

ROLE OF CLINICAL PHARMACIST ON DRUG RELATED PROBLEMS AND RESULTING THERAPEUTIC OUTCOMES

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ABSTRACT

Advancement in pharmacotherapy leads to the new drug discovery for the clinical problem, and also exploring the clinical outcomes and Drug-Related Problems (DRP). Drug-related problems are frequent and will increase the patient economic burden and cause a negative impact on the overall quality of life of patients, even morbidity and mortality. As from the previous studies clinical pharmacists can effectively identify and forestall the clinically significant drug-related problems with collaboration with the physicians by participating in the hospital multidisciplinary team while prescribing and dispensing the drugs and also counsel the patients about the medication and follow up to get a far better benefit. This review suggests that clinical pharmacists have a massive scope and are an integral part of the

healthcare system.

KEYWORDS: Drug-related problems (DRP), Clinical pharmacist, therapeutic outcomes, adverse drug reaction (ADR).

INTRODUCTION

Clinical pharmacy practice involves the availability of patient care with the employment of medicines to optimize the health outcomes of patients.

The clinical pharmacy service was started in Ethiopia in 2013 by Jimma University and allocated the clinical pharmacists and pharmacologists to form the multidisciplinary approach as an answer for the prevention of drug-related problems.

DRUG RELATED PROBLEMS [DRP] are defined as an incident or circumstance involving the drug therapy that really or potentially interferes with desired health outcomes. DRPs include both actual and potential problems. An Actual problem has resulted in clinical manifestations or therapy failure thanks to incorrect dosage. A possible problem isn't manifested, but if left unresolved, it should result in drug-related harm to the patient.

Drug-related problems include drug ineffectiveness, adverse drug reactions, overdosage, under dosage, inappropriate treatment, inadequate monitoring, non-adherence, drug interactions, etc. Nowadays many drugs lead to negative health outcomes which end up in increased morbidity, mortality, and reduced quality of life.

The drug related problems are as follows

1. **Indication without drug therapy:** The patient incorporates a medical condition except for the same he/she not receiving proper medication as per indication.
2. **Drug without indication:** The patient is taking a medicine that there's no medically valid or unvailed indication.
3. **Improper drug selection:** the patient incorporates a proper medication indication but is taking the incorrect drug.
4. **Sub therapeutic dosage:** For the disease condition patient is treated with insufficient proper medication.
5. **Over dosage:** In a medical problem patient is being treated with an excessive amount of dose of the proper medication.
6. **Adverse drug reaction (ADR):** Any untoward and noxious effect of the drug in the patient.
7. **Drug interaction:** during the disease condition drug, medication laboratory, and drug food interaction may cause drug interaction.

- 8. Failure to receive drug:** The patient includes a medical problem that's the result of not receiving a medicine.

DISCUSSION

STUDY – 01: Hussain Abdullah Mubarak al rahbi et al., during this study about 688 interventions 40.8% interventions were tired changing the medication order or clarifying the medication 14.9% of the interventions are associated with administrative issues, 8.7% of interventions were associated with selection of medicines still as errors because of ignorance of the history of patients. 8.2% of the interventions were to deal with the overdose of medicines. Moderately significant interventions were observed in 19.4% and 7.5% of them were having an impact on major medication errors. during this study pharmacists have intervened in 20.8% of the prescriptions to stop complications, 25.1% were to rationalize the treatment, and 7.9% of them were to boost compliance. This study recommends digitalizing the pharmacist interventions and sharing intervention data within and outdoors the healthcare services and also states that role of pharmacists in improving the healthcare system is important.

STUDY – 02: Franklin Acheampong et al., during this study about 529 drug error reports, 448 contained complete information and hence included within the study of which 18.9% untreated indication, 12.5% wrong dose prescribed, 11.4% wrong drug prescribed 10.7% medication interactions and 9.8% duplication therapy. Of them, 90% of interventions and suggestions by the pharmacist were accepted and implemented, and over 70% of the interventions involved drug regimen change and other interventions by patient counselling. This study states that pharmacists played a task in drug error recovery and prevented medication errors from reaching patients. These error mitigation efforts of pharmacists can function as a priority in patient safety strategy.

STUDY – 03: Siddaruda M Biradar et al., during this study out of 120 patients, 137 drug related problems were identified, during which most of them accounted for drug interactions 119(86.8%), adverse drug reactions 11(8%), untreated indication 05 (3.6%), drug without indication 2(1.4%) within which clinical pharmacists' interventions were recommended which incorporates drug replacement 03(42.8%), drug discontinuation 03(42.8%) and frequency changes 01(14.2%). This study recommends that the correct involvement of clinical pharmacist services within the patient care can significantly help to spot, resolve and stop the DRPs during the hospital stay, thereby enhancing the patient therapeutic outcomes.

STUDY – 04: Ashish Singh Parihar *et al.*, during this study out of 120 psychiatry patients five forms of drug related problems were obtained of which, adverse drug reactions 24 (44.4%), drug interaction 6 (11.1%), overdose 12 (12.2%), sub therapeutic dose 6(11.1%). there have been 103 clinical pharmacist interventions associated with drug-related problems were proposed to resident doctors of which 54 recommendations were accepted. This study suggested that clinical pharmacist incorporates a huge scope and act as an integral part of the health care team. The clinical pharmacist has greater responsibility for minimizing the DRPs and helps in decreasing the chances of comorbidities, length of stay, and health care expenditure which contribute to improved patient care.

