

## Exploration of Self-medication Practice among Medical Students of Kathmandu Valley

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### ABSTRACT

**Introduction:** Self-medication has been widely used, most commonly by medical students, for self-diagnosed minor health-related symptoms. Self-medication can be beneficial if used responsibly, however, it can potentially cause harm as well. Thus, the study aimed to identify self-medication practices among medical students.

**Methods:** Descriptive cross-sectional research was conducted among students studying Bachelor levels in Nursing, Public Health, and Pharmacy at four different colleges in the Kathmandu Valley. Students were selected through a convenient sampling technique. Data were collected using a self-developed Google form. Though the calculated sample size was 447, a total of 285 students filled up the form, representing a 63.7% response rate. Data was analyzed through descriptive and inferential statistics.

**Results:** The study revealed that nearly all (93.0%) students have used self-medication. Self-medication was high among females (83.0%), students of Bachelor of Science in Nursing (26.0%), and Bachelors in Pharmacy (26.0%). The maximum students used self-medication due to the mildness of illness (63.8%), mostly for the common cold (67.4%). Antipyretics were used by many (71.2%), and the oral route was mostly preferred (97.0%). The pharmacy was the source for self-medication for almost all (98.5%). One-tenth (12.3%) of students experienced side-effects, after which, 74.3% stopped medications and consulted doctors. There was significant association between self-medication among students and the presence of self-medication in family ( $p$ -value=0.007).

**Conclusion:** The study concluded that nearly all students used self-medication due to mildness of illness, mostly for common cold and antipyretics was commonly used. There was significant association between self-medication among students and the presence of self-medication in the family.

**Keywords:** Medical students, self-medication

### INTRODUCTION

Self-medication is the irrational use of medications for the treatment of common health problems by oneself without professional supervision.<sup>1,2</sup> Individuals use self-medication

for self-diagnosed minor symptoms of health ailments for which the medicine can potentially benefit as well as cause harm.<sup>3</sup> Self-medication has been practiced globally in rural and urban areas,<sup>1-3</sup> creating more issues among medical

students.<sup>4</sup> Self-medication is increasing, which may be due to the easy dispensing of over-the-counter medicines without prescription, easy access to medicine, and low-cost alternatives for people,<sup>3</sup> lack of access to health care, easy availability of medicine in the market, poor drug and regulatory practices.<sup>1</sup>

Self-medication was found to be higher in developing countries than in developed countries. Studies showed self-medication among medical students was high in India (71.7%),<sup>3</sup> Serbia (79.9%)<sup>4</sup>, Saudi Arabia (83.7%)<sup>5</sup>, South Africa (79.2%)<sup>6</sup>, and Nepal (68.4 %)<sup>7</sup>. In contrast, self-medication was much less in developed countries like the United States (13%), Australia (11%), Germany (11%), Spain (9%), the United Kingdom (9%), Switzerland (8%), and South America (15%).<sup>8</sup> In addition, self-medication was nearly half (45.4%) in China. Female medical students were more commonly practicing self-medication in China (50.8%),<sup>9</sup> India (52.8%)<sup>3</sup> which is more in South India (81.2%)<sup>8</sup>, Saudi Arabia (85%)<sup>5</sup>, and South Africa (85.9%)<sup>6</sup> respectively.

The major sources of information about the medicines for self-medications were found to be academic knowledge (51.7%), family (29.3%)<sup>6</sup>, advertisement (35.7%), advice by salesman (23.8%)<sup>10</sup> and reading materials (52.3%), previous prescriptions (17.4%), pharmacist (17.4%), seniors/classmates (12.6%), and media (5.4%).<sup>3</sup>

The main reasons behind self-medication among medical students were found to be previous experience of treating the same illness (51.7%), perceived sufficient knowledge about drugs (35.8%), perceived mildness of illness (25.4%),<sup>6,11</sup> saving time (14.7%) and money (7.8%),<sup>6</sup> or lack of time for treatment (24%) and the cheaper source of treatment (14.7%),<sup>10</sup> illness being too trivial for consultation<sup>2</sup>, minor ailment followed by quick relief (24.9%), urgency (20.3%), previous experience (12.3%; 51.7%)<sup>3,5</sup> respectively. Further, 17.9% of males and 11% of females practiced self-medication because of the experience of family members and colleagues.<sup>5</sup>

