

Prevalence and Determinants of Self-Medication among Elderly in an Urban Community of India: A Community-Based Cross-Sectional Study

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Abstract:

Introduction: Self-medication, defined as the use of medicines without consultation with a qualified healthcare professional, is common among older adults and can pose significant health risks. **Objectives:** To determine the prevalence of self-medication among elderly individuals in an urban Indian community and to examine associated indications, medication types, and socio-demographic and personal factors influencing this practice. **Methods:** A community-based cross-sectional study was conducted from August 2021 to August 2022 in the urban field practice area of a tertiary care teaching hospital in Ahmedabad, Gujarat. A total of 700 adults aged >65 years were selected by simple random sampling. Data were collected through face-to-face interviews using a pre-tested semi-structured questionnaire. Descriptive statistics and multivariate logistic regression were applied, with $p < 0.05$ considered statistically significant. **Results:** The prevalence of self-medication was 62.1%. Common indications were fever (71.5%), cold (66.9%), cough (62.8%), and musculoskeletal complaints (42.8%). Analgesics (41.8%) and antihypertensives (39.5%) were most commonly used. Independent predictors included age 65–79 years (AOR = 3.25; 95% CI: 2.05–5.14), female gender (AOR = 2.12; 95% CI: 1.45–3.10), illiteracy (AOR = 1.52; 95% CI: 1.10–2.10), living alone (AOR = 6.18; 95% CI: 1.84–20.8), and joint/extended family type (AOR = 1.87; 95% CI: 1.20–2.92). Habit status and BMI were also significantly associated. **Conclusion:** Self-medication is highly prevalent among the urban elderly and is influenced by socio-demographic and personal factors. Strengthening health literacy, regular medication review, and pharmacist-led education is essential to promote rational drug use.

Keywords: Elderly; Rational drug use; Self-medication; Urban population

Introduction:

Self-medication is defined as the selection and use of medicines by individuals to treat self-recognized illnesses or symptoms without consultation with a qualified healthcare professional.^[1,2] While responsible self-medication may play a limited role in managing minor ailments, inappropriate use poses substantial public health risks, including adverse drug reactions, drug–drug interactions, antimicrobial resistance, and delayed diagnosis of serious conditions.^[3,4]

Consequently, irrational self-medication practices represent an important challenge to patient safety and rational medicine use globally.^[5]

Older adults are particularly susceptible to the adverse consequences of unsupervised medication use.^[6] Age-related physiological changes affecting pharmacokinetics and pharmacodynamics, coupled with a high prevalence of multimorbidity and polypharmacy, significantly increase the risk of medication-related complications.^[7,8] Furthermore, the unsupervised

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continuation or modification of previously prescribed therapies for chronic conditions such as hypertension and diabetes mellitus, without periodic medical review, may lead to inadequate disease control and preventable adverse outcomes.^[9]

Self-medication practices are especially common in low- and middle-income countries, where structural barriers such as limited healthcare access, financial constraints, long waiting times, and easy availability of over-the-counter medications promote unsupervised drug use.^[10,11] In India, reported prevalence varies widely across studies due to differences in methodology, study populations, and operational definitions.^[12,13] Factors such as unrestricted pharmacy access, reuse of old prescriptions, availability of leftover medicines, and reliance on informal sources of advice further contribute to the widespread practice.^[14–16]

India is undergoing a rapid demographic transition characterized by a steadily increasing elderly population alongside a growing burden of chronic non-communicable diseases.^[17] Despite this shift, community-based evidence focusing specifically on self-medication practices among the urban elderly remains limited. Understanding the magnitude and determinants of this behaviour is essential for designing targeted health education initiatives, strengthening pharmacist engagement, and informing policy measures aimed at promoting rational drug use among older adults.^[18]

Therefore, the present study was undertaken to determine the prevalence of self-medication among elderly individuals residing in an urban Indian community and to assess the common indications, types of medications used, and socio-demographic and personal factors associated with this practice.

Materials and Methods:

Study Design and Setting

A community-based cross-sectional study was conducted from August 2021 to August 2022 in the urban field practice area attached to a tertiary care teaching hospital in Ahmedabad, Gujarat, India.

Study Population

Elderly individuals aged ≥ 65 years who were permanent residents of the study area for at least one year were included. Individuals who were severely ill, cognitively impaired^[19] as assessed by history of diagnosed cognitive disorder or inability to respond appropriately to the questionnaire, or unwilling to participate were excluded.

