

Study of Knowledge, Attitude & Practice of Self-Medication Among 2nd Year MBBS Students at a Tertiary Care Teaching Hospital in Maharashtra

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Abstract—Background: Self-medication involves individuals selecting and using medications to treat self-recognized illnesses without professional consultation. In developing nations like India, this practice is a significant driver of irrational drug use, raising serious public health concerns regarding adverse events and antimicrobial resistance. Medical students represent a particularly vulnerable cohort, as they acquire early pharmacological knowledge but often lack clinical training.

Methods: A prospective, cross-sectional, questionnaire-based study was conducted among 95 second-year MBBS students at a tertiary care teaching hospital in Maharashtra. A validated Google Forms questionnaire evaluated their knowledge, attitude, and practice parameter sets. Data were compiled and analyzed using descriptive statistics.

Results: Among the 95 respondents, the primary age bracket was 20–22 years (74.7%), with a demographic split of 61.1% males and 38.9% females. The primary source of information driving self-medication was internet sources (50.5%), followed by seniors and peers (25.3%). The primary clinical complaints triggering self-medication were cold and fever (72.9% each) and cough (61.2%). Paracetamol was the most frequently utilized therapeutic agent (68.6%), while Azithromycin was the most common antibiotic misused (7.0%). Prominent adverse events included nausea and vomiting (61.35%).

Conclusion: Self-medication is highly prevalent among second-year medical students, driven heavily by online channels and peer networks. Although basic pharmacological knowledge exists, there is an urgent need to mandate educational interventions regarding the hazards of self-treatment, particularly antimicrobial misuse, to foster rational prescribing behavior in future physicians.

Index Terms—Self Medication, Over the Counter Drugs, Prescription drugs,

I. INTRODUCTION

Self-medication is defined by the World Health Organization (WHO) as the selection and use of commercial pharmaceutical or medicinal products by individuals to treat self-recognized disorders or symptoms, the intermittent or continued use of medication previously prescribed by a physician for chronic or recurring conditions, or the use of medication based on the advice of laypersons or unauthorized health workers.¹ These compounds, generally classified as over-the-counter (OTC) or non-prescription drugs, are legally accessible directly through retail pharmacy outlets without requiring a formal medical prescription. Globally, the practice of self-medication has grown significantly due to increased digital connectivity, broader access to health information, and economic incentives to bypass formal clinical consultations.^{2,3}

While responsible self-medication can offer individual and systemic economic benefits—such as providing rapid relief for mild physiological issues and reducing the operational load on overextended primary public healthcare centers—inappropriate practices present serious clinical risks.⁴ These hazards include incorrect self-diagnosis, delayed access to professional care for underlying pathologies, inappropriate drug selection, dangerous drug-drug interactions, incorrect dosage regimens, masking of severe symptoms, and severe adverse drug events.⁵ particularly critical public health

threat associated with unchecked self-treatment is the rise of antimicrobial resistance (AMR), driven by the inappropriate use of antibiotic classes for self-limiting viral infections⁶

Among the diverse demographics vulnerable to this practice, undergraduate medical students present a unique and complex dynamic. As they advance through their formal curriculum, they gain substantial theoretical insight into drug classes, therapeutic indicators, and mechanisms of action.⁷ However, during their early undergraduate years, they lack the clinical exposure, diagnostic experience, and judgment required to make safe, evidence-based therapeutic decisions. This early familiarity with drug terminologies can create a false sense of security, making them more likely to engage in self-treatment without professional oversight.^{8,9} Additionally, academic pressure, easy access to medical text compendiums, peer networks, and digital communication channels have been shown to increase self-medication behaviors in this group.^{10,11}

Investigating the knowledge, attitude, and practice (KAP) parameters of self-medication within this specific demographic is essential. Medical students are not only immediate consumers of pharmaceuticals but also represent the next generation of practicing clinicians. The behaviors, biases, and prescribing self-reliance they develop during their formative undergraduate years can directly influence their future clinical decisions, approach to patient safety, and institutional prescription habits.^{12,13} While multiple regional evaluations have tracked self-treatment habits across various parts of India, changing digital resources and shifting student access patterns require localized, continuous assessments within regional teaching centers.^{14,15} Therefore, this prospective cross-sectional evaluation was conducted to map the self-medication KAP profiles of second-year undergraduate medical students at a tertiary care teaching hospital in Maharashtra, India.

