Research Article

Knowledge Management Practices in Indian Healthcare Sector

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Abstract

With very little information about knowledge management practices in India, efforts have been made to investigate the knowledge management with a focus on knowledge management practices and its relationship with doctors. The study was conducted in hundred Indian hospitals with Doctors'. The primary data collected from these respondents were analyzed to study the equations developed for empirical research. The results obtained from the factor analysis and correlation matrix explain that the Knowledge sharing and use of information technology in healthcare are major factors from doctor point of view and have a significant impact on managing Doctors' workload. The implications of this paper will help in strategic formulation for knowledge management practices for managing Doctors' workload.

Keywords: *Information Technology; Knowledge Management; Knowledge Management Practices.*

1. Introduction

With the advent of modernization and automation, India has been fast catching up with the world culture. The element of information technology and knowledge management has been in corporate and embedded into the industrial and healthcare sector. This paper focuses on the basics of knowledge management practices in health care organizations. In this era of fast and growing technologies, there is a necessity to manage knowledge, its sources, transformation and retention. (World Health Report, 2003) stated that the necessary investments and innovations in health information systems will assist the strengthening and reform of country health information systems. In same line (World Health Report, 2006) states that health workers increasingly use modern communication technology to provide care. There is evidence that computer-based patient records can improve patient care, outcomes and costs. Verma and Prinja, 2008) concluded in their study that health management information system provides information to support planning and control functions of the managers and help them in decision making. (Raja, 2009) found that IT solutions will integrate multiple locations will help patient access and internet-based picture archival for creating simple tele-radiology interface. (Jamal *et al*, 2009) reviewed the impact of health information technology (HIT) or health information systems (HIS) on the quality of healthcare (Chadha and Kapoor, 2010) focused that there still exist barrier in

knowledge sharing. Managing knowledge in an organization requires managerial several processes of knowledge such as creation, storage, sharing and evaluation. Knowledge management has been assumed a key position in modern competitive scenario characterized by the drastic and sporadic changes.

KM does not mean IT and vice-versa. The role of IT in KM is that of a facilitator or an integrator of communications technology. The crucial issues include the need to adopt common, user-friendly platforms. The explosive growths of internet and intranet technologies has also acted as a catalyst to KM initiatives and are especially successful at supporting approaches wherein individuals can find each other, the knowledge they require and for their workload management.

2. Literature Review

(Mathur, 2003) focuses on the nature and scope of the expanding role of information and communication technologies (ICT). (Ramani,2004) suggested successful IT enabled applications telemedicine, e-governance for government hospitals in India. The public-private partnership in the telemedicine project demonstrated improvements in delivery of healthcare services to people in a remote district. (Sudhamony, 2008) also supported for telemedicine is the transfer of electronic medical data from remote areas to centers where experts or well-equipped hospitals are available. Also (World Health Report, 2008) comments that the Internet is a key factor in Information and communication technologies enable connectivity with people in remote and underserved areas.

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(Sandelands, 1997) explored the advantages to health-care professionals of various Internet services, both as a source of information and as a communications platform for management development. (Southard, 2000) have accepted health care organizations have employed decision support applications and Internet technology as an innovative tool that reduces process time, makes diagnoses more accurate, and diffuses knowledge to the health care community.(Kaur & Gupta, 2006) found in a study that e-health helps to improve health care locally, regionally, and worldwide. (Puri *et al*, 2009) addressed the challenges of developing participatory networks to support the design, development and implementation of Health Information Systems. (Kaye *et al*, 2010) Healthcare information technology is a key factor in improving quality and reducing cost in healthcare.

(The American Telemedicine Association, 2006) supports for a system for coordinating the disparate medical record numbers, an automated system of validating individuals' identities. (Liebert, 2004) determined that electronic health record system reduces healthcare costs and improves quality-of-life. (Higgins, *et al*, 2015) gives factor that are supporting use of health IT i.e. a learning culture electronic health record system, decision support system. (Chatman, 2010) Cloud computing is changing the face of health care information technology for the handling of electronic health records (EHRs). (Heiton, 2010) explores that EHR technology can be used in the conduct of fraudulent actions through misuse of data captured in the EHR to prepare false claims for payment.

