



## RESEARCH ARTICLE

## Influence of Medical Education on Knowledge, Attitude and Practice of Self-Medication among Medical Students

Urvisha Gadara<sup>1,\*</sup>, Akanksha Prajapati<sup>2</sup>, Kinnari Thacker<sup>3</sup>, Vipul Chaudhari<sup>4</sup><sup>1</sup>Resident 3rd year, Department of Pharmacology, GCS Medical College, Narora road, Ahmedabad, 380025, Gujarat, India<sup>2</sup>Associate Professor, Department of Pharmacology, GCS Medical College, Narora road, Ahmedabad, 380025, Gujarat, India<sup>3</sup>Assistant Professor, Department of Pharmacology, GCS Medical College, Narora road, Ahmedabad, 380025, Gujarat, India<sup>4</sup>Professor & Head, Department of Pharmacology, GCS Medical College, Narora road, Ahmedabad, 380025, Gujarat, India

## ARTICLE INFO

## Article history:

Received 19.07.2024

Accepted 14.09.2024

Published 14.10.2024

## \* Corresponding author.

Urvisha Gadara

[gadaraurvisha@gmail.com](mailto:gadaraurvisha@gmail.com)[https://doi.org/](https://doi.org/10.18579/jopcr/v23.3.68)

10.18579/jopcr/v23.3.68

## ABSTRACT

Self-medication (SM) is the use of over-the-counter medication to treat self-diagnosed symptoms or disorders, or the continuation and reuse of prescribed medications for recurrent diseases without consulting a physician. Self-medication is very common practice now a days. Medical students are exposed to knowledge about diseases and drugs, which makes SM easier for them. Primary aim of this survey is to study the influence of medical education on knowledge, attitude, and practice of self-medication among medical students. Secondary aim is to evaluate the factors associated with self-medication. A cross sectional, questionnaire based analytical study was carried out in GCS medical college, Ahmedabad from November 2022 to May 2023. Data from 350 students were collected and analysed by using Microsoft Excel version 2019. Out of 350, 132 were from phase I, 80 were from phase II, 77 were from phase III and 61 were from phase IV. From phase I to phase IV, 75.7%, 85.8%, 82.3% and 87.4% students were having knowledge about SM respectively. 87.6% in phase I, 70% in phase II, 73.3% in phase III and 70.4% students in phase IV believed that the easy access to health care facility is the main reason for practicing the SM in medical students. The prevalence of SM was 23% in phase I, 71.25% in phase II, 76% in phase III and 83% in phase IV. The knowledge and practice of SM were more among phase I students compared to those in phase IV students.

**Keywords:** Knowledge; Medical students; Self-medication

## INTRODUCTION

Self-medication has become a very important part of health-care system with people becoming more and more aware about self-care behavior.<sup>1</sup> The World Health Organization (WHO) defines self-medication (SM) as “the selection and utilization of medicines to treat self-recognized symptoms or illness without consulting a physician”.<sup>2</sup> It is now becoming a very common practice due to various reasons like lack of access to health care, easy availability of OTC (over the counter) drugs in the market and poor drug regulatory practices.<sup>3</sup> Inappropriate use of self-medication is associated with many health hazards like misdiagnosis or delayed diagnosis, adverse drug reactions, drug dependence, bacterial infection, antibiotic resistance, etc.<sup>4,5</sup>

Prevalence of SM varies from 11.7 to 92% across the world.<sup>6</sup> In developing countries, prevalence rates of SM

practice are much higher (about 79% in India, 84% in Pakistan, 78% in Saudi Arabia and 67% in Nigeria). According to a study conducted in 2021, the prevalence of SM was around 78% in general population in Gujarat.<sup>7</sup>

