

Self-medication practices among medical and nursing students in Tripura, India: a mixed-method study

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ABSTRACT

Background: In developing countries like India, self-medication is a common practice because of costly clinical services and easy availability of medicine from pharmacies. There is an increase trend of self-medication among different health professional students apart from general people. This study aims to assess self-medication practice among medical and nursing students in Tripura, India.

Methods: This cross-sectional study was conducted among undergraduate medical and nursing students of Tripura Medical College and Tripura College of Nursing, of Tripura for two months (January- February 2018). A pre-tested, semi-structured schedule was used to collect the required information. The collected data was entered in SPSS version 16.0, represented in proportions and $p < 0.05$ was considered as statistically significant.

Results: Overall 353 (88.3%) students of both courses practiced self-medication; prevalence was more among medical (91.5%) than nursing students (85%). Main source of information among medical students were books (90.2%) while 56.5% nursing students replied friends and/or seniors as primary source. Majority (53%) respondents took self-medication for headache (79.2% medical vs 72.4% nursing students) followed by fever (77.6% medical vs 52.4% nursing). Less than half of the respondents (48.5% medical vs 46.5% nursing students) believed that self-medication was harmful; maximum nursing students (71.5%) believed that self-medication is self-care as compare to medical students (56.5%).

Conclusions: The study found wide practice of self-medication among students, inappropriate use of which may cause serious health hazards. Promoting education regarding self-medication and making healthcare system available can reduce self-medication practices substantially.

Keywords: Books, Friends, Headache, India, Self-medication

INTRODUCTION

Medication plays a vital role in health care delivery, being an important therapeutic tool in the hands of health professionals.¹ Even general people throughout world, act on their own for their health by practicing self-medication.² WHO defines Self-medication as selection and use of medicines by individuals to treat recognized illness or symptoms.³ This includes acquiring medicines without prescription, resubmitting old prescriptions, sharing medicines with relatives/friends or using leftover medicines stored at home.⁴⁻⁷ It also includes medication for family members, especially for children or elderly.⁸

Self-medication with OTC medicines is known as responsible self-medication to distinguish from practice of purchasing and using a prescription medicine without a doctor's prescription.⁹ Practice of responsible self-medication is generally considered as safe and effective worldwide; but prescribed drugs dispensed without valid prescriptions in India is a pitfall in this regard may poses many medical and social challenges.^{10,11} WHO is promoting practice of self-medication for effective and quick relief of symptoms to reduce burden on health services.¹² But irrational drug use can cause wastage of resources, increased resistance of pathogens, even serious

health hazards.¹³ Self-medication defers from self-care in that it involves drugs that may do good or cause harm.¹⁴

In developing countries like India, self-medication is common because of costly clinical services and easy alternatives like pharmacies being first point of contact for patient.¹⁵ Pharmacists and pharmacy attendants also play role in fostering self-medication among the public.¹² Even, medical and paramedical students are commonly involved, without complete knowledge about therapy.¹⁶ Literature reported increase trends of self-medication among different health professional students (prevalence ranging from 57.7% to 76%) who gain knowledge of drugs during their course as compared to others.^{8,17,18}

Though studies were conducted both at community as well as institutional level but there is paucity of literature in this part of the country. With this background this study was conducted among undergraduate medical and nursing students of West Tripura district, Tripura to assess their self-medication practices, compare and also to focus on the awareness and attitude of students who practice self-medication.

METHODS

This institutional based cross-sectional study was carried out among medical and nursing students of one medical (Tripura Medical College and Dr. BRAM Teaching Hospital, Hapania, Agartala) and one nursing (Tripura College of Nursing, Hapania, Agartala) institution of West Tripura District, Tripura for a period of two month, January- February 2018. Sample size was calculated using formula= $Z\alpha^2pq / L^2$ where, p=prevalence; q=100-p; L=allowable error (At 95% CI, $Z\alpha=1.96$). Taking 67% as prevalence of self-medication, with 10% relative allowable error and an additional 10% increase to compensate for any non-response sample size calculated was 200.¹⁹ Finally, 200 medical and 200 nursing students were interviewed randomly from each institution using the list of all students from four professional years as sampling frame. Students available on the day of data collection and willing to participate were taken in this study.

A pre-designed, pre-tested, semi-structured questionnaire having two parts:

- Part I: socio-demographic characteristics and
- Part II: questions related to self-medication were used to collect information.

The questionnaire was prepared considering previous literature, applied to 40 students different from study participants, and all ambivalent and unclear questions were rephrased or removed.^{4,6,7,19} Students were selected randomly after entering and interviewed after obtaining informed consent. Collected data was entered into SPSS version 16.0 and represented in frequency, percentages in tables and diagram. Significance were assessed using

Pearson's Chi-square test (p <0.05 was considered as significant).

