

Prevalence of Self-Medication Practices in India: A Cross-Sectional Observational Study from a Tertiary Care Hospital in Bihar

Saurabh Kumar¹, Khursheed Anwar², Jeetendra Kumar³

¹Associate Professor, Department of Pharmacology, Jawaharlal Nehru Medical College and Hospital, Bhagalpur, Bihar, India

²Associate Professor, Department of Pharmacology, Jawaharlal Nehru Medical College and Hospital, Bhagalpur, Bihar, India

³Professor & HOD, Department of Pharmacology, Jawaharlal Nehru Medical College and Hospital, Bhagalpur, Bihar, India

Received: 01-01-2026 / Revised: 25-04-2026 / Accepted: 12-05-2026

Corresponding Author: Dr. Saurabh Kumar

Conflict of interest: Nil

Abstract

Background: Self-medication is common in India and may reduce minor-illness burden but also increases risks of delayed diagnosis, adverse drug reactions, drug interactions and inappropriate antimicrobial exposure.

Aim: To estimate the prevalence, pattern and predictors of self-medication practices among adult patients attending a tertiary care hospital in Bihar, India.

Methods: This hospital-based cross-sectional observational study enrolled 75 adult participants at Jawaharlal Nehru Medical College, Bhagalpur, from 10 February 2025 to 31 January 2026. A structured questionnaire captured sociodemographic characteristics, recent self-medication, indications, drug classes, information sources, adverse events and antibiotic use. Associations were analysed using chi-square tests and multivariable logistic regression.

Results: Self-medication during the preceding 3 months was reported by 46 participants, yielding a prevalence of 61.3% (95% CI 50.0-71.5). Prevalence was higher among participants aged 18-30 years (82.8%), urban residents (72.1%), graduates (73.5%), those without health insurance (70.8%) and those living within 1 km of a pharmacy (71.2%). The commonest indications were fever/body ache (60.9%), cough/cold symptoms (50.0%) and headache/musculoskeletal pain (45.7%). Analgesics/NSAIDs (67.4%), antipyretics (58.7%) and cough/cold preparations (39.1%) predominated; non-prescription antibiotic use occurred in 21.7% of self-medicators. Younger age, urban residence, pharmacy proximity and absence of health insurance independently predicted self-medication.

Conclusion: Self-medication was highly prevalent in this tertiary-care sample from Bihar, with concerning antibiotic exposure and consultation delay. Patient education, pharmacy-level stewardship and improved access to affordable primary care are needed.

Keywords: Self-Medication; Over-The-Counter Medicines; Antibiotic Misuse; India; Bihar; Cross-Sectional Study; Pharmacovigilance; Antimicrobial Stewardship.

DOI: 10.25258/ijcpr.18.5.298

This is an Open Access article that uses a funding model which does not charge readers or their institutions for access and distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/4.0>) and the Budapest Open Access Initiative (<http://www.budapestopenaccessinitiative.org/read>), which permit unrestricted use, distribution, and reproduction in any medium, provided original work is properly credited.

Introduction

Self-medication is commonly defined as the selection and use of medicines by individuals to treat self-recognised symptoms or illnesses without direct supervision from a qualified medical practitioner. In principle, responsible self-care may improve patient autonomy, reduce pressure on outpatient services and permit timely relief of minor symptoms when medicines are used appropriately, according to labelled indications and with adequate understanding of dose, duration, contraindications and warning symptoms [1]. In practice, however, self-medication in low- and

middle-income health systems frequently extends beyond simple over-the-counter use and includes reuse of old prescriptions, direct purchase of prescription-only medicines, incomplete courses of antimicrobials, sharing of medicines within households and reliance on informal advice from pharmacies, peers or digital media. These behaviours are public-health concerns because they may obscure clinical diagnosis, delay appropriate care, precipitate adverse drug reactions, mask severe infection, promote polypharmacy and contribute to antimicrobial resistance [2-4]. India

