

Patterns and Determinants of Non-prescription Medication use for ENT Symptoms: A cross-sectional Study Among Patients Attending a Tertiary Care Teaching Hospital

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Abstract

Background: Self-medication is referred as the use of medicines without prior professional consultation, especially prevalent in lower- and middle-income countries. This pattern is particularly seen in ear, nose and throat (ENT) conditions. Unregulated antibiotic self-use in this context poses a significant threat to antimicrobial stewardship. ROBUST India-specific data quantifying this behaviour in tertiary ENT settings remain limited. The objective is to determine the prevalence of non-prescription medication among patients presenting with ENT infections at a tertiary care teaching hospital, and to identify the drug classes used, sources of procurement, reasons for self-medication and sociodemographic predictors. **Material and Methods:** A hospital-based cross-sectional study was conducted in the ENT outpatient of a tertiary care hospital over a period of six months. Four hundred adult patients presenting with ENT symptoms were enrolled in the study after obtaining written informed consent. A structured, pre-tested, interviewer-administered questionnaire covering sociodemographic profile, symptom characteristics, drug use, sources, reasons, and outcomes was used. Categorical associations were tested using the Pearson chi-square test and independent predictors were identified by multivariate logistic regression. **Results:** The overall prevalence of non-prescription based medication was 62.0% (n=248/400). The mean age of participants was 32.4 ± 11.8 years, 57% were male. Ear discharge (42.9%), nasal congestion (35.5%) and throat pain (25.8%) were the most common presenting symptoms. Analgesics/antipyretics (70.9%) and antibiotics (61.3%) were the most frequently administered drug classes. Azithromycin (36.8%) was the most common antibiotic used. Community pharmacies were the primary source of medicine procurement for the patient (74.2%). Adverse effects were reported by 22.6% of non-prescription based medicines and 64.5% delayed seeking formal consultation. **Conclusion:** Non-prescription base antibiotics are highly prevalent among patients attending ENT OPDs of tertiary care hospital, facilitated by unregulated pharmacy dispensing and limited primary healthcare access. These findings underscore an urgent need of antimicrobial stewardship programmes, pharmacy regulation and community-based public health education.

Keywords: Non-prescription medication, Self-medication, ENT infections, Anti-microbial resistance, pharmacy dispensing.

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INTRODUCTION

Non-prescription based medicine is broadly defined as the selection and use of medicines by individual to treat self-recognized ailments or symptoms without prior professional medical consultation.^[1,2] It is a ubiquitous public health phenomenon that transcends geographic and socioeconomic divided, encompassing over-the-counter (OTC) drugs, prescription-only medicines obtained without a valid prescription, herbal preparation and traditional remedies.^[1] While judicious self-medicines for minor, self-limiting conditions may be broadly acceptable, its unchecked expansion – particularly involving prescription class antibiotics constitutes a critical threat to public health. ENT infections like acute pharyngitis, tonsillopharyngitis, otitis media, acute sinusitis and laryngitis, collectively represent one of the most frequent reasons for both primary care and tertiary care outpatient consultations worldwide.^[3,4] Their symptom profiles like sore throat, ear pain, nasal congestion and mild fever are familiar, widely perceived as self-limiting,

and thus predispose affected individuals to pursue self-managed rather than professional care. This perception, however, is clinically misleading, untreated or improperly treated ENT infections can progress to serious complications including peritonsillar abscess, mastoiditis, intracranial extension and permanent hearing loss.

