

A STUDY ON POLYPHARMACY IN SENIOR INDIAN POPULATION

Nimmy. N. John and N. Akshay Kumar

Department of Pharmacy Practice, N.E.T. Pharmacy College, Raichur, Karnataka, India.

ABSTRACT

Geriatrics is the branch of medicine which aims to promote health by preventing and treating diseases and disabilities in older adults. Elderly people particularly are subjected to have multiple medical disorders; some have self-prescribed many herbal medications and over-the-counter drugs; some adult physicians prescribe medications to their specialty without reviewing other medications used by the elder patient. This polypharmacy may result in many drug interactions and may cause some adverse drug reactions. So the main objective of our study was to assess the polypharmacy and inappropriate medication usage in geriatric population. The prospective study was carried out in the departments of general medicine, cardiology and pulmonology of a private teaching hospital. The prescriptions were also categorized based on the appropriateness of the medications prescribed by the Beers criteria 2012 method. The analysis revealed us that 57.4% of the overall prescriptions was categorized as appropriate and 42.6% was categorized as inappropriate prescriptions. In India there are no standard guidelines about the use of drugs. The geriatric patients with a multiple diseases had consumed more drugs and have higher chance of polypharmacy and inappropriate drug usage. The purpose of this study was to assess the polypharmacy and related factors like how the lack of personalized care in geriatric patients will lead to irrational use of drugs and higher polypharmacy.

INTRODUCTION

Geriatrics is the branch of medicine which aims to promote health by preventing and treating diseases and disabilities in older adults. The ageing process is of course a biological reality which has its own dynamic, largely beyond human control. However, it is also subject to the constructions by which each society makes sense of old age. In the developed world, chronological time plays a paramount role. The age of 60 or 65, roughly equivalent to retirement ages in most developed countries, is said to be the beginning of old age¹. World Health Organization (1963) has defined 'middle-age' as being 45-59 years, 'elderly' as being 60-74 years and the 'aged' as over 75 years of age.

The aged body is different physiologically from the younger adult body, and during old age, the decline of various organ systems becomes manifest. Previous health issues and lifestyle choices produce a

different constellation of diseases and symptoms in different people². The decline in physiological reserve in organs makes the elderly develop some kinds of diseases and have more complications from mild problems. A mild fever in elderly persons may cause confusion, which may lead to a fall and to a fracture of the neck of the femur.

Elderly people particularly are subjected to have multiple medical disorders; some have self-prescribed many herbal medications and over-the-counter drugs; some adult physicians prescribe medications to their specialty without reviewing other medications used by the elder patient. This polypharmacy may result in many drug interactions and may cause some adverse drug reactions. Polypharmacy is particularly common among older adults around 20% of people over 70 years in the western world were taking five or more drugs. In one study, it was found that

prescription and nonprescription medications were commonly used together among older adults, with nearly 1 in 25 individuals potentially at risk for a major drug-drug interaction.³ Drugs are excreted mostly by the kidneys or the liver, either of which may be impaired in the elderly, and as a result the medication might need adjustment to avoid overwhelming the kidneys or liver.

Data from third National Health and Nutrition Examination Survey (NHANES III) reveals that 74% of elderly people use prescription medications. Persons aged 65-74 years, half of them use 2 or more prescription drugs, 12% use 5 or more prescription drugs and those aged 75 and above, 60% use at least two prescription drugs and 16% use at least five.⁵

Use of potentially inappropriate medications in elderly patients is a major health care concern. It is likely to increase the risk of adverse drug events, which are estimated to be the fifth most common cause of death among hospitalized patients.⁶ Poor adherence to medications is also a major public health problem and remains one of the main unresolved issues especially in the management of hypertension. So the main objective of our study was to assess the polypharmacy and inappropriate medication usage in geriatric population.

