ORIGINAL ARTICLE

ASSESSMENT OF POTENTIALLY INAPPROPRIATE MEDICATION USE IN ELDERLY PATIENTS RECEIVING HOME CARE ACCORDING TO STOPP VERSION 3 CRITERIA

Turkish Journal of Geriatrics
2026; 29(3):334–343

DOI: 10.29400/tjgeri.2026.505

Sevgi Didem ŞAHİN
Serap ÖKSÜZ
Gülseren PAMUK
Kurtuluş ÖNGEL

Izmir Katip Celebi University, Family Medicine, Izmir, Türkiye

Abstract

Introduction: The Screening Tool of Older Persons' Prescriptions (STOPP) Version 3 is a tool designed to identify potentially inappropriate medication use in older adults. The aim of this study is to investigate the presence of potentially inappropriate medication use in older adults according to these criteria.

Materials and Method: This prospective descriptive study was conducted between January 1 and March 1, 2025, with 389 participants enrolled in the Home Health Care Unit of a university hospital. After obtaining ethical approvals, the data recorded through the hospital information management system were evaluated according to the Version 3 criteria and the presence of polypharmacy. Statistical analyses were performed using Statistical Package for the Social Sciences 26.0 software; descriptive statistics, chi-square test, and logistic regression were used.

Results: It was found that all 389 participants had at least one chronic disease, with an average of three chronic diseases per individual. The most common disease was hypertension (77.1%), and the most frequently used medications were beta-blockers. At least one potentially inappropriate medication use was detected in 45.8% of the participants. The most common potentially inappropriate medication use was the use of proton pump inhibitors (32.1%). In the logistic regression analysis, dementia/Alzheimer's disease and rheumatic diseases were found to be significant determinants of potentially inappropriate medication use.

Conclusion: Polypharmacy and potentially inappropriate medication use are common among older adults receiving home health care. The Screening Tool of Older Persons' Prescriptions Version 3 is an effective tool for evaluating the rationality of pharmacotherapy and preventing inappropriate prescribing in clinical practice.

Keywords: Health Services for the Aged; Home Care Services; Polypharmacy; Potentially Inappropriate Medication List.

Correspondence

Sevgi Didem ŞAHİN
Phone : +905059011685
e-mail : sevgididem@hotmail.com

Received : May 23, 2026
Accepted: Jul 08, 2026

Cite this article as:
Şahin SD, Öksüz S, Pamuk G et al. Assessment of Potentially Inappropriate Medication Use in Elderly Patients Receiving Home Care According to STOPP Version 3 Criteria. Turkish Journal of Geriatrics 2026; 29(3):334–343. doi: 10.29400/tjgeri.2026.505

INTRODUCTION

With the aging population worldwide, there has been a significant increase in the number of individuals receiving home health care services (1). The vast majority of these individuals bear the heavy burden of multiple chronic diseases and are required to use multiple medications concurrently (2).

The Screening Tool of Older Persons' Potentially Inappropriate Prescriptions (STOPP) criteria were developed as an evidence-based tool that systematically and scientifically identifies potentially inappropriate prescriptions and associated adverse drug events in older adults with high sensitivity (3). The third version of the STOPP criteria (Version 3) was updated and expanded in 2023 by experts in geriatric pharmacotherapy in Europe to include 190 criteria. This update provides an opportunity for a more comprehensive evaluation (4). Various studies have shown that the use of the STOPP criteria reveals the prevalence of potentially inappropriate medication use (PIM) in older adults, and that the implementation of these criteria reduces treatment costs and adverse drug effects (5). Furthermore, it has been observed that the application of the STOPP/START criteria in older adults with high rates of polypharmacy improves clinical outcomes through the discontinuation of unnecessary medications and the addition of omitted treatments (6).

Individuals receiving home health care services represent a group that is more vulnerable to PIM due to factors such as advanced age, multiple chronic diseases, functional limitations, and limited access to healthcare facilities (7).