STUDY – 05: Salmeen D Babelghaith *et al.*, during this study, a whole 369 pharmacist interventions were conducted between 2016 and 2017 of which most of them are drug interactions followed by prolonged antimicrobial therapy and unnecessary medication orders. Interestingly, among the 241 interventions in 2016,199(82.5%) were accepted by physicians, and therapy was changed, in 2017, 90 (70.3%) interventions out of 128 (34.7%) were accepted and therapy was changed. This study recommends that the amount of clinical pharmacy field desires to be enlarged to satisfy the necessities of pharmaceutical care.

STUDY – 06: Firomsa Bekele *et al.*, during this study out of 172 study participants,123 patients had drug-related problems. a whole of 470 DRPs was identified on the typical,2.73 DRPs per patient within which 107 (22.77%) need additional drug therapy, 99 (21.06%) unnecessary drug therapy, 96(20.42%) ineffective drug therapy, 89(18.94%) nonadherence, 79(16.81%) adverse drug reactions. This study states that the magnitude of drug-related problems was found to be high. Hence, clinical pharmacy services should be established to tackle inappropriate indications, ineffective drug therapy, and adverse drug events.

CONCLUSION

From the above studies, it's evident that clinical pharmacists become a crucial element of the health care team and promotes patient care by interacting with physician and patient. As clinical pharmacists have precise knowledge about therapeutics and regular interaction with prescribers, they're ideally placed to bridge the gap between patients and physicians. They'll provide reactive intervention involved within the patient care and may also offer services like drug information to the other members of the health care team so that effective therapeutic decision is formed.

The role of the clinical pharmacist in the optimization of drug therapy could even be evaluated by several drug related problems identified and prevented, reviewing the records of patients to determine the appropriateness of medication therapy, developing effective medication plans that minimize the danger of adverse side effects, identify untreated health problems and refer patients to appropriate physicians, advice on the correct administration of medication. From my review, I conclude that clinical pharmacy services in the hospitals aren't a unique concept but within the context of India, it is a recently emerging discipline. Hence, the clinical pharmacist plays a heavy role in identifying, assessing, and resolving drug-related problems, thereby enhancing therapeutic outcomes.

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REFERENCES

1. Suwitha S, Fardan M, Shaji AM, Joe J, Hasif K, Priya A, et al. An approach of clinical pharmacist regarding solving drug-related problems in pediatric patients. *Int J Basic Clin Pharmacol*, 2020; 9: 1263-8. <https://dx.doi.org/10.18203/2319-2003.ijbcp20203146>
2. A. Sireesha, R.N. S Vasuki, & S. Nithila. Clinical pharmacists' role in the identification of drug-related problems during a tertiary care teaching hospital. *International Journal of Research in Pharmacology & Pharmacotherapeutics*, 2021; 5(4): 311-317.
3. Deepishka P, Gali SD, Arcot M, Durga Prasad TS. Assessment of drug-related problems and clinical pharmacist interventions in the pediatric department of a tertiary care teaching hospital. *Int J Basic Clin Pharmacol*, 2018; 7: 1934-9.
4. Wali SC, Ganachari MS, Parihar AS, and Sonawale SB: Impact of the clinical pharmacist within the monitoring of drug-related problems in psychiatry patients at a tertiary care teaching hospital. *Int J Pharm Sci & Res.*, 2018; 9(2): 81923. doi:10.13040/IJPSR.0975-8232.9(2).819-23.
5. Bekele F, Fekadu G, Bekele K, Dugassa D, Sori J. Drug-related problems among patients with disease admitted to medical wards of Wollega University Referral Hospital: Prospective observational study. *SAGE Open Med.*, Jan 22, 2021; 9: 2050312121989625. DOI: 10.1177/2050312121989625. PMID: 33552517; PMCID: PMC7841694.

6. Acheampong, F., Nkansah, F.A. & Anto, B.P. Drug-related problems and their clinical interventions during a very Ghanaian teaching hospital. *Saf Health*, 2016; 2: 15.
7. Al Rahbi, Hussain Abdullah Mubarak et al. "Interventions by pharmacists in out-patient pharmaceutical care." *Saudi pharmaceutical journal: SPJ: the official publication of the Saudi Pharmaceutical Society*, 2014; 22,2: 101-6.
8. Viktil KK, Blix HS. The impact of clinical pharmacists on drug-related problems and clinical outcomes. *Basic Clin Pharmacol Toxicol*, Mar, 2008; 102(3): 275-80. DOI: 10.1111/j.1742-7843.2007.00206. x. Epub 2008 Jan 30. PMID: 18248511.
9. Muhammad Umair Khan, The Impact of Clinical Pharmacists' Interventions on Drug Related Problems in a Teaching Based Hospital, *International Journal of Pharmaceutical and Clinical Research*, 2014; 6(3): 276-280. ISSN-0975 1556.
10. Ganachari MS, Mahendra Kumar BJ, Wali SC, FabinM. Assessment of Drug Therapy Interventions by Clinical Pharmacist in a Tertiary Care Hospital. *IndJPharmPract.*, 2010; 3: 22-28.
11. Mohammed, Sayibu & Poudel, Shobha & Laloo, F. & Madhur, A. & Robert, R. & Mathew, Binu. Assessment of drug-related problems in a tertiary care teaching hospital, India. *Asian Journal of Pharmaceutical and Clinical Research*, 2017; 10: 310-313. 10.22159/ajpcr.2017.v10i2.15678.
12. Biradar, Siddaruda M.; Indu, Pathi; G., Manjunatha Rao; V., Kalyane N.; Ambali, Anand P.; Naikwadi, "Impact of drug-related problems and clinical pharmacist interventions on therapeutic outcomes of the patients admitted to a tertiary care hospital." *The Free Library*, 01 May 2017. 12 May 2022.DOI:10.5455/ijmsph.2017.1164412122016