

**Original Article**

## **A SURVEY TO STUDY THE USE OF OVER-THE-COUNTER DRUGS AMONG MEDICAL STUDENTS IN A TERTIARY CARE TEACHING HOSPITAL**

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Received: 27 Apr 2024, Revised and Accepted: 18 Jun 2024

### **ABSTRACT**

**Objective:** Non-prescriptive drugs, commonly known as Over-The-Counter (OTC) drugs, are medications purchased without a doctor's prescription. The prevalence of OTC drug use is increasing globally, driven by factors such as rising socioeconomic status, increased literacy rates, and easy access to information. Responsible self-medication necessitates ensuring drug quality and comprehensive information about administration, dosage, Adverse Drug Reactions (ADR), and interactions. This study aimed to assess the prevalence, types, misuse, and adverse effects of OTC drug use among medical students.

**Methods:** A cross-sectional observational study was conducted at Dr DY Patil Medical College, Pune, India, from October 2022 to November 2022. Medical students from the first year to interns were included in the study. Ethical approval was obtained, and informed consent was collected from participants. A questionnaire with multiple-choice questions was distributed to assess OTC drug use patterns and ADR. Data from 379 participants were analyzed using descriptive statistics.

**Results:** Among the 379 participants (57% female, 43% male; age range 18-27 y), 98% reported self-medication. The most commonly used OTC drugs were cough syrups (87%), antibiotics (77%), analgesics (71%), cold medicine (63%), motion sickness medication (49%), sleeping pills (32%), sedatives (19%), and others (1%). Misuse patterns revealed that 43% used OTC drugs once a day, 50% used them twice a day, and 6% used them thrice a day, and 1% used those more than three times a day. ADR included dry mouth (73%), hypersensitivity (69%), diarrhea (64%), anxiety (61%), increased heart rate (41%), blackout (37%), breathing issues (33%), and others (1%). Main reasons for OTC drug use were easy availability (100%), cheaper prices (92%), time savings (100%), and avoiding consultation fees (100%).

**Conclusion:** Addressing improper use of OTC drugs is vital for preventing adverse effects drug resistance and ensuring proper healthcare practices. The distinction between 'misuse' and 'abuse' of OTC drugs should be recognized and addressed to promote responsible self-medication practices among medical students and the broader population.

**Keywords:** Non-prescriptive drugs, Misuse, Self-medication, Over-the-counter drugs

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### **INTRODUCTION**

Over-The-Counter (OTC) drugs referred to those drugs that are sold by pharmacist or purchased by patient without prescription of a healthcare professional. OTC drugs use is prevalent among medical students, raising serious public health concerns. OTC drugs are also referred as self-medication or non-prescriptive drugs. OTC medication must be reasonably safe and well tolerated. It must be used to treat condition for which a doctor is not directly supervising. These are legally allowed to be sold by pharmacist without any regulations. Presently more than 300000 different OTC drugs are available worldwide. Due to the daily addition of new medications to the market, the number is always rising [1].

Self-medication is becoming more common as a result of factors such as people's socioeconomic level, growing healthcare costs, rising literacy rates, easy access to information, time constraints, and the accessibility of OTC medications, among others [2]. It is observed that literate is more likely to self-medicate than the illiterate. A study done in India in 1995, shows that self-medication, was found to be higher in urban regions (37%) than in rural areas (17%) [3].

A thorough understanding of a drug's composition, dosage, and mode of administration, duration of therapy, side effects, interactions, and precautions is necessary for responsible self-medication. Inadequate duration of consumption may contribute to development of resistance, wastage of resources, and drug dependence. But if it is done appropriately, it can be economical, time-saving, helpful in relieving acute condition, and also help in

decreasing the health care burden. The present study was undertaken to analyze the most commonly used OTC drug, its frequency of consumption and adverse effects.

