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Research Article

**A PROSPECTIVE INTERVENTIONAL STUDY ON THE
IMPACT OF CLINICAL PHARMACOLOGIST ON PATIENT
CARE BY DRUG INTERVENTIONS IN INTENSIVE CARE
UNITS IN A TERTIARY MULTISPECIALITY
HOSPITAL IN NORTH INDIA****Elza Mathew^{1*}, Sreenath K¹, Elizabeth Wilson¹, Dijo Wilson¹, Apollo James² and
T. Sivakumar³**¹PharmD Interns, Department Of Pharmacy Practice, Nandha College of Pharmacy, Erode,
Tamilnadu.²Asst. Professor, Department Of Pharmacy Practice, Nandha College of Pharmacy, Erode,
Tamilnadu.³Principal, Nandha College of Pharmacy, Erode, Tamilnadu.**Abstract:**

Objective: The main aim was to analyze the impact and effectiveness of having a clinical pharmacologist in an intensive care unit to optimize drug therapy, reduce polypharmacy through clinical pharmacologist interventions by keeping main focus on optimizing the quality of pharmacotherapy and patient safety. [1,2]

Methods: A prospective interventional study on 170 patients was carried out in different specialized intensive care units of a multispeciality hospital in North India. Drug related problems were identified and documented.

Results: Out of 170 patients studied, a total of 89 clinical pharmacologist interventions were documented. Among them 66 suggestions were accepted by the physicians and 23 were not.

Conclusion: Clinical pharmacologists activities in our study has resulted in pointing out more serious problems present in the critical care areas. Hence it helped in improving the patient outcome.

Keywords: Intensive care units, drug-related problems, Drug interventions, Pharmacologist

***Corresponding Author:**

Elza Mathew,
PharmD Interns,
Department Of Pharmacy Practice,
Nandha College of Pharmacy, Erode, Tamilnadu.
Phone no: 8281458883
Email: elzam8@gmail.com

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INTRODUCTION:

Intensive care units are about specialized and dedicated care given by a team to a patient who is very seriously ill. The patients who are admitted to critical care units are at high risk for medication errors and related patient harm(preventable adverse drug events), due to the critical nature of their illness, polypharmacy, high frequency of changes in pharmacotherapy and use of high risk drugs. Many studies have revealed that on ward, daily participation of a clinical pharmacologist into the intensive care unit can effectively and efficiently reduce the number of medication error and patient harm. [3]Clinical pharmacologists are the uniquely trained ones in pharmacotherapeutics and pharmacology and they can provide comprehensive drug management to patients and providers.(which include physicians and additional members of the care team.) [4] The concept of having a clinical pharmacologist in intensivists led multidisciplinary team evolved in the early 1980s in USA. [5] Pharmacologists intervention outcomes mainly included economics, health related quality of life, patient satisfaction, adverse drug events, adverse drug reaction and medication appropriateness. We therefore designed a study to assess the impact of clinical pharmacologist whether it could add value to the medication and patient safety.[3]

MATERIALS AND METHODS:

The prospective, interventional study was carried out in a 750-bedded multispecialty hospital in North India. All patients irrespective of age, gender and type of infection admitted into the intensive care units such as medical ICU, pediatric ICU, surgical ICU, transplant ICU, neonatal ICU and cardiac ICU.[6] Every patient on polypharmacy and with co-

morbid conditions were also included. Patients not on polypharmacy were considered as exclusion criteria.

A post graduate clinical pharmacologist reviewed the drug prescription over a period of 1 month. They evaluated each new medication order for its appropriateness for given indication, duration of therapy, drug dosage and frequency, risk of drug-drug and drug-disease interaction; the whole of medication scheme was checked for pharmacologic duplication and drug omissions. When the ICU clinical pharmacologist was absent from the intensive care unit, the file was reviewed on the subsequent monitoring day. All the evaluations were based on the international and national pharmacotherapy guidelines and local evidence-based pharmacotherapy protocols.

