ORIGINAL ARTICLE

Hospital Information System Awareness, Approach and Practices Among two Different Health Care Organization in Islamabad

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ABSTRACT

Objective: To compare the awareness, approach and practice of HIS technical staff about HIS in public and private sector hospital.

Methods: A cross-sectional descriptive survey research design was applied to collect data from HIS users in the sample. All participants must have more than 3 months experience of workplace.

Results: The study sample was 75 in which 35 from PIMS (mean=11.30, SD=4.98) and 40 from SIH (mean=3.51, SD=2.30).The resultant test statistic was significant $p<0.05$. The highest number of HIS users were responsive, available and practice with the system in SIH ($p<0.000$).

Conclusion: In our study we concluded that overall awareness, approach and practice of HIS users in private sector hospital; Shifa International Hospital are better than the public sector hospital; Pakistan Institute of Medical Science.

Keywords: Patient care; Health information systems; Hospital information systems; Research; Quality and efficiency of health care.

Introduction

The Hospital Information System (HIS) is a comprehensive, integrated information system designed by hospital to manage all aspects of hospital operation such as medical, administrative and financial processes. The system is designed for the purpose of collecting and reporting information so that the hospital managers can plan, monitor and evaluate the operations and performance in their areas of responsibilities.[1]

HIS is necessary for all decisions made by hospital managers as well as the clinicians. Good information system

benefits patient care and it improves the quality, effectiveness and efficacy of patient care. For this purpose it is necessary that good professional staff should deal with this data.[2]

Laboratory information system (LIS) and Radiology Information System (RIS) are the two extensions of HIS which provide an important tool for research purpose.[3]

HIS also includes Human resource information system (HRIS) and Pharmacy information system (PIS). PIS make clinician conscious about the safety of drug and the potential effect of drug. PIS ensure proper drug procurement, dispensing, distribution, maintenance and literatures of drug with special emphasis on its toxicity.[4]

To achieve the effective goals, organizations have started human resource information system as well. HRIS is an important tool in determining salary forecasts, pay budgets, labor and employee relations, skilled staff and planning for future employee strength. So far research have been done on perception, effectiveness and efficient use of HRIS in hospitals.[5]

The technical staffs dealing with HIS software are important stakeholders of this information system and any mistake done by them owing to some reason affects the authenticity of this useful data. Unluckily in Pakistan, in public sector hospitals the usefulness of HIS is badly affected owing to overcrowding of patients, inadequate human resource, lack of monitoring system and lack of co-ordination with Information and Communication Technology (ICT) experts.[6]

The rationale of study is to evaluate the awareness, approach and practice of HIS technical staff in two different health care organizations.

Methodology

This is a cross sectional descriptive study conducted in Pakistan Institute of Medical Sciences (PIMS) Islamabad (public sector) and Shifa International Hospital (SIH) Islamabad (private sector) from March 2015 to May 2016. Ethical permission was taken from both hospitals' ethical committee prior to the study. A total of 75 HIS users, dealing with hospital information system (HIS) of the two hospitals were included in the study. There were 35 participants who consented to participate in study from public sector hospital (PIMS) and 40 participants from private sector hospital (SIH). Sampling technique was census. All participants must have more than 3 months experience of workplace.

A pre-validated structured questionnaire was distributed among these participants and filled under the supervision.[7]Some questions in the questionnaire which the participants did not understand properly were explained to them in detail. The questions about awareness, approach and practices of HIS were phrased with dichotomous answer alternatives 'YES' and 'NO'. All statistical analysis was observed through SPSS 16. Chi square test was performed, taking p value less than 0.05 as significant.

Results

Familiarity of hospital information system between HIS users from two health care organizations is shown in table 1.

The awareness with the system between HIS users of two hospitals was shown in table 2.

Table 3 shows the significance of attitude between HIS users of two hospitals (where p value is less than 0.05 taking significant).

