Original Article

Knowledge, Attitude, and Practice Regarding Self-Medication Among Pharmacy, Nursing, and Medical Students: A Comparative Cross-Sectional Study

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ABSTRACT

Background: Self-medication is common among health-science students, who may feel confident selecting medicines because of their developing pharmacological knowledge. However, unsupervised use of prescription-only medicines, especially antibiotics, can cause harm. Objective: To compare knowledge, attitudes, and practices (KAP) regarding self-medication among undergraduate MBBS, pharmacy, and nursing students and describe their sources of medication information. Methods: This cross-sectional, questionnaire-based survey analysed 236 of 295 distributed questionnaires: 68 MBBS, 122 pharmacy, and 46 nursing students. The questionnaire assessed demographics, knowledge using eight scored items (range 0–8), attitudes using eight three-point Likert items, and self-medication practices over the preceding six months. Categorical variables were compared using chi-square tests; knowledge scores were compared using the Kruskal–Wallis test, with Bonferroni-adjusted pairwise Mann–Whitney U tests. Results: Overall, 161/236 students (68.2%) reported self-medication in the preceding six months: 80.9% of MBBS, 67.4% of nursing, and 61.5% of pharmacy students (χ^2=7.60, df=2, p=0.022). Knowledge scores were similar across groups (MBBS 6.66±1.86; pharmacy 6.30±1.67; nursing 6.20±1.76; p=0.080). Pharmacy students more often agreed that self-medication was part of self-care (57.4% vs 32.4% of MBBS students; p=0.004) and acceptable for minor illness (76.2% vs 57.4%; p=0.041). Nursing students most often reported possible adverse effects (32.6%; p=0.004). Antibiotic self-medication was reported by 85/236 students (36.0%); differences between programmes were not statistically significant (p=0.140). Conclusion: Self-medication was common despite broadly similar knowledge scores. The findings support discipline-sensitive education on antibiotic stewardship, adverse drug reaction recognition, and responsible over-the-counter use. Because the study was cross-sectional, self-reported, and unadjusted for demographic differences between groups, the findings should be interpreted as associations rather than causal effects.

Key words: self-medication; knowledge, attitude, practice; medical students; pharmacy students; nursing students; antibiotic stewardship; adverse drug reactions.

Self-medication refers to the selection and use of medicines by individuals to manage self-recognised symptoms or conditions without advice from a qualified prescriber [1]. Responsible use of appropriately labelled over-the-counter products for minor, self-limiting conditions can form part of self-care, but the practice becomes hazardous when medicines are selected without adequate attention to dose, contraindications, interactions, or the need for professional assessment [2,3].

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Potential harms include delayed diagnosis, symptom masking, adverse drug reactions, and inappropriate antimicrobial exposure [4]. Antimicrobial resistance is a major public-health problem with a substantial global burden [5]. Health-science students warrant particular attention because they are developing professional knowledge while also making personal treatment decisions. Studies among Indian medical students have documented substantial self-medication, including in coastal South India and West Bengal [6,7].

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Research among students at other institutions has likewise described self-medication as a common behaviour [8,9]. International studies among medical and pharmacy students and broader university populations show that prevalence varies by population, setting, definition, and recall period [10,11]. A systematic review and meta-analysis of university students in Ethiopia also found substantial between-study variation, illustrating why prevalence estimates should not be compared without considering methods [12].

The Indian setting raises additional concerns about access to medicines and non-prescription use. An Indian study of professional students called attention to the need for effective statutory drug control [13]. The emergence and spread of antimicrobial resistance has also been documented in South Asia [14], while more recent Indian research has examined awareness of antibiotic resistance among medical professionals [15]. Inadequate recognition of risks may persist even when students have encountered relevant information in their courses.

Evidence directly comparing medical, pharmacy, and nursing students is useful because these groups will have different future roles in prescribing, dispensing, administering, and monitoring medicines. A South Indian study of healthcare students examined KAP across healthcare disciplines [16], and earlier comparative studies included medical, pharmacy, and nursing students [17,18]. Studies among healthcare students in Pune and among medical and paramedical students in Central India provide further points of comparison [19,20]. Antibiotic-focused research has separately examined medical and pharmacy students [21], while studies of healthcare students and nursing students have explored self-medication and antibiotic use in other settings [22,23]. Reviews of medical students' beliefs about antibiotics and resistance, and an educational intervention among MBBS students, offer context for potential curricular responses [24,25].

This study compared knowledge, attitudes, and self-medication practices among undergraduate MBBS, pharmacy, and nursing students using a common questionnaire, and described the sources of information they reported using.

2. METHODS

2.1 Study design and setting

This was a cross-sectional, questionnaire-based survey of undergraduate students enrolled in MBBS, pharmacy, and nursing programmes. Students from all years of study were eligible. The source manuscript did not identify the institution or data-collection dates; these details should be added before journal submission.

