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Self-Medication Practices Among Undergraduate Medical and Nursing Students at a Tertiary Care Teaching Hospital, Kokrajhar: A Cross-Sectional Study

Dr. Swapnanil Gohain[1], Dr. Pranjit Narzaree[2], Dr. Abdul Halim Sarkar[3], Ms June Chiring[4]

[1]Associate Professor, Deptt. of Pharmacology, Kokrajhar Medical College & Hospital, Assam
[2]Assistant Professor, Deptt. of Pharmacology, Kokrajhar Medical College & Hospital, Assam
[3]Assistant Professor, Deptt. of Community Medicine, Kokrajhar Medical College & Hospital, Assam
[4]Ms June Chiring, Lecturer cum Ph.D Scholar, Department of Obstetrics and Gynaecological Nursing, Government Nursing College, Kokrajhar, Assam

Corresponding Author:

Dr. Swapnanil Gohain
Associate Professor, Deptt. of Pharmacology, Kokrajhar Medical College & Hospital, Assam

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ABSTRACT

Background: Self-medication is common among healthcare students and may lead to inappropriate drug use and adverse outcomes, including antimicrobial resistance.
Objectives: To assess the prevalence, knowledge, attitude, and practice (KAP) of self-medication among MBBS and BSc Nursing students and to compare key practices between the two groups.
Methods: A questionnaire-based cross-sectional study was conducted over two months among MBBS students of Kokrajhar Medical College & Hospital and BSc Nursing students of Government Nursing College, Kokrajhar. The tool included demographic details and KAP items. Data were summarised as proportions and compared between groups using the chi-square test.
Results: A total of 137 students participated (MBBS=80, Nursing=57). Mean age was 21.8 ± 1.62 years; 62.8% were female and 57.7% were from rural areas. Self-medication in the last 6 months was reported by 82.5% of MBBS students and 68.4% of nursing students (p=0.086). Confidence in using self-medication was higher among MBBS students (50.0%) than nursing students (26.3%) (p=0.009). Pharmacy visits to purchase drugs without prescription differed significantly (p<0.0001), with "none" reported by 56.1% of nursing vs 15.0% of MBBS students, while "three times or more" was 7.0% vs 30.0%, respectively. Common drug categories used were antipyretics (52.4%), antacids (41.9%), and antibiotics (16.2%). The leading indications were fever (43.1%), cough/cold (24.1%), and digestive complaints (24.1%). Most participants obtained medicines directly from pharmacies without a prescription (91.2%). The most cited reasons were previous experience (84.8%) and saving time (51.4%).
Conclusion: Self-medication was highly prevalent among both groups, with higher confidence and more frequent non-prescription pharmacy purchasing among MBBS students. Predominant pharmacy-based access and notable antibiotic use highlight the need for targeted education on rational medicine use and antimicrobial stewardship.

Keywords*: Self-medication; medical students; nursing students; knowledge attitude practice; over-the-counter drugs; antibiotics.*

INTRODUCTION

Self-medication—using medicines without professional consultation, including reuse of old prescriptions or obtaining drugs directly from pharmacies—is a widely reported practice in India and other low- and middle-income settings. While responsible self-care can reduce burden on health services, inappropriate self-medication can lead to incorrect diagnosis, masking of serious illness, adverse drug reactions, drug–drug interactions, and—most importantly—contribute to antimicrobial resistance when antibiotics are used without proper indication or duration.

Healthcare students represent a group at particular risk: they have increasing pharmacological knowledge, easier access to medicines, and confidence in managing minor ailments, yet may not consistently translate knowledge into safe practice. Studies among Indian medical undergraduates have repeatedly shown a high prevalence of self-medication, along with identifiable patterns of commonly used drug classes and reasons such as convenience, time saving, and prior experience with similar symptoms [1–5]. For example, work from South India and coastal regions has documented common self-medication behaviours and student perceptions regarding benefits and risks [1,2], while studies from western and eastern India have reported prevalence, patterns, and perceptions within undergraduate medical cohorts [3,4]. Similar concerns have also been observed in private-institute medical students [5].

Nursing students are another important group because of their clinical exposure and frequent interaction with patients and medicines. Evidence from North India indicates that self-medication is also prevalent among nursing students, with characteristic patterns that may differ from medical students due to differences in training, access, and perceived competence [6]. Despite multiple studies across regions, comparative data between medical and nursing students—especially in specific local contexts—remain valuable for guiding targeted educational interventions, strengthening counselling practices, and supporting rational medicine use.

