

## Health Information Technology Media by Nurses in Patient Care

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### ARTICLE INFO

Received: January 25, 2019

Accepted: February 20, 2019

Published: March 31, 2019

Volume: 2

Issue: 2

DOI: 10.32996/ijllt.2019.2.2.7

### KEYWORD

*Health information technology, Information technology, nurse, patient care, electronic health record*

### ABSTRACT

Health Information Technology (HIT) is an electronic application of patient management system in health services that yield data for enhanced patient care. This literature review article examined the ability of nurses using HIT. Nurses being the highest proportion of population in the health sector, examining the extent of HIT use from nurses, will provide a clarified outlook on the implications of HIT. Evidential literature search was done in Pubmed, Google Scholar and Science Direct and collectively it yielded 1801 articles. The articles was carefully skimmed for applicability and relevancy. The deemed inclusion criteria was met by eleven articles and it was entirely reviewed and sorted. The findings revealed that for the HIT system to be successful, from the conceptualisation of HIT, to its planning, to designing, to the application of HIT and also at the feedback stage all the members involved and affected by HIT and its implications must be consulted, especially nurses being the major number of health workers in the health care realm, its crucial that nurses are involved in every stage of HIT management and its execution. Application of HIT was found to improve skill of nurse in informatics and electronic documentation. It was found that issues like medication errors, missing-out of service by the patients were reduced. Good standard of practice was also evident by continuation of care, and reaching the unreached remote marginalised communities was the best of all HIT's benefit.

## 1. INTRODUCTION

In Health Service Institutions Media refers to the Health Information Technology (HIT). Towards the ultimate goal of safe patient care and to provide quality care, in India the advancement of Health Information Technology (HIT) has gained momentous support from the National Health Policy 1983 by the Indian Government (2). Among India's healthcare system, the National Health Information system had led to a major reform. Substantial development had been progressed till date however, adherence of local sector and implementation of HIT across individual hospitals and health personnel's by-enlarge is lacking. Every hospital have difference health information system, whistle enduring along the lines of core focus to achieve accurate and safe data sharing is a challenge. Getting connected with the organisational standard of practise to implement the national program must instigate health care participants to take proprietorship in safe health care delivery to achieve health for all status. Acquittance of information technology has influenced and shall continue to inspire the nurses to

update their knowledge in various areas of healthcare (Ng et al. 213). Appropriate efficient use of HIT enable quick access to the required information for the patient care analysis and management. Particularly, in patient service, this shall reduce the reiteration of health information as the individual patient receive care, similarly the significant health care team will also have access to the required health information by maintaining privacy confidentiality of the patient's identity. These aspects of development is promised to the users of the health system, through the process of information and the ability to use the HIT (Staggers et al. 195).

In this digital era if health care institutions to meet the health standards, major health care reforms, especially in information technology programs got to happen in the near future. In this line of thought, nurses being the majority of the healthcare sector must reflect on the health information technology which is a crucial indicator for better healthcare prospects in the future. Nursing is an area of specialisation which connects the nursing science with manifold information

management, analytical skills to define, identify, manage and communicate data, information, knowledge and insight in nursing practice. The term E-health as defined by the Royal College of Nursing 'concerns to promote, empower and facilitate health and wellbeing with individual, families and communities and enhance professional practice using information management and information and communication technologies'(RCN 1). It is expected that HIT will benefit by maintaining safe patient care by reducing medication error (Waneka and Spetz 513).

The commonly used HIT that are capable to retrieve patients results and records, and enhance professional education and development. In the field of nursing, at all levels of nursing care a significant and purposeful use of HIT depends on the resourceful availability of opportunity for which it is crucial for the nurses to effectively and diligently use the information technology.

## **2. HEALTH INFORMATION TECHNOLOGY AND NURSES**

In India there are over 1.79 million registered nurses and midwives (Indian Nursing Council, 1). At an average the nurse to patient ratio in India is 1:475.14 which includes the registered nursing officers (staff nurses) and midwives ( Narang) 1, INC 1). In the healthcare sector the conversion from paper to electronic records by due involved change, in India it is claimed as e-health. By enlarge nurses constituting a larger proportion of the healthcare population, these programs on health information technology will profusely impact the implications of the projects. In adhering to the change first nurses must overcome the natural resistance to change. For this nurses must insightfully learn to perceive that the issue with the system, and must reflect on the improved process that would exist. Next, the individuals or communities facing the change should be positive and adaptive to update their knowledge on the new process of learning and working and must feel safe with the learning pattern through the mentor, for some it could be self-motivation too. In addition, it will be crucial for the nurses to understand that innovation do exist and so evolve with time and they must also be convinced that their idea may also be benefiting. The individuals or group must later choose and decide to utilise the innovation and act towards the implementation of the change. Finally, there must also validate the innovative procedure and exemplify that innovation is a development of the previous version of practice towards a novel approach for the best practice in nursing science.

