	20.0
> 30	8	40.0	43	21.5	24	80.0
Mean ± SD	30.25 ± 3.49		27.11 ± 6.22		36.37 ± 6.38	
Gender:						
Male	12	60.0	9	4.5	22	73.3
Female	8	40.0	191	95.5	8	26.7
Marital status:						
Married	12	60.0	138	69.0	27	90.0
Not married	8	40.0	62	31.0	3	10.0
Years of experience:						
< 5	1	5.0	49	24.5	0	0.0
5 - 10	13	65.0	100	50.0	6	20.0
> 10	6	30.0	51	25.5	24	80.0
Mean ± SD	9.25 ± 3.49		8.76 ± 6.05		15.20 ± 4.29	
Duration of electronic system use in hospital:						
< 2	7	35.0	26	13.0	0	0.0
2 - 4	11	55.0	119	59.5	10	33.3
> 4	2	10.0	55	27.5	20	66.7
Educational level:						
Technical secondary school	0	0.0	53	26.5	1	3.3
Technical institute	0	0.0	121	60.5	9	30.0
Bachelor or higher	20	100.0	26	13.0	20	66.7

Table (2): Percentage distribution of technical challenges of implementing e-HIS for studied subjects (n= 250)

Items	Physicians						Nurses						Employees					
	Agree		Neutral		Disagree		Agree		Neutral		Disagree		Agree		Neutral		Disagree	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
1-There are no manuals or guidelines for using HIS records	19	**95.0**	1	5.0	0	0.0	182	**91.0**	10	5.0	8	4.0	22	**73.3**	2	6.7	6	20.0
2-Computer and networks have a lot of maintenance problems	0	0.0	3	15.0	17	**85.0**	56	28.0	68	34.0	76	38.0	3	10.0	5	16.7	22	**73.3**
3-The computer terminal are slow	0	0.0	1	5.0	19	**95.0**	19	9.5	62	31.0	119	59.5	2	6.7	6	20.0	22	**73.3**
4-HIS modules are not fully integrated	1	5.0	16	**80.0**	3	15.0	32	16.0	95	47.5	73	36.5	4	13.3	9	30.0	17	56.7
5-HIS are not satisfying different user's needs	3	15.0	13	**65.0**	4	20.0	22	11.0	93	46.5	85	42.5	3	10.0	14	46.7	13	43.3
6-The main difficult with HIS is data entry	0	0.0	0	0.0	20	**100.0**	13	6.5	7	3.5	180	**90.0**	1	3.3	1	3.3	28	**93.3**
7-Communication networks are old	0	0.0	1	5.0	19	**95.0**	4	2.0	17	8.5	179	**89.5**	1	3.3	3	10.0	26	**86.7**
8-There are not enough computer terminals	3	15.0	9	45.0	8	40.0	30	15.0	70	35.0	100	50.0	5	16.7	2	6.7	23	**76.7**
9-There is no maintenance/technical support for hardware/ software	1	5.0	6	30.0	13	65.0	9	4.5	23	11.5	168	84.0	4	13.3	2	6.7	24	**80.0**
10-There are no standards for data entry and/ or retrieval	5	25.0	11	55.0	4	20.0	40	20.0	43	21.5	117	58.5	2	6.7	8	26.7	20	66.7
11-The main difficult with HIS is data retrieval	0	0.0	0	0.0	20	**100.0**	9	4.5	9	4.5	182	**91.0**	2	6.7	0	0.0	28	**93.3**
12-The user interface language is difficult or not clear	0	0.0	0	0.0	20	**100.0**	9	4.5	11	5.5	180	**90.0**	2	6.7	1	3.3	27	**90.0**
13-It is difficult to train users to use HIS	0	0.0	4	20.0	16	**80.0**	14	7.0	17	8.5	169	**84.5**	4	13.3	2	6.7	24	**80.0**
14-HIS are difficult to use because they are very complicated	0	0.0	0	0.0	20	**100.0**	16	8.0	11	5.5	173	**86.5**	2	6.7	0	0.0	28	**93.3**

Table (3): Percentage distribution of human challenges of implementing e-HIS for studied subjects (n= 250)

