

## A CROSS-SECTIONAL STUDY ON SELF-MEDICATION PRACTICES, PERCEPTION, AND ATTITUDES OF UNDERGRADUATE MEDICAL STUDENTS AT A GOVERNMENT TERTIARY CARE TEACHING HOSPITAL IN EASTERN INDIA

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### ABSTRACT

**Objectives:** Self-medication (SM) is common in India. It is of greater significance when practiced by medical students as they are going to be medical practitioners in the future. This study was conducted to assess the pattern of SM practices, perceptions, and attitudes among students pursuing 2<sup>nd</sup>-year professional MBBS in a tertiary medical college in the year 2019.

**Methods:** This study was a cross-sectional one based on a questionnaire. It was conducted among the 2<sup>nd</sup>-year undergraduate (MBBS) medical students in a tertiary care medical college in West Bengal, India.

**Results:** Out of 199 students approached, 198 consented to the study and filled in the supplied study questionnaire. Thirteen incomplete questionnaires were excluded and the remaining 185 were analyzed. It was found that 81.6% (151/185) respondents practiced SM. The most common ailments for seeking SM were fever 66.2% (100/151), followed by cough cold, and sore throat 55.0% (84/151), diarrhea/nausea, and vomiting 40.4% (61/151). The most common drug used for SM was paracetamol 73.51% (111/151), followed by H<sub>1</sub> antihistaminics and proton pump inhibitors. A small percentage of students used topical preparations of steroids, analgesics, antibiotics, and antifungals as well. Among the common reasons for seeking SM, 72.2% (109/151) felt that their illness was mild and 57% (86/151) preferred it as they had prior experience.

**Conclusion:** Our study showed that SM is commonly practiced among the students of this institution. Therefore, medical teachers need to try even more to generate adequate awareness among the students about inherent risks of SM.

**Keywords:** Self-medication, Undergraduate students, Ailments, Drugs.

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### INTRODUCTION

Self-medication (SM) may be considered when an individual selects and uses medicines for self-diagnosed conditions or symptomatic relief, without proper consultation with a qualified medical professional. It may also include the continued/chronic use of medications beyond the prescribed duration [1-5]. SM is considered a necessary component of healthcare by some [6]. When practiced judiciously, it can have some benefits such as saving cost and time, reducing the burden on the healthcare system, and thereby facilitating more critical patients to get appointments, reducing the financial burden on the government or the insurance companies who bear the expenses. [7].

However, users may not be well aware about the potential risks [8]. Improper SM can lead to serious problems of immense public health importance, for example, under-treatment, drug toxicities, masking the underlying disease or condition, drug interactions, dependence, development of drug resistance, and may even cause death [3,7]. The practice appears to be more in developing countries – where access is easier [7]. In many developing countries, even prescription-only medicines can be purchased from local pharmacy shops without producing a valid prescription – making SM potentially more dangerous [3,4].

The prevalence of SM varies widely among populations [6] even in India; the prevalence varies widely from 8.3% to as high as 92% [9]. Several factors influence the practice of SM – including age, gender, level of education, and accessibility. [3]. Medical students can be viewed as future doctors who should take leading roles in rational

pharmacotherapy and prevent the misuse of drugs. They also have much better and easier access to information as well as to professional advice. However, like the general population, the practice of SM varies among medical students in various regions [10]. In a state-funded teaching hospital, where treatment is free, the cost factor is less likely to play a role. In this situation, this study tried to look into the practice of SM among medical students in a state-funded, tertiary care teaching hospital in Eastern India and the factors contributing to it. The study also tried to assess the perception and attitude of the medical students, who are at the juncture of pre-clinical subjects and the clinical disciplines and are newly exposed to pharmacology, regarding SM practices with a special emphasis on SM with antimicrobial drugs.

### METHODS

#### Study design and study setting

This was an observational, descriptive cross-sectional study, conducted at the Department of Pharmacology in Medical College, Kolkata, in the year 2019.

#### Study participants

Students pursuing an M.B.B.S. course (2<sup>nd</sup> Professional MBBS) in Medical College, Kolkata in the year 2019 were recruited for the study.

#### Inclusion criteria

Medical students studying an M.B.B.S. course in a Medical College and Hospital, Kolkata who had given voluntary informed consent to participate were included in the study.

### Exclusion criteria

Those who had not given consent to participate were excluded from the study.

### Study tool

A pre-designed structured questionnaire, developed based on some of the previous related studies, has been used for the study.