The unprescribed and inappropriate use of antibiotics in community settings has been identified by the World Health Organization (WHO) as one of the critical drivers of

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antimicrobial resistance (AMR), a global health emergency projected to cause 10 million attributable deaths annually by 2050 if current trajectories persist.^[5,6] Community pharmacies in low- and middle-income countries (LMICs) frequently dispense antibiotics without valid prescriptions, serving as the proximal point of drug access for a large proportion of self-medicating patients.^[6,7] In India specifically, the Schedule H1 regulations governing antibiotic dispensing remain unevenly enforced at the community level, creating a regulatory lacuna that perpetuates inappropriate antibiotic usage.^[8] Published systematic reviews and meta-analysis document non-prescription rates of 50-80% for respiratory and ENT conditions in LMICs,^[3,6] yet rigorous, methodologically robust studies specifically examining this behaviour in Indian tertiary ENT outpatient context – with quantification of drug classes, antibiotic selection patterns, determinant and patient-reported outcomes remain sparse. The existing literature from the Indian subcontinent is largely confined to general self-medication surveys without ENT-specific stratification and multivariate analyses of predictors are limited.^[8,9]

This study was therefore designed to fill these evidence gaps by providing comprehensive, locally relevant data on the prevalence, patterns determinants and outcomes of self-medication among adult patients presenting with ENT infections at a tertiary care teaching hospital in northern UP, a region that is both geographically representative of semi-urban India and characterized by heterogeneous healthcare access. The findings are intended to directly inform antimicrobial stewardship programme design, pharmacy regulatory interventions and community-level health education strategies.

MATERIALS AND METHODS

Study design and setting: a hospital based, descriptive study was conducted in the ENT Outpatient Department (OPD) of a tertiary care hospital of Bareilly, Uttar Pradesh, India over a period of six months. Our institute is a recognized tertiary care teaching institution serving a predominantly semi-urban and rural population from Bareilly and surrounding districts of the Rohilkhand region.

Study Population: Adult patients (Age ≥ 18) presenting to ENT OPD with a primary complaint of ENT symptoms suggestive of infection during the defined data collection period.

Inclusion Criteria: Age ≥ 18 years at the time of enrolment. Presenting to ENT OPD with symptoms of ENT infections, willingness and ability to provide written informed consent, capacity to communicate adequately to participate in the structured interview.

Exclusion Criteria: Patients with pre-existing disease of chronic ENT disease, cognitive impairment, active psychiatric illness, or any other condition precluding reliable participation, refusal to provide informed consent, concurrent enrolment in another clinical study that could influence medication taking behaviour and age < 18 years.

Sample Size: The sample size was calculated using the standard formula for estimation of a single proportion: $n = Z^2$

$\times p \times q / d^2$, where $Z = 1.96$ (95% confidence interval), $p = 0.60$ (assumed non-prescription based medicine prevalence based on published literature) (3,6) $q = 0.40$ and $d = 0.05$ (acceptable margin of error). The minimum calculated sample was 369. To account for non-response, incomplete questionnaires and exclusion, the target enrolment was set at 400 participants.

Sampling technique: Consecutive sampling was employed. All patients presenting to the ENT OPD during the data collection period who satisfied the eligibility criteria were approached for enrolment until the target size was achieved.

Data collection instrument: Data were collected using a structured, pre-tested, interviewer-administered questionnaire developed by the research team based on validated instruments from published self-medication studies,^[3,6] and adapted to the local ENT context. The questionnaire comprised six sections: Section A: Sociodemographic Profile (age, sex, residence, education, occupation, monthly income, availability of a regular family doctor and proximity to the nearest pharmacy); Section B: Symptoms Profile (symptomatic type, duration, severity and prior ENT episodes); Section C: Self Medication History (drug used, dose and duration); Section D: Drug class and Source (Drug categories, antibiotic identity, procurement source and prescription status); Section E: Reasons for self-medication and Section F: Self-reported outcomes (symptom relief, adverse effects and delay in consultation). The questionnaire was available in both English and Hindi. Pilot testing was conducted on 20 patients (not included in the main analysis) to evaluate clarity, acceptability and estimated completion time. Minor linguistic adjustments were made following the pilot.