Studies on PIM in older adults in Turkey are quite limited (8). In this context, the application of the STOPP Version 3 criteria to patients receiving home health care services may contribute to the objective evaluation of the appropriateness of medication therapies, the identification of inappropriate prescribing, and the improvement of medication safety. To address this gap, the present study aims to evaluate potentially inappropriate medication use in older adults receiving home health care services using the STOPP Version 3 criteria.

MATERIALS AND METHOD

This cross-sectional study was conducted on patients enrolled in the Home Health Care Unit of a university hospital. Sample size was calculated using the OpenEpi program. Previous studies have reported a potential prevalence of inappropriate drug use between 65% and 72.3% (9,10). Based on these studies, the expected prevalence was accepted as 68.65%, and with a population size of 6300, a 95% confidence level, and a 5% absolute margin of error, the minimum sample size was found to be 314. Considering a possible 20% data loss, the required sample size was increased to 378, and the study was completed with 389 patients.

Following the receipt of ethical approval from the university's Non-Interventional Clinical Research Ethics Committee (decision no. 229 dated 14.11.2024) and necessary institutional permissions, the data of patients followed in the Home Health Care Unit were accessed via the automation system. This study was screened prospectively between January 1, 2025, and March 1, 2025. Data collection was carried out according to a predefined study schedule within this time frame.

The study was conducted over a three-month period following ethics committee approval and included patients aged 65 years and older who were visited at home within the scope of home healthcare services. Patients who met the inclusion criteria, had no severe dementia or major cognitive impairment, were not tube-fed, and had complete data were included; cases with missing data were excluded. During data collection, clinical assessments were performed during home visits, and diagnostic information, medication use, and laboratory data were verified using the hospital information management system and electronic health record

system. PIM use was evaluated according to the STOPP Version 3 (2023) criteria. Medications were assessed against 133 criteria, and those meeting drug–drug or drug–disease interaction criteria were recorded as PIMs. The prevalence of at least one PIM and the mean number of PIMs per patient were calculated.

Data analysis was performed using SPSS 26.0 software. Descriptive statistics were expressed as mean ± standard deviation for continuous variables and as frequency (n) and percentage (%) for categorical variables. Relationships between categorical variables were evaluated using the Pearson Chi-Square (χ^2) test; Fisher's exact test was applied when necessary. Binary logistic regression analysis was performed. The goodness-of-fit of the model was evaluated using the Hosmer-Lemeshow test, and its explanatory power was measured using the Nagelkerke R^2 coefficient. The effects of independent variables were presented using odds ratios (Exp(B)) and 95% confidence intervals (CI).

RESULTS

The study was conducted with 389 participants, of whom 74.8% (n=291) were female and 25.2% (n=98) were male, with an average age of approximately 82,6± 7,4 (min:65, max:104) years. The level of

Table 1. Participants' Socio-demographic Characteristics

Variable	Category	n	%
Gender	Female	291	74.8
	Male	98	25.2
Age	65-74	59	15.2
	75–84	148	38.0
	85 and above	182	46.8
Educational Status	Illiterate	53	13.6
	Primary school	216	55.5
	Middle school	66	17
	High School	38	9.8
	Associate Degree	1	0.3
	Undergraduate	13	3.3
	Postgraduate	2	0.5
Marital Status	Married	139	35.7
	Single	7	1.8
	Divorced/Widowed	243	62.5
Bedridden Status	Yes	147	37.8
	No	242	62.2
Care Provided By	Own	14	3.6
	Family	354	91
	Caregiver	21	5.4
Total		**389**	**100**



Table 2. Distribution of medication groups (n, %)