### Study variables

The questionnaire used to collect data included various parameters such as – age, gender, SM status in the past 6 months, names of the drugs used for SM, indications for SM, and reasons for SM instead of seeking professional help, source of obtaining the drug(s) and source of the recommendation for the drug(s), whether the student had any side effect during SM, etc. Whether the student had taken antimicrobial drugs in the preceding 6 months, indication and source of obtaining such antimicrobial drugs were included. In addition, whether and how the student gathered information on such drugs, whether she/he changed the drugs during treatment, if multiple antimicrobial agents (AMAs) were used simultaneously, and when the treatment was discontinued were the questions asked. Students' attitudes toward SM practices and their perception of their ability to treat minor infections by themselves were enquired. Their concept of where an "antibiotic" should be used was asked, as well.

### Study size

There are 250 seats in each batch. All the students of the current session were approached at the end of a tutorial class of respective groups. Their queries were addressed. Out of 199 students present and approached, only one student did not take part in the study. Out of the 198 forms received, 13 were rejected for gross incompleteness or gross discrepancies. The rest 185 forms were finally considered for analysis.

However, ethically, participants were allowed not to answer any question(s) if they did not feel comfortable. Some of the participants skipped a few questions.

### Data collection

Students pursuing the 2<sup>nd</sup>-year professional M.B.B.S. in this institution were recruited to participate in the study through a direct personal approach at the end of a tutorial class for the respective group. Those who agreed to participate and submitted the informed consent form were enrolled in the study. They were then provided with the survey questionnaire. Their queries were addressed. Out of 199 students present and approached, only one student did not take part in the study. Out of the 198 forms received, 13 were excluded for gross incompleteness and/or gross inconsistency. The rest 185 forms were entered digitally using Google Forms. The final compiled database was then downloaded in spreadsheet/Excel format for analysis.

### Ethical consideration

Prior approval from the Institutional Ethics Committee (IEC) of the Medical College, Kolkata was obtained (Ref No. MC/KOL/IEC/NON-SPON/358/04-2019 dated April 27, 2019). Written informed consents were obtained from the students before enrollment clarifying that the participation is completely voluntary and that they had the choice to skip any point if they felt uncomfortable.

### Statistical methods

The final 185 forms were entered digitally using Google Forms. The final compiled database was then downloaded in spreadsheet/Excel format for analysis. The results were expressed in figures and percentages. Microsoft Office Excel 2007 has been used for some statistical calculations.

## RESULTS

We received 198 responses. Thirteen were excluded for gross incompleteness and/or gross inconsistency. The rest 185 were finally

considered for analysis. The participants were, ethically, allowed to skip answering any question if they did not feel comfortable with it. Some of the questions received more responses than others as some participants did not respond to all the questions.

Out of 185 included participants, 175 mentioned their age while 10 did not. The average age was 20.18 ( $\pm 0.92$ ) years and the median age was 20 years. About 61.6% (114/185) were male and 36.8% (68/185) were female. About 1.6% (3/185) did not specify their gender.

A whopping 81.6% (151/185) admitted to having some form of SM in the preceding 6 months while the remaining 18.4% (34/185) reported not to have taken any SM during that time. Male students were found to have self-medicated more than the female students (87.7%, 100/114, 72.1%, and 49/68, respectively).

Among those who self-medicated themselves in the last 6 months (n=151) the most common drug used for SM was paracetamol (73.51%, 111/151). This was followed by H<sub>1</sub> antihistaminics and proton pump inhibitors (32.45%, 49/151 each) (Table 1).

Among the topical drugs, topical steroid was used by 1.99% (3/151), topical analgesics by 1.32% (2/151), and topical antibacterial and antifungal by 0.66% (1/151) each. About 1.32% (2/151) had used other topical medicines.

Among the 151 students who had a history of SM, the most common reason was fever (66.2%, 100/151) followed by cough, cold, and sore throat (55.6%, 84/151). Diarrhea/nausea-vomiting was the third leading cause (40.4%, 61/151) (Fig. 1). One participant (0.7%, 1/151) who reported SM, did not answer this question.

When asked why they chose to self-medicate, rather than consult a qualified doctor, the vast majority (72.2%, 109/151) cited it was because the ailment was minor. The participants could select more than one applicable option. The second-most important reason was reportedly "prior experience" (57%, 86/151) (Fig. 2).