provides a distinctive context for studying self-medication. The country has a dense and heterogeneous pharmacy network, high out-of-pocket health expenditure, variable availability of primary-care providers, wide socioeconomic diversity and strong public familiarity with common medicines. These features create a pathway in which patients may first seek medicines directly from retail pharmacies or repeat previously prescribed drugs for recurrent symptoms. A recent systematic review and meta-analysis of 66 Indian studies including 29,873 participants estimated a pooled self-medication prevalence of 64.4%, with wide regional and population-level variation; the review reported particularly high prevalence among student populations and identified fever, headache and cough/cold as frequent indications, while pharmacists and previous prescriptions were leading information sources [2]. An earlier systematic review also suggested substantial heterogeneity across Indian studies, reflecting differences in recall period, population type, urban-rural composition, operational definition and measurement of medicine categories [5].

The clinical consequences of self-medication are especially important in relation to antimicrobial use. Antibiotics are not appropriate for most undifferentiated viral febrile or upper-respiratory illnesses, yet non-prescription antibiotic access has been repeatedly described in community and student populations. Incomplete or unnecessary antibiotic exposure selects resistant organisms, disturbs commensal flora, increases risk of adverse reactions and may compromise future treatment options. India is already recognised as a high-burden setting for antimicrobial resistance, and therefore community-level behaviours such as non-prescription antibiotic purchase, reuse of leftover tablets and premature discontinuation require local surveillance. Studies from central and northern India have reported that self-medication is commonly driven by perceived minor illness, time constraints, financial barriers, easy availability of medicines and prior treatment experience [3,4]. These drivers are likely to vary across regions, particularly in semi-urban and rural districts where tertiary hospitals receive patients from diverse socioeconomic backgrounds.

Despite increasing national evidence, Bihar remains under-represented in published self-medication literature compared with metropolitan and medical-student settings. Hospital-based studies from tertiary centres can complement community surveys by identifying self-medication behaviours among patients who ultimately seek professional care and by highlighting potentially harmful practices such as delayed consultation, adverse drug events and antibiotic use before presentation. Such evidence is relevant for

designing pharmacy-linked counselling, outpatient screening questions, discharge education, and local antimicrobial-stewardship interventions. The present study was therefore conducted at Jawaharlal Nehru Medical College, Bhagalpur, Bihar, to estimate the prevalence of self-medication practices among adult patients, describe the common symptoms and drug classes involved, and examine sociodemographic and access-related predictors. We hypothesised that self-medication would be frequent and associated with younger age, urban residence, easy pharmacy access and economic barriers to formal healthcare.

Materials and Methods

This hospital-based cross-sectional observational study was conducted at Jawaharlal Nehru Medical College, Bhagalpur, Bihar, India, from 10 February 2025 to 31 January 2026. Adult patients aged 18 years or above attending outpatient or general clinical services during the study period were screened. Participants were included if they were willing to provide informed consent and able to answer a structured questionnaire. Patients who were severely ill, unable to communicate, cognitively impaired without an available reliable attendant, or unwilling to participate were excluded. A total of 75 eligible participants were enrolled by consecutive sampling.

Self-medication was operationally defined as the use of any allopathic, traditional, herbal or household medicinal product for self-recognised symptoms without a fresh prescription or direct consultation with a registered medical practitioner during the preceding 3 months. Use of medicines strictly according to an ongoing valid prescription for a diagnosed chronic disease was not counted as self-medication unless the participant independently changed dose, restarted treatment for a new episode or shared/reused the medicine for another person.

A predesigned and pilot-tested questionnaire captured age, sex, residence, education, health-insurance status, distance to nearest pharmacy, self-medication episodes, indication, drug category, information source, antibiotic use, delay in consultation, medicine sharing and adverse drug events. When participants could recall drug names, medicines were classified into analgesics/non-steroidal anti-inflammatory drugs, antipyretics, antibiotics, cough/cold preparations, gastrointestinal medicines, vitamins/supplements, herbal/home remedies and others.

Data were entered into a structured spreadsheet and checked for completeness and internal consistency. Categorical variables were summarised as frequencies and percentages. The primary outcome was prevalence of self-medication with 95% confidence interval using the Wilson method.

