



## Original Research Article

## Need of clinical pharmacists in healthcare centre

Md. Israr Uddin<sup>1</sup>, Saleh Hamed Rifai<sup>1</sup>, Md. Atif Ali<sup>1</sup>, Nasr Jawad Hussain<sup>1</sup>, Syed Ahmed Hussaini<sup>1\*</sup>, U. Ramchander Rao<sup>2</sup>, Md Zahid Saif<sup>1</sup>, J.A. Ansari<sup>1</sup>.

<sup>1</sup>Department of Pharmacy Practice (PharmD), MESCO College of Pharmacy, (Osmania University), Hyderabad, India.

<sup>2</sup>Department of General Medicine, Osmania General Hospital (OGH), Afzal Gunj, Hyderabad, India.

## ARTICLE INFO

*Article History:*

Received 15 September 2017

Revised 30 September 2017

Accepted 03 October 2017

*Keywords:*

Clinical Pharmacy,  
Health Care,  
Pharmacist.

## ABSTRACT

**Aim:** The main aim of our study was to evaluate and illustrate the need of clinical pharmacist in a tertiary care setup.

**Subject and Methods:** The data of 112 patients were collected by using prepared forms and was examined to identify any discrepancies within the prescriptions, evaluate the patients' knowledge on his oral medication, Un-Identified Adverse Drug Event, Drug-drug interactions and provide drug information when requested, evaluating its feedback.

**Results:** In the data collected, the following outcomes were recorded. Out of 112 patients, only 19 were aware of the indications and a number of 3 patients knew the side effects of their respective drug regimen. A total of 85 interactions were found in the prescriptions majority of which were insignificant. About 331 prescription errors were noted, unauthorized abbreviations were a majority. About 222 adverse drug events were recognized out of which majority of them were classified as possible. During the study, a total of 89 drug information queries (DIQ's) were requested out of which majority of the queries were regarding indication of the drug therapy.

**Conclusion:** Analyzing the results, it is noted that the presence of a clinical pharmacist is essentially required in the near future to address these issues so that successful therapy outcomes are achieved. Clinical Pharmacist will help in filling the gap between patients and other healthcare professions thereby improving Health-Related Quality of Life (HRQOL) of the patients.

\*AUTHOR FOR CORRESPONDENCE

E-mail address: [sah296@gmail.com](mailto:sah296@gmail.com)

Copyright © 2013 Biomedjournal Privacy Policy. All rights reserved.

## INTRODUCTION

Today there is drugs and information explosion in relation to drugs. Increase in drug information and discoveries in the new drug is a mixed blessing for the medical profession. One way there is the development of newer and more effective drugs and another way rise of potential hazards associated with the drugs. The rapid increase in a synthesis of the new drug requires more knowledge about these drugs. These results are that in spite of our increasing dependence on modern drugs inquisitive individual remains starved for information. Firstly, with the rise in patient workload on doctors there is a very little patient-doctor interaction. Secondly, the patient himself holds in such

awe that he thinks twice before questioning his judgment lest he upsets the doctor. Thus many times needlessly the patient life is endangered and people fall in what is called IATROGENESIS (Goyal and Parikh, 2014; Qadry et al., 2009).

The pharmacist is considered to be a link between physician and patient. However, for a long time pharmacist has been considered to be a key person involved in manufacture and dispensing of drugs but with the upcoming awareness about iatrogenic diseases (adverse drug event), medication error, drug information and medication adherence problem, a new

science emerged as the clinical pharmacy (Goyal and Parikh, 2014; Patil, 2008).

The clinical pharmacy can be defined as the branch of pharmacy dealing with optimum utilization of the pharmacist judgments, skills and knowledge of pharmaceutical and biomedical sciences to prove the efficacy, the safety, the cost and the precision with which drugs are used in patient care. This branch of pharmacy focuses on to ensure the patient's maximum well-being and to play a meaningful role in the safe and rational use of the drugs. These goals are to enable the physician do a better job of prescribing and monitor the drug therapy for the patient. Further, to help the medical and para-medical staff to enable effective drug therapy. Clinical pharmacy practice also deals with proper maintenance of the documentation regarding the medication incidents effectively to maximize the patient's compliance in drug use process (Goyal and Parikh, 2014; Qadry et al., 2009).