Qualitative method (focus group discussion)

Two semi-structured focus group discussions (FGDs) as per PRIA (Participatory Research in Asia) guidelines were facilitated by faculties to explore issues pertinent to self-medication among medical and nursing students. Each FGD was conducted for about 45 minutes till point of exhaustion. Those students who talked freely and communicated effectively during quantitative data collection were chosen for FGDs.

The FGDs started with briefing them about the purpose of interview, discussions were audio recorded and transcripts were prepared as verbatim on the same day. Descriptive coding was done in transcripts thorough manual content analysis. Later, similar codes were merged together to form the categories or themes which were reviewed by another researcher who was not involved in earlier stage to avoid subjective bias and strengthen interpretive credibility. A statement in 'Italics and inverted comma' depicts direct quotes/words/statements from participants.

Ethical consideration

This research study was approved by institutional ethics committee (Tripura Medical College and Dr. BRAM Teaching Hospital, Agartala).

RESULTS

This institution based cross-sectional study was conducted among 400 students (200 medical and 200 nursing), where majority (64.5%) undergraduate medical students were <22years old with a mean age of 20.9±1.3years (18-24years) whereas 61.5% undergraduate B.Sc nursing students were ≥22years with a mean age of 22.0±2.0years (18-26 years). Male students were more in number (59%) among medical students; female predominance (79%) was among nursing students. Most of them were Hindu (95% medical vs 92% nursing students); 58% medical vs 44% nursing students belonged to general caste, 10% ST from both streams. Maximum were from nuclear families (87.5% medical vs 76.5% nursing students); 84% medical as compared to 48% nursing students belonged to upper class as per B.G. Prasad scale updated for 2017.²⁰

Figure 1 showed that prevalence of self-medication was more among medical students than nursing students; 183 (91.5%) and 170 (85%) respectively practice self-medication. Overall among 400 students, 353 (88.3%) students of both courses practiced self-medication.

Table 1 showed that, main sources of information for self-medication among medical students were books (90.2%), followed by internet (47.5%), advertisements in TV, magazines (44.8%), guardian (25.1%), friends and/or seniors (19.1%), previous prescriptions (9.8%). Out of 170

nursing students practising self-medication, 96 (56.5%) replied friends and/or seniors as primary sources followed by advertisements in TV, magazines (48.2%), textbooks (47.1%), internet (43.5%), guardians (9.4%), previous prescription (4.1%). More nursing students (26.5%) practiced self-medication with advice from pharmacist and/ or chemists as compared to medical students (5.5%).

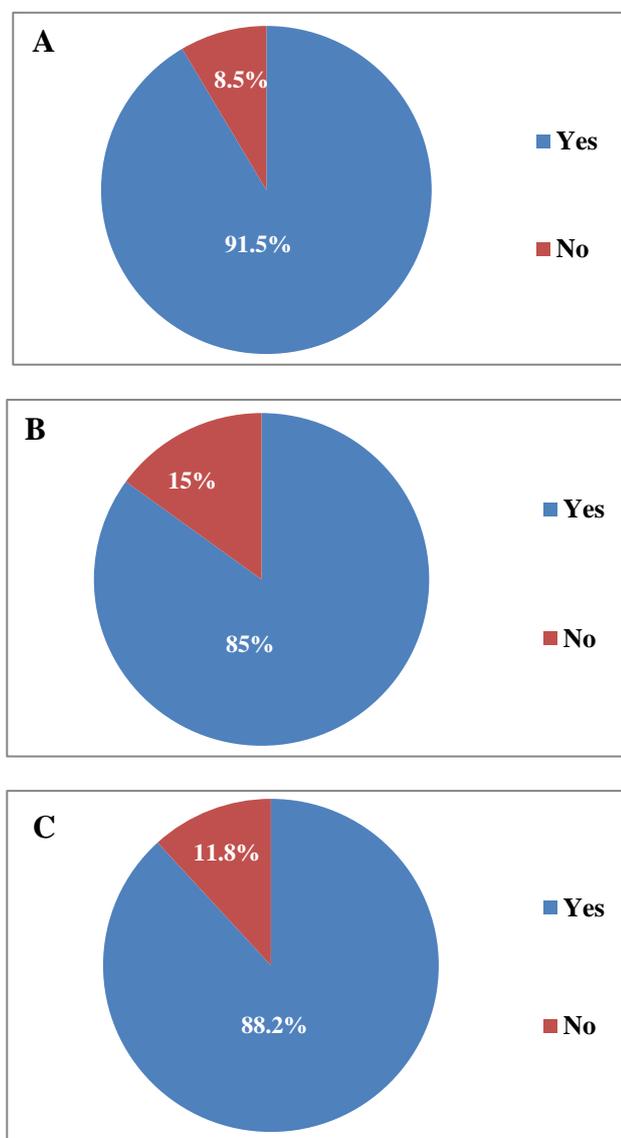


Figure 1: Distribution of participants according to prevalence of self-medication. (A): self-medication among medical students, (B): self-medication among nursing students, (C): self-medication among all students.

