



ASSESSMENT OF SELF-MEDICATION KNOWLEDGE, ATTITUDE AND PRACTICES (KAP) AMONG PHASE II MBBS STUDENTS IN KOLHAPUR DISTRICT, MAHARASHTRA: A CROSS-SECTIONAL STUDY

Dr. Pramod Prabhakar Bhalerao^{1*}, Dr. Vikram Anant Rajadnya², Dr. Jagdish Gangadhar Puri³, Dr. Archana Ganesh Dhavalshankh⁴

^{1*}Department of Pharmacology, Dr. D. Y. Patil Medical College, Kolhapur, Maharashtra, India.

²Department of Pharmacology, Dr. D. Y. Patil Medical College, Kolhapur, Maharashtra, India.

³Department of Radiology, Government Medical College, Jalna, Maharashtra, India.

⁴Department of Pharmacology, Dr. D. Y. Patil Medical College, Kolhapur, Maharashtra, India.

***Corresponding Author:** Dr. Pramod Prabhakar Bhalerao

^{*}Department of Pharmacology, Dr. D. Y. Patil Medical College, Kolhapur, Maharashtra, India.

ABSTRACT

Background: Self-medication is a common practice, especially among medical students due to easy access to drugs in combination with incomplete medical knowledge. While responsible self-medication can reduce healthcare burden, inappropriate use may lead to adverse drug reactions, antimicrobial resistance and drug dependence.

Objective: To assess the prevalence, knowledge, attitude, and practices related to self-medication among Phase II MBBS students at Dr. D. Y. Patil Medical College, Kolhapur.

Materials and Methods: A cross-sectional, questionnaire-based study was conducted among 120 Phase II MBBS students using a pre-validated structured questionnaire. Data regarding patterns, indications, sources, medications used and awareness of risks associated with self-medication were collected and analysed using MS Excel. Results were expressed in frequencies and percentages.

Results: Of the 120 students, 102 (85%) reported practicing self-medication. There was no significant difference in prevalence of self-medication between females (84.1%) and males (86.3%) ($p \approx 0.74$). Internet (36.7%) was the most common sources of information of medicines. Doctors in the family (45.8%) was the common source used to procure medicines for self-medication. Antibiotics (45%) were the most frequently self-medicated drugs, followed by antipyretics and multivitamins. The most common indications were common cold (60%), fever, and cough. Major reasons for self-medication included convenience (42.5%), easy availability (40.8%), and time saving (36.7%). Most students were aware of adverse effects (82.5%), antibiotic resistance (85.8%), drug interactions (86.7%) and drug dependence (89.2%). A large majority (91.7%) felt that educational programs on safe self-medication are necessary.

Conclusion: Self-medication is highly prevalent among Phase II MBBS students, with antibiotics being the most commonly used drugs. Despite good awareness of its risks, the practice remains common, emphasizing the urgent need for early education on rational drug use.

Keywords: Self-medication, Medical students, Antibiotics, Rational drug use, KAP study.

1. INTRODUCTION

Self-medication refers to the use of drugs by individuals to treat self-diagnosed symptoms or disorders, or the continued or intermittent use of previously prescribed medications for chronic or recurrent conditions.¹ Practices such as obtaining medicines without a valid prescription, reusing old prescriptions, consuming drugs stored at home, or using medications obtained from friends or relatives all fall under the definition of self-medication.^{2,3}

Self-medication is not a new phenomenon; it has been practiced for decades across both developing and developed nations.⁴ The practice is particularly common among medical undergraduates, who have early access to pharmacological knowledge and drug information.⁵ The World Health Organization (WHO) acknowledges that responsible self-medication for minor illnesses that do not require a physician's prescription can be a cost-effective and practical approach to healthcare.^{6,7}

However, irresponsible or irrational self-medication carries significant risks, including adverse drug reactions, drug wastage, worsening of existing health conditions, antimicrobial resistance, and the potential for drug dependence.⁸ Conversely, when used appropriately, self-medication can effectively relieve minor ailments, reduce the time spent on physician consultations, provide convenience to patients, and decrease the workload on healthcare professionals. It may also offer economic benefits to both the pharmaceutical industry and governmental health systems.⁹

Given these potential benefits and risks, promoting responsible self-medication becomes essential. Previous studies by Honnekeri et al. and Sundararajan et al. reported self-medication prevalence rates of 83.9% and 85.2%, respectively, among their study populations.^{10,11} Despite several such studies in India, there remains limited research specifically focusing on medical students in the Kolhapur district of Maharashtra.