**Table 1: The most common drugs used in self-medications**

Drugs	No. of participants who have self-medicated with the drug	% age (n=151)
Paracetamol	111	73.51
H <sub>1</sub> antihistaminics	49	32.45
Proton pump inhibitors	49	32.45
Antibacterials	40	26.49
Antiprotozoals	30	19.87
Prokinetics and antiemetics	21	13.91
NSAIDs	17	11.26
H <sub>2</sub> blockers	17	11.26
Prokinetic agents	14	9.27
Antispasmodics	11	7.28
Cough remedies	10	6.62
Topical drugs	9	5.96
Digestive enzymes	8	5.30
ORS	7	4.64
Nasal decongestant	6	3.97
Leukotriene receptor antagonist	6	3.97
Antacids	6	3.97
Miscellaneous other GI	6	3.97
Caffeine/combo	5	3.31
Anthelmintic	4	2.65
Bronchodilator	3	1.99
Serratiopeptidase	3	1.99
Antifungal	2	1.32
Miscellaneous others	10	6.62
Herbal drug	1	0.66

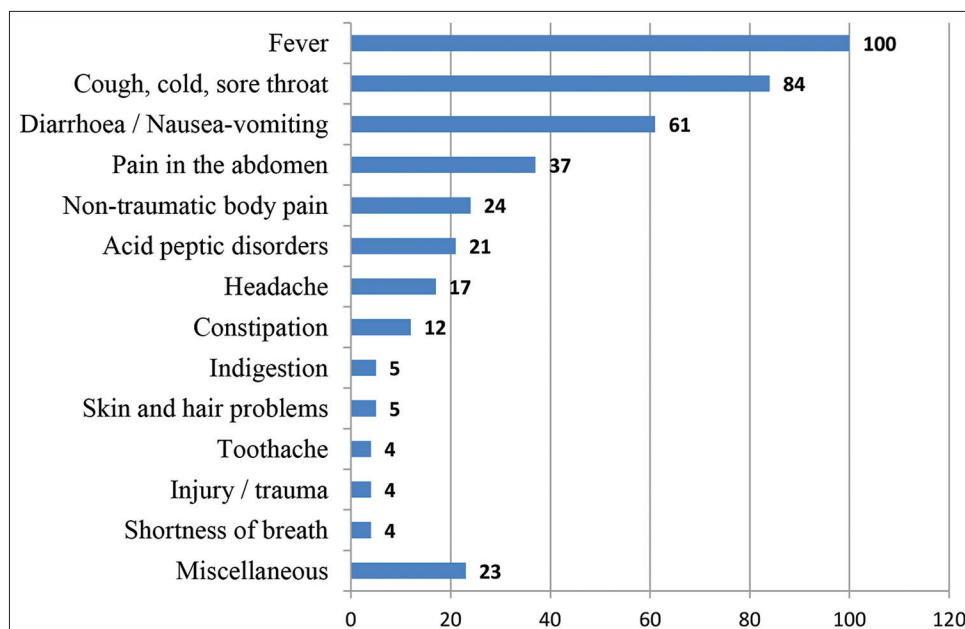


Fig. 1: The most common ailments leading to self-medication (n=151)

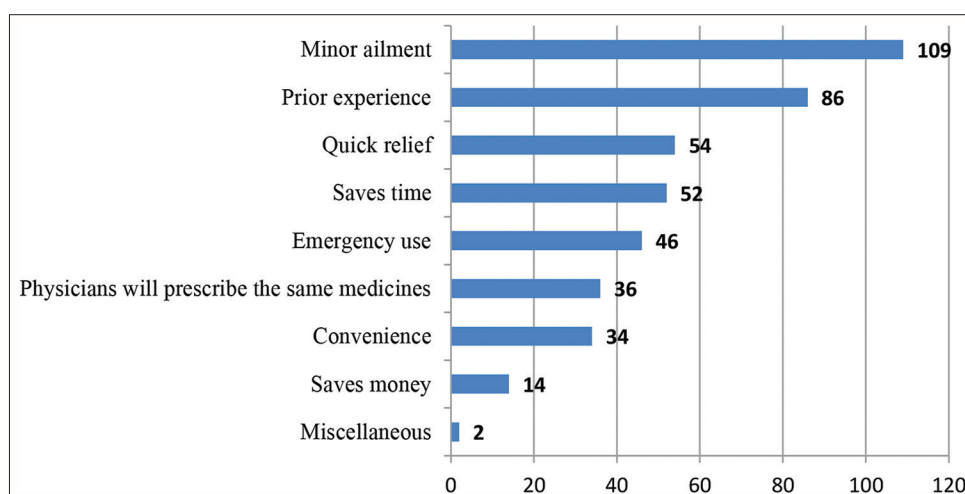


Fig. 2: Reasons for self-medication instead of consulting a doctor (n=151)

The most common source of obtaining medicines for SM was pharmacy shops (78.8%, 119/151) followed by the leftovers at home/hostel (39.1%, 59/151). About 11.9% (18/151) had obtained them from their friends/relations (non-doctors) while only 2.6% (4/151) obtained them from online pharmacies. The remaining 1.3% (2/151) had other sources. For some, multiple sources were there.