The reasons for taking self-medication were self-confidence and awareness about medicine (62.3% medical vs 15.3% nursing students), lack of time to visit a doctor (7.6% medical vs 41.2% nursing), reluctance to spend money on doctors' fee and lab investigations (5.5% medical vs 12.9% nursing), quick relief (22.4% medical vs 10.6% nursing). However, students (49.7% medical vs 30% nursing) having previous experience with a disease

(themselves or family/friends) took self-medication which got cured previously with same medication.

More than half (53%) of the respondents took self-medication for headache (79.2% medical vs 72.4% nursing students) followed by fever (77.6% medical vs 52.4% nursing), common cold (72.7% medical vs 49.4% nursing). Few female students also practice self-medication for their menstrual problems (4.4% medical vs 2.4% nursing).

Most common drugs used for self-medication were vitamins and antioxidants (67.8%) followed by antibiotics (61.2%) and cough syrup (55.9%) followed by vitamins and antioxidants (51.8%) for medical and nursing students respectively. Others were analgesics (23.5% medical vs 20.6% nursing students), anta-acids (37.2% medical vs 22.6% nursing students), antipyretics (42.6% medical vs 34.7% nursing students), and antispasmodic (6% medical vs 2.4% nursing students), anti-allergies (7.6% medical vs 5.9% nursing students) and topical preparations (7.6% medical vs 4.7% nursing students). Most of the medical students (87.4%) knew drug dosage, whereas only 38.2% nursing students knew about this. Majority medical students {122 (66.7%)} completed course of drug as compared to nursing students {75 (44.1%)}. Maximum medical students (70.5%) had knowledge about side effects, whereas half (50.6%) of the nursing students knew about side effects of drugs; only {25(13.5%)} medical students experienced drug related adverse effects while 90 (52.9%) nursing students experienced side effects. Majority (58.5% medical vs 45.3% nursing students) had withdrawn medication after cessation symptoms. Most of the respondents from both streams preferred allopathic medicine (87.4% medical vs 85.9% nursing students). More nursing students {46 (27.1%) and 28 (16.5%) respectively} preferred Homoeopathy and Ayurveda as compared to medical students {35 (19.1%) and 10 (5.5%) respectively}.

Table 2 showed attitude of participants towards self-medication. Less than half (48.5% medical vs 46.5% nursing students) believed that self-medication was harmful; maximum nursing students (71.5%) believed this as self-care than medical students (56.5%). Surprisingly when asked about continuation, only 21% nursing and 32.5% medical students reported to continue with self-medication in the future also. A vast majority of the nursing students (55.5%) had a positive attitude toward giving/taking self-medication advice to/from others than medical students (24.5%). The opinion of students to curb growing trend of self-medication showed that majority (69.5% medical vs 62% nursing students) vouched for preventing the sale/supply of medicines without valid prescription; some others also suggested enforcement of stringent regulations regarding misleading pharmaceutical advertising (81.52% medical vs 72% nursing students), making health facilities affordable and easily available (86.5% medical vs 89.5% nursing students) and spreading awareness about adverse effects (86% medical vs 85% nursing students).

Table 1: Distribution of participants according to the characteristics of practice of self-medication.