Drug Group	Inappropriate Drug Use		Total
	Yes	No	n (%)
	n (%)	n (%)	
Beta blockers	175	7.9	44.99
Diuretics	171	7.8	43.96
Selective serotonin reuptake inhibitors (SSRIs)	139	6.3	35.73
Antidiabetics	138	6.3	35.48
Proton pump inhibitors (PPI)	137	6.2	35.22
Anti-muscarinics	137	6.2	35.22
Calcium channel blockers (CCB)	121	5.5	31.11
Acetylsalicylic acid (ASA)	110	5.0	28.28
Angiotensin receptor blockers (ARBs)	101	4.6	25.96
Anti-convulsants	24	1.1	6.17
Angiotensin-Converting Enzyme Inhibitors (ACE inhibitors)	99	4.5	25.45
Statins	98	4.4	25.19
Anti-dementia medications	94	4.3	24.16
Anti-psychotics	91	4.1	23.39
Thyroid medications	90	4.1	23.14
Anti-platelets	72	3.3	18.51
Anti-anginal medications	51	2.3	13.11
Inhaler medications	44	2.0	11.31
Piracetam	43	1.9	11.05
Alpha blockers	40	1.8	10.28
Anti-arrhythmics	34	1.5	8.74
Nonsteroidal anti-inflammatory drugs (NSAIDs)	33	1.5	8.48
Anti-convulsants	24	1.1	6.17
Anti-parkinson medications	21	1.0	5.40
Anti-histamines	19	0.9	4.88
Anti-emetics	8	0.4	2.06
Bisphosphonates	1 (0.1)	2 (0.2)	3 (0.1)
Total	**2.206**	**100**	

dependency was assessed using the Barthel Index of Activities of Daily Living, and it was found that a significant proportion of individuals (37.8%, n=147) were totally or severely dependent. The sociodemographic data of the participants are presented in Table 1.

The most frequently used medication group among the participants was beta-blockers (44.99%).

Table 3. Distribution of Participants According to Potentially Inappropriate Medication Criteria

Item	Potentially Inappropriate Medication Use	
	Yes	No
	n(%)	n(%)
Prescribed medication without a clinical indication	7 (1.8)	382 (98.2)
Prescription of duplicate medication classes for regular daily use	1 (0.3)	388 (99.7)
Long-term use of more than 100 mg aspirin per day	2 (0.5)	387 (99.5)
Aspirin + clopidogrel combination (>4 weeks)	1 (0.3)	388 (99.7)
Anticoagulant + antiplatelet (dual therapy)	2 (0.5)	387 (99.5)
SSRI* + anticoagulant (previous history of major bleeding)	11 (2.8)	378 (97.2)
Aspirin for primary prevention in cardiovascular disease	10 (2.6)	379 (97.4)
SSRI + significant hyponatremia (<130 mmol/l)	1 (0.3)	388 (99.7)
Acetylcholinesterase inhibitor + bradycardic medications	1 (0.3)	388 (99.7)
Nootropics in the treatment of dementia	31 (8.0)	358 (92.0)
First generation antihistamines for insomnia	5 (1.3)	384 (98.7)
Digoxin ≥125 µg/day, eGFR <30	1 (0.3)	388 (99.7)
Direct thrombin inhibitors, eGFR <30	3 (0.8)	386 (99.2)
Factor Xa inhibitors, eGFR <15	4 (1.0)	385 (99.0)
NSAIDs*, eGFR <50	8 (2.1)	381 (97.9)
Metformin, eGFR <30	4 (1.0)	385 (99.0)
Mineralocorticoid receptor antagonists, eGFR <30	12 (3.1)	377 (96.9)
PPIs for >8 weeks in uncomplicated peptic ulcer disease	125 (32.1)	264 (67.9)
SGLT2 inhibitors* + symptomatic hypotension	2 (0.5)	387 (99.5)

eGFR: Estimated Glomerular Filtration Rate; *SGLT2: Sodium-glucose cotransporter 2 inhibitors; NSAIDs: Non-steroidal anti-inflammatory drugs; SSRIs: Selective serotonin reuptake inhibitors

Table 2 shows the distribution of medication groups by PIM status, and it was determined that 1,141 (51.7%) out of a total of 2,206 medications were classified as PIMs. It is noteworthy that 45.8% of the participants had at least one type of potentially inappropriate medication use.