Self-medication was commonly used for fever and headache (84.5%; 62.9%)<sup>3,6</sup>, diarrhea (16.6%;

15.7%) and skin problems (14.3%, 19%)<sup>3,5</sup>, pain management (69%; 22.4%), common cold (45%; 25%)<sup>5,6</sup>, acidity (53.7%), nausea vomiting (12.9%), ear/eye problems (19.7%),<sup>3</sup> heartburn (34%), constipation (16%),<sup>5</sup> and sore throat (10.3%)<sup>6</sup> respectively. The commonly used medicines for self-medication were analgesics (64.6%) followed by antipyretics (40.7%)<sup>6</sup>, and antibiotics (11%)<sup>12</sup>. Similarly, most of the medical students in India also used antacids (55.1%), and topical ointment (20.6%)<sup>3</sup>; in south India mostly used antipyretic (71%), analgesic (65%), antihistamines (37%), and antibiotics (34%).<sup>13</sup> The most preferred routes for self-medicine were the oral (93.7%), topical (18%), and inhalational (1.7%) routes. None of the students used injections.<sup>3</sup>

Self-medication was found effective by half of the students of South Africa (55.2%)<sup>6</sup>, Saudi Arabia (44.7%), and said self-medication is a serious issue (52.6%)<sup>5</sup>. Only 35.9% recommend self-medication practice to others.<sup>6</sup>

Though self-medication has some benefits, it also increases risks such as abuse of medication, prolonged consumption, incorrect diagnosis, drug interaction, polypharmacy, and antibiotics resistance resulting in increasing morbidity<sup>14</sup>. About 26.3% of students have experienced adverse effects of medicine after which 53.3% of students stopped medications and consulted doctors, some students changed medications and started other drugs (26.1%) and few stopped medications (5.4%).<sup>3</sup>

Medical students are future healthcare professionals. Self-medication among them can seriously threaten medical professionalism, risking public trust in the medical profession.<sup>4</sup> Further, self-medication is considered a component of self-care; if used responsively, self-medication can prevent and treat various minor ailments, save lives in acute conditions, serve as a cheaper alternative to treat minor ailments, and save time. However, responsible self-medication must be accompanied by appropriate health information.<sup>4</sup>

## METHODS

A cross-sectional descriptive research design was adopted for the study. The study population was all the students studying in Bachelor Science (B.Sc.) in Nursing, Post-Basic Bachelor in Nursing Science (PBNS), Bachelor in Public Health (BPH), and Bachelor in Pharmacy (B.Pharm) in Purbanchal University affiliated colleges of Kathmandu Valley, Nepal. Four colleges, Alka Hospital Pvt. Ltd. (College), Dhobighat, Lalitpur, Asian College for Advanced Studies, Satdobato, Lalitpur, Everest College of Nursing, Sinamangal, Kathmandu, and Karnali College of Health Sciences were selected purposively. The principals of respective colleges were contacted, the purpose of the study was explained, and permission was requested through forwarding formal letters.

The sample size of the study was obtained using the formula  $n = p \frac{(100-p)z^2}{E^2}$ <sup>15</sup>

where,

percentage of occurrence (p) = 59%<sup>16</sup>

Percentage of maximum error required (E) = 5%  
value corresponding to the level of confidence (z) = 1.96 at 95% class interval.

The calculated sample size was 372. The non-response rate of 20% was added, and the final sample size was 447. Samples were selected using non-probability convenience sampling method. Data were collected using a self-developed Google form with structured - questions. The validity of the instrument was established by developing the instrument based on a literature review, suggestions from the pharmacology teacher, and peer discussion. The instrument was pre-tested among the 10% of the total sample that was excluded from the actual study. Ethical approval for the study was obtained from Nepal Health Research Council (Ref. no. 4060). Data were collected from 13<sup>th</sup> June to 14<sup>th</sup> August 2022. The links to the Google form were sent to students of selected colleges via emails and contact numbers through their respective authorities. The objectives of the study were mentioned in the Google form and only after clicking on the attached informed consent

form attached, the students were given access to answer the questions. Students studying in B.Sc. Nursing, PBNS, BPH, and B. Pharm, but refused to participate and do not give consent were excluded from the study. Students were allowed to discontinue their participation at any time during answering. The Google form was designed so that each student could respond only once. The completed forms were automatically stored in the Google account, with access to the principal investigator only. The form did not collect any personal identifying information, such as emails and contact numbers. After the collection deadline, the responses were no longer recorded. The collected information was downloaded. Though, the calculated sample size was 447, a total of 285 students filled up the form representing a 63.75% response rate. Data were analyzed using descriptive such as frequency, percentage, mean, standard deviation and inferential statistics such as chi square test.

