

**A PROSPECTIVE STUDY ON CLINICAL OUTCOMES OF POLYPHARMACY IN  
TERTIARY CARE HOSPITAL**

**Nayana P. Kunderi<sup>1</sup>, Vishal Vijayan\*<sup>2</sup>, Amal Devasia<sup>2</sup>, Jothika Ravichandran<sup>2</sup>, Melikha Nessler<sup>2</sup>, Dr. Spoorthi H.V<sup>3</sup>, Dr. Satheesh Kumar<sup>1</sup> and Dr. Narayana Swamy V.B.<sup>1</sup>**

<sup>1</sup>Department of Pharmacy Practice RR College of Pharmacy Bangalore, Karnataka, India.

<sup>2</sup>Interns, Department of Pharmacy Practice RR College of Pharmacy, Bangalore, Karnataka, India.

<sup>3</sup>Department of Pharmacology Sapthagiri Institute of Medical Science and Research Centre, Bangalore, Karnataka, India.

**\*Corresponding Author: Vishal Vijayan**

Interns, Department of Pharmacy Practice RR College of Pharmacy, Bangalore, Karnataka, India.

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**ABSTRACT**

The cross sectional study conducted to assess the clinical outcomes of polypharmacy in tertiary care hospital showed a total more than 200 cases with the above mentioned risk, of which male patients were higher than females. The final group of patients assessed comprised of patients diagnosed with multiple diseases in combination along with singular disease like IHD, CKD, HTN etc. Most of the study patients had a maximum of 20 drugs and minimum of 5 drugs being administered regularly, causing interaction and other side effects in their treatment regime. The study aimed to find the outcomes of the population having polypharmacy along with the goal to educate these population for better life and health care.

**KEYWORDS:** Polypharmacy, drug interactions.

Polypharmacy is the condition resulting from using five or more drugs, some of them may clinically inappropriate.<sup>[3]</sup> Poly pharmacy is commonly seen in elderly patients due to increasing number of chronic diseases, treatment by multiple prescribing, high cost of prescription medications, re-use of old medications, availability of OTC medications, use of herbal and vitamin formulations, inadequate patient knowledge of medications and medical conditions etc. Poly pharmacy increases the incidence of adverse drug reactions, drug interactions, non – adherence which again leads to increase in length of hospitalizations that again increases the health care cost.<sup>[1]</sup>

There are different factors that contribute to polypharmacy in the geriatric patients. Some doctors may prescribe more drugs for geriatric than they may have in the past only because of that there is diverse availability of the drugs.<sup>[3]</sup> Although the new drug discoveries of a wide group of pharmaceutical products for a wide variety of conditions has saved many patients, it has also led to both overuse and inappropriate use of prescription that made many people unfortunate. And many of the medicines which were once available for the patients with prescription only are now available as OTC medicines. Herbal and other dietary formulations are also

increasing in their use day by day especially among the geriatric patients.

There is a situation existing that a patient of age over 60 is more likely to have many serious disorders and each need at least one drug. Those with more than one disease condition may receive treatment from different doctors whom may prescribe a different medication to treat the same symptoms. In addition to this, patients may buy the drugs from more than one pharmacy, and each pharmacist only checks for the potential effects of only those medications that the pharmacist in charge knows the patient is supposed to be taking.<sup>[3]</sup> Another factor called the prescribing cascade occurs when an elderly patient develops side effects from a medication he is taking however; his healthcare provider interprets the symptoms not as a side effects of the drug but as symptoms not as side effects of the drug but as symptoms of another medical condition. Thus, he then prescribes another drug creating the potential for even more side effects. The study was conducted with the aim of assessing the clinical outcomes of polypharmacy in adult patients in tertiary care hospital.

**METHODOLOGY**

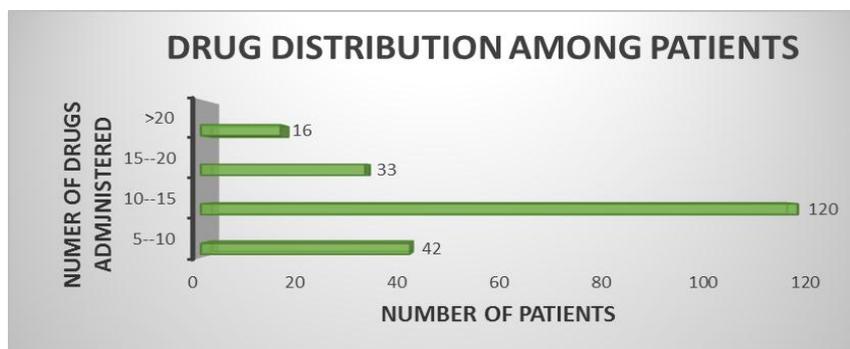
A cross- sectional study was carried out in In-patient Department of Sapthagiri Institute of Medical Science

and Research Centre, Bangalore. The study was conducted in all adult in-patients satisfying the inclusion criteria. The data was collected and reviewed from those patients on daily basis in a pre-designed format which included the demographic details, past medication history, co morbid condition, therapeutic drugs including name, dose, duration, and frequency of drugs. The collected data was entered in Microsoft excel sheet for analysis of results later. The prescription was assessed for outcomes that appear contradictory to the proposed goals of therapy. The entire data was analysed using appropriate statistical methods.