### **MATERIALS AND METHODS**

It was a cross sectional, observational study which was conducted at Dr. DY Patil Medical College Pune in Maharashtra. The duration of the study was two months and conducted between October 2022 to November 2022. In this study.

**Inclusion criteria:** MBBS students from 1<sup>st</sup> year to final year and interns who were willing to participate in the study.

**Exclusion criteria:** MBBS students who were not willing to participate in the study.

The study was conducted after obtaining permission from the Institutional Ethical Sub-Committee of Dr. D. Y. Patil Medical College, hospital and research Centre, Pune (ref. no. I. E. S. C./127/2022 dated 07/10/22.). Objectives and procedure of the study were explained to the participants. Informed consent was taken from all the participants willing to take part in the study. A questionnaire consisting of eight multiple-choice (MCQ) questions were distributed. The questions were about the demographic data of the participants, pattern of used OTC drugs, its frequency and ADR relating to its usage etc. The filled questionnaire was collected from the participants.

The obtained data were analyzed by (Statistical Package for Social Sciences) Software version 20/Epi Info/Primer/Win-pep.

**RESULTS**

Total 379 students that took part in the study; 216 (57%) of them were female and 163 (43%) were male. The average age of the study group was 18 to 27 y. There were 81 first-year participants, 180 second-year participants, 54 y participants, 43 fourth-year participants, and 21 interns in the study.

**Prevalence of over-the-counter drugs in medical students**

Out of the 379 students, 371 (98%) had taken self-medication and only 8 (2%) were not. Comparing the gender wise variation of self-medication rate, it was found that out of 216 females, 210 (97%) were took self-medication and 6 (3%) were not. On the other hand, out of 163 males, 161 (99%) were took self-medication and 2 (1%)

were not.

**Over-the-counter drug usage pattern**

The most commonly used OTC drugs found were cough syrups (87%), antibiotics (77%), analgesic (71%), cold medicine (63%), motion sicknesses medicine (49%), sleeping pills (32%), sedatives/antianxiety (19%) and others (1%). The most commonly used cough syrup was Dextromethorphan, an antibiotic was azithromycin and analgesic was paracetamol.

**Frequency of over-the-counter drugs consumption per day**

Among the 371 students who responded to the survey and used OTC medications, 43% used the medication once daily, 50% used it twice daily, 6% used it three times daily, and 1% used it more than three times.