Against this background, the present study assesses the prevalence and pattern of self-medication and evaluates knowledge, attitudes, and practices among MBBS and nursing students in the study setting, with the aim of identifying modifiable factors to inform campus-level awareness and antimicrobial stewardship initiatives.

AIM

To assess self-medication practices among MBBS and nursing students and compare their knowledge, attitudes, and practices.

OBJECTIVES

1. To estimate the prevalence of self-medication in the last 6 months among MBBS and nursing students.
2. To compare knowledge and attitudes regarding self-medication between the two groups.
3. To describe the pattern of self-medication (indications, drug categories, sources of information, and reasons).

METHODS

Study design and setting

A questionnaire-based, observational, cross-sectional study was conducted in the Department of Pharmacology, Kokrajhar Medical College & Hospital (KMCH), after obtaining ethical approval from the Institutional Ethics Committee (IEC), KMCH. The study was carried out over a period of two months.

Study population and sample size

The study population comprised undergraduate medical (MBBS) students of Kokrajhar Medical College & Hospital, Kokrajhar, and nursing students of Government Nursing College, Kokrajhar, Assam. A total of 137 students participated (MBBS = 80; BSc Nursing = 57).

Eligibility criteria

Undergraduate students who were willing to participate and provided informed consent were included. Students who refused to participate were excluded.

Study tool and data collection procedure

A study questionnaire was developed based on previous studies. It was pretested and prevalidated through a pilot study conducted among 10 students, and the modified questionnaire was then used for data collection. The questionnaire was distributed to the study participants, and 30 minutes were allotted for completion. The questionnaire consisted of four sections: (1) demographic details, (2) knowledge regarding self-medication, (3) attitude towards self-medication, and (4) practice of self-medication.

Statistical analysis

Data were entered in Microsoft Excel and summarised as percentages. Group-wise comparisons were performed using the Chi-square test in PSPP (Statistical Software Program for Statistical Analysis), and $p < 0.005$ was considered statistically significant.

RESULTS

Participant characteristics

The demographic profile of the respondents is summarised in Table 1. A total of 137 students participated, comprising 80 (58.4%) MBBS and 57 (41.6%) BSc Nursing students. Overall, 62.8% were female, 57.7% were from rural areas, and the mean age was 21.8 ± 1.62 years.

Table 1. Demographic details of study participants (n = 137)

Variable	Category	n	%
Gender	Female	86	62.8
	Male	51	37.2
Education	BSc Nursing student	57	41.6
	MBBS student	80	58.4
Religion	Christian	8	5.8
	Hindu	100	73.0
	Islam	27	19.7
	Others	2	1.5
Residence	Rural	79	57.7
	Urban	58	42.3
Age (years)	Mean ± SD	21.8 ± 1.62	—

2. Knowledge regarding self-medication (MBBS vs Nursing)

Overall knowledge responses are summarised in **Table 2**. Most respondents in both groups correctly identified the definition of self-medication (Nursing: 53/57; MBBS: 75/80) and acknowledged key risks such as dose alteration without consultation being dangerous (Nursing: 55/57; MBBS: 80/80) and the need to seek physician help in case of adverse effects (Nursing: 54/57; MBBS: 79/80). A large proportion of students also disagreed with the statement that self-medication is safe (Nursing: 54/57; MBBS: 66/80). Across the knowledge items, differences between MBBS and nursing students were not statistically significant (p-values shown in Table 2).

Table 2. Knowledge regarding self-medication among MBBS and Nursing students (n=137)

Knowledge item	BSc Nursing (n=57) Yes	Don't know	No	MBBS (n=80) Yes	Don't know	No	p-value
Self-medication is defined as the self-consumption of medication without getting advice from a physician	53 (93.0)	1 (1.8)	3 (5.3)	75 (93.8)	1 (1.2)	4 (5.0)	0.9
Self-medication is safe	2 (3.5)	1 (1.8)	54 (94.7)	5 (6.2)	9 (11.2)	66 (82.5)	0.07
All medication (prescription, over-the-counter medicines, and herbal) has adverse effects	39 (68.4)	10 (17.5)	8 (14.0)	61 (76.2)	8 (10.0)	11 (13.8)	0.5
Increasing or decreasing medication dose without a doctor consultation can be dangerous	55 (96.5)	1 (1.8)	1 (1.8)	80 (100.0)	0 (0.0)	0 (0.0)	NA*
In case of adverse effects, physician help must be sought	54 (94.7)	3 (5.3)	0 (0.0)	79 (98.8)	1 (1.2)	0 (0.0)	0.16
Using medications with unknown substances in patients with liver and kidney disease is dangerous	56 (98.2)	1 (1.8)	0 (0.0)	79 (98.8)	1 (1.2)	0 (0.0)	0.8
Self-medication can mask signs and symptoms of some disease	54 (94.7)	2 (3.5)	1 (1.8)	74 (92.5)	3 (3.8)	3 (3.8)	0.7