Table 3 shows the distribution of participants according to PIM criteria. The most common PIM was the use of PPIs for longer than the recommended duration in uncomplicated peptic ulcer disease, with a frequency of 32.1% (n=125).

In this study, logistic regression analysis was conducted on variables predicting PIM to determine the effects of various chronic diseases on PIM use. Table 4 presents the findings of the logistic regression analysis regarding the variables predicting PIM.

The effects of medication groups on potentially inappropriate medication use were examined using binary logistic regression analysis; the model was found to be statistically significant overall ($p < 0.001$) with high explanatory power (Nagelkerke R^2



Table 4. Logistic Regression Analysis of Variables Predicting Potentially Inappropriate Medication Use

Variable	B	S.E.	Wald	p	Exp(B)
Hypertension	-0.065	0.267	0.059	0.808	0.937
Diabetes	-0.075	0.115	0.422	0.516	0.928
Hyperlipidemia	0.008	0.092	0.007	0.931	1.008
Cardiovascular disease	-0.053	0.058	0.834	0.361	0.949
Neurological Disease	-0.035	0.057	0.381	0.537	0.966
Chronic renal failure	0.059	0.061	0.914	0.339	1.06
Dementia/Alzheimer's	0.091	0.038	**5.894**	**0.015**	**1.096**
Parkinson's Disease	0.12	0.063	3.618	0.057	1.127
Psychiatric disease	0.02	0.069	0.085	0.771	1.02
Dysrhythmia	-0.032	0.038	0.699	0.403	0.968
Respiratory system diseases	0.045	0.034	1.775	0.183	1.046
Rheumatic diseases	0.13	0.056	**5.401**	**0.02**	**1.139**
Thyroid diseases	0.002	0.02	0.011	0.916	1.002
Malignancy	-0.004	0.025	0.029	0.866	0.996
Benign Prostatic Hyperplasia	0	0.031	0	0.992	1
Osteoporosis	0.041	0.054	0.574	0.449	1.042
Allergy	-0.044	0.063	0.506	0.477	0.956
Digestive system diseases	0.096	0.062	2.365	0.124	1.1
Vertigo	0.003	0.039	0.007	0.936	1.003

*Logistic regression analysis was performed. In the binary logistic regression analysis performed, the dependent variable "potentially inappropriate medication use" consists of two categories: "presence of PIM use (0)" and "absence of PIM use (1)".

Note:B: Regression coefficient, S.E.: Standard error, Wald: Wald statistic, p: Significance level, Exp(B): Odds ratio

= 0.685). Table 5 presents the results of the binary logistic regression analysis regarding the effects of medication groups on potentially inappropriate medication use.

DISCUSSION

The study determined that nearly all participants had at least one chronic disease and an average of three chronic diseases. This finding indicates that the burden of multimorbidity is very high within the study sample and that chronic diseases are prevalent among elderly individuals. Similarly, a systematic review by Marengoni et al. reported that the prevalence of multimorbidity ranged from 55% to 98% (11). This demonstrates that the patient profile of the study is consistent with similar research findings in the literature.

When the chronic disease profile of elderly individuals receiving home health care was examined, it was found that not only physical health problems but also psychological disorders play a significant role in this patient group. In a study conducted in Sweden, Grundberg et al. emphasized that both cardiovascular diseases and mental health problems are prevalent among elderly individuals receiving home care (12).

Table 5. Results of Binary Logistic Regression Analysis Regarding the Effects of Medication Groups on Potentially Inappropriate Medication Use