Items	Physicians						Nurses						Employees					
	Agree		Neutral		Disagree		Agree		Neutral		Disagree		Agree		Neutral		Disagree	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
-lack of awareness of the importance and benefits of using HIS	14	**70.0**	2	10.0	4	20.0	124	**62.0**	11	5.5	65	32.5	6	20.0	0	0.0	24	**80.0**
-lack of knowledge of using HIS	4	20.0	2	10.0	14	**70.0**	109	54.5	11	5.5	80	40.0	7	23.3	1	3.3	22	**73.3**
-lack of experience using HIS	11	55.0	3	15.0	6	30.0	159	**79.5**	15	7.5	26	13.0	17	56.7	1	3.3	12	40.0
-lack of motivation to learn and train on using HIS	2	10.0	5	25.0	13	**65.0**	59	29.5	23	11.5	118	59.0	10	33.3	1	3.3	19	63.3
-lack of time allowed to learn and train on using HIS	3	15.0	5	25.0	12	**60.0**	49	24.5	20	10.0	131	65.5	4	13.3	2	6.7	24	**80.0**
-HIS add more professional responsibilities	4	20.0	8	40.0	8	40.0	117	58.5	39	19.5	44	22.0	5	16.7	2	6.7	23	76.7
-Negative beliefs about their ability to use HIS	4	20.0	10	50.0	6	30.0	104	52.0	34	17.0	62	31.0	14	46.7	2	6.7	14	46.7
Negative beliefs and impressions about HIS	4	20.0	10	50.0	6	30.0	101	50.5	29	14.5	70	35.0	15	50.0	1	3.3	14	46.7
-HIS decrease interaction between doctors and patient	0	.0	6	30.0	14	**70.0**	66	33.0	51	25.5	83	41.5	3	10.0	11	36.7	16	53.3
0-Using HIS creates legal problems for users	14	**70.0**	6	30.0	0	0.0	129	**64.5**	27	13.5	44	22.0	3	10.0	4	13.3	23	**76.7**
1-Using HIS creates administrative problems for users	16	**80.0**	4	20.0	0	0.0	138	**69.0**	26	13.0	36	18.0	5	16.7	5	16.7	20	66.7
2-Using HIS creates clinical problems for users	7	35.0	13	65.0	0	0.0	107	53.5	62	31.0	31	15.5	3	10.0	16	53.3	11	36.7
3-HIS slow down work/ decrease productivity	0	0.0	8	40.0	12	60.0	24	12.0	47	23.5	129	**64.5**	2	6.7	3	10.0	25	**83.3**

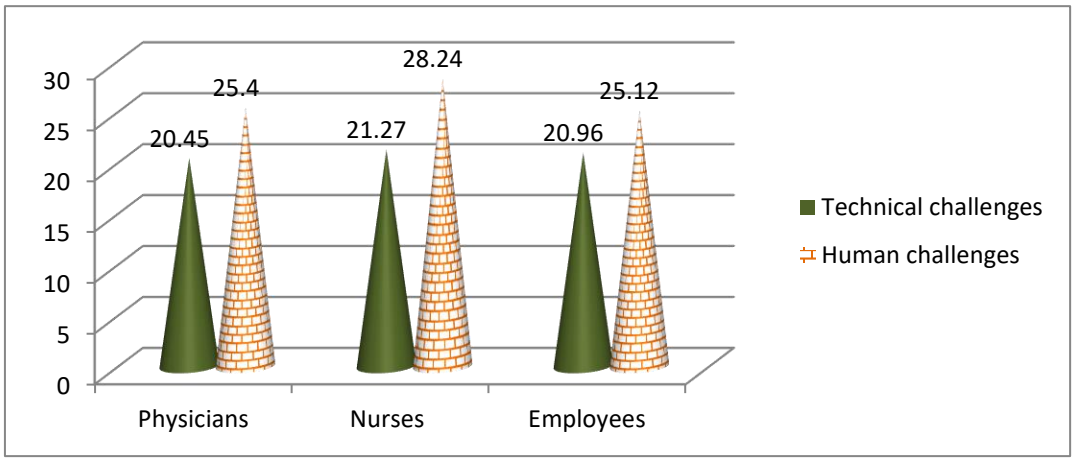

Figure (1): Mean scores of challenges of implementing e-HIS by study subjects (n=250) at AL-Rajhy hospital

Discussion

Embracing and application of information technology is essential to reform healthcare and meet patients' needs, to improve the effectiveness of care provided, enhancing patient safety, increase workforce productivity and satisfaction. Developing countries are now waking up to the realization that there is need to embrace information and communication technologies to cope with the problem of access, quality and costs of healthcare. Adoption of IT in health area across developing countries accelerates knowledge diffusion and increase access to health information. **(Ben-assuli, 2018)**

Hospital information system has the opportunity to improve the health of individuals and the performance of healthcare providers, improved care quality, saving cost, and better engagement by patients in their own healthcare decisions. **(Ojo et al., 2015)**

The response of healthcare providers to the use of health information systems is an

important issue that can clarify the success or failure of any e-HIS development and implementation project. **(Ketikidis et al., 2012).**

It is clearly understood that despite the many benefits of electronic health records**,** and a visible increase the process of implementation and adoption of electronic records system, still slower than expected especially in rural and small hospitals and will have to accelerate this project to achieve the goals of complete paperless electronic records within the planned time frame **(Adler-milstein et al., 2015; Jha et al., 2018).**

The present study aimed to determine the e-HIS technical and human challenges perceived by healthcare providers.