Clinical pharmacy describes the new role of the 21st Century's pharmacists. It doesn't restrict the role of a pharmacist merely to good manufacture practices, easy procurement, proper preparation, distribution and control of drug products (Tipnis, 2009). In addition, it also comprises functions necessary to discharge a particular set of social responsibilities related to the proper therapeutic use of drugs in the aspects like prescribing, dispensing and administering drugs, documenting professional services, direct patient involvement, Reviewing drug use, Education, Consultation and Counseling (Goyal and Parikh, 2014). Clinical pharmacists care for patients in all healthcare settings but the clinical pharmacy movement initially began inside hospitals and clinics often collaborate with physicians and other healthcare professionals (Tripathi, 2013). Pharmacists should be well-versed with the common language used by the people in order to communicate with the patient and co-professionals easily and effectively. Pharmacists are also expected to have the thorough knowledge of the etiology of the disease, its signs, symptoms, pathophysiology, diagnostic tests, pharmacokinetics, etc. (Parthasarathi et al., 2012). Proper clinical training should be given to the clinical pharmacist to provide information regarding rational drug use, drug therapy and drug doses (Walker and Edwards, 2011).

There has been a relatively long tradition of clinical activities being performed by pharmacists working within the hospital setting, and numerous studies have demonstrated the positive impact of pharmacists on

patient outcomes. For example, an evaluation of pharmacists' clinical interventions from 1989 to 1998 demonstrated a decrease in mortality with the provision of 7 pharmacy services, specifically drug use evaluation, in-service education provided by pharmacists, monitoring of adverse drug reactions, management of drug protocols, participation in the cardiopulmonary resuscitation team, participation in medical rounds, and completion of admission drug histories. Clinical pharmacists have also proven their role in improving the safety and efficacy of drug therapy in various patient populations (Dean et al. 2002).

The aim of the present study was to justify the need of clinical pharmacist in the hospital which can be achieved by evaluating and analyzing the possible contribution of the pharmacist in patient care directly and indirectly.

