THE ROLE OF CLINICAL PHARMACIST IN PATIENTS WITH CARDIOVASCULAR DISEASES

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ABSTRACT

The role of clinical pharmacist is considered valuable in providing the best possible health care services and this is done by diminishing the prescription errors, rationalizing the treatment and reducing the cost of treatment. The primary objective of this study was to determine the number and type of medication errors intervened by the clinical pharmacist at IPD in the multispecialty hospital. The results indicate that 41.48% interventions were majorly significant, 32.31% interventions were moderately significant, and 26.2% were categorized as minorly significant having no potential to cause any harm. The need for interventions in most cases was due to adverse drug reactions, drug interactions, dispensing error, incorrect diagnosis, improper review of past medical history, drug dose modification in special population. In this study period we scrutinized and meticulously studied the medical records of 458 patients in cardiovascular department and found pharmacist interventions in the ongoing therapy. In our study the interventions undertaken by the pharmacists were well received and accepted by the attending physicians in the hospital and we could conclude that if pharmacist had good knowledge and effective way of communication, they could get the attention of the prescriber and convince them to make necessary changes resulting in cost effectiveness and rationalizing the drug therapy.

KEYWORDS: Pharmacist Interventions; Cardiovascular; Cost effectiveness; Rationalizing the drug therapy.

INTRODUCTION

The role of pharmacist has gradually diversified from dispensing medications to patient care, patient counselor, health care educator, and community service to clinical practice. The Joint Commission on Accreditation of Healthcare Organizations (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). Any error in ordering, transcribing, dispensing, administering and monitoring in the process of medication is called medication error (Kim and Schepers, 2003).

Types of Medication Error

The process of medication use is subdivided into five important stages including prescribing, dispensing, transcribing, preparing and administering of which the processes of prescribing and administering of medication are most vulnerable stages for medication error. Medication errors are broadly categorized into prescription error, dispensing-related error and errors-related to the administration of medication(Harmeet *et al.,* 2015).

Interventions by the pharmacists

Patient safety is defined as "the reduction of risk of unnecessary harm associated with health care to an acceptable minimum. An acceptable minimum refers to the collective notions of given current knowledge, resources available and the context in which care was delivered weighed against the risk of non-treatment or other treatment." Therefore the role of pharmacists is much more than counseling the patient and dispensing alone. Pharmacists should be involved in the decision making process so as to avoid drug therapy problems and medication errors. Pharmacist's interventions are considered to be effective in achieving positive health outcomes (Advit *et al.,* 2009).

5. METHODOLOGY

The study was carried out by collecting case sheets at in-patient cardiovascular department for a period of 6 months in a multispecialty hospital located in Warangal region. The study was approved by the institutional ethical committee and patient's consent was taken.

The patient information was obtained on daily basis through medication chart review, clinical rounds, drug information questions and patient counseling. During the data collection period, information about each case including patient demographic details, past medical history, social history and family history of the patient, drug allergies, name and class of drug involved, and the nature of action taken in the care was recorded and documented. Confidentiality of the information was maintained. The guidelines for therapy were taken from standard journals (National and international journals which have good impact factor),

Guidelines (AHA, FDA) and databases (Micromedex, Lexicomp) were used as standards to substantiate and correct interventions by the pharmacist.

6. RESULT

In our study majority of patients (more than 60%) were of middle age (40-60) which indicate an obvious but alarming pattern. This is an age group where people are still productive; have responsibilities and these are concerned about their health and therefore definitely visit the physician. Therefore more no of patients are seen in this age group on the other hand, this is also an age where people should still be healthy and should not be needing hospitalization and cardiovascular care, and this indicates that there is general decline in the health status with the beginning of middle age in this population.

In our study the medication errors identified were categorized in according to NCC MERP (national coordinating council for medication error reporting and prevention) and are as shown in **Table-1.**

Table 1: Types of Medication Errors.

Types of medication errors	No. of errors	Percentage
Type A	54	11.79%
Type B	**168**	**36.68%**
Type C	68	14.84%
Type D	59	12.80%
Type E	40	8.73%
Type F	9	1.96%
Type G	2	0.43%
Type H	58	12.66%
Type I	0	0.00%

Out of the total 458 interventions we could suggest to the physicians in the study center 328 (71.16%) interventions were accepted and 130 (28.4%) were rejected by the prescriber as there were certain specific medical conditions and unique situations, where guidelines could not be strictly adhered to.