Variable	B	S.E.	Wald	p	Exp(B)
Proton pump inhibitor (PPI)	-4.517	0.467	93.392	**0.000**	**0.011**
Antidiabetic medication (Antidm)	-0.352	0.18	3.811	0.051	0.703
NSAIDs	-0.166	0.22	0.568	0.451	0.847
Acetylsalicylic acid (ASA)	-0.34	0.108	9.832	**0.002**	**0.712**
Anti-anginal	-0.066	0.113	0.345	0.557	0.936
Diuretic	-0.005	0.061	0.006	0.938	0.995
Beta-blocker	0.096	0.055	3.088	0.079	1.101
ACE inhibitor	0.015	0.052	0.082	0.775	1.015
ARB	0.014	0.047	0.091	0.762	1.014
Calcium channel blocker (CCB)	-0.027	0.035	0.586	0.444	0.973
Alpha blocker	0.092	0.059	2.428	0.119	1.097
Inhaler	0.069	0.05	1.928	0.165	1.071
Anti-dementia medication	0.009	0.031	0.082	0.775	1.009
Anti-psychotic	-0.024	0.031	0.604	0.437	0.976
Anti-parkinson	0.024	0.056	0.19	0.663	1.025
Selective serotonin reuptake inhibitors (SSRIs)	-0.018	0.023	0.605	0.436	0.982
Anticoagulant	-0.093	0.028	11.113	**0.001**	**0.911**
Antipylatelet	-0.089	0.027	10.724	**0.001**	**0.915**
Statin	0.016	0.023	0.489	0.484	1.016
Anti-arrhythmic	-0.033	0.03	1.178	0.278	0.968
Steroid	0.207	0.062	11.015	**0.001**	**1.23**
Anti-convulsant	0.013	0.033	0.171	0.68	1.014
Antihistaminic	-0.029	0.03	0.962	0.327	0.971
Anti-emetic	-0.051	0.04	1.661	0.198	0.95
Thyroid medication	0.013	0.017	0.593	0.441	1.013
Piracetam	-0.095	0.02	22.389	**0.000**	**0.91**
Bisphosphonate	-0.017	0.063	0.069	0.793	0.984
Vitamin	0.016	0.013	1.55	0.213	1.016

*Logistic regression analysis was performed. In the binary logistic regression analysis performed, the dependent variable "potentially inappropriate medication use" consists of two categories: "presence of PIM use (0)" and "absence of PIM use (1)".

Note:B: Regression coefficient, S.E.: Standard error, Wald: Wald statistic, p: Significance level, Exp(B): Odds ratio.

The study determined that participants used an average of 5.7 different medications. This result underlines the need for more careful evaluation when prescribing specific drug groups. Studies by Komiya et al. and Bao et al. have shown that high polypharmacy rates increase the risk of PIM (13,14).



This similarity suggests that UIC is not a problem unique to our country, but a public health problem that is gaining importance on a global scale with the aging population.

51.7% of the medications used by the participants were evaluated within the scope of age-related pharmacokinetic and pharmacodynamic changes. The highest rate was found in the PPI group, followed by beta-blockers, diuretics, antidepressants, and antidiabetics. Komiya reported that PPI, SSRI, and antihypertensive groups were prominent in terms of age-related pharmacokinetic and pharmacodynamic changes, while Bao et al. reported that PPI, benzodiazepine, and long-acting hypoglycemic agent groups were prominent according to Beers criteria (13,14). These findings show that some drug groups frequently prescribed to elderly individuals are used without sufficient consideration of age-related pharmacokinetic and pharmacodynamic changes.

The most common pattern revealing potentially inappropriate medication use was the use of PPIs for longer than the recommended duration (32.1%). This indicates that guidelines are not sufficiently followed in clinical practice and that the duration of PPI treatments is not being effectively monitored. In a study conducted by Michelon et al., it was found that more than 78% of elderly individuals used PPIs off-label or for a prolonged duration, which was evaluated within the scope of potentially inappropriate medication use according to the STOPP criteria (15). Additionally, the use of nootropic agents with unproven efficacy in dementia treatment is a noteworthy pattern of potentially inappropriate medication use. In the study, it was observed that these medications were prescribed in 8.0% of cases, which indicates that the unnecessary use of medications providing limited contribution to treatment continues. The literature also states that nootropics increase medication burden and economic cost rather than providing clinical benefit in elderly individuals (16).

