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**Research Article**

**The study on prevalence of polypharmacy in elderly patients presenting for first time to the geriatric clinic of a tertiary care hospital in Kerala**

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**Abstract:**

**Introduction**

Elderly patients are the most common group who use health care facilities. This study assesses the prevalence of polypharmacy and use 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 polypharmacy (taking >5 medications at a time) and 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. The prevalence of polypharmacy found to be 22.9%. 63 out of total 275 patients took more than 5 medications at a time. 81 (29.5%) out of 275 patients had at least one potentially inappropriate medication.

**Conclusion**

The prescription of 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.

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**Introduction**

India is undergoing the process of greying of population even though at a slower rate. The elderly population (more than 60 years) is expected to be 10% by 2021 compared to 6.7% in 1991 (1). Kerala has achieved significant progress in health sector and has a good public health system catering to every sector of the population. The most common group who use health care facilities are the elderly patients due to multiple health problems. Increased utilization of health care facilities results in increased number of drugs being prescribed for ailments. Hence the problem of polypharmacy is found most commonly in elderly patients in many studies. (2)

Polypharmacy is defined as use of more number of medications than that are clinically indicated for treatment. It is a vaguely defined term since the fact, as the number of ailments increases, the number of medications prescribed for treatment also increases. Some studies has defined polypharmacy as taking more than 5 medications at a time. The consensus definition on classification of polypharmacy is lacking. (3) But many studies has shown that as the problem of polypharmacy increases the prescription of potentially inappropriate medications (PIM) also increases. A medication is considered as potentially inappropriate when the risk of adverse events are more and better tolerated alternative medications are available (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. (5)

Polypharmacy results in adverse outcomes like drug reactions, drug-drug interactions as well as significant cost spent on procuring medications. This mainly occurs as a result of multiple specialist visits and absence of medication reconciliation practices in many centres. (6,7) We decided to study the prevalence of the problem of polypharmacy and associated factors in the newly registered out patients presenting to geriatric clinic in a tertiary care hospital in Kerala since it is an emerging problem and data on this regard is scarce.

**Objectives**

To assess the prevalence of problem of polypharmacy and use of potentially inappropriate medications in elderly patients presenting for first time to the geriatric clinic of a tertiary care hospital in Kerala.

**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 use according to 2012 Beer's criteria was 40% (8). Using the formula  $N=1.96^2pq/d^2$ , 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 number of drugs in current medication list was calculated. The patient was considered to have polypharmacy if the number of active medication was more than five (>5). Potentially inappropriate medications were identified in accord to 2012 modified Beer's criteria. The data was analysed and prevalence of polypharmacy and inappropriate medication use was determined.

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. The mean age of the patients was 74 years.

The prevalence of polypharmacy in our study was found to be 22.9%. 63 out of total 275 patients took more than 5 medications at a time. (Fig 1)

81 (29.5%) out of 275 patients had at least one potentially inappropriate medication (Fig 2).

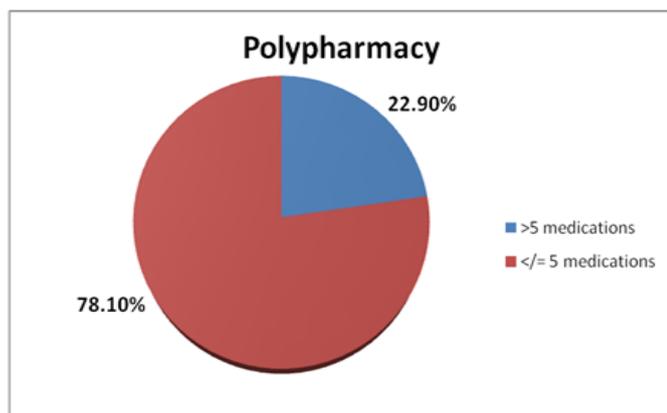


Fig 1: Prevalence of polypharmacy

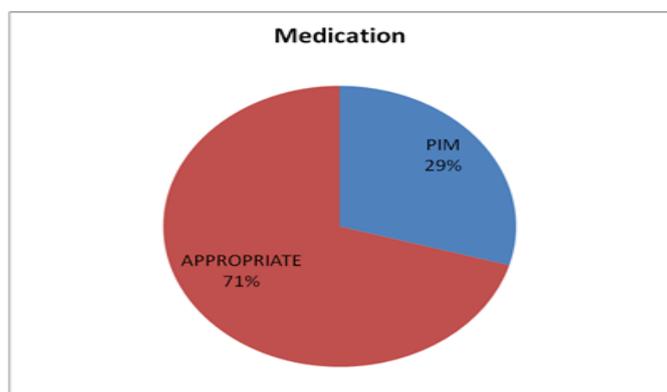


Fig 1: Prevalence of potentially inappropriate medication (PIM) use

### Discussion

Polypharmacy is an emerging problem in developed as well as developing countries where health sectors are being increasingly utilized by the elderly population. There is no standard definition for polypharmacy since as the number of ailments increases, the drugs prescribed to treat also increases. Polypharmacy is a term used in many studies to indicate that the patient is taking more than 5 medications at a time (9). The number of drugs prescribed should be the least possible since taking multiple drugs at a time can result in various drug interactions and adverse effects especially in elderly patients.(10) It has been found from various studies that the patients who are taking more than 5 drugs at a time has more risk for drug related adverse effects and hip fractures. (11)

The prevalence of polypharmacy from our study was 22.9%. A study from Brazil show prevalence to be 18.1% in patients more than 65 years (12). A study from Switzerland shows prevalence of elderly patients taking more than 5 medications at a time to be 11.8% (13). The reasons for increased prevalence of polypharmacy in our study could be multiple. Firstly, ours being a tertiary referral centre the patients included in the study might have already been taking multiple medications. Other reasons for polypharmacy might be absence of medication reconciliation practices in many centres and addition of drugs due to multiple specialist visits which might have resulted in drug duplications and prescription of inappropriate medications.

The prevalence of taking at least one potentially inappropriate medication use in our study was found to be 29.5%. Several studies carried out in elderly patients around the world show that prevalence of use of inappropriate medications ranges from (25%-49%)(14). A study from India shows prevalence of use of at least one potentially inappropriate medication in elderly to be 87.3% (15). Another study reports the prevalence of 40% of at least one, 22.61% of two and 3.57% of three or more potentially inappropriate medication use (8).

### Conclusion

The problem of polypharmacy and potentially inappropriate medication use is an emerging problem in developing countries and strict measures should be taken to implement medication reconciliation practices in centres taking care of elderly patients with multiple comorbidities.

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