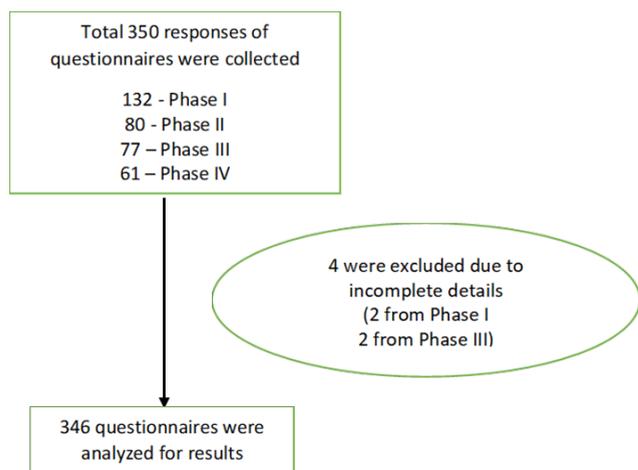
Various studies have been carried out to know the prevalence and pattern of SM in medical students.<sup>8,9</sup> In a study conducted in Nagpur medical college, the prevalence of SM from phase I to phase IV students was 50%, 70.6%, 77.9% and 90.5% respectively.<sup>4</sup> SM has a special impact on medical students as they have more knowledge about diseases and drugs. As far as practice of SM is concerned, phase I medical students may not differ from general population<sup>10</sup> but, this scenario changes from phase II onwards.<sup>11</sup>

Hence, this study was undertaken with the objective to know about knowledge, attitude, and practice of self-medication among medical students.

**METHODOLOGY**

It was a cross sectional questionnaire-based study carried out in GCS medical college, Ahmedabad from November 2022 to May 2023 after ethics committee approval. A physical copy of pre structured questionnaire was used to record the responses of all medical students (phase I to phase IV) about knowledge, attitude, and practice of SM. Four sections were there; first was about demographic details of participants which had 8 questions, second was regarding their knowledge about SM which had 6 questions, third was about the attitude towards self-medication which had 5 questions and fourth was about the practice of self-medication with 13 questions. Those who were willing to participate were asked to fill up the questionnaire and confidentiality was maintained. Filled up questionnaires were collected and analysed using Microsoft excel version 2019.

**RESULTS**



**Table 1: Demographic details of medical students**

	Phase I n=130 (%)	Phase II n=80 (%)	Phase III n=75 (%)	Phase IV n=61 (%)
<b>Gender</b>				
Male	55 (42.3)	21 (26.2)	22 (29.3)	34 (55.7)
Female	75 (57.7)	59 (73.8)	53 (70.7)	27 (44.3)
<b>History of personal past or present medical illness</b>				
Present	3 (2.3)	2 (2.5)	2 (2.7)	0 (0)
Absent	127 (97.7)	78 (97.5)	73 (97.3)	61 (100)
<b>Students having a medical family background</b>				
Yes	80 (61.5)	38 (47.5)	30 (40)	11 (18.1)
No	50 (38.4)	42 (52.5)	45 (60)	50 (81.9)

Table 1 shows the demographic details of students. History of past or present medical condition (bronchial

asthma, food allergy) was present in 3 students from phase I, 2 from phase II and 2 from phase III. So, the practice of SM was present in all of them. In phase 4 none of them had any medical condition. Quite a good number of students had a family with medical background which could also have had an impact on knowledge and practice of SM.

**Table 2: Prevalence of knowledge about SM**

	Phase I n=130 (%)	Phase II n=80 (%)	Phase III n=75 (%)	Phase IV n=61 (%)
Knowledge about definition of self-medication	106 (81.5)	71 (88.7)	64 (85.3)	55 (90.1)
Knowledge about the safety of SM	70 (53.8)	56 (70)	50 (66.6)	47 (77)
Knowledge about masking of some signs and symptoms of disease by drugs	116 (89.2)	75 (93.7)	68 (90.6)	57 (93.4)
Knowledge about safety of drugs in history of liver or kidney disease	127 (97.6)	80 (100)	75 (100)	61 (100)
Knowledge about dose of drugs	66 (50.7)	50 (62.5)	38 (50.6)	39 (63.9)
Understanding the information given on package insert	106 (81.5)	80 (100)	75 (100)	61 (100)
Average	75.7%	85.8%	82.2%	87.4%

Table 2 shows the prevalence of knowledge about SM. 6 different questions were asked to check the knowledge of students. The first question was open ended which was about definition of SM where 3 options were given, out of which two were correct and one was wrong. For correct option score 1 was given and for incorrect option score 0 was given. Other questions were about knowledge regarding safety of SM, dose of drugs and diseases. These all were close ended questions and for YES score 1 was given and for NO score 0 was given. Then average knowledge was calculated for each phase. In phase I, 75.7% students had knowledge about drugs, disease, and SM. While from phase II to phase IV knowledge was almost similar ranging between 82 to 88%.

Table 3 shows the attitude of students towards SM. Students were asked to answer whether they agree or disagree.