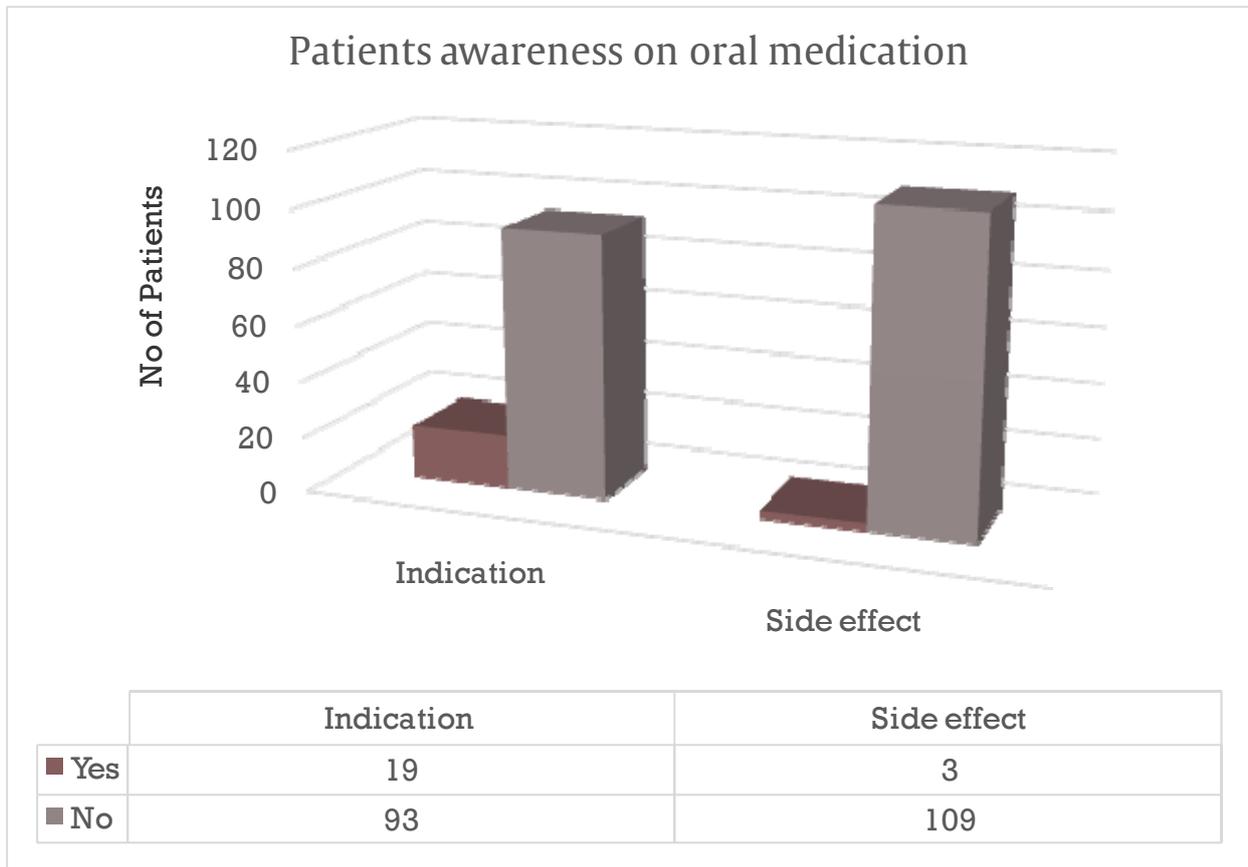
## SUBJECTS AND METHODS

The present study was prospective observational study approved by Institutional Ethics Committee (MCP/PD/PR/12) conducted at Department of General Medicine, Osmania General Hospital, Hyderabad, India for a period of six months. The data collected for an expected sample size of 112, that includes all patients of either gender and above 18 years of age excluding patients admitted with iatrogenic cause and had taken the alternate system of medicine such as Ayurveda, Homeopathy etc. The data was collected using pre-designed forms so as to fulfill the requirements of the study. The data was analyzed using 'good prescribing guidelines' by WHO. Patient awareness was evaluated regarding his/her drug regimen and/or medical condition. Presence of any possible adverse drug event was evaluated using close-ended questions judged by using Naranjo Scale.