Prescribing certain medications to individuals with renal dysfunction (eGFR <30 mL/min) also poses a potential risk. The study concluded that mineralocorticoid receptor antagonists, NSAIDs, metformin, and direct oral anticoagulants are potentially inappropriate for patients with severe renal dysfunction. This indicates that medication treatments in elderly individuals should be evaluated not only in terms of quantity but also in terms of indication, duration of use, and dose adjustment according to renal function.

The study found that some potentially risky drug combinations were used in elderly individuals. Specifically, the rate of concomitant use of SSRIs and anticoagulants was found to be 2.8%. The literature reports that the combined use of SSRIs and anticoagulants increases the risk of gastrointestinal bleeding (17, 18). Pothen et al. reported that the use of SSRIs increases the risk of bleeding, especially in individuals over 80 years of age, and that the risk is significantly higher when used in combination with aspirin and NSAIDs; therefore, it is recommended to avoid concomitant prescribing, to prefer the lowest effective dose, and to keep the treatment duration as short as possible (18). Sarbacker et al. stated that routine aspirin use for primary prevention in elderly individuals may do more harm than good, and therefore thrombotic and hemorrhagic risks should be assessed individually (19).

Although no statistically significant correlation was found between the presence of chronic diseases and medication use disorders in the study, it was determined that dementia/Alzheimer's disease and rheumatic diseases are significant predictors of medication use disorders in elderly individuals. Individuals with various types of dementia may experience difficulties in medication adherence due to cognitive impairment; this increases the risk of polypharmacy and inappropriate medication use. In the study conducted by Lau et al., it was found that elderly individuals with dementia used a higher number of medications and that the likelihood of potentially inappropriate medication use increased

significantly (20). Similarly, in the study conducted by Murphy et al., it was stated that potentially inappropriate medication use is common among Alzheimer's patients (21). In rheumatic diseases, the need for long-term use of analgesic and anti-inflammatory medications due to chronic pain may arise, which can increase the risk of long-term potentially inappropriate medication use.

Finally, it was found that the level of potentially inappropriate medication use was higher among individuals using steroids. The research results indicate that non-prescription medications should be more strictly controlled in clinical practice.

The findings demonstrate the need for routine application of STOPP criteria to reduce inappropriate drug use in elderly individuals receiving home health care. Limitations of the study include its cross-sectional design, single-center execution, and the lack of clinical outcomes such as adverse drug reactions or hospitalization risk in the evaluation of PIM.

Conflict of Interest: The authors declare that there is no conflict of interest.

Financial Disclosure: The authors received no financial support for this study.