MATERIAL AND METHODS

The prospective study was carried out in the departments of general medicine, cardiology and pulmonology of a 500 bedded multispecialty private teaching hospital. The study was carried out by regular ward round participation to obtain relevant data by using previous designed protocol after receiving acceptance from Institutional Ethics Committee.

Inclusion criteria: Patients admitted to general, special, deluxe wards of departments of General medicine, Pulmonology and Cardiology who were of age above 60 years were included.

Exclusion criteria: Out Patients and terminally ill patients

RESULTS

A total of 550 patients were admitted in the study site during the period, in which 85 cases were found to be geriatrics with 65.88% males. Whereas 37.64% represented general medicine, 27.05% represented pulmonology, and 23.52% represented cardiology. 57.64% of patients are of young old category (65-74 years) were the most prevailing age group in both genders. The details were depicted in Fig: 1 and Fig: 2. The most common disorders were found to be Hypertension with 27.3%, Type II Diabetes Mellitus with 22.4%, Chronic Obstructive Pulmonary Disorder with 18.5% and Ischemic Heart Disease with 15.4%. Other diagnosis observed in our study population are Congestive Cardiac Failure, Urinary tract infection, Rheumatoid Arthritis, Cirrhosis and Hepatitis.

Antibiotics were widely prescribed (68.15%) Whereas, most commonly prescribed antibiotics were found to be Amoxicillin+Clavulanic acid with 28% followed by Ampicillin, Cefotaxime and Ofloxacin with 8%, 12% and 10% respectively. The other categories of drugs include Antihypertensives, Cardiac glycosides, Antiulcer drugs, NSAIDs, Antianxiety drugs, Antihyperlipidemic drugs, Multivitamins, Antitussives, Mucolytics, Bronchodilators. However, Antiulcer drugs and anti anxiety drugs are widely used in elderly population.

Moreover, Etophylline and theophylline combination (45%) was widely used in geriatrics population. Amlodipine (32%), losartan potassium, (24%) and ramipril (12%) commonly used antihypertensive agents. Proton pump inhibitor especially pantoprazole was the commonly prescribed anti-ulcer drug (74%) followed by ranitidine hydrochloride (70%) was widely prescribed anti-ulcer agent. Alprazolam (70%) was mostly used sedative/ anti-anxiety.

The study population had been prescribed with minimum of 4 drugs to the maximum of 14 drugs. The average number of drugs been prescribed was found to be 9. In our study 18% of population had been prescribed with 2-4 drugs, 52.18% with more than 5 drugs and 27.52% with 9-12

drugs. A very less percentage of the population (1.18%) had been prescribed with more than 12 drugs whereas 95.88% prescription was classified as major polypharmacy. The analysis also revealed that 100% of prescriptions belonging to cardiology and 99% of the prescriptions belonging to general medicine.

The prescriptions were also categorized based on the appropriateness of the medications prescribed by the Beers criteria 2012 method. The analysis revealed us that 57.4% of the overall prescriptions was categorized as appropriate and 42.6% was categorized as inappropriate prescriptions. The drugs have to be avoided in the geriatrics as described in the Beers criteria was given in the following Table:1. Whereas drugs that were inappropriately prescribed in the particular diseased conditions were also identified and given in the Table:2.

Our study result shows that 58.23% of prescriptions had therapeutic polypharmacy. Our study reported that 73.35% of prescriptions were found to be rational with multiple drug use.

DISCUSSION

Polypharmacy and associated adverse drug reactions are becoming very common now a days. It is well established that older adults are more likely to be affected by multiple chronic conditions, thus increasing the likelihood that they take several or more

medications concurrently. Elderly patients often use multiple medications together, including prescription, nonprescription, and herbal or dietary supplements.⁷ In India there are no standard guidelines about the use of drugs. The geriatric patients with a multiple diseases had consumed more drugs and have higher chance of polypharmacy and inappropriate drug usage. The purpose of this study was to assess the polypharmacy and related factors like how the lack of personalized care in geriatric patients will leads to irrational use of drugs and higher polypharmacy.

