

## Drug Utilization in Geriatric Population in a Tertiary Care Centre

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### Abstract

One hundred and fifty-two prescriptions of patients aged more than 65 years were picked up from in-patients of our hospital and analysed for drug utilization pattern. The mean age of the patients was  $69.9 \pm 5.7$  years. The mean number of drugs per prescription were  $6.33 \pm 2.35$ . Tablets were used in 48.5%, injections in 39.6%, capsules and syrups in 5.5% each and inhalers in 1.1% of patients. Antibiotics were prescribed for 140 patients, diuretics for 34, ACE inhibitors for 33, Calcium channel blockers for 59, H<sub>2</sub> blockers for 84, narcotic analgesics and NSAIDs for 36 and 33 patients respectively. Beta blocker usage was minimal. Digoxin, aspirin and thrombolytics were used in 10, 50 and 5 patients respectively. Compliance was 100% and side effects like haemoptysis, gastritis, palpitation and vomiting were seen in 1 patient each.

### Key Words

Drug utilization, Geriatrics, Drug prescribing.

### Introduction

Drug prescribing for older patients offers special challenges. As compared to the younger individuals, older people take about three times more medications because of the increased incidence of chronic problems (5). As the number of drugs increase the risk for drug interactions, adverse reactions also increase. Special precautions have to be taken as there are changes in pharmacokinetics and pharmacodynamics due to the age. Physicians can usually do little to alter the above said characteristics. However, the choice of the drug, the dose and duration of therapy are under the control of the physician. As there is paucity of information to guide

the physicians and take proper decisions while prescribing to this special category of patients, we have undertaken the present study of drug utilization in elderly.

### Material & Methods

One hundred and fifty-two prescriptions, where the patients age was more than 65 years were picked up from in-patients of Nizam's Institute of Medical Sciences and the details of the patients like the name, age, sex, diagnosis, department, number of drugs prescribed, dose, duration, route of administration, whether the drugs were taken regularly and side

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effects if any, were recorded on to a data recording form for a period of six months.

## Results

Total number of prescriptions analysed at the end of six months were, one hundred and fifty-two from various departments like cardiology, general medicine, all surgical specialities (general surgery, vascular surgery, neurosurgery and cardiothoracic surgery), orthopaedics, neurology and gastroenterology (Table-I). The mean age of the patients was  $69.9 \pm 5.7$  years. The major diagnoses from cardiology department were coronary artery disease, congestive heart failure, atrial fibrillation and cardiomyopathy; from general medicine they were diabetes mellitus, hypertension, bronchial asthma and bronchogenic carcinoma; from surgical specialities carcinoma breast, coronary artery bypass graft, deep vein thrombosis and pulmonary thromboembolism; from orthopaedics intratrochanteric fracture neck of femur; from neurology stroke, cerebrovascular accidents, hemiplegia, hemiparesis and accelerated hypertension; from gastroenterology cirrhosis of liver, acute pancreatitis, colonic carcinoma and adenocarcinoma of stomach.

The mean number of drugs per prescription were  $6.33 \pm 2.35$ . The minimum number of drugs prescribed were 1 and maximum were 12. The type of formulations used

were tablets in 48.5%, injections 39.6%, capsules and syrups in 5.5% each and inhalers 1%.

Total number of antibiotics prescribed for these 152 patients were 140. Cephalosporins for 46, penicillins for 33, aminoglycosides for 30, metronidazole for 22, quinolones and macrolides for 8 and 1 patients respectively.

Diuretics were used in 34 patients. Frusemide was used in 26 patients followed by combination of frusemide with spironolactone and frusemide with amiloride in 6 and 1 patients respectively. Spironolactone was used as a single drug in one patient.

Thirty-three patients received ACE inhibitors in which enalapril was the most commonly prescribed (31 patients) and the 2 patients received lisinopril.

Fifty-nine prescriptions contained calcium channel blockers. Amlodipine and nifedipine were prescribed for 23 and 22 patients respectively followed by diltiazem in 11. Atenolol and nimodipine were used sparingly.

The usage of beta blockers was minimal. The newly emerging drugs like carvedilol and nicorandil were used in 3 and 4 patients respectively. The other groups of drugs like digoxin, aspirin for antiplatelet activity and thrombolytics were used in 10, 50 and 5 patients respectively.

Thirty-three patients received various NSAIDs. The newer NSAID nimesulide was used maximally in 18 followed by combination of ibuprofen and paracetamol and ketorolac in 7 each. Diclofenac sodium was less frequently used (one patient).

Eighty-four patients received  $H_2$  blockers out of which ranitidine was used in 63 and famotidine in 21. Proton pump inhibitors were less often used, omeprazole was used in 6 patients and lansoprazole in one patient.

**Table I**

**Departmentwise distribution of patients**

	Department	No. of patients
1.	Cardiology	39
2.	General Medicine	33
3.	Surgical Specialities	25
4.	Orthopaedics	24
5.	Neurology	16
6.	Gastroenterology	15

Among the benzodiazepines, alprazolam was maximally used in 25, diazepam in 16 and nitrazepam in 2 patients constituting a total of 43.

Narcotic analgesics were used in 36 patients. Tramadol was used in 26, morphine in 2 and pentazocine in 6 patients.

Metoclopramide and domperidone were used in 2 and 1 patients respectively as antiemetic agents. Amitriptyline was used in 3 patients as antidepressant. Iron, B-complex and calcium preparations were used in 47 patients.

### Discussion

The mean number of drugs per prescription in our study were 6.33/day/patient. In a previous study the mean number of regular items per prescription were 4.6/day/patient (1,4). In another community based study conducted in the general population the mean number of drugs per prescription were 3.2 in an urban area (2). Paula Rochon A. *et. al.*(5) had reported that elderly patients take about 3 times more number of medicines as compared to the younger individuals. However, in the present study the number of drugs used by the elderly was only 2 times more as compared to the general population (2).

Hypokalaemia is more prevalent in elderly patients and may be exaggerated by the diuretic therapy (3). In the present study, diuretics were used in 34 patients without any clinical evidence of hypokalaemia.

ACE inhibitors and potassium sparing diuretics were co-prescribed for 1 patient (0.65%) and rest of the prescriptions were appropriate.

A previous study (1) had shown low dose aspirin prescriptions in 36% which is comparable to the

prescriptions containing aspirin in our study (33%).

A previous study showed the usage of NSAIDs by the elderly patients as 13% (4).. However in our study the usage of NSAIDs was much higher (22%). However, it was encouraging to see that the latest COX-2 inhibitor nimesulide was used maximally.

H<sub>2</sub> blockers and proton pump inhibitor usage was only 2.6% in an earlier study (1) as compared to our study where the usage was 55%. This may be because ours is a tertiary care centre where most of the use is for prophylactic than for therapeutic reasons.

Benzodiazepines usage in our study and a previous study (1) were comparable.

Little duplication of treatment was seen in the present study whereas a previous study showed 14% of prescriptions containing 2 or more drugs with similar activity (2).

Universal problem with drug prescription is non-compliance. However in our study it was minimal as the drugs were administered by a nurse.

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