Characteristics		Frequency (%) n (%)	Frequency (%) n (%)	Frequency (%) n (%)
		Medical*	Nursing**	All Students^*
Source of information***	Friends and/ or, Seniors	35 (19.1)	96 (56.5)	131 (37.1)
	Pharmacist and / or Chemists	10 (5.5)	45 (26.5)	55 (15.6)
	Internet	87 (47.5)	74 (43.5)	161 (45.6)
	Advertisement in TV, Magazine	82 (44.8)	82 (48.2)	164 (46.5)
	Text-Books	165 (90.2)	80 (47.1)	245 (69.4)
	Previous prescriptions	18 (9.8)	7 (4.1)	25 (7.1)
	Guardian	46 (25.1)	16 (9.4)	62 (17.6)
Reasons for not consulting a doctor***				
Lack of time to visit a doctor		14 (7.6)	70 (41.2)	84 (23.8)
Reluctance to spend money on doctors' fee and lab investigations		10 (5.5)	22 (12.9)	32 (9.1)
Self-confidence regarding awareness about medicine		114 (62.3)	26 (15.3)	140 (39.7)
Previous experience with disease		91 (49.7)	51 (30.0)	142 (40.2)
Quick relief		41 (22.4)	18 (10.6)	59 (16.7)
Symptoms for which drugs were taken***	Fever	142 (77.6)	89 (52.4)	231 (65.4)
	Headache	145 (79.2)	123 (72.4)	268 (75.9)
	Common Cold and Cough	133 (72.7)	84 (49.4)	217 (61.5)
	Gastrointestinal problems	25 (13.7)	53 (31.2)	78 (22.1)
	Skin problem and allergies	11 (6.0)	16 (9.4)	27 (7.6)
	Menstrual Problems	8 (4.4)	4 (2.4)	12 (3.4)
Drug taken for self-medication***	Analgesic	43 (23.5)	35 (20.6)	78 (22.1)
	Antipyretics	78 (42.6)	59 (34.7)	137 (38.8)
	Antibiotics	112 (61.2)	68 (40.0)	180 (50.9)
	Cough syrups	83 (45.4)	95 (55.9)	178 (50.4)
	Antacids	68 (37.2)	38 (22.6)	106 (30.02)
	Antiallergics	14 (7.6)	10 (5.9)	24 (6.8)
	Vitamins and antioxidants	124 (67.8)	88 (51.8)	212 (60.1)
	Antispasmodics	11 (6.0)	4 (2.4)	15 (4.2)
	Topical preparations	14 (7.6)	8 (4.7)	22 (6.2)
Checking of instructions on the medicine				
Yes		150 (82.0)	88 (51.8)	238 (67.4)
No		33 (18.0)	82 (48.2)	115 (32.6)
Knowledge about dosage of drug				
Yes		160 (87.4)	65 (38.2)	225 (63.7)
No		23 (12.6)	105 (61.8)	128 (36.3)
Completion of course of the drug				
Yes		122 (66.7)	75 (44.1)	197 (55.8)
No		61 (33.3)	95 (55.9)	156 (44.2)
Knowledge about the side effects of drug				
Yes		129 (70.5)	86 (50.6)	215 (60.1)
No		54 (29.5)	84 (49.4)	138 (39.1)
Experience of adverse effects				
Yes		25 (13.5)	90 (52.9)	115 (32.6)
No		158 (86.5)	80 (47.1)	238 (67.4)
Withdrawal of medication after cessation of symptoms				
Yes		107 (58.5)	77 (45.3)	184 (52.1)
No		76 (41.5)	93 (54.7)	169 (47.9)
Type of treatment modality taken***	Allopathy	160 (87.4)	146 (85.9)	306 (86.7)
	Ayurvedic	10 (5.5)	28 (16.5)	38 (10.8)
	Homeopathy	35 (19.1)	46 (27.1)	81 (22.9)

(*n=183 for Medical & **n= 170 for Nursing students, ^* n= 353 for all Students from both medical and nursing courses) [***multiple responses taken]

Table 2: Distribution of participants according to their perception and attitude towards self-medication.

Item	Medical (n=200)			Nursing (n=200)			All Students (n= 400)		
	Agree n (%)	Disagree n (%)	No response n (%)	Agree n (%)	Disagree n (%)	No response n (%)	Agree n (%)	Disagree n (%)	No response n (%)
Self-medication is harmful	97 (48.5)	58 (29.0)	45 (22.5)	93 (46.5)	32 (16.0)	75 (37.5)	190 (47.5)	90 (22.5)	120 (30.0)
Self-medication is a part of self-care	113 (56.5)	48 (24.0)	39 (19.5)	143 (71.5)	25 (12.5)	32 (16.0)	256 (64.0)	73 (18.3)	71 (17.7)
Continuation of self medication	65 (32.5)	62 (31.0)	73 (36.5)	42 (21.0)	50 (25.0)	108 (54.0)	107 (26.7)	112 (28.0)	181 (45.3)
Give and take self-medication advice from friends and family members	49 (24.5)	80 (40.0)	71 (35.5)	111 (55.5)	68 (34.0)	21 (10.5)	162 (40.5)	148 (37.0)	92 (23.0)
Prevent medicine supply without valid prescription	139 (69.5)	18 (9.0)	43 (21.5)	124 (62.0)	61 (30.5)	15 (7.5)	263 (65.7)	79 (19.8)	58 (14.5)
Enforcement of strict rules	163 (81.5)	5 (2.5)	32 (16.0)	144 (72.0)	36 (18.0)	20 (10.0)	307 (76.7)	41 (10.3)	52 (13.0)
Making health services affordable	173 (86.5)	3 (1.5)	24 (12.0)	179 (89.5)	14 (7.0)	7 (3.5)	352 (88.0)	17 (4.3)	31 (7.7)
Spreading awareness about adverse effects	172 (86.0)	4 (2.0)	24 (12.0)	170 (85.0)	21 (10.5)	9 (4.5)	342 (85.5)	25 (6.2)	33 (8.3)

Table 3: Association of students practicing self-medication and various factors.

