



Self-Medication Practices Among Medical and Non-Medical Students of Siddharthanagar, Nepal during Covid-19 Pandemic

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ABSTRACT

Introduction: Self-medication is an essential component of the health care system that involves using drugs to treat self-diagnosed symptoms without consulting a medical practitioner. In the background of the COVID-19 pandemic, self-medication has increased among the general public, including students. Hence, the present study was undertaken to find the differences between medical and non-medical students regarding the prevalence, pattern, and attitude of self-medication practice.

Methods: A cross-sectional web-based study was executed among medical students and non-medical students of Siddharthanagar, Nepal, between August 2020 and January 2021. A pretested Google linked questionnaire was circulated through the Student Forum on social media to collect the data. Chi-square test was used to compare the two groups.

Results: Of the 519 respondents, 360 (69.4%) practiced self-medication in the last six months. There was a statistically significant difference between medical students and non-medical students ($p=0.008$). Headache was the most common symptom leading to Self-medication, and the most frequently used drug was Paracetamol. Quick-relief was the most common reason, and the primary source of drugs was pharmacies. 80 (15.4%) students reported using herbal preparation of Giloy (*Tinospora cordifolia*) followed by vitamin C 18 (3.5%) to increase their immunity for the prevention of COVID-19 infection.

Conclusion: Self-medication practice is common among medical and non-medical undergraduate students of Siddharthanagar, with a significant difference between students in the prevalence, pattern, and attitude. Since self-medication is a sensitive issue, health awareness programs must be initiated at national levels to educate students about its merits and demerits.

Keywords: Medical and Non-medical students, Self-medication, Web based questionnaire

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INTRODUCTION

World Health Organization defines 'Self-medication' as the use of medicine by a patient's initiative to treat self-diagnosed symptoms instead of consulting a medical practitioner and recognizes it as an essential component of the health care system.¹ It also involves using leftover medicines, consuming drugs from the previous prescription, and exchanging drugs with and from family.²

On the one hand, self-medication increases the unnecessary use of medications, drug dependency, drug resistance development, delay in disease diagnosis & appropriate treatment. On the other hand, it helps to deal with minor health problems that do not need medical consultation, saves time and money, and contributes significantly to reduce healthcare costs for developing countries like Nepal.^{3,4}

The practice of self-medication has an upward trend among the general public and health professionals globally in the background of the COVID-19 pandemic.⁵ Self-medication is widely practiced in Nepal, including students, as most medications are dispensed from the pharmacy without medical prescriptions as 'Over the counter.' In this digital era, students mostly depend on the internet rather than seeking medical professionals to learn about their health issues and treatment.^{6,7}

Self-medication has a significant effect on undergraduate medical students as they are medical professionals in the coming days.⁸ The prevalence of self-medication among medical students in Nepal varied from 61.5% to 83.3%, as shown by previous studies.⁹⁻¹¹ Medical students' perception and attitude towards self-medication practice typically differ from non-medical students as they know about diseases and medicines from their academics.¹² Therefore, the present study evaluated the differences between medical and non-medical students of Siddharthanagar regarding the prevalence and pattern of self-medication practice.

METHODS

The present study was a cross-sectional web-based study executed among medical students of Universal College of Medical Sciences-Teaching Hospital (UCMS-TH), Ranigaun, and non-medical students of the Institute of Agriculture and Animal Science (IAAS), Paklihawa of Siddharthanagar, Nepal, between August 2020 and January 2021, started after

the approval of the Institutional Review Committee-UCMS (UCMS /IRC /057 /20). The minimum required sample size per group was determined by applying Cochran formula for cross-sectional studies, $N = Z_2 \times P (1-P) / \delta_2$ with Z value taken as 1.96 at 95% confidence interval, 5% margin of error (δ) and the prevalence (p) of Self-medication among students was taken as 83%.⁹ The minimum sample size calculated was 217.

The data was collected using Google Forms Link through a web-based questionnaire circulated through the Student Forum on social media sites such as Messenger, Viber, and WhatsApp. A Google-linked questionnaire was already pretested on a sample of 20 students to diminish technical and structural flaws and later did necessary modifications.

