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Original Article

Self-Medication Practices and Patterns Among Medical Students: A Cross-Sectional Study

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Abstract

Background: Self-medication is a common healthcare practice involving the use of medicines for self-recognized symptoms without consultation with a qualified healthcare professional. Medical students may be particularly prone to self-medication because of their medical knowledge, easy access to medicines, academic workload, and confidence in managing minor illnesses. However, inappropriate self-medication can result in adverse drug reactions, drug interactions, treatment failure, and antimicrobial resistance. **Objectives:** To assess the prevalence and pattern of self-medication among Second and Third MBBS students and to determine the commonly used medicines, indications, reasons for self-medication, sources of information and procurement, and awareness regarding its potential risks. **Methods:** A cross-sectional observational study was conducted in the Department of Pharmacology, Institute of Medical Sciences and Research, Mayani, Satara, Maharashtra, India, from January 2015 to March 2015. A total of 250 Second and Third MBBS students were included. Data were collected using a pre-designed, structured, self-administered questionnaire. Information regarding self-medication practices, symptoms, medications used, reasons, sources of information and procurement, and awareness of potential risks was collected. Qualitative variables were expressed as frequencies and percentages, and associations were assessed using the Chi-square test or Fisher's exact test, as appropriate. **Results:** Of the 250 students, 202 (80.8%) reported practicing self-medication. The prevalence was higher among Third MBBS students (86.9%) than Second MBBS students (75.0%), with a statistically significant difference ($\chi^2 = 6.42$, $p = 0.011$). Headache was the most common indication for self-medication (70.3%), followed by fever (58.4%) and common cold (52.0%).

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Analgesics/antipyretics were the most frequently used medications (83.2%), followed by antacids/antiulcer drugs (45.0%) and antihistamines (37.6%). Antibiotic self-medication was reported by 31.7% of students. The most common reason was considering the illness mild (67.3%), followed by saving time (59.9%) and previous experience with similar symptoms (51.5%). Pharmacy without prescription was the most common source of medicines (76.2%). Awareness of antibiotic resistance and adverse drug reactions was reported by 88.4% and 85.6% of students, respectively. **Conclusion:** Self-medication was highly prevalent among the medical students studied, despite substantial awareness of its potential risks. The findings indicate a gap between knowledge and practice and highlight the need for strengthening education regarding rational medicine use, responsible self-medication, and appropriate antibiotic use among medical students.

Keywords: Self-medication; medical students; MBBS; analgesics; antibiotics; rational drug use; drug safety.

Introduction

Self-medication refers to the use of medicines by individuals to treat self-recognized symptoms or illnesses without consultation with a qualified healthcare professional. It may include the use of over-the-counter medicines, previously prescribed drugs, medicines recommended by family members or friends, or drugs obtained based on information from the internet and other informal sources.[1] While responsible self-care can improve access to treatment and reduce the burden on healthcare services, inappropriate self-medication may result in incorrect diagnosis, adverse drug reactions, drug interactions, treatment failure, and delayed medical consultation.[2]

Medical students represent a unique population in relation to self-medication. Their increasing knowledge of pharmacology, pathology, and clinical medicine may provide them with greater confidence in recognizing common symptoms and selecting medications. At the same time, easy access to medicines, familiarity with prescription drugs, academic stress, demanding schedules, and limited time for seeking professional medical advice may encourage self-medication.[3] Studies conducted among medical students have reported substantial use of medications without consultation, particularly for common conditions such as headache, fever, cough, cold, gastrointestinal complaints, and musculoskeletal pain. [4,5]

The pattern of self-medication may vary according to the type of illness, year of medical education, availability of medicines, previous experience with a particular drug, and perceived

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severity of symptoms. Analgesics, antipyretics, antihistamines, antibiotics, and gastrointestinal medications are among the commonly reported drugs used for self-medication. [4,6] Although some of these medicines are readily available without prescription in many settings, their inappropriate use can have important consequences. In particular, unnecessary or inappropriate antibiotic consumption contributes to antimicrobial resistance, which is recognized as a major global public-health concern. [7]

Self-medication among medical students is therefore important not only as an individual health behaviour but also from a broader public-health perspective. Medical students are future prescribers and their personal medication practices may influence their attitudes toward prescribing and medicine use in professional practice. Understanding the reasons for self-medication, sources of drug information, commonly used medications, frequency of practice, and awareness regarding its potential risks can help identify areas requiring educational intervention. [3,5]

Despite increasing awareness about rational drug use, self-medication remains common among university and medical students in different parts of the world. [8] However, the magnitude and patterns of this practice can differ between institutions and populations because of variations in healthcare accessibility, regulatory practices, socioeconomic conditions, and educational exposure. Therefore, institution-specific assessment is useful for understanding the local pattern of self-medication and identifying modifiable factors associated with the practice. [8]

The present study, titled “Self-Medication Practices and Patterns Among Medical Students: A Cross-Sectional Study,” was undertaken to assess the prevalence and pattern of self-medication among medical students, identify the commonly used medications and indications, explore the sources of information influencing medication use, and evaluate students’ awareness regarding the potential risks associated with self-medication. The findings may provide useful evidence for strengthening awareness regarding rational and responsible medicine use among future healthcare professionals.

