Interventions of Clinical Pharmacist to Improve Safety in Patients Suffering With Neurological Disorders: A Prospective Observational Study

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ABSTRACT

Clinical pharmacy services aim at improving the health care system by diminishing the prescription errors, rationalising the treatment and reducing the cost of treatment. The primary objectives of the studies were to detect the drug related problems, to observe patient's progress to drug therapy and to assess the effectiveness of pharmacist participation in improving patient care. In this study, 197 medication errors were identified from 152 cases of patients suffering from neurological disorders. Most common medication error was drug interactions (53%), followed by insufficient lab data (13%) and untreated indication (10%). A total number of 74 pharmacist interventions were recommended to the physician, out of which 59% of interventions were accepted. Clinical pharmacist's interventions assisted in early detection of drug related problems and prevention of consequent patient harm. We concluded that if a pharmacist and a physician work in collaboration, it can improve the patient's therapeutic outcome.

Keywords: Drug related problems, pharmacist interventions, neurological disorders, drug interactions.

Subject: Pharmaceuticals

INTRODUCTION

"Clinical Pharmacists are the professionals who are granted patient care privileges by collaborating physicians and/or health systems that allow them to perform a full range of medication decision making functions as part of the patient's health care team" (ACCP, 2017). Clinical pharmacy services aim at minimising the inherent risks associated with medication use, increased patient safety during drug therapy and optimise patient health outcomes. The Joint Commission on Accreditation of Healthcare Organization (JCAHO) has recommended that all prescriptions must be reviewed by pharmacists before dispensing and stressed that the outcomes should be documented as a result of direct patient care by the pharmacy (Liya et al., 2003).

Medication Errors
A medication error is any preventable event that may occur or lead to inappropriate medication use or patient harm while the medication is in control of the healthcare professional, patient or consumer (NCC MERP).

Types of Medication Errors
According to the stage of the medication use cycle in which they occur, medication errors are classified as prescribing errors, dispensing errors and administration errors (Rehan& Bhargava, 2015). Medication errors are categorised into nine categories from A to I (NCC MERP). Categories A to D indicates no harm to the patient, whereas categories E to I indicate definite harm to the patient with category I indicating possible death because of medication error.

Pharmacist Interventions
In a clinical intervention, the pharmacist identifies and makes a recommendation in order to prevent or resolve a drug related problem. Clinical pharmacist interventions play a major role in improving the safety, efficacy or cost effectiveness of medications which illustrate the significance of pharmacist in every aspect of patient care. The outcome of pharmacist interventions includes patients' satisfaction, medication appropriateness, health related quality of life, adverse drug reactions and economics. Involvement of pharmacist in clinical decision making avoids drug related problems. Pharmacist interventions can result in positive patient outcomes (Bosma et al., 2008; Bieszk et al., 2002)

MATERIALS & METHODS

This is a prospective observational study carried out in tertiary care hospitals of Warangal region for a period of 6 months. The study was approved by the institutional human ethics committee and the patient's consent was taken. Our study population included all in-patients diagnosed with neurological disorders put on medications. The patient information was obtained on daily basis through therapeutic chart review, ward rounds, drug information queries and patient counselling. During the study period we collected information about patients including demographics, past medical and medication history, family history, social history, drug allergies and drug related problems were identified and documented. Confidentiality of the patient information was maintained. Therapeutic guidelines were taken from standard journals and databases like Micromedex were used to identify and correct drug related problems.

RESULTS

A total number of 152 cases were collected during the study period in which men composed 67.1% of the total population. Majority of the patients were of the age group 51-70 years. Majority of patients were presented with Ischemic stroke (48%) followed by Epilepsy (20%). Others include Encephalopathy, Neuropathy, Guillain-Barre syndrome, Bell's palsy etc. Most of the patients (57.89%) were presented with one or more comorbidities out of which (38.81%) are non- neurological comorbidities followed by neurological (12.5%) and others (6.57%). Most common non-neurological comorbidities were diabetes and hypertension. It also included renal and hepatic impairments. Disease wise classification of subjects was shown in Figure 1.

Medication Errors

A total number of 197 medication errors were identified from 152 subjects. The most commonly identified medication errors were drug interactions (53%) followed by insufficient lab data (13%), untreated indications (10%), insufficient lab monitoring (7%), incomplete prescriptions (6%) and ADRs (3%). Most of the drug interactions were moderate followed by major, minor and contraindicated. Table 1. represents different meditational errors identified. The identified medication errors are classified according to NCC MERP (national coordinating council for medication error reporting and prevention) and are shown in Table 2. The most common type of error was Type D (26.39%) followed by Type C (22.33%) and Type A (20.81%). Type D errors are the errors that occurred and reached the patient and the outcome of the error required monitoring. Out of 197 medication errors, 37.56% of errors had an effect on patients that required interventions or monitoring.

Pharmacist Interventions

Out of the total 74 medication errors suggest by pharmacist only 44 were accepted by physician (59%). The other 30 (41%) were rejected as there were specific medical condition and unique situations (no harm to patient) where guidelines could not be strictly adhered to. The various causes that led to interventions are categorised as shown in Table 3. Out of 74 interventions done most of the interventions were due to prescribing errors and administrative issues. Majority of interventions were drug interactions (37.25%) followed by untreated indication (23.52%). The changes made by pharmacist interventions in drug therapy are categorised and are shown in Table 4. Pharmacist intervention resulted in drug dechallenge was seen in 10 cases, drug rechallenge in 9 cases, addition of new drug in 19 cases, drug dose modification in 3 cases and modified dosing interval in 3 cases.

DISCUSSION

Our study intended to see if inclusion of a clinical pharmacist in the healthcare setting in Neurology department would result in improvement in patient care. The majority of DRPs (66.44%) were categorised as causing no harm to patients. In our study, a total number of 74 interventions (33.56%) were recommended to the physician. Out of which 59% of interventions were accepted without which there could have been a complication/loss/harm to the patient. Majority of clinical pharmacists' interventions are categorised as minorly significant having no potential to cause morbidity or mortality, whereas others include moderately significant and majorly significant. The most common medical errors in our study were due to drug interactions (53%), insufficient lab data (16%), untreated indication (10%), insufficient lab monitoring (7%) etc. Our results were similar to the study carried out by Dhandapani et al., 2017, Role of clinical pharmacist in management of neurological disorder (stroke), where 146 DRPs were identified in 84 patients. Recent studies carried out to know the impact of pharmacists' interventions concluded that the clinical pharmacist providing patient counselling had a positive impact on medication adherence and quality of life (Ramanath et al., 2012; Al-Hajje et al 2012). Our study also aimed at improving the patient compliance to medications. This was attained through educating the patient about the importance of medication compliance. In our study, 59% of the interventions recommended to the physician were accepted which resulted in better patient outcome, reduced hospital stay and better quality of life. We evidenced that the review of prescription orders plays a key role in the activities of hospital and clinical pharmacists which can contribute to improving the quality of medication use and patient safety. This states that, the role of clinical pharmacist improves the patient safety in collaboration with the working physician in the hospital.

CONCLUSION

Medication errors are more likely to occur in the in-patient department. The role of clinical pharmacist in reducing drug related problems is proven to be clinically significant. Interventions by clinical pharmacist assisted in early detection of drug related problems and prevention of patient harm. A physician-pharmacist collaborative practice can help to improve the patient health. The pharmacist can help the patient to take necessary step towards a better lifestyle and improve medication use through patient counselling. A pharmacist with good knowledge and an effective way of communication can improve patient outcomes and rationalise the drug therapy.

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