The questionnaire was divided into two sections. The first section featured demographic details and the second section contained 14 questions, both open and close-ended, to assess the prevalence, pattern, and attitude of self-medication. The information sought from the questionnaire was mainly related to know the pattern of self-medication practice like health problems, reasons and suggestions for self-medication, sources of medicines, and a class of drugs consumed. Appropriate instructions were provided for filling in the questionnaire. Students were informed that their participation was voluntary, and consent was taken. Participants were not allowed to submit the questionnaire more than once by denying access to the Google link.

Data were expressed as counts and percentages. Statistical comparison of data between the two groups was made by Chi-square test using Statistical Package for the Social Sciences (SPSS) for Windows Version 20.0, and p-value less than 0.05 was considered statistically significant.

RESULTS

Five hundred nineteen students completed the questionnaire, out of which 254 (48.94%) were medical students and 265 (51.06%) were non-medical students, as shown in table 1. Medical students mostly included Bachelor of Medicine and Bachelor of Surgery (22.2%), Bachelor of Dental Surgery (8%), Bachelor in Pharmacy (12.5%), whereas non-medical students included Bachelor in Science Agriculture (17.9%), Bachelor in Science Horticulture (16.7), and Bachelor in Science Veterinary (15.8%).

Table 1. Socio-demographic characteristics of 519 students

Variables		Medical students (%)	Non-medical students (%)	Total (%)
Sex	Male	121 (47.6)	110 (41.5)	231 (44.5)
	Female	133 (52.4)	155 (58.5)	288 (55.5)
	Total	254 (48.94)	265 (51.06)	519
Age	Below 20 years	74 (29.1)	55 (20.8)	129 (24.8)
	21-25 years	172 (67.7)	175 (66)	347 (66.9)
	26-30 years	7 (2.8)	35 (13.2)	42 (8.1)
	Above 30 years	1 (0.4)	0 (0)	1 (0.2)
Academic year	First year	84 (33.1)	26 (9.8)	110 (21.2)
	Second year	88 (34.6)	90 (34)	178 (34.3)
	Third year	49 (19.3)	40 (15.1)	89 (17.1)
	Fourth year	23 (9.1)	59 (22.3)	82 (15.8)
	Fifth year	10 (3.9)	50 (18.9)	60 (11.6)

Table 2. Self Medication practice in last 6 months.

Variables	Medical students (%)	Non-medical students (%)	Total (%)	P-value
Self-medication practicing	190 (74.8)	170 (64.2)	360 (69.4)	0.008
Self-medication non-practicing	64 (25.2)	95 (35.8)	159 (30.6)	
Reasons for practicing Self-medication (Multiple response)				
Quick relief	99 (39)	105 (39.6)	204 (39.3)	0.880
Ease & convenience	94 (37)	83 (31.3)	177 (34.1)	0.172
Prior experience	97 (38.2)	58 (21.9)	155 (29.9)	<0.05
Mildness of illness	86 (33.9)	34 (12.8)	120 (23.1)	<0.05
Emergency	53 (20.9)	50 (18.9)	103 (19.8)	0.568
Sources of medicine for Self-medication (Multiple response)				
Pharmacy	211 (83.1)	200 (75.5)	411 (79.2)	0.033
Left over medicines	37 (14.6)	40 (15.1)	77 (14.8)	0.866
Family/Friends	19 (7.5)	25 (9.4)	44 (8.5)	0.424
Physicians sample	21 (8.3)	15 (5.7)	36 (6.9)	0.243
Suggestions for Self medication (Multiple response)				
Family members	81 (31.9)	140 (52.8)	221 (42.6)	<0.05
Friends	40 (15.7)	75 (28.3)	115 (22.2)	0.001
Own experience & knowledge	114 (44.9)	84 (31.7)	198 (38.2)	0.002
Previous prescription	65 (25.6)	50 (18.9)	115 (22.2)	0.065
Pharmacist	64 (25.2)	55 (20.8)	119 (22.9)	0.229
Internet	44 (17.3)	45 (17)	89 (17.1)	0.918
Books	44 (17.3)	12 (4.5)	56 (10.8)	<0.05

