International Journal of Science and Healthcare Research
Vol.8; Issue: 1; Jan.-March 2023
Website: ijshr.com
Original Research Article *ISSN: 2455-7587*

Effect of Polypharmacy on Adverse Drug Reaction Among Geriatric Patients at Tertiary Care Hospital

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DOI: https://doi.org/10.52403/ijshr.20230144

ABSTRACT

BACKGROUND: Polypharmacy and Drug - related problems (DRPs) have been shown to prevail in hospitalized patients. We evaluated the prevalence of polypharmacy and investigated relationship between polypharmacy and adverse drug reaction occur with it. The present study was designed to identify the adverse drug reactions occur due to polypharmacy.

METHODOLOGY: This observational study was conducted for 6 months in the various department of a tertiary care Super speciality Hospital at Malabar region of Kerala. The patients were selected based on inclusion and exclusion criteria.

RESULTS: A total of 60 geriatric inpatients were selected, of which approximately 60% were male. About 38% of population had co-morbidities (1-4) lead to more number of prescribed medications. More number of patients were admitted in general medicine department (43%) and secondly in neurological department (26%) followed by gastroenterology (15%) and general surgeon (5%). From the selected population, 30%of people occurred with adverse drug reactions. Among them 94.4% were assessed as possible cases by Naranjo's algorithm scale

CONCLUSION: Polypharmacy among geriatric patients is mainly due to the co-morbidities. This study concluded that polypharmacy among geriatric patients were high and a part of them (30%) were occurred with adverse drug reactions. Efforts should be made to improve appropriate medication and quality of life of geriatrics. Educational programmes need to be implemented and can improve the awareness of health care workers. Pharmacists also have a key role in improving appropriate use of medications.

Keywords: Polypharmacy, geriatric, concomitant, drug interaction, Naranjo's algorithm

INTRODUCTION

Polypharmacy is often defined as the routine use of five or more medications. This includes over the counter, prescription and /or traditional and complementary medicines used by a patient. The use of multiple medicines, commonly referred to as polypharmacy is common in the older population with multimorbidity. Polypharmacy is associated with adverse outcomes including mortality, falls, adverse drug reaction, increased length of stay in hospital and readmission to hospital. Adverse drug events are unintended pharmacologic effects that occur when a medication is administered in usual dose. Polypharmacy increases the risk of drug-drug interactions and requires an individual risk assessment. Some of the drug-drug interactions are documented to be associated with harm in older adults including intoxication, gastrointestinal bleeding, or falls. Therefore, they are considered to be of special importance in the elderly patients. "Older" is preferred over "elderly", but both are equally imprecise;>65 is the age often used, but most people do not need geriatrics expertise in their care until age 70,75, or even 80. Polypharmacy is a major concern in the care of older adults. Due to the

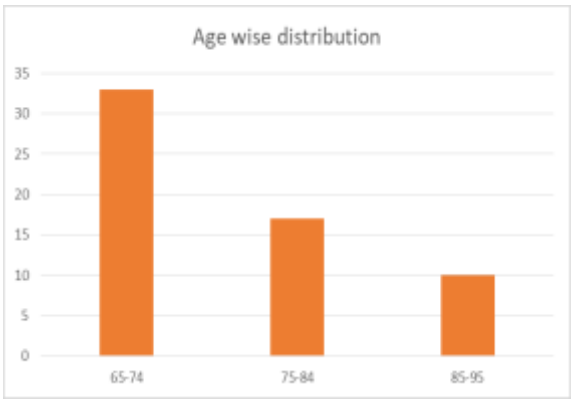
increase in the population of geriatrics and the medical complexity of older adults, every doctor should receive basic Geriatric Medicine training during their undergraduate education, aimed at developing knowledge, skills and attitudes relevant to older people. Methods to reduce the risk of polypharmacy include patient education, Physician education such as education and feedback system, and regulatory intervention continual drug and monitoring is essential.

MATERIALS & METHODS

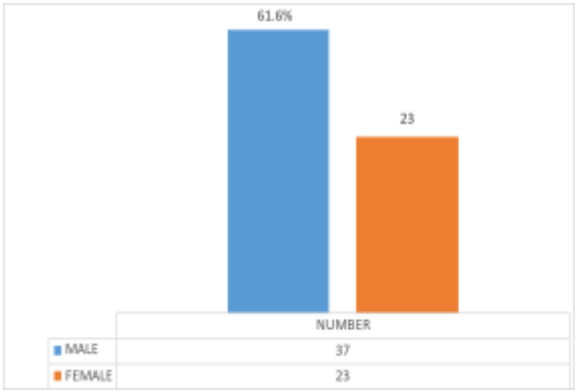
The study was conducted at a tertiary care hospital at Malabar region of Kerala and it is an observational study with a period of 6 months that focused on effect of polypharmacy among geriatric patients in a tertiary care hospital. Inclusion and exclusion were made based on the different patients admitted on the various departments of the hospital. System based patients' case sheet and prescriptions were used to collect data. Well-designed data collection form was used to collect and document the patient data, that describes the patients' demographics, past medical and medication history, lab investigation, pharmacotherapy details and adverse drug reactions. Causality assessment of ADRs were done using Naranjo's Algorithm Scale.