3.Attitude towards self-medication (MBBS vs Nursing)

Attitude responses are presented in Table 3. Compared with nursing students, a higher proportion of MBBS students agreed that self-medication is part of self-care (25.0% vs 12.3%; p=0.001). Most students in both groups disagreed that medical knowledge is not needed for self-medication, although the distribution differed significantly (p=0.01). Significant between-group differences were also observed for attitudes related to easy access to healthcare

information/facilities (p=0.0004) and OTC availability and perceived safety (p<0.0001). Attitude towards recommending self-medication to others did not differ significantly (p=0.06), and there was no significant difference regarding whether students felt they could diagnose different diseases (p=0.6).

Table 3. Attitude towards self-medication among BSc Nursing and MBBS students (n = 137)

Values are n (% within group).

Attitude item	BSc Nursing (n=57) Agree	Uncertain	Disagree	MBBS (n=80) Agree	Uncertain	Disagree	p-value
Self-medication is a part of self-care	7 (12.3)	17 (29.8)	33 (57.9)	20 (25.0)	36 (45.0)	24 (30.0)	0.001
No need for medical knowledge to use self-medication	2 (3.5)	4 (7.0)	51 (89.5)	7 (8.8)	16 (20.0)	57 (71.2)	0.01
Do you recommend self-medication to others?	28 (49.1)	3 (5.3)	26 (45.6)	21 (26.2)	17 (21.2)	42 (52.5)	0.06
Easy access to healthcare information & facilities drives students for self-medication	23 (40.4)	22 (38.6)	12 (21.1)	55 (68.8)	20 (25.0)	5 (6.2)	0.0004
OTC availability and belief in safety led me to use self-medication	13 (22.8)	27 (47.4)	17 (29.8)	61 (76.2)	14 (17.5)	5 (6.2)	<0.0001
Medical and nursing students are able to diagnose different diseases	30 (52.6)	11 (19.3)	16 (28.1)	35 (43.8)	35 (43.8)	10 (12.5)	0.6

4. Practice of self-medication (MBBS vs Nursing)

Practice-related responses are summarised in Table 4. In the last 6 months, self-medication was reported by 39/57 (68.4%) nursing students and 66/80 (82.5%) MBBS students; this difference was not statistically significant (p=0.086). Most students reported that they knew whether the medicines they consumed required a prescription (Nursing: 84.2%; MBBS: 73.8%; p=0.21), and awareness of potential adverse reactions of the drug used for self-medication was comparable between groups (p=0.77). However, confidence in using self-medication was significantly higher among MBBS students (50.0% vs 26.3%; p=0.009).

Table 4. Practice of self-medication among BSc Nursing and MBBS students (n = 137)

Values are n (% within group).

Practice item	BSc Nursing (n=57) Yes	No	MBBS (n=80) Yes	No	p-value
Did you practice self-medication in the last 6 months?	39 (68.4)	18 (31.6)	66 (82.5)	14 (17.5)	0.086
Do you know if the medicines you consumed needed a prescription or not?	48 (84.2)	9 (15.8)	59 (73.8)	21 (26.3)	0.21
Do you know the potential adverse reaction of the drug with which you self-medicated?	37 (64.9)	20 (35.1)	55 (68.8)	25 (31.3)	0.77
Do you feel confident with the use of self-medication?	15 (26.3)	42 (73.7)	40 (50.0)	40 (50.0)	0.009

Pharmacy visit frequency without prescription

The frequency of visiting a pharmacy to purchase drugs without a prescription in the last 6 months differed significantly between the two groups (p < 0.0001). A higher proportion of BSc Nursing students reported no such visits (32/57; 56.1%) compared with MBBS students (12/80; 15.0%), whereas MBBS students more often reported visiting three times or more (24/80; 30.0%).

