Prevalence of potentially inappropriate prescribing in older Irish adults

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Background and Objective

Appropriate medications in older people have a clear evidence-based indication, are well tolerated and are cost-effective. In contrast, medicines that are potentially inappropriate lack evidence-based indications, pose a higher risk of adverse effects and are not cost-effective. There have been few studies of potentially inappropriate prescribing in the general population of older people. Previous research has focused on specific groups, in particular those in geriatric units, nursing homes and hospitals.

•The overall aim of the study is to estimate the prevalence of potentially inappropriate prescribing (PIP) in a nationally representative sample of Irish adults aged 65 years and older using the STOPP criteria (Screening Tool for Older Peoples Prescriptions).

•A secondary aim of the study is to examine the prevalence of prescribing omissions using the START criteria (Screening Tool to Alert doctors to Right Treatment).

Methods

Drug-drug interactions
•Drug prescriptions are coded in the TILDA dataset using the World Health Organization Anatomical Therapeutic Chemical (ATC) classification system.
•Relevant ATC codes were extracted to apply the STOPP/START criteria that focused on medication use or drug-drug interactions.
•No information is available on strength, quantity, duration or cost of prescription.

Drug-disease interactions
•Patient diagnosis was used where possible to apply the STOPP/START criteria (e.g. hypertension, chronic obstructive pulmonary disease, glaucoma).
•In the absence of diagnosis, prescription drugs for the treatment of certain conditions were used as proxies (e.g. gout, epilepsy).
•Responses to questions in CAPI were cross-validated with objective measures completed at the health assessment where appropriate.

Statistical analysis
•The overall prevalence of PIP or prescribing omission and the prevalence per individual STOPP/START criteria was calculated as a proportion of all eligible persons ≥65 years.

•The prevalence of each PIP/prescribing omission as measured by the STOPP/START criteria was also calculated as a proportion of the overall disease or drug prevalence (e.g. beta-blocker with COPD as a proportion of COPD prevalence or two concurrent opiates as a proportion of opiates prevalence).

•Participants were also classified by gender and age group (65 to 74 years, ≥ 75 years) to examine the prevalence rates of PIP by gender and age.

•The association between any PIP and age and gender was assessed using logistic regression presenting adjusted odds ratios and 95% confidence intervals.

Results

Population descriptive statistics
•A total of 3,507 people ≥ 65 years in Ireland were identified from the TILDA database of which 1,842 (52.52%) were female and 1,665 (47.48%) male.

•Almost two thirds of individuals were aged between 65-74 years (n=2163). The remaining 38% (n=1344) were aged ≥75 years.

•Fifty three participants reported missing medication data; therefore the STOPP criteria were applied to 3,454 participants.

Application of the STOPP/START criteria
•Twenty six STOPP criteria were applied.

•Thirty-nine STOPP criteria were excluded for the following reasons:
❖the disease/condition and/or severity was not recorded and no drug proxy was suitable (e.g. oedema, constipation, renal failure) (n=20)
❖the duration of prescription was not recorded (n=14)
❖no information on drug dosage was available (n=2)
❖individuals with dementia were excluded from participating in the TILDA study (n=3).

•Nine START criteria were applied.

•Thirteen START criteria were excluded for the following reasons:
❖the disease/condition and/or severity was not recorded and no drug proxy was suitable (e.g. gastro-oesophageal reflux, constipation, renal impairment) (n=10)
❖the duration of prescription not recorded (n=3).

Prevalence of PIP
The overall prevalence of PIP was 15.34% (n=530).
•13.29% prescribed one PIP
•1.68% prescribed two PIPs
•0.38% prescribed three or more PIPs

Tables 1 and 2 contain the highest prevalence rates of PIP per physiological system and by age and gender.

Table 1: Highest prevalence rates of PIP per physiological system

Physiological system	STOPP description	Prevalence (%)
Cardiovascular system	Loop diuretic as first line monotherapy for hypertension	4.46
CNS & psychotropic drugs	TCA and opiate or calcium channel blockers	0.46
Gastrointestinal system	Prochlorperazine or metoclopramide with parkinsonism	0.03
Respiratory system	Theophylline as monotherapy for COPD	0.32
Musculoskeletal system	NSAID with moderate-severe hypertension	2.06
Urogenital system	Alpha-blockers in males with frequent incontinence i.e. one or more episodes of incontinence daily	0.55
Endocrine system	Glibenclamide or chlorpropamide with type 2 diabetes mellitus	0.09
Drugs that adversely affect those prone to falls	Benzodiazepines	1.16
Analgesic drugs	N/A	-
Duplicate drug classes	Two concurrent ACE inhibitors	1.19

Table 2: Five highest prevalence rates of PIP overall by gender and age

STOPP description	OR (95% CI) Gender (F v M)	OR (95% CI) Age (>75 v 65-74 yrs)
Loop diuretic as first line-monotherapy for hypertension	0.94 (0.68-1.30)	3.10 (2.21-4.35)
Aspirin with no history of coronary, cerebral, or peripheral vascular symptoms or occlusive event	1.02 (0.70-1.49)	2.00 (1.37-2.91)
Aspirin with a past history of peptic ulcer disease without histamine H2 receptor antagonist or Proton Pump Inhibitor	0.48 (0.29-0.77)	0.95 (0.59-1.52)
NSAID with moderate-severe hypertension	1.19 (0.67-2.12)	1.17 (0.65-2.11)
Benzodiazepines	1.48 (0.78-2.83)	1.79 (0.96-3.33)

Prevalence of prescribing omissions
The overall prevalence of prescribing omissions was 41.52% (n=1434).
•31.56% - one prescribing omission
•8.08% - two prescribing omissions
•1.88% - three or more prescribing omissions

Table 3 contains the highest prevalence rates of prescribing omissions per physiological system.

Table 3: Highest prevalence rates of prescribing omissions per physiological system

Physiological system	START description	Prevalence (%)
Cardiovascular system	Warfarin in the presence of chronic atrial fibrillation	7.82
Central nervous system	Antidepressant drug in the presence of moderate-severe depressive symptoms lasting at least three months	22.78
Endocrine system	Statin therapy in diabetes mellitus if one or more co-existing major cardiovascular risk factors present	6.43

Conclusions

•This study found that over 15% of adults in Ireland, aged ≥ 65 years, received at least one potentially inappropriate medication, according to a subset of the STOPP criteria.

•The most commonly prescribed potentially inappropriate drugs were loop diuretics as first line-monotherapy for hypertension.

•There were differences in prevalence rates of PIP across gender and age groups.

•There was a high prevalence of prescribing omissions in older adults, with over 40% not prescribed clinically indicated medications, according to a subset of the START criteria.

•The most common prescribing omission was antidepressant drugs in the presence of moderate-severe depressive symptoms lasting at least three months.