The various causes which led to problems in the patients and required interventions are categorized as are shown in table- 2 (Hussain Abdullah Mubarak Al Rahbi et al., 2013).

Table 2: Causes for Intervention.

Causes	No. of patients	Percentage of interventions
Adverse drug reaction	**148**	**38.74%**
Drug-drug interaction	56	17.07%
Dispensing errors	44	13.41%
Incorrect diagnosis	2	0.46%
Improper review of past medical history	18	5.48%
Drug modification	38	1 1.58%
Therapeutic duplication	18	5.49%
Over dose	4	1.21%

Many problems seen in the patients were due to adverse drug reactions, drug interactions, dispensing error, incorrect diagnosis, improper review of past medical history, drug dose modification in special population. When this was brought to doctor's attention, the interventions resulted in one of the following options- Drug Dechallenge (It is a response observed for the reduction or disappearance of adverse drug reactions (ADR) on withdrawal of a drug from a patient), or Drug Rechallenge (To try a therapeutic pharmaceutical drug, suspected allergen, or medical treatment on a patient a second or subsequent time, to see if the suspected effects of the treatment occur again) or New Drug Added or Drug Dose Modification.

Depending on the severity of the problem in patients, the interventions carried out by the pharmacist were categorized as major, moderate and minor as shown in table 3. Minor were those that did not harm the patient and needed monitoring; moderate were those that could cause a temporary harm in patient and major were those that harmed temporarily and led to hospitalization.

Table 3: Assessment of intervention.

Severity of intervened medication errors	No. of patients	Percentage
Minor	120	26.20%
Moderate	148	32.31%
Major	**190**	**41.48%**

Pharmacist intervention outcomes

Pharmacist intervention had effects ranging from cost reduction to preventing complications and morbidity in patients, indicating importance of clinical pharmacist in overall therapeutic outcome for the patient. The data was categorized on the basis of effect on pharmacotherapy due to pharmacist intervention as shown in **Table- 4.**

Table 4: Pharmacist interventions outcome.

Outcome of interventions.	No. of patients	Percentage
Prevent complication	**108**	**32.92%**
Rationalize treatment	86	26.21%
Cost reduction	51	15.54%
Improve patient compliance	54	16.46%
Prevent morbidity	29	8.84%

The changes brought about in drug therapy by pharmacist intervention are categorized as shown in table **Table 5.**

Table 5: Medications altered through interventions.

Changes brought by interventions	No of patients	Percentage
Drug dechallenge	108	37.11%
Drug rechallenge	79	27.14%
New drug added	56	19.24%
Drug dose modification	48	16.49%

7. DISCUSSION

Most of the clinical interventions reported in our study at inpatient department showed that 41.48% were majorly significant, 32.31% interventions were moderately significant and 26.20% were categorized as minorly significant having no potential to cause harm. The observations in our study were similar to that in (Husain Abdullah Mubarak Al Rabbi et al., 2013), (Al Adjani, 2007). The need for interventions in most cases was due to adverse drug reactions(38.74%), drug interactions(17.07%), dispensing error (13.41%), incorrect diagnosis(0.46%), improper review of past medical history(5.48%), drug dose modification in special population(11.58%). Some studies in the past have shown similar causes for interventions (Liya et al., 2003; Kim and Schepers, 2003; Alderman and Farmer, 2001. Stubbs et al., 2004). One recent study carried out to know the impact of clinical pharmacists' interventions concluded that the clinical pharmacist providing patient counseling had a positive impact on medication adherence and quality of life (Ramanath, 2012; US Food and Drug Administration, 2011). Studies have shown that 46% of interventions by pharmacist have prevented morbidity, complications and rationalized the therapy (Stubbs et al., 2004; Bosma, 2007). One most important aspect observed in our study was medication compliance by the patient. We had to repeatedly counsel the patients about the importance of medication compliance because in India, once the patients begin to feel good and symptom free, would neglect taking medication. This is one area where a pharmacist can educate the patient. In our study such a patient counseling improved medication compliance. In our study the

interventions undertaken by the pharmacists were well received and accepted by the physicians in the hospital.

8. CONCLUSION

We could experience during our study that if pharmacist had good knowledge and effective way of communication, they could get the attention of the prescriber and convince them to make necessary changes which resulted in cost effectiveness and rationalizing the drug therapy for the patient.

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