As regards to technical challenges of implementing e-HIS as perceived by physicians; the highest percent of them agreed that the there are no manuals or guidelines for using HIS records. While all of physicians disagreed that the main difficult with HIS was data retrieval, the user interface language was difficult or unclear, and HIS were difficult to use because it was very complicated. Moreover; the highest percent of them disagreed that the computer terminal was slow, and communication networks were old.

This study finding was congruent with the study findings of **(Buntin, et al., 2011)** who clarified that; EHR systems used to automate standardized guidelines and implement rules-based procedures to prevent common errors, to coordinate care for patients being treated by multiple clinical specialties where communication between providers are important.

Furthermore, the present study in contrast with (**Ben-assuli, 2018)** who reported other challenges like; inadequate physical space to keep the cards in case of high number of patients, inconsistency in handwriting of individuals as well as vulnerability to termite attack or other attacks.

Regarding to technical challenges of implementing e-HIS as perceived by nurses; the majority of them agreed that there were no manuals or guidelines for using HIS. And the majority of nurses disagreed that the main difficult with HIS was data retrieval, data entry, and the user interface language was difficult or unclear. Also; high percentage of them disagreed that communication networks were old, HIS was difficult to use because it was very complicated, it was difficult to train users to use HIS, and there was no maintenance/technical support for hardware/software.

This finding was congruent with **(Charles et al., 2010)** who argued that the standardization of e-health main elements such as information, communication and security is an important determining factor for implementing e-health success. This is highly associated with the enactment and harmonization of laws, policies and regulatory frameworks.

With this respect **(Blumenthal, 2011)** stated that; technical challenges still arise from lack of standardization of technology, the absence of a well-developed healthcare information guidelines and exchange (HIS) which will permit healthcare institutions in a given region to be able to freely share healthcare data.

This finding consistent with **(Morton, et al., 2010)** explained that; many studies have been trying to explain the delay or unsuccessful implementation of HIS and electronic medical records and link this problem to the acceptance or resistance of healthcare professionals' towards these systems.

According to (**Cresswell et al., 2013**), the very first step towards a successful implementation is to clarify the problem a technology is designed to solve, which the adoption of e-HIS in the public hospitals and implementation the systems would improve work processes, especially in information management, which is captured electronically, and patient flow from admission up until discharge is properly monitored.

About employees; the majority of them agreed that there were no manuals or guidelines for using HIS records while the same percent of them disagreed that computer and networks have a lot of maintenance problems, the computer terminal are slow. Beside that; the high percent of them disagreed that the main difficult with HIS was data entry, data retrieval and HIS were difficult to use because they were very complicated, user interface language is

difficult or not clear, communication networks were old and there was no maintenance/ technical support for hardware/ software.

This finding inconsistent with **(Berg, 2003)** who showed that; users agreed that the performance of HIS was slow overall and this slowness was not acceptable and might lead to more slowness in the process of care delivery and might increase the time spent by patients inside hospital even more. Also; inadequate design of e-HIS, such as bad or inadequate user interface or poor HIS performance, such as slow response times, will reduce its chances of being accepted by users and implemented successfully.

While the finding was congruent with (**Hillestad et al., 2005)** which they identified some barriers to the widespread adoption of clinical information technology among healthcare providers as no guidelines or standards exist for interoperability of technology applications and clinical representation of data, and, thus, most applications are not well integrated.

Regarding to human challenges of implementing e-HIS for studied subjects as perceived by physicians, the majority of them agreed that using HIS creates administrative problems for users, creates legal problems, and lack of awareness of the importance & benefits of using HIS. While more than half of them agreed that lack of experience using HIS. Meanwhile; high percent of them disagreed that lack of knowledge of using HIS, it decrease interaction between doctors and patient, and lack of motivation to learn & train on using HIS.

According to; **(Stella Ouma, et al.,2009)** stated that; Strategies for the successful management of HIS development and implementation should include engaging the physicians and other healthcare professionals and providing strong organizational support to them before and during the implementation activities. These two factors could eliminate major resistance and alleviate negative attitudes and in the same time increase level of acceptance of HIS by physicians and healthcare professionals.