The strategy of current and future application and wider use of information technology in nursing service

are uniform across the globe. Multitude of nurses as healthcare providers are influenced. For the process of the use of these applications to be useful and successfully implemented at the services, positive inclination of nurses towards the HIT is an important step. In this perspective nurses opinions on using technology must be appraised before applying any system modification. Nurses must believe that the electronic system in suited at the health care institutions over paper record will improve patient care services and at the same protect nurses lawfully. For this nurse administrators and policy makers must provide comfortable learning atmosphere and maintain sufficient feedback and follow-up support to the nurses when the system is in place (Ifinedo 317). As we have entered and are in the digital era of information technology, this literature review paper has examined the influence of information technology and the effective application of these technologies by the nurses. This will further enhance the nurse administrators and managers to plan strategically for incorporating HIT with the health services for better nursing care delivery.

## **3. LITERATURE REVIEW**

The main keywords used for the literate review string was nurse, patient service and information technology in PubMed. Articles published in English study was chosen from 1st January 2008 to 1st September 2018 pulled 1801 articles. The Google Scholar search string of same keywords yielded 181 articles and Science Direct pulled 208 publications. The article titles were again carefully read and sorted for relevance and abstract was carefully read for pertinent articles. For to be analysed for the review, the articles were to be based on original research publication, published in peer-reviewed journal. The criteria framed for the review considered articles that were focused on registered nurses adherence to technology for patient-care-services. For instance, if multidisciplinary studies were found, the nurses data was interrogated from the results. Other studies done with allied health workers, physicians and per say nursing students were not included, and the evaluation criterion tool was developed. The studies were also not limited to the registered (staff) nurses and nursing officers practicing at India. 11 articles adhered to the mentioned review inclusion criteria and they were subsequently reviewed.

## **4.LINGERED USE OF HEALTH INFORMATION TECHNOLOGY**

Health information technology is commonly utilised in health care sector from hospitals extending to the community health care setting. It also enables accessed care and delivery that widens health care network from public hospitals to specific remote

regions, where it might be largely unfeasible to provide consistent health services similar to urban cities. Modern electronic devices for communication, permits nurse to access patient record, have a look at the information and jot-notes on patient care, plan service appropriately from anywhere from the world. Telenursing is also another aspect of nursing services with HIT, which facilitate the information technology to a higher level of patient care. It enables to reach-out to patients in rural and remote regions, dealing patients by delivering audio-visual support in health care. The manifestations of telenursing include home-monitor, assessment of physiological measure, and provide support to self-management of chronic ailment and video conference. The information pertinent to clinical aspects can shared (with patients consent) with other professional team members from national and international expertise (Loh et al.) 25. Telehealth is a means of health care delivery by utilising technology over a distance with telecommunication. In consideration of the HIT lingered by the nurses there seems to be a positive adherence to it, and the fact that it grant to the hospital, residential and community patient care is enormous.

#### **5. DEMOGRAPHIC INDICATOR**

The perception of the nurses as along with their ability and knowledge in using HIT influences nurse use of HIT and this directly and/or indirectly was supporting the nurses to apply these technologies for patient care (DesRoches et al. 164). The demographic variable of the reviewed article pulled data from full time and part time nurses, informing their gender and educational status. However, these were not deemed to be indicative of nurses adhering to use HIT. Though it wasn't proven statistically but positive correlation was found for those nurses who had computer skills (Kossman and Scheidenhel 73). It was also found that lesser the nurses' age group, more significant there were inclined in using HIT, at the same time rest of the staff including senior nurses were also found to show keen interest in updating their knowledge in HIT, this reflected their dedication for patient services adhering with the mandate standards of health care (Ng et al. 210). As per the precepts of patients dignity, nurses signposted the threat in desensitising patients health services and it was perceived as an intimidating factor (Huryk 610). Nurses with more life experience and nursing background did have trust in the confidentiality of the system and this enabled them to use HIT to the need as required to the fullest. Those nurses who believed the system may have gaps in intimidating the patients image and privacy exhibited restrained use of the system. The resistive nurses were also found to be more cautions in using information technology and they were worried on the legal implications (Staggers

et al. 194). In addition, the frequent concepts that popped up was the disappointments with the system and the system interruptions influenced by compromised HIT literacy of the users (Eley et al. 1155). Nurse researchers were linking the system capacity compared with other nurses. Pain nursing care team nurses also appreciated the HIT in comparison. Commonly oncology unit nurses, used it to monitor the patients pain management, followed with the renal nurses and then the others (Loh et al. 3)

. The bar coding system was together applauded by all the nurses, and this was a factor maintain the confidently of patients with the core health care team members. It was also shown that subsequent staff development programs on HIT and the use of updated system of health care management was found to be more useful (Waneka and Spetz 512). Decades before writing the nursing care plan was an effort and using the HIT with imbibed system management of patient care was positively acknowledged by the nurses. At the same time it was highlighted that the nurses were not involved and weren't consulted in making improvements in the patients HIT system, this was reflected on the poor and repeated system update (Ifinedo 317). Other impeding factors referred by the nurses was the competing availability of the computer system, as other health care team members also had to use the computer at the same time (Unertl et al. 396). It was reported that the automatic notification of the scheduled procedure for instance giving medication, pre-operative management of patient, getting the progress chart of the patients health status etc. was a remarkable use of HIT. Though the time spent by individual nurses for the HIT was variant, many nurses felt that it uplifted the nurse-patient rapport by nurses being able to inform the patients on the tailored health care services depending on the condition of the patient (McCullough et al. 654). It was also found that patients were given the choices of services and they can choose the one that would best suit the patients' own need.