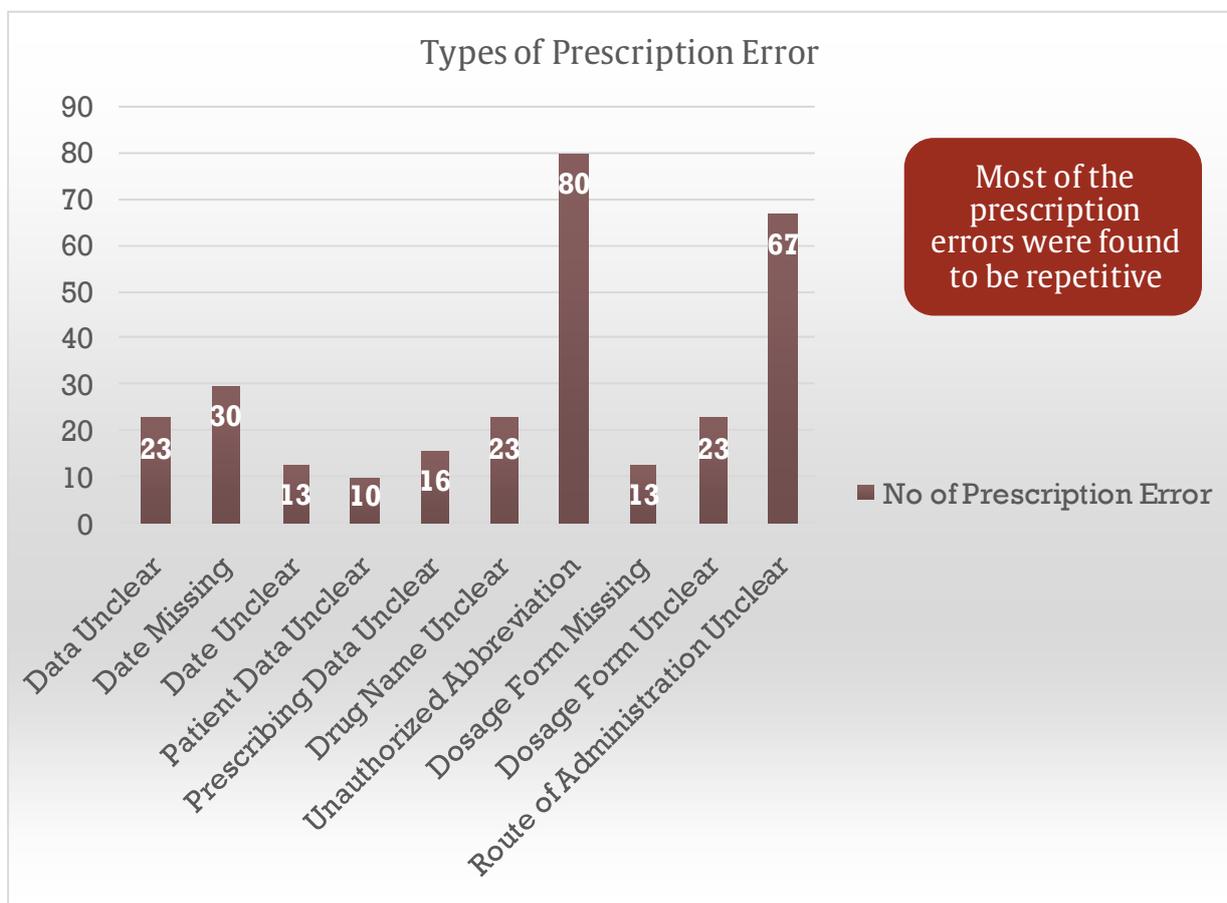
## RESULTS

### Patient's oral medication awareness

Figure 1 shows the patient's awareness on their oral medication. A total number of 93 patients which accounts for about 83% of the total patient population was not aware of the indication of drugs. a total number of 112 patients which accounts for about 97.3% of the patient's population did not know about the side effects of their medications.



**Figure 1.** Patient’s awareness on their oral medication.



**Figure 2.** Different type of ADE found in the study.

### Adverse drug event

Figure 2 shows the different type of ADE found in the study when asked by using close ended question. Total Number of drugs were 438 from which 222 drugs had

ADE. 222 drugs were divided into different category based on Naranjo scale (Definite, Probable, Possible and Doubtful) (Table 1).

**Table 1.** Types of adverse drug event found using Naranjo assessment.

Type	No. of ADE	Percentage(%)
Probable	48	21.62
Possible	112	50.46
Doubtful	62	27.92