Objectives

Primary Objective

1. To assess the **prevalence and pattern of self-medication practices** among Second and Third MBBS students.

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Secondary Objectives

1. To identify the **common illnesses or symptoms** for which self-medication was practiced.
2. To determine the **commonly used classes of medicines** for self-medication.
3. To assess the **sources of information and sources of procurement** of medicines used for self-medication.
4. To identify the **reasons for practicing self-medication** among medical students.
5. To assess students' **knowledge and awareness regarding the benefits and potential risks** associated with self-medication.
6. To compare self-medication practices between **Second and Third MBBS students**.

Materials and Methods

Study Design

The present study was a **cross-sectional observational study** conducted to assess self-medication practices and patterns among undergraduate medical students.

Study Setting

The study was conducted in the **Department of Pharmacology, Institute of Medical Sciences and Research, Mayani, Satara, Maharashtra, India**.

Study Duration

The study was conducted over a period of **three months, from January 2015 to March 2015**.

Study Population

The study population comprised undergraduate medical students studying in **Second MBBS and Third MBBS** at the Institute of Medical Sciences and Research, Mayani.

Sample Size

A total of **250 MBBS students** from Second and Third MBBS were included in the study.

Inclusion Criteria

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Students were included if they:

1. Were studying in Second or Third MBBS during the study period.
2. Were willing to participate in the study and provided informed consent.
3. Were present at the time of administration of the questionnaire.

Exclusion Criteria

Students who did not provide consent or submitted substantially incomplete questionnaires were excluded from the final analysis.

Study Tool and Data Collection

Data were collected using a **pre-designed, structured, and self-administered questionnaire**. Before administration, the students were informed about the purpose of the study and were assured regarding the confidentiality of their responses. Participation was voluntary.

The questionnaire collected information regarding demographic and academic characteristics, history and frequency of self-medication, illnesses or symptoms for which self-medication was practiced, commonly used medicines or drug classes, sources of information about medicines, sources of procurement, reasons for choosing self-medication, and awareness regarding its potential benefits and risks.

For the purpose of the study, **self-medication** was considered as the use of medicines by students for self-recognized symptoms or illnesses without consultation with a qualified medical practitioner for the particular episode.

Outcome Measures

The primary outcome measure was the **prevalence of self-medication** among the participating medical students. Other outcome measures included the pattern of medicines used, indications for self-medication, reasons for self-medication, sources of drug information and procurement, and awareness regarding the risks associated with self-medication.

Statistical Analysis

The collected data were entered into Microsoft Excel and analyzed using appropriate statistical software. Qualitative variables were expressed as **frequencies and percentages**, while

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quantitative variables, wherever applicable, were summarized as **mean ± standard deviation (SD)**. The association between categorical variables, including the year of MBBS and self-medication practices, was assessed using the **Chi-square test or Fisher's exact test**, as appropriate. A **p-value <0.05 was considered statistically significant**.

Ethical Considerations

The study was conducted after obtaining approval from the **Institutional Ethics Committee**. Participation was voluntary, and informed consent was obtained from all participants. Confidentiality and anonymity of the information provided by the students were maintained throughout the study.

Results

Table 1. Sociodemographic and academic characteristics of study participants (n=250)

Variable	Category	Frequency (n)	Percentage (%)
Age (years)	19–20	68	27.2
	21–22	142	56.8
	≥23	40	16
Gender	Male	138	55.2
	Female	112	44.8
Academic year	Second MBBS	128	51.2
	Third MBBS	122	48.8

Table 1 shows the sociodemographic and academic characteristics of the 250 study participants. The majority of students, 142 (56.8%), were in the 21–22-year age group, followed by 68 (27.2%) students aged 19–20 years and 40 (16.0%) aged ≥23 years. There were 138 (55.2%) male and 112 (44.8%) female students. Regarding academic year, 128 (51.2%) participants were from Second MBBS, while 122 (48.8%) were from Third MBBS.