## RESULTS

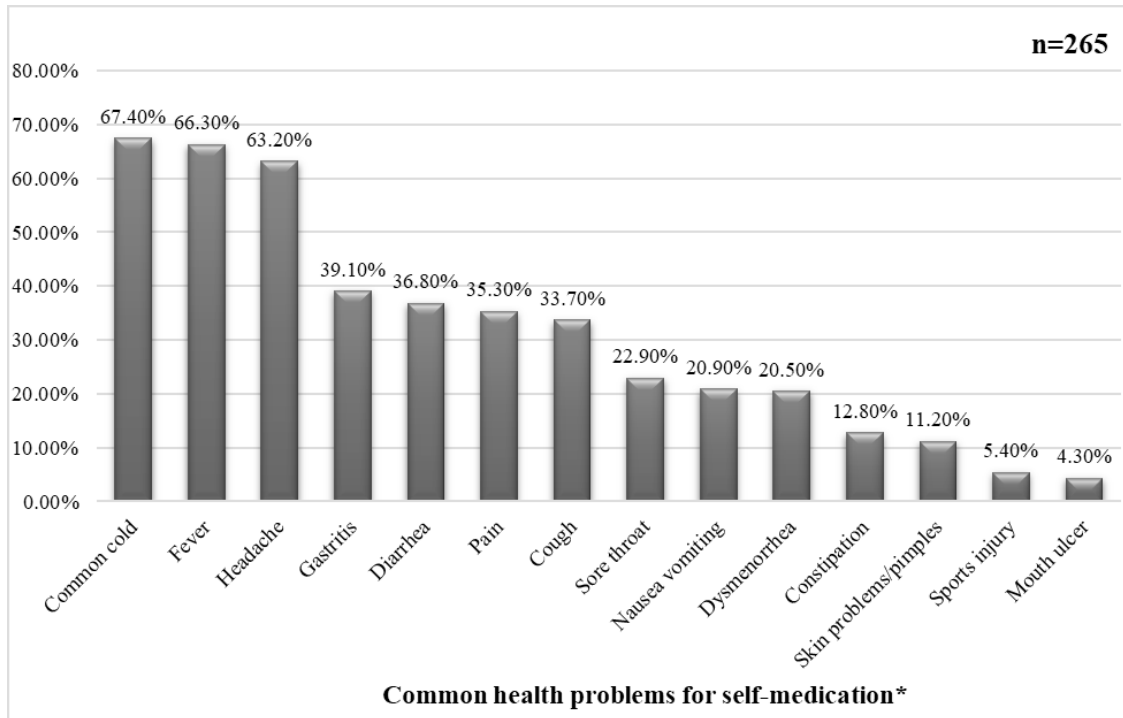
The findings showed that the maximum (94.4%) students were 19-28 years old (mean age: 23.45±3.085years). Most students were female (82.5%), Brahmin/Chhettri (50.8%), and Hindu (86%). The maximum number of the students were studying B.Sc. Nursing (26.6%) followed by BPH (25.3%), B. Pharm. (25.3%), and PBNS (22.8%) respectively. Most students were posted in a clinical area (65.6%), had easy access to pharmacy (88.4%) and easy availability of drugs (87.4%). Likewise, 46.7% of the students' family members practiced self-medication .

Table 1 shows that 93.0% of students had a self-medication practice: with the majority being females (83.0%). Likewise, self-medication was common among B.Sc. Nursing (26.0%) and B. Pharm. (26.0%) students. Almost all students preferred the oral route for self-medication (97.0%) and obtained medicines from pharmacy (98.5%). More than half (59.8%) of students had received information on medication dosage from previous prescriptions.

