

Statistical Field Study to Find the Actual Reasons of Lake of Integrated Electronic System in Developing Countries

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ABSTRACT

Healthcare, as in any other sector, has been pressing forth towards adopting and using Information technology (IT) as a tool to simplify management of patient data, healthcare, and healthcare related processes; facilitating healthcare processes and data management across departments and institutions. Even though the adoption rate was relatively slow, some countries have led the way in implementing IT in healthcare; growing complexity of science, inherent nature of the complexity of health problems and healthcare processes, and the necessity to have complete patient's health information at the point of care. Availability and sharing of this data have been found to be essential for longitudinal patient care, public health and clinical research ; With this regard, countries have now identified the application of Electronic health record (EHR) systems as a way forth in addressing the demand for process simplification and effective clinical data management. In some countries like Sweden, Demark and New Zealand the adoption has been reported to reach higher level. However it is not the same case in the developing countries where the electronic medical report (EMR) implementations seem to go on very slow speed and face difficulties. This paper contains a statistical field study on a segment of the Egyptian society, through which we figure out the actual Reasons why there is no integrated health electronic system so far.

Keywords: Electronic health record, Electronic medical report.

1. INTRODUCTION

Healthcare, as in any other sector, has been pressing forth towards adopting and using Information Technology (IT) as a tool to simplify management of patient data, healthcare, and healthcare related processes [1]; facilitating healthcare processes and data management across departments and institutions [2]. Even though the adoption rate was relatively slow, some countries have led the way in implementing IT in healthcare [1]; and the necessity to have complete patient's health information at the point of care.

So the entire advanced world is heading currently these days to work with the Comprehensive Electronic Medical Record System (EMR) and how to improve it so it can save all the important medical information of the patient; Availability and sharing of this data have been found to be essential for longitudinal patient care, public health and clinical research [3]; Considerable work is now underway in many countries to develop the components of effective and comprehensive EHRs, and EHR development is central to many national health information strategies. EHRs consist of components that enable health care providers to access a patient's health information regardless of geographical location. Other components refer patients to various providers and enable providers to access clinical decision support and electronic prescribing, physician order entry, and integrated communication with laboratories, imaging centers, colleagues and patients; and would include population health management with the overall goal of assisting providers to give better quality health care [5].

In some countries like Sweden, Demark and New Zealand the adoption has been reported to reach higher level [5], and several countries (e.g. Canada, Finland, England, Sweden and United States) around the world are pressing forth towards the realization of national electronic health information [1]. It is not the same case in the developing countries. They mostly do not have such system and laws to protect personal information and the population also doesn't know their rights on that matter. [6]

In developing countries, they still have problems in providing basic needs to the population and infrastructures are still at a rudimentary level. However, the EMR should not be ignored given its role in improving healthcare quality. Low and middle-income countries share the largest part of disease burden with the rest of the world. Therefore, it is important to manage healthcare information efficiently. [7]

It may be an opportunity to encourage low-income countries to consider open source in EMR systems as good option for their health IT. On the other hand, to have program or disease centered software gave insights of extending these systems to fit all hospital services. The challenge is the cost of fully functional EMR; EMR implementations in developing countries seem to go on very slow speed especially in Africa. In middle-income countries of Asia and Latin-America, EMR implementations are being done faster [8].

The challenges in implementing EMR in Africa may include the lack of basic infrastructures, ICT equipment, and shortage in electricity, unclear policies, and poor planning due to the lack of financial capacity. Some projects are implemented without plans. This comes mostly with the availability of foreign development funds, which are not predictable. For the developing countries, to have a long-term development plan could help in investing in important projects progressively [9].

With this regard, the question remains what are the reasons for the absence of a MIS as comprehensive health system that can generate an EMR for the patient in Egypt, noting that Egypt is the largest Arab country developed in the continent of Africa. To further extend the discussion on this matter, we conducted Qualitative case study this study attempts to improve the understanding of MIS implementation in Egypt as a developing country, Data is collected with the help of interview and questionnaire as a tool for conducting the field study, Findings of this study are presented in the form of recommendations, which need to be considered and be done.