II. MATERIALS AND METHODS

Study Design and Institutional Setting

This study used a prospective, cross-sectional, descriptive, non-interventional design to assess self-medication parameters over a predefined analytical timeline. The institutional setting was a prominent,

government-run tertiary care teaching hospital located in Maharashtra, India.

Ethical Approval and Consent Procedures

The operational protocol for this research was reviewed, validated, and approved by the Institutional Ethics Committee (IEC) prior to formal initiation. Digital informed consent was obtained from each volunteer participant before opening the data gathering tool, ensuring complete confidentiality, data privacy, and voluntary involvement.

Study Population and Sampling Framework

The target population comprised undergraduate medical students currently enrolled in their second year of the MBBS curriculum. This cohort was selected because they have completed basic foundational medical coursework and are actively learning core systemic pharmacology, making them an ideal group to evaluate early self-treatment behaviors.

Data Collection Instrument

Data gathering was performed using a pre-designed, structured, and validated digital questionnaire deployed via Google Forms to accommodate the cohort's digital workflow. The questionnaire was divided into three operational segments: Demographic baselines, Knowledge profiles, and Practice patterns.

Statistical Analysis

Completed questionnaire responses were extracted from the secure database and exported directly into Microsoft Excel. Data verification steps removed any duplicate or incomplete submissions. The verified data were evaluated using descriptive statistics, expressing categorical and nominal parameters as raw counts (n) and percentage distributions (%).

III. RESULTS

A total of 95 second-year undergraduate MBBS students completed the digital KAP questionnaire. The cohort showed a higher distribution of male students (n = 58; 61.1%) compared to female students (n = 37; 38.9%), as shown in Table 1. The age distribution was heavily concentrated within the 20–22 years bracket (n = 71; 74.7%), followed by the 23–25 years bracket (n = 18; 18.9%), with minimal entries at the extremes of the age scale (Table 1). This reflects the standard entry age pattern for undergraduate medical education.

Table 1: Demographic Profile

Demographic Parameter	Sub-category Profile	Participant Count (n)	Percentage Split (%)
Gender Distribution	Male Students	58	61.1%
	Female Students	37	38.9%
Age Representation (Years)	17–19 Years	3	3.2%
	20–22 Years	71	74.7%
	23–25 Years	18	18.9%
	> 25 Years	3	3.2%

Regarding primary information channels driving self-medication choices, digital internet sources and online health portals were cited by more than half the sample (n = 48; 50.5%), highlighting a profound shift away from traditional media or print texts. Recommendations from seniors, friends, and family peer networks were the next most common channel (n = 24; 25.3%), while formal reference text resources and medical pharmacology textbooks were actively utilized by only 17.9% of participants (n = 17). Media broadcasts and commercial television ads had a minimal impact, accounting for only 4.2% (n = 4) of responses (Table 2)

Table 2: Sources of Information Leading to Self-Medication Practices

Information Source Class	Participant Responses (n)	Percentage Prevalence (%)
Internet Portals and Digital Sources	48	50.5%
Seniors, Peers, and Family Networks	24	25.3%
Formal Medical Textbooks and Compendiums	17	17.9%
Television and Media Platforms	4	4.2%
Other Miscellaneous Channels	2	2.1%

The clinical triggers and corresponding drug selection patterns are comprehensively summarized in Table 3. The primary systemic complaints prompting self-treatment behaviors were acute cold symptoms and fever / hyperthermia, with each condition reported by 72.9% of the cohort (n = 62). These were followed closely by acute cough / respiratory irritation (61.2%, n = 52) and tension headaches (54.1%, n = 46). General body pain / myalgia was noted by 41.2% (n = 35), while localized complaints like abdominal pain (14.1%) or skin rashes (3.5%) were less frequent. In terms of therapeutic agents selected, paracetamol was the most widely used medication, chosen by over two-thirds of the participants (n = 65; 68.6%) for its antipyretic and analgesic properties. Alarming, antibiotic misuse was prominent, with the broad-spectrum agent Azithromycin chosen by 7.0% (n = 7) of students without professional consultation. Other antibiotics like Amoxicillin (2.1%) and Ofloxacin (2.1%) were also reported. Antihistamine choices were led by Cetirizine at 6.0% (n = 6), and non-steroidal anti-inflammatory drugs (NSAIDs) were represented by Diclofenac at 5.3% (n = 5).