Ethical Considerations: The study was initiated after obtaining formal approval from the Institutional Ethical Committee (IEC) with IEC Reference no. IEC/RMCH/73/2026/MAY. The study was conducted in accordance with the Declaration of Helsinki and the Indian Council of Medical Research (ICMR) National Ethical Guidelines for Biomedical and Health Research.^[10] Written Informed consent was obtained from all participants in their preferred language prior to enrolment. Participation was voluntary and patients were assured that non-participation or withdrawal would not affect their clinical care. All data were de-identified at the point of entry; participants were assigned unique study codes. Paper questionnaires were stored in a locked cabinet accessible only to the principal and designated co-investigators; electronic data were password protected.

Statistical Analysis: Data was entered into Microsoft Excel and analysed using the IBM SPSS Statistics Version 26.0. Categorical variables were expressed as frequencies and percentages; the continuous variable (age) was expressed as mean $\pm$ standard deviation (SD). Associations between categorical sociodemographic variables and self-medication status (dichotomous outcome: Yes/No) were assessed using the Pearson chi-square test, with Fischer's exact test applied where expected cell frequencies were < 5 . Variables found to be significant at $p < 0.20$ on univariate analysis were entered into a multivariate binary logistic regression model to identify independent predictors of self-medication; results were expressed as adjusted odds ratio with 95% confidence intervals. The Hosmer-Lemeshow goodness-of-fit test was used to assess model calibration. Statistical significance set at $p < 0.05$ (two-tailed) for all tests.

RESULTS

Participant Enrolment and Sociodemographic characteristics: A total of 400 patients fulfilling the eligibility criteria were enrolled during the study period. No participants withdrew after initial consent. The mean age of participants was 32.4 ± 11.8 years (range: 18-72 years), with the majority (47%, n= 188) in the 18–30-year age group. Male constituted 57% (n=228) of the sample and nearly half

of the participants were urban residents (49%, n = 198), while 36% (n= 144) were from rural areas. In terms of educational attainment, graduates constituted the largest group (30%, n= 120) and the majority of participants (76%) had educational qualifications up to secondary or higher secondary level. More than half of participants (57%, n = 228) did not have a regular family doctor. Over half (54%, n = 216) lived within 1 km of a pharmacy. The complete sociodemographic profiles, stratified by self-medication status, is presented in [Table 1].

Table 1: Socioeconomic characteristics of study participants and prevalence of self-medication by subgroup (n=400)

Variable	Category	n (%)	Self-Medicated n (%)
Age (years)	18-30	188 (47.0)	124 (66.0)
	31-45	136 (34.0)	80 (58.8)
	46-60	56 (14.0)	32 (57.1)
	>60	20 (5.0)	12 (60.0)
Sex	Male	228 (57.0)	152 (66.7)
	Female	170 (42.5)	95 (55.9)
	Other	2 (0.5)	1 (50)
Residence	Urban	196 (49.0)	110 (56.1)
	Semi-urban	60 (15.0)	36 (60.0)
	Rural	144 (36.0)	102 (70.8)
Education	No formal school	16 (4.0)	14 (87.5)
	Primary (up to 5th)	32 (8.0)	24 (75.0)
	Secondary (6th-10th)	88 (22.0)	56 (63.6)
	Higher secondary	96 (24.0)	64 (66.7)
	Graduate	120 (30.0)	68 (56.7)
Occupation	Postgraduate/Doctorate	48 (12.0)	22 (45.8)
	Student	72 (18.0)	42 (58.3)
	Homemaker	64 (16.0)	36 (56.3)
	Salaried	96 (24.0)	56 (58.3)
	Business	88 (22.0)	60 (68.2)
	Daily wage	48 (12.0)	36 (75.0)
	Unemployed	32 (8.0)	18 (56.3)
Monthly income	<10,000	80 (20.0)	58 (72.5)
	10,000 – 25,000	144 (36.0)	94 (65.3)
	25,000 – 50,000	104 (26.0)	60 (57.7)
	>50,000	56 (14.0)	26 (46.4)
	Prefer not to say	16 (4.0)	10 (62.5)
Regular Family Doctor	Yes	144 (36.0)	54 (37.5)
	No	228 (57.0)	176 (77.2)
	Don't know	28 (7.0)	18 (64.3)
Distance to pharmacy	Within same compound	40 (10.0)	30 (75.0)
	< 1 km	176 (44.0)	116 (65.9)
	1 – 5 km	144 (36.0)	84 (58.3)
	>5 km	40 (10.0)	18 (45.0)
TOTAL		400 (100.0)	248 (62.0)