The medicines taken were mostly suggested by the participants themselves (74.2%, 112/151). Those were suggested by parents/relatives (non-doctor) in 27.2% (41/151) cases. In 11.9% (18/151), the medicines were reportedly suggested by the pharmacy shops, while in 8.6% of cases, (13/151) friends had suggested such medicines. In 2.6% (4/151), the participants reportedly had selected the medicines based on previous prescriptions. Some participants had more than one recommendation.

Regarding side effects, the vast majority (76.2%, 115/151) reported that they did not observe any side effects after the SM, while 20.5% (31/151) were not sure about side effects. However, 2.6% (4/151) reportedly had some side effects after SM although none of them was serious.

The majority (61.6%, 93/151) of the SM participants did not take any antimicrobials AMAs in SM while 35.1% (53/151) had taken AMAs as well (28.7%, 53/185 of all respondents). This question was not answered by 3.3% (5/151) of participants. About 34% (18/53) of those 53 respondents who had used AMA drugs in SM, did it only once in the preceding 6 months. 28.3% (15/53) used them twice and 11.3% (6/53) had used AMAs on three occasions. About 15.1% (8/53) had taken AMAs in SM on more than three occasions. 11.5% (6/151) of participants did not answer this question.

The most common disease for which AMAs were taken in SM was diarrhea (58.8%, 31/53), followed by fever (34%, 18/53), sore throat (32.1%, 17/53), and running nose (20.8%, 11/53). For 17% (9/53), nasal congestion was the reason and cough was responsible in 15.1% (8/53) cases. These were followed by pain/ache in 9.4% (5/53) and by vomiting (5.7%, 3/151). About 7.5% (4/53) had various other causes. Some participants had more than one disease for which they had SM with AMA. 6.7% (3/53) did not respond to this question.

About 52.8% (28/53) reported that they "sometimes" read the instructions while using AMAs while 24.5% (13/53) reported that they

would check it every time. About 11.3% (6/53) informed that they had never checked such instructions while another 11.3% (6/53) did not give any response to the question.

While enquiring about the common sources of such instructions, those who said they never checked the instructions were excluded from the study. Among the remaining 47 respondents 23.4% (11/47) did not provide any specific answer (no options selected). The study participants had the liberty to select multiple options. Textbooks and the internet were the most common sources of information (28.5%, 14/47 each) followed by package inserts (27.7%, 13/47). 21.3% (10/47) had taken the opinion of a doctor at some point of time during the course and 14.9% (7/47) consulted a senior (who has not yet completed his/her medical course).

Among the 53 participants, who had used AMAs in SM, 77.4% (41/53) never changed the antimicrobial drug(s) during the course of treatment. However, 13.2% (7/53) did it sometimes and 1 participant (1.9%, 1/53) changed it every time he used AMAs. About 7.5% (4/53) did not answer the question.

When asked about multiple antimicrobial uses at the same time, 77.4% (41/53) did not do so. However, 15.1% (8/53) reportedly used multiple AMAs at the same time. Here also, 7.5% (4/53) did not answer this question.

About 60.4% (32/53) stopped taking AMAs at the completion of the course while 20.8% (11/53) stopped after the symptoms disappeared. About 7.5% (4/53) did not answer the question. Rest 6 participants (11.3%, 6/53) stopped at various other times.

Among all the enrolled participants, 42.2% (78/185) felt that SM with AMAs is not acceptable. About 32.4% (60/185) considered it acceptable and 5.9% (11/186) considered it to be a "good practice." 19.5% (36/185) did not respond to this question.

About 57.8% (107/185) were not sure if they could treat common infections by themselves. However, 20.8% (38/185) were confident that they could. 12.4% (23/185) confessed that they could not treat those themselves. The remaining 9.2% (17/185) did not share any opinion.

About 67.2% (123/185) could identify that "antibiotics" are used for bacterial infections only whereas 9.8% (18/185) felt that it is used to treat both bacterial and fungal diseases. 3.8% of students (7/185) considered that "antibiotics" can treat both bacterial and viral infections while 13.1% (24/185) felt that "antibiotics" are useful in all - bacterial, viral, and fungal infections. The remaining 11 participants (6%, 11/185) did not answer the question.

## DISCUSSION

Our study was aimed at looking into the ongoing practice of SM among the 2<sup>nd</sup>-year medical students and their attitudes and perceptions toward SM, including SM with AMAs.

The response rate was very high (99.5%, 198/199) however, after the exclusions 185 were considered for the final analysis.