Comparison of practice between HIS users of two hospitals was shown in table 4. Though HIS users in PIMS are receiving more patients per hour owing to which they look for more shortcuts during their work (table 4, $p < 0.05$ is significant).

Discussion

In developing countries like Pakistan, hospital information system (HIS) is still in the process of development. HIS in PIMS was the first HIS sprang in public sector hospital in 1997 while SIH using hospital information system (HIS) from the day first of its functionality as private sector healthcare. This study has few limitations. One of

Table: 1 Comparison of familiarity between HIS user from two health care organization (N=75)

Hospital	HIS user in Departments					Mean (SD)	P value
	Emergency N (%)	Laboratory N (%)	Radiology N (%)	OPD reception N (%)	HIS manager N (%)		
PIMS (n=35)	4 (11%)	13 (37%)*	8 (23%)	7 (20%)	3 (9%)	11.30 (4.98)	0.000*
SIH (n=40)	6 (15%)	9 (22%)	10 (25%)	13 (32%)*	2 (5%)	3.51 (2.30)	

*Highest number of HIS users in departments of two hospitals. Applying Chi square test.
*p-value < 0.05 is significant.

Table: 2 Comparison of awareness with the system between HIS user from two health care organization (N=75)

Hospital	MS office knowledge		Typing skills		course attended for HIS users		Workshop attended		refresher courses attended	
	Yes	no	Yes	No	Yes	No	yes	no	Yes	No
PIMS (n=35)	8 (17%)	27 * (96%)	6 (17%)	29 * (72%)	0 (0%)	35 (51%)	22 (42%)	13* (59%)	18 (43%)	17 (52%)
SIH (n=40)	39* (83%)	1 (4%)	29* (83%)	11 (28%)	7* (100%)	33 (49%)	31* (58%)	9 (41%)	24* (57%)	16 (48%)
λ test	44.45		22.98		6.75		1.93		0.56	
P value	0.001*		0.000*		0.009*		0.160		0.450	

*highest number of HIS users.
*P value < 0.05 is significant. , Chi-square test (**λ**) was used.

Table: 3 Comparison of approach between HIS user from two health care organization (N=75)

Hospital	Easy data entry		HIS whether invalid or not		Improve patient care		Keeping record easier		effect of language barrier	
	Yes	No	Yes	No	Yes	no	yes	no	yes	No
PIMS (n=35)	35 (100%)	0 (0%)	33 (48%)	2 (29%)	35 (52%)	0 (0%)	27 (43)	27 (43%)	27 (52%)	8 (35%)
SIH (n=40)	40 (100%)	0 (0%)	35 (52%)	5 (71%)	34 (48%)	6 (10%)	36 (57)	4 (33%)	25 (48%)	15 (65%)
λ test	N/A		1.01		5.70		2.29		1.88	
P value	N/A		0.314		0.017*		0.130		1.170	

*P value < 0.05 is significant. , Chi-square test (**λ**) was used.

Table: 4 Comparison of practice between HIS user from two health care organization (N=75)

Different Practices of HIS user	Hospital				λ test	P value
	PIMS (n=35)		SIH (n=40)			
	Yes	No	Yes	No		
Turnover of staff affecting work at work place	25(45%)	10(50%)	30(55%)	10(50%)	0.12	0.720
Taking bio data through CNIC	5 (15%)	30 (73%)	29(85%)	11(27%)	25.52	0.000*
Looking for shortcuts	39 (97%)	29 (83%)	1(3%)	6(17%)	4.73	0.030*
Enough manpower in HIS	6 (14%)	29 (88%)	36(86%)	4(12%)	0.06	0.800
Satisfactory response from HIS experts	27 (41%)	8 (89%)	39(59%)	1(11%)	0.21	0.640
Support from HIS official staff	27 (77%)	38(95%)	8(23%)	2(5%)	5.15	0.023
workplace monitoring system	1 (2%)	21(60%)	39(98%)	14(40%)	29.77	0.000*
Getting good practice praise	6(43%)	29(48%)	8(57%)	32(52%)	0.10	0.750
Password security by HIS users	29(44%)	6(67%)	37(56%)	3(33%)	2.44	0.190
Comfort ability with HIS	18(41%)	17(55%)	26(59%)	14(45%)	1.41	0.230

*P value < 0.05 is significant. , Chi-square test **(λ)** was used.

them is acceptance of participation from HIS users' controlling body.