When any drug related problem is identified, then it will be discussed with the physician in duty and appropriate suggestions will be provided. Then it will be recorded and documented in a pre-prepared case report form. Accepting the intervention is entirely the discretion of the medical staff. Each data analysis and results were presented as percentage and numerically coded for the ease of the descriptive status. Also the results will be discussed with the chiefs in the monthly meeting. [7]

RESULTS:

A total of 170 patients who were admitted in the intensive care units were enrolled in to our study. On reviewing these patients a total of 89(52.35%) drug related problems were identified. Out of these interventions 66(74.15%) were approved by the physicians and remaining 23(25.84%) was unapproved.[8]

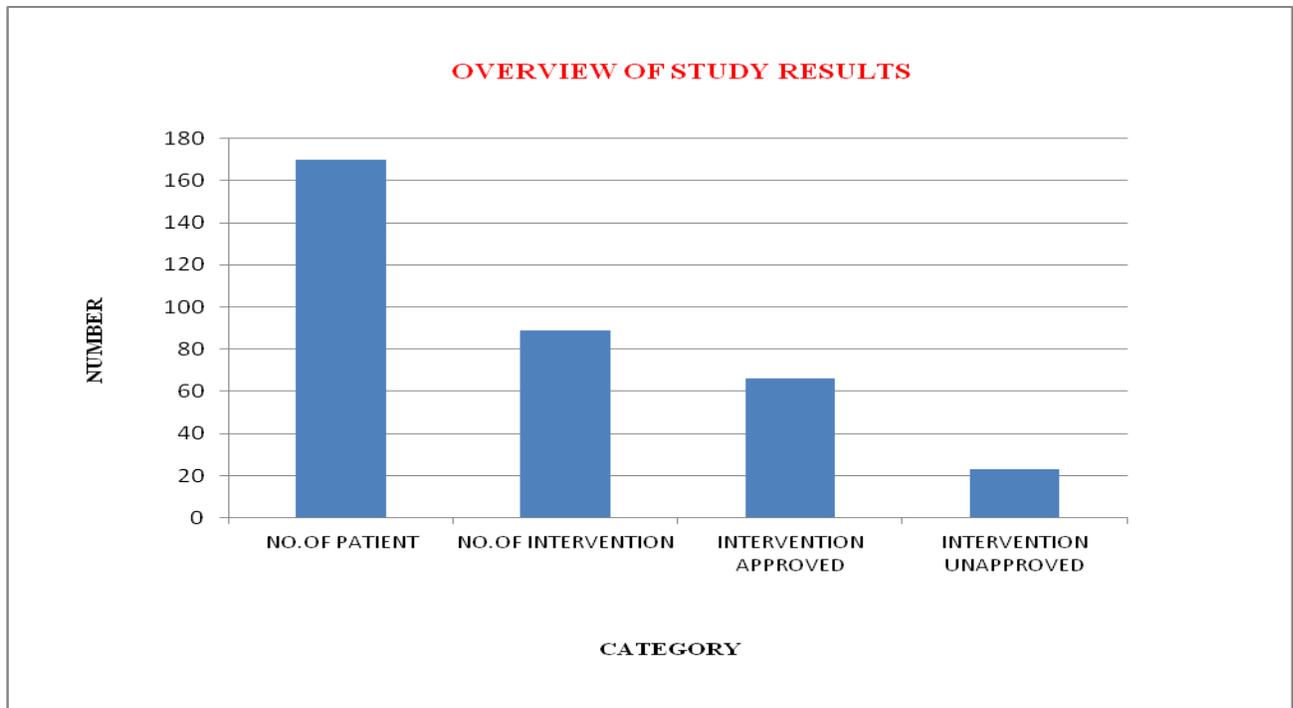


Fig 1: Overview of the study results

The very frequent DRP which was identified was drug interactions (n=25; 28.08%) followed by dose adjustments (n=21; 23.59%). Dose adjustments were mainly performed for renally impaired patients.