2.2 Participants and sample size

Eligible participants were undergraduate students who were present during data collection, provided informed consent, and completed the questionnaire. Postgraduate students and faculty members were excluded, as were questionnaires with more than 20% of responses missing and students who declined or withdrew. Students who had not self-medicated remained in the survey and completed the demographic, knowledge, and attitude sections. The stated minimum sample size was 295, calculated using the Raosoft online calculator with 95% confidence, a 5% margin of error, 50% expected prevalence, and the institutional student population. Of 295 questionnaires distributed, 236 were included in the analysis (80.0%).

2.3 Questionnaire and variables

The structured, self-administered, pretested questionnaire comprised four sections: demographics (age, gender, year of study, residence, and programme); eight true/false knowledge items scored 1 for each correct answer (total 0–8); eight attitude statements rated agree, neutral, or disagree; and practice questions. Practice items covered self-medication during the preceding six months, medicine classes, conditions treated, reasons, information sources, knowledge of the medicine requested, awareness of prescription requirements, and reported adverse effects. Self-medication was defined as use of any medicine without a prescriber's advice during the six-month recall period. Details of questionnaire validation and pilot testing were not reported and should be supplied if available.

2.4 Statistical analysis

Data were analysed using SPSS. Categorical variables were summarised as frequencies and percentages, and knowledge scores as means and standard deviations. Chi-square tests were used to compare categorical variables across the three programmes. Because knowledge scores were not normally distributed, the Kruskal–Wallis test was used, followed by pairwise Mann–Whitney U tests with Bonferroni correction (α=0.0167). Multiple-response items were analysed item by item. A two-sided $p<0.05$ was considered statistically significant except for the corrected pairwise comparisons. The source manuscript did not report the SPSS version or an adjusted model.

3. RESULTS

3.1 Participant characteristics

Of the 236 participants, 68 (28.8%) were MBBS, 122 (51.7%) pharmacy, and 46 (19.5%) nursing students. The groups differed significantly in age ($p = 0.004$), gender ($p < 0.001$), and residence ($p < 0.001$) but not in year of study ($p = 0.327$) (Table 1). Female students predominated in pharmacy (63.9%) and nursing (73.9%), while most MBBS students were male (61.8%). Pharmacy students most often came from rural areas (78.7%).

Table 1. Demographic characteristics of participants by programme (N = 236)

Variable	MBBS (n = 68)	Pharmacy (n = 122)	Nursing (n = 46)	Total (N = 236)	p
Age, years					
≤20	8 (11.8)	42 (34.4)	15 (32.6)	65 (27.5)	0.004*
21–25	53 (77.9)	76 (62.3)	31 (67.4)	160 (67.8)	
26–30	4 (5.9)	1 (0.8)	0 (0.0)	5 (2.1)	
>30	3 (4.4)	3 (2.5)	0 (0.0)	6 (2.5)	
Gender					
Male	42 (61.8)	44 (36.1)	12 (26.1)	98 (41.5)	<0.001*
Female	26 (38.2)	78 (63.9)	34 (73.9)	138 (58.5)	
Year of study					
1st	3 (4.4)	9 (7.4)	2 (4.3)	14 (5.9)	0.327
2nd	6 (8.8)	12 (9.8)	9 (19.6)	27 (11.4)	
3rd	25 (36.8)	49 (40.2)	17 (37.0)	91 (38.6)	
4th	25 (36.8)	44 (36.1)	17 (37.0)	86 (36.4)	
5th	9 (13.2)	8 (6.6)	1 (2.2)	18 (7.6)	
Residence					
Rural	36 (52.9)	96 (78.7)	26 (56.5)	158 (66.9)	<0.001*
Urban	32 (47.1)	26 (21.3)	20 (43.5)	78 (33.1)	
Values are n (%). *p < 0.05, chi-square test					

3.2 Prevalence and frequency of self-medication

In the preceding six months 161 of 236 students (68.2%) had self-medicated. This included 55 of 68 MBBS students (80.9%), 31 of 46 nursing students (67.4%), and 75 of 122 pharmacy students (61.5%). The difference in prevalence was significant (χ^2 = 7.60, df = 2, p = 0.022). Among all students 37.3% had self-medicated once, 14.4% twice, and 16.5% three or more times. The distribution across these four frequency categories did not differ significantly between groups (χ^2 = 9.32, df = 6, p = 0.156) (Table 2).

