



ATTITUDE AND SELF-REPORTED PRACTICES OF SELF-MEDICATION AMONG HEALTHCARE AND NON-HEALTHCARE UNDERGRADUATE STUDENTS: A COMPARATIVE CROSS-SECTIONAL STUDY

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Abstract

Background: Self-medication is a growing global concern, particularly in developing countries where easy drug accessibility may lead to inappropriate use. Understanding attitudes and practices among students is crucial for public health interventions.

Objective: To compare attitudes and self-reported practices of self-medication between healthcare and non-healthcare undergraduate students.

Methods: A comparative cross-sectional survey was conducted among 400 students (200 healthcare, 200 non-healthcare) from selected institutions of Varanasi, Uttar Pradesh, India. Data were collected using validated questionnaires assessing attitudes and self-reported practices of self-medication. Statistical analysis was performed using SPSS version 16.

Results: The majority of students in both groups favored self-medication (healthcare: 68.5%, non-healthcare: 87%). Non-healthcare students had significantly higher attitude scores (median=36) compared to healthcare students (median=33), $U=15,420$, $p=0.002$. Self-medication was practiced by 91.5% of students overall (healthcare: 89.5%, non-healthcare: 93.5%). Common indications included fever (90.8% vs 88.2%), cold (83.2% vs 90.4%), cough (82.1% vs 83.5%), and headache (77.1% vs 78.6%). Primary reasons were perceiving illness as minor (87.2% vs 88.8%) and seeking quick relief (81.5% vs 76.3%).

Conclusions: Self-medication practices are highly prevalent among both healthcare and non-healthcare students, with non-healthcare students showing more favorable attitudes toward self-medication. Educational interventions are needed to promote responsible medication use among university students.

Keywords: self-medication, healthcare students, attitude, practices, comparative study

Introduction

Self-medication is defined by the World Health Organization as "the use of medications without prior medical consultation regarding indication, dosage, and duration of treatment." While self-medication can be part of appropriate self-care, it poses significant risks including drug interactions, misdiagnosis, dependency, and antimicrobial resistance when used inappropriately.

The prevalence of self-medication among students varies globally, with studies reporting rates between 0.1% to 100%. University students represent a unique population due to their educational exposure, autonomy, and lifestyle factors. Healthcare students, with their medical knowledge, might be expected to practice more judicious self-medication compared to their non-healthcare counterparts, yet empirical evidence comparing these groups remains limited.

In developing countries like India, easy drug accessibility combined with inadequate healthcare services contributes to widespread self-medication practices. Understanding the attitudes and practices of future healthcare professionals and educated youth is crucial for developing targeted interventions. This study aimed to compare attitudes and self-reported practices of self-medication between healthcare and non-healthcare undergraduate students at a major Indian university.

Methodology:

Study Design and Setting

A comparative cross-sectional survey was conducted at selected colleges of Varanasi, Uttar Pradesh, India, between February and March 2024.

Participants

Final-year undergraduate students from healthcare (nursing, pharmacy, allied health) and non-healthcare (engineering, commerce, communication) institutions were eligible. Students willing to participate and available during data collection were included.

Sample Size and Sampling

Sample size was calculated using the formula $n = 2\sigma^2(Z_{1-\alpha/2} + Z_{1-\beta})^2/d^2$, yielding 412 students per group for adequate power. A total of 400 students were recruited (200 healthcare, 200 non-healthcare) using simple random sampling to select institutions, followed by convenience sampling of eligible students. This sample size provides 80% power to detect a medium effect size (Cohen's $d = 0.4$) at $\alpha = 0.05$.

Data Collection Instruments

Three validated tools were used:

1. **Socio-demographic proforma:** Age, gender, course, family type, parental education, healthcare professionals in family, awareness of over-the-counter medicines
2. **Attitude questionnaire:** 15-item Likert scale (Cronbach's $\alpha = 0.711$) with scores 31-60 indicating "favoring self-medication" and 15-30 "not favoring self-medication"
3. **Self-reported practices questionnaire:** 11 items assessing medication use patterns (test-retest reliability $r = 0.76$)

Ethical Considerations

Ethical approval was obtained from the Institutional Ethics Committee of selected colleges of Varanasi, Uttar Pradesh, India. Written informed consent was obtained from all participants.