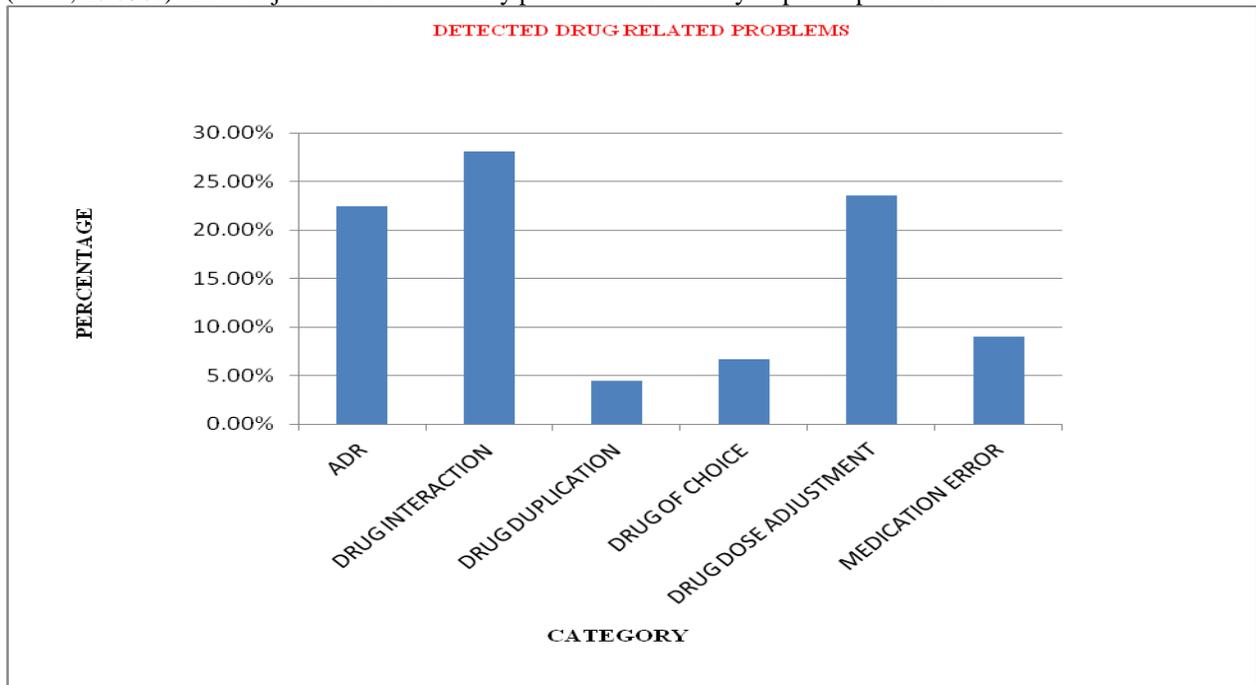


Figure 2 Detected drug related problems

The level of interventions was mainly sorted out in both prescriber and drug level. Mostly found is the prescriber level which included providing suggestions to the physician (n=16; 17.97%), the physician may ask for clarification (n=11; 12.35%) and then they may or may not accept the intervention. The drug level modifications included the following.

Table 1 Drug level interventions for drug related problem[1]

Level Of Intervention	Detailed Classification	n
At drug level	Drug changed	2 (5.12%)
	Dose or dosage form changed	15 (38.46%)
	Drug stopped	10 (25.64%)
	New drug started	12 (30.76%)

DISCUSSION:

Every patient in the intensive care units will be critically ill and will be treated by different physicians; hence polypharmacy will be very common in this setup. [1] This was the main reason for the incidence of large number of drug interactions in our study. Not only that, but also the patients will be with co morbid medical conditions.

Another main drug related problem was dose adjustment which was mostly associated with antibiotics. The dose was increased, decreased or else spacing of administration was modified. Drug duplication, choice of drug, adverse drug interactions are the various other drug related problems which was reported in our study.

The alternate reason for drug related problems are the increased work load of doctors/ medicine postgraduates, lack of adequate knowledge about the newly marketed drugs, urgency in providing treatment and possible stress on health care professionals.

In this scenario no doubt, clinical pharmacology have made positive impact on hospital health care system.[9] It is highly necessary to have a clinical pharmacologist especially in critical care units to verify the treatment charts and to rectify the issues. Many studies have even reported the drug profit, cost savings and patient benefits of having a clinical pharmacologist. [7]

CONCLUSION:

The results of the study provides a sound justification for the need of involving a full time clinical pharmacologist to the critical care units where the patient care is very complex and medication use is error-prone. They can definitely help in improving patient safety and outcome, reduce costs and provide quality of care.[5,10]

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