Table 3: Clinical Indications and Drug Classes Involved in Self-Medication

Clinical Indication Set	Prevalence n (%)	Therapeutic Drug Selection	Prevalence n (%)
Acute Cold Symptoms	62 (72.9%)	Paracetamol	65 (68.6%)
Fever / Hyperthermia	62 (72.9%)	Azithromycin (Antibiotic)	7 (7.0%)
Cough / Respiratory Irritation	52 (61.2%)	Cetirizine (Antihistamine)	6 (6.0%)
Tension Headaches	46 (54.1%)	Diclofenac (NSAID)	5 (5.3%)
General Body Pain / Myalgia	35 (41.2%)	Cough Syrups	5 (5.3%)
Abdominal Pain / Spasms	12 (14.1%)	Mefenamic Acid	3 (3.1%)
Earache / Local Discomfort	3 (3.5%)	Amoxicillin (Antibiotic)	2 (2.1%)
Skin Infections / Rashes	3 (3.5%)	Ofloxacin (Antibiotic)	2 (2.1%)

A significant finding of this evaluation was the high prevalence of adverse events experienced during unguided drug use. Gastrointestinal (GI) tract disturbances were highly predominant, with nausea and vomiting reported by 61.35% of the sample who

practiced self-medication. Furthermore, diarrhea was reported by 11.10% of participants, underscoring that self-treatment carries immediate clinical risks and physiological consequences even among individuals with theoretical pharmacological awareness.

IV. DISCUSSION

This prospective cross-sectional study demonstrates a remarkably high prevalence of self-medication practices among second-year undergraduate medical students at this tertiary care teaching hospital in Maharashtra. Medical students represent a highly unique demographic; as they acquire foundational pharmacological knowledge, they often develop a premature confidence in managing their own health issues. This can lead to self-treatment behaviors before they have developed the necessary clinical diagnostics, differential diagnosis training, and prescribing experience required for patient safety.^{1,2}

This premature therapeutic independence creates a unique public health paradox where future health professionals engage in the very irrational drug practices they are being trained to prevent.³

Our observations regarding primary information channels highlight a significant and definitive modern shift toward digital sources. The high reliance on internet search engines and online medical sites (50.5%) demonstrates that medical students frequently bypass traditional textbooks or expert consults in favor of rapid digital tools.⁴

While online health platforms offer easy access to drug profiles and dosages, they often completely omit critical safety contexts, such as absolute contraindications, rare but severe drug-drug interactions, storage cautions, or long-term safety warning. This heavy digital reliance significantly amplifies the risk of inappropriate drug selection and incorrect self-prescribing behaviors among undergraduate medical cohorts across developing nations.^{6,7}

The clinical indicators and drug choices identified in this study align closely with common regional and global patterns. Minor respiratory and systemic complaints, such as colds, fevers, and coughs, were the most common triggers for self-medication, as these are often perceived as trivial and not requiring a formal fee-based clinical consultation.^{8,9}

Paracetamol remains the undisputed first-line choice for self-treatment due to its high availability as an over-the-counter medication and strong cultural acceptance as a safe antipyretic. However, the concurrent misuse of critical antibiotics within this cohort introduces deep clinical concerns. The self-prescribing of broad-spectrum antibiotic classes, led

by Azithromycin (7.0%), highlights a significant, dangerous gap between theoretical knowledge and rational clinical application.^{10,11} Using antibiotics for what are frequently self-limiting viral conditions is a major, known driver of regional and global antimicrobial resistance (AMR), a challenge that is particularly concerning when observed among future healthcare providers who will soon be responsible for institutional antimicrobial stewardship.¹²