Prevalence of self-medication: The overall prevalence of self-medication among study participants was 62.0% (248/400; 95% CI: 57.1%-66.7%). Among self-medicators, 77.4 % (n= 192/248) reported self-medicating for >2 episodes in the past year, with 32.3% (n= 80) reporting frequent self-medication (>3 times/year). Only 22.6% (n=56) were first-time self-medicators.

Symptoms profile and Self-medicators: Sore throat/throat pain was the most common presenting symptom among self-

medicators (41.9%, n=104), followed by nasal congestion (35.5%, n=88), ear pain (25.8%, n= 64) and nasal discharge (22.6%, n=56). Most self-medicators presented with symptoms of 3-7 days duration (38.7%, n=96) and symptom severity was predominantly mild (48.4%, n= 120) or moderate (41.9%, n= 104). Over half (54.8%, n= 136) reported a similar ENT episode in the preceding six months. Details are presented in [Table 2].

Table 2: Symptoms profile among self-medicating participants (n = 248)

Variable	Category	N (%)
Symptoms	Sore throat	104 (41.9)
	Nasal congestion	88 (35.5)
	Ear pain	64 (25.8)
	Nasal discharge	56 (22.6)
	Difficulty swallowing	20 (8.1)

	Hearing loss	24 (9.7)
	Ear discharge	16 (6.5)
	Hoarseness	12 (4.8)
Duration of symptoms	< 3 days	72 (29.0)
	3 – 7 days	96 (38.7)
	1 – 2 weeks	56 (22.6)
	>2 weeks	24 (9.7)
Symptoms Severity	Mild	120 (48.4)
	Moderate	104 (41.9)
	Severe	24 (9.7)
Recurrent ENT Episode	Yes	136 (54.8)
	No	96 (38.7)
	Not Sure	16 (6.5)

Drug Classes, Antibiotics, Use and Source of Procurement: Analgesics/antipyretics were the most frequently self-administered drug class (70.9 %, n = 176), followed by antibiotics (61.3%, n= 152), antihistamines (38.7%, n=96), and cough syrups/expectorants (32.3%, n=80). Among the 152 participants who self- administered and antibiotic, amoxicillin was the most commonly used agent (36.8 %, n=56), followed by azithromycin (26.3%, n =

400 and amoxicillin-clavulanic acid (15.8%, n = 24). Community pharmacies were the primary source of self-medicated drugs (74.2%, n = 184). Strikingly, 86.9% (n= 160/184) of pharmacists dispensed antibiotics without requesting a valid prescription. Drug class, antibiotic choice, procurement source and prescription demand patterns are detailed in [Table 3].

Table 3: Drug classes used, antibiotics selection, sources of procurement and prescription demand patterns among self-medicating participants (n= 248)

Drug Class/Source	n	% of self-medicators
Drug Class		
Analgesics/Antipyretics	176	70.9
Antibiotics	152	61.3
Antihistamines	96	38.7
Cough syrups/Expectorants	80	32.3
Nasal decongestants	72	29.0
Throat lozenges/Antiseptic sprays	56	22.6
Traditional/Herbal remedies	40	16.1
Steroids/Anti-inflammatory medicines	24	9.7
Antibiotics		
Amoxicillin	56	36.8
Azithromycin	40	26.3
Amoxicillin-Clavulanic acid	24	15.8
Ciprofloxacin	16	10.5
Cefixime	8	5.3
Unknown	8	5.3
Source of medicine		
Community pharmacy	184	74.2
Leftover medicine from past prescription	72	29.0
Given by family/friend	40	16.1
Online purchase/e-commerce	8	3.2

