Original Article

Health Information System and Their Impact on The Quality of Healthcare at Benghazi Medical Center

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ABSTRACT

Background and objectives. The quality of health care delivery or the effectiveness of health planning and policy making depend on the availability of accurate and timely information to support decision-making. Broadly, Hospital Information System (HIS) is any form of structured repository of data, information, or knowledge that can be used to support health care delivery or to promote health development. The aim of this study was to examine the role of hospital information systems in improvement of health care outcomes for patients at Benghazi Medical Center. **Methods:** A questionnaire-based study was conducted in Benghazi Medical center over the period from March to June 2019. Data were descriptively analyzed and presented as counts and percentages. **Results:** Regarding the improvement of health outcomes, 31.7 % of the responded not agree that the electronic health information system helps to improve the follow-up of patients' health outcomes. **Conclusions:** There is need for increases the awareness about the benefits of information system, and develop a database to collect factors affecting the HIS failures. There is also need for implementing such application for enhancing communication between all health care providers.

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INTRODUCTION

Health information systems (HIS) become a serious field of study largely through the development of computers and related technologies [1]. HIS are often implemented to enhance the quality and patient-centeredness of care, as well as to improve the efficiency and safety of the services [2].

They are in high demand to handle increased flow of patients and increasing populations and aids the doctors and support staffs [3]. HIS can support the activities of employee's owners, costumers and any other key people in hospital environment to assurance quality [4]. The quality of health care delivery or the effectiveness of health planning and policy making depend on the availability of accurate and timely information to support decision-making. Broadly, (HIS) is any form of structured repository of data, information, or knowledge that can be used to support health care delivery or to promote health development [5]. HIS streamlines operational activities and enhances administration and control, patient care, cost control and increased revenue. The importance of these systems emerges from the importance of their role in keeping all types of patient data and information including key data about the

patient and other comprehensive medical data; recording all medical services that have been provided to the patient such as investigations, diagnoses, treatments, follow up reports and important medical decisions [6]. In general, one can define health information systems as comprehensive software for patient information integration, and to exchange comprehensive patient information between wards and other medical centers in order to expedite the process of patient care, improve quality, increase patient satisfaction and reduce cost [3]. To have sustainable public health development and improved health outcomes, strengthening health systems, including health information systems, is essential [7]. The aim of this study was to examine the role of hospital information systems in improvement health care outcomes for patients at Benghazi medical Center.

METHODS

This study was a descriptive cross-sectional study, using a questionnaire to collect data from the Benghazi Medical Center, a governmental hospital affiliated to the Ministry of Health. The population includes 5 categories, (nurses, administrators, radiology technicians, pharmacy, laboratory technicians), who are working in Benghazi medical center. This population consists of 180 employees.

Data of health information system were collected from March 2019 and end in June 2019 by using the health information system questionnaire. The questionnaire included two parts: socio demographic data and the improvement health outcomes for patients. Data were fed to Statistical Package for the Social Sciences (SPSS) version 20.0. Approval of ethical committee of faculty of public health was obtained.

RESULTS

The result showed that the sample of the study was 180 employees, (60.6 %) of them was female. About (62.2 %) of them aged from 25-35 years, and (44 %) of the study sample had Bachelor.

About (23.3 %) of the employees was nurses and administrators, and (65,0 %) had qualification years from 2-5 years.

Table 1. The distribution of employees in BMC according to social demographic data.

Items	Respondents (n)	Percentage %
Male	71	39.4%
Female	109	60.6 %
Education level		
Phd	1	6%
Master	8	4%
Bachelor	98	44%
Diploma	72	40%
High School	1	6 %
Age		
Less than 25 y	42	23.3%
25 – 35 y	112	62.2%
35 – less than 45 y	23	12.8%
45 y and more	3	1.7
Current job		
Nurse	42	23.3%
Administrators	42	23.3%
Radiology Technicians	27	15.1%
Laboratory Technicians	31	17.2%
Pharmacy	38	21.1%
Qualification years in using system		
Less than 1 year	38	21.1%
2-5 years	117	65.0%
5-10 years	21	11.7%
10 years and more	4	2.2%
Total	180	100

Based on the following data about (33.3%) of employees not agree on (The health Information System allows all patient-related information to be collected in one place, and (43.9%) from them not agree on (The health Information System allows the presentation of medication information that is). About (32.2 %) of the participants not agree on (The Health Information System has the option of sending reminders to health care providers), and (31.7 %) of them not agree on (the electronic health information system helps to improve the follow-up of patients' health outcomes).

Table 2. Distribution of the employees according to Improvement Health Outcomes for Patients

		Respondents (n)	Percentage %
The health Information System allows all patient-related information to be collected in one place.	Strongly disagree	40	22.2
	Not agree	60	33.3
	Neutral	23	12.8
	Agree	24	13.3
	Strongly agree	33	18.3
The health Information System allows the presentation of medication information that is prescribed to patients.	Strongly disagree	34	18.9
	Not agree	79	43.9
	Neutral	12	6.7
	Agree	25	13.9
	Strongly agree	30	16.1
The Health Information System has the option of sending reminders to health care providers.	Strongly disagree	47	26.1
	Not agree	58	32.2
	Neutral	19	10.6
	Agree	35	19.4
	Strongly agree	21	11.7
In general, the electronic health information system helps to improve the follow-up of patients' health outcomes.	Strongly disagree	48	26.7
	Not agree	57	31.7
	Neutral	18	10.0
	Agree	25	13.9
	Strongly agree	32	17.8
Total		180	100

DISCUSSION

The result of the present study revealed that approximately two third of study subject were females, this finding is similar to a study in (UK 2006) [8], which founded that female had the highest percentage than male. It may be attributed to the fact that women tend to be more active information-seekers than men.

