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Research Article

DRUG PRESCRIBING PATTERN IN GERIATRIC PATIENTS IN A RURAL TEACHING HOSPITAL

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ABSTRACT

Objective: The present study was undertaken to study prescribing pattern of various drugs in geriatric patients and also to evaluate inappropriate prescribing with the help of Beers criteria.

Material & methods: The study was conducted in Rajah Muthiah Medical College Hospital, Annamalai University from January 2013 to April 2013. A total of 92 case records of inpatients ≥ 65 years of both gender in medicine wards were reviewed. Relevant information was recorded in a designed proforma and data was evaluated.

Results: Most of the cases were from cardiovascular system (39.13%), followed by endocrine system (25 %). The most commonly prescribed drugs were gastrointestinal drugs (17.46 %), and followed by cardiovascular drugs (13.88 %). Polypharmacy was observed (89.13) in patients. According to Beers criteria, 12 (13.04%) patients were prescribed inappropriately and all these were drugs to be generally avoided in older adults.

Conclusion: This study has shown the patterns of diseases prevalent in geriatric patients, drug use among them and also suggests that drugs to be avoided in elderly are among the most frequently inappropriately prescribed drugs. Prevalence of polypharmacy was high which is usually unavoidable in the elderly. This indicates that there is a need for multidisciplinary and pharmaceutical care which may improve drug safety and adherence in the geriatric patients.

Keywords: Beers criteria, geriatric, polypharmacy, inappropriate prescribing

INTRODUCTION

Optimizing drug therapy is an essential part of caring for an older person. The process of prescribing a medication is complex and includes: deciding that a drug is indicated, choosing the best drug, determining a dose and schedule appropriate for the patient's physiologic status, monitoring for effectiveness and toxicity, educating the patient about expected side effects, and indications for seeking consultation. Prescribing for older patients presents unique challenges. Premarketing drug trials often exclude geriatric patients and approved doses may not be appropriate for older adults¹. Many medications need to be used with special caution because of age-related changes in pharmacokinetics (ie, absorption, distribution, metabolism, and excretion) and pharmacodynamics (the physiologic effects of the drug). Multiple drug use and polypharmacy is highly prevalent in elderly exposing them to drug interactions and increased cost

of therapy^{2,3}. Physiological aging and Alzheimer's disease also affects compliance. Hence this study was undertaken to identify the pattern of inappropriate use of medicines in this population which may help to prevent adverse drug reactions.

MATERIALS AND METHODS

Objectives: The prime objective of the work was to study the prescribing pattern of drugs in geriatric patients and also to evaluate the inappropriate prescribing with the help of Beers criteria. This prospective observational study was carried out in the Medicine ward of Rajah Muthiah Medical College and Hospital, Annamalai University for four months from January 2013 to April 2013. The study included 92 hospitalised patients of geriatric age group (≥ 65 years) of both sex. Demographic data, medical and medication history were collected from the patient's case sheet and analysed the drug prescribing pattern and evaluate inappropriate prescribing with help of Beers criteria.

RESULTS AND DISCUSSION

92 patient’s records were analyzed during the study period. Most of the patients were in the age group of 65-70yrs (73.26%).The study population comprised of 64.34% males. Maximum of these cases were from cardiovascular system (39.13%) followed by endocrine system (25 %)- Fig 1. Cardiac disorder and complications due to hypertension and followed by diabetic were the most common reasons for

hospital admission. Polypharmacy was observed in 89.13% cases. 6-8 drugs were prescribed for most patients (56.52%), 9-12 drugs were prescribed for patient (23.91%), followed by >12 drugs (8.69%) -Fig 2. Gastrointestinal drugs were most prescribed(17.46 %), cardiovascular drugs 13.88 %, Antimicrobial drugs (13.49%),drug acting Haematological system (12.89 %) followed by drug acting endocrine system(10.31%) and drug acting respiratory system (9.12%) were the most commonly prescribed medications (TABLE-1) in geriatric patients.