Reasons for self-medication: The most common reason cited by self-medicators was the perception that symptoms were mild and did not require medical consultations (58.1%, n=144), followed by prior experience with similar symptoms (48.1%, n=120), time constraints due to long waiting times (41.9%, n=104), and pharmacies convenience (38.7%, n=96). Prior self-medication success (35.5%, n=88) and trust in pharmacist advice (29%, n=72) were also common motivators. Economic barriers – inability to afford the consultation fee (22.6%, n=56) and inability to take off work (16.1%, n=40) were cited by a notable minority. The complete frequency distribution of reasons is shown in [Table 4].

Outcomes of self-medication: Regarding symptom relief, only 22.6% (n=56) of self-medicators reported complete symptom resolution following self-medication, while 51.6% (n=128) experienced partial relief, 16.1% (n=40) reported no relief, and 9.7% (n=24) described worsening of symptoms. Adverse effects were reported by 22.6% (n=56) of self-medicators, of these, the majority were mild (57.1%, n=32) or moderate (35.7%, n=20) with 7.1 % (n=4) reporting severe adverse effects requiring emergency care. Delayed consultation was reported by 64.5% (n=160) of self-medicators, the majority delayed for 3-7 days (45.0%, n=72). A full summary of outcomes is presented in [Table 5].

Table 4: Reason cited by participants for opting for self-medication (n = 248)

Reason	n	% of self-medicators
I felt my symptoms were mild and did not need a doctor	144	58.1
I had similar symptoms before and knew what to take	120	48.4
Consulting a doctor takes too much time/long waiting times	104	41.9
It was more convenient to go to the pharmacy	96	38.7
I have done this before and it worked	88	35.5
I trusted the pharmacist's advice	72	29.0
I could not afford the consultation fee	56	22.6
A family member or friend recommended the medicine	48	19.4
I could not afford to take time off work/daily wage	40	16.1
I thought I would get better on my own anyway	32	12.9
I live far from hospital/clinic	24	9.7
Fear of injections or invasive procedures	16	6.5
Fear of COVID-19/infection at hospital	8	3.2

Table 5: Self-reported outcomes of non-prescription based medicines

Outcome variable	Category	n(%)
Symptom Relief	Complete relief	56 (22.6)
	Partial relief	128 (51.6)
	No relief	40 (16.1)
	Symptom worsened	24 (9.7)
Adverse Effects Experienced	None	192 (77.4)
	Yes (any)	56 (22.6)
Severity of adverse effects (n=56)	Mild	32 (57.1)
	Moderate	20 (35.7)
	Severe	4 (7.1)

Predictors of Self-Medication: Multivariate Logistic Regression: On bivariate analysis, sex, residence, educational level, monthly income, the absence of a regular family doctor, and pharmacy proximity were each significantly associated with self-medication ($p < 0.05$). These variables, along with age groups and history of prior ENT episode ($p < 0.20$ on univariate analysis), were entered into the multivariate logistic regression model. The model demonstrated adequate fit. The absence of a regular family doctor was the strongest independent predictor of self-medication (aOR 3.21; 95% CI 1.89-5.43; $p < 0.001$). Lower

educational attainment (primary or below: aOR 2.86; 95% CI 1.42-5.76; $p = 0.003$; secondary/higher secondary: aOR 2.14; 95% CI 1.22-3.74; $p = 0.008$), lower monthly income ($< \text{INR } 10,000$: aOR 1.92; 95% CI 1.08-3.41; $p = 0.027$), male sex (aOR 1.71; 95% CI 1.08-2.70; $p = 0.023$), rural residence (aOR 1.64; 95% CI 1.03-2.61; $p = 0.037$) and proximity of pharmacy ($< 1 \text{ km}$: aOR 1.58; 95% CI 1.00-2.51; $p = 0.048$) were also identified as independent predictors. Adjusted odds ratio, 95% confidence intervals and p-values for all variables are presented in [Table 6].