Sample Size

Assuming a prevalence of 37% based on previous studies and meta-analyses reporting self-medication prevalence among elderly populations to be approximately 36%, with Indian studies showing a range of 36%–66%^[12,20,21], 95% confidence level, and 10% allowable error, the minimum required sample size was 681, rounded to 700 to account for non-response.

Sampling Method

The urban field practice area was divided into five administrative units. The total sample size was equally allocated across these units. Eligible participants were selected using simple random sampling from household lists maintained by health workers.

Operational Definition

Self-medication was defined as the use of any medication without consultation from a qualified healthcare professional for self-recognized illness within the past three months.

Data Collection

Data were collected through face-to-face interviews using a pre-tested semi-structured questionnaire, translated into the local language (Gujarati), and back-translated to ensure validity and consistency. Information on socio-demographic characteristics, personal factors, indications, types of drugs, and reasons for self-medication was obtained. Height and weight were measured using standard instruments, and BMI was calculated according to WHO criteria.^[22] Habit status was defined as current tobacco or alcohol use. Socioeconomic status was assessed using the Modified Kuppaswamy Scale (updated for 2021 income criteria).^[23]

Statistical Analysis

Data were entered into Microsoft Excel and analysed using the Statistical Package for the Social Sciences (SPSS) version 26.0 (institutional licensed version). Descriptive statistics summarized participant characteristics and self-medication patterns. Associations between self-medication and independent variables were assessed using Chi-square test. Variables significant at $p < 0.05$ in bivariate analysis were included in multivariate logistic regression to identify independent predictors, expressed as adjusted odds ratios (AOR) with 95% confidence intervals (CI).

Ethical Considerations

The study was approved by the Institutional Ethics Committee of B. J. Medical college, Ahmedabad (Ref no.- 166/2021). Verbal informed consent was obtained from all participants, and confidentiality was maintained.

Results:

Among the 700 elderly participants included in the study, nearly two-thirds (62.1%) of participants reported self-medication. (Figure 1). Among those who practiced self-medication, the most commonly reported indications were fever (71.5%), cold (66.9%), cough (62.8%), and runny nose (56.8%), followed by musculoskeletal complaints such as aches and pains

(42.8%) and headache (39.8%). Gastrointestinal and other indications were reported less frequently (Figure 2).

Consistent with these indications, the most commonly used medications were analgesics (41.8%) and antihypertensive drugs (39.5%), followed by antitussives (25.7%), antacids (24.1%), and hypoglycaemic agents (22.3%). Use of antibiotics (4.4%) and other medications was comparatively low (Figure 3).

Analysis of socio-demographic characteristics showed that self-medication was significantly more prevalent among participants aged 65–79 years compared with those aged ≥ 80 years ($p < 0.0001$), among women compared with men ($p < 0.0001$), and among illiterate participants compared with literate participants ($p = 0.007$). No significant association was observed with occupational status. Family structure was significantly associated with self-medication, with higher prevalence among participants living in joint and extended families compared with nuclear families (Table 1).

With respect to personal characteristics, self-medication prevalence differed significantly by living arrangement, with the highest prevalence among participants living alone, followed by those living with children, with spouse and children, and with spouse only

Figure 1: Prevalence of self-medication (n=700)