#### **6. FACTORS CONTRIBUTING HIT IN PATIENT CARE**

Investigation of the registered nurses application and the usage level of HIT among nurses for the patients was carried out. Results from statistical analysis indicated overall nurses were optimistic in using the technology. Level of acceptance of HIT was predominantly high among the nurses who had higher level of knowledge in using information technology. Consistently the nurses informed the trait of using HIT for patients was mostly influenced by the nurse managers, whereas the Nurse Director provided the environment for the application of HIT for patient-care services. It was also evident that if the nurses were allowed to use HIT in a positive environment, their

competency in using HIT was also higher. There was also positive correlation between familiarity of nurses to use HIT with their intended ability to use HIT (Huryk 610). Nurses who were acclaimed to use information technology, had positive feedback on the system when they encounter system downtime and slowness. Overall, in the recent decade use of HIT for patients by the nurses is increasing and nurses also remark that their repetition of care was not required to be repeated.

## 7. INTEGRATION AND IMPLICATION OF HIT

The influence of information technology is inevitable and so it has influenced the health care as along as HIT. The cruxes of successful application of HIT in patient services rely on the capability of the nurse to learn and integrate HIT in the system of health service. For which the nurse administrators have to take leadership and work with the team in designing the HIT, provide the resources and make feasible user friendly, at the sometime maintain the confidentiality of the patients. There must be provision for an ongoing learning and supportive measure. The end users, such as the nurses must be involved right from the beginning of the system designing, operation and management. Most importantly the HIT must be an integrated process imbibed with the workflow of nursing services professed as an advanced system as opposed to the prerequisite. Adequate scheduled safe learning environment and training on HIT to the nurses will enhance the nurses effective uses of HIT for patient care, and training must also focus on advanced skill before application and subsequently as required. Insufficient training upsurge discomfort in using the system, and it may possibly lead to unsuccessful HIT project execution. There must also be a channel for feedback and provision to update the system with quality output. As along keeping the nurses and clinicians updated with the outcome of HIT on the prospects of patient care will inform the nurses to realise the use of HIT and it will also motivate them to continue using HIT to its best (Ifinedo) 317. To advance the system of HIT, it must keep evaluating itself and finding the gaps in the system must improve its performance by closing the system gap. Further research can also be done in understanding the HIT system gaps and address it with actionable strategies for implementation.

## 8. REFLECTING ON THE HIT SYSTEM GAPS

It is true that not every aspects of HIT could be constructive. The pitfalls might be lack in getting adopted with the mundane working system of patient care, may be its possible that there could be doubling of records and reports, else it might be challenging to maintain confidentiality of patient's information. Currently with continuous system update, the issues

might be minimal, however no error can be neglected. Capacity to be adoptive to the ever changing technology could be a challenge. Adequate technical support, reaching the unreached and taking the HIT services to the underprivileged health services in remote regions should be a target to achieve in the near future.

## 9. DISCUSSION

The study findings revealed that nurses were well acquainted in using HIT for patient care, they illustrated optimistic views on the progress of HIT. Factors associated with effective application and use of HIT involved nurses confidence in using general information technology, adequate support system while using HIT, enhanced patient care, easy adoption of system and provision of safe and sound HIT in conducive environment and reduced duplication of documentation. The nurses echoed more time for patient care, and informed that they were able to visualise the continuity of care that was and will be provided for the patients (Huryk 608). They also highlighted that medication error, negligence of service and overseeing patients report were lesser. Overall nearly the nurses informed that, their involvement in HIT, right from designing the application will minimise the risk of the system not being used. It was also informed that it was better than paper documentation, where in retrieving archived documents for continuity of care was a positive mark of HIT. It was insisted that nurses new to the HIT system, with addition training will guarantee adequate use of HIT (Ifinedo 317). It was recommended to have concurrent feedback on the system, to make the best use of the technology in a safe way.

## 10. CONCLUSION

Incorporating HIT in the healthcare system is possible to improve patient services in a cost effective way. Ongoing training program to updates nurses' knowledge and skill in using HIT will enable achieve the purpose of HIT to provide best diligent care to the patient by improved medical outcome. For sustainable future ardent application of HIT and legitimate support to the nurses as uses will take health care to the unreached remote and marginalised population

## ACKNOWLEDGEMENT

This work was supported by Ln.J. Theobald Vasigaran PMJF and we thank his in-kind contribution. The authors of this literature review paper acknowledge the Authors and Researchers of the reviewed and cited articles.

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