Characteristics	All students (n=400)	Students practicing self-medication							
		Medical (n=400)				Nursing (n=400)			
		Total n (%)	Yes n (%)	No n (%)	Total n (%)	χ^2 value, p value	Yes n (%)	No n (%)	Total n (%)
Age (in years)									
< 22 years	206(51.5)	116(89.9)	13(10.1)	129(100.0) (64.5)	1.163, 0.281	66(85.7)	11(14.3)	77(100.0) (38.5)	0.050, 0.823
≥ 22 years	194 (48.5)	67(94.4)	4 (5.6)	71 (100.0) (35.5)		104(84.6)	19(15.4)	123(100.0) (61.5)	
Gender									
Male	160 (40.0)	105(89.7)	12 (10.3)	117(100.0) (59.0)	1.118, 0.290	35 (83.3)	7(16.7)	42 (100.0) (21.0)	0.116, 0.734
Female	240 (60.0)	78 (94.0)	5 (6.0)	83 (100.0) (41.0)		135(85.4)	23(14.3)	158(100.0) (79.0)	
Religion									
Hindu	374 (93.5)	175(92.1)	15(7.9)	190(100.0) (95.0)	7.410, 0.050	155 (84.2)	29 (15.8)	184 (100.0) (92.0)	0.735, 0.885*
Muslim	8 (3.0)	2(50.0)	2(50.0)	4 (100.0) (2.0)		7 (87.5)	1 (12.5)	8 (100.0) (4.0)	
Christian	9 (2.3)	3 (100.0)	0	3 (100.0) (1.5)		6 (3.5)	0	6 (100.0) (3.0)	
Buddhist	5 (1.2)	3 (100.0)	0	3 (100.0)		2 (100.0)	0	2 (100.0)	

	(1.5)					(1.0)			
Caste									
General	204(51.0)	110(94.8)	6 (5.2)	116(100.0) (58.0)	5.060, 0.136*	79 (89.8)	9 (10.2)	88 (100.0) (44.0)	9.522, 0.023
OBC	77 (19.3)	29 (87.9)	4 (12.1)	33 (100.0) (16.5)		34 (77.3)	10(22.7)	44 (100.0) (22.0)	
SC	79 (19.7)	26 (83.9)	5 (16.1)	31 (100.0) (15.5)		37 (77.1)	11(22.9)	48 (100.0) (24.0)	
ST	40 (10.0)	18 (90.0)	2 (10.0)	20 (100.0) (10.0)		20(100.0)	0	20 (100.0) (10.0)	
Academic year									
1 st year	100 (25.0)	43 (86.0)	7 (14.0)	50 (100.0) (25.0)	3.572, 0.327*	40 (80.0)	10 (20.0)	50 (100.0) (25.0)	2.039, 0.564
2 nd year	100 (25.0)	45 (90.0)	5 (10.0)	50 (100.0) (25.0)		45 (90.0)	5 (10.0)	50 (100.0) (25.0)	
3 rd year	100 (25.0)	47 (94.0)	3 (6.0)	50 (100.0) (25.0)		42 (84.0)	8 (16.0)	50 (100.0) (25.0)	
4 th year	100 (25.0)	48 (96.0)	2 (4.0)	50 (100.0) (25.0)		43 (86.0)	7 (14.0)	50 (100.0) (25.0)	
Type of family									
Nuclear	328 (82.0)	161 (92.0)	14 (8.0)	175 (100.0) (87.5)	0.410, 0.502*	132 (86.3)	21 (13.7)	153 (100.0) (76.5)	0.829, 0.362
Joint	72 (18.0)	22 (88.0)	3 (12.0)	25 (100.0) (12.5)		38 (80.9)	9 (19.1)	47 (100.0) (23.5)	
Socio-economic status (Modified BG Prasad Scale for 2017)									
Lower class (PCI <938)	2 (0.5)	1 (100.0)	0	1 (100.0) (0.5)	2.426, 0.829*	1(100.0)	0	1 (100.0) (0.5)	2.455, 0.630*
Lower middle class (PCI =938-1875)	6 (1.5)	1 (100.0)	0	1 (100.0) (0.5)		5(100.0)	0	5 (100.0) (2.5)	
Middle Class (PCI= 1875- 3126)	30 (7.5)	4 (100.0)	0	4 (100.0) (2.0)		22(84.6)	4 (15.4)	26 (100.0) (13.0)	
Upper middle class (PCI = 3127-6253)	98 (24.5)	23 (88.5)	3 (11.5)	26 (100.0) (13.0)		58(80.6)	14 (19.4)	72 (100.0) (36.0)	
Upper class (PCI ≥6254)	264 (66.0)	154 (91.7)	14 (8.3)	168 (100.0) (84.0)		84(87.5)	12(12.5)	96 (100.0) (48.0)	
Attitude									
Negative (≤median value)	231 (57.8)	102 (95.3)	5 (4.7)	107 (100.0) (53.5)	4.333, 0.037	106(85.5)	18(14.5)	124(100.0) (62.0)	0.060, 0.807
Positive (>median value) (median value= 19 and 20 for medical and nursing students respectively)	169 (42.2)	81 (87.1)	12 (12.9)	93 (100.0) (46.5)		64 (84.2)	12 (15.8)	76 (100.0) (38.0)	
Total	400 (100.0)	183 (91.5)	17 (8.5)	200 (100.0)		170 (85.0)	30 (15.0)	200 (100.0)	