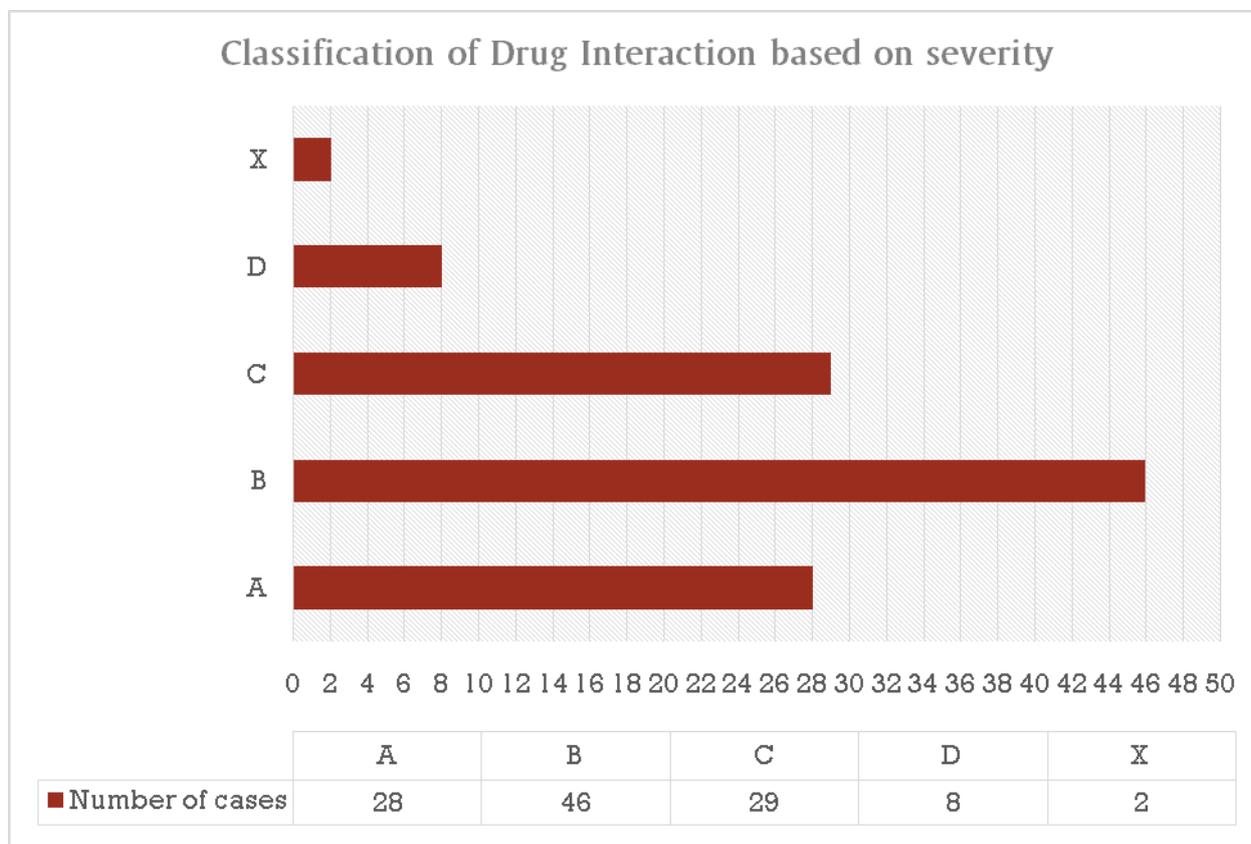
### Distribution of drug interaction based on Medscape Drug Interaction Checker

**Table 2.** Distribution of drug interaction based on severity using Medscape Drug Interaction Checker.

Category	%
A	25
B	41.1
C	25.9
D	6
X	2

From 112 Prescriptions collected, 25% of the prescriptions had no interaction while 75% of the prescriptions accounted for the following interactions, the Category B accounts for 41.1%, Category C accounts for 25.9%, while category D accounts for 6% and

category X for 2%. Figure 3 shows the distribution of drug-drug interactions based on Medscape Drug Interaction checker in a bar diagram. Table 2 show the percentage of different type of drug-drug interactions from a total of 112 prescriptions recorded.



**Figure 3.** Distribution of drug-drug interactions based on Medscape Drug Interaction checker in a bar diagram.

### Drug information queries

A total of 89 queries were asked by the patient. Table 3 shows the different types of queries asked by the patient during the study. Table 3 represents the number and percentage of different type queries asked by the patient during the study.