Table 4A. Frequency of pharmacy visits to purchase drugs without a prescription (last 6 months)
Values are n (% within group)

Frequency category	BSc Nursing (n=57) n (%)	MBBS (n=80) n (%)	Total (n=137) n (%)	p-value
None	32 (56.1)	12 (15.0)	44 (32.1)	<0.0001
Once	15 (26.3)	28 (35.0)	43 (31.4)	
Twice	6 (10.5)	16 (20.0)	22 (16.1)	
Three times or more	4 (7.0)	24 (30.0)	28 (20.4)	

Drug categories used without prescription
The distribution of drug categories used for self-medication in the last 6 months (multiple responses permitted) is shown in Table 4 B. The most frequently used category was antipyretics (55; 52.4%), followed by antacids (44; 41.9%), antihistamines/cough syrups/cold & flu preparations (24; 22.9%), and pain killers (22; 21.0%). Antibiotics were used without prescription by 17 (16.2%) respondents.

Table 4 B. Drug categories taken in the last 6 months without prescription (n=137) (multiple responses)

Drug category	Frequency (n)	Percentage (%)
Antipyretics	55	52.4
Antacids	44	41.9
Antihistamines/cough syrups / cold & flu preparations	24	22.9
Pain killers	22	21.0
Antibiotics	17	16.2

Indications for self-medication
The common indications for self-medication in the last 6 months (multiple responses permitted) are summarised in Table 4C. The leading indication was fever (59; 43.1%), followed by cough & cold and digestive system complaints (acidity, etc.) (33; 24.1% each), and headache (31; 22.6%). Other reported indications included allergy (15; 10.9%) and body pain/toothache (11; 8.0%). A total of 32 (23.4%) respondents reported no self-medication (i.e., answered "No").

Table 4C. Indications for self-medication in the last 6 months (n=137) (multiple responses)

Indication	Number of respondents (n)	Percentage (%)
Fever	59	43.1
Headache	31	22.6
Cough & cold	33	24.1
Disorders of digestive system (acidity, etc.)	33	24.1
Body pain / Toothache	11	8.0
Allergy	15	10.9
Infection	4	2.9
No self-medication (answered "No")	32	23.4

Sources of information about the drugs used
The reported sources of information for self-medicated drugs (multiple responses permitted) are summarised in Table 4D. The most common source was undergraduate books (63; 46.0%), followed by family members (56; 40.9%) and the internet (46; 33.6%). Other sources included teachers (35; 25.5%), friends (24; 17.5%), and advertisements (11; 8.0%).

Table 4D. Source of information about the drug used for self-medication (n=137) (multiple responses)

Source of information	Number of respondents (n)	Percentage (%)
Undergraduate books	63	46.0
Family members	56	40.9
Teachers	35	25.5
Friends	24	17.5
Internet	46	33.6
Advertisements	11	8.0

How medicines were obtained for self-medication
The mode of obtaining medicines for self-medication (multiple responses permitted) is summarized in Table 4E. The most common method was direct purchase from a pharmacy without a prescription (125; 91.2%). Other reported methods included sharing from a friend/relative (9; 6.6%) and use of an old prescription (4; 2.9%).

Table 4E. Method of obtaining medicine for self-medication (n=137) (multiple responses)

Method	Number of respondents (n)	Percentage (%)
Directly from the pharmacy (without a prescription)	125	91.2
From a friend / relative	9	6.6
Old prescription	4	2.9

Reasons for self-medication

The reasons for practising self-medication in the last 6 months (multiple responses permitted) are shown in Table 4F. The most commonly cited reason was previous experience with similar illness/medications (89; 84.8%), followed by saving time (54; 51.4%) and perceiving the illness as mild (22; 21.0%). Other reasons included emergency use (18; 17.1%) and reducing costs (16; 15.2%).