In India, many medications—classified as over-the-counter (OTC) drugs—are easily accessible without a prescription. While this facilitates quick relief for minor conditions, it also underscores the need for awareness and caution regarding their safe use.

The present study was undertaken to assess the knowledge, attitudes and practices related to self-medication among Phase II MBBS students of Dr. D. Y. Patil Medical College, Kolhapur, Maharashtra.

2. MATERIALS AND METHODS

This study employed a cross-sectional, questionnaire-based design and was conducted among Phase II MBBS students of Dr. D. Y. Patil Medical College, Kolhapur, Maharashtra.

A structured and pre-validated questionnaire was administered to the participants. Prior to data collection, the purpose and objectives of the study were briefly explained, and students were assured of complete confidentiality.¹² The questionnaire consisted of items designed to assess the participants' self-medication knowledge, attitudes and practices (KAP).

2.1 Inclusion and Exclusion Criteria

Phase II MBBS undergraduate students of Dr. D. Y. Patil Medical College, Kolhapur were included in the study. Students who were unwilling to participate or those who submitted incompletely filled questionnaires were excluded from the analysis.

2.2 Statistical Analysis

The collected data were entered into a Microsoft Excel spreadsheet and analysed using descriptive statistics. The results were summarized as percentages and presented in tabular or graphical form where appropriate.

3. RESULTS AND DISCUSSION

A total of **120 Phase II MBBS students** participated in the study, comprising **69 (57.5%) females** and **51 (42.5%) males**. Overall, **102 students (85%)** reported practicing self-medication within the past six months. Among females, **58 of 69 (84.1%)** practiced self-medication, while **44 of 51 (86.3%)**

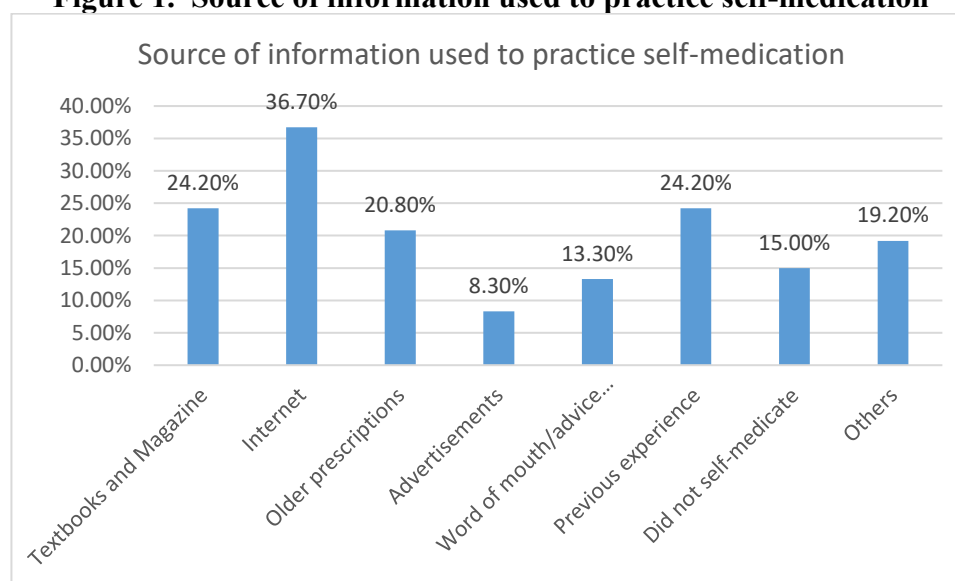
males reported similar behaviour. The difference between the two groups was **not statistically significant** ($p \approx 0.74$), indicating comparable self-medication practices across genders.