Table 2. Prevalence, frequency, and practice characteristics of self-medication

Variable	MBBS (n = 68)	Pharmacy (n = 122)	Nursing (n = 46)	χ^2	p
Self-medication in last six months					
Practised (≥1 episode)	55 (80.9)	75 (61.5)	31 (67.4)	7.60	0.022*
Did not practise	13 (19.1)	47 (38.5)	15 (32.6)		
Frequency					
Not practised	13 (19.1)	47 (38.5)	15 (32.6)	9.32	0.156
Once	30 (44.1)	40 (32.8)	18 (39.1)		
Twice	12 (17.6)	18 (14.8)	4 (8.7)		
Three or more times	13 (19.1)	17 (13.9)	9 (19.6)		
Knowledge of drug requested					
Brand name only	25 (36.8)	46 (37.7)	10 (21.7)	33.16	<0.001*
Generic name only	18 (26.5)	43 (35.2)	7 (15.2)		
Indication only	11 (16.2)	16 (13.1)	11 (23.9)		
Brand + generic name	4 (5.9)	14 (11.5)	10 (21.7)		
Brand + generic + indication	9 (13.2)	1 (0.8)	5 (10.9)		
Other combinations	1 (1.5)	2 (1.6)	3 (6.5)		
Knew a prescription was required					
Yes	46 (67.6)	84 (68.9)	34 (73.9)	0.56	0.757
No	22 (32.4)	38 (31.1)	12 (26.1)		
Experienced adverse effects					
Yes	13 (19.1)	21 (17.2)	15 (32.6)	15.55	0.004*
No	47 (69.1)	62 (50.8)	19 (41.3)		
Maybe	8 (11.8)	39 (32.0)	12 (26.1)		
Values are n (%); percentages use all students in the group as the denominator. *p < 0.05. Prevalence (practised vs not) compared across the three groups, df = 2.					

3.3 Knowledge

Knowledge was high in every group. Mean scores out of 8 were 6.66 ± 1.86 (MBBS), 6.30 ± 1.67 (pharmacy), and 6.20 ± 1.76 (nursing) (Kruskal–Wallis H = 5.05, p = 0.080). No pairwise difference remained significant after Bonferroni correction, and no individual item differed between groups (Table 3). Awareness was highest for checking expiry dates (91.3–97.1%) and for self-medication causing drug resistance (80.4–84.4%). The statement defining self-medication as taking medicines without a prescriber's advice was answered correctly least often (63.0–76.5%).

Table 3. Knowledge about self-medication (correct responses; all statements were true)

Statement	MBBS n (%)	Pharmacy n (%)	Nursing n (%)	χ^2	p
Self-medication is taking medicines without a prescriber's advice	52 (76.5)	87 (71.3)	29 (63.0)	2.41	0.299
Self-medication may not always be safe and effective	60 (88.2)	102 (83.6)	37 (80.4)	1.36	0.506
Self-medication can mask signs and symptoms of disease	56 (82.4)	90 (73.8)	34 (73.9)	1.95	0.377
All medications may have adverse effects	55 (80.9)	98 (80.3)	34 (73.9)	0.99	0.609
Checking the expiry date before use is necessary	66 (97.1)	118 (96.7)	42 (91.3)	2.81	0.245
Self-medication can hide the real disease behind symptoms	58 (85.3)	89 (73.0)	35 (76.1)	3.80	0.149
Medicine advertisements are a leading cause of OTC use/self-medication	49 (72.1)	82 (67.2)	37 (80.4)	2.88	0.237
Self-medication can lead to drug resistance	57 (83.8)	103 (84.4)	37 (80.4)	0.39	0.821
Mean knowledge score (0–8), mean ± SD	6.66 ± 1.86	6.30 ± 1.67	6.20 ± 1.76	H = 5.05	0.080

Chi-square test for items; Kruskal–Wallis test for total score.

3.4 Attitude

Attitudes differed significantly on two of the eight statements (Table 4). Pharmacy students were more likely to agree that self-medication is part of self-care (57.4% vs 52.2% nursing and 32.4% MBBS; p = 0.004).

They were also more likely to agree that it is acceptable for minor illnesses and emergencies (76.2% vs 58.7% nursing and 57.4% MBBS; p = 0.041). Agreement with the statements that recognise risk (adverse reactions, prolonged use, unsuitability for all ages, and interactions) was high and similar in all groups.

3.5 Practice: drug classes, conditions, reasons, and sources of information

Overall, 85 of 236 students (36.0%) reported using antibiotics for self-medication. The proportion was highest among MBBS students (44.1%), followed by pharmacy (35.2%) and nursing (26.1%) students, but the difference was not significant (p = 0.140). Antipyretics were most common among nursing students (52.2%). Fever, cough/common cold, and headache were the leading conditions in all groups. The most frequent reasons were that the illness was not serious and that the student wanted quick relief (Table 5). Roughly three in ten students in each group did not know that the drug they used required a prescription (Table 2).