Table 6: Multivariate binary logistic regression analysis of independent predictors of self-medication (n=400)

Predictor Variable	aOR	95% CI	P-value
Absence of a regular family doctor (Ref: has family doctor)	3.21	1.89-5.43	< 0.001
Education: primary or below (Ref: postgraduate)	2.86	1.42-5.76	0.003
Education: secondary/higher secondary (Ref: postgraduate)	2.14	1.22-3.74	0.008
Education: graduate (Ref: postgraduate)	1.54	0.091-2.59	0.109
Monthly income $< \text{INR } 10,000$ (Ref: $> \text{INR } 50,000$)	1.92	1.08- 3.41	0.027
Monthly income $\text{INR } 10,000\text{-}25,000$ (Ref: $> \text{INR } 50,000$)	1.67	1.02-2.74	0.042
Male sex (Ref: female)	1.71	1.08- 2.70	0.023
Rural residence (Ref: Urban)	1.64	1.03-2.61	0.037
Pharmacy within $< 1 \text{ km}$ (Ref: $> 5 \text{ km}$)	1.58	1.00- 2.51	0.048
Recurrent ENT episode in past 6 months (Ref: No)	1.48	0.95-2.30	0.083
Age 18-30 years (Ref: > 45 years)	1.32	0.78-2.25	0.297

DISCUSSION

This cross-sectional study documents an overall non-prescription based medicine prevalence of 62.0% among adult patients presenting with ENT infections to a northern tertiary care teaching hospital. This figure is consistent with the pooled estimates reported in a systematic review from LMICs, Azami et al. (2022) reported a global self-medication prevalence of 53.7 % (95% CI: 45.7% - 61.7%) across all conditions, with rates in developing countries reaching up to

80% for respiratory and ENT complaints.^[6] Similarly, Ocan et al. (2015) documented household antimicrobial self-medication rates of 38.8%-76.4% in developing nations.^[3] The present estimate corroborates these figures within an ENT-specific tertiary care teaching hospital, where such data were previously lacking.

A particularly significant finding is that 61.3% of self-medicators used antibiotics, an alarming high proportion given well-established viral aetiology of the majority of acute ENT infections. Amoxicillin was the most commonly used antibiotic

(36.8%), followed by azithromycin (26.3%) and amoxicillin-clavulanic acid (15.8%), consistent with patterns reported from Nigeria by Momoh et al (2019), where amoxicillin constituted the most frequently self-prescribed antibiotic for ENT conditions.^[4] The widespread self-use of broad-spectrum agents like Azithromycin, Amoxiclav are particularly concerning from an AMR perspective, as inappropriate use of these agents is known to drive resistance in bacterial pathogens.^[5,11]

The finding that 86.9% of pharmacies dispensed antibiotics without demanding a prescription is consistent with Indian pharmacy audit data reported by Kotwani and Holloway (2011), who documented systematic prescription non-compliance among Delhi outpatient pharmacies.^[7] Despite Schedule H1 regulations mandating prescription requirements for antibiotics in India, enforcement remains poor. This finding highlights an urgent, actionable regulatory gap that the state drug control authorities must urgently address, as pharmacies constitute the dominant point of drug access for self-medicating patients. Community pharmacy was the most common source of self-medicated drugs (74.2%), with household leftovers medicines (29.0%) representing a secondary, and potentially more hazardous, incomplete prior prescriptions that reinforce partial antibiotic courses. This dual-source pattern creates reinforcing cycles of AMR; pharmacies provide drugs without appropriate triage, and residual medications perpetuate self-initiated re-treatment at the next symptomatic episode. The 3.2% who reported online procurement, though small, represents an emerging trend that will require regulatory attention as e-pharmacy platforms proliferate.

