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REGULAR ARTICLE

IMPROVEMENT IN HEALTH CARE SERVICES USING INFORMATION AND COMMUNICATION TECHNOLOGIES (ICTs) BY COMMUNITY PHARMACY

SUNIL JAWLA[1*], D. V. RAI[2]

[1]Adarsh Vijendra Institute of Pharmaceutical Sciences, Shobhit University, Gangoh, Saharanpur 247341, UP, India

[2]Centre for Biological Engineering, Shobhit University, Gangoh, Saharanpur 247341, UP, India

ABSTRACT

Information and communication technologies (ICTs) are improving health services throughout the world. Health information and technologies (HITs) involve application of information processing using computer for storage, retrieval, sharing and use of knowledge for communication by a pharmacist. Similarly, electronic prescription (EP) services have made the dispensing and reimbursement processes more efficient. Maintenance of patient record become easy by using ICTs. Barcode identification of medicines can be used to decrease drug administration errors and to improve the medication history of patients. Telecare using digital communications technology provides healthcare consultations and other health care services to rural, old and handicap patients easily and improves their access to healthcare by reducing their hospital attendance. In developing countries, it is quite a challenging task to provide access to information and communication technologies. As the geographical diversity is also a challenging for implementation of ICTs at everywhere. Information and technologies are giving a way to access the data all over the globe. ICTs have brought transformation in health care sector all over the globe. Information and technologies are helping patients in correct medication and treatment. In the field of pharmaceutical sciences, ICTs can further enhance the qualities of services provided by community pharmacist to indoor and outdoor patients. As lots of modifications and newer drugs are coming in the market, it is quite a challenging task to a pharmacist to update knowledge to serve the society in an efficient way. ICTs can be utilized in health care sector to improve quality of patient centric services.

Keywords: Information and communication technologies, Health information and technology, Electronic prescription, Barcode identification, Telecare, Community pharmacy

INTRODUCTION

During last 40 y, information and communication technologies have major impact on the health care services for patients. Automated information processing has an advantage, hence most of countries are using computer technology. In present scenario newer technologies are introduced in the education system for further improving quality of education. Education is improving quality of life since the time immemorial and is back bone of civilization of world. Information and Communication Technologies (ICTs) means all sources that can be deployed for realising the goals of teaching learning, enhancing access to resources for improving education (1). For a community pharmacist, ICTs can help in maintaining patient's record, electronic prescribing, dispensing and administration of medicines. It also provides a tools to monitor the efficacy and safety of drugs (2-3). ICTs can improve patient safety and provide high quality care to the patients. Community pharmacists are already using computers to support their daily activities to provide health care services worldwide (4). Pharmacy management system is used for maintaining medication records, dispensing, labelling, packaging, and also controlling buffer stock (5). However, many pharmacies do not use all of the available facilities due to awareness and availability of man power in developing countries.

Impact on community pharmacy

By using information and communication technology drug therapy may be optimised for patient care. By using ICTs safe and effective drug distribution is possible. A consistent and coordinated approach is required for implementing new information and technology in the field of pharmacy. As field of pharmaceutical sciences is very vast and lots of changes are taking place every day. Information and communication technologies can be utilized for enhancing teaching learning process and improving quality of education. Community pharmacists can also expertise their skills by knowing latest developments in the field by using information and technology (fig. 1.) (6-8).

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*Corresponding Author

Sunil Jawla

Adarsh Vijendra Institute of Pharmaceutical Sciences, Shobhit University, Gangoh, Saharanpur, UP, India 247341

Email: sunil.jawla@shobhituniversity.ac.in

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Fig. 1: Use of information and communication technologies by community pharmacists

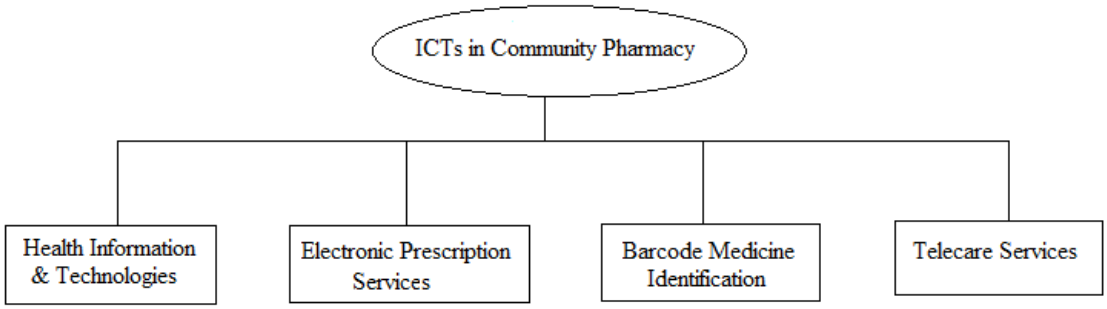

Fig. 2: Block diagram representing recently used ICTs in community pharmacy

New studies are designed by using health information and technologies for enhancing qualities of health care system. There is tremendous scope for improvement in quality of pharmaceutical field by using information and communication technology for serving the community. A pharmacist must update their knowledge to provide better services and right medication to the common person. Communication and information technologies are used in different ways to improve the services of community pharmacy (fig. 2) (9-11). Internet access to every person is an important issue and governments must move in this direction, so that all the information available should be in reach of health care professionals and patients (12).

