



THE STUDY ON USE OF POTENTIALLY INAPPROPRIATE MEDICATIONS IN ELDERLY PATIENTS PRESENTING TO A TERTIARY CARE HOSPITAL IN KERALA

Medicine

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ABSTRACT

Introduction: Elderly patients are the most common group who use health care facilities. Use of potentially inappropriate medications results in adverse health outcomes thereby affecting quality of health care system. This study assesses the prevalence of prescription of potentially inappropriate medications in elderly patients presenting to the geriatric clinic of a tertiary care hospital in Kerala for first time.

Materials and methods:

The study was a hospital based retrospective study. The data from patients presenting to Geriatrics clinic from period of 1st January 2016 to 31st December 2016 were retrieved from the medical records and assessed for potentially inappropriate drugs in accord with modified 2012 Beer's criteria.

Results A total of 275 patients were included in the study of which 110 (40%) were males and 165 (60%) were females. 81 (29.5%) out of 275 patients had at least one potentially inappropriate medication. The most common inappropriately prescribed medication belonged to psychotropic drug class (12.4%) followed by central nervous system (9.8%). It was found on statistical analysis that age and gender of the patients had no association with potentially inappropriate medication use.

Conclusion The prescription potentially inappropriate medications is a serious problem which can affect overall quality of health care. Hence regular medication review and reconciliation practices should be implemented to prevent this to an extent

KEYWORDS

Medication, Geriatric

Introduction

Elderly patients are the most common group who use health care facilities. Over use of drugs results in problems like drug over dose, drug reactions and drug-drug interactions which have serious implications on overall health and well being of the patient. Good patient care depends upon the rationale of the medications prescribed to a patient. It is very important to ensure that the patients are taking the appropriate medications for their ailments, especially in elderly patients with multiple comorbidities. Avoidance of prescription of potentially inappropriate medications (PIM) to patients hence can contribute to good health care. (1,2)

India being a developing country has a significant aging population who frequently use the health care facilities. Occurrence of medication related adverse events are also common in this age group. The problem of use of inappropriate medications has recently gained more concern from health care related sector since data from studies conducted on this subject show alarming results, which warrants urgent interventions (3,4).

Beer's criteria is one of the commonly used validated tool for identifying use of potentially inappropriate medications in elderly patients. The criteria was modified in 2012 with addition of new classes of potentially inappropriate drugs. It has been approved by the American Geriatrics society and is commonly used in various studies on medication appropriateness all over the world. A Medication is considered as potentially inappropriate when the risk of adverse events are more and better tolerated alternative medications are available (5).

There is alarming prevalence of problem of potentially inappropriate medication (PIM) use in elderly patients in India (6). This results in over utilization of health systems and has significant economic implications for the society and individual which can be prevented. Studies regarding this matter is lacking in Kerala. Hence this study was done to identify the use of potentially inappropriate medications in elderly patients presenting to a tertiary care hospital in Kerala.

Objectives

To assess prevalence of potentially inappropriate medication (PIM) use in elderly patients

To assess socio demographic characters associated with potentially inappropriate medication use in elderly.

Materials and Methods

The study was a hospital based study done at Amrita Institute of Medical sciences, Kochi which is one of the major tertiary care teaching centres in South India. Data from all patients who presented for first time to the geriatric out patient clinic from 1st January 2016 to 31st December 2016 were included in the study. The patient's whose case sheets were incomplete were excluded.

The sample size was calculated based on a study done at Ahmedabad where the prevalence of inappropriate medication according to 2012 Beer's criteria was 40% (7). Using the formula $N = 1.96^2 pq / d^2$, with 95% confidence and 20% allowable error the minimum calculated sample size came to 150. But total of 275 patients were included in the study.

A structured checklist was used to collect details of patients including demographics and active medication list. Data was retrieved from Electronic medical records of the patients. The medication list was assessed and potentially inappropriate medications were identified and grouped in accord to 2012 modified Beer's criteria. The data was analysed and prevalence of inappropriate medication use was determined. The potentially inappropriate medications were grouped according to the pharmacological class.

Data was entered in Microsoft Excel and analysed with SPSS version 20. Quantitative variables were expressed as mean with standard deviation. Qualitative variables were expressed as proportions. Association between socio demographic factors and PIM was checked using the chi square test.

The study was done after obtaining clearance from hospital ethics committee.

Results

A total of 275 patients were included in the study of which 110 (40%) were males and 165 (60%) were females. 81 (29.5%) out of 275 patients had at least one potentially inappropriate medication (Fig 1).

The most common inappropriately prescribed medication belonged to psychotropic drug class. 34 (12.4%) patients took potentially inappropriate psychotropic drugs. The next most common class was central nervous system drugs in which 27(9.8%) patients took inappropriate medications. The group of inappropriate anti diabetic and cardiovascular system drugs showed 19(6.9%) and 13(4.7%) patients respectively (Fig 2). However the drugs belonging to respiratory system, analgesics and GI system were appropriately prescribed. (Fig 2)