Table 4: Findings of focus group discussion to explore relation of Knowledge, Attitude and Practice of Self Medication among undergraduate medical and B. Sc nursing students.

Category	Code	Interpretation
Self-medication	Definition	Self-medication is the treatment of common ailments with medicines that are taken by patient's own choice without doctor's advice.
	Source of knowledge	They got Lecture classes, Internet, friends/ seniors, old prescriptions, pharmacist, magazine, newspaper, mass media, guardian.
	Knowledge of medication	Majority medical students know about the dosage and side effects of drugs, hazards due to increase drug dose and due to change of timing, in comparison to nursing students.
	Source of drugs	Medicine shop is the commonest place to buy medicines for self-medication. Few collect in from friends/ seniors, relatives, neighbours, guardians. 'Sometimes we get free medicine samples from our seniors (internees and junior residents) in hostel. We keep those with us, use as and when required'
Self-medication pattern	Medication use	They use for themselves, family members, relatives, friends, neighbours. "Friends/ relatives often ask me to tell them about few medicine name for gas/ GI upset, headache"
	Type of medicine	Majority students use Allopathic medicine, few use Ayurvedic and Homoeopathic medicine. Only very few students use herbal products as seen in TV advertisement, magazine, newspaper.
	Disease	Medication is used for common ailments such as fever, headache, abdominal pain, gastritis, vomiting, diarrhoea, common cold and cough, skin problems, rash, allergies, muscular/ joint pain.
	Drugs	They use variety of medicines like analgesic, antipyretics, coughs syrup, antihistaminic, antiemetic, multi- vitamins, antispasmodic, topical preparation; eye/ ear drops, herbal preparation.
	Duration	Majority students stop the drugs when the symptoms disappear whether course completed or not; few of them, take the drug on and off.
Influencing factors	Reason for self-medication	Prior experience, Non-seriousness illness, Emergency use, seeking quick relief, Time-saving, Cost-effectiveness is some of the reason which leads them to practice self medication. "I am confident enough to take medicines for minor illness"
	Reasons for not consulting a doctor	Minor illness, lack of time to consult doctor, not willing to spend money in doctor's fee and doctors may suggest laboratory investigations. "Unavailability of health-care facilities nearby my home, so I keep few medicines (abdominal pain, diarrhoea) in my home which may be needed in odd hours" "Who will go to a doctor for simple fever, headache or abdominal pain?"
	Contributory factors	"Our teachers often ask subject related questions when we go to them for own illness. So I often took medicine on my own for minor illness."
		They use previous prescription when experienced similar symptoms and even give that prescription to someone who is having similar symptoms.
		Easy availability of medicines from medicine shop, seniors in hostel.
Health hazards	Side effects	They have experienced side effects like drowsiness (cetirizine), nausea etc. Medicine was stopped when side effects appeared.
	Experience	Though there are some side effects, still they get benefitted from it and advise this to friends and peer groups, relatives.
Awareness	Opinion	Self-medication is acceptable for medical students, not others. Though self medication is a part of self care but harmful effects on health are there. "Thinking, if my peers stop, I will stop self medication"
		Reason against self-medication
	Preventive strategies	Newly admitted Student should be informed & educated. "Government should bring rules against advertisement and sell of pharmaceutical products, health supplements without prescription"
		"We can make people aware about possible health hazards of self medication and making health care facilities easily available, but still it remain a personal choice" 'Spreading awareness about emergence of drug resistance, when antibiotic dose is left in midway after 2-3 days when he/she feels well'.

Total attitude score was calculated, mean was 19.1±2.9 and 19.1±2.7 for medical and nursing students respectively.

Table 3 showed that study participants (both medical and nursing students) aged 22 years old or above, female, Hindu religion, general/OBC/ST community, higher academic year (3rd and 4th year followed by 2nd year in each stream), those belonging to nuclear families, upper class and upper middle class, negative attitude towards self-medication had more practice of self-medication compared to their counterparts. Statistically significant ($P < 0.05$) association of self-medication practices was found with religion and attitude in case of medical students and caste of nursing students respectively (Table 3).