**Table 3.** Different types of queries asked by the patient during the study.

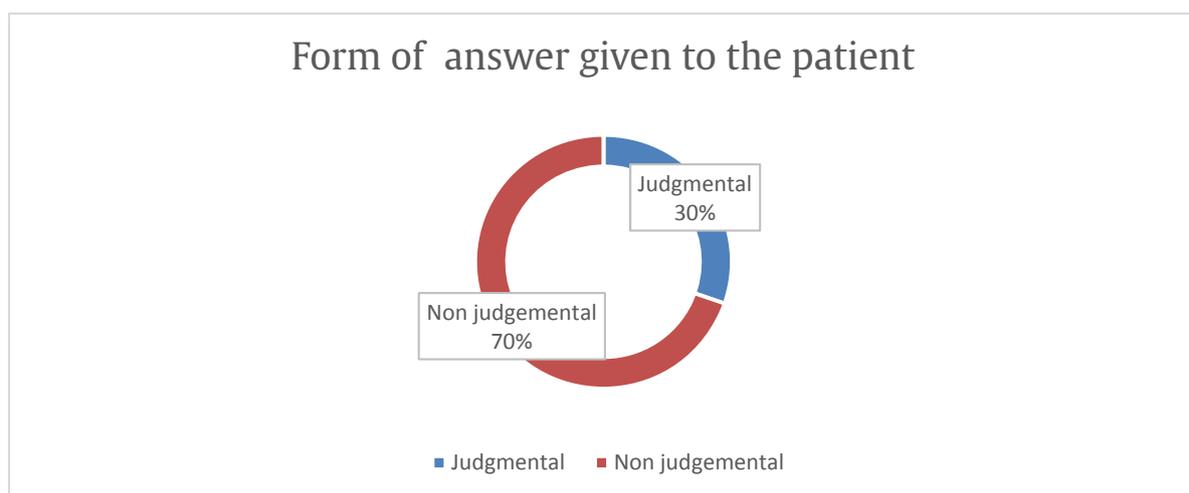
Type	No. of queries	Percentage (%)
Indication	20	22.47
Drug Overview	15	16.85
Duration of Therapy	14	15.73
Time of Administration	11	12.35
Lag Time	09	10.11
Frequency	06	6.74
Cost	05	5.6
Knowledge	04	4.49
ADR 's	03	3.37
Drug Interaction	02	2.24

### Drug information query feedback

All the patients (89) gave the feedback on the quality of our answer to the query requested. 82% of the query got good as the rating and 18% gave satisfactory rating as the feedback while no patient gave rating as unclear. Table 4 shows the rating of feedback given by the patient for the drug information provided.

**Table 4.** Rating of feedback given by the patient for the drug information provided.

Category	Percentage of Queries (%)	Number of queries
Good	82	73
Satisfactory	18	16
Unclear	0	0



**Figure 4.** Doughnut chart representation of form in which the queries were answered.

Out of 89 query, 27 query (30.3%) were answered in judgemental form while 62 (69.7%) were given in the non-judgemental form (Figure 4).

### DISCUSSION

This study was conducted in Osmania General Hospitals' In-patient General Medicine Department for

a span of six months on evaluating the need of clinical pharmacy services in a tertiary care setting. A total sample of 112 patients was collected. On evaluating the collected samples, it was found that categories C, D and X (Medscape drug interaction checker) account for 35% of the drug-drug interactions. Category C signifies that monitoring of therapy is required, Category D signifies that a change or modification in therapy may be

required and category X signifies to avoid the combination of that particular regimen. It was also found that 41% of drug-drug interactions were from category B which signifies that no action or modification is required to the drug therapy. This might be due to the fact that many therapies require the synergistic action of that particular drug combination (Calder and Barnett, 1967). For example: Aspirin + clopidogrel, Probenecid+ penicillin etc.

During study, 112 prescriptions were analysed for prescription errors, in it 331 errors were found, out of which 24.16% of the total errors were from unauthorized abbreviations which may have been caused due to high workload on the medical staff, some other errors such as unclear routes of administration was found to be 20.24% which may be due to carelessness and disregarding the seriousness of the error. Although most of the errors were not potentially serious, most of them were repetitive and a majority of the prescriptions were unclear.

A total number of 112 patients were assessed for their knowledge regarding the indications and side effects of their oral medication. Out of the total number of patients, about 83.04% of the patients were not aware of the indications or uses of their medication, and about 97.33% of the patients were not aware of the possible side effects of their drug regimen. This might have occurred due to the lack of dialogue and possible hesitation that the patients feel during their interaction with the respective doctor/physician.