RESULT

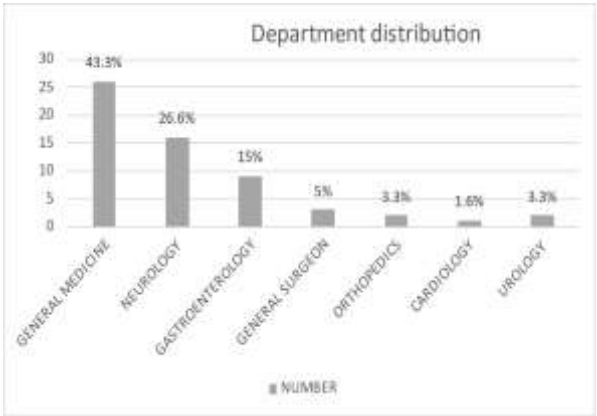
After analyzing the estimated population, patients were categorized into 3 groups, out of total collected patients(n=60),55%(n=33) of patients were under the age group of 65-74 years followed by 28.3%(n=17) with in the group 75-84 years and 16.6%(n=10) were under the age group 85-95. We found that 61.6%(n=37) were male and 38.3% (n=23) were female. Out of 60 population, 43.3% (n=26) were visited to General medicine department, 26.6%(n=16) visited neurology, 15%(n=9) visited gastroenterology, 5%(n=3) visited general surgeon, 3.3% visited orthopedics and urology and 1.6% (n=1) visited Cardiology. Among our population, 31.6% (n=19) have no more than one disease conditions but 68.3%(n=41) have 1-4 diseases in them, 25% (n=15) were having five drugs at a time, 65%(n=39) were in the 5-8 medications and 10%(n=6) were taking 9 and more than 9 number of drugs at a time. Out of 60 population, 15 were occurred with ADR and among them 94.4% (n=17) were in the possible category and 5.5%(n=1) was in the probable category.



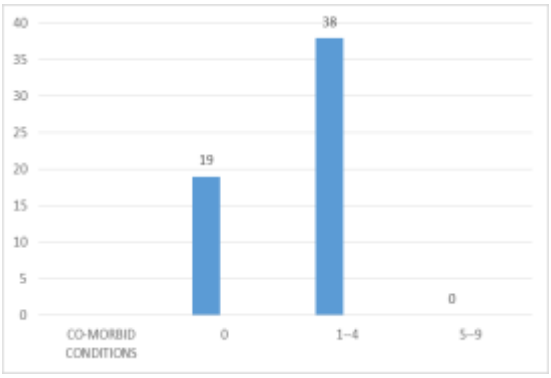
(Fig.1 Graphical representation of age wise distribution)



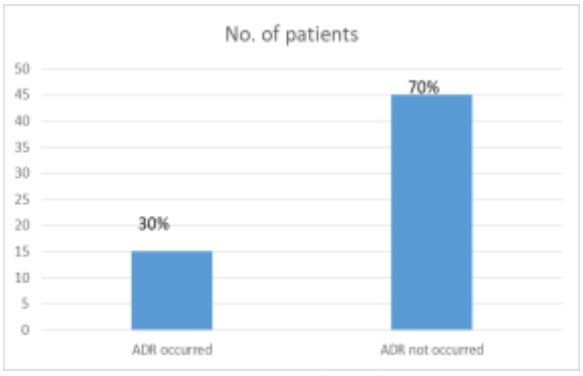
(Fig. 2 Graphical representation of gender wise distribution)



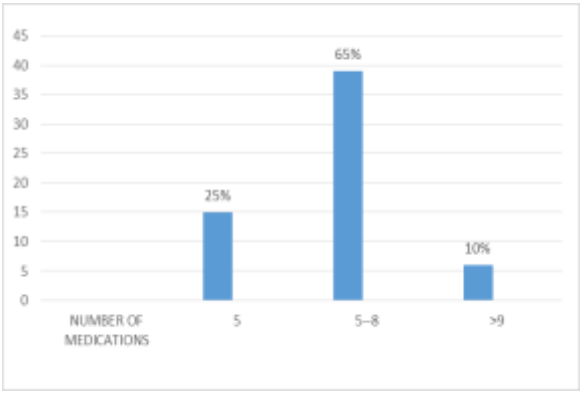
(Fig. 3 Graphical representation of department wise distribution)