One of the questions asked was any extra knowledge about disease and drugs is not required to practice SM. In phase I 53.8% disagreed, in phase II 78.2%, in phase III 68% and in phase IV 63.9% disagreed.

In one question, students were asked whether one should have understanding about severity of diseases before



**Table 3: Student's attitude towards SM**

	Phase I n=130 (%)			Phase II n=80 (%)			Phase III n=75 (%)			Phase IV n=61 (%)		
	A*	N*	DA*	A*	N*	DA*	A*	N*	DA*	A*	N*	DA*
Self-medication is a part of self-care	74 (56.9)	40 (30.7)	16 (12.3)	29 (36.2)	45 (56.2)	06 (7.5)	31 (41.3)	24 (32)	20 (26.6)	22 (36)	21 (34.4)	18 (29.5)
Any training or extra-edge knowledge for practice of self-medication is not required	45 (34.7)	15 (11.5)	70 (53.8)	09 (11.2)	10 (12.5)	61 (76.2)	12 (16)	12 (16)	51 (68)	09 (14.7)	13 (21.3)	39 (63.9)
One should understand the severity of disease before taking the medication	113 (86.9)	12 (9.2)	05 (3.8)	78 (97.5)	0(0)	02 (2.5)	69 (92)	06 (08)	0(0)	54 (88.5)	06 (9.8)	01 (1.6)
We should encourage the self-medication practice in non-medical people for minor disease	58 (44.6)	36 (27.6)	36 (27.6)	26 (32.5)	35 (43.7)	19 (23.7)	13 (17.3)	22 (29.3)	40 (53.3)	16 (26.2)	19 (31.1)	26 (42.6)
Main reason for self-medication in medical student is easy access to healthcare information and facilities	114 (87.6)	10 (7.6)	06 (4.6)	56 (70)	11 (13.7)	03 (3.7)	55 (73.3)	19 (25.3)	01 (1.3)	43 (70.4)	14 (22.9)	04 (6.5)

\*A-agree, DA- disagree, N-neutral

practicing SM. In phase I, 86.9% students believed that proper understanding of disease severity should be there to practice SM, while in phase II, 97.5 % students agreed to this. In phase III and phase IV, 92% and 88.5% students agreed to this. This implied that a greater number of students in all phases believed that SM should be practiced only in mild symptoms or disease only.

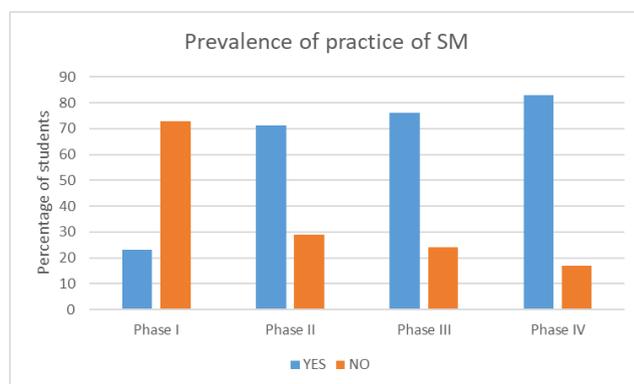
Another question was whether practice of SM should be encouraged in non-medical public. In phase I 44.6%, in phase II 32.5%, in phase III 17.3% and in phase IV 26.2% agreed that it should be encouraged in non-medical people. More number of students disagreed in phase II, III and IV with this, as they may have knowledge of serious consequences of SM in general public.

As medical students are part of health care system, it can influence the practice of SM in them. When this was asked to students, 87.6% students in phase I, 70% in phase II, 73.3% in phase III and 70.4% students in phase IV agreed to this. Students thus believed that easy access to healthcare facility can increase the practice of SM.

Figure 1 shows that prevalence of practice of SM increases from phase I to phase IV. In phase I 23% students practiced SM, while 77% did not, in phase II 71.2% practiced while 28.8% did not, in phase III 76% practiced while 24% did not and in phase IV 83% practiced SM while 17% students did not practice.

In phase I students anti-tussives (43%), in phase II antibiotics (50%), antipyretics in phase III (58.6%) and NSAIDS in phase IV (34.4%) were the most commonly used groups. Considering all the phases together (overall) the most common group used by students was antipyretics which ranged from 31 to 60%.

