Evaluation of standardized drug dispensing ratios and associated factors in Hungary 2012-2015

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Percentage of drugs actually dispensed

- One of the key indicators of patient care developed by WHO to investigate drugs use in healthcare centers[1].
- It represents number of drugs actually dispensed over total number of drugs prescribed, multiplied by 100.
- This indicator measures ratios of adherence to prescribed medications.

Significance of drugs dispensing ratios

- Evaluation of dispensing ratios of drugs is useful in:
  - Prevention of therapeutic failure and disease progression[2].
  - Reducing morbidity and mortality.
  - Reducing healthcare cost, hospitalization and improves quality of life[3,4].
- In Germany, nonadherence to medications increases healthcare costs by 10 billion Euro per year[5].

Aims

1. To estimate standardized drugs dispensing ratios of the general medical practices for adults 2012 – 2015.
2. To determine some of the associated factors.
3. To evaluate the usefulness of dispensing ratios as general practice indicators for different therapeutic classes.

Methodology

- Subjects: All general medical practices (**GMP**) for adults in Hungary.
- Period: 2012-2015.
- Database:
  - Drug prescription and dispensing database of the National Health Insurance Fund Administration of Hungary (**NHIF**).
  - Stratified by age (5-year age groups), sex and presence/absence of exemption certificate.
  - Drugs were classified according to the Anatomical Therapeutic Chemical Classification (**ATC**)[6].