Various issues related to self-medication were merged under 17 codes from the transcripts, which were grouped into five categories. Five categories were- ideas of self-medication and its pattern, influencing factors, health hazards, awareness. These, along with responses provided by the respondents regarding self-medication were listed as interpretation (Table 4).

DISCUSSION

In this study among 400 students (200 medical and 200 nursing students), majority (64.5%) medical students were <22 years old (mean age 20.9±1.3 years) whereas 61.5% nursing students were ≥22 years (mean age 22.0±2.0 years), almost similar to the findings of other studies.^{7,19,21} Philip PT et al, in Tamil Nadu showed that maximum (29.14%) respondents were 20 years old followed by 26.34% in 19 years.⁶ Few studies included participants from various professional education, i.e BN, Bsc Nursing, BDS, MBBS and B. Pharmacy, physiotherapy, Paramedical.^{7,21,22} Overall, female predominance (60%) was seen in present study (59% male among medical, whereas 79% female among nursing students) similar to other studies.^{4,6,21} Dutta S et al, found more male students (59.07% in medical vs 47.79% in non-medical courses).¹⁹ Johnson D et al, and Mehta RK et al, found higher (70.1% and 72% respectively) female participation than present study.^{7,22}

Present study found that overall 88.3% (91.5% medical vs 85% nursing) students practiced self-medication which was consistent with studies done elsewhere.^{4,6,7,21} Dutta S et al, found overall less (67%) of self-medication, but more (71%) medical students practiced than (63%) non-medical students ($p < 0.05$).¹⁹ Johnson D et al, found slightly more self-medication (92.39%) with higher practice among pharmacy (92.35%) and nursing (99.4%) than medical students (86.3%).²²

Philip PT et al, found that 31.33% students recommended drugs to their families and friends.⁶ Qualitative analysis in present study found that students practiced for themselves, family members, relatives, friends, neighbours; similar to other studies.^{4,7} Students in present study also stated that

“Friends/ relatives often ask me to tell them about few medicine names for gas/ GI upset, headache”.

Similar to present study; textbook was reported as their primary source of information followed by parents, friends, old prescriptions, internet, pharmacist in some other studies.^{4,6,7,21} Dutta S et al, found that the most common source of information for medicos are textbooks (67.5%) and physician or pharmacists (66%) whereas for non-medical students, pharmacist (68%) and previous prescriptions (66%) were most common sources.¹⁹

Johnson D et al, found that pharmacy was their source of drug (96.9%); others were parents (27.8%), friends (15.3%), relatives (8.28%) and herbal store (6.9%).²² Present qualitative analysis found medicine shop as the commonest place to buy medicines; few collect from friends/seniors, relatives, neighbours, guardians. Philip PT et al, revealed that 70.80% obtained drugs directly from medical shop; others use leftover medicines, hospital supplies, physician samples etc.⁶

Previous literature reported minor illness as main reason for self-medication; others were quick relief of symptoms, confident to treat, lack of time, financial constraints, and non-availability of health-care facilities.^{6,7,19,21,22}

In present study, confidence and awareness about medicine (62.3% medical vs 15.3% nursing students), lack of time to visit a doctor (7.6% medical vs 41.2% nursing students), reluctance to spend money (5.5% medical vs 12.9% nursing students), quick relief (22.4% medical vs 10.6% nursing students) were reason behind self-medication. Dutta S et al, showed that awareness constitutes 56.89% in medical and 32% in non-medical students ($p < 0.0001$).¹⁹ Majority (overall 40.2%; 49.7% medical vs 30% nursing students) took self-medication having previous experience of disease whereas Damodar G et al, found 35.23% had previous experience of treating similar disease.⁴

Mehta RK et al, found that reason against self-medication were afraid of adverse drug reaction (50%), wrong diagnosis (50%), missing actual diagnosis (33.3%) and drug dependence (25%).⁷ Present qualitative analysis revealed missing actual diagnosis, side effects, drug dependence, not taking complete dose and course (particularly in case of antibiotics) points against self-medication.

