EVALUATION OF HOSPITAL MANAGEMENT SYSTEM AT COMBINED MILITARY HOSPITAL PESHAWAR

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ABSTRACT

Objective: To evaluate HMS in terms of its user's satisfaction, time management, data retrieval, record keeping and confidentiality of medical records.
Study Design: Cross sectional study.
Place and Duration of Study: Combined Military Hospital (CMH) Peshawar, from 1st Nov 2013 to 30th Apr 2014.
Material and Methods: All doctors using hospital management system (HMS) for more than six months in CMH Peshawar were included in this study by means of non probability convenient sampling. This made a total sample size of 71. A questionnaire was filled regarding satisfaction, time management, data retrieval, record keeping and confidentiality of medical records and results analyzed.
Results: Out of total 71 participants, 25 (35.25%) were satisfied and 46 (64.75%) were not satisfied with the use of HMS. Increase in time per patient was observed in 60 (84%). Out of total respondents, 57 (80%) found HMS as useful tool for data retrieval and 25 (35%) stated that manual record should be retained along with electronic records. Concerns regarding confidentiality of record was shown by 21 (30%) of the participants.
Conclusion: A significant percentage of doctors were not satisfied with the use of HMS. Its use leads to increase in time spent per patient. However, most of the participants of the study found HMS efficient tool for data retrieval, record keeping and confidentiality of medical records.

Keywords: Hospital, Information management, Management, Medical record.

INTRODUCTION

Hospital Management System (HMS) is recognized as critical ingredient of health care[1]. It is a computer based system in which data are stored in a database, from where it is put at the disposal of authorized users[2]. Hospitals consists of different departments which are working together to provide services to the patients[3]. Modern HMS is an integrated system that manages data related to clinic, laboratory, pharmacy, radiology and finance departments[4]. Information and management systems are used in hospitals to improve the effectiveness and efficiency of the hospitals in modern world[5]. This system comprises of a set of related modules which are used to collect, reclaim, stock and distribute data which helps in improving patient care[6]. It has many advantages such as faster access, storage, security and retrieval of data. HMS is indispensable for any hospital for strategic planning, programming, budgeting, financial resource allocation, maintaining patient's record, personnel development, distribution and management of equipment, supplies, drugs and supervision of the services. It is envisaged that though the initial cost would be high, long term multifaceted benefits will outweigh the high installation cost[7].

Most of the government health care setups in Pakistan either do not have HMS or has it in limited scope. The situation is a shade better in private sector. The main limiting factor is cost and the lack of trained staff.

Pakistan Army is providing health care services not only to defense forces personnel but also to civilians. Army Medical Corps (AMC) decided to adopt HMS in all military hospitals. Instillation of this system in CMH Peshawar is one such initiative. The aim of this study was to evaluate HMS in CMH Peshawar in terms of its

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user's satisfaction, time management, data retrieval, record keeping and confidentiality of medical record.

MATERIAL AND METHODS

This cross sectional study was carried out at Combined Military Hospital, Peshawar over a period of six months from 1st Nov 2013 to 30th Apr 2014. A total of 71 participants, both male and female, between 25 and 55 years of age having access to the HMS for more than six months were included in the study by means of non probability convenient sampling technique. Doctors not using HMS were excluded from the study (Anesthetists and intensive care specialists, working in operation theatres and intensive care units, as HMS facility is not available at these places). Requisite permission from the hospital ethical committee was obtained and verbal consent was taken from each individual included in the study. A specially designed questionnaire (attached as annex A) was used to collect data. Hard copies of questionnaire were distributed and were collected back next day after they had been filled. All participants were reassured about the confidentiality of filled forms. Demographic and baseline data about the participants, including age, gender, and specialty were obtained. Information regarding satisfaction, time management, data retrieval, record keeping and confidentiality of medical records was collected. Data analysis was carried out with the help of SPSS version 16. Chi square test was applied at 95% confidence interval. The *p*-value ≤ 0.05 was considered statistically significant.

RESULTS

Gender, age, designation and speciality of respondents are shown in table-I.

Satisfaction, time management, data retrieval, record keeping and confidentiality with HMS use are shown in table-II.

Table-I: Gender, age, designation and speciality of respondents.

Variable	Frequency	Percentage
Gender		
Male	57	80
Female	14	20
Age (years)		
21-40	41	58
41-55	30	42
Designation		
Senior Consultants	21	30
Consultants	19	26
Trainees	26	37
Administrators	5	7
Speciality		
Clinical	58	82
Non clinical	13	18

DISCUSSION

Most of the participants in our study were not satisfied with HMS use. The reasons for this were excessive workload, software complexity and system hang-ups. HMS is newly installed in CMH Peshawar and it was expected that like any new system, problem areas may arise which need attention as per feedback given by its users. The imbalance doctor patient ratio is a universal issue in our health care system. This can be overcome by employment of doctors as per workload. Our study highlighted the facets of HMS complexity in a healthcare set up. Software of HMS was rated as complex by its users. It needs up gradation as per need of its users. System hang-ups also need

attention; by changing to new versions and prompt response from IT personnel. As this study was done on the initial users of HMS after its installation, it is hoped that it will be more user friendly with these changes. Doctors were used to pen and paper system and showed a lot of resistance to computerized system. These results are matching with the cross-sectional study conducted in Malaysia, Selayang Hospital on implementation of Total Hospital Information System (THIS) in which different parameters of health information system was studied and proposed a model for acceptance study for electronic medical records[8].