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Table 2. Prevalence of self-medication among MBBS students (n=250)

Self-medication practice	Frequency (n)	Percentage (%)
Practiced self-medication	202	80.8
Did not practice self-medication	48	19.2
Total	**250**	**100**

Table 2 presents the prevalence of self-medication among the study participants. Out of 250 students, 202 (80.8%) reported practicing self-medication, whereas 48 (19.2%) did not report such practice. Thus, self-medication was a commonly reported practice among the medical students included in the study.

Table 3. Comparison of self-medication according to academic year

Academic year	Self-medication Yes n (%)	Self-medication No n (%)	Total
Second MBBS	96 (75.0)	32 (25.0)	128
Third MBBS	106 (86.9)	16 (13.1)	122
Total	**202 (80.8)**	**48 (19.2)**	**250**

$\chi^2 = 6.42$; $p = 0.011$ — statistically significant.

Table 3 compares self-medication practices according to the academic year of the students. Among Second MBBS students, 96 (75.0%) reported self-medication, compared with 106 (86.9%) among Third MBBS students. The proportion of students not practicing self-medication was 25.0% in Second MBBS and 13.1% in Third MBBS. The difference between the two groups was statistically significant ($\chi^2 = 6.42$, $p = 0.011$), with a higher proportion of Third MBBS students reporting self-medication.

Table 4. Common symptoms/conditions for which self-medication was practiced (n=202)

Symptom/condition*	Frequency (n)	Percentage (%)
Headache	142	70.3

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Fever	118	58.4
Common cold	105	52
Sore throat	76	37.6
Body ache/myalgia	69	34.2
Gastric symptoms/acidity	61	30.2
Menstrual pain	48	23.8
Cough	44	21.8
Diarrhoea	22	10.9
Other conditions	18	8.9

Table 4 depicts the common symptoms and conditions for which self-medication was practiced among the 202 students who reported self-medication. Headache was the most frequently reported indication, reported by 142 (70.3%) students, followed by fever in 118 (58.4%) and common cold in 105 (52.0%). Sore throat and body ache/myalgia were reported by 76 (37.6%) and 69 (34.2%) students, respectively. Gastric symptoms or acidity were reported by 61 (30.2%), while menstrual pain, cough, and diarrhoea were reported by 48 (23.8%), 44 (21.8%), and 22 (10.9%) students, respectively. Multiple responses were permitted.

Table 5. Classes of medicines commonly used for self-medication (n=202)

Drug class	**Frequency (n)**	**Percentage (%)**
Analgesics/antipyretics	168	83.2
Antacids/antiulcer drugs	91	45
Antihistamines	76	37.6
Antibiotics	64	31.7
Cough and cold preparations	58	28.7
Antispasmodics	42	20.8
Vitamins/mineral preparations	39	19.3
Anti diarrhoeal drugs	21	10.4

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Table 5 describes the classes of medicines used for self-medication. Analgesics and antipyretics were the most commonly used medicines, reported by 168 (83.2%) students. This was followed by antacids/antiulcer drugs in 91 (45.0%), antihistamines in 76 (37.6%), and antibiotics in 64 (31.7%) students. Cough and cold preparations were used by 58 (28.7%), while antispasmodics and vitamin/mineral preparations were reported by 42 (20.8%) and 39 (19.3%) students, respectively. Antidiarrheal drugs were used by 21 (10.4%) students. Multiple responses were permitted.

Table 6. Reasons for practicing self-medication (n=202)

Reason	Frequency (n)	Percentage (%)
Illness considered mild	136	67.3
Saves time	121	59.9
Previous experience with same symptoms	104	51.5
Easy availability of medicines	92	45.5
Confidence in own medical knowledge	86	42.6
Avoidance of consultation fees	38	18.8
Difficulty accessing healthcare services	24	11.9
Other reasons	16	7.9

Table 6 presents the reasons reported by students for practicing self-medication. The most common reason was the perception that the illness was mild, reported by 136 (67.3%) students. Saving time was reported by 121 (59.9%), while previous experience with similar symptoms was cited by 104 (51.5%). Easy availability of medicines was reported by 92 (45.5%), and 86 (42.6%) students reported confidence in their own medical knowledge as a reason. Avoidance of consultation fees and difficulty accessing healthcare services were reported by 38 (18.8%) and 24 (11.9%) students, respectively. Multiple responses were permitted.