In individual drugs most common drug used was paracetamol (by 68.4% students in phase I, 96.2% in phase II,



**Fig. 1: Prevalence of practice of SM**

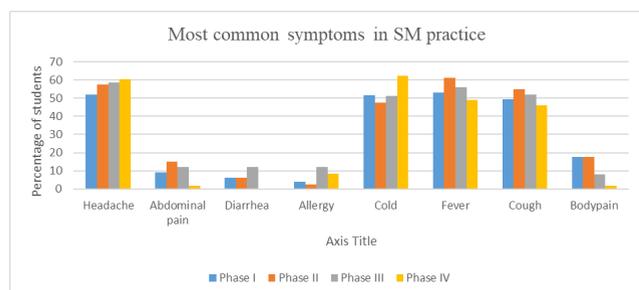
**Table 4: Common groups of drug used in SM**

	Phase I n=130 (%)	Phase II n=80 (%)	Phase III n=75 (%)	Phase IV n=61 (%)
Antipyretics	46(35.3)	32(40)	44(58.6)	19(31.4)
Antibiotics	49(37.6)	40(50)	17(22.6)	03(4.9)
Anti-allergic	13(10)	13(16.2)	11(14.6)	07(11.4)
Multivitamins	16(12.3)	22(27.5)	14(18.6)	06(9.8)
Proton pump inhibitors	0(0)	04(05)	03(4)	01(1.6)
Anti-tussives	56(43)	31(38.7)	38(50.6)	04(6.5)
NSAIDS	13(10)	06(7.5)	19(25.3)	21(34.4)

**Table 5: Common drugs used in SM**

	Phase I n=130 (%)	Phase II n=80 (%)	Phase III n=75 (%)	Phase IV n=61 (%)
Paracetamol	89(68.4)	77(96.2)	67(89.3)	42(68.8)
Aspirin	23(17.6)	13(16.2)	15(20)	0(0)
Dicyclomine	05(3.8)	01(1.2)	05(6.6)	02(3.2)
Azithromycin	23(17.6)	18(22.5)	13(17.3)	0(0)
Pantoprazole	09(6.9)	04(2)	11(14.6)	03(4.9)
Amoxicillin	06(4.6)	06(7.5)	07(9.3)	01(1.6)
Calcium	11(8.4)	04(5)	06(8)	0(0)
Aceclofenac	01(0.07)	01(1.2)	07(9.3)	0(0)
Ibuprofen	08(6.1)	05(6.2)	10(13.3)	0(0)
Vitamin B12	19(14.6)	19(23.7)	10(13.3)	3(4.9)
Levocetizine	21(16.1)	08(10)	16(21.3)	05(8.1)
Diclofenac	08(6.1)	15(18.7)	17(22.6)	04(6.5)

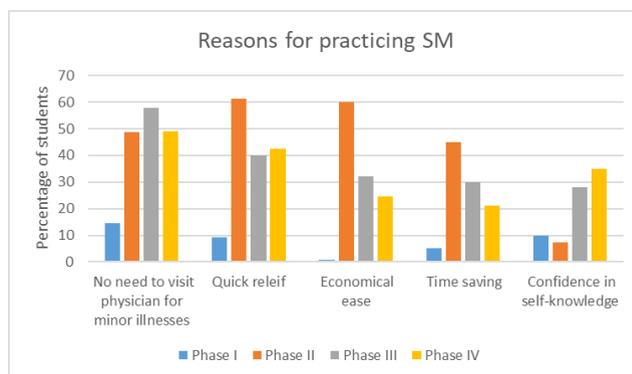
89.3% in phase III and 68.8% students in phase IV). Second most common drug used was Azithromycin (by 17.6% in phase I, 22.5% in phase II and 14.6% in phase III while 0% in phase IV). Similarly, the prevalence of usage of amoxicillin in phase I was 4.6%, in phase II was 7.5%, in phase III was 9.3% and in phase IV, it was 1.6%. This implied that phase IV students might have more knowledge about importance of rational use of antibiotics and increasing problem of antibiotic resistance worldwide.