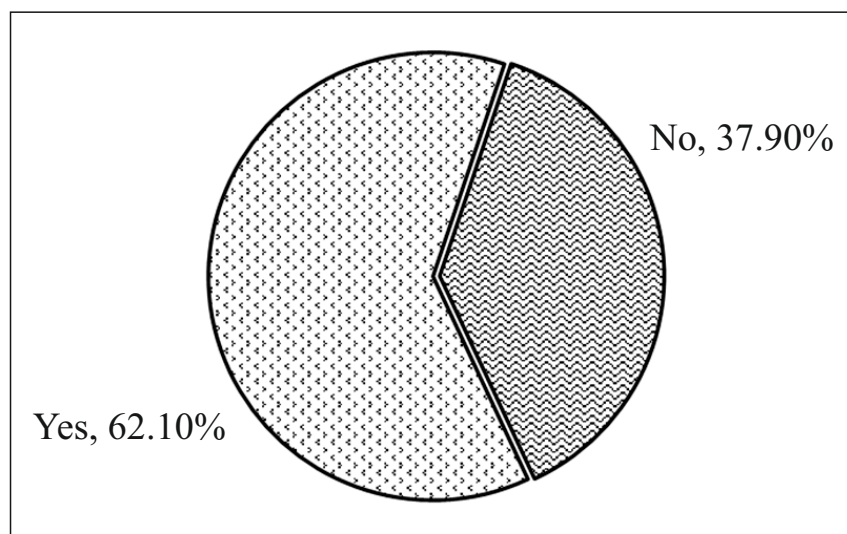
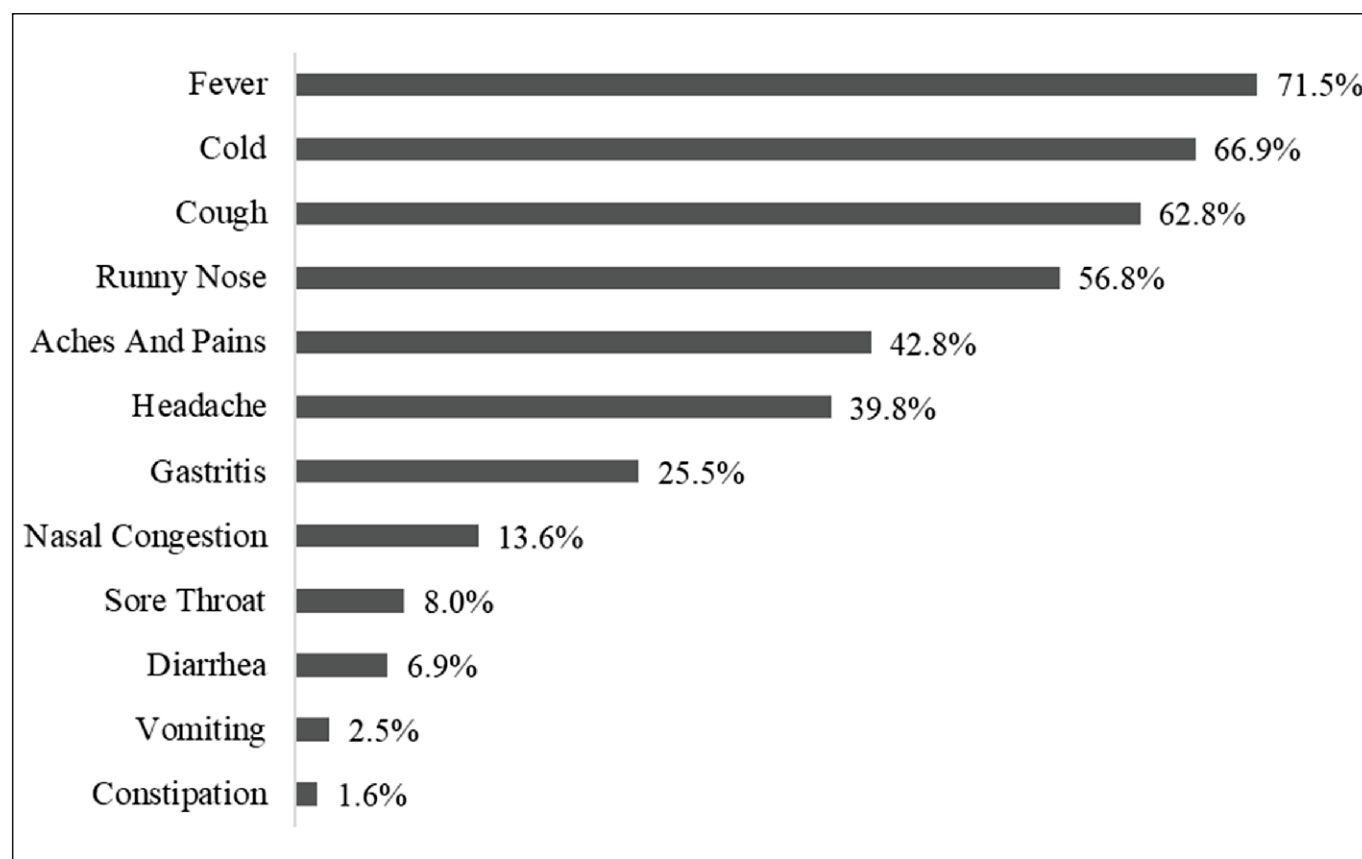
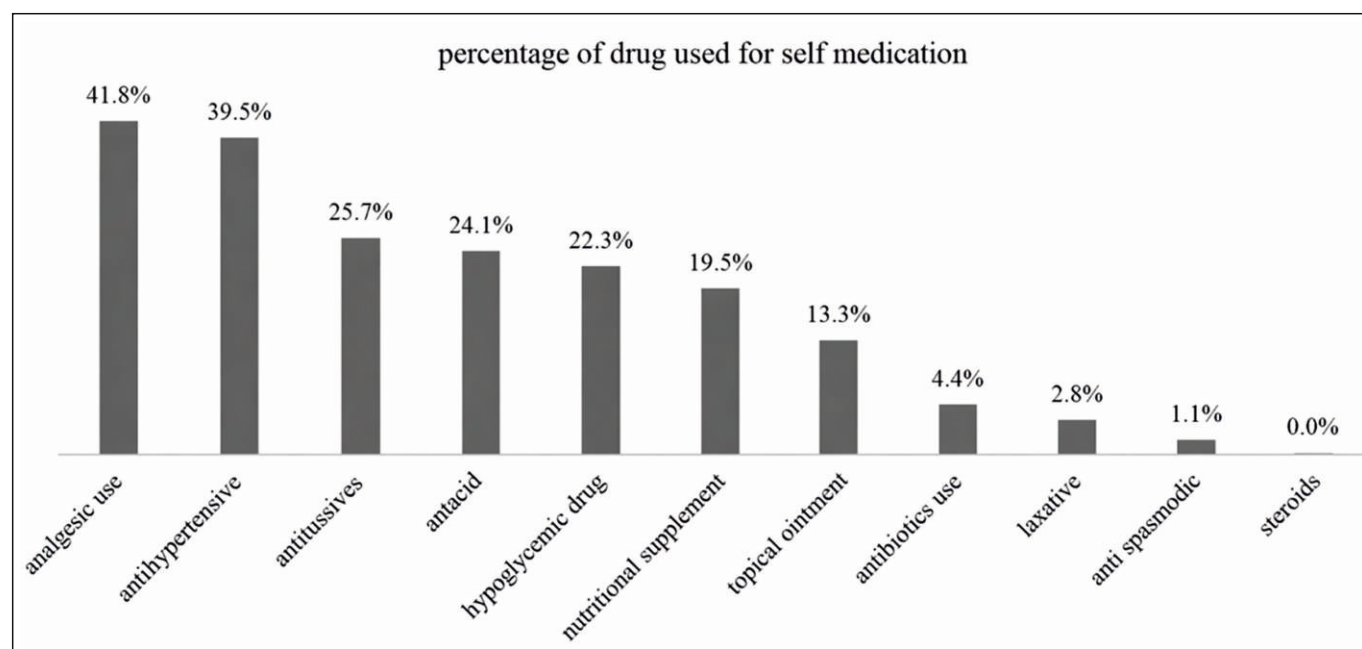