The finding of this study inconsistent with **(Miller; 2004)** who stated that, the problems with HIS usability especially for documenting progress notes and other labor intensive components caused physicians to spend extra work time to learn effective ways to use the HIS. These initial time costs are considered an important barrier to obtaining benefits, as greater burdens on physicians' time decrease their use of HIS and increase their resistance, which lowers the potential for achieving quality improvement.

Additionally; (**Wager et al., 2009)** added that, patient records can become legal documents in the event of a lawsuit or other legal action involving a patient's records. Patient records can be used as primary evidence that a patient's medical history and treatment took place in the event of an accident.

Moreover; **(Ludwick, et al., 2009)** explained that, the transition from traditional patient records to electronic patient records requires a change of employees' attitudes, awareness, behavior, skills, knowledge and competence to cope with the shift from traditional to use of EHRs**.**

While **(Middleton,et al., 2013)** reported that, patient records are needed in legal disputes and investigations. Patient records can provide evidence for legal support and argument. EHR can be considered as legal documents in cases of dispute and legal requirements.

As regards to the nurses; the majority of them agreed that there was lack of experience of using HIS. And high percent of them agreed that the using HIS creates administrative problems for users, creates legal problems, and lack of awareness of the importance & benefits of using HIS. Also; more than half of them agreed that HIS add more professional responsibilities, lack of knowledge of using HIS, and using HIS creates clinical problems for users. While; most of nurses disagreed that they lack time allowed to learn & train on using HIS and it slowdown work/ decrease productivity.

This in the same line with **(Kumar, et al, 2011)** add that the lack of knowledge about and experience with using EMR systems among hospital staff in Saudi Arabia, also, staff attitudes in respect of their preferences for EMR systems.

With this respect **(Khalifa, 2013)** those showed that; planned training of healthcare professionals is needed to foster positive attitudes about HIS, and build confidence in the benefits of these systems.

This in agreeing with the study of **(Hasanain & Alkraiji; 2014)** were noted that the main barriers obstructing EMR implementation were lack of knowledge and experience using EMR systems; and staff resistance to using the system.

For employees; the majority of them disagreed that HIS slowdown work/decrease productivity, lack of time allowed to learn & train on using HIS, and lack of awareness of the importance & benefits of using HIS. Also; high percent of employees disagreed that using HIS creates legal problems for users, HIS add more professional responsibilities, and lack of knowledge of using HIS. About half of them agreed that lack of experience using HIS and negative beliefs & impression about HIS.

Likewise; **(Li and Benton, 2005)** clarified that, due to continuous technology implementation, the on -job technological training of the staff should be provided .Staff should be trained in techniques for information production and use in the introduction phase.

While it was disagreed with **(Chaudhry et al., 2006)** those had showed that; Users highlighted that using the HIS might frequently slow down the process of care delivery and increase the time spent by patients inside hospital, in the form of decreased efficiency and increased patient waiting time at the many hospital services, mainly in the outpatient settings and during the procuress of registration and admission especially at the beginning of the HIS implementation or at the transitional phases of updating or upgrading HIS**.**

Also; this finding inconsistent with (**Perez; 2013)** who stated that; the shift from paper to an electronic health record creates many challenges; these challenges include workflows becoming more complicated thereby making the system costly and billings being affected due to multiple location of information.

Moreover; **(Ajami; 2013)** stated that, knowing potential users' basic computer knowledge and skills would help trainers estimate the length of time and amount of effort required to put into the training to make sure they are well prepared to adopt the software into practice.

Furthermore; **(Khalifa, 2014)** stated that; The effect of information technology knowledge, experience and skills of healthcare professionals, current status of computerization in hospitals, and professionals' attitudes, in terms of their positive or negative beliefs about computerized systems and electronic medical records in the healthcare environment are considered among the major human barriers to the successful implementation and use of such systems.

From the researchers points of view, these findings may be due to slowness of the system, frequent malfunctioning of computers as a result of lack of updating and maintaining of computers. Also, this may be due to lack of clear policies and procedures for using e-HIS, and insufficient training of physicians nurses and employees about e-HIS. Moreover, there was lack of support reward and incentives for e-HIS users for using it.

Conclusion:

For technical challenges of implementing e-HIS, there are no manual or guidelines for using e-HIS records, no standards for data entry and / or retrieval. There were many human challenges are facing them as e-HIS creates administrative & legal problems and add more professional responsibilities. There were highly statistical significant difference among physicians employees and human challenge of implementing e-HIS**,** while there was statistical significant difference between nurses and challenges of implementing e-HIS.

Recommendations:

- Developing guidelines and manuals books for users should be widely available to support them.
- Provide support from IT department continuously to the users.
- Arrange continues training workshops for electronic HISs users.

- Motivate the electronic HISs users to accept new electronic system by communicating a clear vision of new system among them.

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