Regarding the sources of information used for self-medication, the **internet** was the most frequently cited source, reported by **36.7%** of students. **Textbooks and magazines** and **previous personal experience** were each reported by **24.2%**, while **older prescriptions** were used by **20.8%** of participants. Additional sources included **word of mouth or advice from friends** (**13.3%**) and **advertisements** (**8.3%**). A minority of students (**19.2%**) relied on other miscellaneous sources. Notably, **15.0%** of the respondents reported that they did not self-medicate during the reference period.

Table 1. Source of information used to practice self-medication (n=120)

Sr. No.	Source of information	Percentage
1.	Textbooks and Magazine	24.2 %
2.	Internet	36.7%
3.	Older prescriptions	20.8%
4.	Advertisements	8.3%
5.	Word of mouth/advice from friends	13.3%
6.	Previous experience	24.2%
7.	Did not self-medicate	15.0%
8.	Others	19.2%

Figure 1. Source of information used to practice self-medication

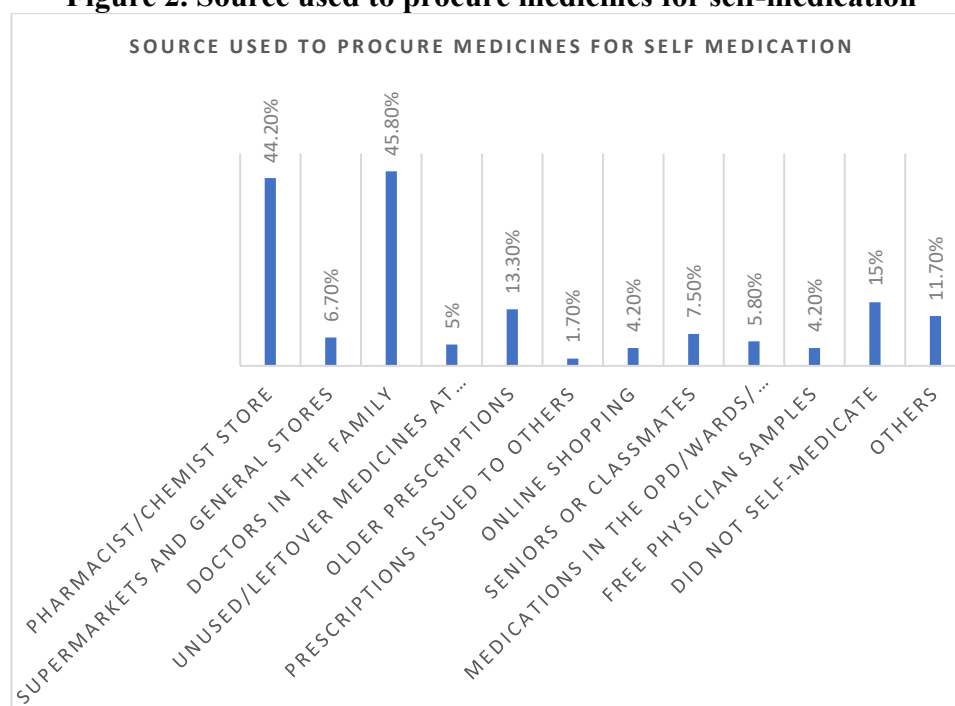


The most common source from which students procured medicines for self-medication was a **doctor in the family**, reported by **45.8%** of respondents. This was closely followed by **pharmacist/chemist stores** (**44.2%**), indicating easy accessibility to medications through retail pharmacy outlets. Other sources included **older prescriptions** (**13.3%**), **seniors or classmates** (**7.5%**), and **supermarkets or general stores** (**6.7%**). A smaller proportion obtained medicines from **unused or leftover drugs at home** (**5%**), **OPD/ward or nursing trolleys** (**5.8%**), **online platforms** (**4.2%**), and **free physician samples** (**4.2%**). Additionally, **1.7%** reported using prescriptions issued to others, and **11.7%** mentioned other miscellaneous sources. Notably, **15%** of students reported that they had not procured any medications for self-medication during the study period.