Concerning age group, most of the study subjects had age group (from 25 – less than 35 years), this is consistent with Malaysia's study (2011) [9], which founded that the most age of users (from 26-35 years). Suggesting that the younger could be more educated people and increasingly used health information system to know more about this system and more use to modern technology.

The current study showed that the nurses and administrators had the highest percentage, and this is

inconsistence with the study in (USA 2011) [10], that showed that doctors and technicians are the most users of the health information system, and appears to have enhanced physicians' perception of providing high-quality care.

This study also illustrates that the young people with less experience showed the highest percentage, this finding is similar to that a study in (Malaysia 2014) [11], that indicated that most respondents had qualification years from (1-3 years). So, training of healthcare professionals is needed to foster positive attitudes about HIS, and build confidence in the benefits of these systems.

The study in (Saudi Arabia 2017) [12], indicated that HIS are intended to prevent medication error by ensuring that the right patient receives the right medication at the right time and improves patient safety by reducing medication errors, reducing adverse drug reactions and improving compliance to practice guidelines, and this is inconsistence with current study that found that (43.9 %) from responses not agree on (The health Information System allows the presentation of medication information that is prescribed to patients). This confirms that the system exists and is not activated in some departments in the hospital.

The present study showed that the (32.2 %) of them not agree on (The Health Information System has the option of sending reminders to health care providers), this is inconsistence with the study in the USA (2007) [13], which revealed the highest percentage given to strongly agree on (Reminds me to do things I might forget). This is indicated that HIS exists, but it is not activated, which makes the quality of it not beneficial.

The present study is congruent with a study in (USA 2018) [14], which concluded no evidence that the impact of HIS on staff or workflows improves quality of care or resident health outcomes. Without initial investment in implementation and training of their work force, also the current study revealed that the highest percentage of responses not agree on (The electronic health information system helps to improve

the follow-up of patients' health outcomes). This explains that most hospital work force are not aware of how to use this system, which makes training necessary and affects the quality of health care.

CONCLUSION

It is necessary to increases the awareness about the benefits of information system, developing a database to collect factors affecting the HIS failures. In addition, is required to implement each application for enhancing communication between all involved providers of care. There is need for test existing systems to ensure that they actually catch errors that injure patients and provide continuous training courses and to be accredited.

Conflict of Interest

There are no financial, personal, or professional conflicts of interest to declare.

REFERENCES

[1] Najem FM, Dahleez K A, Ashour Y. The Impact of Hospital Information System Quality on the Health Care Quality. Health Information Management Journal .2009;38(3):26-37.

[2] Rahimi B, Vimarlund V, Timpka T. Health Information System Implementation: A Qualitative Meta-analysis. Journal of medical systems. 2009;5(33):359-368. http://dx.doi.org/10.1007/s10916-008-9198-9

[3] Ross D, Venkatesh R. The Role of Hospital Information Systems in Improving Health Care Quality in Hospitals.Indian Journal of Science and Technology. 2016; 9(26):1-5.

[4] Puttell P, Hendler R, Daley J. Quality in Health Care: Concepts and Practice. 2007:611394.

https://www.researchgate.net/publication/255620653

[5] Panerai R. Health Information System. Global perspectives in health. 2010;1(5):1-6.

[6] Alswailem O, Khalifa M. Hospital Information Systems (HIS) Acceptance and Satisfaction: A Case Study of a Tertiary Care Hospital. Procedia Computer Science. 2015;63: 198-204.

[7] Stansfield S, Orobaton N, Lubinski D, Uggowitzer S, Mwanyika H. The Case for a National Health Information System Architecture: A Missing Link to Guiding National Development and Implementation. Italy, 2008:1-9.

[8] Coulter A, Ellins J, Swain D, Clarke A, Paulheron A, Rasul F, et al. Assessing the quality of information to support people in making decisions about their health and healthcare. Picker Institute Europe. Oxford, 2006:1-74. ISBN-13: 978-1905945030.

[9] Hussein S, Amin I, Rahim W. Assessing User Satisfaction of using Hospital Information System (HIS) in Malaysia. International Conference on Social Science and Humanity. 2011; 5: 210-213.

[10] Fang H, Peifer K, Chen J, Rizzo J. Health information technology and physicians' perceptions of healthcare quality. The American Journal of Managed Care. 2011; 17(3): 66-70. https://europepmc.org/article/med/21504261

[11] Ahmadi H, Rad M S, Nazari M, Nilashi M, Ibrahim O. Evaluating the Factors Affecting the Implementation of Hospital Information System (HIS) Using AHP Method. Life Science Journal. Malaysia .2014 ;11(3): 202-207.

[12] lotaibi Y K, Federico F. The impact of health information technology on patient Safety. Saudi Medical Journal. 2017;38(12): 1173-1180.

[13] Adams W G, Mann A M, Bauchner A. Use of an Electronic Medical Record Improves the Quality of Urban Paediatric Primary Care. American Academy of Pediatrics. 2007;111(3):626-632.

[14] Michelle K, Wagner L, Spetz J. Nursing Home Implementation of Health Information Technology: Review of the Literature Finds Inadequate Investment in Preparation, Infrastructure, and Training. The Journal of Health Care Organization. 2018; 55:1-10. https://doi.org/10.1177/0046958018778902