**Fig. 2: Most common symptoms in SM practice**

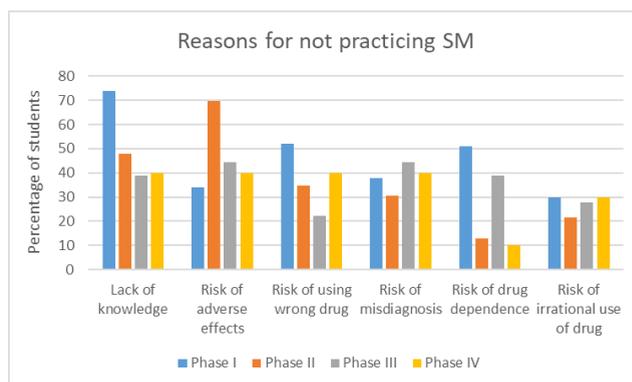
Figure 2 shows the various symptoms for which SM was practiced. Headache was the most common symptom in phase I (56.7%), phase III (61.4%) and phase IV (78.4%). In phase II cough (61.4%) was the most common symptom followed by headache and fever (50.8%). Other common symptoms included cold, body pain, abdominal pain, and diarrhea.

Figure 3 shows the various reasons for practicing SM. In phase I, III, and IV students the most common reason was that they believed that there is no need to visit physician for minor illnesses. While in phase II the most common reason was to get quick relief from symptoms followed by economical ease.



**Fig. 3: Reasons for practicing SM**

During our study we came across that in phase I 77%, in phase II ~28%, in phase III 24% and in phase IV 17% students didn't practice SM. We tried to find out reasons for the same.



**Fig. 4: Reasons for not practicing SM**

Figure 4 shows the various reasons for not practicing the SM. In phase I students, most common reason was lack of knowledge about drugs and diseases (74%). Risk of adverse effects in phase II (69.5%), risk of adverse effects (44.5%) and misdiagnosis (44.5%) in phase III and lack of knowledge (40%), risk of adverse events (40%), risk of using wrong drug (40%) and irrational use of drugs (30%) in phase IV were the common reasons for not practicing SM.

**DISCUSSION**

SM has become a very common practice now a days, but it has its own merits and demerits. It can be very useful and time saving for treatment of minor illnesses if it is used in a correct way, but at the same time it can lead to various consequences if used incorrectly like serious side effect or development of resistance in case of inappropriate antibiotic usage.

In present study we observed that in phase I of MBBS, 75.7% students had knowledge of SM while from phase II to

phase IV it increased to 85.8%, 82.2% and 87.4% respectively. Various questions were asked regarding the knowledge about SM. A gradual increase in knowledge about safety of SM, dose and frequency was noted from phase I to phase IV. Our results were quite similar to the results of one study carried out by Arti A. Kasulkar and M. Gupta, in medical students of private college of Nagpur, where phase IV students had more knowledge (32.4%) about adverse effects compared to phase I students (15.5%).<sup>4</sup> Similarly more students were aware about dose and frequency of drug in phase IV (94%) than phase I students (51%).<sup>4</sup>

When it was told that to practice SM no extra knowledge is required, in phase I 56.9% students agreed, in phase II only 11.2% agreed, in phase III and phase IV, 16% and 14.7% agreed respectively. So, in phase I students, they might not have proper knowledge about consequences of practice of SM so they believed that there is no need of extra knowledge to practice SM. During course of MBBS students are taught about drugs and diseases and they get knowledge about the same. As medical students are part of health care system, it can influence the practice of SM in them. Regarding this, 87.6% students in phase I, 70% in phase II, 73.3% in phase III and 70.4% students in phase IV agreed. Students thus believed that easy access to healthcare facility can increase the practice of SM. To the best of our knowledge, we could not find any study to see the attitude of medical students regarding the SM.

There are studies which have been carried out in medical students to see the prevalence of practice of SM and it is found to be increasing from phase I to phase IV.<sup>5</sup> A study conducted by Arti A. Kasulkar and M. Gupta, in medical students of a private college in Nagpur reported that the prevalence of SM was 50%, 70.6%, 77.9% and 90.5% from phase I to phase IV students respectively.<sup>4</sup> In our study also a similar pattern was seen where prevalence of practice of SM was 23.07%, 71.25%, 76% and 83.06% from phase I to phase IV students respectively. The reason of increasing practice of SM from phase I to phase IV could be more knowledge of drugs and diseases in phase IV students compared to phase I students.