Statistical Analysis

Data were analyzed using SPSS version 16. Descriptive statistics were used for demographic characteristics and prevalence. Mann-Whitney U test was used to compare attitude scores between groups. Chi-square tests were performed for categorical variables. Effect sizes were calculated using

Cohen's d for continuous variables and Cramér's V for categorical variables. Statistical significance was set at $p < 0.05$.

Results

Participant Characteristics

The mean ages were 21.12 years (SD=1.8) for healthcare and 20.34 years (SD=1.9) for non-healthcare students. Healthcare students were predominantly female (74.5% vs 25.5% male), while non-healthcare students showed more balanced gender distribution (52.5% female vs 47.5% male). Most parents had graduation-level or higher education. Awareness of over-the-counter medicines was higher among healthcare students (77% vs 65%, $\chi^2=6.84$, $p=0.009$).

Attitude Toward Self-Medication

The majority of students favored self-medication: 137 healthcare students (68.5%) and 174 non-healthcare students (87%). Non-healthcare students demonstrated significantly higher attitude scores (median = 36, IQR: 33-39) compared to healthcare students (median = 33, IQR: 30-36), $U = 15,420$, $p = 0.002$, with a medium effect size (Cohen's $d = 0.52$).

Self-Medication Practices

Overall, 366 students (91.5%) reported practicing self-medication: 179 healthcare students (89.5%) and 187 non-healthcare students (93.5%). The difference between groups was not statistically significant ($\chi^2=1.98$, $p=0.160$).

Common medications used:

- Cough syrup: 80.4% (healthcare) vs 84.5% (non-healthcare)
- Antipyretics: 74.3% vs 61.5%
- Pain killers: 72.1% vs 78.6%
- Antibiotics: 67.6% vs 63.6%

Primary indications:

- Fever: 90.8% vs 88.2%
- Cold: 83.2% vs 90.4%
- Cough: 82.1% vs 83.5%
- Headache: 77.1% vs 78.6%

Main reasons for self-medication:

- Minor illness perception: 87.2% vs 88.8%
- Quick symptom relief: 81.5% vs 76.3%
- Previous similar medication use: 73.7% vs 77.8%
- Sufficient medication knowledge: 59.2% vs 67.4%

Information sources: Healthcare students primarily relied on academic knowledge (70.4%) and healthcare professionals in family (69.8%), while non-healthcare students used previous prescriptions (79.1%) and family healthcare professionals (77.0%).

Safety practices: Most students (53.6% healthcare, 47.1% non-healthcare) checked expiry dates when purchasing new medications. When self-medication failed, 89.4% of healthcare students vs 78.6% of non-healthcare students would consult physicians ($\chi^2=8.76$, $p=0.003$).

Discussion

This study reveals high prevalence of self-medication among both healthcare and non-healthcare students, consistent with previous research reporting rates of 78-97% among university students. The finding that non-healthcare students have more favorable attitudes toward self-medication despite having less medical knowledge raises important public health concerns.

Healthcare students showed more conservative attitudes, possibly due to their education about medication risks and appropriate prescribing practices. However, their high self-medication rate (89.5%) suggests that knowledge alone may not prevent self-medication practices.

The similar patterns of medication use and indications across both groups suggest that self-medication practices are driven more by convenience and accessibility than by medical expertise. The predominance of symptomatic treatments for minor ailments (fever, headache, cold symptoms) reflects rational self-care behaviors, though the high use of antibiotics (63.6-67.6%) without medical supervision is concerning from an antimicrobial resistance perspective.

The reliance on academic knowledge among healthcare students and previous prescriptions among non-healthcare students highlights different information-seeking behaviors. While healthcare students may feel confident in their pharmaceutical knowledge, non-healthcare students appear to depend more on external guidance.

Limitations

This study was limited to a single university system and relied on self-reported practices rather than observed behaviors. The affected data collection due to feasibility, though the achieved sample size of 400 students provided adequate statistical power for the primary comparisons. The cross-sectional design prevents causal inferences about the relationship between attitudes and practices.