Table 2. Source used to procure medicines for self-medication (n=120)

Sr. No.	Source used to procure medicines for self-medication	Percentage
1.	Pharmacist/Chemist store	44.2%
2.	Supermarkets and General Stores	6.7%
3.	Doctors in the family	45.8%
4.	Unused/leftover medicines at home	5%
5.	Older prescriptions	13.3%
6.	Prescriptions issued to others	1.7%
7.	Online shopping	4.2%
8.	Seniors or classmates	7.5%
9.	Medications in the OPD/Wards/ Nursing trolleys or cabinets	5.8%
10.	Free physician samples	4.2%
11.	Did not self-medicate	15%
12.	Others	11.7%

Figure 2. Source used to procure medicines for self-medication



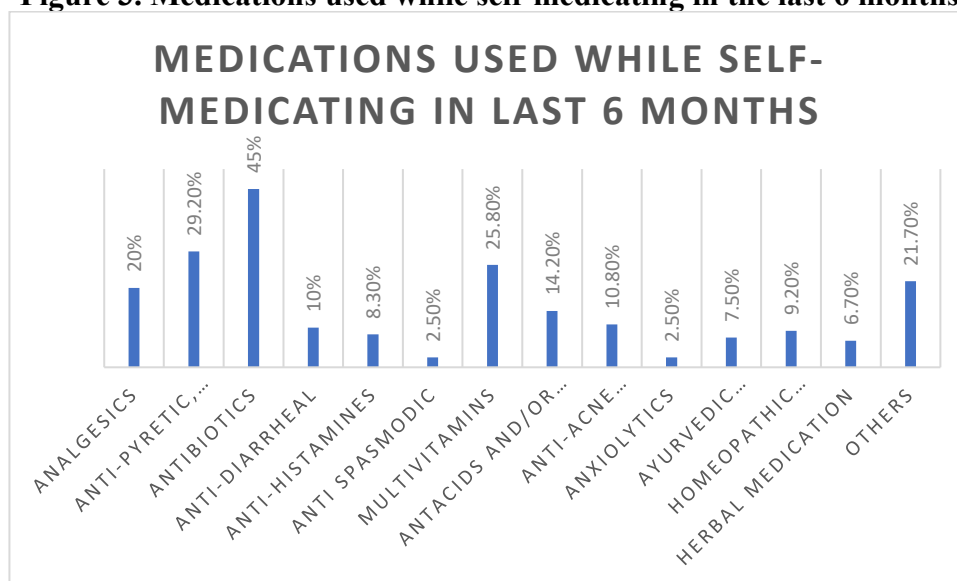
The most commonly self-medicated class of drugs was **antibiotics**, reported by **45%** of the students. This was followed by **antipyretic and anti-inflammatory agents (29.2%)**, **multivitamins (25.8%)**, and **analgesics (20%)**. Other drug classes used included **antacids (14.2%)**, **anti-acne medications (10.8%)**, **antidiarrheals (10%)**, and **antihistamines (8.3%)**. A smaller proportion reported the use of **Ayurvedic (7.5%)**, **homeopathic (9.2%)**, **herbal preparations (6.7%)**, **antispasmodics (2.5%)**, and **anxiolytics (2.5%)**. Additionally, **21.7%** of students reported using medications outside these major categories.

Table 3. Medications used while self-medicating in the last 6 months (n=120)

Sr. No	Medications used while self-medicating in last 6 months	Percentage
1	Analgesics	20%
2	Anti-pyretic, Anti-inflammatory agents	29.20%
3	Antibiotics	45%
4	Anti-diarrheal	10%

5	Anti-histamines	8.30%
6	Anti spasmodic	2.50%
7	Multivitamins	25.80%
8	Antacids and/or other anti-acidity medications	14.20%
9	Anti-acne medication	10.80%
10	Anxiolytics	2.50%
11	Ayurvedic medication	7.50%
12	Homeopathic medication	9.20%
13	Herbal medication	6.70%
14	Others	21.70%