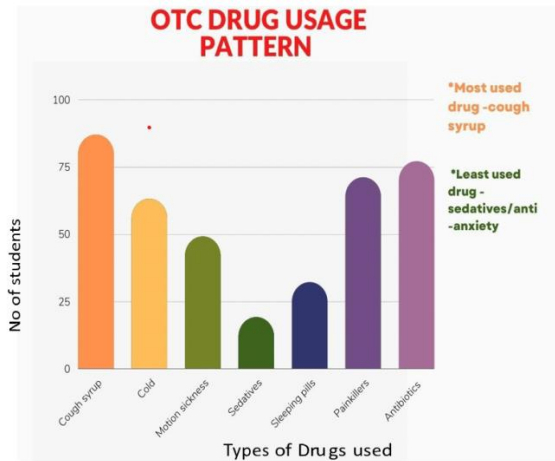


Fig. 1: Over-the-counter drug usage pattern in students

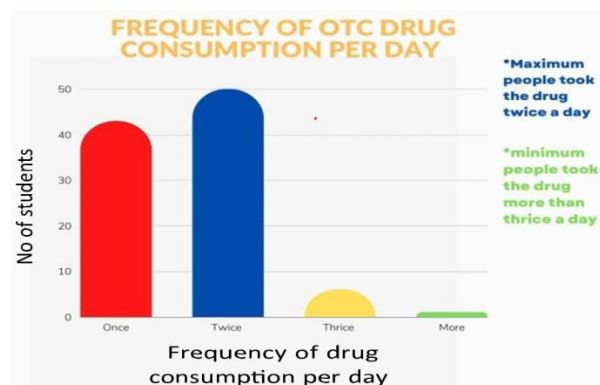


Fig. 2: Frequency of the over-the-counter drugs consumption per day in students

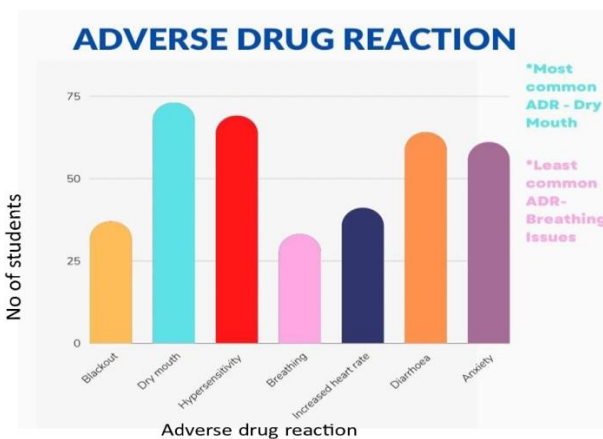


Fig. 3: Adverse drug reactions in over-the-counter drug users

### Adverse Drug Reaction observed by the users

The common ADR observed by the users of OTC drugs were-Dry mouth (73%), Hypersensitivity (69%), Diarrhoea (64%), Anxiety (61%), Increased heart rate (41%), Blackout (37%), Breathing issues (33%) and Others (1%).

### Main reasons to use over-the-counter drugs

The most common reasons for not visiting doctor were-it's easy availability (100%), based on previous prescription (92%), time-saving (100%) and consultation fee saving (100%). For this question it was found that participants have opted to choose multiple options as answers.

### Action after noticing adverse drug reaction

On noticing the ADR after use of OTC drug, 77% of users discontinued the drug, 1% took the medical guidance and only 2% continued the drug.

### DISCUSSION

OTC drugs use is very common in India because of its easy availability without any regulations. Safety and effectiveness of OTC drugs is doubtful if they are used without knowledge. It is becoming a routine practice to use the OTC drugs by the medical students. The present study shows a high prevalence rate of using OTC drugs that is 98% amongst medical students. Various studies have been done in India and have reported different prevalence rates-57.05% [4], 78.6% [5], 92.7% [6]. This topic has been studied Globally; the prevalence has been reported by various scientists i. e. 62.9% from Egypt [7], 80% from Pakistan [8]. The prevalence found in our study resembles the prevalence reported by a scientist from Kuwait i. e. 97.8% [9].

The difference in the prevalence can be attributed to multiple factors like difference in study methodology and recruitment of participants etc. as well as sociodemographic, socio-economic, and behavioral differences. For example, some studies were done only on 1st and 2nd-year medical students [10], while in some studies, all the medical students have been enrolled [5]. In one study, first and last year medical and non-medical students were included [7, 8]. For the first time in the present study, we have included interns also. In our study the prevalence of self-medication was higher among females (57%) as compared to males (43%). Similarly, other authors have also reported a higher prevalence of self-medication among females [9, 10]. In some studies, a higher prevalence among males has also been reported [8].

Our study found out various reasons for increasing prevalence of OTC drugs use. The main reason for not visiting a doctor and using OTC drugs were its easy availability (100%), its time saving (100%) and consultation fee saving (100%) as well as based on previous experiences (old prescriptions) (92%). For this question it was found that participants have opted to choose multiple options as answers. Other studies showed varied reason such as minor illness, easy availability of information on the internet, non-seriousness of the illness, the ability to save necessary medications at home, the inconvenience of using health insurance for purchasing OTC drugs. This is a risky presumption because self-medication can easily lead to improper management of mild illnesses that should have been treated by a doctor [11, 12]. Other reasons for not going to the doctor may include careless attitude, fear of the doctor, and fear of facing consequences of drug abuse.