Associations between categorical predictors and self-medication status were evaluated using chi-square tests or Fisher exact tests when cell counts were small. Variables with clinical plausibility or p value below 0.10 in bivariate analysis were considered for multivariable logistic regression. Adjusted odds ratios (ORs) with 95% confidence intervals (CIs) were reported. A two-sided p value below 0.05 was considered statistically significant. The study followed principles of the Declaration of Helsinki. Institutional ethics approval/waiver and written informed consent details should be inserted as per the final institutional record before journal submission.

Results

Among 75 participants, 46 reported self-medication within the preceding 3 months, giving an overall prevalence of 61.3% (95% CI 50.0-71.5). The study population included 40 males (53.3%) and 35 females (46.7%); 43 participants (57.3%) were urban residents and 32 (42.7%) were rural residents. Younger participants had a significantly higher prevalence of self-medication, with 82.8% in the 18-30 year age group compared with 35.0% among those older than 45 years ($p=0.003$). Urban residence (72.1% vs 46.9%, $p=0.027$), graduate-level education (73.5% vs 51.2%, $p=0.048$), absence of health insurance (70.8% vs 44.4%, $p=0.024$) and proximity to a pharmacy within 1 km

(71.2% vs 39.1%, $p=0.009$) were also significantly associated with self-medication (Table 1). Among self-medicators, more than half reported at least two episodes during the recall period. The leading indications were fever/body ache, cough/cold/sore throat and headache or musculoskeletal pain. Analgesics/NSAIDs and antipyretics were the most frequently used medicine classes, followed by cough/cold preparations, vitamins/herbal/home remedies and antibiotics.

Pharmacists/chemists and previous prescriptions were the leading information sources, followed by family/friends and internet/social media. Ten participants, representing 21.7% of self-medicators and 13.3% of the entire sample, reported antibiotic use without a fresh prescription. Delayed consultation due to self-medication was reported by 15 self-medicators and adverse drug events by 5 (Table 2).

In multivariable logistic regression, age 18-30 years, urban residence, pharmacy proximity within 1 km and absence of health insurance remained independent predictors of self-medication. Graduate-level education showed a borderline association, while male sex was not independently associated with self-medication (Table 3). Figure 1 illustrates prevalence differences across major strata, and Figure 2 summarises common drug classes and indications among self-medicators.

Table 1: Sociodemographic characteristics and prevalence of self-medication (n=75)

Variable	Total n	Self-medication n	No self-medication n	Prevalence %	P value
Age 18-30 years	29	24	5	82.8	0.003
Age 31-45 years	26	15	11	57.7	
Age >45 years	20	7	13	35.0	
Male	40	26	14	65.0	0.486
Female	35	20	15	57.1	
Urban residence	43	31	12	72.1	0.027
Rural residence	32	15	17	46.9	
Graduate or above	34	25	9	73.5	0.048
Below graduate	41	21	20	51.2	
Health-insurance absent	48	34	14	70.8	0.024
Health-insurance present	27	12	15	44.4	
Nearest pharmacy ≤1 km	52	37	15	71.2	0.009
Nearest pharmacy >1 km	23	9	14	39.1	

Abbreviations: CI, confidence interval; OR, odds ratio. P values were obtained using chi-square or logistic regression as appropriate.

Table 2: Pattern of self-medication practices among participants

Practice/pattern	n	%	95% CI lower	95% CI upper
Overall self-medication in last 3 months	46	61.3	50.0	71.5
At least two episodes among self-medicators	24	52.2	nan	nan
Delayed consultation due to self-medication	15	32.6	nan	nan
Shared prescription medicine with family/friend	12	26.1	nan	nan
Used antibiotic without prescription	10	21.7	nan	nan
Reported adverse drug event	5	10.9	nan	nan

Most common indication: fever/body ache	28	60.9	nan	nan
Cough/cold/sore throat	23	50.0	nan	nan
Headache/musculoskeletal pain	21	45.7	nan	nan
Gastrointestinal symptoms	11	23.9	nan	nan
Analgesic/NSAID use	31	67.4	nan	nan
Antipyretic use	27	58.7	nan	nan
Antibiotic use	10	21.7	nan	nan
Cough/cold preparations	18	39.1	nan	nan
Vitamins/herbal/home remedies	14	30.4	nan	nan
Primary source: pharmacist/chemist	29	63.0	nan	nan
Previous prescription	25	54.3	nan	nan
Family/friends	17	37.0	nan	nan
Internet/social media	13	28.3	nan	nan

Abbreviations: CI, confidence interval; OR, odds ratio. P values were obtained using chi-square or logistic regression as appropriate.