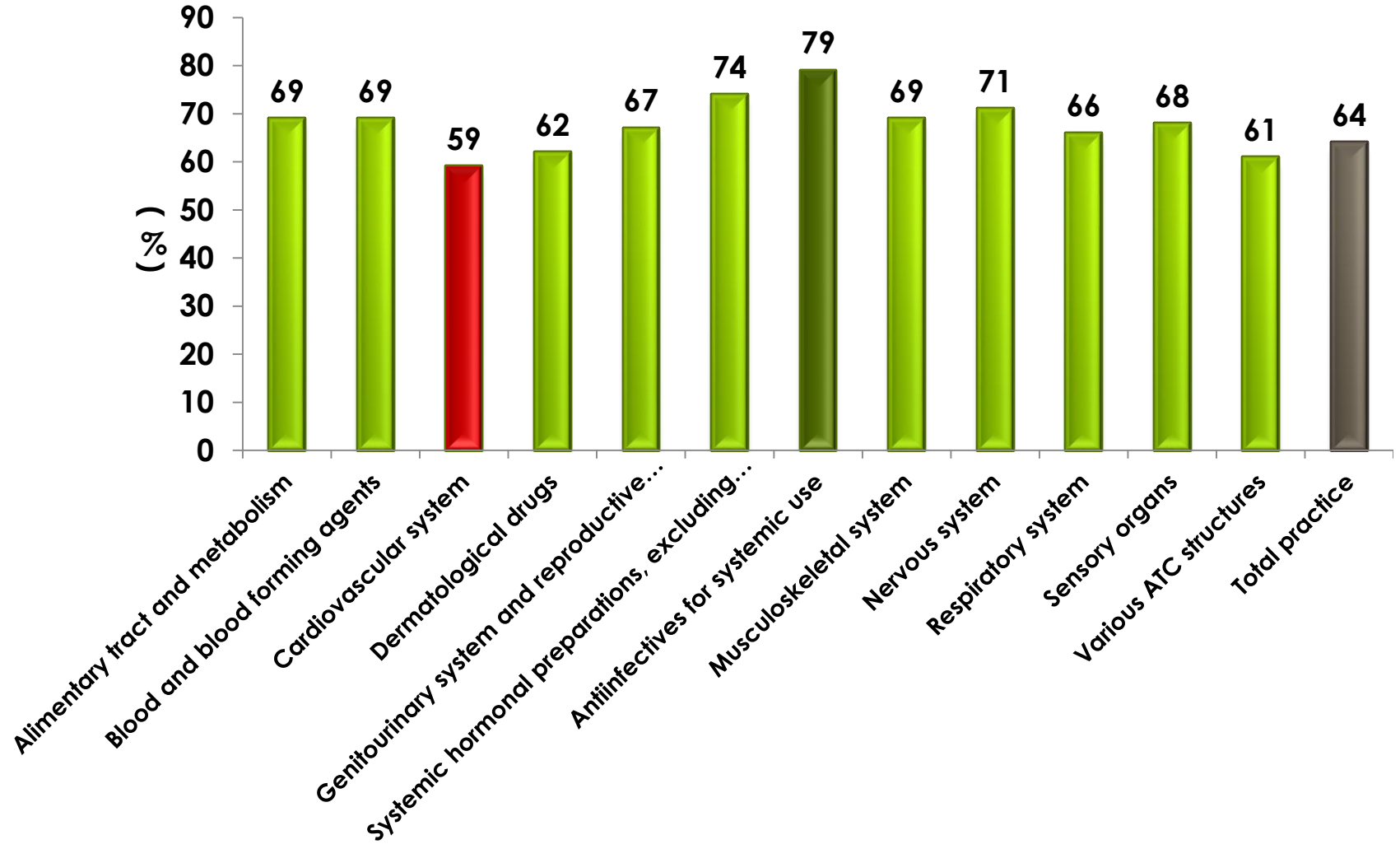
Methodology

- Crude dispensing ratios (dispensed / prescribed)
- Standardized dispensing ratios (**sDR**) by age, sex, and prescription exemption.
- Effects of patients' education, vacancy of GP, localization of GMP (settlement type, county) on sDRs through multiple linear regression models.
- Distribution and the 75%iles of GMP specific sDRs.

Dispensing ratios by patients' characteristics

		Prescriptions written	Prescriptions filled	Dispensing ratio
Age	18-44	39,971,036	25,539,871	0.64
	45- 64	171,996,562	106,753,470	0.62
	65-X	226,646,402	149,022,045	0.66
Gender	Male	172,358,931	109,603,855	0.64
	Female	266,255,069	171,711,531	0.64
Exemption certificate	Yes	47,960,440	37,548,944	0.78
	No	390,653,560	243,766,442	0.62
Total		438,614,000	281,315,386	0.64