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Table 7. Sources of information and procurement of medicines (n=202)

Variable	Category	Frequency (n)	Percentage (%)
Source of information	Previous prescription/experience	118	58.4
	Medical textbooks/academic knowledge	82	40.6
	Pharmacist	48	23.8
	Internet/social media	42	20.8
	Friends/relatives	27	13.4
Source of medicines	Pharmacy without prescription	154	76.2
	Previously prescribed medicines	73	36.1
	Medicine kept at home	61	30.2
	Friends/relatives	14	6.9

Table 7 shows the sources of information and procurement of medicines among students practicing self-medication. Previous prescriptions or personal experience constituted the most common source of information, reported by 118 (58.4%) students, followed by medical textbooks or academic knowledge in 82 (40.6%). Pharmacists and the internet/social media were reported as sources of information by 48 (23.8%) and 42 (20.8%) students, respectively. Regarding procurement, the majority, 154 (76.2%), obtained medicines directly from a pharmacy without a prescription. Previously prescribed medicines and medicines kept at home were used by 73 (36.1%) and 61 (30.2%) students, respectively. Multiple responses were permitted.

Table 8. Awareness regarding potential risks of self-medication (n=250)

Awareness parameter	Yes n (%)	No n (%)
Aware of adverse drug reactions	214 (85.6)	36 (14.4)
Aware of drug–drug interactions	198 (79.2)	52 (20.8)
Aware of antibiotic resistance	221 (88.4)	29 (11.6)

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Aware that self-medication may mask serious illness	183 (73.2)	67 (26.8)
Believe self-medication can be harmful	207 (82.8)	43 (17.2)
Believe antibiotics should be used only on prescription	196 (78.4)	54 (21.6)

Table 8 presents the students' awareness regarding the potential risks associated with self-medication. A large majority, 214 (85.6%), reported awareness of adverse drug reactions, while 198 (79.2%) were aware of possible drug–drug interactions. Awareness regarding antibiotic resistance was reported by 221 (88.4%) students. Furthermore, 183 (73.2%) students recognized that self-medication could potentially mask a serious underlying illness. Overall, 207 (82.8%) students believed that self-medication could be harmful, while 196 (78.4%) believed that antibiotics should be used only with a prescription. These findings indicate that although self-medication was frequently practiced, a substantial proportion of students were also aware of its potential risks.

Discussion

The present study assessed self-medication practices among 250 Second and Third MBBS students. In our study, 202 (80.8%) students reported practicing self-medication. This finding indicates that self-medication was common among the study participants. Our observed prevalence was comparable to that reported in several studies among medical students. Badiger et al., in a study of 200 medical students from South India, reported a substantially higher prevalence of 92%.[4] Similarly, a study by Kasulkar and Gupta among 488 medical students in Nagpur reported self-medication in 71.7% of students. [5] More recently, a study conducted among medical students in urban India reported a prevalence of 83.9%, which was close to our finding. [6] A systematic review and meta-analysis involving 76 studies and 29,726 medical students from 25 countries reported a pooled prevalence of 77.6%, further supporting the high frequency observed in our study. [7]

The differences in prevalence between studies may be related to variations in study population, academic level, definition of self-medication, recall period, questionnaire design, and availability of medicines. A recent systematic review of studies from India reported a pooled

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prevalence of 64.4% across the general population and different student groups, with healthcare-domain students having a prevalence of approximately 79%.[8] The heterogeneity between studies suggests that prevalence estimates should be interpreted in the context of the population and methodology used.

In the present study, Third MBBS students showed a higher prevalence of self-medication (86.9%) compared with Second MBBS students (75.0%), and this difference was statistically significant ($\chi^2 = 6.42$, $p = 0.011$). This finding may reflect greater exposure to clinical subjects and pharmacological knowledge among students in the later phase of undergraduate medical education. A similar pattern was reported by Kasulkar and Gupta, who found that self-medication was more prevalent among final-year medical students. [5] However, not all studies have demonstrated an association between academic year and self-medication. A recent Indian study involving 180 medical students reported no significant difference between academic years, indicating that factors other than academic exposure may also contribute to the practice. [7]

With respect to the indications for self-medication, headache was the most commonly reported symptom in our study (70.3%), followed by fever (58.4%) and common cold (52.0%). These findings are broadly consistent with previous Indian studies. Badiger et al. reported common cold (69%), fever (63%), and headache (60%) as the most frequent indications for self-medication. [4] Kasulkar and Gupta similarly identified fever and headache among the most frequently reported illnesses. In a recent Indian study, common cold was the leading indication for self-medication. Thus, minor and self-limiting symptoms appear consistently among the principal circumstances in which medical students choose to self-medicate. [4]