Table 3: Multivariable predictors of self-medication practice

Predictor	Adjusted OR	95% CI lower	95% CI upper	P value
Age 18-30 vs >45 years	4.46	1.25	15.95	0.02
Urban vs rural residence	2.74	1.01	7.42	0.05
Nearest pharmacy ≤1 km	3.3	1.15	9.48	0.03
No health insurance	3.04	1.11	8.34	0.03
Graduate or above	2.64	0.98	7.12	0.06
Male sex	1.39	0.53	3.63	0.50

Abbreviations: CI, confidence interval; OR, odds ratio. P values were obtained using chi-square or logistic regression as appropriate.

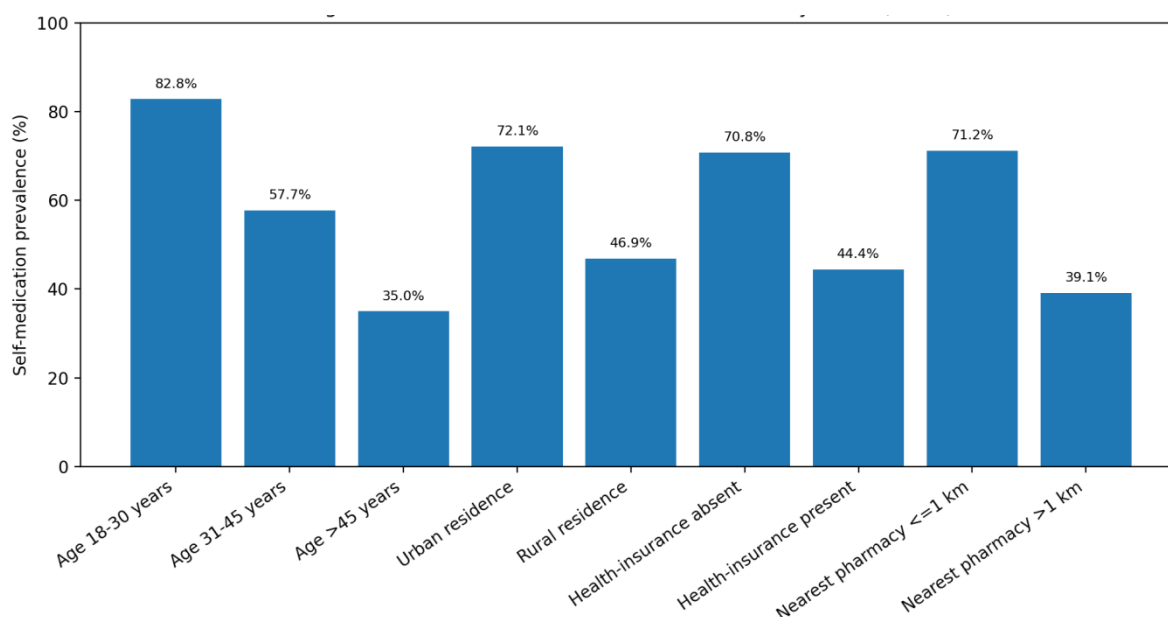


Figure 1: Prevalence of self-medication across key participant strata

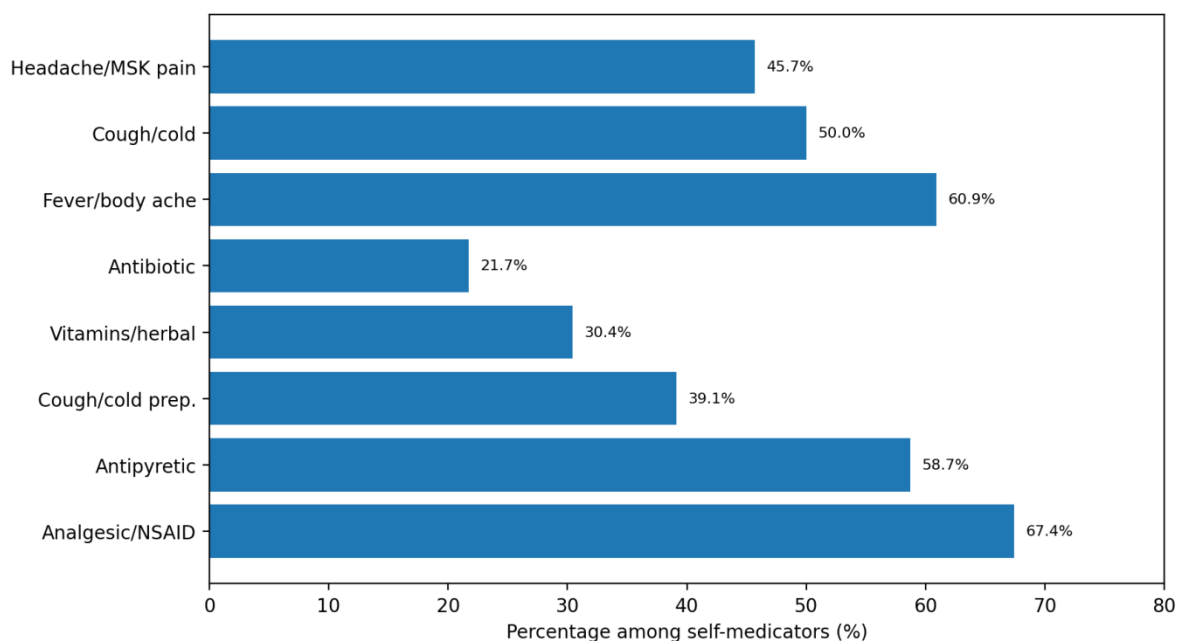


Figure 2: Common drug classes and indications among self-medicators

Discussion

This study found that 61.3% of adult participants attending a tertiary-care hospital in Bhagalpur had practised self-medication in the preceding 3 months. The estimate is closely aligned with the recent Indian pooled prevalence of 64.4% reported in a systematic review and meta-analysis, supporting the interpretation that self-medication is not an isolated behaviour but a routine component of healthcare-seeking in India [2]. The prevalence is also comparable to community-based evidence from central India, where perceived minor illness, economic constraints and accessibility of medicines were major determinants [3]. The consistency of these findings across settings suggests that self-medication is sustained by structural factors: easy access to pharmacies, high patient confidence in previously used medicines, inconvenience of formal consultations for minor illness and the financial burden of repeated outpatient visits.

Age showed one of the strongest associations in the present study. Participants aged 18-30 years had more than four-fold higher adjusted odds of self-medication compared with older adults. This pattern may reflect greater mobility, familiarity with digital health information, lower perceived vulnerability, and greater willingness to use quick symptom-based remedies. Similar trends have been observed among student and young