2. METHODS AND VALIDATION

The researcher developed and validated a questionnaire to collect objective quantitative data from different types of the various clients of the electronic health system. The questionnaire contained five sections of questions; the first part consists of a set of statements that reflect the knowledge axis about the electronic health system in general. The second part includes a set of phrases that express the knowledge of the electronic health system in terms of design. The third part include a set of phrases that reflect the knowledge of the system in terms of management. The fourth part comprises a set of phrases that reflect the importance of the system to the sample members after knowing some of the superficial information about it and whether it satisfies its needs. The fifth part include a set of phrases that represent the potential reasons for the lack of the electronic health system. This paper spotlight on the fifth axes which answers and figure out the reasons of the lack of the electronic health system.

The questionnaire used the classic three Likert scale format; agree, neutral (neither agree nor disagree), disagree. Acceptance and satisfaction among users.

The sample of the research was randomized to be representative of the original community in question. They are different categories and levels dealing directly or indirectly with the electronic health system and its networks. The sample consisted of 243 individuals distributed in the departments and departments of public and private hospitals and medical centers and clinics. This number represents the questionnaires returned after the exclusion of invalid forms, and after the division of the research community into the classes or categories mentioned above, which was limited to this number due to the large size of the original community.

A. Designing the Questionnaire and Drafting Its Paragraphs

Consistent with the nature of the research and to achieve its objectives, the researcher used the questionnaire as a tool to conduct the field study. The questionnaire is "an important way to obtain answers to a number of questions written in a form prepared for this purpose and completed by the respondent." It gives us the data responses needed to identify the aspects identified by the researcher.

The questionnaire was prepared in its initial form by studying and reviewing the theoretical literature, standards used in the studies, and extracting a set of appropriate statements with the nature of the subject and its limits. The first page of the questionnaire included the title of the research, the purpose of the questionnaire, basic data required from the sample, guidelines for answering the questionnaire and the terms of the questionnaire.

B. The Validity and Reliability of The Questionnaire

The next step in the data analysis process was to conduct a test of validity and reliability. Validity of the Knowledge of the design and management of medical networks for various clients of the electronic health system scale was established with The Comparison of Extreme Groups method. In this method the scale will be valid if the difference between the mean scores of the two extreme groups (high scores group- lowest scores group) is significant. Table 1 indicate that the differences among the mean scores of the two extreme groups at the total score of Knowledge of the design and management of medical networks for various clients of the electronic health system scale take the value ($t= 13.439$, $p<0.01$.) And this values is significant at 0.01 level, and which indicate that the scale was valid.

Table 1: Mean, Standard Deviation, and the differences among the scores of the two extreme groups (high scores group- lowest scores group) at the total score of (Knowledge of the design and management of medical networks for various clients of the electronic health system scale.

	Group(1) high scores group (n=25)		Group(2) low scores group (n=25)		t
	Mean	Std. Deviation	Mean	Std. Deviation	
Total Score	72.4	8.367	103.64	9.907	13.439 **

Note: * = significant at .05 level ($\alpha < .005$) ** = significant at .01 level ($\alpha < .001$)

Also, the reliability of the Knowledge of the design and management of medical networks for various clients of the electronic health system scale was tested by using Cronbach's alphacoefficients which indicate to internal consistency reliability and split-half reliability (The most commonly used method to split the test into two is using the odd-even strategy). Split-half reliability represents the reliability of a test only half as long as the actual test, a correction formula must be applied to the coefficient. Spearman-Brown prophecy formula.

Cronbach's alpha coefficients and split-half coefficients in Table (2) indicate that Knowledge of the design and management of medical networks for various clients of the electronic health system Scale is a highly reliable.

Table (2): Knowledge of the design and management of medical networks for various clients of the electronic health system Scale: Reliability of Cronbach's alpha coefficients and split-half coefficients (n=100)

Subscales of the Scale	Cronbach's alpha coefficients	Split-half coefficients
1- Knowledge of the electronic health system in general	0.676	0.599
2- Knowledge of the electronic health system in terms of design	0.789	0.715
3- Knowledge of the system in terms of management	0.787	0.703
4- The importance of the system to the sample	0.852	0.796
5- Reasons for the lack of a health system	0.618	0.565
Total Score	0.844	0.831

3. RESULTS

This paper concentrates on the results of the fifth axis of the questionnaire that answers and figure out the reasons of the lack of the electronic health system in Egypt. The researcher used the statistical package for social sciences (SPSS) to perform a group of statistical analyses including both descriptive and inferential statistics. The total number of valid responses was 243 participants, with a gender distribution that is almost one to one (male to female ratio). Tables 3,4, and 5 show the distribution of sample members according to the category of job, grade, and type of hospital.