Figure 3. Medications used while self-medicating in the last 6 months



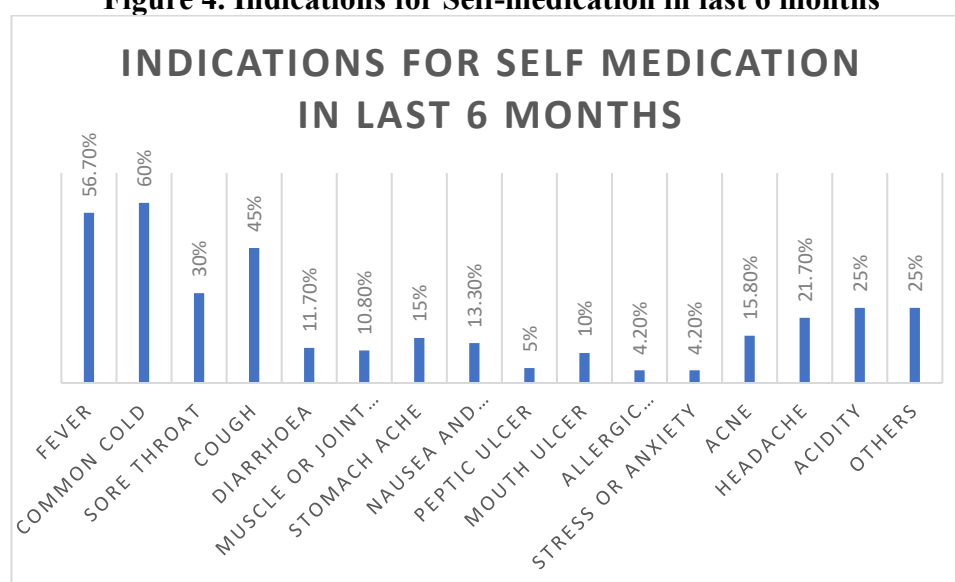
The most commonly reported indication for self-medication was **common cold**, cited by **60%** of the students, followed closely by **fever (56.7%)** and **cough (45%)**. Other frequently reported indications included **acidity (25%)**, **headache (21.7%)**, **stomach ache (15%)**, **acne (15.8%)**, and **nausea or vomiting (13.3%)**. Less commonly reported reasons were **diarrhoea (11.7%)**, **mouth ulcers (10%)**, **muscle or joint pain (10.8%)**, and **allergic conditions (4.2%)**. A small number of students used self-medication for **stress or anxiety (4.2%)** or **peptic ulcer symptoms (5%)**. Additionally, **25%** of respondents reported other miscellaneous indications.

Table 4. Indications for Self-medication in the last 6 months (n=120)

Sr. No.	Indications for Self-medication in last 6 months	Percentage
1	Fever	56.70%
2	Common cold	60%
3	Sore throat	30%
4	Cough	45%
5	Diarrhoea	11.70%
6	Muscle or joint pain	10.80%
7	Stomach ache	15%
8	Nausea and vomiting	13.30%
9	Peptic ulcer	5%
10	Mouth ulcer	10%