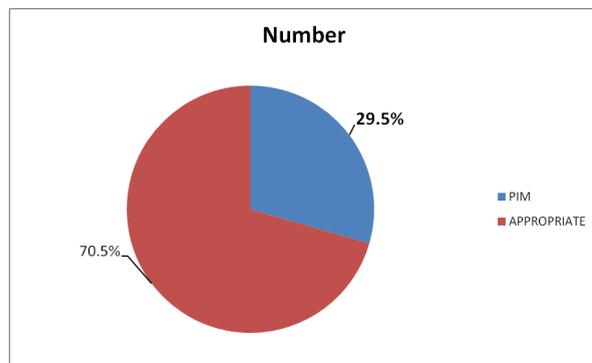


Fig 1: Potentially inappropriate medication (PIM) use

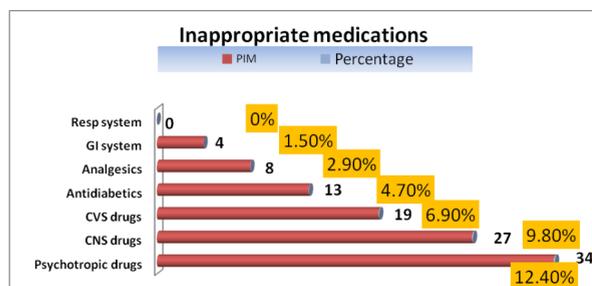


Fig 2: PIM and drug class

Discussion

The prevalence of at least one potentially inappropriate medication use in our study was found to be 29.5% and most commonly inappropriately prescribed drug being belonging to psychotropic class (12.4%) followed by nervous system drugs (9.8%). Several studies carried out in elderly patients around the world show that prevalence of use of inappropriate medications ranges from (25%-49%)(8). The study of inappropriate medication use in hospitalized elderly patients in India shows prevalence of use of at least one potentially inappropriate medication in elderly to be 87.3% (6). However other studies report the prevalence of 40% of at least one, 22.61% of two and 3.57% of three or more potentially inappropriate medication use (7)

The data from international publications also shows the magnitude of the problem. A study conducted in Italy shows prevalence of 84.1% of at least one and 15.9% of two or more potentially inappropriate medications(9). The study conducted in community dwelling elderly patients presenting to a tertiary care hospital in Lebanon shows prevalence of 45.2 % of patients taking at least one potentially inappropriate medication and the most commonly inappropriately prescribed drug class to be central nervous system agents (71.4%). (10)

The study in Korean elderly patients who are enrolled in a health insurance registry shows prevalence of 80.96% patients taking at least one potentially inappropriate medication and the most common class of drug inappropriately prescribed being antihistaminics with anticholinergic properties (52.33%) followed by pain medications (43.04%) and benzodiazepines (42.53%)(11).

Conclusion

Our study shows 29.5% of potentially inappropriate medication use among elderly.

The problem of use of inappropriate medications is of serious concern in elderly due to multiple specialist visits and hospital admissions. This can lead to over prescribing or drug duplication due to absence of medication reconciliation practice in many centers. Hence drug prescriptions should be reviewed regularly and inappropriate medication usage should be avoided to the extent possible.

References

- 1) Laroche ML, Charnes JP, Bouthier F, Merle L. Inappropriate medications in the elderly. *Clin Pharmacol Ther.* 2009;85:94-7.
- 2) Cahir C, Fahey T, Teeling M, Teljeur C, Feely J, Bennett K. Potentially inappropriate prescribing and cost outcomes for older people: A national population study. *Br J Clin Pharmacol.* 2010;69:543-5
- 3) Shenoy S. Evaluation of the drug prescribing pattern in elderly patients in tertiary care hospital. *Indian J Pharmacol.* 2006;38:S90.
- 4) Zaveri HG, Mansuri SM, Patel VJ. Use of potentially inappropriate medicines in elderly: A prospective study in medicine out-patient department of a tertiary care teaching hospital. *Indian J Pharmacol.* 2010;42:95-8.
- 5) American Geriatrics Society 2012 Beers Criteria Update Expert Panel. American geriatrics society updated beers criteria for potentially inappropriate medication use in older adults. *J Am Geriatr Soc.* 2012;60:616-31.
- 6) Jhaveri BN, Patel TK, Barvaliya MJ, Tripathi C. Utilization of potentially inappropriate medications in elderly patients in a tertiary care teaching hospital in India. *Perspectives in Clinical Research.* 2014;5(4):184-189. doi:10.4103/2229-3485.140562.
- 7) Momin TG, Pandya RN, Rana DA, Patel VJ. Use of potentially inappropriate medications in hospitalized elderly at a teaching hospital: A comparison between Beers 2003 and 2012 criteria. *Indian Journal of Pharmacology.* 2013;45(6):603-607. doi:10.4103/0253-7613.121372.
- 8) Veehof LJG, Meyboom-De Jong B, Haaijer-Ruskamp FM. Polypharmacy in the elderly - a literature review. *Eur J Gen Pract.* 2000;6(3):98-106. doi: 10.3109/13814780009069956.
- 9) Napolitano F, Izzo MT, Di Giuseppe G, et al. Frequency of Inappropriate Medication Prescription in Hospitalized Elderly Patients in Italy. *Mintzes B, ed. PLoS ONE.* 2013;8(12):e82359. doi:10.1371/journal.pone.0082359.
- 10) Zeenny R, Wakim S, Kuyumjian Y-M. Potentially inappropriate medications use in community-based aged patients: a cross-sectional study using 2012 Beers criteria. *Clinical Interventions in Aging.* 2017;12:65-73. doi:10.2147/CIA.S87564.
- 11) Nam Y-S, Han JS, Kim JY, Bae WK, Lee K. Prescription of potentially inappropriate medication in Korean older adults based on 2012 Beers Criteria: a cross-sectional population based study. *BMC Geriatrics.* 2016;16:118. doi:10.1186/s12877-016-0285-3.