The most commonly used nonprescriptive drugs in our study were cough syrups (87%), antibiotics (77%), analgesic (71%), cold medicine (63%), motion sicknesses (49%). All have used allopathic medicines only. In variety of other studies conducted on nonprescriptive drugs, different non-prescriptive drugs for self-medication were reported. Different studies were conducted in which the most prominent reason for consuming self-medications were cold cough [7, 13]. In a study conducted by Chautrakarn *et al.* most commonly used nonprescriptive drugs were NSAIDs (34.8%), antibiotics (30.2%), and anti-allergic drugs (28.4%) [8]. Another study shows reason for self-medication, such as headache (treated by analgesic), gastritis (treated by antacid), fever (treated by antipyretic or analgesic), dysmenorrhoea (treated by Analgesic) [5, 14].

Most of the studies were done to find out the condition for which the participants have taken the nonprescriptive drugs. But the present study was conducted to find out the most commonly used nonprescriptive drugs and its frequency by medical students, including interns.

The common ADR observed by the medical students using OTC drugs are; Dry mouth (73%), Hypersensitivity (69%), Diarrhea (64%), Anxiety (61%), Increased heart rate (41%), Blackout (37%), Breathing issues (33%) and Others (1%). Adverse Drug Reaction (ADR) report analysis was done according to Med DRA.

System Organ Class (SOC) reported that the most frequently reported adverse drug reactions were gastrointestinal (N= 154; 23.4%), skin and subcutaneous tissue (N=145; 22.0%) and nervous system disorders (N=104; 15.8%). Overall, 36.5% of ADR reports were for drugs classified in R (Respiratory system), 18.3% were from group D (Dermatological) and 17.5% from group A (Alimentary tract and metabolism). Other reports, in minor proportions, included drugs from group G (Genitourinary system and sex hormones) with 14.4%, group C (Cardiovascular system) with 8.3%, group N (Nervous system) with 4.1% and less than 1% reports from group S (Sensory organs) [11].

Our survey study showed that 43% of students used the medication once a day, 50% used the medication twice a day, and 6% used the medication thrice a day, while 1 % used the medication more than three times a day. There hasn't been much research done on frequency of intake of the OTC drugs. Although this study attempted to highlight this crucial aspect, fortunately, we were unable to identify any abusive tendencies among medical students.

This research was done on medical students who were familiar with ADR of medicine. When they discovered the ADR, 77% of the OTC drug users stopped taking it; 1% of them sought medical consultation, and only 2% of them continue taking it.

Though the irrational use of medicines has raised several questions among the general population and professionals [12]. The primary drivers propelling the expansion of the Indian OTC medicine market are the adulteration to products, pharmaceutical companies' inclination to prioritize OTC pharmaceuticals over prescription (RX) drugs and, most important the evolving consumer mindset toward self-medication [15].

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### CONCLUSION

OTC medicine misuse is a recognized problem internationally involving a range of medicine and potential harm but is currently incompletely understood [16]. Not many studies have examined the scale of misuse medication. The improper use of these drugs can cause potential harm to patient and society. Resistance may arise as a result of easy accessibility issues, excessive use, and inadequate infection prevention and control measures. Even if medical students are well-informed about the side effects of OTC medications, incorrect handling of these medications can result in the development of drug resistance. That will be a major setback for the scientist's work and investment in drug research. We need to strike a balance between the access of OTC drugs and its improper use.

The study's shortcomings, possible biases resulting from the study's dependence on self-reporting and the absence of a control group for comparison. Secondly, the study's generalizability may be impacted by the fact that the individuals were chosen solely from one accessible medical college.

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**FUNDING**

Nil

**CONTRIBUTION OF AUTHORS**

Anita Barde looked after study conception and study design of the research. Siddhi Patel looked after the data collection, data analysis, data interpretation and manuscript preparation.

**CONFLICT OF INTERESTS**

Declared none

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