REFERENCES

1. Al-Hamad A, Yasin YM, Metersky K, et al. Home Healthcare Services and Interventions for Older Adults: An Umbrella Review of Systematic Reviews and Meta-Analyses. Journal of Ageing and Longevity. 2025; 5(3):25. doi.org/10.3390/jal5030025
2. Borazan NG, Kırışık H, Ulusal F. Yaşlılarda ilaç bağımlılığı ve ilacın kötüye kullanımının gerontolojik perspektiften değerlendirilmesi. Bağımlılık Dergisi 2025;26(1):116-26. doi: 10.51982/bagimli.1471584
3. Gallagher P, O'Mahony D. STOPP (Screening Tool of Older Persons' potentially inappropriate Prescriptions): application to acutely ill elderly patients and comparison with Beers' criteria. Age and Ageing 2008;37(6):673-9. doi: 10.1093/ageing/afn197
4. O'Mahony D, Cherubini A, Guiteras AR, et al. STOPP/START criteria for potentially inappropriate prescribing in older people: version 3. Eur Geriatr Med. 2023;14(4):625-32. doi:10.1007/s41999-023-00777-y
5. Hill-Taylor B, Walsh KA, Stewart S, Hayden J, Byrne S, Sketris IS. Effectiveness of the STOPP/START criteria: systematic review and meta-analysis of randomized controlled studies. J Clin Pharm Ther. 2016;41(2):158-69. doi:10.1111/jcpt.12372
6. McDermott C, Shanahan E. Inappropriate prescribing in community-dwelling older adults: a cross-sectional review using the STOPP/START criteria. Age Ageing. 2022;51(Suppl 3):afac218.142. doi:10.1371/journal.pone.0167586
7. Karimi R, Robinson-Barella A, Davey V, Sinclair DR, Hanratty B, Todd A. Understanding polypharmacy for people receiving home care services: a scoping review of the evidence. Age Ageing. 2025;54(2):afaf031.doi doi:10.1093/ageing/afaf031
8. Bahat G, İlhan B, Erdoğan T, et al. Presenting Turkish inappropriate medication use in the elderly (TIME) criteria set in Turkish. Eur J Geriatr Gerontol. 2020;11(3):491-8. doi:10.1007/s41999-020-00297-z
9. Özaydın F. N.The Frequency of Inappropriate Medication Use Among the Oldest Old People. J Contin Med Educ. 2025.cilt volume 34. sayı issue 3. DOI: 10.17942/sted.1529976
10. Öztürk, G.Z, Ardıç, C., Toprak D. Frequency Of Polypharmacy And Use Of Potentıally Inappropnate Medıcatıons In The Elderly. Turkish Journal Of Geriatrics / Türk Geriatri Dergisi, 2017, V. 20, N. 4, P. 296
11. Marengoni A, Angleman S, Melis R, et al. Aging with multimorbidity: a systematic review of the literature. Ageing Res Rev. 2011;10(4):430-9. doi:10.1016/j.arr.2011.03.003
12. Grundberg Å, Hansson A, Religa D, Hillerås P. Home care assistants' perspectives on detecting mental health problems and promoting mental health among community-dwelling seniors with multimorbidity. J Multidiscip Healthc. 2016;9:83-95. doi:10.2147/JMDH.S99388
13. Komiya H, Umegaki H, Asai A, et al. Factors associated with polypharmacy in elderly home-care patients. Geriatr Gerontol Int. 2018;18(1):33-41. doi:10.1111/ggi.13132



14. Bao Y, Shao H, Bishop TF, Schackman BR, Bruce ML. Inappropriate medication in a national sample of US elderly patients receiving home health care. J Gen Intern Med. 2012;27(3):304-10. doi:10.1007/s11606-011-1905-4

15. Drusch S, Neumann A, Michelon H, Pépin M, Zureik M, Herr M. Proton pump inhibitors: why this gap between guidelines and prescribing practices in geriatrics? Eur J Clin Pharmacol. 2019;75(9):1327-9. doi:10.1007/s00228-019-02692-3

16. Malík M, Tlustoš P. Nootropics as cognitive enhancers: types, dosage and side effects of smart drugs. Nutrients. 2022;14(16):3367. doi:10.3390/nu14163367

17. de Abajo, F.J. Effects of Selective Serotonin Reuptake Inhibitors on Platelet Function. Drugs Aging 28, 345–367 (2011). doi.org/10.2165/11589340-000000000-00000

18. Pothen N, Patel P, Jafri A. Selective Serotonin Reuptake Inhibitors and Bleeding Risk in the Geriatric Population. Innov Clin Neurosci. 2024 Dec 1;21(10):34-37.

19. Sarbacker GB, Lusk KA, Flieller LA, Van Liew JR. Aspirin use for the primary prevention of cardiovascular disease in the elderly. Consult Pharm. 2016;31(1):24-32. doi:10.4140/TCP.n.2016.24

20. Lau DT, Mercaldo ND, Harris AT, Trittschuh E, Shega J, Weintraub S . Polypharmacy and potentially inappropriate medication use among community-dwelling elders with dementia. Alzheimers Dis Assoc Disord. 2010;24(1):56-63. doi:10.1097/WAD.0b013e31819d6ec9

21. Murphy C, Dyer AH, Lawlor B, Kennelly SP. Potentially inappropriate medication use in older adults with mild-moderate Alzheimer's disease: prevalence and associations with adverse events. Age Ageing. 2020;49(4):580-7. doi:10.1093/ageing/afaa067