Figure 2: Indications for self-medication in the geriatric population (n=435) *

*Multiple responses allowed

Figure 3: Distribution of medications used for self-medication (n=435) *

*Multiple responses allowed

Table 1: Association of socio-demographic characteristics with self-medication among elderly participants (n=700)

Characteristics	Yes n (%)	No n (%)	Total n (%)	Test statistic (χ^2 value)	p value
Age					
65–79	400 (65.9)	207 (34.1)	607 (100.0)	$\chi^2 = 35.82$	<0.001*
≥80	35 (37.6)	58 (62.4)	93 (100.0)		
Gender					
Male	114 (46.3)	132 (53.7)	246 (100.0)	$\chi^2 = 37.12$	<0.001*
Female	321 (70.7)	133 (29.3)	454 (100.0)		
Education					
Illiterate	177 (68.6)	81 (31.4)	258 (100.0)	$\chi^2 = 7.23$	0.007*
Literate	258 (58.4)	184 (41.6)	442 (100.0)		
Occupation					
Working	78 (59.1)	54 (40.9)	132 (100.0)	$\chi^2 = 0.65$	0.42
Not working	357 (62.9)	211 (37.1)	568 (100.0)		
Family type					
Joint	287 (68.2)	134 (31.8)	421 (100.0)	$\chi^2 = 24.73$	<0.001*
Nuclear	132 (50.8)	128 (49.2)	260 (100.0)		
Extended	16 (84.2)	3 (15.8)	19 (100.0)		