Implications

These findings suggest need for targeted educational interventions addressing:

1. Responsible self-medication practices for both student populations
2. Specific training on antibiotic stewardship
3. Enhanced awareness of medication risks and appropriate healthcare-seeking behaviors
4. Institutional policies promoting rational medication use

Conclusions

Self-medication is highly prevalent among both healthcare and non-healthcare undergraduate students, with non-healthcare students demonstrating more favorable attitudes despite having less medical training. While many self-medication practices appear rational for minor ailments, concerning patterns such as antibiotic use without medical supervision warrant targeted educational interventions. Universities should implement comprehensive medication literacy programs to promote responsible self-medication practices among their students.

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Conflicts of Interest

The authors declare no conflicts of interest.

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Tables:

Organization of Study Findings - Analysis Tables (N=400)

Section 1: Description of Socio-demographic Characteristics of the Undergraduate Students of Healthcare and Non-Healthcare

Table 1.1: Socio-demographic Profile of Study Participants

Characteristic	Healthcare Students (n=200)	Non-Healthcare Students (n=200)	Total (n=400)
Age (years)			

Mean $\pm$ SD	21.12 $\pm$ 1.8	20.34 $\pm$ 1.9	20.73 $\pm$ 1.9
Range	19-25	18-24	18-25
Gender, n (%)			
Female	149 (74.5)	105 (52.5)	254 (63.5)
Male	51 (25.5)	95 (47.5)	146 (36.5)
Course Distribution, n (%)			
Nursing	78 (39.0)	-	78 (19.5)
Pharmacy	67 (33.5)	-	67 (16.8)
Allied Health	55 (27.5)	-	55 (13.8)
Engineering	-	89 (44.5)	89 (22.3)
Commerce	-	63 (31.5)	63 (15.8)
Communication	-	48 (24.0)	48 (12.0)
Family Type, n (%)			
Nuclear	134 (67.0)	128 (64.0)	262 (65.5)
Joint	66 (33.0)	72 (36.0)	138 (34.5)

Table 1.2: Educational Background and Healthcare Exposure

Characteristic	Healthcare Students (n=200)	Non-Healthcare Students (n=200)	Total (n=400)
Father's Education, n (%)			
Below graduation	45 (22.5)	52 (26.0)	97 (24.3)
Graduation and above	155 (77.5)	148 (74.0)	303 (75.8)
Mother's Education, n (%)			
Below graduation	58 (29.0)	67 (33.5)	125 (31.3)
Graduation and above	142 (71.0)	133 (66.5)	275 (68.8)
Healthcare Professional in Family, n (%)			
Yes	89 (44.5)	74 (37.0)	163 (40.8)
No	111 (55.5)	126 (63.0)	237 (59.3)
Awareness of OTC Medicines, n (%)			
Yes	154 (77.0)	130 (65.0)	284 (71.0)
No	46 (23.0)	70 (35.0)	116 (29.0)

Section 2: Description of Attitude on Self-Medication Among the Undergraduate Students of Healthcare and Non-Healthcare

Table 2.1: Attitude Scores Toward Self-Medication

Attitude Parameters	Healthcare Students (n=200)	Non-Healthcare Students (n=200)	Total (n=400)
Attitude Score Distribution			
Mean $\pm$ SD	32.8 $\pm$ 4.2	35.4 $\pm$ 4.8	34.1 $\pm$ 4.6
Median (IQR)	33 (30-36)	36 (33-39)	35 (31-38)
Range	18-48	22-51	18-51
Attitude Score Categories, n (%)			
15-20 (Very Low)	3 (1.5)	1 (0.5)	4 (1.0)

21-25 (Low)	18 (9.0)	6 (3.0)	24 (6.0)
26-30 (Moderate)	42 (21.0)	19 (9.5)	61 (15.3)
31-35 (High)	89 (44.5)	78 (39.0)	167 (41.8)
36-40 (Very High)	38 (19.0)	73 (36.5)	111 (27.8)
41+ (Extremely High)	10 (5.0)	23 (11.5)	33 (8.3)

Table 2.2: Attitude Classification by Self-Medication Favorability

Attitude Classification	Healthcare Students (n=200)	Non-Healthcare Students (n=200)	Total (n=400)
Favoring Self-Medication (31-60), n (%)	137 (68.5)	174 (87.0)	311 (77.8)
Not Favoring Self-Medication (15-30), n (%)	63 (31.5)	26 (13.0)	89 (22.3)