The familiarity with the HIS between the two health care organizations among HIS users was significant (p<0.000) in participants from PIMS as compared to SIH (see table-1) where highest percentage (37%) of HIS users were seen in laboratory moreover this percentage (32%) was seen in HIS users of OPD reception from SIH. This shows that private sector health care organization (SIH) express their concern on qualification rather than experiences. These results were consistent with the outcomes in another study published in 2008. [8]

Regarding awareness with the ease of the use of system the HIS users from SIH were found more comfortable and knowledgeable (p<0.000) compared to HIS users from PIMS. See table-2. This study shows that HIS users from private sector health care organization were paying more attention towards refresher courses and workshop related to knowledge of the system (See table-2). This is consistent with the outcomes by Pedro Luiz Cortes et al in 2011[9] and Bowman S et al in 2013.[10]Similar outcomes was concluded

by Qazi M S in 2009 that refresher courses for HIS users are required for proper implementation of HIS.[7]

Concerning approach towards HIS data entry HIS users from both health care organizations find it easy. See table-3. On the other hand a result from Maroof et al in 2014 was dissimilar.[11]We found that 51 % of HIS users from PIMS and 49 % of HIS users from SIH (p=0.017) have their opinion that HIS has improved patient care. See table-3. A

similar outcome was seen from Takhti H K et al in their study on impact of hospital information system on patient care. [12]

Majority of HIS users in both public and private sector hospitals believe that HIS has made keeping record easier (p=0.13) as demonstrated in table 3. And language barrier interfere data entry in HIS. Statistically the problem is similar in both hospitals (p=1.17). See table-3. This is consistent with study published in 2008.[13]

The practice of taking personnel bio data through CNIC is more frequently observed in private sector hospitals(SIH) than in public sector hospital (PIMS)(p=0.000). See table-4. Whereas the practice of getting around (shortcuts) is more commonly observed in public sector hospital, (p=0.03).See table-4. These outcomes were similar with another study.[10, 14]

Manpower or human resource always remain an issue in both public and private sector hospital (p=0.80). Only 14 % of public sector and 86 % of private sector hospital's participants believe that they have enough manpower in their HIS department and these numbers of employees are sufficient for smooth running of HIS (table-4). Forty one percent of HIS users from PIMS and 59% of HIS users from SIH believe that HIS experts respond quickly to troubleshooting. This practice is somehow similar in both health care facility (p=0.64). Similar results were found in two different studies. [9, 10]

Monitoring of performance of HIS users was observed more in SIH than in PIMS (p=0.000). Twenty six percent of HIS users in public sector (PIMS) and 74% in private sector (SIH) hospital believe that they have been monitored properly. This improves the quality of data in HIS as concluded in two other studies.[10, 15]

In our study, password protection practice was poor in public sector hospital while in private sector hospital the practice was quiet good. Forty four percent participants of PIMS and 56 % participants of SIH believe that they keep their password well protected (p=0.19). Similar outcomes were concluded in different studies that most HIS users remain using weak password, making the hospital data accessible to unauthorized person while some HIS users share their passwords with co-workers.[6, 8,9,10]

This study suggests that the problem of inadequate number of HIS users comparing with the patient burden in public sector hospitals should be solved for proper implementation of HIS in future.

Robbins et al[25] reported that lower income level, education, and occupation were positively associated with prevalence of diabetes.

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Conclusion

It seems that an HIS helped administrators and all departments to identify and eliminate ineffective activities involved in the patient process and provide complete, essential data to support optimal patient care.

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