*Statistically significant at $p < 0.05$

Table 2: Association of personal characteristics with self-medication among elderly participants (n=700)

Characteristics	Yes n (%)	No n (%)	Total n (%)	Test statistic (χ^2 value)	p value
Living arrangement					
Living single	18 (94.7)	1 (5.3)	19 (100.0)	$\chi^2 = 37.91$	<0.001*
Living with children	148 (70.1)	63 (29.9)	211 (100.0)		
Living with a spouse	21 (32.8)	43 (67.2)	64 (100.0)		
Living with spouse and children	248 (61.1)	158 (38.9)	406 (100.0)		
Dependency					
Dependent	335 (61.8)	207 (38.2)	542 (100.0)	$\chi^2 = 0.08$	0.78
Independent	100 (63.3)	58 (36.7)	158 (100.0)		
Habit (Tobacco/Alcohol)					
Yes 134 (55.8)	106 (44.2)	240 (100.0)	$\chi^2 = 6.63$	0.01*	
No 301 (65.4)	159 (34.6)	460 (100.0)			
BMI					
Underweight	81 (57.9)	59 (42.1)	140 (100.0)	$\chi^2 = 10.91$	<0.01*
Normal	214 (68.8)	97 (31.2)	311 (100.0)		
Overweight	60 (54.5)	50 (45.5)	110 (100.0)		
Obese	80 (57.6)	59 (42.4)	139 (100.0)		

*Statistically significant at $p < 0.05$

Table 3: Multivariate Logistic Regression Analysis of Factors Associated with Self-Medication Among Elderly Participants

Variable	Adjusted Odds Ratio (AOR)	95% Confidence Interval (CI)	p value
Age 65–79 vs ≥80	3.25	2.05–5.14	<0.001*
Female vs Male	2.12	1.45–3.10	<0.001*
Illiterate vs Literate	1.52	1.10–2.10	0.012*
Living Alone vs With Spouse	6.18	1.84–20.8	0.003*
Living with Children vs With Spouse	2.11	1.35–3.30	0.001*
Joint/Extended Family vs Nuclear	1.87	1.20–2.92	0.005*
Habit (Tobacco/Alcohol)	0.72	0.53–0.97	0.031*
BMI (Normal vs Others)	1.35	1.01–1.80	0.045*

*Statistically significant at $p < 0.05$

Table 4: Reasons for self-medication among elderly participants (n=435) *

Reasons of self-medication	Frequency	Percentage
Prior experience with drugs	170	39.1%
Minor health problem	251	57.7%
Urgency of the problem	60	13.8%
Advice from friends, family or neighbours	78	17.9%
Medicines present in the house	70	16.1%
Certainty of its safety	17	3.9%
Hospital/Clinic far from home	13	3.0%
Easily available in drug stores	28	6.4%
No medical insurance and high cost of medical consultation	29	6.7%
Saving money	97	22.3%
Inadequate time to attend the hospital	15	3.4%

*Multiple responses allowed

($p < 0.001$). Habit status and body mass index were also significantly associated with self-medication practices, whereas dependency status showed no statistically significant association (Table 2).

Multivariate logistic regression was performed to identify independent predictors of self-medication among the elderly. Variables significant in bivariate analysis were included in the model (Table 3).

Reasons reported for self-medication were aligned with the observed indications and medication patterns. Minor health problems (57.7%) and prior experience with medicines (39.1%) were the most frequently cited reasons. Economic factors, availability of medicines at

home, social advice, urgency of illness, and accessibility of drug stores were also reported, while time constraints, perceived safety, and distance from healthcare facilities were less commonly cited (Table 4).

Discussion:

Self-medication among elderly individuals represents an important public health concern due to age-related physiological changes, multimorbidity, and the high likelihood of polypharmacy, all of which increase susceptibility to adverse drug reactions and drug–drug interactions.^[7,8] Additionally, inappropriate self-use of medications, particularly antibiotics, contributes to antimicrobial resistance and other preventable harms.^[4,24]

Understanding the determinants and motivations underlying self-medication practices in this population is essential for designing targeted interventions that promote rational and safe medicine use.