Table-II: Satisfaction, time management, data retrieval, record keeping and confidentiality with HMS use.

Satisfaction with HMS use	**Frequency**	**Percent**	***p*-value**
Yes	25	35.21	p=0.0092*
No	46	64.79	
No (due to Workload)	12	26.09	
No (due to Software Complexity)	23	50.00	
No (due to System Hang ups)	11	23.91	
Total	71	100.00	
Increase in time per patient with HMS use	**Frequency**	**Percent**	
Yes	60	84.51	
Yes (due to Too much detail in patient encounter form)	38	63.33	
Yes (due to Lack of Proficiency in computer usage)	11	18.33	p<0.0001*
Yes (due to Ergonomics of office)	11	18.33	
No	11	15.49	
Total	71	100.00	
HMS as an efficient tool for data retrieval	**Frequency**	**Percent**	
Yes	57	80.28	p<0.0001*
No	14	19.72	
Total	71	100.00	
Retaining manual record along with electronic record	**Frequency**	**Percent**	
Yes	25	35.21	p=0.0092*
No	46	64.79	
Total	71	100.00	
Reliability of HMS for record keeping	**Frequency**	**Percent**	
Yes	64	90.14	p<0.0001*
No	7	9.86	
Total	71	100.00	
Concerns regarding confidentiality of record	**Frequency**	**Percent**	
Yes	21	29.58	p=0.0003*
No	50	70.42	
Total	71	100.00	

*p-value <0.05

Our study also revealed that HMS has direct impact on doctors' time per patient. The reasons

for increase in time were too many details in the patient encounter form, lack of proficiency in computer use and ergonomics of office. Patient encounter forms need brevity. Doctors were of opinion that patient encounter form is having too much detail and it is laborious job to fill all the details and without its filling, it is not possible to move on to treatment portion. It was seen that participants not proficient in the use of computers were having difficulty in using HMS. It is in agreement with the other studies conducted in USA on implementation of electronic health records system which showed that time spent on computers was increased and time and attention given to patient was decreased[9,10]. Another study conducted by J. Alder et al found that participants having computer proficiency were more satisfied with the electronic health record system[11]. Clinicians are more interested in filling the screen of the computer in front of them in this new system than to see the patients. In an editorial titled "Survival of the kindest" Safdar CA has stressed on listening to the patients attentively rather than filling the forms on HMS[12]. The use of electronic pen, dictaphone and voice recognizer can be an option. Use of computers in HMS system need purpose build ergonomics of the office, height of the table, distance of chair from the table, distance and height of computer display form the eye level of the user and the level of the key board are few of them.

Majority of participants were satisfied with the data retrieval. Data retrieval by HMS are helpful to the participants of the study as majority of patients don't bring their medical documents while coming for follow up. By using HMS, it is possible to retrieve patient's record and it helps in better patient management. Although manual record keeping is costly job and requires a lot of manual work and space, a strong back up to store data on hardware is also important so as the data may not be destroyed by untoward faults in the system. These results were in consistent with the results of study conducted by Ford EW et al, which showed importance of electronic medical record for data retrieval and record keeping[13].

Most of the participants of our study agreed that HMS is a reliable tool for record keeping. Confidentiality of health care records and communication among colleagues is very important in healthcare set up. It is the responsibility of organization to ensure confidentiality of data. A study by Fernandez-Aleman et al has elaborated that information technology should be used responsibly by it users to protect patient confidentiality[14]. As information systems go online, the risk of compromising patient confidentiality increases dramatically. Therefore, health systems need to take steps to ensure that their computerized patient records remain secure and confidential to avoid being found in violation of patients' legal right to privacy[15].

Weakness and complexity of the HMS software is revealed by analysis of questionnaire. Our study indicates limitations of software but no tangible flaws were detected. For this purpose, problem areas need to be analyzed thoroughly. Another study may be carried out after remedial plan.

The main limitation of this study is the number of participants. Large sample size is needed to study the difference in parameters comprehensively. However, the sample suited the objectives of this study with regard to its variables.

Another limitation is that it is a single center study and like all single center studies, the results cannot be widely generalized. Exclusion criteria were strictly followed to limit the confounding variables since the sample size was small. However, it would be interesting to see how these parameters reflect when used in multicenter study and on wide variety of participants.

CONCLUSION

A significant percentage of doctors were not satisfied with the use of HMS. Its use leads to increase in time spent per patient. However, most

of the participants of the study found HMS efficient tool for data retrieval, record keeping and confidentiality of medical records.

CONFLICT OF INTEREST

This study has no conflict of interest to declare by any author.

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