Section 3: Comparison of the Attitude on Self-Medication Between the Healthcare and Non-Healthcare Undergraduate Students

Table 3.1: Statistical Comparison of Attitude Scores

Comparison Parameters	Healthcare Students (n=200)	Non-Healthcare Students (n=200)	Test Statistic	p-value	Effect Size
Attitude Score					
Median (IQR)	33 (30-36)	36 (33-39)	U = 15,420	0.002*	Cohen's d = 0.58
Mean $\pm$ SD	32.8 $\pm$ 4.2	35.4 $\pm$ 4.8			
Attitude Favorability, n (%)					
Favoring self-medication	137 (68.5)	174 (87.0)	$\chi^2 = 18.92$	<0.001*	Cramér's V = 0.22
Not favoring self-medication	63 (31.5)	26 (13.0)			

*Statistically significant at $p < 0.05$

Table 3.2: Attitude Score Distribution Comparison

Score Range	Healthcare Students n (%)	Non-Healthcare Students n (%)	Difference (%)	χ^2	p-value
15-30 (Not Favoring)	63 (31.5)	26 (13.0)	-18.5	18.92	<0.001*
31-35 (Moderately Favoring)	89 (44.5)	78 (39.0)	-5.5		
36-40 (Highly Favoring)	38 (19.0)	73 (36.5)	+17.5		
41+ (Extremely Favoring)	10 (5.0)	23 (11.5)	+6.5		

*Statistically significant at $p < 0.05$

Section 4: Description of Self-Reported Practices of Self-Medication Among the Undergraduate Students of Healthcare and Non-Healthcare

Table 4.1: Self-Medication Practice Overview

Practice Parameters	Healthcare Students (n=200)	Non-Healthcare Students (n=200)	Total (n=400)
Ever Practiced Self-Medication, n (%)			
Yes	179 (89.5)	187 (93.5)	366 (91.5)
No	21 (10.5)	13 (6.5)	34 (8.5)
Frequency Among All Participants, n (%)			
Daily	8 (4.0)	12 (6.0)	20 (5.0)
Weekly	45 (22.5)	52 (26.0)	97 (24.3)
Monthly	89 (44.5)	84 (42.0)	173 (43.3)
Occasionally	37 (18.5)	39 (19.5)	76 (19.0)
Never	21 (10.5)	13 (6.5)	34 (8.5)
Duration of Practice Among All Participants, n (%)			
Never practiced	21 (10.5)	13 (6.5)	34 (8.5)
<1 year	32 (16.0)	28 (14.0)	60 (15.0)
1-3 years	78 (39.0)	91 (45.5)	169 (42.3)
>3 years	69 (34.5)	68 (34.0)	137 (34.3)

Table 4.2: Commonly Used Medications in Self-Medication

Medication Type	Healthcare Students (n=200)	Non-Healthcare Students (n=200)	Total (n=400)
Cough Syrup, n (%)	144 (72.0)	158 (79.0)	302 (75.5)
Antipyretics, n (%)	133 (66.5)	115 (57.5)	248 (62.0)
Pain Killers, n (%)	129 (64.5)	147 (73.5)	276 (69.0)
Antibiotics, n (%)	121 (60.5)	119 (59.5)	240 (60.0)
Antacids, n (%)	98 (49.0)	108 (54.0)	206 (51.5)
Antihistamines, n (%)	87 (43.5)	95 (47.5)	182 (45.5)
Vitamins/Supplements, n (%)	76 (38.0)	82 (41.0)	158 (39.5)
Topical Preparations, n (%)	65 (32.5)	71 (35.5)	136 (34.0)
Anti-diarrheal, n (%)	52 (26.0)	58 (29.0)	110 (27.5)
Laxatives, n (%)	34 (17.0)	41 (20.5)	75 (18.8)