(Pedersen and Larsen, 2001)distributed Knowledge Management model proved its efficiency in sharing and exploitation of data in decision support system that pushed forward relevant knowledge to decision-makers such as doctors and other administers. (Taylor & Wright, 2004) Investigates knowledge sharing in one public service context and identifies factors that influence the readiness of an organization to share knowledge effectively. Also explored that an innovative culture, a capacity to learn from failure and good information quality are strong predictors of successful knowledge sharing. (Nawakda *et al*, 2008) in a study reported that it is difficult to create a knowledge sharing culture in an environment under pressure involving medical and administrative staff. IT systems need to be utilized as the backbone for exchanging information which is needed to be replaced to an open system.(Ebrahim and Hamid, 2008) proposed that implementation of KM had many positive impacts in terms of planning and decision making.

(Sanghani, 2009) explores that knowledge sharing is one of the core tasks of the running organizations to maintain their performance in competitive era. (Batra, 2010) made a study about the knowledge management process includes creation of knowledge by sharing and collecting tacit and explicit knowledge of employees of an organization and capturing it, applying it to get optimum output of Knowledge. (Hameed, 2010) tried to find out that health sector is very much interconnected and interrelated so a successful initiative in one department can be easily extended to practice in other departments. For effective use of knowledge and information in health sector, necessary skills needs to be developed to store, retain and share knowledge.

From above literature review Information technology and knowledge sharing systems are the core elements of knowledge management practices.

3. Objectives of studies

This paper focused on knowledge management practices in Indian healthcare sector for the purpose of doctors' workload management. By identifying variables of knowledge sharing and information technology in healthcare sector. Study also finds the impact of knowledge sharing and information technology on doctors' workload management.

4. Methodology and data collection

In order to decide the use of research design an exhaustive literature review was done on knowledge management practices for healthcare. On the basis of review it is decided to use descriptive research design as it will be appropriate in studying the objectives defined. A sample of 100 hospitals with minimum hundred beds has been taken for different regions of the country by convenience sampling. For primary data collection a structured questionnaire was designed and circulated among sample of 2 doctors from each hospital and total of 200 doctors was taken and their views formed basis for further analysis and interpretation. Descriptive analysis, ANOVA, factor analysis, reliability analysis and multiple regression analysis sing SPSS 20.0 have been used in the study.

5. Data analysis and Discussion

Table 1 Doctor's view point regarding system implemented for knowledge sharing

S. No.	Statements	Exist %	Non exist%
1	Internet	93.5	6.5
2	Intranet	38.5	61.5
3	Conferences	88.5	11.5
4	Seminars	95.0	5.0
5	Catalogues	65.5	34.5
6	Booklets	63.5	36.5
7	Research papers	58.0	42.0
8	Heath reports	65.5	34.5
9	Discussion groups	73.0	27.0
	Overall	**71.2**	**28.8**

Table No 1 shows that perception of doctors towards the availability of tools in health organization for knowledge sharing.

Table 2 Doctor's view point regarding implementation of knowledge management practices

S. No.	Statements	Cronbach's Alpha if Item Deleted	Mean Scores
1	Participation in decisions making	0.802	4.38
2	Adoption of recommendations of groups	0.792	3.79
3	Information movement	0.792	3.86
4	Learning for knowledge	0.793	3.86
5	Acquires knowledge from other members	0.786	3.92
6	Technology and standards	0.786	3.75
7	Experience sharing	0.786	3.96
8	E-health system	0.800	4.11
9	Automation	0.797	4.13
10	Patients' case history	0.789	4.24
11	IT treating patients of remote areas	0.794	4.10
12	Innovations	0.788	4.24
13	Information sharing	0.792	4.29
	Overall	**0.805**	**4.04**

Table 3 Varimax Rotated Factor Matrix

	Variable	Factor1	Factor2
1	Participation in decisions making	[0.513]	0.028
2	Adoption of recommendations of groups	[0.681]	0.042
3	Information movement	[0.500]	0.256
4	Learning for knowledge	[0.585]	0.123
5	Acquires knowledge from other members	[0.678]	0.16
6	Technology and standards	[0.758]	0.064
7	Experience sharing	[0.622]	0.223
8	E-health system	[0.442]	0.158
9	Automation	0.108	[0.625]
10	Patients' case history	0.121	[0.766]
11	IT treating patients of remote areas	0.198	[0.602]
12	Innovations	0.147	[0.750]
13	Information sharing	0.101	[0.752]
	Eigen values	**3.304**	**2.657**
	Explained Variance per Factor (%)	**23.336**	**20.436**
	Cumulative %	**23.336**	**43.773**

No. of cases 200, [ ] indicates the highest loading in each row

A valid percentage of responses towards the internet, seminar, conferences, discussion groups, are found to be good and towards the health reports, booklets, catalogues are found to be moderate, but availability/uses towards intranet is found to be very low, that is 38.5. Also the research papers circulation and participation are found to be moderate.