Of the 519 respondents, 360 (69.4%) practiced self-medication in the last six months. There was a statistically significant difference between medical students 190 (74.8%) and non-medical students 170 (64.2%), as shown in table 2. The most common reason for self-medication was Quick-relief (39.3%), followed by ease & convenience (34.1%), prior experience (29.9%), and mildness of illness (23.1%). A significantly higher percentage of medical students consider prior experience and mildness of illness as reasons for practising self-medication. The majority of students purchased their medicines from the pharmacy 79.2%, followed by drugs from previous prescription (14.8%), family/friends (8.5%), and physician's sample (6.9%).

42.6% (221 students) seek advice from family members for Self-medication, whereas 38.2% (198 students) have self-medicated with their own experience & knowledge. The other sources of information for Self-medication were friends 115 (22.2%), previous prescription 115 (22.2%), pharmacist 119 (22.9%), and internet 89 (17.1%). The higher percentage of non-medical students reported family members 140 (52.8%) as the common source of information, whereas own experience & knowledge was the primary source of information among medical students 114 (44.9%).

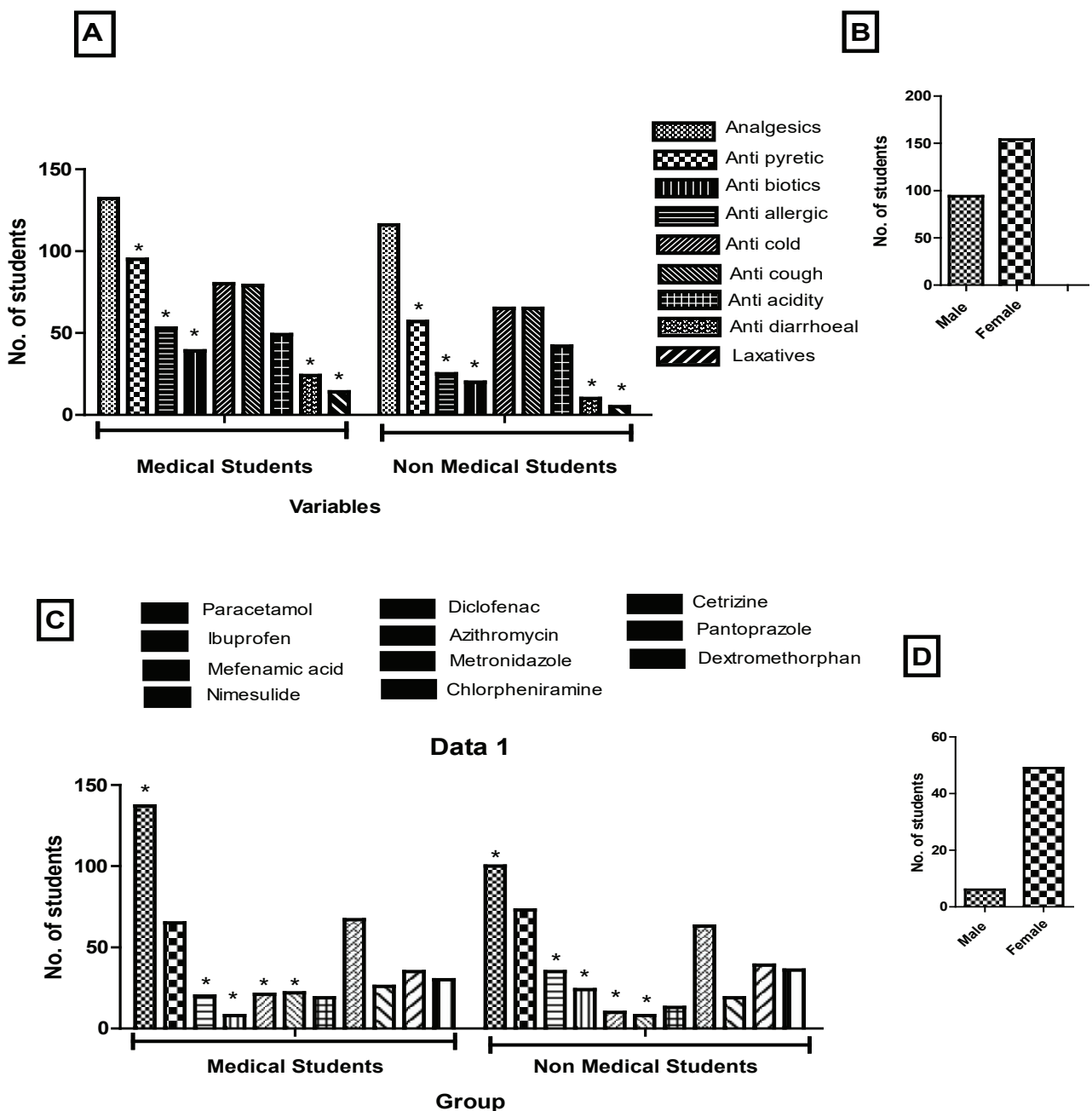


Figure 1. Pie chart of indications for Self-medication among medical and non-medical students

The most frequent indication self-medicated by participants was a headache in both medical 119 (46.9%) and non-medical group 84 (31.7%) with a total of 203 students (39.1%) followed by cough 148 (28.5%), cold 147 (28.3%), fever 114 (22%) and menstrual pain 82 (15.8%) as expressed in Figure 1.

Figure 2. (A) Therapeutic group of self-consumed drugs, (B) Association between gender and analgesics consumption, (C) Therapeutic drug consumed among medical and non-medical students (D) Association between gender and Mefenamic acid consumption. The data was analyzed by using SPSS 20 followed by Chi-square test of <0.05 level of significance.