Table 4.3: Common Indications for Self-Medication

Indication	Healthcare Students (n=200)	Non-Healthcare Students (n=200)	Total (n=400)
Fever, n (%)	162 (81.0)	165 (82.5)	327 (81.8)
Cold, n (%)	149 (74.5)	169 (84.5)	318 (79.5)
Cough, n (%)	147 (73.5)	156 (78.0)	303 (75.8)
Headache, n (%)	138 (69.0)	147 (73.5)	285 (71.3)
Body Ache, n (%)	125 (62.5)	134 (67.0)	259 (64.8)
Stomach Ache, n (%)	108 (54.0)	119 (59.5)	227 (56.8)
Acidity, n (%)	89 (44.5)	98 (49.0)	187 (46.8)
Skin Problems, n (%)	72 (36.0)	78 (39.0)	150 (37.5)
Diarrhea, n (%)	58 (29.0)	67 (33.5)	125 (31.3)
Constipation, n (%)	45 (22.5)	52 (26.0)	97 (24.3)
Allergic Reactions, n (%)	38 (19.0)	43 (21.5)	81 (20.3)

Table 4.4: Reasons for Self-Medication Practice

Reason	Healthcare Students (n=200)	Non-Healthcare Students (n=200)	Total (n=400)
Minor illness perception, n (%)	156 (78.0)	166 (83.0)	322 (80.5)
Quick symptom relief, n (%)	146 (73.0)	143 (71.5)	289 (72.3)
Previous similar medication use, n (%)	132 (66.0)	145 (72.5)	277 (69.3)
Sufficient medication knowledge, n (%)	106 (53.0)	126 (63.0)	232 (58.0)
Time constraints, n (%)	98 (49.0)	108 (54.0)	206 (51.5)
Cost effectiveness, n (%)	87 (43.5)	95 (47.5)	182 (45.5)
Privacy concerns, n (%)	76 (38.0)	82 (41.0)	158 (39.5)
Distance to healthcare facility, n (%)	65 (32.5)	78 (39.0)	143 (35.8)
Unsatisfactory previous consultation, n (%)	54 (27.0)	67 (33.5)	121 (30.3)
Emergency situations, n (%)	43 (21.5)	52 (26.0)	95 (23.8)

Table 4.5: Information Sources for Self-Medication

Information Source	Healthcare Students (n=200)	Non-Healthcare Students (n=200)	Total (n=400)
Academic knowledge, n (%)	126 (63.0)	89 (44.5)	215 (53.8)
Healthcare professionals in family, n (%)	125 (62.5)	144 (72.0)	269 (67.3)
Previous prescriptions, n (%)	98 (49.0)	148 (74.0)	246 (61.5)
Pharmacist advice, n (%)	89 (44.5)	76 (38.0)	165 (41.3)
Friends/peers, n (%)	76 (38.0)	95 (47.5)	171 (42.8)
Internet/online sources, n (%)	65 (32.5)	82 (41.0)	147 (36.8)
Family members (non-healthcare), n (%)	58 (29.0)	78 (39.0)	136 (34.0)
Television/media, n (%)	45 (22.5)	67 (33.5)	112 (28.0)
Package inserts, n (%)	43 (21.5)	34 (17.0)	77 (19.3)
Books/journals, n (%)	38 (19.0)	23 (11.5)	61 (15.3)

Table 4.6: Safety Practices in Self-Medication

Safety Practice	Healthcare Students (n=200)	Non-Healthcare Students (n=200)	Total (n=400)
Check expiry date when purchasing, n (%)	96 (48.0)	88 (44.0)	184 (46.0)
Follow recommended dosage, n (%)	125 (62.5)	134 (67.0)	259 (64.8)
Read package instructions, n (%)	87 (43.5)	76 (38.0)	163 (40.8)
Check for drug interactions, n (%)	78 (39.0)	45 (22.5)	123 (30.8)
Store medications properly, n (%)	89 (44.5)	82 (41.0)	171 (42.8)
Keep medication records, n (%)	65 (32.5)	54 (27.0)	119 (29.8)
Inform healthcare provider about self-medication, n (%)	56 (28.0)	43 (21.5)	99 (24.8)

Section 5: Comparison of the Self-Reported Practices of Self-Medication Between the Healthcare and Non-Healthcare Undergraduate Students

Table 5.1: Statistical Comparison of Self-Medication Practices

Practice Parameter	Healthcare Students (n=200)	Non-Healthcare Students (n=200)	Test Statistic	p-value	Effect Size
Practice Prevalence, n (%)					
Ever practiced self-medication	179 (89.5)	187 (93.5)	$\chi^2 = 1.98$	0.160	Cramér's V = 0.07
Practice Frequency, n (%)					
Daily to Weekly	53 (29.6)	64 (34.2)	$\chi^2 = 3.42$	0.331	Cramér's V = 0.10
Monthly to Occasional	126 (70.4)	123 (65.8)			