In the present study, 62.1% of elderly participants residing in an urban community reported practicing self-medication. This prevalence is comparable to findings from North India (63%)^[25] and Iran (76.2%).^[26,27] Such variability across studies may reflect differences in sociodemographic characteristics, healthcare accessibility, regulatory enforcement regarding over-the-counter medication sales, and operational definitions of self-medication.

The reasons for self-medication identified in this study were multifactorial. Minor ailments, prior experience with medications, and convenience emerged as the most frequently cited reasons. These findings are consistent with previous literature indicating that symptom-driven self-medication is prevalent among older adults, particularly for conditions perceived as routine or recurrent.^[14,28] While such practices may reduce the burden on healthcare facilities for minor conditions, they may also delay appropriate diagnosis and treatment when symptoms are misinterpreted.^[3]

A significantly higher prevalence of self-medication was observed among women compared with men, consistent with earlier studies.^[27,28] Lower educational status was also significantly associated with increased self-medication practices, possibly reflecting limited health literacy and inadequate awareness of medication-related risks.^[29]

Polypharmacy and chronic disease burden were prominent contributors to self-medication practices. Many elderly individuals receiving long-term therapy for hypertension and diabetes may engage in unsupervised continuation or dose modification of medications, increasing the risk of adverse drug events and poor disease control.^[8,9] These findings highlight the importance of regular medication review and strengthened follow-up mechanisms in primary care settings.

Healthcare system–related factors such as economic constraints, long waiting times, and difficulty accessing healthcare facilities have been widely documented as drivers of self-medication in low- and middle-income settings.^[10,12] The frequent use of old prescriptions as a guide for medication use further indicates gaps in continuity of care and patient counselling.^[30]

Pharmacists emerged as a key source of advice for elderly individuals engaging in self-medication. Their accessibility and community presence position them as critical stakeholders in promoting safe medication practices. Strengthening pharmacist-led education and awareness initiatives and implementing standardized dispensing protocols could substantially reduce inappropriate medication use.^[31]

Overall, the present study demonstrates that self-medication among the elderly is shaped by a complex interplay of individual characteristics, social support systems, and structural healthcare factors. Addressing this issue requires a comprehensive and multifaceted approach, including improving health literacy, strengthening pharmacist engagement, reinforcing regulatory oversight of over-the-counter drug sales, and ensuring regular medication review for chronic disease management.

Future research should focus on longitudinal assessment of self-medication patterns and evaluation of clinical outcomes associated with unsupervised medication use among elderly populations.

Limitation:

This study has certain limitations. Being cross-sectional in design, causal relationships cannot be established. Self-medication practices were self-reported and may be subject to recall bias. Additionally, the study was conducted in a single urban field practice area, which may limit generalizability to other settings. Despite these limitations, the study provides valuable community-based evidence on self-medication practices among the elderly.

Recommendations

- Promote regular medication review for elderly individuals, especially those with chronic diseases.
- Design and implement structured health education programs to improve awareness regarding risks of self-medication.
- Strengthen pharmacist-led education at community pharmacies to promote safe medication practices.
- Improve accessibility to primary healthcare services to reduce dependence on self-medication.
- Strengthen social and community support systems for elderly individuals living alone.
- Strengthen regulatory enforcement on over-the-counter drug sales to minimize inappropriate access to medications.

Conclusion:

Self-medication was highly prevalent among elderly individuals residing in an urban community, with nearly two-thirds reporting the use of medicines without professional supervision. Minor health problems, prior experience with medications, and economic and accessibility factors were the most common reasons for self-medication. The practice was significantly associated with several socio-demographic and personal factors, including age, gender, education, living arrangement, habit status, and body mass index.

The frequent use of medications for chronic conditions such as antihypertensive and hypoglycaemic drugs highlights potential risks related to unsupervised medication use among the elderly. These findings underscore the need for targeted public health interventions focusing on health education, regular medication review, and promotion of rational drug use. Strengthening pharmacist-led education and improving access to affordable, age-friendly healthcare services may help reduce inappropriate self-medication and its associated risks in the elderly population.

Declaration

Conflict of Interest:

The authors declare no financial, institutional, or personal conflicts of interest.

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AI Use:

No artificial intelligence tools were used in data collection, analysis, or manuscript drafting.

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