## RESULTS

Out of the 211 cases selected 138(65%) was found to be males and 73(35%) females. Observed study subjects admitted were having comorbidities either singular or

multiple for which treatment and evaluation was done. The disease distribution of the study population indicates that CKD-173(81.99%) is the most prevalent and parkinsonism ,OSA, hernia, angina, the least 1( 0.47%) out of total 211 cases, followed by HTN- 165 (78.19%), T2 DM-138(65.40%), IHD-66(31.27%), MI-09(4.26%), UTI-07(3.31%) ,COPD-6(2.84%) and other cardiac cases below five respectively. In the treatment or evaluation of polypharmacy, we studied the frequency of drugs being administered and cross referenced the number of patients taking these number of drugs for each diagnosis, the result identified were a) more than three-fourth of the study population were being administered with 10-15 drugs daily that is 120 (56.87%) patients and greater than 20 drugs in 16 (7.5%) patients which represented in the fig 1.



As the outcomes of treatment were assessed, the frequently of interactions were checked for their prevalence among the prescribed drugs and serious interactions. The major and frequently reported interactions were Ranolazine with Metformin drug interaction in 6 patients followed by Fluconazole with Amiodarone in 4 patients, Potassium chloride and spironolactone in 3 patients, Rifampicin and Pyrazinamide in 3 patients, Sodium bicarbonate with levofloxacin, Clarithromycin with tolvaptan, aspirin with ramipril, were found to be in 2 patients. Other 24 interactions were identified in each case. The frequency of drug- drug interactions categorized according to the Age group was found to be 14 cases in the age group of 61-70 years followed by 11 cases in 71-80years. Above 80 years and 51-60 years had 3 cases and 40-50 years showed 2 case.

Our study also included the rational prescribing of drugs in the study population. During the cross -sectional study, 21 cases out of 173 CKD cases had irrational prescribing of antibiotics according to article on drug therapy in patients with chronic renal failure. This made a major impact on the study results as majority of the study population were suffered from chronic kidney disease. Irrespective of the age, sex and diagnosis for which they were treated, antibiotics like ceftum (second generation antibiotics) Magnex forte (third generation cephalosporin). Azee, ceftriaxone, monocef being some of the antibiotics were prescribed. It was prescribed in

both IV and oral route and for 1 to 3 days either once twice or thrice depending on the use of these drugs irrespective of whether they are generic or branded ,does not change its probability of causing interaction or any other unwanted reaction. The prevalence of cases among our study population shows CKD, T2 DM and HTN and the antibiotics like azithromycin being used in CKD patients that lead to antibiotic toxicity is a well evidenced matter. These antibiotics when prescribed with respect to no indication in diagnosis leads to increased expense and also the unwanted reactions. For instance, a tablet of Azithral 500 by alembic pharmaceutical cost Rs 23.9 and an injection of the same dose cost Rs 214.65, an injection of monocef 500 mg costs Rs. 50.61 whereas a XONE injection costs Rs.60.18, a tablet of second generation cephalosporin, ceftum costs Rs. 100.

## DISCUSSION

The study was done among the inpatients with a single disease or co morbidity, the age of 40 years and above were taken that fit the other inclusion criteria as well.

➤ 211 cases were selected as samples that fit the inclusion criteria out of which the gender distribution observed were 138 males and 73 females which contributed to 65% and 35% respectively. This indicates a significant increase in prevalence of comorbidities in males than in females which was contrary to the results obtained in the comparative studies conducted by K B Rakesh, Mukta N Chowta, where their was slight

difference in the disparity in prevalence among male and female .

- The diseases that were more frequent or in which the number of medications were high in descending order were, CKD, HTN, and T2 DM.
- These diseases were present either as individual or as co morbidities in the patients assessed.
- The number of drugs administered for each individual patient in the study population was analysed and the most frequently prescribed number of drugs were in the category of 10-15 and was found on 120 patients out of the total followed by 5-10 drugs.
- In 42 patients and 15-20 was being administered in 33 patients only 16 patients were being given 20 drugs and more.
- The outcomes like drug-drug interactions turned out to be 46 serious interactions with ranolazine and metformin interaction being the prevalent one. In accordance only 4 serious adverse drug reactions were also reported which was similar to the study conducted by Lisha Shaiju and L P Amaayappan<sup>2</sup> in the international journal of pharmacotherapy were they obtained a similar amount of interactions in their total
- The age category where drug interactions were more prevalent was in the geriatric category of 61 – 70 where 14 cases were found followed by 11 cases in 71 – 80 this may be due to the frail body condition of the geriatric age group. However the study conducted by John Johny<sup>4</sup> and group finds results contradictory to the present study where they got gender distribution 50.7% in males and 49.3% in females making the distribution almost equal. The most cases were number of drugs administered in their study was in the category of 7-9.
- The dosage forms like OTC and other Ayurveda could not be assessed due to no significant information from any source from patient, bystander etc.

## CONCLUSION

The management of morbidities among adult patient is becoming more and more important as the percentage of people having these manageable diseases are increasing among the said age groups. The morbidity and mortality rate of these special age groups have increased during the covid pandemic of 2019. As these co-morbidities are merely manageable in the prevalent population steps to control these disparities should be done. As for the risk population exercise and healthy diet are key steps for their prevention.

**“AS PREVENTION IS BETTER THAN CURE”**

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