Sources of information differed significantly by discipline (Table 5). Pharmacists were the commonest source among pharmacy students (65.6%). MBBS and nursing students more often consulted doctors without a prescription (44.1% and 43.5%). Nursing students relied most on friends and relatives (41.3%). Between 16.4% and 28.3% of students cited internet and multimedia sources. Multiple responses permitted; percentages use all students in the group as the denominator (MBBS n = 68, pharmacy n = 122, nursing n = 46). *p < 0.05, chi-square test applied item by item. Paracetamol as a separate class (n = 3) and stomach complaints (n = 2) are omitted because of very small numbers.

DISCUSSION

In this cross-sectional sample, 68.2% of students reported self-medication during the preceding six months. MBBS students had the highest prevalence, while pharmacy students had the lowest; knowledge scores did not differ significantly between programmes. Attitudes towards self-medication, reported adverse effects, and sources of information showed some between-group differences. Antibiotic self-medication was reported by more than one-third of the full sample, although the difference between programmes was not statistically significant.

Table 4. Attitude towards self-medication: proportion agreeing with each statement

Statement	MBBS n (%)	Pharmacy n (%)	Nursing n (%)	χ^2	p
Self-medication is a part of self-care	22 (32.4)	70 (57.4)	24 (52.2)	15.57	0.004*
There is no need for training on self-medication	19 (27.9)	46 (37.7)	13 (28.3)	4.98	0.289
Self-medication is acceptable for minor illnesses/emergencies	39 (57.4)	93 (76.2)	27 (58.7)	9.99	0.041*
OTC availability encourages self-medication	34 (50.0)	69 (56.6)	21 (45.7)	3.54	0.472
Self-medication is not free from adverse drug reactions	40 (58.8)	83 (68.0)	31 (67.4)	4.19	0.381
Self-medication is not advisable for prolonged periods	52 (76.5)	105 (86.1)	38 (82.6)	3.75	0.440
Self-medication is not safe for all age groups	55 (80.9)	105 (86.1)	35 (76.1)	4.57	0.334
Self-medication drugs can interact with prescribed medicines	52 (76.5)	89 (73.0)	32 (69.6)	2.00	0.735
*p < 0.05. Chi-square (df = 4) was calculated on the full agree/neutral/disagree distribution; only "agree" is shown.					

Table 5. Drug classes, conditions, reasons, and sources of information for self-medication

Variable	MBBS n (%)	Pharmacy n (%)	Nursing n (%)	χ^2	p
Drug classes used					
Antibiotics	30 (44.1)	43 (35.2)	12 (26.1)	3.94	0.140
Antipyretics	26 (38.2)	47 (38.5)	24 (52.2)	2.90	0.235
Analgesics	18 (26.5)	33 (27.0)	17 (37.0)	1.85	0.396
Nutritional supplements	20 (29.4)	25 (20.5)	16 (34.8)	4.19	0.123
Conditions treated					
Fever	33 (48.5)	62 (50.8)	30 (65.2)	3.53	0.171
Cough / common cold	32 (47.1)	50 (41.0)	24 (52.2)	1.87	0.393
Headache	27 (39.7)	49 (40.2)	23 (50.0)	1.53	0.467
Reasons for self-medication					
Illness not serious	33 (48.5)	55 (45.1)	18 (39.1)	0.98	0.612
Quick relief	35 (51.5)	45 (36.9)	23 (50.0)	4.72	0.095
To save time	16 (23.5)	19 (15.6)	12 (26.1)	3.10	0.213
Past experience	16 (23.5)	18 (14.8)	7 (15.2)	2.53	0.283
To save money	8 (11.8)	21 (17.2)	13 (28.3)	5.16	0.076
No hospital nearby	4 (5.9)	20 (16.4)	5 (10.9)	4.58	0.101
Sources of information					
Pharmacist	27 (39.7)	80 (65.6)	16 (34.8)	18.59	<0.001*
Doctor (without prescription)	30 (44.1)	24 (19.7)	20 (43.5)	16.02	<0.001*
Friends and relatives	23 (33.8)	27 (22.1)	19 (41.3)	6.91	0.032*
Multimedia / internet	14 (20.6)	20 (16.4)	13 (28.3)	2.98	0.226

CONCLUSION

Self-medication was common among the surveyed MBBS, pharmacy, and nursing students, with the highest prevalence in the MBBS group despite similar knowledge scores across programmes. Pharmacy students more often endorsed self-medication as self-care, and nursing students more often reported possible adverse effects. Antibiotic self-medication was reported by 36.0% of the full sample, but differences between programmes were not statistically significant. These findings support educational approaches tailored to professional roles, including antibiotic stewardship, adverse drug reaction recognition, and responsible OTC counselling. The results should be interpreted cautiously because of the cross-sectional design, self-reported measures, sample size shortfall, and absence of adjusted analyses. Multicentre studies with adequate sample sizes, validated instruments, and multivariable analysis are needed.

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