

1. INTRODUCTION

Geriatrics with hypertension are at increased risk of adverse drug events due to age-related factors and polypharmacy. PIMs further compromise treatment safety and age-related pharmacokinetics changes in renal function, slowed hepatic metabolism, and altered body composition heighten the risk of drug saturation. This study aimed to evaluate the prevalence of PIMs and polypharmacy among hypertensive geriatric patients using the 2023 American Geriatrics Society (AGS) Beers Criteria® and to suggest Safer alternatives using AGS list 2025.

2. OBJECTIVES

- To determine the prevalence of PIMs and polypharmacy.
- To assess the degree of polypharmacy and its association with PIMs.
- To propose evidence-based, clinically safer therapeutic alternatives for each identified PIMs.

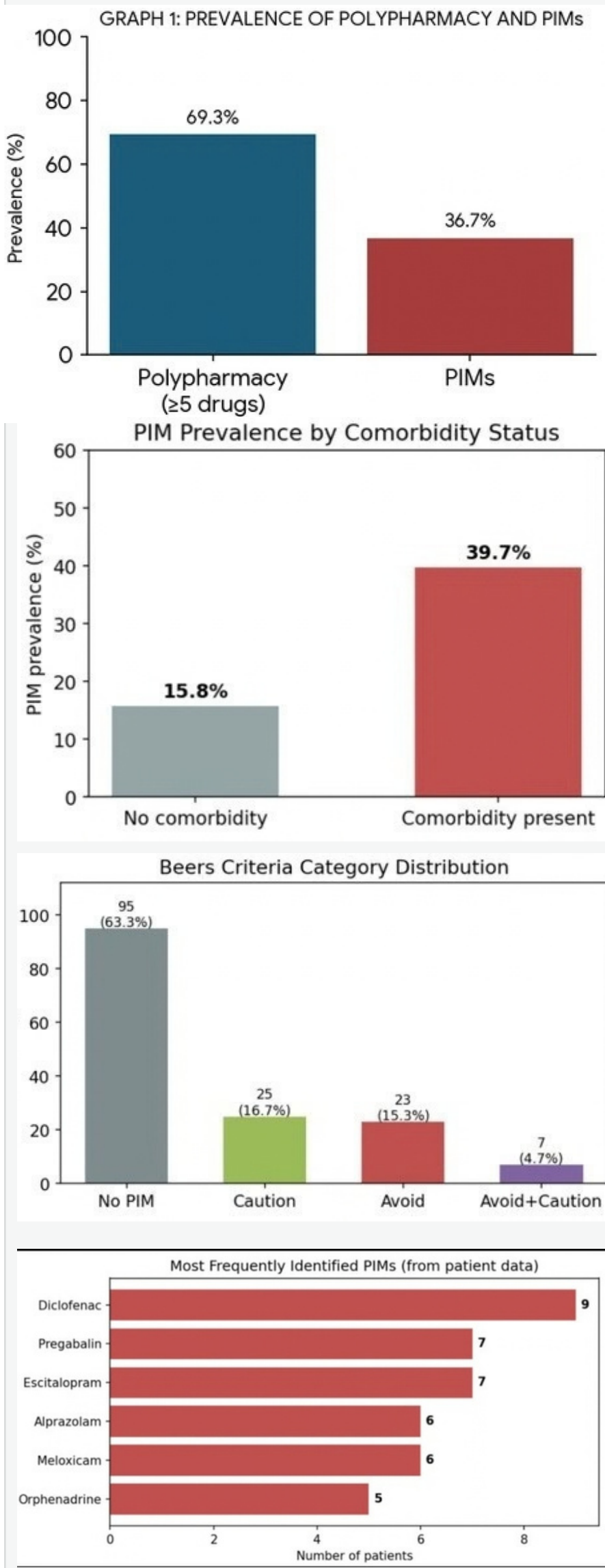
3. METHODOLOGY

Cross-sectional observational study was conducted across tertiary care hospitals in Lahore, Pakistan, from January to April 2026. Prescriptions of geriatric patients with confirmed HTN diagnosis from OPD and general wards. Screened against Beers Criteria all relevant category (avoid, caution, renal adjustment.)

The sample size was determined using the single population proportion formula. A 95% confidence level was used, with a Z-value of 1.96. A margin of error of approximately 8.3% was used to obtain the required sample size. The calculated mini. sample size was 140 patients approximately.

4. KEY FINDINGS

- Polypharmacy was highly prevalent, affecting 69.3% of patients.
- PIMs were identified in 36.7% of the patients, demonstrating a high burden of inappropriate prescribing.
- A significant association was found between the presence of comorbidities and the occurrence of PIMs (p 0.0046)
- Analgesic and central nervous system agents constituted the majority of identified PIMs.



5. DISCUSSION AND CONCLUSION

Both polypharmacy and PIMs use are prevalent among hypertensive geriatric patients. The most frequently identified PIMs—reflect the common treatments in older adults. These medications carry disproportionate risks.

The findings support the implementation systematic, pharmacist-led medication reviews.

6. SAFER ALTERNATIVES

Alternatives according to AGS list of safer alternatives 2025 is as follows:

Identified PIM	Recommended Alternatives
Diclofenac / Meloxicam (NSAIDs)	Topical NSAIDs, paracetamol, physical therapy; COX-2 inhibitor with PPI if essential.
Pregabalin (Gabapentinoid)	SNRIs (duloxetine), topical agents, CBT. Avoid combined use of opioids
Alprazolam (Benzodiazepine)	CBT-I for insomnia; SSRIs/SNRIs or buspirone for anxiety management.
Escitalopram (SSRI)	Monitor serum sodium and fall risk; employ non-pharmacological options.

7. ETHICAL CONSIDERATION

Ethical approval from the Institutional Review Board/Ethics Committee of the UMT. (Approval No: Ref-2026-017). Strict confidentiality. The study was conducted in accordance with the Declaration of Helsinki

8. FUTURE DIRECTIONS

Future research should prioritize longitudinal studies to assess the inappropriate prescribing, Larger multicenter studies across Pakistan with complementary screening tools such as Beers Criteria, and integrating clinical parameters, would allow more precise PIM identification.