In our study we observed that in phase I students, anti-tussive group of drugs was the most commonly used (43%). In phase II antibiotic was the most common group (50%). In phase III antipyretics (58.6%) and in phase IV NSAIDs (34.4%) were the most commonly used groups. Considering students of all phases together (overall), the most common group was antipyretic drugs which ranged between 31 to 60%. The observation made is similar to a study conducted by Rashmi Kumari, Dinesh Kumar *et al.* in medical students of Jammu where the most common groups of drug used were anti-pyretic and analgesics followed by antibiotics.<sup>5</sup>

In our study paracetamol was the most commonly used drug by students of all phases which was similar to other study carried out by Pragna Patel *et al.* in

students of Pramukhswami Medical College, Anand, Gujarat where the most common drug used by students was paracetamol.<sup>11</sup> In our study second most common drug used was Azithromycin which was used by 17.6% students in phase I, by 22.5% in phase II and by 14.6% in phase III while in phase IV students it was not used by any students. Same way the prevalence of usage of amoxicillin also decreased from phase I to phase IV which showed lower use of antibiotics in phase IV students which could be due to their knowledge about increasing scenario of antibiotic resistance.

We observed that fever (69% in phase I, 49% in phase II, 42% in phase III and 30% in phase IV), headache (68% in phase I, 46% in phase II, 44% in phase III and 37% in phase IV) and cold (67% in phase I, 38% in phase II, 41% in phase III and 38% in phase IV) were the few common symptoms for which students practiced SM. These results were comparable to a study conducted by Sonish Prabhakaran *et al.* in government medical college of Kerala where the most common symptoms were common cold (91%) followed by headache (66.4%).<sup>12</sup> A study conducted by Henry James and others in phase I medical students of Arabian Gulf University of Manama, headache was reported by 70.9% students and common cold was reported by 53.7% of the students.<sup>13</sup>

In current study main sources of information for students to practice SM were the interaction with pharmacist or textbooks or their knowledge of medical curriculum. In phase I, 66.67% students bought medicine with help of pharmacist. In phase II and phase III majority of students took help of textbooks and pharmacist. But in phase IV 82.35% students used their own knowledge to practice SM. This could be due to the reason that their knowledge increases during the course of MBBS from phase I to phase IV. This observation is similar to the study which was conducted by Sanjeev Badiger *et al.* in medical students of South India where the common sources of information for practicing SM were using their academic knowledge (50%) and textbooks (39%).<sup>14</sup>

In our study avoiding visits to physician for minor illnesses, to save time, to get quick relief from symptoms and economical ease were the few reasons which led to practice of SM. A study conducted by Dr. Rajiv Singh *et al.* in students of private medical college of Kerala showed similar result where the most common reason was avoiding visits to physician for minor illnesses and in a study carried out by Banerjee *et al.* in medical college of West Bengal the most common reason for SM was cost effectiveness followed by minor illnesses.<sup>9,15</sup>

During our study, we observed that 77% students in phase I, ~28% in phase II, 24% in phase III and 17% in phase IV didn't practice SM. In phase I students most common reason for not practicing the SM was the lack of knowledge (74%) followed by fear of using wrong drugs (52%). In phase II most common reason was risk of adverse effect which was seen

in 70% of students. In phase III and phase IV, misdiagnosis (40%) and risk of adverse effects (40%) were the common reasons for not practicing SM. Similarly in a study conducted by S. Tewari et al. in medical students of Institute of National Importance in North India, 75.4 % students worried about misdiagnosis and 66.7% were concerned about irrational use of drug and 78.9% were worried about adverse effects.<sup>16</sup>

## CONCLUSION

This study shows that knowledge of students increases with increasing phase and so the prevalence of SM practice. Adequate information regarding SM should be addressed in medical students to increase the rational practice.

## ACKNOWLEDGMENT

We are very grateful to GCS Medical college, hospital and research center for their valuable support in our study. We are thankful to Dr. Alay Patel for his help throughout the study.

## Conflicts of interest

There were no conflicts of interest in this study.

## Funding

Not applicable.