**Table 1: Information on Self-medication (n=285)**

Variables	Number	Percentage
Presence of self-medication (n=285)	265	93.0
<b>Self-medication according to sex (n=265)</b>		
Male	45	17.0
Female	220	83.0
<b>Self-medication according to faculty (n=265)</b>		
PBNS	64	24.2
B.Sc. Nursing	69	26.0
BPH	63	23.8
B. Pharm.	69	26.0
<b>Preferred route of drug administration</b>		
Oral route	256	97.0%
Topical route	66	25.0%
Inhalation route	11	4.2%
Intravenous route	4	1.5%
<b>Sources of medication</b>		
Pharmacy	261	98.5
Friends, Family, Relatives	47	17.7
Left-over drugs from previous prescription	33	12.5
<b>Knowledge acquired on dosage of medication</b>		
From previous prescription	152	59.8
By checking the leaflet inserted	93	36.6
Internet	70	27.6
From books, newspapers	65	25.6
Asking teachers	14	5.5
By guessing the dosage	7	2.8

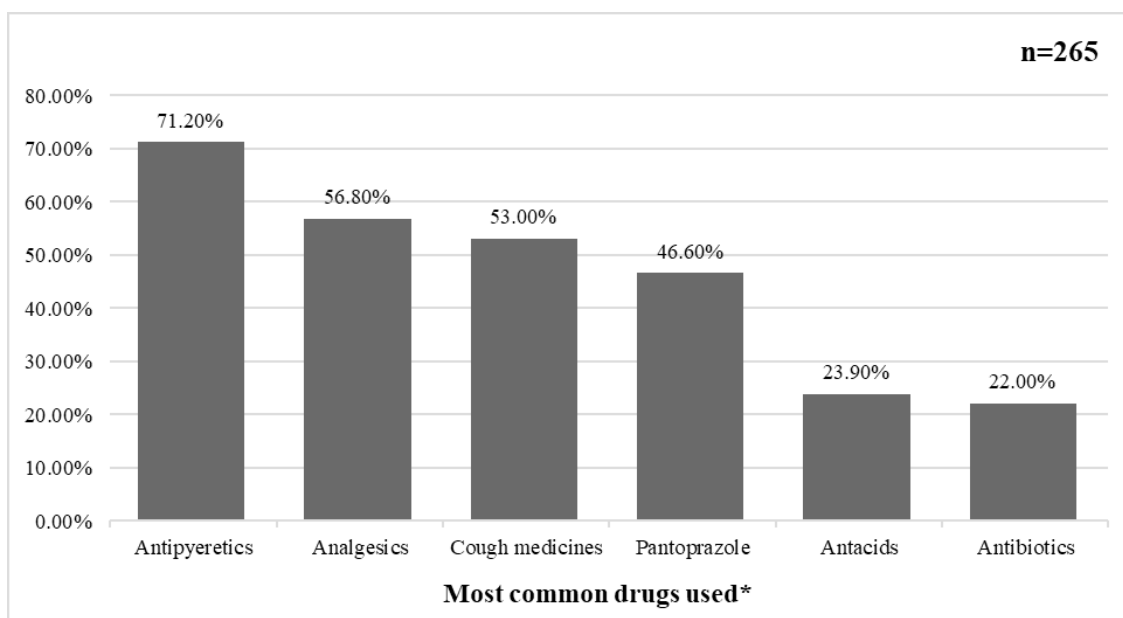
Figure 1 shows that the most common health conditions for self-medication included common cold (67.4%) followed by fever (66.3%), and headache (63.2%).



\*Multiple responses

**Figure 1: Common Health Conditions for Self-medication**

Figure 2 shows that the most common drugs used for self-medication by the majority of students were antipyretics (71.2%) followed by analgesics (56.8%), cough medicines (53%), and antibiotics were the least used (22%).



\*Multiple responses

**Figure 2: Common Drugs Used for Self-medication by the Respondents**

Table 2 depicts that maximum student used self-medication due to mildness of illness (63.8%). Furthermore, 12.3% of students practicing self-medication have experienced side-effects; with nearly half (45.7%) reporting sleepiness, followed by allergies (31.4%) and palpitations (6.3%). After experiencing side-effects, 74.3% of students

stopped medications and consulted doctors. The symptoms of the majority of students were relieved or improved by self-medication (91.2%). Similarly, 33.3% of students visited a physician after self-medication because their symptoms lasted for more than a week (50.5%). Only 25.7% of students recommend self-medication.