In Figure 2, Analgesics (n = 248, 47.8%) was determined as the most common therapeutic group of medicines consumed among students, followed by antipyretics 152 (29.3%), anti-cold 145 (27.9%), and anti-cough 144 (27.7%). A statistically significant percentage of medical students used more antipyretics, antibiotics, anti-allergic, anti-diarrhoeal, and laxatives (p<0.05) compared to non-medical students. Paracetamol 237 (45.7%) was the most common drug consumed, followed by Ibuprofen 138 (26.6%), Chlorpheniramine 130 (25%), Pantoprazole 74 (14.3%), respectively.

coronavirus infection during this COVID-19 pandemic, and highly prevalent among non-medical students (p= 0.026). Most of the students, 55 (10.6%), had taken Herbal preparations like Giloy (*Tinospora cordifolia*) followed by Vitamin C 18 (3.5%), Vitamin B 6 (1.2%), Vitamin D 1 (0.2%) with a significant difference among students, p<0.05, as shown in Table 3.

In Table 4, the majority of the students, 241 (46.4%), favored Self-medication as an acceptable practice, with a significant difference between medical and non-medical students. In the present study, 162 (31.2%) students had prescribed medicines to their family and friends too in the last six months, that includes 97 (38.2%) medical students and 65 (24.5%) non-medical (p<0.05). 328 (63.2%) students reported that they would likely follow Self-medication practice in the coming days.

Table 3. Use of drug supplements to boost immunity for prevention of COVID-19 Eighty (15.4%) students had taken drug supplements to boost their immunity to prevent infection:

	Medical students (%)	Non-medical students (%)	Total (%)	P-value
Attitude				
Good practice	38 (15)	80 (30.2)	118 (22.7)	<0.05
Acceptable practice	121 (47.6)	120 (45.3)	241 (46.4)	
Not acceptable	95 (37.4)	65 (24.5)	160 (30.8)	
Prescription of medicines to family & friends in last 6 months				
Yes	97 (38.2)	65 (24.5)	162 (31.2)	0.001
No	157 (61.8)	200 (75.5)	357 (68.8)	
Self-medication practice in near future				
Likely to follow	158 (62.2)	170 (64.2)	328 (63.2)	0.646
Unlikely to follow	96 (37.8)	95 (35.8)	191 (38.8)	