The dominant reasons for self-medication, perceived symptom mildness (58.1%), prior experience (48.4%), and time constraints (41.9%) reflect a complex interplay of health literacy deficits, healthcare system inefficiencies and pragmatic barriers to care. These findings parallel those from Rashid et al (2020), who in their systematic review of Indian self-medication determinants identified symptom perception, convenience and prior experience as the leading drivers.^[8] The substantial proportions citing inability to afford consultation fees (22.6%) and inability to take time off work (16.1%) highlight important socioeconomic access barriers that must be addressed through strengthened primary healthcare infrastructure.

On multivariate analysis, the absence of a regular family doctor emerged as the strongest predictor of self-medication (aOR 3.21; $p < 0.001$), underscoring the protective role of continuous primary care relationships in preventing self-initiated pharmaceutical management. This finding aligns with global primary care literature emphasising the importance of accessible, first-contact healthcare in reducing inappropriate self-treatment.^[1,2] Lower educational level and income were also independent predictors, consistent with the broader literature from India and comparable LMICs,^[6,8] and likely compound effects of lower health literacy, higher informal work vulnerability and reduced access to affordable consultation services.

Rural residence was an independent predictor (aOR 1.64; $p = 0.037$), likely reflecting reduced access to outpatient health

services and closer reliance on community pharmacies as de facto primary care provider – a pattern well documented in Indian rural health surveys. Pharmacy proximity was also a significant predictor (aOR 1.58; $p = 0.048$), consistent with the hypothesis that increased spatial accessibility to pharmacies lowers the threshold for self-medication. Male sex was an independent predictor (aOR 1.71; $p = 0.023$), mirroring previous findings from India and Nigeria,^[4,8] possibly reflecting gender differences in healthcare-seeking behaviour, occupational time constraints or culturally attitude towards illness severity.

The outcome data reveal important clinical consequences. Only 22.6% of self-medicators achieved complete symptom resolution, while 9.7% reported symptom worsening a finding that contradicts the widespread perception that self-medication in safe and effective for ENT symptoms. Adverse effects were reported by 22.6%, with 7.1% experiencing severe effects requiring emergency care. These outcomes profiles are broadly comparable to those documented by Ocan et al (2015) in their meta-analysis, which reported adverse drug reactions in 8-30% of self-medication episodes across LMIC settings.^[3] The observation that 64.5% of self-medicators delayed formal consultation, a substantial proportion by more than 7 days (20.0%), raises serious concerns about delayed diagnosis of potentially serious ENT conditions like peritonsillar abscess, acute mastoiditis or deep neck space infections in the patient population.

CONCLUSION

This study documents a high prevalence of self-medication (62.0%) in patients with ENT infections attending a tertiary care hospital in northern India, with over three-fifths of self-medicators using unprescribed antibiotics, predominantly amoxicillin and azithromycin procured largely from community pharmacies without prescription demands. Adverse effects affected nearly one-quarter of self-medicators and delayed consultation was reported by the majority. Independent predictors of self-medication included absence of a regular family doctor, lower educational attainment, lower income, male gender, rural residencies, and pharmacy proximity. These findings provide actionable, India-specific evidence to guide antimicrobial stewardship programmes, pharmacy regulatory reform and targeted public health education contributing to national and global efforts to combat antimicrobial resistance.

Limitations: Several limitations of this study merit acknowledgment. First, being a single centre hospital-based study conducted at a tertiary care institution, the findings may not be fully generalisable to the broader community or to primary care settings, where self-medication patterns may differ. Second, as a cross-sectional design, casual inferences about predictor cannot be drawn. Third. Self-reported data are subject to recall and social desirability bias; participants may have under-reported unprescribed antibiotic use due to perceived stigma. Fourth, the study was limited to adult patients and did not capture paediatrics population patterns, which are likely driven by parental decisions and may differ substantially. Fifth, although symptom duration was documented, microbiological confirmation of the infection's aetiology was not performed, so the appropriateness of individual antibiotic choices relative to likely pathogens could not be

assessed. Finally, online procurement of non-prescription based medications was reported by a small minority and this route may be underestimated in a relatively older and lower income sample, future studies assess this specifically among younger, internet using populations.

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Conflicts of interest

There are no conflicts of interest.

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