

SELF-MEDICATION WITH OVER-THE-COUNTER DRUGS AMONG MEDICAL STUDENTS: INSIGHTS FROM A CROSS-SECTIONAL STUDY

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Received : 06/10/2024
Received in revised form : 18/11/2024
Accepted : 03/12/2024

Keywords:
Self-medication, Over-the-counter drugs, medical students.

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DOI: 10.47009/jamp.2024.6.6.139

Source of Support: Nil,
Conflict of Interest: None declared

Int J Acad Med Pharm
2024; 6 (6); 738-742



Abstract

Background: The use of non-prescription drugs for self-treatment of common ailments is becoming increasingly popular in our society. Trends in the use of non-prescription drugs are expected to vary among medical students as medical students have more knowledge about drugs and easy access to them. But inappropriate self-treatment can pose various risks including drug side effects, drug resistance, etc. The purpose of this study was to investigate the knowledge, attitude, and practice of medical students regarding self-medication. **Materials and Methods:** In this cross-sectional study, a total of 260 medical students were included in our study. A questionnaire containing questions about their knowledge, attitude, and perception of non-prescription drugs was filled by them. Data were analyzed using descriptive statistics and relevant statistical methods. **Result:** Out of 300 distributed questionnaires, 260 were completed, yielding an 87% response rate. Of the participants, 63.8% were females, and 62.6% were aged 21–23. By year of study, participants were evenly distributed across the 1st, 2nd, and 3rd years, with fewer from the 4th year (13.1%). Awareness of OTC drugs was high (84.2%), with 85.4% using them for minor illnesses, primarily fever (88.8%) and headache (77.3%), with antipyretics (83.5%) and analgesics (57.7%) being the most common medications. Most respondents (58.8%) believed continuous OTC drug use could lead to dependency, and 64.6% emphasized the importance of following recommended doses. Prior experience with the disease and medication was the reason OTC was preferred. **Conclusion:** There is an increasing trend of self-medication among the youth today. Medical students have better access to such drugs and hence are expected to self-medicate more, Hence There is a need to educate medical students regarding self-medication and its side effects. The high prevalence of self-medication and the overuse of antibiotics can pose a significant risk of drug resistance.

INTRODUCTION

Over-the-counter (OTC) drugs, also known as non-prescription drugs are drugs that can be purchased from pharmacies without the prescription of a medical practitioner.^[1] These drugs are frequently used for Self-medication (SM) which refers to the practice of obtaining and consuming medications without consulting a physician for diagnosis, prescription, or treatment.^[2] The WHO supports the fact that if responsible and controlled Self-medication is practiced, it can cause prompt and effective relief of common illnesses reducing the burden on health care services.^[3,4]

Self-medication is a common practice among all age groups, though its prevalence varies among individuals and regions.^[5] The Medical students, as future healthcare professionals, are an integral part of society. They exhibit a growing inclination towards self-medication, attributed to their access to drug and disease knowledge as well as the ease of obtaining medications.^[6]

Insufficient knowledge about Over-the-counter drugs can result in unintended consequences such as overuse or non-adherence to treatment programs.^[7] There are several potential risks with the use of inappropriate self-medication such as the risk of adverse drug reactions (ADRs), risk of wrong use of drugs, risk of missing the diagnosis, risk of drug

dependence, risk of drug-drug, drug-food, drug-disease interactions, risk of overuse or toxicity.^[8] Medical students, being the future medical practitioners, have an important role in the counseling of patients regarding the advantages and disadvantages of self-medication with OTC drugs. So, for safe use of OTC medications, medical students are expected to have proper knowledge regarding OTC medications and subsequent adverse drug reactions. Since, medical students use and also often recommend OTC drugs to their family, friends, and relatives, this study aimed to assess their knowledge, attitude, and practice of self-medication using OTC drugs.

MATERIALS AND METHODS

Study design: Descriptive Cross-sectional study

Study population: Medical undergraduates (first-year to fourth-year students) of a medical college in Kerala

Duration of study: 2 months

Sample size: 300

Sample size was calculated using the formula:

$$N = \frac{Z\alpha^2 P Q}{d^2}$$

Assuming a 95% confidence interval ($Z\alpha = 1.96$) and 5% margin of error; $P = 76.8\%$ (prevalence of self-medication among medical students in a previous study)

$N = 258$; rounded to 300.