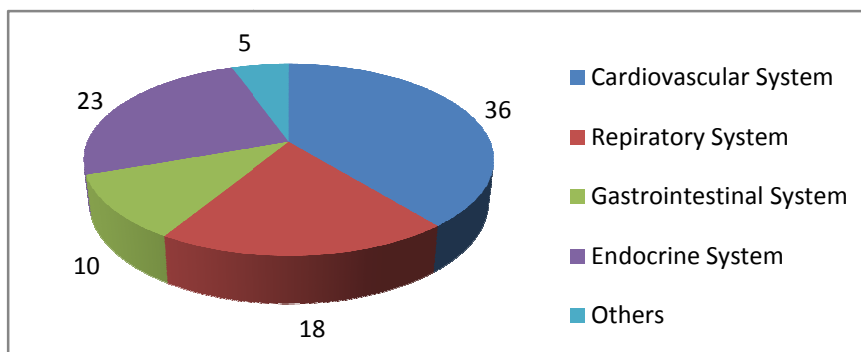


Fig.1: Distribution of patients

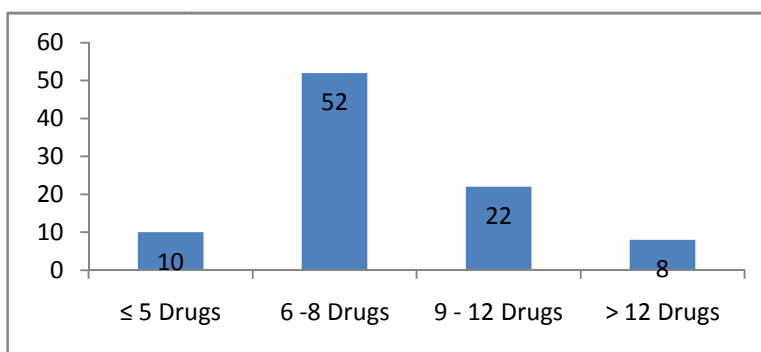


Fig.2: Number of drugs per Prescription

TABLE 1: Category of drugs prescribed in geriatric patients

Category of drugs	Number of drugs (%)
Drugs acting on Respiratory System	46 (9.12)
Antimicrobial drugs	68 (13.49)
Drugs acting on Haematological system	65 (12.89)
Drugs acting on Central Nervous System	21 (4.16)
Drugs acting on Gastrointestinal System	88 (17.46)
Vitamins, minerals & dietary supplements	34 (6.74)
Cardiovascular drugs	70 (13.88)
Drugs acting on Endocrine system	52 (10.31)
Analgesics & anti-inflammatory drugs	42 (8.33)
Others*	18 (3.57)
Total	504

* - Antihistamines, skeletal muscle relaxants

Based on Beers criteria, 12 (13.04%) patients received potentially inappropriate prescription of at least one drug and all these belong to category A (TABLE 2). A total of 504 formulations were prescribed out of which 12(2.38%) were prescribed inappropriately. Inappropriate prescribing can be

defined as prescribing medications outside the bounds of accepted medical standards⁴. In a previous study among the elderly at Kathmandu, respiratory and cardiovascular diseases were shown to be the predominant reasons for admission⁵.

Table 2: Frequency of use of Potentially Inappropriate Medicines in Geriatric Based on Beers Criteria

Category	Name of drugs	Number of drugs
A	Generally to be avoided in older adult	
	Alprazolam	03
	Amitryptiline	03
	Chlorpheniramine	04
	Diazepam	02
B	Drug that exceed maximum recommended daily dose	Nil
C	To be avoided in combination with specific co-morbidity	Nil

In this study, a total of 504 drug formulations were prescribed to 92 patients for different diseases. Beers criteria are very frequently used method for evaluating appropriateness of prescribing in elderly. It was developed in 1999 and recently updated in 2012. In the present study, according to Beers criteria; it was revealed that 2.38% of total drugs prescribed were inappropriate as compared to 4.1% in an earlier study conducted in south India⁶. Anticholinergics, antihistamines, long acting sulfonylurea & benzodiazepines were prescribed to 12 patients. Long acting benzodiazepines (diazepam) can cause hangover effects, Concomitant increase in falls. Hence short acting benzodiazepines like oxazepam is preferred. Among geriatric patients, dizziness, postural hypotension, constipation, delayed micturition are found commonly with tricyclic antidepressants. Counselling elderly patients and their family members may help in improving their mood rather than drug therapy for depression. However, these findings are not significantly different from that found in a study from Japan⁷ Ahmedabad⁸ and Gujrat⁹ which observed use of at least one inappropriate medicine in 21.1%, 23.58% and 27.25% prescriptions respectively. This suggests that drugs 'to be avoided in elderly' are among the most frequently inappropriately prescribed drugs¹⁰.

CONCLUSION

This study has shown the patterns of diseases prevalent in geriatric patients, drug use among them and also suggests that drugs to be avoided in elderly are among the most frequent inappropriately prescribed drugs. Prevalence of polypharmacy was high and it is usually unavoidable in the elderly. More studies are required on the pattern of inappropriate prescribing over a long period of time and on intervention programs to reduce potentially adverse health outcomes in elderly patients. This indicates that there is a need for multidisciplinary, multifaceted, multi sector approach and pharmaceutical care which may improve drug safety and adherence in the geriatric patients.

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