**Table 2: Reasons for Self-Medication (n=265)**

Reasons for self-medication*	Number	Percentage
Due to the mildness of the illness	148	63.8
Provide quick relief from common illnesses	102	44.0
Emergency use	70	30.2
Easy access to medicine	68	29.3
Personal experience in treating the same symptom in the past	61	26.3
Past experience in treating the same symptoms in others (e.g. family members, friends, etc.)	29	12.5
It is the cheaper source of treatment (Economical)	28	12.1
Personal convenience/Timesaving	27	11.6
Studying Pharmacology subject, so, have enough confidence	26	11.2
Physician's suggestion for self-management	11	4.7
Avoidance of long waiting queues to consult physician at a clinic/hospital	9	3.9
Expensive fee for physician consultation	8	3.4
Poor communication skills of a physician	4	1.7
Did not want to consult a physician because felt uncomfortable discussing about own symptoms	1	0.4

\*Multiple responses

Table 3 illustrates that 12.3% of students practicing self-medication have experienced side-effects; nearly half (45.7%) have sleepiness, followed by allergies (31.4%), abdominal problems (28.6%), restlessness (20%), and palpitations (8.6%). After experiencing side-effects, 74.3% of students stopped medications and consulted doctors, 17.1% did nothing, and 8.6% started other drugs on self. Similarly, 33.3% of students visited physicians after self-medication because symptoms lasted for more than a week (50.5%), usual treatment was found to be not so effective

(29.0%), thought the problems were serious (16.1%), and symptoms were worsening (9.7%). Self-medication relieved or improved symptoms in 91.2% cases, however, only 25.7% of students recommend self-medication

**Table 3: Students' Information on Effects of Self-Medication**

Characteristics	Frequency	Percentage (%)
Experienced side-effects (n=265)	35	12.3
<b>Side-effects experienced (n=35)</b>		
Sleepiness	16	45.7
Allergies	11	31.4
Abdominal problems	10	28.6
Restlessness	7	20.0
Palpitation	3	8.6
<b>Manage side-effects (n=35)</b>		
Stopped medications and consulted doctors	26	74.3
Did nothing	6	17.1
Started other drugs on self	3	8.6
Self-medication relieved or improved symptoms (n=265)	260	91.2
Visited physician after taking self-medication (n=265)	95	33.3
<b>Reasons for visiting the physician (n=95)</b>		
Symptoms lasted for more than a week	47	50.5
Usual treatment was found to be not so effective	27	29.0
Thought problems were serious	15	16.1
Symptoms were worsening	9	9.7
Recommends/advises for self-medication (n=265)	68	25.7

\*Multiple responses

Table 4 shows a significant association between self-medication among students and the presence of self-medication in families ( $p$ -value=0.007).

**Table 4: Association between Self-medication and Selected Variables**

Characteristics	Self-medication				$\chi^2$ Value	p-value
	Present		Absent			
	N	%	N	%		
<b>Age</b>						
19-28 years	250	87.7	19	6.7	0.000	1.000**
29 years and above	15	5.3	1	0.3		
<b>Sex</b>						
Male	45	15.8	5	1.7	0.365	0.546**
Female	220	77.2	15	5.3		
<b>Educational Faculty</b>						
Nursing (B.Sc. Nursing, PBNS)	133	46.7	8	2.8	0.772	0.380
Others (BPH, B.Pharm.)	132	46.3	12	4.2		
<b>Ever posted in clinical setting</b>						
Yes	174	61.0	13	4.6	0.004	0.952
No	91	31.9	7	2.5		
<b>Easy accessibility of pharmacy</b>						
Easy access	237	83.2	15	5.3	2.506	0.113**
Not so easy access	28	9.8	5	1.7		
<b>Easy availability of drugs</b>						
Yes	234	82.1	15	5.3	1.898	0.168**
No	31	10.9	5	1.7		
<b>Presence of self-medication in family</b>						
Yes	130	45.6	3	1.0	7.352	0.007**,*
No	135	47.4	17	6.0		