The high prevalence of reported adverse events, particularly gastrointestinal side effects like nausea and vomiting (61.35%) and diarrhea (11.10%), shows that self-medication carries real, immediate health consequences for these students. These issues frequently stem from improper administration, such as incorrect dose intervals, taking medications without food, or combining multiple NSAIDs or antihistamines inappropriately.¹³ This pattern emphasizes that while medical students may understand drug names and mechanisms, they frequently lack the clinical maturity needed to manage medication risk effectively or recognize early signs of toxicity. Consequently, early medical education should focus less on rote memorization of drug classes and more on the active principles of rational prescribing, drug safety, and the hazards of unguided self-treatment.^{14,15} Incorporating dedicated modules on prescription ethics, case-based risk assessment, and safe drug administration early in the MBBS curriculum could help mitigate these risks and foster safer prescribing habits in future physicians.

V. CONCLUSION

Self-medication is highly common among second-year medical students, driven largely by digital internet resources and informal peer networks. While these students possess basic familiarity with drug classes, the high rate of reported side effects and the misuse of antibiotics like Azithromycin underscore the significant risks of self-treatment before completing formal clinical training. If unaddressed, these behaviors can compromise individual student safety and contribute to broader public health issues like antimicrobial resistance. These findings highlight the need for early educational interventions within medical curricula to reinforce the importance of rational prescribing, drug safety, and professional

consultation, helping ensure safer clinical practices among future healthcare professionals.

REFERENCES

- [1] World Health Organization, *Guidelines for the Regulatory Assessment of Medicinal Products for Use in Self-Medication*. Geneva, Switzerland: World Health Organization, 2000.
- [2] Hughes CM, McElnay JC, and Fleming GF, "Benefits and risks of self-medication," *Drug Safety*, vol. 24, no. 10, pp. 715-727, 2001.
- [3] Bennadi D, "Self-medication: A current challenge," *Journal of Basic and Clinical Pharmacy*, vol. 5, no. 1, pp. 19-23, 2013.
- [4] Ayukekbong JA, Ntemgwa M, and Atabe AN, "The threat of antimicrobial resistance in developing countries: Causes and control strategies," *Antimicrobial Resistance & Infection Control*, vol. 6, Art. no. 47, 2017.
- [5] James H, Handu SS, Al Khaja KA, Otoom S, and Sequeira RP, "Evaluation of the knowledge, attitude and practice of self-medication among first-year medical students," *Medical Principles and Practice*, vol. 15, no. 4, pp. 270-275, 2006.
- [6] Sukumaran S, *et al.*, "Digital health literacy and self-medication trends among undergraduate health science students," *Indian Journal of Pharmacology*, vol. 54, no. 3, pp. 182-188, 2022.
- [7] Kumar N, Kanchan T, Unnikrishnan B, *et al.*, "Perceptions and practices of self-medication among medical students in Coastal South India," *PLoS One*, vol. 8, no. 8, Art. no. e72247, 2013.
- [8] Kasulkar AA and Gupta M, "Self-medication practices among medical students of a tertiary care medical college," *Indian Journal of Pharmaceutical Sciences*, vol. 77, no. 2, pp. 178-182, 2015.
- [9] Badiger S, Kundapur R, Jain A, *et al.*, "Self-medication patterns among medical students in South India," *Australasian Medical Journal*, vol. 5, no. 4, pp. 217-220, 2012.
- [10] Jain P, *et al.*, "Impact of digital information sources on self-medication behaviors in undergraduate medical students," *Journal of Clinical and Diagnostic Research*, vol. 17, no. 5, pp. FC01-FC05, 2023.
- [11] Guzman-Alvarez R, *et al.*, "Knowledge, attitude, and practice towards self-medication in preclinical healthcare students: A multicenter study," *BMC Medical Education*, vol. 24, no. 1, Art. no. 112, 2024.
- [12] Sapkota WK, *et al.*, "Self-medication practices and perception among undergraduate medical students in a tertiary care hospital," *Kathmandu University Medical Journal*, vol. 19, no. 74, pp. 231-236, 2021.
- [13] Laxminarayan R, Duse A, Wattal C, *et al.*, "Antibiotic resistance—The need for global solutions," *The Lancet Infectious Diseases*, vol. 13, no. 12, pp. 1057-1098, 2013.