In our study, the overall prevalence of SM was found to be as high as 81.6%, similar to the findings of Tomas Petrović *et al.* [11], and Ramadan [12]. It was slightly higher than the findings of Khadka *et al.* (74.2%) [13], and Rasania *et al.* [1] but much higher than another study conducted in South India (47.2%). Joseph and Jain [14], and Yismaw *et al.* [15].

SM with AMAs was found to be 28.7% in our study which is much lower than Nabi *et al.* (68%) [16], and Nakato *et al.* [17], (80–93%) and Wahab *et al.* (61%) [18], and Shitindi *et al.* [19].

In our study, the common ailments for using SM were found to be fever (66.2%), respiratory illnesses such as cough, cold, and sore throat (55.6%) as well as gastrointestinal problems such as diarrhea, nausea vomiting (40.4%), and pain abdomen (24.5%). These were also found as common illnesses associated with SM by Rasania *et al.* [1], Zeru *et al.* [4], Yismaw *et al.* [15], and Wahab *et al.* [18].

We found that the common drugs used in SM were paracetamol (73.5%), followed by H<sub>1</sub> antihistaminics and proton pump inhibitors (32.5% each). However, to control acidity, 11.26% also used H<sub>2</sub> blockers, and 3.97% used antacids. This is almost similar to Khadka *et al.* [13], and Rasania *et al.* [1].

In our study, the most common reason for resorting to SM and not visiting a doctor was "minor ailment" (72.2%). Joseph and Jain [14], Zeru *et al.* [4], Tomas Petrović *et al.* [11], Wahab *et al.* [18], and Shrestha *et al.* [20] had similar findings. The major reasons, including "prior experience," "quick relief," "time-saving," and "emergency," were largely common in several other studies as well [2,4,11,18,20,21].

Sources of obtaining medicines were pharmacy shops (78.8%) and leftovers at home/hostel (39.1%), which is somewhat similar to the findings in Tomas Petrović *et al.* [11], Zeru *et al.* [4], and in Shrestha *et al.* [18].

In our study, most of the medicines used in SM were suggested by participants themselves (74.2%), parents and relatives (27.2%), pharmacy shops (11.9%), friends (8.6%), and previous prescriptions (2.9%). These were the common sources of information in some other studies with varied proportions [1,2,4,20,21]. Previous prescriptions were found to be the commonest source in the study by Rasania *et al.* [1]. However, media played an important role as reported by some studies conducted in Pakistan [2] and in Saudi Arabia [21].

For self-medications using antimicrobials, the common ailments found in our study were diarrhea (58.8%), fever (34%), sore throat (32.1%), running nose (20.8%), nasal congestion (17%), and cough (15.1%). Nabi *et al.* found fever and respiratory illnesses as the most common conditions [16], while peptic ulcer, diarrhea, and wound infections predominated in the study by Nakato *et al.* [17].

Although SM is a common practice among medical students, the prevalence of SM, ailments leading to SM, as well as the medicines used in SM appear to vary widely in different countries and/or regions. Although the students commonly used SM in this teaching hospital, the prevalence was far lower than in some other places. Unlike those places, most of the students used paracetamol for SM which is an over-the-counter drug. These changes may be due to easy accessibility of healthcare and free supply of medicines from government hospitals, available against prescriptions. However, awareness is still required among medical students to be more rational with this practice. Some knowledge gaps identified in our study may be rectified as they are supposed to learn more about the use of drugs in the subject of pharmacology in their 2<sup>nd</sup> Professional MBBS curriculum.

## CONCLUSION

The benefits as well as disadvantages of SM are to be understood properly by the medical students, as they shall deal directly with patient care in their careers. Their understanding of the consequences of SM will be transmitted to society at large, as they shall counsel patients regarding the use of drugs. Although SM may have the advantages of saving valuable time and health resources, certain disadvantages may be irrational and wrong use of drugs regarding indication, duration, dose, and frequency. The development of resistance to antibiotics as a result of improper use is a pertinent problem in developing countries like India. Hence, the onus of creating awareness regarding SM lies largely on the subject of pharmacology in the curriculum of 2<sup>nd</sup>-year professional MBBS. Students need to be enlightened on the different aspects of SM by the faculties of the department of pharmacology in medical colleges.

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**AUTHOR'S CONTRIBUTIONS**

Preparation of the protocol and collection of data were done by Kushal Banerjee and Manasi Basu Banerjee. Statistical analysis was done by Kushal Banerjee and Abhishek Ghosh. Preparation of the manuscript was done by Kushal Banerjee, Manasi Basu Banerjee, and Abhishek Ghosh.

**CONFLICTS OF INTEREST**

Nil.

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