Table 4: Attitude of Students towards Self-Medication Practice

Variables	Medical students (%)	Non-medical students (%)	Total (%)	P- value
Yes	30 (11.8)	50 (18.9)	80 (15.4)	0.026
No	224 (88.2)	215 (81.1)	439 (84.6)	
Drug supplements consumed to boost immunity				
Vitamin C	11 (4.3)	7 (2.6)	18 (3.5)	<0.05
Vitamin B	6 (2.4)	0 (0)	6 (1.2)	
Vitamin D	1 (0.4)	0 (0)	1 (0.2)	
Herbal preparations Giloy (<i>Tinospora cordifolia</i>)	12 (4.7)	43 (16.2)	55 (10.6)	

DISCUSSION

The COVID-19 pandemic has a more significant impact on Self-medication by individuals to self-care during the general lockdown as most hospitals were closed because of fear of contracting COVID-19. The prevalence of self-medication in Nepal is high, especially among medical students.^{9, 11} However, the involvement and perception of medical students towards self-medication would not match to non-medical students.¹³ A cross-sectional study was conducted to evaluate the prevalence and pattern of self-medication among undergraduate students currently studying at UCMS-TH and IAAS in Siddharthnagar, Nepal.

In the current study, the prevalence of self-medication amid the outbreak of COVID-19 was 69.4%, which is almost close to other studies done in Kathmandu, Nepal (76.6%)¹⁴, Egypt (62.9%)¹⁵, Saudi Arabia (64.8%)¹⁶, Ethiopia (64.5%)¹⁷, Uganda (63.5%)¹⁸. This resemblance may be attributed to the similarities between the perception of students towards disease and self-medication.

The tendency of self-medication during the COVID-19 pandemic was thought to be increased scarily due to inadequate access to doctors, unusual psychological distress, and high self-awareness of well-being. Still, the prevalence was lower than studies conducted among students in Kathmandu, Nepal (94.9%)¹², Slovenia (92.3%)¹³, Jordan (96%)¹⁹, India (94%)²⁰. Different factors may be responsible for the difference, such as decreased health issues due to social distance, mask usage and sanitizer and soap (SMS measures), shortage of drugs during COVID-19 lockdown, and health-seeking attitude of students across the study settings.

Following Daniel JSR et al.²⁰ Helal RM et al.¹⁵, and Mona Ehab Aljaouni et al.¹⁶ Our study findings showed a higher Self-medication prevalence among medical students (74.8%) versus non-medical students (64.2%). Though medical students have access to free health care service from the hospital, incorporating their medical skills into self-practice could explain the more significant percentage of medical students practicing self-medication. However, there were no significant differences between the students in the studies conducted in Slovenia¹³, Pakistan²¹, which suggests that medical subjects' presence in academic

curricula does not affect the overall self-medication practice. Besides, knowledge of medicines used for self-medication is common and evenly distributed among students.

"Quick relief," "Ease & convenience," and "Prior experience" were common reasons for practicing self-medication, and "Money saving" was the least as supported by Baral et al.¹² and Khadka et al.¹⁴ This study reveals that one of the key benefits of self-medication is the rapid relief of symptoms.³ A significant difference existed between students regarding the reasons like "Mildness of illness" and "Prior experience" in parallel with the studies by Singh A et al.¹⁰ and Bhattarai AK et al.²², which revealed that the majority of medical students practiced self-medication because of mild nature of their illness. But these mild illnesses may evolve into severe health problems in case of misdiagnosis or incorrect treatment.

Headache was the most common symptom leading to Self-medication followed by cough & cold, as supported by Tesfaye ZT et al.¹⁷, Khadka et al.¹⁴ The high prevalence of headaches in students might be due to continuous 5-6 hours of a regular online class, general lockdown mental stress, and isolation. Furthermore, it also means that students regard headache, cough, and cold as an illness that does not require a medical checkup, and self-medication is justifiable. Loss of sleep (0.8%) was the least frequently recorded health condition comparable to the study by Zafar SN et al.²³