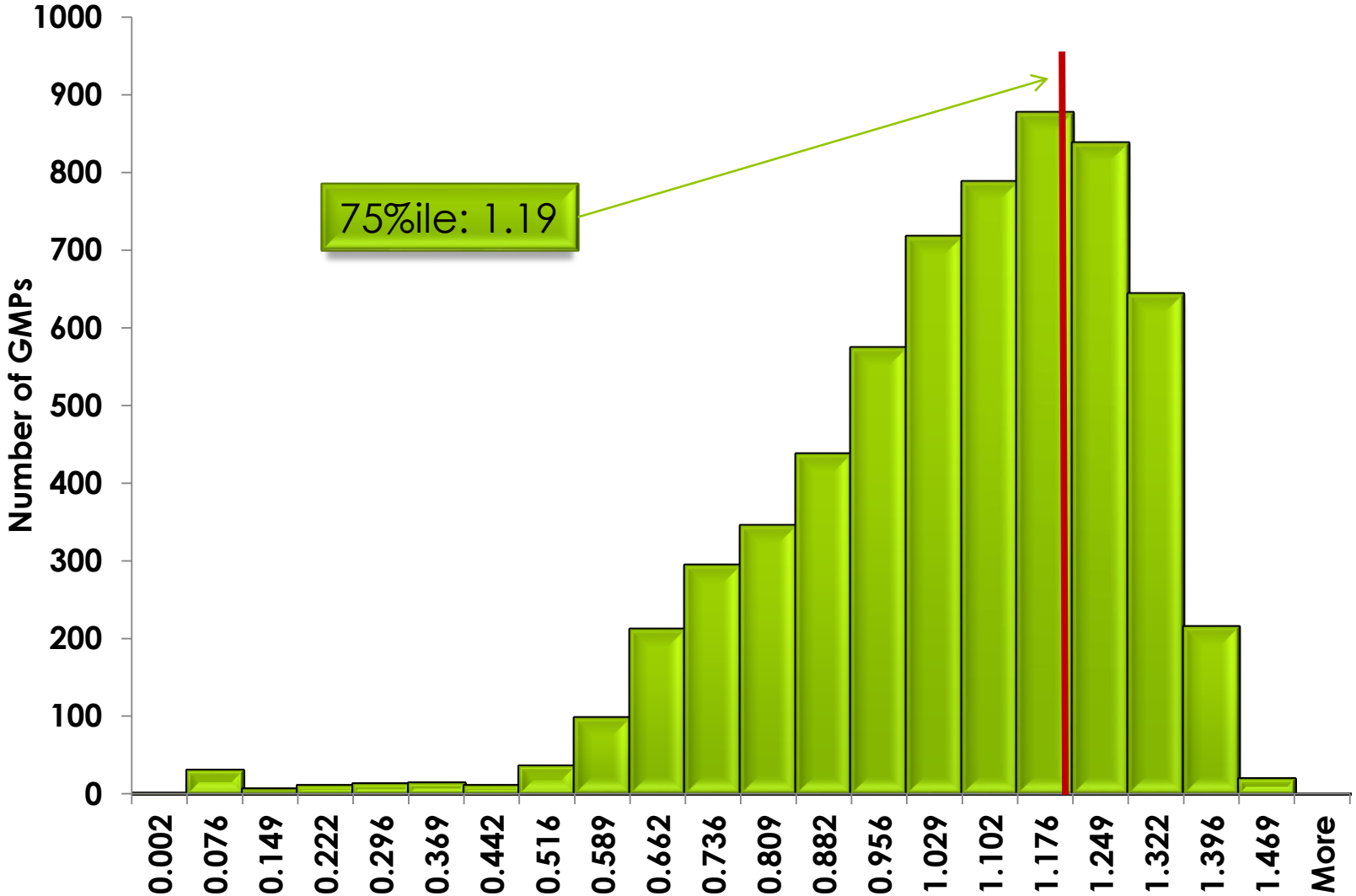
Dispensing ratios by drug class



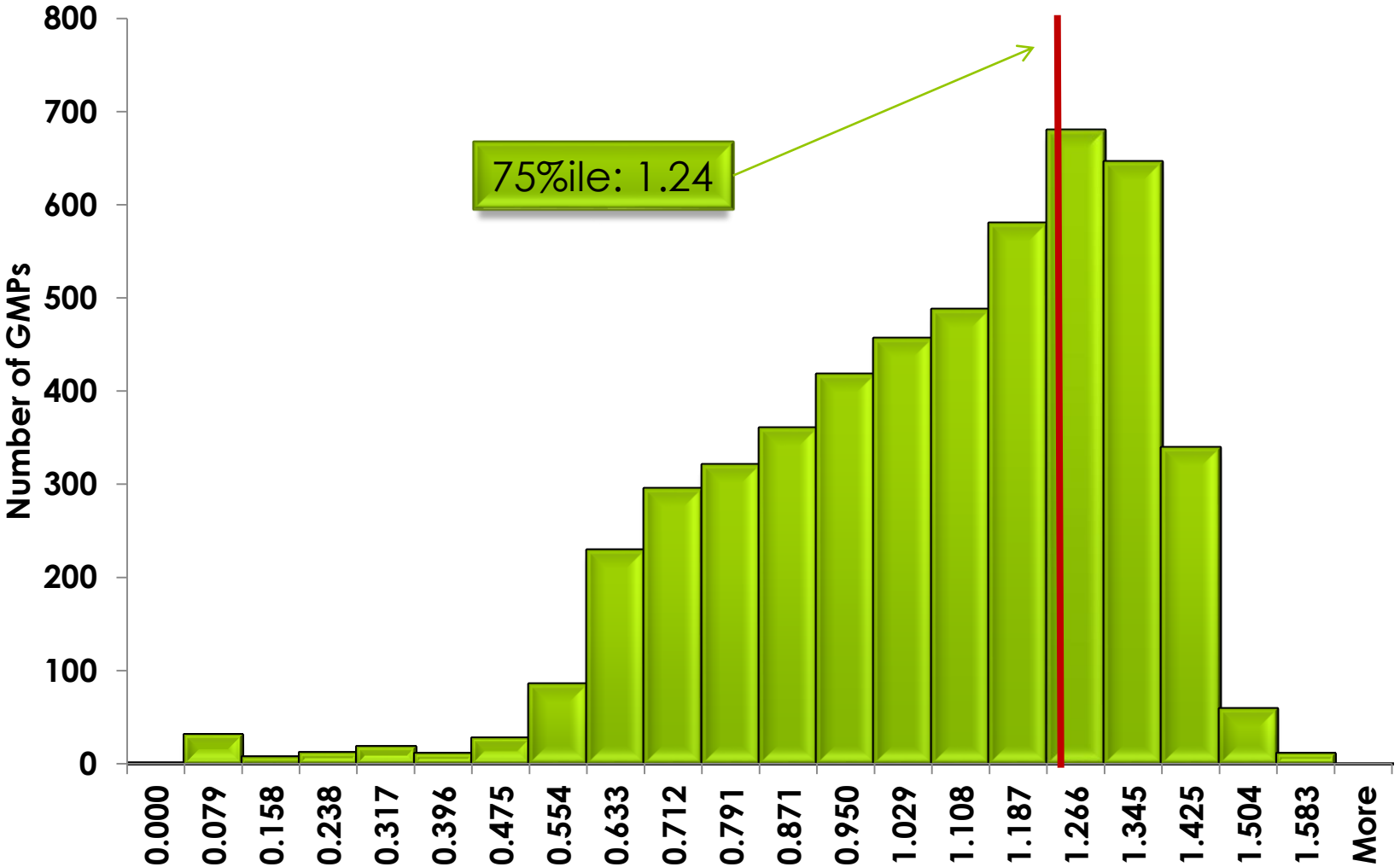
Determinants of GMP specific Standardized Dispensing Ratios by multivariate linear regression model

	Beta coefficient	95% confidence intervals	
		Lower limit	Upper limit
Education	**-0.159**	-0.164	-0.155
Vacancy of GPs	**-0.168**	-0.197	-0.140
Residence in town	**-0.135**	-0.141	-0.129
Fejér county	**-0.085**	-0.094	-0.076
Baranya	**0.061**	0.053	0.068
Bács	**0.057**	0.053	0.061
Komárom	**0.059**	0.056	0.063
Somogy	**0.061**	0.058	0.065
Szabolcs	**0.083**	0.077	0.088
Szolnok	**0.048**	0.043	0.053
Tolna	**0.044**	0.042	0.047
Vas	**0.057**	0.052	0.061