Mehta RK found that 85.7% use medication for cold and cough, 76.2% for pain; fever (73.0%), diarrhea (47.6%), dysmenorrhea (46.0%) and nausea- vomiting (30.2%).⁷ In our study majority (53%) took self-medication for headache (79.2% medical vs 72.4% nursing students) followed by fever (77.6% medical vs 52.4% nursing students), (12.5%), common cold (72.7% medical vs 49.4% nursing students) consistent with other findings.^{6,21,22}

Literature review revealed that most common drugs used were analgesics, antipyretics, anta-acids and antispasmodic.^{6,7,19-21} Damodar G et al, reported 88.08% used antibiotics and cough syrup followed by 74.09% analgesics for self-medication in the preceding 12 months.⁴ In present study most commonly used drugs were vitamins and antioxidants (67.8%) followed by antibiotics (61.2%) and cough syrup (55.9%) and other drugs, i.e. analgesics (23.5% medical vs 20.6% nursing students), antipyretics (42.6% medical vs 34.7% nursing students), anti-allergies (7.6% medical vs 5.9% nursing students). Mehta RK et al, found that antibiotics 25(40.3%), vitamins 23 (37.1%), anti-allergies 22(35.5%) and herbal 19(30.6%) were also used.⁷

Mehta RK et al, found that 36% had some knowledge on drugs adverse reaction and 25.3% had little knowledge on completing dose.⁷ Present study found that majority medical students (70.5%) as compared to nursing students (50.6%) knew about side effects and majority (58.5% medical vs 45.3% nursing students) had withdrawn medication after symptoms were over. Philip PT et al, found that 57.21% students completed course and 23.94% were aware of ADRs.⁶ Dutta S et al, found that 46% medical students complete full treatment as compared to 32% non-medical students and maximum students (93%) read label instructions as compared to present study (67.4%).¹⁹ More than half (55.8%) of the participants (66.7% medical vs 44.12% nursing) completed full course of therapy whereas 37.82 % students for 3-5 days and 17% students for >5 days as shown by Damodar G et al.⁴

Singla S et al, and Philip PT et al, found that 6% and 19.71% students respectively experienced side effect, in present study majority nursing students (52.9%) experienced adverse effects than medical students (13.5%).^{6,21} Dutta S et al, found on and off drug use pattern (33% medical vs. 63% in non-medical students), with stoppage of drug on appearance of adverse symptoms (21% of medical vs 5% of non-medical students).¹⁹ Present study showed that majority students stop taking drug when symptoms disappear and when side effects appeared; few of them take the drug on and off as and when required. Mehta RK et al, found that 61.3% didn't discontinue medicines when symptoms were not relieved, 72% didn't experience adverse reaction and 88% won't habitual to any drug.⁷ Qualitative analysis found that majority students opined though there are some side effects; still they got benefitted and advise this to friends and peer groups, relatives. Johnson D et al, found that 94% benefited from self-medications.²² Philip PT et al, found that only 18.18% students use alternative medicines like Ayurveda, Homeopathy etc., without medical advice.⁶ In present study maximum respondents preferred allopathic medicine (87.4% medical vs 85.9% nursing students) while majority nursing students used Homoeopathy and Ayurveda; similar to more use of Ayurveda by non-medical students.¹⁹

Dutta S et al, showed that 85% non-medical students didn't know whether self-medication was correct or not.¹⁹ Mehta

RK et al, found higher (50.7%) positive attitude than present study (42.2%).⁷ Present study found that less than half of the respondents (48.5% medical vs 46.5% nursing students) believed self-medication as harmful, whereas 71.5% nursing students believed this as self-care as compared to medical students (56.5%); when asked about continuation, only 21% nursing and 32.5% medical students reported to continue in future also. Damodar G et al, found most of them (80.94%) disagree with self-medication practices.⁴ Johnson D et al, found, 28.2% pharmacy students believed this as a self-care but 5.4% medical professionals didn't believed so.²² Similarly, 42.1% of students told that they will continue/start self-medication practice (mostly medical) whereas 20.24% told that they won't continue/start (mostly nurses); while, 47.14% students replied advising to their friends in near future.²²

Opinion in present study to prevent self-medication revealed consistent findings with Johnson D et al, where students suggested to promote awareness and education regarding self-medication, making health care facilities easily available, to enforce strict rule regarding misleading pharmaceutical advertisement but few supported to prevent supply of medicine from pharmacy.²²

Damodar G et al, found no significant difference between self-medication practices of medicine, pharmacy and nursing students; male and female and year of study ($p > 0.05$) matched with present study findings.⁴ Present study also found significant ($P < 0.05$) association of self-medication with religion and attitude in case of medical students and caste of nursing students respectively.

CONCLUSION

Self-medication was widely practiced among students for minor illness, lack of health services and easy availability of drugs. Making healthcare system easily available and promoting education regarding self-medication can reduce the risk. A separate module on pros and cons of self-medication and drug-induced injury in professional teaching curriculum is a need of hour. Responsible self-medication being safe and effective for common illnesses not requiring medical consultation can be a cheaper alternative and will reduce burden on Indian health care system. Lastly, government support in curbing easy availability of medicine across pharmacies can also reduce self-medication practices substantially.

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