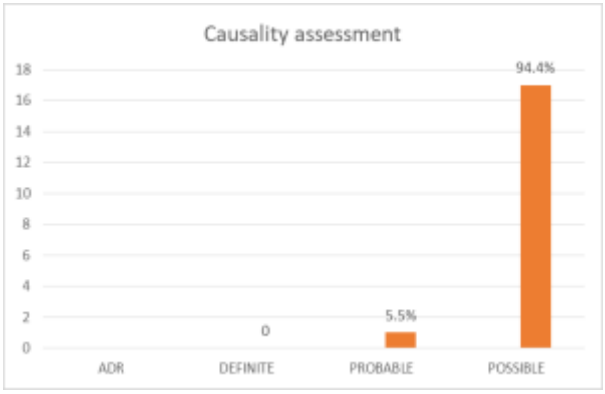
(Fig. 4 Graphical representation of co-morbid conditions)



(Fig.6 Graphical representation of no. of patients with ADR)



(Fig. 5 Graphical representation of number of medications)



(Fig.7 Graphical representation of causality assessment)

ADVERSE DRUG REACTION REPORTED

SI.NO.	DRUG	ADR
1.	T. DAPAGLIFLOZIN	Nausea and dizziness
2.	INJ.CIPROFLOXACIN	Allergic reaction
3.	INJ.HYDROCORTISONE	Swelling, pain at injection site
4.	INJ.LEVOFLOXACIN	Itching
5.	T. LEVOGEN	Itching and redness
6.	INJ.LASIX	Hypoglycemia & elevation in blood urea
7.	T. PARACETAMOL	Itching and red swollen
8.	T. ASPIRIN	Stomach upset, heartburn
9.	T. ATENOLOL	Fatigue, nausea, diarrhoea
10.	INJ.FOLIC ACID	Shivering
11.	T. PIRFENIDONE	Cholestatic hepatitis
12.	INJ.CEFOPERAZONE	Redness and swelling in skin
13.	INJ.CARBAPENAM	Hypersensitivity reaction
14.	T. TORSIMIDE	Headache, constipation
15.	T. GABAPENTIN & NORTRIPTYLINE	Headache, nausea, vomiting

DISCUSSION

A prospective observational study was conducted on geriatric patients with polypharmacy in order to access the adverse drug reactions occurred in them. This study was carried out in the General medicine, Neurology, Gastroenterology, Cardiology and Urology of KIMS Al Shifa hospital, Perinthalmanna, Malappuram. 60 patients were selected based on inclusion and exclusion criteria. Among them 18 ADRs were noted. The patient demographic factors were collected from the case file and were categorized according to age, gender and department. Patients were categorized into 3 groups, out of total collected patients(n=60), 55%(n=33) of patients were under the age group of 65-74 years followed by 28.3%(n=17) with in the group 75-84 years and 16.6%(n=10) were under the age group 85-95. Out of 60 population 61.6%(n=37) were male and 38.3%(n=23) were female.

This may be due to male patients were more visited than female patients during our study and 43.3%(n=26) were visited to General medicine department,26.6%(n=16) visited neurology, 15%(n=9) visited gastroenterology, 5%(n=3) visited general surgeon, 3.3% visited orthopedics and urology and 1.6% (n=1) visited cardiology. The selected patients for our study mostly visited general medicine then neurology and gastroenterology. This may be due to the most prevalent diseases occurring in geriatric patients are treated by general medicine department and also people are more prone to consult general medicine before going for specialist. Common diseases consulted in general medicine during our study were weakness, diabetics, etc. Out of 60 population,31.6% (n=19) have no more than one disease conditions but 68.3%(n=41) have 1-4 diseases in them. From this data it is clear that a major population in our study have more than one disease. This is a common scenario among geriatric population. As become elder the body functions slow down and lead to multiple diseases and medications and 25%(n=15) were having five drugs at a time,65%(n=39) were in the 5-8 medications and 10%(n=6) were taking 9 and more than 9 number of drugs at a time. This is due their different co-morbid conditions. This category of people are more chance to get adverse drug reactions in them. Polypharmacy has been associated with increased morbidity and mortality in the older population.

CONCLUSION

This study concluded that polypharmacy among geriatric patients were high and a part of them (30%) were occurred with adverse drug reactions. This high percentage of polypharmacy is because of the geriatric patients admitted to our hospital were have multiple co- morbidities. Efforts should be made to improve appropriate medication and quality of life of geriatrics. Educational programmes need to be implemented and can improve the awareness of health care workers. Pharmacist also have a key role in improving appropriate use of medications.

Declaration by Authors

Ethical Approval: Approved

Acknowledgement: We acknowledge our sincere thanks to hospital authorities for giving support to carry out the study in the hospital.

Source of Funding: None

Conflict of Interest: The authors declare no conflict of interest.

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How to cite this article: Shinu C, Masouda TK, Jusaina et.al. Effect of polypharmacy on adverse drug reaction among geriatric patients at tertiary care hospital. *International Journal of Science & Healthcare Research.* 2023; 8(1): 317-322. DOI: *https://doi.org/10.52403/ ijshr.20230144*

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