11	Allergic conditions	4.20%
12	Stress or anxiety	4.20%
13	Acne	15.80%
14	Headache	21.70%
15	Acidity	25%
16	Others	25%

Figure 4. Indications for Self-medication in last 6 months

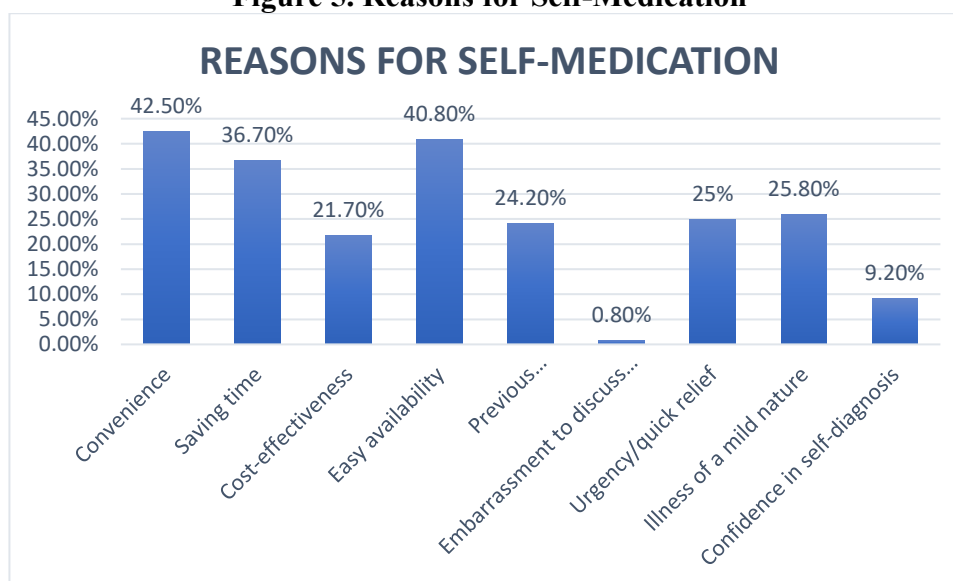


The most commonly cited reason for self-medication was **convenience**, reported by **42.5%** of students, followed closely by **easy availability of medicines (40.8%)** and **saving time (36.7%)**. Other frequently reported reasons included **previous experience with similar ailments (24.2%)**, **urgency or need for quick relief (25%)**, and the **mild nature of the illness (25.8%)**. A smaller proportion indicated **cost-effectiveness (21.7%)** and **confidence in self-diagnosis (9.2%)** as contributing factors. Only **0.8%** of students reported embarrassment in discussing symptoms with a physician as a reason for choosing self-medication.

Table 5. Reasons for self-medication (n=120)

Sr. No.	Reasons for self-medication	Percentage
1	Convenience	42.50%
2	Saving time	36.70%
3	Cost-effectiveness	21.70%
4	Easy availability	40.80%
5	Previous experience/recurrent ailment	24.20%
6	Embarrassment to discuss symptoms with the physician	0.80%
7	Urgency/quick relief	25%
8	Illness of a mild nature	25.80%
9	Confidence in self-diagnosis	9.20%

Figure 5. Reasons for Self-Medication



Our findings indicate that self-medication is highly prevalent among medical students, predominantly for **mild and self-limiting conditions** such as the common cold, low-grade fever, cough, and sore throat. This pattern aligns with global trends, where medical students frequently rely on self-medication for minor ailments that they perceive as manageable without professional consultation.⁴ Regarding knowledge related to self-medication, the majority of students demonstrated good awareness of its potential risks. A total of **99 students (82.5%)** acknowledged that self-medication can lead to adverse effects, while **90 students (75%)** agreed that taking over-the-counter medications without medical consultation is unsafe. Additionally, **82 students (68.3%)** reported being aware of the recommended dosages for commonly self-medicated drugs.

Awareness of antibiotic-related risks was particularly high, with **103 students (85.8%)** recognizing that incomplete antibiotic courses may contribute to antimicrobial resistance. Similarly, **104 students (86.7%)** believed that using two or more medications simultaneously can result in drug interactions. A substantial proportion—**107 students (89.2%)**—understood that long-term use of certain medications may cause drug dependence, and **104 students (86.7%)** reported being aware of potential side effects associated with commonly self-medicated drugs. Notably, **110 students (91.7%)** agreed that educational sessions on the risks of self-medication are essential for medical students.

Regarding attitudes toward self-medication, a majority of students expressed caution in continuing the practice of self-medication. Specifically, **81 students (67.5%)** reported that they would not continue self-medication, whereas **39 students (32.5%)** indicated that they would. A considerable proportion found self-medication acceptable under certain circumstances, with **82 students (68.3%)** agreeing it is permissible in urgent situations and **84 students (70%)** considering it acceptable for minor illnesses. Conversely, **58 students (48.3%)** believed that self-medication is generally unacceptable, reflecting a cautious approach despite the prevalence of the practice.

Regarding factors associated with self-medication practices, more than half of the students (**63 students, 52.5%**) emphasized the importance of completing a full course of antibiotics when initiating treatment on their own. A majority demonstrated careful medication practices, with **86 students (71.7%)** reporting that they read dosage instructions prior to self-medication, and **93 students (77.5%)** checking the expiry dates of the drugs used. Proper storage of medicines was also commonly observed, with **92 students (76.7%)** maintaining medications in a cool, dry place away from light. These findings indicate that while self-medication is prevalent, students generally adopt certain responsible practices to minimize risks.

The study population consisted of Indian nationals aged between 20 and 22 years. Self-medication was commonly practiced among Phase II MBBS students of Dr. D. Y. Patil Medical College, Kolhapur. These students had access to abundant sources of drug-related information, including textbooks, the internet, family members, seniors, consultants, peers, and teachers. Despite this access, gaps in comprehensive pharmacotherapeutic knowledge for specific ailments were evident.