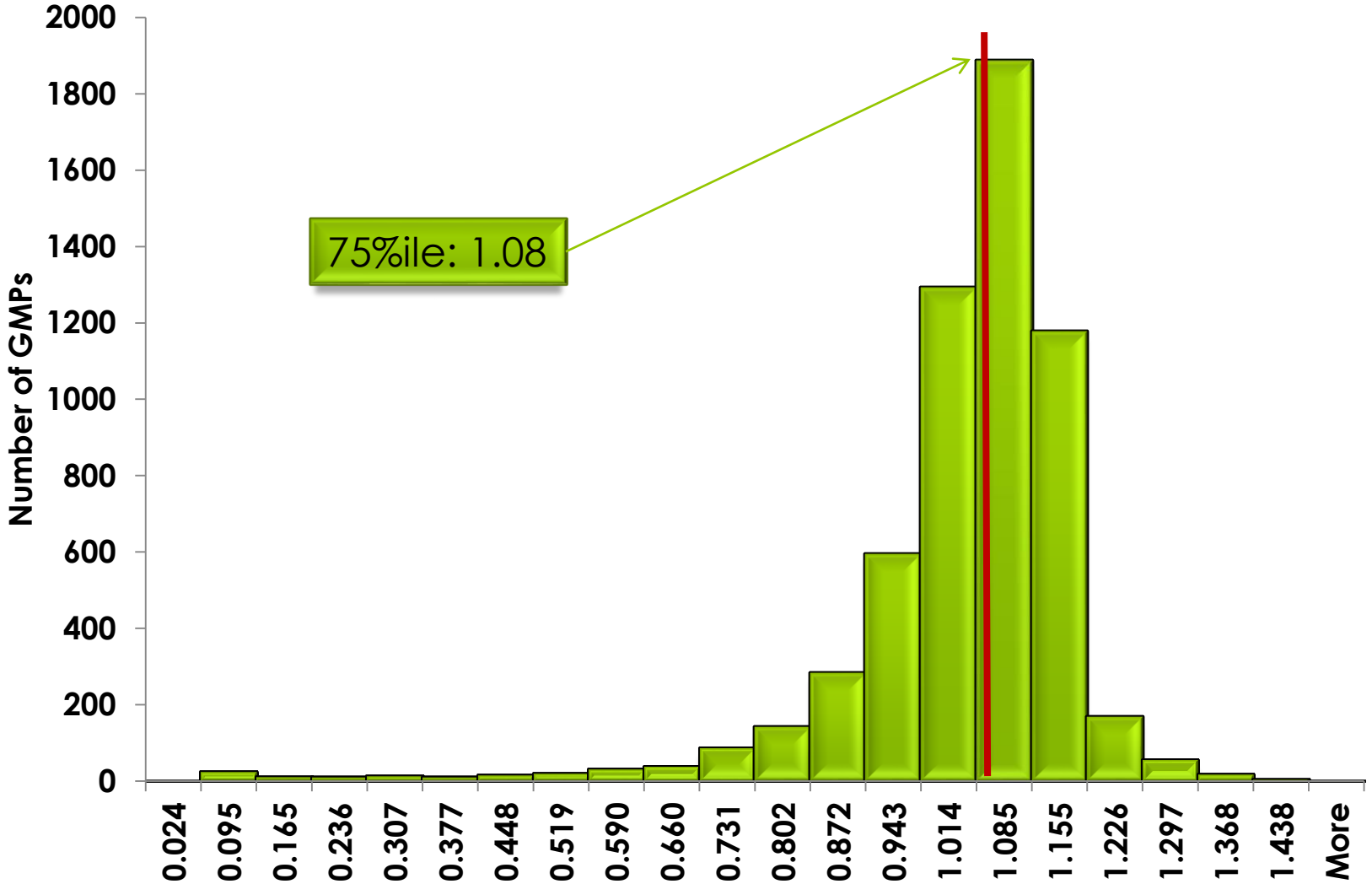
GMP Specific Standardized Dispensing Ratios



GMP Specific Standardized Dispensing Ratios for cardiovascular agents



GMP Specific Standardized Dispensing Ratios for anti-infective agents



Discussion

1) Age, sex and exemption certificate standardized sDR can be calculated for GMPs using NHIF databases.
2) There is a negative association between education and sDR.
3) Vacancy of GPs is negatively associated with sDR.
4) Urban residents are less likely to dispense drugs comparing to rural residents.
5) There is geographical heterogeneity for sDR.
6) The 75%ile thresholds by ATC groups ranged between 1.08-1.24.
7) The general sDR, the cardiovascular and anti-infective sDRs seem to be useful as indicators for patient-GP cooperation.

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