adult populations, where self-medication prevalence is often higher than in general community samples [2,6]. Younger adults may also be more likely to use internet or social-media information, although in this study pharmacy advice and previous prescriptions remained dominant. This finding highlights the need for responsible digital health

messaging and counselling at the point of medicine purchase.

Urban residence and pharmacy proximity were independently associated with self-medication. Participants living within 1 km of a pharmacy had higher adjusted odds of self-medication, emphasising that physical access strongly shapes treatment behaviour. In many Indian settings, pharmacies function as the first point of care for minor symptoms because they are geographically accessible, require no appointment and often provide immediate medicine-based solutions. While pharmacists can support safe self-care for selected over-the-counter medicines, the boundary becomes unsafe when antibiotics, steroids, sedatives or high-risk analgesics are supplied without clinical evaluation. The present finding that 21.7% of self-medicators used antibiotics without a fresh prescription is therefore clinically important. This proportion is lower than some student-based reports but remains significant because even intermittent unnecessary antibiotic exposure can contribute to antimicrobial resistance [4,7]. Analgesics/NSAIDs and antipyretics were the most common drug classes, corresponding to fever, body ache, headache and musculoskeletal pain as common indications. These results mirror previous Indian evidence identifying fever, headache and cough/cold as leading reasons for self-medication [2,3]. Although these medicines are familiar and often perceived as harmless, inappropriate dosing, duplicate combination preparations, use in renal disease, gastritis, liver disease or pregnancy, and delayed evaluation of persistent fever can cause avoidable harm. The observation that nearly one-third of self-medicators delayed consultation is particularly relevant in Bihar, where febrile