In this study, **antibiotics** were the most frequently self-prescribed drugs, differing from previous findings by Joshi et al.¹³, where **analgesics** were the most common class. Antipyretic–anti-inflammatory medications and multivitamins were the second and third most commonly used drug classes, respectively.

The most commonly reported reasons for self-medication included **convenience, easy availability, and time-saving**, with additional reasons such as the mild nature of illness or previous experience also contributing. Self-medication appears to be a cost-effective and practical alternative for the management of minor and well-known ailments.^{14,15}

Overall, the study highlights that self-medication is prevalent among this student population. However, there is a clear need to **guide medical students on responsible self-medication practices**, including proper drug selection, dosage and awareness of potential adverse effects. Structured educational interventions could help bridge the gap between access to information and safe pharmacotherapeutic practice.

Strengths of the Study:

The study addresses self-medication practices among medical students—a population at higher risk due to easy access to drugs and partial medical knowledge. This makes the findings highly relevant for medical education and public health. A pre-validated questionnaire with 24 items ensures reliability and improves the internal validity of the data collected on knowledge, attitudes, and practices (KAP). With 120 students participating, the response rate from the cohort is high, improving representativeness and reducing non-response bias. The study includes 69 girls and 51 boys, allowing gender-wise comparison of self-medication practices. The study thoroughly evaluates: Knowledge (adverse effects, antibiotic resistance, dosage awareness), Attitude (acceptability, willingness to continue self-medication) and Practices (drug classes, indications, storage, expiry checking). This provides a holistic understanding of self-medication behaviour. Selecting only Phase II MBBS students ensures homogeneity in terms of academic exposure, reducing confounding effects of varying knowledge levels across different years. Percentages and frequencies are consistently provided, enabling easy interpretation of prevalence and trends. The study highlights unique observations—such as antibiotics being the most self-medicated drugs, and "doctor in the family" being a common source—adding valuable new insights compared with previous studies. Confidentiality was maintained, and the study purpose was explained, ensuring ethical conduct and honest responses. The findings provide evidence for incorporating rational drug-use education early in medical training, making the study educationally significant.

Limitations of the Study:

The research was conducted only among Phase II MBBS students of one medical college in Kolhapur. This limits the generalizability of the findings to other medical colleges or regions with different educational environments and healthcare access patterns. As the study uses a cross-sectional design, it captures practices and attitudes at only one point in time. It cannot assess changes in self-medication behaviour as students' progress through medical training. The findings are based on self-administered questionnaires, which may be influenced by: recall bias social desirability bias (students may underreport unsafe practices or overreport knowledge-related questions).

Although the questionnaire captures important quantitative aspects, it does not explore deeper qualitative insights such as motivations, cultural influences or detailed decision-making processes behind self-medication. The study presents mainly descriptive statistics (percentages). The absence of inferential tests limits the ability to establish associations or compare differences (e.g., gender

differences, knowledge vs. practice correlations). Since only Phase II MBBS students were included, the findings do not reflect the self-medication behaviour of students in other Phase years who may have more clinical exposure or pharmacological knowledge. The study does not evaluate whether self-medication resulted in adverse outcomes, treatment failures, or complications—important aspects of assessing the real impact of the practice. Some practices such as use of antibiotics without prescription or inappropriate dosages may be underreported due to fear of judgement despite assurances of confidentiality.

Future Scope of the Study:

Conducting similar studies across various medical colleges in Maharashtra and India would help compare patterns of self-medication and improve the generalizability of the findings. Following the same group of students over the course of their MBBS program would help understand how increasing clinical exposure and pharmacology knowledge influence self-medication behaviour.

4. CONCLUSION

The present study demonstrates that self-medication is highly prevalent among Phase II MBBS students of Dr. D. Y. Patil Medical College, Kolhapur, with 85% reporting the practice. Although most students used self-medication for minor and commonly occurring conditions such as common cold, fever, cough, and sore throat, the frequent use of antibiotics without prescription is a concerning finding. Despite this, students generally displayed good awareness regarding the risks of self-medication, including adverse drug effects, drug interactions, antibiotic resistance and drug dependence.

