Impact of Technology in Better Dispersal of Health Care Methods and Improving Health Care Systems

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Abstract

Background: Using new information technology (IT) has provided remarkable opportunities to decrease medical errors, support healthcare specialist, increase the efficiency and even the quality of patient's care and safety. Studies are few which actually deals with the outcomes of the patients and improving the healthcare dispensing by health care workers and hence the study.

Methods: A six month prospective study among 40 enrolled health care workers (doctors and nurses) by dividing them into two subgroups; one using conventional paper work and other using electronic health record system, computerized physician order entry, patient clinical information systems and using mobiles for health care. They were given instructions at the beginning and end of six months and data collected using single blinded method based on a questionnaire.

Results: The study observed that doctor (90%) and nurses (95%) found that CPOE has improved their health care dispensing but it did not affect the outcomes of the patients in the long run. Another important finding in this study was the use of cellular phones which has helped the health care workers (85% doctors and 70% nurses) in better health care especially in following up patients who were unable to attend follow-up. Also, there was work flow improvement by 20-fold reduction in the delay from writing admission orders to the execution of those orders. However, this need large infrastructure to set up and maintain it.

Conclusion: Though there was reduction in the paper related work load of conventional method and was time saving, it however did not affect the outcome of the in patients significantly ($p > 0.05$) in the long run but helped in the post discharge patient care.

Keywords: Technology; Healthcare; Improvement; Methods; Data storage

Introduction

age in each subgroup; 5 each were males and remaining 5 of them were females. All the staff enrolled in the study falls in the age group ranging from 20 – 35 years. The HCWs enrolled were selected based on their ability to use electronic system or not though this was not disclosed to them when they were enrolled. This was done in a single blinded manner.

in case of late infections developing after discharge. A total of 85% (17/20) doctors and 70% (14/20) nurses gave positive response regarding the easy access and better health dispensing to the patients through CBPMIs.

Another observation from this study was the reduction in the workload created by the paperwork and avoidance of the slow processing of admission of a patient to its access of his/her information to other health care working involved in healthcare though not in the immediate treating team. Doctors told us they were 80% (16/20) satisfied with faster work and reduction in the paper work processing and a total of 90% (18/20) nurses said that it had removed many of their loads. Also, while retrieving healthcare information, doctors found 50% (10/20) discrepancy in the electronic method as compared to the conventional method; though its time consuming to retrieve a file and subjected to wear and tear and data loss. A total of 70% (14/20) nurses noted the discrepancy. It was also observed that health care workers who had knowledge of technology like computers can access the data easily and can also update the data. Here, proper training in the use of the technology and knowledge of the medical terminology were needed and staff who does not have much knowledge about the electronic system use need to be educated regarding its use compared to using the conventional system of using pen and paper work. Hence, this was a drawback which we have observed in this study.

Another important finding from this study was that though technology has improved our easy access to the health care systems and better dispensing of the medical information leading to reduced workload in terms of paper work and storage, it didn't affect the final outcomes of the patient either in terms of morbidity and mortality significantly ($p > 0.05$). These findings were observed equally by both the doctors and nurse each (70%, 14/20). This was done based on comparing the mortality report from those departments where such an electronic system is being used with those departments where such a system is not used. The study found that monthly mortality in those areas where such a system was used and hence enrolled in our study (Medicine, Surgery, Orthopaedic, Neurosurgery, Emergency medicine, Pathology and from Anaesthesia and Critical care Departments) was 15 per month (mean) whereas those departments where such a system was not implemented (Ophthalmology, Otorhinolaryngology, Pediatrics, Psychiatry and Obstetrics and Gynaecology) was 16.5 per month (mean). Hence, the study did not find any significant change the final outcomes of the patient ($p>0.05$) though some improvement was seen in those departments where such an electronic system was used. Further studies need to done on this. Large infrastructure was also needed to maintain such a technology and hence its implementation.

Discussion

Our study found 75% improvement in the work output and performance by using the technology while dispensing health care and that was quite an improvement over the conventional method. This however did not affect the outcome of the patient in the long run. Similar findings were seen in another study [4]. Another major issue overcame by the CPOE was the elimination of sloppy and ineligible handwriting and hence better dispensing of the medical instructions. This was seen in our study and supported by another study [4].

Our study did not observe any direct health benefit outcomes from CPOE. No study has shown any direct health outcome benefit from CPOE, and we doubt that CPOE (order entry by the physician per se) systems will produce lifesaving benefits that cannot be delivered by other computer processes (e.g., checking on drug dosages when pharmacists enter the orders or reminders delivered to physicians through other mechanisms)[5]. On the other hand, CPOE systems definitely can have large importawe benefiwe ot inec. through oti N M= oimilar the ispensing f ealth are ystems