

Awareness, Attitude and Utilization Pattern of Hospital Information System among Healthcare Staff of a Tertiary Care Teaching Hospital

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ABSTRACT

Background: Hospital information system (HIS) is a vital component for decision making in various clinical and administrative areas of the hospital, leading to quality patient care and overall development of the organisation. Successful implementation of HIS depends on the awareness, positive attitude, and effective and efficient utilization by the various healthcare providers. Thus this study was carried out with the aim to assess the awareness, attitude and utilization pattern of HIS among the staff of a tertiary care teaching hospital of Karnataka. **Method:** Self-structured, pre-tested questionnaire that probe into the awareness, attitude, and utilization pattern of HIS among medical, nursing, pharmacists and health information professionals. Descriptive statistics of their awareness, attitude and utilization pattern were calculated. **Results and Conclusion:** The knowledge of staff regarding basic working of computer was very good while knowledge of advanced technology and documentation standards were found to be below average. Their opinion and attitude towards functioning of current HIS was good and they agreed that it has tremendously helped them in continuing patient care and thus there is regular and optimum utilization. Majority of participants strongly agreed that present HIS has improved documentation, helped in faster data processing, patient treatment and also in education and research, though there is need to upgrade its features so as to meet the changing requirements of different healthcare professionals. But factors like unavailability of trained manpower and past patient electronic details which delay patient care should be looked into to make HIS sustainable.

Keywords: Awareness, Attitude and Utilization Pattern, Hospital Information System, Teaching Hospital

INTRODUCTION

The presence of computer and information technologies in today's business and public sector organisations has expanded dramatically. Since the 1980s, about 50% of all new capital investment in organisations has been in information technology.[1] Investment in emerging information technology applications can lead to productivity gains but only if they are accepted and used. The health service is becoming more dependent on information technology and its various applications such as Hospital Information System (HIS), electronic medical/health records, decision support systems, etc.

Hospital information system is a comprehensive, integrated information system designed to manage the administrative, financial and clinical aspects of a hospital. This encompasses paper-based information processing as well as data processing machines.[2] Electronically managed services demand a minimum level of competence from staff in order to ensure smooth, safe and effective functioning. Strategic planning is therefore required to ensure staffs are adequately trained and ready for an increasingly technological role.

It is normally seen that most of the tertiary care Indian hospitals are not utilising the technology effectively to provide quality patient care. This condition is due to poor knowledge of computers and information technology among

the healthcare staff. They basically deal with the most important aspect of providing patient care but remain almost ignorant about most technological advances which do not directly relate to their nursing and diagnostic care. But with the increasing standards of living and sector moving towards more number of corporate hospitals, there is a vital need for implementation of such applications as well as training of the healthcare staff to enable them to utilize these applications in providing quality patient care, reduce the span of treatment, and increasing overall patient satisfaction. Very little is known about the perception, knowledge and utilisation pattern among healthcare staff regarding the Hospital information system used in the Indian hospitals. An information-proficient workforce that is computer literate, trained in information management skills, and motivated to use the well-designed clinical systems would be necessary in a tertiary institution particularly in a developing country such as India. Clinical informatics aims to improve patient care by the intelligent application of technology and hopes to increase the effectiveness and efficiency of care, as well as patient safety. Informatics can fulfil its promises in developing countries only if health care professionals are trained in basic computing skills and IT. Designing such training will necessitate an assessment of baseline knowledge and the utilization patterns of all personnel involved in health care delivery which is the major thrust of this survey.

METHODOLOGY

The present study was carried out in a tertiary care teaching hospital of Karnataka. A structured interview was conducted with the randomly selected 375 healthcare professionals (53 doctors, 220 nursing staffs, 37 pharmacists, and 65 health information staff - 21 billing section, 20 registration, 19 records department and 5 admission area staff) involved in patient care, teaching and research, pharmacy, administration, and finance. Inquiries were made regarding their awareness, attitude and utilization pattern related to hospital information system in their practices. Information was obtained on a pre-tested questionnaire designed for the above.

The first section of the questionnaire sought identification of the respondents. The awareness / knowledge of Hospital Information System was assessed by analyzing responses to a set of 4 question based on 5 point Likert scale (*Excellent to Below Average*) while another set of 9 questions also based on 5 point Likert scale (*strongly agree to strongly disagree*) to know their opinion on hospital information system and utilization pattern (frequency) were assessed by analyzing 6 questions based on four point Likert scale (*Never used to Always*)

RESULTS AND DISCUSSION

Demographic Characteristics of the respondents

A total of 375 healthcare staff including 53 doctors, 220 nurses, 37 Pharmacist, 65 Health Information Professionals participated in the study in which 83 were males and 292 females. (Table 1)

Awareness about Hospital and Health Information System (HIS)

Study showed that 63.36% of the participants have very good knowledge regarding computer and peripheral devices, only 1.86% of the respondents have below average knowledge. The knowledge regarding various technologies involved in HIS like PACS, CDSS etc is very good for 25% of the population (only the staff those are using these systems are aware), rest 50% of the participants have below average knowledge. 84.2% of the respondents have below average knowledge about classification and coding standards and 89.3% about various reporting standards and laws to be followed in health information practice. (Table 2)

Opinion of the healthcare staff regarding the existing HIS:

Among the respondents, 63% strongly agreed that the present HIS has improved the documentation process and patient information management, while only 3.5% of staff disagreed to it. Also 41% staff agreed that it's better than

paper based system and 64% professionals strongly agreed that it helps in faster communication within and outside the hospital. 35% staffs agreed that HIS has reduced the healthcare cost; although 33% of them gave no response was questioned to this question. Similar type of result was seen when asked regarding utilisation of HIS for statistical analysis. To this 47% gave no response as they never used it for this purpose. Queries on utilisation regarding patient enquiry yielded a strong agreement. 60% strongly agreed to use it most of the time while only 3% did not use it. 99% claimed that the present HIS is very helpful for obtaining advice in diagnosis and therapy, while 0.74% gave no opinion and only 0.37% disagreed. 55% staffs agreed that the system helps in education and research activities while 39% staffs disagreed. 89% of pharmacists agreed that the present HIS helps in stock management of various drugs and other products. (Table 3)

Utilization pattern of present HIS

Analysis of frequency of HIS utilisation showed that 35% always use HIS for documenting patient information and only 7.5% staff never use for this activity. Markedly, for clinical and treatment activities 79.1% staffs claimed that they use HIS always. For education and research, 35.16% staff claimed that they always use it, while 27% said that they never use it for such activities. For, statistical analysis work only 11% staffs said that they always use it, basically whenever required; 69% of staff never used it as there is limited database for patients (only inpatient databases). For billing and financial statement preparation 76% billing staff asserted that they use the HIS always and for stock management, 65% pharmacy staff claimed that they always use HIS for this purpose. (Table 4)

CONCLUSION

Most of the Indian hospitals are gradually transforming its information system from paper based to electronic, considering its inevitable benefits and with the advent of latest technologies and increasing customer/patient needs and demands. From the study, it can be concluded that as information technology has brought major transformation in healthcare industry in providing quality patient care and increasing patient satisfaction levels, the healthcare providers who actually render the patient care services, should be fully aware and trained about the new electronic system, so as to efficiently use the system for patient care activities and produce effective results that would readily benefit patients and contribute to overall organisational growth. Along with adequate training for proficient use of the system it should be made sure that the existing HIS caters to the needs of the hospital; henceforth, periodic upgradation should be done to meet the changing demands of its users.

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- [2]. Available from URL; <http://www.answers.com/library/wikipedia-cid>, hospital information system.

Appendices

Table 1. Demographic Characteristics of Respondents

Doctors		Nurses		Pharmacists		Health Information Professionals (Registration, admission, billing)		Total	
53		220		37		65		375	
M	F	M	F	M	F	M	F	M	F
39	14	0	220	21	16	23	42	83	292

M=Male, F=Female respondents

Table 2. Awareness about Hospital and Health Information System (HIS)

Knowledge about :	Healthcare staffs knowledge regarding HIS				
	Excellent %	Very good %	Good %	Average %	Below average %
Computers and peripheral devices (n=375)	55 (14.6%)	239 (63.73%)	58 (15.46%)	16 (4.26%)	7 (1.86%)
Technology involved (n=375)	13 (3.46%)	94 (25.06%)	47 (12.53%)	32 (8.53%)	189 (50.4%)
Various classification & coding standards (n=273)	Knowledge of doctors and nurses in particular (n=273)				
	04 (1.46%)	10 (2.73%)	16 (5.86%)	13 (4.76%)	230 (84.2%)
Documentation & reporting laws & standards (n=273)	02 (0.73%)	03 (1.09%)	13 (4.76%)	11 (4.02%)	244 (89.37%)

Table 3. Opinion of the healthcare staff regarding the existing HIS

Present information system helps in:	Strongly Agree	Agree	No Response	Disagree	Strongly Disagree
Better Documentation & patient information management (n=375)	235 (62.67%)	113 (30.13%)	15 (4%)	12 (3.2%)	0
Better than paper based system (n=375)	149 (39.7%)	152 (40.53%)	36 (9.6%)	34 (9.06%)	04 (1.06%)
Faster communication (n=375)	241 (64.2%)	107 (28.53%)	20 (5.33%)	04 (1.06%)	03 (0.8%)
Reduction of healthcare cost (n=375)	71 (18.93%)	131 (35%)	124 (33.06%)	39 (10.4%)	10 (2.6%)
Statistical analysis (n=375)	68 (18.13%)	91 (24.2%)	179 (47.7%)	29 (7.73%)	08 (2.13%)
Patient enquiry (n=375)	225 (60%)	121 (32.2%)	16 (4.2%)	12 (3.2%)	01 (0.26%)
Obtaining advise for diagnosis and therapy* (n=270)	238 (88.1%)	29 (10.7%)	2 (0.74%)	1 (0.37%)	0
Education and research* (n=270)	99 (36.6%)	51 (18.9%)	15 (5.6%)	27 (10%)	78 (28.9%)
Stock management**(n=37)	14 (37.8%)	19 (51.3%)	2 (5.41%)	2 (5.41%)	0

*Asked only to doctors and nurses (Out of 273 doctors and nurses, 270 responded)

**Asked only to pharmacists

Table 4. Utilization pattern of present HIS

Frequency of utilisation for	Never	Sometimes	Often	Always
Documentation of patient information (n=267)	28 (7.5%)	60 (16%)	47 (12.5%)	132 (35%)
Clinical and treatment activities* (n=273)	19 (7%)	23 (8.4%)	15 (5.4%)	216 (79.1%)
Education and research* (n=273)	76 (27.8%)	62 (22.8%)	39 (14.2%)	96 (35.2%)
Statistical analysis* (n=273)	189 (69.2%)	41 (15%)	13 (4.8%)	30 (11%)
Billing & financial statement preparation*** (n=21)	1 (4.8%)	4 (19%)	0	16 (76.2%)
Stock management & Purchase orders generation** (n=37)	0	6 (16.2%)	7 (18.9%)	24 (64.9%)

*Asked only to doctors and nurses, **Asked only to pharmacists, *** Asked only to billing staff