Table 5.2: Comparison of Medication Types Used

Medication Type	Healthcare Students n (%)	Non-Healthcare Students n (%)	χ^2	p-value	Difference (%)
Cough Syrup	144 (72.0)	158 (79.0)	2.67	0.102	+7.0
Antipyretics	133 (66.5)	115 (57.5)	3.42	0.064	-9.0
Pain Killers	129 (64.5)	147 (73.5)	3.78	0.052	+9.0
Antibiotics	121 (60.5)	119 (59.5)	0.04	0.841	-1.0
Antacids	98 (49.0)	108 (54.0)	1.00	0.317	+5.0
Antihistamines	87 (43.5)	95 (47.5)	0.64	0.424	+4.0

*Statistically significant at $p < 0.05$

Table 5.3: Comparison of Common Indications

Indication	Healthcare Students n (%)	Non-Healthcare Students n (%)	χ^2	p-value	Difference (%)
Fever	162 (81.0)	165 (82.5)	0.15	0.699	+1.5
Cold	149 (74.5)	169 (84.5)	6.14	0.013*	+10.0
Cough	147 (73.5)	156 (78.0)	1.10	0.294	+4.5
Headache	138 (69.0)	147 (73.5)	0.98	0.322	+4.5
Body Ache	125 (62.5)	134 (67.0)	0.89	0.345	+4.5

*Statistically significant at $p < 0.05$

Table 5.4: Comparison of Information Sources

Information Source	Healthcare Students n (%)	Non-Healthcare Students n (%)	χ^2	p-value	Difference (%)
Academic knowledge	126 (63.0)	89 (44.5)	13.71	<0.001*	-18.5
Previous prescriptions	98 (49.0)	148 (74.0)	25.97	<0.001*	+25.0
Healthcare professionals in family	125 (62.5)	144 (72.0)	3.95	0.047*	+9.5
Television/media	45 (22.5)	67 (33.5)	6.07	0.014*	+11.0
Books/journals	38 (19.0)	23 (11.5)	4.20	0.040*	-7.5

*Statistically significant at $p < 0.05$

Table 5.5: Comparison of Safety Practices

Safety Practice	Healthcare Students n (%)	Non-Healthcare Students n (%)	χ^2	p-value	Difference (%)
Check for drug interactions	78 (39.0)	45 (22.5)	12.58	<0.001*	-16.5
Read package instructions	87 (43.5)	76 (38.0)	1.24	0.265	-5.5
Check expiry date	96 (48.0)	88 (44.0)	0.64	0.424	-4.0
Keep medication records	65 (32.5)	54 (27.0)	1.43	0.232	-5.5
Inform healthcare provider	56 (28.0)	43 (21.5)	2.22	0.136	-6.5
Check for drug interactions	78 (43.6)	45 (24.1)	15.73	<0.001*	-19.5
Read package instructions	87 (48.6)	76 (40.6)	2.33	0.127	-8.0
Check expiry date	96 (53.6)	88 (47.1)	1.57	0.210	-6.5
Keep medication records	65 (36.3)	54 (28.9)	2.33	0.127	-7.4
Inform healthcare provider	56 (31.3)	43 (23.0)	3.22	0.073	-8.3

*Statistically significant at $p < 0.05$

Table 5.6: Comparison of Actions When Self-Medication Fails

Action	Healthcare Students n (%)	Non-Healthcare Students n (%)	χ^2	p-value	Difference (%)
Consult physician	160 (89.4)	147 (78.6)	8.76	0.003*	-10.8
Try different medication	45 (25.1)	67 (35.8)	4.89	0.027*	+10.7
Increase dosage	23 (12.8)	43 (23.0)	6.48	0.011*	+10.2
Seek pharmacist advice	34 (19.0)	52 (27.8)	3.87	0.049*	+8.8
Wait for natural recovery	78 (43.6)	82 (43.9)	0.00	0.952	+0.3

*Statistically significant at $p < 0.05$