Table 3: Distribution of the sample according to the gender

gender	male	female	total
frequencies	128	115	243
percentage	52.67%	47.33%	100%

Table 4: Distribution of the sample according to the job

Job Category	Doctor	Nursing	Engineer	Technician	Employee	total
frequencies	196	41	0	1	5	243
percentage	80.66%	16.87%	0%	0.41%	2.06%	100%

Table 5: Distribution of the sample according to the Type of hospital

Type of hospital	Public Hospital	private hospital	teaching hospital	medical Center	medical clinic	other	total
frequencies	86	93	25	22	0	17	243
percentage	35.39	38.27	10.29	9.05	0%	7	100%

Table 5 shows the diversity of the sample of the field study to represent the different specialties and functions in public and private hospitals, medical centers and clinics.

After the statistical processing of the data, the results were monitored according to the research axes in the form of statistical tables, calculation of the percentages, for each of the questionnaire terms, which aims to identify the degree of verification of these practices from the point of view of employees in public and private hospitals and medical centers and clinics for each axis of the questionnaire.

Table 6 shows the significance of the differences between respondents' responses to each of the terms of the questionnaire on the first axis, namely Reasons for lack of availability of Electronic Health System Within the medical entities in Egypt that can do its full job?, in terms of degree of achievement in actual reality in public and private hospitals, medical centers and clinics.

Table (6) Statistical of samples' responses to Reasons for lack of availability of Electronic Health System Within the medical entities in Egypt that can do its full job

Terms	Responses						Mean	Std. Deviation	Percentages
	Yes		Neutral		No				
	Freq.	%	Freq	%	Freq.	%			
1. The high cost of setting up the system	79	32.5	86	35.4	78	32.1	2	0.805	66.8
2. The lack of cadres to work it correctly because of the absence of experience	182	74.9	45	18.5	16	6.6	2.68	0.591	89.4
3. The lack of conviction of the higher management of medical entities benefits	87	35.8	123	50.6	33	13.6	2.22	0.668	74.1
4. The fear of showing the percentages of errors resulting from the medical team and prove responsibilities	103	42.4	105	43.2	35	14.4	2.28	0.701	75.9

The data shown in the table 6 shows the following:

- Phrase (2), which states that "the reason for the absence of a health system within the medical entities in Egypt is full function is the lack of cadres to work correctly because of the absence of experience" was the most important words by 89.44%.
- The phrase "The reason for the absence of a health system within the medical entities in Egypt is full function is the fear of showing the percentages of errors resulting from the medical team and proving the responsibilities" was the second most important statement by 75.99%.
- The third important statement was No. (5) Stating that "the reason for the absence of a health system within the medical entities in Egypt is its full function is the lack of conviction of the higher management of medical entities with its benefits" by 74.07%.
- The last important of these phrase was the number 1, which focused on "Is the reason for the lack of a health system within the medical entities in Egypt is full function is the high cost of setting up the system" where it was = 66.80%.

4. CONCLUSION

From the illustrated results, we can conclude that the real reasons for the lack of an integrated health electronic system so far within the medical entities are the high cost of establishing the electronic system, which may not be borne by most hospitals due to lack of financial ability, in addition to the lack of cadres to work properly because of lack of enough experience; That there are 243 individuals working in 25 hospitals. There is no one engineer specializing in electronic health systems which is very dangerous, which is one of the biggest challenges facing the application of an integrated health electronic system within medical entities.

In addition to the lack of awareness among the higher departments of the benefits that may benefit in the case of the application of electronic health systems within the medical entities, and the lack of ability of employees to change the traditional system to an advanced system, which certainly needs training and rehabilitation of staff, and suggests the current study to hold several seminars In order to increase awareness of all the importance of applying electronic health systems within medical entities as well as the need to apply the electronic system in a hospital as a pilot study and compare the results of the hospital before the application of the system and after the application of the system to examine the effectiveness and success of the electronic system after training the staff of the administrative staff at the hospital and providing engineers and technicians to provide full support to the system.

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