Regarding the types of medicines used, analgesics/antipyretics were the most frequently used drugs in our study (83.2%). Antacids/antiulcer drugs (45.0%) and antihistamines (37.6%) were the next most frequently reported categories. Antibiotic self-medication was reported by 31.7% of students. These findings are consistent with the established pattern in medical-student populations. Badiger et al. reported antipyretics (71%), analgesics (65%), antihistamines (37%), and antibiotics (34%) as the most commonly self-medicated drugs. [4] Kasulkar and Gupta also found antipyretics and analgesics to be the predominant medications. [9] The systematic review by Izadpanah et al. estimated pooled prevalence of analgesic self-medication

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at 47.1% and antibiotic self-medication at 34.8% among medical-science students, although substantial heterogeneity existed between individual studies. [4]

The relatively frequent use of antibiotics in our study is noteworthy. Although the present study did not assess appropriateness of individual antibiotic prescriptions, self-directed antibiotic use can contribute to inappropriate treatment, adverse effects and antimicrobial resistance. The systematic review by Izadpanah et al. documented considerable antibiotic self-medication among medical students internationally, with marked variation between studies. [4] Therefore, antibiotic use represents an important area for antimicrobial-stewardship education among undergraduate medical students.

The perception that the illness was mild (67.3%) was the most frequently reported reason for self-medication in our study, followed by saving time (59.9%) and previous experience with similar symptoms (51.5%). This pattern is comparable with previous research. Badiger et al. reported that 82% of students practiced self-medication because the ailment was considered minor, while time-saving was also an important consideration. [1] Kasulkar and Gupta reported minor ailments and quick relief as prominent reasons. [9] In the recent urban Indian study, convenience was the most frequently reported reason (52.8%), followed by the mild nature of illness (45.6%), urgency/quick relief (40.6%), and previous experience (37.8%).[3] These findings suggest that perceived simplicity of symptoms, convenience and previous familiarity with treatment are recurring reasons for self-medication among medical students.

Previous prescription or personal experience was the principal source of information in our study (58.4%), followed by medical textbooks or academic knowledge (40.6%). This finding is consistent with the observations of Badiger et al., who reported textbooks (39%) and seniors/classmates (38%) as important sources of information.[1] Kasulkar and Gupta similarly reported reading material as an important source.[9] The recent systematic review of medical students identified healthcare workers as an important source of information, although the relative contribution of healthcare workers, previous prescriptions, textbooks, peers and pharmacists varied substantially across studies.[4]

In our study, 76.2% of students obtained medicines directly from pharmacies without a prescription. This finding is relevant because easy availability of medicines can facilitate self-medication. Badiger et al. specifically identified easy availability of drugs as an important

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factor facilitating self-medication among medical students. [4] The recent Indian study also reported pharmacists'/pharmacy stores as an important source for obtaining medicines. [10]

Despite the high prevalence of self-medication, awareness regarding its potential risks was relatively high in our study. 85.6% of students were aware of adverse drug reactions, 79.2% were aware of drug–drug interactions, and 88.4% were aware of antibiotic resistance. Furthermore, 82.8% believed that self-medication could be harmful. This contrasts with the earlier study by Badiger et al., in which approximately one-third of students were unaware of adverse effects of the medications they used. [4] The difference may reflect differences in educational exposure, questionnaire wording, study period and participant characteristics. It also demonstrates that knowledge of potential risks does not necessarily prevent self-medication, since a large proportion of students in our study continued to practice it despite awareness of possible adverse consequences.

Overall, the findings of our study are broadly consistent with previous literature showing that self-medication is common among medical students. The high use of analgesics/antipyretics, frequent treatment of minor symptoms, reliance on previous prescriptions or medical knowledge, and easy access to pharmacies were also reported in earlier studies. [1-4] At the same time, differences in prevalence and individual medication patterns between studies highlight the influence of local prescribing practices, accessibility of healthcare, academic exposure and methodological differences.

Conclusion

The present study demonstrated that self-medication was a common practice among MBBS students, with 80.8% of the participants reporting its use. Third MBBS students showed a significantly higher prevalence of self-medication compared with Second MBBS students. Headache, fever, and common cold were the most frequent conditions for which students practiced self-medication, while analgesics and antipyretics were the most commonly used medicines. Previous experience, perception of illness as mild, and the convenience of saving time were the major reasons for self-medication. Pharmacies without a prescription and previous prescriptions or personal experience were important sources for obtaining and selecting medicines.

Although most students demonstrated good awareness regarding adverse drug reactions, drug interactions, antibiotic resistance, and other potential hazards of self-medication, this

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awareness did not prevent the practice. The findings therefore suggest a knowledge–practice gap among medical students. Structured education regarding rational drug use, responsible self-medication, appropriate antibiotic use, adverse drug reactions, and the importance of professional consultation may help promote safer medication practices among future healthcare professionals.

Conflict of interest: None

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