

An Exploration towards Patients opinion about Effects of Information Technology on Health Outcomes

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ABSTRACT

Health information technology (HIT) was introduced in hospitals in earlier 19th century. During earlier days, the HIT only dealt with financial transactions. At recent times information technology is installed in all departments of hospitals to enable faster processes. The HIT also contributes towards better health outcomes. The proliferation towards patient focused processes and applications require increased partnering between public and private parties. The robust regarding implementation of information technology is adoption of electronic and automatic medical records. The information technology when emptied in health care setting delivers and enhances quality, efficacy and safety for both patients as well as providers. But the benefits due to adoption of HIT is not distributed uniformly among various processes, there are differences and difficulties. The present literature puts forth about health outcomes as a result of adopting information technology in hospitals.

Key words: health information technology, electronic medical records, financial transactions, adoption, applications.

Introduction

The technology of health information (HIT) is a comprehensive phrase that widely covers range of technologies which is capable of storing, sharing as well as analyzing information related to health. This HIT may perhaps influence quality of health service that is provided associated with performance of health care provider. This commenced with the endorsement of electronic medical records (EMR) in hospitals. In certain nations like Germany the health care providers are penalized if they are not utilizing EMR. The adoption of HIT will results in better quality, saves providers time, enhances treatment efficiencies, elevate patient participation, etc. The information technology in

hospitals has been tremendously increasing over the past decades. This elevates the patient care quality and eventually transmutes clinical advancements into increased profits, lowered operating costs and mounted patient volumes. Despite the fact that hospitals face numerous challenges and difficulties during metamorphosis of quality enhancements into profits, they give preferences to patients choice and try to fulfill their expectations. The applications like automatic accounting and billing, mechanized supply chain, etc would possibly dwindle transaction cost and boost resource allocation. All these processes when internalized will assist in revenue management and proper documentation. This is evident through clinical systems which enables electronic medical records. The present study highlights significant outcomes and results out of implementing information technology in hospital processes. The current research targets the results of adopting information technology in hospitals with assistance of 15 effects such as errors, medical history, quality, patient safety, communication, records, online facilities, accessibility, data, documents, recognize, cost, clarity, medical errors and affordability.

Review of Literature

Liang et al. (2019) claimed that the information technology employed in healthcare will probably bring in reforms. According to this study, the Chinese government used this technique and attained positive results from hospitals. Therefore, a medical consortium was constituted to implement information technology in all hospitals.

Kim and Choi (2019) explored the willingness of older adults towards adoption of technology in health services. The study tried to find out factors influencing elder ones to disclose their private as well as health related information while using upgraded technology. It is evident from the study that older adults fear about their privacy and security that is the reason why they don't share their health information.

Yang et al. (2015) discussed about the progressing information technology for the purpose of enhancing healthcare service. This is proved with the adoption of electronic medical documentation and records. The other technologies include sensing of health, analysis of medical data, cloud computing of health information, etc.

Nair and Dreyfus (2018) illustrated the significance of aligning technology in the existence of regulatory alterations. According to this study, the meetings frequency and length must be planned using horizon by installing information technology. This study also suggests that hospitals can adopt boosted integrated approach with respect to information technology.

Turan and Palvi (2014) explained about the issues that arise out of implementing information technology in hospitals. Although this provides excellent service quality, the costs of implementation and purchase is really high. The researchers strongly argue that the issues include privacy, security and costs.

Abandu et al. (2019) illustrated about the usage of information along with communication technology in post conflict health services for mothers. This study focuses on techniques such as short messages through mobile phones, calls, ultrasound services and Television services to enhance the delivery of maternity medical services.

Kumar et al. (2019) examined the transmission of medical data with the assistance of monitoring system in health care. This is based on a cognitive technology. This study also spotlighted about the incorporation of cognitive technology with artificial intelligence and usage of simulated annealing for management of data.

Mamlin and Tierney (2016) elucidated the significance and promises obtained from information along with communication technology (ICT) in healthcare. The ICT encompasses health records generated electronically (EMR), exchange of health information (HIE), Portals for patients, telemedicine, wearable sensors, social media, mobile devices and monitors.

Sligo et al. (2019) presented a checklist for hospitals during the transformation and implementation of information technology at large scale. This study depicts that the drastic metamorphosis must take place in structure of organizations, resourcing, requirements for workforce and adaptations according to the market changes.

Fang et al. (2019) demonstrated the understanding and knowledge level of physicians towards implementation of EMR. Their understanding level should incorporate risk perspectives involved, level of service provided and self efficacies delivered. The implications of this study display affirmative response from service providers.

Effects of Information Technology on Health Outcomes

The predominant aim of presents literature is to figure out the effects of implementing information technology in hospitals and benefits gained out of adopting HIT. This is performed with the help of a questionnaire encompassing various results because of using information technology in hospitals. The sample size employed is 105. The respondents are patients of corporate hospitals. The demographic sketch of this study displays information regarding gender, age, qualification and income of patients. The frequency evaluation of demographic sketch is given within table 1.

