Potential inappropriate medication screening by Beers criteria in elderly inpatients

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Backgrounds

- Elderly inpatients have a high prevalence of potential inappropriate medication (PIM), which may cause prolonged hospital stay and increased medical expenses. The risk factors of PIM include polypharmacy, age and gender in elderly population. We found the importance of PIM during pharmacy intern training program and then wanted to do a research on PIM.

Purpose

- To analyze the prevalence and risk factors of PIM in elderly inpatients.

Methods

- A retrospective study was conducted by chart review from January 2016 to October 2017 in a regional hospital in New Taipei City in Taiwan.
- Inpatients who received pharmaceutical care, 65 years or older, used more than 4 medications were included in this study.
- All descriptive statistics were analyzed, and all prescriptions were evaluated applying the list of "PIM use in older adults" in 2015 AGS Beers criteria to detect PIM. Furthermore, logistic regression models were also performed to examine risk factors of PIM.

Results

- The prevalence rate of PIM was 60.7% with a total of 425 prescriptions reviewed (Table 1).
- Among the PIM, the most frequent one was metoclopramide (13.8%), followed by quetiapine (9.8%) and lansoprazole (7.4%) (Table 2).
- Moreover, the number of medications used was associated with the increased risk of PIM (Odds ratio [OR] 1.254, 95% confidence interval [CI] 1.150-1.367, p<0.05), but no significant difference was found in the age and the gender (Figure 1 and Table 3).

Table 1. Characteristics of the Case Patients and the Prevalence of PIM[a]

Characteristic		Case Patients (N=425)
		Mean ± SD
Age (yrs)		78 ± 7.99
		No. (%) of Patients
Gender	Male	222 (52.2)
	Female	203 (47.8)
District	Sanchong	293 (68.9)
	Banqiao	132 (31.1)
Division	Nephrology	70 (16.5)
	Urology	58 (13.6)
	Chest Medicine	57 (13.4)
	Orthopedics	43 (10.1)
	Neurology	37 (8.7)
Prevalence of PIM		258 (60.7)

[a]PIM= Potential Inappropriate Medication

Table 2. the 10 Most Common Prescribed PIM

	No.	%
Metoclopramide	58	13.8
Quetiapine	41	9.8
Lansoprazole	31	7.4
Alprazolam	28	6.7
Insulin	27	6.4
Estazolam	26	6.2
Clonazepam	23	5.5
Amiodarone	21	5.0
Lorazepam	21	5.0
Omeprazole	18	4.3

Figure 1. Association between the Number of Medications and the Number of PIM

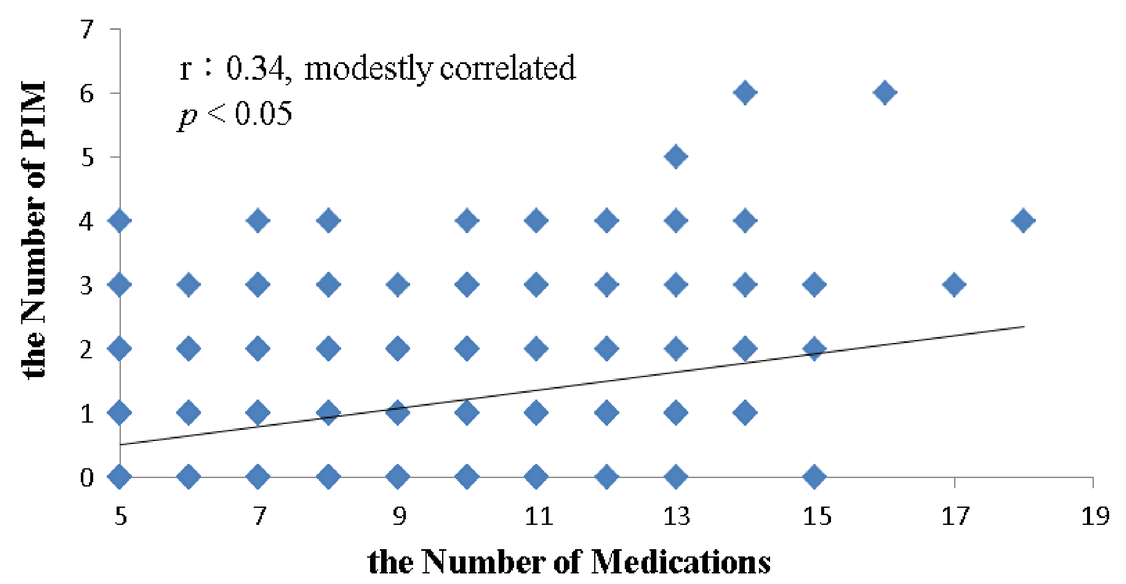

Table 3. Risk Factors of PIM Analysed via Logistic Regression Models

	Odds ratio (95% confidence interval)	*p*-Value
Age	1.005 (0.981-1.030)	0.692
Gender (Female as 1)	1.116 (0.755-1.648)	0.582
the Number of Medications	1.254 (1.150-1.367)	<0.05

Conclusion

- Our study has shown that prescription of PIM is common in elderly inpatients, and the more medications patients take, the more chances PIM may happen.
- We expect to use Beers criteria as a guide on reviewing prescriptions and to recommend doctors proper PIM alternatives.