Convenience, easy availability of medicines and time-saving were the major reasons influencing self-medication. The most common sources of information were the internet, textbooks, and previous prescriptions while medicines were frequently procured from family members who were doctors or from pharmacists.

Although students demonstrated satisfactory knowledge and a generally cautious attitude toward self-medication, the gap between knowledge and practice was evident, particularly in the use of antibiotics. This highlights the need for structured educational interventions focusing on rational drug use, safe self-medication practices and antibiotic stewardship early in medical training.

Overall, the study reinforces that while self-medication may serve as a convenient option for minor ailments, it requires responsible practice. Strengthening pharmacology teaching, counselling on the dangers of inappropriate drug use, and increasing awareness about Over-The-Counter (OTC) regulations can help reduce the potential risks associated with self-medication. Further studies involving multiple institutions and longitudinal follow-up may provide deeper insights into changing patterns and determinants of self-medication among medical students.

References:

1. World Health Organization. Guidelines for the regulatory assessment of medicinal products for use in self-medication. World Health Organization; 2000.
2. Selvaraj K, Kumar SG, Ramalingam A. Prevalence of self-medication practices and its associated factors in Urban Puducherry, India. *Perspectives in clinical research*. 2014 Jan 1;5(1):32-6.
3. Hassan NM, Koabar SM. Self-medication pattern among medical students in Middle Delta, Egypt. *BMC Medical Education*. 2025 Jan 21;25(1):99.
4. Behzadifar M, Behzadifar M, Aryankhesal A, Ravaghi H, Baradaran HR, Sajadi HS, Khaksarian M, Bragazzi NL. Prevalence of self-medication in university students: systematic review and meta-analysis. *East Mediterr Health J*. 2020 Jul 23;26(7):846-57.
5. Kasulkar AA, Gupta M. Self medication practices among medical students of a private institute. *Indian journal of pharmaceutical sciences*. 2015 Mar;77(2):178.

6. Galato D, Galafassi LD, Alano GM, Trauthman SC. Responsible self-medication: review of the process of pharmaceutical attendance. *Brazilian Journal of Pharmaceutical Sciences*. 2009;45:625-33.
7. World Health Organization. The Role of the pharmacist in self-care and self-medication: report of the 4th WHO Consultative Group on the Role of the Pharmacist, The Hague, The Netherlands, 26-28 August 1998. In *The Role of the pharmacist in self-care and self-medication: report of the 4th WHO Consultative Group on the Role of the Pharmacist, The Hague, The Netherlands, 26-28 August 1998* 1998.
8. Ruiz ME. Risks of self-medication practices. *Current drug safety*. 2010 Oct 1;5(4):315-23.
9. Bennadi D. Self-medication: A current challenge. *Journal of basic and clinical pharmacy*. 2013 Dec;5(1):19.
10. Honnekeri A, Bhavshaikh N, Shah M, Nayak U. Self-medication in medical students in urban India: Exploring the extent of this dangerous practice. *Journal of Family Medicine and Primary Care*. 2024 Aug 1;13(8):3381-7.
11. Sundararajan A, Thangappan AK. Knowledge, attitude and practice of self medication among undergraduate medical students in a teaching institution.
12. Jaiswal M, Gupta S, Kumar N, Narkhede V. Prevalence of Self Medication in Medical Students. *www.ijphrd.com*. 2024 Jan;15(1):199.
13. Joshi DK, Srujana P, Patil BS, Shareef SM, Karunasree P, Raikar S, Tadvi NA, Naidu CD, Rao VY. Study on Self-medication Practices among Second Year MBBS Undergraduates. *INTERNATIONAL JOURNAL OF PHARMACEUTICAL AND PHYTOPHARMACOLOGICAL RESEARCH*. 2015 Mar 1;4(5):298-300.
14. James H, Handu SS, Al Khaja KA, Ootom S, Sequeira RP. Evaluation of the knowledge, attitude and practice of self-medication among first-year medical students. *Medical principles and practice*. 2006 Jun 12;15(4):270-5.
15. Chaudhary V, Kumari S, Sharma B, Ahuja C, Kishore H, Pal B. Prevalence and patterns of self-medication practices in India: A systematic review and meta-analysis. *Medical Journal Armed Forces India*. 2025 Jul 1;81(4):377-85.