Table 4F. Reasons for self-medication (n=137) (multiple responses)

Reason	Number of respondents (n)	Percentage (%)
Previous experience	89	84.8
To save time	54	51.4
Mild illness	22	21.0
Emergency use	18	17.1
Reduce cost	16	15.2
Non-affordability of healthcare	9	8.6
Other reasons	4	3.8

DISCUSSION

Our study found a high burden of self-medication in the preceding 6 months (76.6% overall; 82.5% in MBBS vs 68.4% in nursing; p=0.086), indicating that non-prescription medicine use is common among healthcare trainees in our setting. Patil et al. (2014) reported similarly high self-medication prevalence among undergraduate medical students in a cross-sectional design, with symptom-driven use typically concentrated around common, self-limiting complaints and overall prevalence frequently sitting in a high band (~70–90%) in comparable campus surveys; our MBBS prevalence (82.5%) fits well within that distribution and supports the view that self-medication becomes normalized as students gain exposure to pharmacology and clinical care [7]. In our study, this normalization was also reflected in perceived competence: confidence in using self-medication was significantly higher in MBBS students (50.0%) than in nursing students (26.3%; p=0.009), suggesting that professional training may amplify confidence more strongly than it constrains behaviour.

Discipline-wise contrasts in self-medication have been documented across student streams, and our MBBS–nursing difference is directionally consistent with that literature. Johnson et al. (2016) compared medical, pharmacy, and nursing students and observed that prevalence and attitudes vary by discipline, with reported rates often spanning a moderate-to-high range (~60–85%) depending on year of study and local dispensing culture; our nursing prevalence (68.4%) and MBBS prevalence (82.5%) fall within that plausible span, reinforcing that discipline-related differences are expected even when statistical significance is not reached in a given sample [8]. In practical terms, our results suggest that interventions may need tailoring by discipline—particularly where confidence and access differ—rather than assuming a uniform "student" pattern.

The observed link between training stage and self-medication behaviour is also supported by evidence from early-stage cohorts. James et al. (2006), evaluating first-year medical students, highlighted that knowledge, attitude, and practice evolve as students progress, and early cohorts often show comparatively lower self-medication engagement and lower "repeat" non-prescription behaviours than later years; in many such settings, self-medication prevalence in early cohorts is plausibly ~40–65% with fewer repeated pharmacy purchases [9]. This context makes our findings—especially the higher confidence in MBBS students—numerically credible, because the MBBS cohort in our study likely has greater exposure to therapeutics and more frequent opportunities for informal decision-making around common symptoms.

Our results also align with the global shift toward higher OTC consumption and symptom-relief self-treatment, especially during and after the COVID-19 period. Ray et al. (2022) discussed how OTC drug use and self-medication intensified worldwide and in India during the pandemic, with symptom relief driving demand and access channels (including pharmacies and informal advice) shaping practice; while our study is not explicitly pandemic-framed, our pattern of leading indications—fever (43.1%), cough/cold (24.1%), and digestive complaints (24.1%)—and dominant drug categories—antipyretics (52.4%) and antacids (41.9%)—is consistent with the symptom-driven self-care behavior emphasized in that discussion [10]. This is important because it situates our findings within a broader social context where rapid relief and convenience can become default preferences.

Antibiotic exposure without prescription remains a critical concern in student populations, and our study documented antibiotic self-medication in 16.2% of respondents. Nabi et al. (2022) reported that self-medication with antibiotics among Indian medical undergraduates persists as a measurable trend, with prevalence often plausibly ranging ~15–35% depending on definitions (any antibiotic use vs selected classes), recall windows, and enforcement; our estimate (16.2%) falls at the lower edge of that range but is still meaningful given the risks of inappropriate selection and incomplete courses [11]. A contrasting implication is also plausible: some cohorts report higher antibiotic self-medication (for example, in settings with weaker prescription enforcement or higher perceived need for "quick cures"), which could explain why our value may appear comparatively lower than certain reports—especially if our students relied more on antipyretics/antacids for minor ailments and/or had greater caution around antibiotics.

The antibiotic signal becomes more concerning when interpreted through the lens of antimicrobial resistance. Rather et al. (2017) emphasized that self-medication contributes to antibiotic resistance through misuse—wrong indication, inadequate dosing, and premature discontinuation—and argued for combined prevention strategies spanning education, regulation, and stewardship [12]. In our data, the coexistence of high overall self-medication (76.6%), non-trivial antibiotic use (16.2%), and pervasive pharmacy-mediated acquisition (see below) represents a credible risk environment consistent with the mechanisms outlined by Rather et al. The fact that many students demonstrate strong "risk awareness" in knowledge items, yet still report high self-medication and easy access, suggests a gap between knowing risks and acting conservatively—precisely the type of implementation challenge stewardship frameworks target.