Reliability of items was assessed by computing coefficient of Cronbach alpha. Cronbach coefficient measures the inter consistency of the items. Value of coefficient alpha above 0.700, is considered to be reliable. This table 2, Cronbach alpha coefficient is 0.805 that indicates more consistency within the items of a group. Mean scores of these items is also shown in this table which indicate more than 3.75, which is best indication of doctors' perception towards KM in health organization.

In order to find out the actual factors of knowledge management practices thirteen sets of possible causes were identified that are affecting technology strategy with Doctor's view point that how Information technology is beneficial in healthcare practices.

The factors for Doctors are:

Y_{DS} = Doctors Strategy
Y_{DS} = f (X_{PDM}, X_{ARG}, X_{IM}, X_{LK}, X_{AKM}, X_{TS}, X_{ES}, X_{EH}, X_{AM}, X_{PCH}, X_{IT}, X_{IV}, X_{IS})
X_{PDM} = Participation in decisions making
X_{ARG} = Adoption of recommendations of groups
X_{IM} = Information movement
X_{LK} = Learning for knowledge
X_{AKM} = Acquires knowledge from other members
X_{TS} = Technology and standards
X_{ES} = Experience sharing
X_{EH} = E-health system
X_{AM} = Automation
X_{PCH} = Patients' case history
X_{IT} = IT treating patients of remote areas
X_{IV} = Innovations
X_{IS} = Information sharing

Data analyzed by extracting factors using principal component analysis with varimax rotation in order to see which factor set could be formed and these results are shown in Table 3.

Table 4 Emerging Factors for Doctors

Factor 1 Knowledge Sharing	
Participation in decisions making	0.513
Adoption of recommendations of groups	0.681
Information movement	0.5
Learning for knowledge	0.585
Acquires knowledge from other members	0.678
Technology and standards	0.758
Experience sharing	0.622
E-health system	0.442
Factor 2 Use of IT in Healthcare	
Automation	0.625
Patients' case history	0.766
IT treating patients of remote areas	0.602
Innovations	0.75
Information sharing	0.752

$Y_{DS} = f(X_{KS}, X_{ITHC})$; Y_{DS} =Doctors Strategy; X_{KS} =Knowledge Sharing; X_{ITHC} =Use of IT in healthcare

Table 5 Multiple Regression Results for Factor1: Knowledge Sharing/ Factor2: Use of IT in healthcare

Independent Variables	Beta Coefficients	t	Significance
(Constant)		1.008	0.315
X_{KS}	0.293	4.258	0
X_{ITHC}	0.25	3.622	0

Dependent Variable: Doctors Workload; Sample R^2 = .205; Adjusted R^2 = .197; Overall Degree of Freedom = 199; F = 25.463; Durbin-Watson = 1.794; Number of Cases = 200

Two factors emerge from the factor analysis of thirteen factors and factor loadings of .4 or greater are enclosed in brackets. The result of attitude of Doctors viewpoint on implementation of knowledge strategy consisting of thirteen components accounted total of 43.773 % (Table 3) of the variance explained. The resultants of factor analysis were two factors labeled as knowledge sharing and use of IT in healthcare (Table 4).

Finally the multiple regression results for factors effecting knowledge management strategy –Doctors' workload from knowledge sharing and use of IT in healthcare point of view (see Table 5) shows that R^2 = .205 F = 25.463 and Durbin-Watson = 1.794.

Doctors believes that Doctors' workload can be managed by Knowledge sharing and use of Information Technology. Results shows that knowledge sharing and use of information technology impacts for better management of Doctors' workload with significant level of 0.000

Conclusion

The result highlights that the doctors are well conversant towards acquiring new knowledge through conference, discussion groups, health reports etc but they are poorly inclined towards availability / usage of IT tools / intranet. There is future of development of intranet with in hospitals in particular and extranet in general for healthcare industry where doctors can acquire new knowledge from industry, colleagues, competitors etc. Two factors that emerged from

Doctors' viewpoint for knowledge management practices were Knowledge sharing and use of IT in healthcare. Both the two identified factors viz knowledge sharing and use of IT have shown to have significant impact on knowledge management practices as Doctors' workload management.

Managerial implications

To explore that knowledge management may be an effective strategic initiative that enables long-term success, enhances value, and helps to increase competitive advantage. The study strives to examine the extent of knowledge management practices in healthcare organizations i.e. management for Doctors' workload.

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