CONCLUSION

Our study suggests that current practice in our hospital associated with greater polypharmacy and inappropriate medication use. A regular medication chart review by the clinical pharmacist to discontinue unnecessary medication will reduce the polypharmacy and inappropriate medication use. It will also reduce the cost of the therapy which will ultimately benefit the patients. It is also necessary to improve the geriatric care as this age group possesses risk for more diseases and medication use. In future a multidisciplinary approach, steps to be taken involving physicians, nurses and pharmacists has to work as team for bringing out rational drug use in geriatric population.

Table 1: List of Inappropriat E Drugs Use In Geriatrics As Per Beers Criteria 2012

DRUGS	INFERENCE	SEVERITY OF ADVERSE EFFECT
Piroxicam	NSAIDs can increase the risk of indigestion, ulcers, and bleeding in your stomach or colon. They can also increase blood pressure, affect your kidneys, and make heart failure worse.	High
Ibuprofen	Same as Piroxicam	High
Digoxin	Decreased renal clearance may lead to increased risk of toxic effects	Low
Diazepam	The drug has a long half-life in elderly patients (often several days) producing prolonged sedation and increasing the risk of falls and fractures. Short and intermediate acting benzodiazepam's are preferred if a benzodiazepine is required	High
Alprazolam	Same as Diazepam	High
Amitriptyline	Because of its strong anti-cholinergic and sedative properties these are rarely the antidepressant of choice for elderly patients.	High
Hyoscyamine	GI antispasmodic drugs are highly anticholinergic and have uncertain effectiveness. These drugs should be avoided.	High

Table 2:

Disease	Drug	Concern	Severity
Gastric Ulcer	NSAID's	May exacerbate existing ulcer or produce new ulcers	High
COPD	Beta blockers	May induce respiratory depression.	high

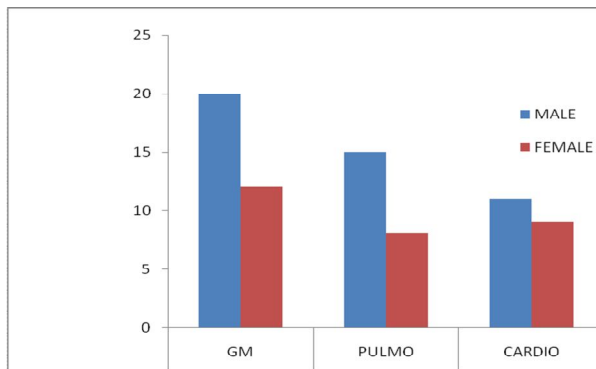


Fig. 1: Gender distribution of Patients

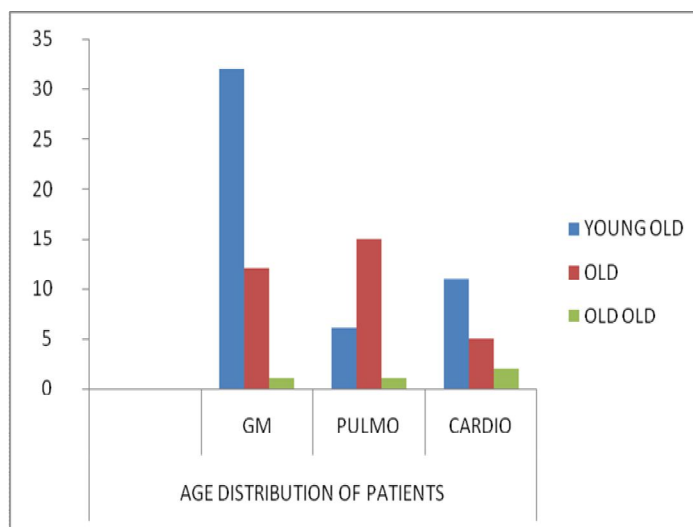


Fig. 2: Age distribution of patients

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