\*Test statistics: Chi-square test significant at p-value <0.05

\*\*value of continuity correction

## DISCUSSION

The present study showed that nearly all (93.0%) students practiced self-medication. However, self-medication rates were lower compared to findings among medical students in India<sup>3</sup>, Serbia<sup>4</sup>, Saudi Arabia,<sup>5</sup> South Africa<sup>6</sup>, and Nepal.<sup>7,17,18</sup> The number is even lower in developed countries.<sup>8</sup>

The present study showed that self-medication is higher among females (83.0%). The female students were more prevalent in the present study; hence, the findings might indicate a higher prevalence among females. Several studies supporting the present findings showed that more female medical students used self-medication in

Saudi Arabia<sup>5</sup>, South Africa<sup>6</sup>, and China.<sup>9</sup> However, a study showed contrasting finding, revealing more male students used self-medication in Karachi.<sup>18</sup>

The present study showed that the most common health conditions for self-medication included common cold (67.4%) followed by fever (66.3%), and headache (63.2%). This finding is incongruent with other studies as the common symptoms for self-medication included headache<sup>18,21</sup>, followed by fever<sup>19</sup> while common cold was less than the present finding. A similar finding was seen in a study where the health conditions for self-medication included flu followed by headache.<sup>22</sup>

The findings of the present study showed that the most common drugs used for self-medication by most students included antipyretics (71.2%), analgesics (56.8%), and cough medicines (53%) respectively. These are over-the-counter drugs, so, students most probably used them for symptomatic relief. Studies showed contrasting findings in which the most used drugs for self-medication were analgesic.<sup>6,20,21</sup> Likewise, a study done in South India<sup>13</sup> showed antipyretic (71%) was the commonly used drug, similar to the present finding.

In the present study, 97% of the students preferred the oral route for self-medication followed by topical (25%), inhalation (4.2%), and intravenous (1.5%) routes, respectively. A similar finding was noted in which 93.7 % of students preferred the oral route.<sup>3</sup>

The present study showed that most of the students used self-medication due to mildness of illness (63.8%) followed by quick relief in common illness (44%), emergency use (30.2%), easy access to medicine (29.3%), personal experience in treating same symptom in past (26.3%), a cheaper source of treatment (12.1%), time saving (11.6%) and having enough confidence from studying Pharmacology subjects (11.2%) respectively. A contrast finding was shown by the study conducted in Bahrain where the main reasons behind practicing self-medication among medical students were found to be previous experience in treating similar symptoms<sup>11,20,21</sup> followed by sufficient knowledge about drugs, lack of time, mildness of illness, and easy availability of drugs.<sup>11</sup> Similarly, contrasting findings were seen in the studies which showed the reasons for self-medication include lack of time for treatment followed by the cheaper source of treatment in Pakistan;<sup>10</sup> illness being too trivial for consultation in India<sup>2</sup> and perceived sufficient knowledge about the drug, followed by mildness of illness, and previous experience in South Africa.<sup>6</sup> A similar finding was seen in a study done in India which showed minor ailments followed by quick relief, urgency, previous expertise were the main reasons for self-medication.<sup>3</sup> The present study findings revealed that 12.3% of students have

experienced side-effects from self-medication and three-fourths (74.3%) of students stopped medications and consulted doctors while 17.1% did nothing and 8.6% changed medications and started other drugs on their own. These findings are incongruent with the study that showed more (26.3%) students have experienced adverse effects of medicine, after which 53.3% of students stopped medications and consulted doctors, while 5.4% stopped medications.<sup>3</sup>

The present study showed that most (91.2%) of the students' symptoms were relieved or improved by self-medication. Studies showed incongruent findings where self-medication was found to be effective by fewer students in Saudi Arabia<sup>5</sup> and South Africa.<sup>6</sup> In the present study, among the self-medication users, one-fifth (25.7%) of students recommended self-medication which is high compared to a study in South Africa.<sup>6</sup>

The present study revealed a significant association between self-medication among students and the presence of self-medication in their families. An incongruent finding was revealed where sex and department of study were found to be independent predictors<sup>6</sup>.

## CONCLUSION

Nearly all the students practiced self-medication. There was a significant association between self-medication among students and the presence of self-medication in their families. The study recommends that awareness can be provided to students for the rational use of medications.

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**Conflict of Interest:** None

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