## REFERENCES

1. Eticha T, Mesfin K. Self-medication practices in Mekelle, Ethiopia. *PLoS ONE*. 2014;9(5):1–5. Available from: <https://doi.org/10.1371/journal.pone.0097464>.
2. Guidelines for the regulatory assessment of medicinal products for use in self-medication. 2000. Available from: <https://iris.who.int/handle/10665/66154>.
3. The Role of pharmacist in Health Care System. 1998. Available from: [https://iris.who.int/bitstream/handle/10665/59169/WHO\\_PHARM\\_94.569.pdf?sequence=1&isAllowed=y#:~:text=The%20pharmacist%20seeks%20to%20collect,and%20evaluates%20the%20therapeutic%20response](https://iris.who.int/bitstream/handle/10665/59169/WHO_PHARM_94.569.pdf?sequence=1&isAllowed=y#:~:text=The%20pharmacist%20seeks%20to%20collect,and%20evaluates%20the%20therapeutic%20response).
4. Kasulkar AA, Gupta M. Self Medication Practices among Medical Students of a Private Institute. *Indian Journal of Pharmaceutical Sciences*. 2015;77(2):178–182. Available from: <https://doi.org/10.4103/0250-474x.156569>.
5. Kumari R, Kumar D, Kiran K, Bahl R, Gupta R. Study of Knowledge and Practices of Self-Medication among Medical Students at Jammu. *Journal of Medical Sciences*. 2012;15(2):141–144. Available from: <https://doi.org/10.33883/jms.v15i2.252>.
6. Rathod P, Sharma S, Ukey U, Sonpimpale B, Ughade S, Narlawar U, et al. Prevalence, Pattern, and Reasons for Self-Medication: A Community-Based Cross-Sectional Study From Central India. *Cureus*. 2023;15(1). Available from: <https://doi.org/10.7759/cureus.33917>.
7. Shah H, Arora B. Knowledge, attitude and prevention of self-medication practices among the general population of Gujarat. *Indian Journal of Medical Sciences*. 2022;74(1):22–26. Available from: [https://doi.org/10.25259/IJMS\\_354\\_2021](https://doi.org/10.25259/IJMS_354_2021).
8. Mehta RK, Sharma S. Knowledge, Attitude and Practice of Self-Medication among Medical Students. *IOSR Journal of Nursing and Health Science (IOSR-JNHS)*. 2015;4(1):89–96. Available from: <https://www.iosrjournals.org/iosr-jnhs/papers/vol4-issue1/Version-1/P04118996.pdf>.
9. Singh RK, Thomas AM, Hariharan HC, Sreedharan DA, Padmanabhan G, Antony R. Prevalence and pattern of self-medication among medical students of a private medical college in Kerala. *International Journal of Public Health Research*. 2016;3(4):162–167. Available from: <https://doi.org/10.17511/ijphr.2016.i4.05>.
10. Klemenc-Ketis Z, Hladnik Z, Kersnik J. Self-Medication among Healthcare and Non-Healthcare Students at University of Ljubljana. *Medical Principles and Practice*. 2010;19(5):395–401. Available from: <https://doi.org/10.1159/000316380>.
11. Patel PM, Prajapati AK, Ganguly B, Gajjar B. Study on impact of pharmacology teaching on knowledge, attitude and practice on self-medication among medical students. *International Journal of Medical Science and Public Health*. 2013;2:181–186. Available from: <https://www.bibliomed.org/gotodoi.php?mno=26985&gdoi=10.5455/ijmsph.2013.2.173-178>.
12. Prabhakaran SS, Prabha MPS, Asha S, Palappallil DS. Self-Medication Practices among 1st- and 2nd-Year Medical Undergraduates. *Asian Journal of Pharmaceutical and Clinical Research*. 2023;16(4):161–166. Available from: <https://doi.org/10.22159/ajpcr.2023.v16i4.47475>.
13. James H, Handu SS, Khaja KAJA, Ootom S, Sequeira RP. Evaluation of Knowledge, Attitude and Practice of Self-Medication among First Year Medical Students. *Medical Principles and Practice*. 2006;15(4):270–275. Available from: <https://doi.org/10.1159/000092989>.
14. Badiger S, Kundapur R, Jain A, Kumar A, Pattanshetty S, Thakolkaran N, et al. Self-Medication Patterns among Medical Students in South India. *Australasian Medical Journal*. 2012;5(4):217–220. Available from: <https://doi.org/10.4066/amj.2012.1007>.
15. Banerjee I, Bhadury T. Self-Medication Practice among Undergraduate Medical Students in a Tertiary Care Medical College, West Bengal. *Journal of Postgraduate Medicine*. 2012;58(2):127–131. Available from: <https://doi.org/10.4103/0022-3859.97175>.
16. Tewari S, Mukherjee A, Upadhyay GK. Knowledge, attitude, and practice of self-medication among undergraduate medical students in an Institute of National Importance in North India. *National Journal of Physiology, Pharmacy and Pharmacology*. 2023;13(12):2464–2469. Available from: <https://www.ejmanager.com/mnsteps/28/28-1694765581.pdf?t=1726669584>.