Health information and technology (HIT)

Latest computer hardware and software are now used for storage, sharing and use of health knowledge for communication to common masses by health care service provider. By sharing health information using information and communication technologies, lifestyle of peoples can be improved. Various studies were designed on quality and safety outcomes of health information and technology based on a triangle model. This model is based on identification of structure-level predictors, including the technology itself; the health care service provider; and the patients. It specifies the variables to be estimated in the study and include both qualitative and quantitative analysis of data. Impact of health information technology on quality, efficiency and cost of health care services are specifically studied (13).

Health information and technology is not completely adopted by community pharmacies. As per survey in 2007, about 80% of community pharmacies are using automated dispensing and repackaging of medicines. However, in only 46 % cases; bar-code medication or electronic administration of drugs are used. As per survey in 2010, 14% of community pharmacies are using inpatient computerized order entry, having decision support system. Health care professionals can update their knowledge and can contribute to the welfare of society. The field of pharmaceutical sciences can be further improved by using health information and technology. Patents may be cared efficiently and medicine information can be provided efficiently (14-15).

Electronic prescription services

Electronic prescription (EP) services have made the drug dispensing processes more efficient for community pharmacist. Maintaining patient record systems will help pharmacists in providing patient-centric services. Accurate transmission of patient discharge prescription prevents errors due to miscommunication of drug information. It is important to provide efficient health care services to the patient. Currently most of hospitals and community pharmacy are adopting electronic discharge systems. But these electronic prescription systems have inadequate support functions, and as a result of which data is not in a standard form. A major drawback of the EP system is that it does not share the discharge information to community pharmacists. In early 1990s, EP systems were designed

and developed by United States, but in UK only few hospitals are following EP systems (16-17).

Generally electronic prescriptions are shared electronically to the community pharmacist, to gap the bridge between hospitals and pharmacists regarding patient safety. In addition to dispensing drugs and medication counselling, the duties and responsibilities of pharmacists in community are continuously expending. The pharmacist need support by additional information and knowledge, to council the patients about the prescribed medication use and to evaluate efficacy, and safety of drugs (18-20).

Barcode identification of medicines

Barcode identification of drugs is useful along with electronic prescription system in decreasing medication errors and improving the completeness of the drug administration history of patients undergoing treatment. The Falsified Medicines Directive (FMD) system was implemented in community pharmacy in United States in 2017. By using FMD system unique identification i.e. bar coding of medicines in dispensing area, to avoid substitute or fake drugs. By scanning the bar codes of medicines patients are prescribed with exact medicine and it has further improved the services of community pharmacist (21-22).

Counterfeit drugs containing the wrong medicaments or without active pharmaceutical ingredient (API) is a significant challenge to community pharmacist while dispensing the drugs to the patients. Barcode identification technology prevent medication error by providing the exact information to the community pharmacist and provide better health care services to the patients. Raman spectroscopy is generally used in reading bar codes of medicines, which is useful in preventing drug counterfeiting (23).

Telecare services for outdoor patients (OPD)

Telecare services utilises the digital communication technology to dispense health care services to outdoor patients residing in rural areas. Audio and visual technologies are an efficient way to communicate with patients regarding their dose regimen. This system provide care to old and handicap patients and supports them in their medication. Due to telecare services paediatric and geriatric patients may have efficient healthcare services and decreases their inconvenience of attending hospital. It can minimise the travelling times and costs of health care services to poor patients especially in developing countries. By using telecare services for remote consultations, along with electronic prescription system can transform the health care services provided by community pharmacist to rural and semi-urban patients. However, use of telecare services in community pharmacy dependents on the availability of communication media and willingness of hospital administration to invest in this area (24-26).

Impact ICTs on other fields

ICTs can help in choosing the treatment options like ayurvedic, allopathic and homeopathic systems of medicine (27). As the information and communication technologies are spreading in service provider sectors, ease of accessibility and improvement in services provided to the customers associated in various sectors. Improved software is supporting the daily operations of many organisations. ICTs is useful in design, development, operation, analysis, maintenance and management in a systematic and efficient manner. Technology is a global commodity and helping in various sectors to work on any project. In the current scenario the team spirit is on the rise with the advancement of ICTs all over the world. Globalization of education must support the technology transfer using ICTs in an efficient way (28-30).

CONCLUSION

Health information and technologies (HITs) involve information processing using various software. Software play an important role in HITs for storage, accessibility, sharing the information by community pharmacy. Electronic prescription (EP) services have made the dispensing and reimbursement processes more efficient. Maintenance of patient record become easy for community pharmacists in providing patient-centric services. Barcode identification of medicines can be used efficiently to decrease drug administration errors and improve the health care services provided by community pharmacist to both outdoor and indoor patients.

Telecare services use digital communications technology to provide consultations and other health care services to rural and sub-urban patients. It can provide efficient services to the geriatric, paediatric, handicap patients, and improves accessibility to the healthcare facilities by decreasing their hospital attendance. Management and administration must utilise the latest developments in the field of communication and technology to provide better services to the patients. Internet access and availability of ICTs is also an important issue, to provide information to health care professionals, patients, community pharmacist and all stake holders.

CONFLICT OF INTERESTS

None

AUTHOR'S CONTRIBUTION

Prof. Dr. Sunil Jawla carried out exhaustive literature survey to include the latest communication techniques used by community pharmacist. He compiled all the reports and data in the shape of a manuscript.

Prof. Dr. D. V. Rai edited the manuscript and helped in finalising it. He suggested to include the previously published reports in the manuscript.

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