The most frequently used drugs among students were analgesics, consistent with previous studies.^{19, 23} The frequent use of analgesics is pretty logical as they are prescribed for common illness like fever, headache & pain and are available as over-the-counter drugs. In the present study, the self-use of antibiotics was much lower than that of the reviews by Tesfaye ZT et al.¹⁷, O. Alshogran OY et al.¹⁹, and Ali H et al.²⁴ The low prevalence of antibiotic use by students should be viewed as an appreciable practice, as irrational use of antibiotics can lead to bacterial resistance. The current study found a significantly higher percentage of medical students had consumed antibiotics, anti-allergic, anti-diarrheal, and laxatives, similar to the study by Daniel JSR et al.²⁰ This result may be because non-medical students may not be completely aware of those drugs' possible indications.

Regarding the use of analgesics, there was a statistically significant difference between male (37.9%) and female (62.1%) students, which is consistent with the study by Al-Imam A et al.²⁵ The high consumption of analgesics may be due to the high prevalence of health problems like fever, headache, and monthly dysmenorrhea among female students.

According to this study, Paracetamol was the most common drug used for self-medication, 45.7%, followed by Ibuprofen 26.6%, supported by the previous studies.^{8,11} Paracetamol was mostly preferred self-medication drug since it is readily available at a lower price and common perception of the least toxic analgesic. Still, a great concern is that Ibuprofen as an analgesic was consumed to a great extent, which has been reported to increase the risk of developing thromboembolism in COVID-19 patients.²⁶ Also, Mefenamic acid was used mostly by female students for the dysmenorrhoea parallel with the study done by Zwinczewska Het al.²⁷

Most students (15.4%) reported using herbal preparations of Giloy (*Tinospora cordifolia*) followed by vitamin C 18 (3.5%) to increase their immunity for the prevention of COVID-19 infection in parallel with the study by Sadio AJ et al.²⁸ This finding could be clarified by the fact that *Tinospora cordifolia* has unique immuno-modulating properties and benefits in the treatment of infection caused by SARS-CoV-2.²⁹ Besides, WHO also promotes indigenous and traditional medicine practice as new therapies in the quest for potential treatments of COVID-19.

This study found that the primary source of drugs for self-medication was pharmacies, followed by leftover medicines from previous prescriptions, congruent with previous studies conducted in Nepal.^{14,30} Several pharmacy shops near the college have made it easy for students to access drugs and facilitate them to practice self-medication, as stated in previous studies.³¹ Family/relatives (42.6%) were the primary sources of suggestion for self-medication, which mismatch the study by Mehta RK et al.³² where pharmacist (60.31 %) was the primary source. Since most of the students in this study were in their early 20's, they consulted with their family members to self medicate.

Most participants (359) supported self-medication, stating that it was an appropriate and acceptable practice. At the same time, 160 students thought that

it was unethical and drugs should be consumed after proper diagnosis from a registered physician, which contradicts the earlier studies by Bhattarai N et al.³⁰ and Aljaouni ME et al.¹⁶ But there was a significant difference between students regarding the attitude as most medical students are vigilant about safety and believe that their medical learning has contributed to more responsible self-medication.

63.2% of the students wished to continue with self-medication in the near future and consider it a part of self-care. Nearly one-third of them (31.2%) had also given medicine to their family and friends for self-medication in the last six months. A mindset like this is an unfavorable one and shows that even educated youth are unaware of the negative consequences of self-medication practice.

CONCLUSION

Self-medication practice is common among medical and non-medical undergraduate students of Siddharthanagar, Nepal, with a significant difference between students in the prevalence, pattern, and attitude. Headache was the most common symptom leading to Self-medication, and the most frequently used drug was Paracetamol. Since self-medication is a sensitive issue, health awareness programs must be initiated at national level to educate students about its merits and demerits.

LIMITATIONS

There are few drawbacks of this study. The study included only one medical institute and one non-medical institute, which might not represent all Nepal students, and the findings could not be generalized. The method of collecting data was web-based, so we did not find out how many students viewed the invitation and the respondents' percentage to the questionnaire. A recall bias and underreporting were possible as the study was primarily based on self-reporting in the Google form about intake of drugs in the last six months.

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