illnesses may include malaria, dengue, enteric fever, tuberculosis and other infections requiring timely diagnosis. The reported adverse-event frequency of 10.9% among self-medicators is likely an underestimate because minor reactions may be forgotten and attribution to medicines may be uncertain. Absence of health insurance was another independent predictor, suggesting that cost considerations influence self-treatment. This finding is consistent with literature indicating that financial barriers and time constraints are major drivers of self-medication [2,3,5]. Policy responses should therefore combine patient education with system-level solutions. Merely warning against self-medication may be ineffective if patients cannot easily access affordable primary care. Practical interventions include outpatient screening for recent self-medication, counselling about red-flag symptoms, pharmacy stewardship for antibiotics and high-risk drugs, public campaigns on safe dosing and avoidance of medicine sharing, and tighter enforcement of prescription-only medicine regulations. Pharmacists should be engaged as partners rather than treated only as points of violation; structured referral prompts and antibiotic-sale monitoring could reduce risk while preserving access to appropriate self-care.

The study has limitations. The sample size was modest and drawn from a single tertiary-care institution, limiting generalisability to all Indian communities. Recall bias is possible because participants were asked to report medicine use during the previous 3 months. Drug names could not always be verified from strips or prescriptions, and the cross-sectional design cannot establish causality. Nevertheless, the study provides locally relevant evidence from Bihar, a setting less represented in the Indian literature, and identifies actionable predictors including pharmacy proximity and insurance status. Future multicentre studies with larger community-based samples, pharmacy-level data and verified medicine classification are warranted.

Conclusion

Self-medication was common among adults attending a tertiary-care hospital in Bhagalpur, affecting approximately three in five participants. Younger age, urban residence, nearby pharmacy

access and lack of health insurance were important predictors. Analgesics, antipyretics and cough/cold medicines predominated, but non-prescription antibiotic use and delayed consultation were notable safety concerns. Local interventions should integrate patient education, pharmacy-based counselling, antimicrobial stewardship and improved access to affordable primary care.

References

1. World Health Organization. Guidelines for the regulatory assessment of medicinal products for use in self-medication. Geneva: World Health Organization; 2000.
2. Chaudhary V, Kumar R, Sharma S, et al. Prevalence and patterns of self-medication practices in India: a systematic review and meta-analysis. *J Eval Clin Pract*. 2025. PMID: 40697682.
3. Rathod P, Sharma S, Ukey U, et al. Prevalence, Pattern, and Reasons for Self-Medication: A Community-Based Cross-Sectional Study From Central India. *Cureus*. 2023;15(1):e33917. doi:10.7759/cureus.33917. PMID: 36819304.
4. Juneja K, et al. Self-medication prevalence and associated factors among adults in an urban community in India. 2024.
5. Rashid M, Chhabra M, Kashyap A, et al. Prevalence and predictors of self-medication practices in India: a systematic literature review and meta-analysis. *Curr Clin Pharmacol*. 2020.
6. Banerjee I, Bhadury T. Self-medication practice among undergraduate medical students in a tertiary care medical college, West Bengal. *J Postgrad Med*. 2012;58(2):127-131. doi:10.4103/0022-3859.97175. PMID: 22718057.
7. Atem TD, et al. Prevalence and associated factors of self-medication with antibiotics among the pediatric population in India: a systematic review and meta-analysis. 2025. PMID: 40468262.
8. Chaudhary V, et al. Prevalence of self-medication practices among pregnant Indian women: a systematic review and meta-analysis. 2024. PMID: 38565527.