Table 1: Demographic Sketch of Patients

Gender	Frequency	Percent
Male patients	45	42.9
Female patients	60	57.1
Total	105	100.0
Age	Frequency	Percent
< 25	41	39.0
25- 30	36	34.3
>30 years	28	26.7
Total	105	100.0
Qualification	Frequency	Percent
UG	38	36.2
PG	49	46.7
Others	18	17.1
Total	105	100.0
Income/Yr	Frequency	Percent
< 1 Lakh	47	44.8
1 - 5 Lakhs	39	37.1
> 5 Lakhs	19	18.1
Total	105	100.0

It is clear from summarized frequency sketch that majority are female patients (57.1) less than 25years of age (39.0) who are post graduates (46.7) earning annual income below 1 Lakh. Table 2 gives information about mean analysis to know the effects of information technology in hospitals according to patient's opinion. This is done using likert scale.

Table 2 : Mean analyses for Effects of information technology on Health Outcomes

S.No	Effect of information technology on health outcomes	Mean	Rank
1	Human errors will be reduced (Errors)	2.66	5

2	Tracking of medical history is possible at any time (Medical History)	2.55	12
3	The quality of healthcare delivery will be improved (Quality)	2.81	1
4	Enhanced safety can be provided to patients (Patient Safety)	2.79	2
5	Communication between the patients and providers will be easy (Communication)	2.69	6
6	Accurate medical records (Records)	2.67	10
7	Appointments, consultations, counselling sessions are available online at patients' homes (Online facilities)	2.68	4
8	Medical records are easily accessible (Accessibility)	2.48	13
9	All the medical data can be stored and retrieved at any time (Data)	2.60	8
10	Documentation becomes simpler (Documents)	2.58	11
11	Doctors can understand clearly about the patient condition (Recognize)	2.75	3
12	Reduced time and cost (Cost)	2.65	9
13	Clarity in treatment provided (Clarity)	2.34	15
14	Medication errors will be avoided (Medical Errors)	2.45	14
15	Choosing of affordable health services (Affordability)	2.60	7

Table 2 explains the mean analysis with respect to patient opinion about effects of information technology on health outcomes. It is understood from mean table that increased mean value is held by Quality followed by Patient Safety, Recognise, Online Facilities, Errors, Communication, Affordability, Data, Cost, Records, Documents, Medical History, Accessibility, Medical Errors and Clarity. As a result, it is concluded that patients think that quality will be accomplished due to implementation of information technology. Table 3 exhibits the factorisation of patient perception towards effects of information technology on health outcomes.

Table 3: KMO and Data Deterioration analysis

Measure of Sampling Adequacy (KMO)		0.862
Chi Square (Approx)		584.098
Significance		0.000
	Total	Cumulative Variance

Rotated Sums of Squared Loadings	3.281	21.876
	3.156	42.915
	2.031	56.458

Table 3 represents the analysis of KMO and portrays that data collected is satisfactory for proceeding factor analysis. The total variance obtained displays variance of components. It is clear from table 3 that fifteen effects are grouped into three components and together they demonstrate 56.8% of variance.

Table 4: Grouping of Effects of Information Technology on Health Outcomes

S.No	Effects	Component			Component Name
		1	2	3	
1	Accessibility	0.759	-	-	Information
2	Documents	0.730	-	-	
3	Records	0.724	-	-	
4	Patient Safety	0.586	-	-	
5	Data	0.582	-	-	
6	Cost	0.465	-	-	
7	Online Facilities	-	0.722	-	Service
8	Communication	-	0.676	-	
9	Medical Errors	-	0.643	-	
10	Clarity	-	0.613	-	
11	Affordability	-	0.609	-	
12	Recognize	-	0.526	-	
13	Quality	-	-	0.765	Excellence
14	Errors	-	-	0.668	
15	Medical History	-	-	0.509	

Table 4 displays the grouping of three components based on patient opinion about effects of information technology on health outcomes. Table 5 is about ANOVA which is used to test the opinion difference among respondents based on demographic data.

Table 5: Demographic Outline Vs their Opinion

S. No.	Demographic Profile Vs their Opinion	F	Sig.
1	Age Vs Information	0.877	0.481
2	Age Vs Service	2.617	0.440
3	Age Vs Excellence	0.820	0.331
4	Qualification Vs Information	1.165	0.327
5	Qualification Vs Service	0.370	0.775
6	Qualification Vs Excellence	0.370	0.774
7	Income Vs Information	4.031	0.621
8	Income Vs Service	5.220	0.707
9	Income Vs Excellence	1.473	0.234

From table 5, it is clear that that significance is higher than 0.05 and therefore there is no difference in the opinion of patients with respect to effects of information technology on health outcomes such as information, service and excellence.

Conclusion

Using HIT will possibly assist in transformation of healthcare field and enhance patient safety by leveraging and providing accuracy, efficiency and reliability in all hospital processes. The implementation and support of applications with respect to information technology in hospitals require expertise with skill set to face challenges and take out benefits from automations. Hospitals are at a faster pace in adoption of HIT in order to witness lowered costs , increased profits and improved efficacies. This is beneficial in all hospitals as they get connected to headquarters using fibre optic network, usage of wireless technology, sensing and monitoring applications, involving artificial intelligence, etc. Although, adoption is a little bit tedious task , the outcome will be fruitful.

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