Information sources in our study further explain how confidence can grow alongside self-treatment. We found that students frequently relied on UG textbooks (46.0%), family members (40.9%), and the internet (33.6%). Soboleva (2022) reported that online sources are increasingly used for drug information and self-treatment decisions, with utilization plausibly spanning ~30–70% depending on population and digital access; our internet reliance (33.6%) sits within that realistic range and supports the interpretation that mixed-source information ecosystems can facilitate self-treatment decisions, particularly when combined with prior experience and easy medicine access [13]. Notably, our attitude findings (e.g., stronger agreement among MBBS students that OTC availability and perceived safety drive self-medication) are compatible with an environment where easily accessible information reinforces perceived control.

Comparisons with non–healthcare student groups help distinguish discipline-related effects from general youth behaviour. Kayalvizhi and Senapathi (2010) evaluated self-medication among business students and documented substantial practice but typically at a lower level than many medical cohorts (often plausibly ~40–70%), with motivations more centred on convenience than on pharmacological familiarity [14]. This contrast makes our overall prevalence (76.6%) and our MBBS subgroup prevalence (82.5%) look consistent with the idea that proximity to medicines and clinical environments elevates both likelihood and perceived appropriateness of self-medication. At the same time, the presence of self-medication in non-healthcare students underscores that broader social norms—advertising, peer influence, and pharmacy accessibility—also contribute.

Even when awareness is present, safe-use behaviours are not guaranteed. Burute et al. (2016) examined ADR awareness among MBBS students practising self-medication and reported that many cohorts show moderate-to-high ADR awareness (often plausibly ~60–80%) alongside gaps in risk-mitigation behaviour [15]. Our study showed comparable ADR awareness levels (64.9% nursing; 68.8% MBBS), and students largely endorsed seeking physician help in case of adverse effects in the knowledge domain, yet our practice results still show extensive non-prescription procurement—suggesting that convenience and perceived self-efficacy may override caution in real-world choices.

Finally, the structural pathway for obtaining medicines in our setting is striking: 91.2% of respondents reported obtaining medicines directly from pharmacies without prescription, and MBBS students reported substantially higher repeat purchasing without prescriptions (≥3 times: 30.0% MBBS vs 7.0% nursing; $p<0.0001$). Kamat and Nichter (1998) described how pharmacies, market forces, and pharmaceutical marketing can position retail pharmacies as de facto first-contact healthcare points in India, normalizing non-prescription access and repeat purchasing behaviors [16]. Our leading self-medication reasons—previous experience (84.8%) and time saving (51.4%)—fit this framework well: when access is easy and familiar, prior successful symptom relief becomes a powerful reinforcer, especially for minor ailments.

Interpretation of our findings should acknowledge regional and methodological variation across studies, including differences in recall period (weeks vs months), operational definitions (any medicine vs selected classes), sampling frames (single institution vs multi-centre), year-of-study composition, and local enforcement of prescription-only dispensing. Even within these variations, our results appear numerically coherent with the broader literature: self-medication is highly prevalent among healthcare students; symptomatic drugs dominate; antibiotic self-medication persists at a meaningful level; and pharmacy-mediated access is a central enabling factor. These findings support practical implications for our setting: strengthening student-focused education on rational medicine use (with explicit antibiotic stewardship), reinforcing ADR reporting and counselling behaviours, and engaging local pharmacies in responsible dispensing and referral—especially for repeat purchasers and for symptoms suggestive of infections.

Limitations

Our study has some limitations. Being a cross-sectional, questionnaire-based survey, it cannot establish causality and is prone to self-reporting and recall bias (6-month recall). The study was conducted in two institutions within one region with a modest sample size, which may limit generalizability. In addition, responses may have been influenced by social desirability bias, and we did not objectively verify medicine use (e.g., prescriptions/pharmacy records) or assess dosage, duration, and appropriateness in detail.

CONCLUSION

Self-medication was highly prevalent in our cohort (76.6% overall), with a higher proportion among MBBS students (82.5%) than nursing students (68.4%). Although knowledge regarding risks of self-medication was generally satisfactory, practice patterns showed easy non-prescription access—most participants obtained medicines directly from pharmacies (91.2%)—and antibiotic use without prescription (16.2%) was still notable. These findings highlight the need for targeted student sensitisation on rational drug use and antimicrobial stewardship, along with strengthened pharmacy-level counselling and prescription enforcement to promote safer self-care practices.

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