The assessment was conducted to identify adverse drug events in the recorded prescriptions using, Naranjo scale. There were a total of 222 ADE's found in about 34% of the recorded drugs which were identified using close-ended questions. Although we could not classify the ADE's into the category of 'Definite' as the ethical committee did not grant us the permission of any intervention, we could classify the identified ADE's into the 'possible' category, which was accounted for a majority of about 50.45% of the cases. About 27.92% of the recorded cases were found to be from 'doubtful' category of ADE's which could be explained by the disease condition of the patient.

During the study of about six months, different query requests were posted by the patients and their attendees' combined. Out of a total number of 89 query requests about 22.5% of the queries were about the indication of the drugs followed by 16.8% of the queries for drug overview and about 15.7% of queries were regarding the duration of therapy. Most of the queries were addressed in a non-judgemental form which accounts for about 69.66% of the total query requests. All the patients and attendees', when asked

for feedback regarding our response, rated our answers as satisfying.

It was analyzed that most of the patients were admitted because they were suffering from cirrhosis of the liver which accounted for about 17% of the total cases. All the cirrhosis of liver patients were male and alcohol abusers. Some other cases for which the patients were admitted were hypertension, epilepsy, diabetes, and COPD etc.

Upon assessment of the recorded data, the age group of 55-65-year-olds' accounted for a major part of the morbid group which was about 30.35% of the patients. As population above 50 are more prone to morbidity as stated in global health report in WHO.

## CONCLUSION

On analyzing the observational study we see that the presence and services of a Clinical Pharmacist will indeed prove to be beneficial in improving the health-related quality of life of the patient. Appointment of a qualified clinical pharmacist shall also be beneficial to the physicians as the approach towards treatment and desired clinical outcome can be discussed among them so as to help in achieving better treatment goals.

The Clinical Pharmacist can also play a vital role in educating the patient about their clinical condition, the approach of treatment, therapy and desired outcome so that the patient is completely aware of their clinical condition. Appointment of clinical pharmacist can also help in better patient compliance of the treatment by thorough counseling to the patient about their drug therapy, precautions, possible effects, dosage and time of administration etc.

The hazardous and less desirable Drug-Drug interactions which are sort of unintended outcome of the treatment whose rate can be reduced by careful and periodic vigilance over the patient condition can be achieved by the appointment of clinical pharmacists in every department of specialization in a tertiary care center. It will also help in determining and addressing ADE and Drug interactions so that the therapeutic outcome is maximized and quality of life is restored by the best means possible. Additional follow-up duties can be assigned to clinical pharmacists which will help in achieving sustained benefits in medication adherence and detection of avoidable ADE.

Greater roles for pharmacists in health care centers should be considered especially as medical reconciliation becomes mandatory. Future studies should be considered and conducted focusing on

optimizing these interventions and identifying the departments, policies, and patients who are most likely to benefit from the involvement of pharmacists.

### **CONFLICT OF INTEREST**

None declared.

### **REFERENCES**

- Calder G, Barnett J W. The pharmacist in the ward. *Pharmacy Journal*. 1967;198:584–586.
- Dean B, Schachter M, Vincent C, Barber N. Prescribing errors in hospital inpatients: their incidence and clinical significance. *Quality and Safety in Health Care*. 2002;11(4):340–344.
- Goyal RK, Parikh RK. *A Text-Book of Hospital Pharmacy*. India: BS Shah Prakashan; 2014.
- Parthasarathi G, Nyfort-Hansen K; Nahata MC. 2nd Edition. *A Textbook of Clinical Pharmacy Practice: Essential Concepts and Skills*. India: University Press; 2012.
- Patil DJ. *Hospital & Clinical Pharmacy*. M.S., India: Nirali Prakashan; 2008.
- Qadry JS, Goyal RK, Parikh RK. *Textbook of Hospital Pharmacy*. 10th Edition. India: BS Shah Prakashan; 2009.
- Tipnis HP. *Community Pharmacy*, 1st Edition, M.S., India: Career Publication; 2009.
- Tripathi KD. *Essentials of Medical Pharmacology*. 7th edition. New Delhi, India: Jaypee Brothers Medical Publishers; 2013.
- Walker R, Edwards C (eds). *Clinical Pharmacy and Therapeutics*. 5th edition. Philadelphia: Churchill Livingstone Publishers; 2011.