Sampling method: Convenient sampling

Inclusion Criteria

Medical students from first year to fourth year who are willing to participate in the study

Gender: both males and females

Age > 18years

Exclusion Criteria

Those who are not willing to participate in the study

Study tool: Semi-structured Questionnaire

Study procedure: The study was initiated after obtaining approval from the Institutional Ethics Committee. Students were selected for the study by a convenient sampling method. After obtaining the informed consent, a questionnaire through Google Forms was supplied to the medical students, and the required data was assimilated and assessed. The questionnaire has 4 parts: Part A of the questionnaire included demographic characteristics of the students: age, gender, and year of study. Part B of the questionnaire has questions to assess the participant's knowledge by using a set of eight questions; Part C has questions to assess the attitude of the participant towards self-medication with OTC drugs and Part D questions determine the pattern of self-medication, common source of drugs for self-medication, purchase of drugs for self-medication by using brand name or generic name, the indications and the most common drugs for the self-medication. Data was collected and entered in Microsoft Excel 2010 and was analyzed using SPSS version 16. All qualitative

variables were presented using descriptive statistics with frequency and percentages.

RESULTS

A total of 300 questionnaires were distributed to be filled by the study participants, and 260 were filled and collected via Google Forms, which gives a response rate of 87%. Of the total participants, 166(63.8%) were females and 94 (36.2%) were male by gender and the majority of them 163 (62.6%) were within the age group 21-23. Concerning the year of study, 75(28.8%) were from 1st year, 76 (29.2%) were from 2nd year, 75 (28.8%) were from 3rd year and the rest 34 (13.1%) were from 4th year.

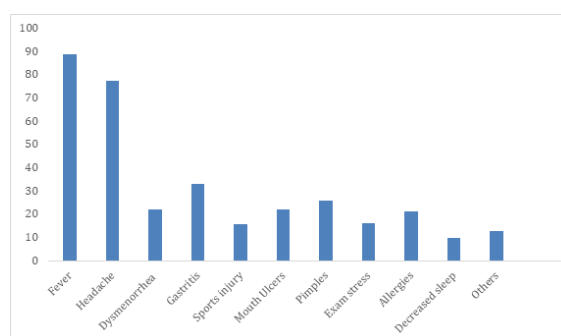


Figure 1: Common Illnesses (%) Treated with Over-the-Counter (OTC) Drugs

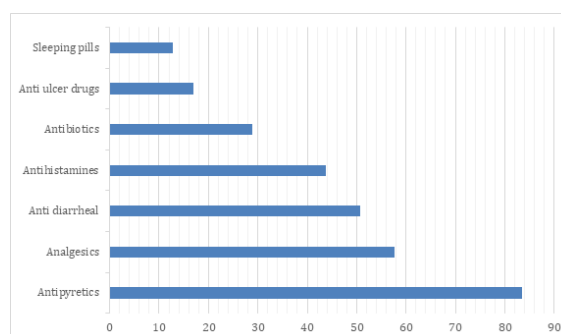


Figure 2: Commonly purchased OTC drugs

About 219 (84.2%) of the respondents knew about OTC drugs, and 222(85.4%) considered it for treating minor illnesses. The majority of them (58.8%) state that continuous use of OTC drugs may result in dependency .64.6 % of the respondents i.e. 168 respondents consider it necessary to take OTC drugs according to the recommended dose whereas 24.6% respondents say that the correct dose is not necessary for OTC drugs, However, 232 respondents (89.2%) agree that the instruction label of OTC drugs must be followed. Surprisingly 20 respondents (7.7%) say that OTC drugs could be used after their expiry date, whereas the rest 88.5% disagree with that.

137 of the respondents (52.7%) have never experienced any side effects following intake of OTC drugs but 56.2% of students believe that there may be some minor Adverse drug reactions that are tolerable and 120 respondents (46.2%) state that OTC drugs can cause drug interactions when taken with other

drugs, and 63.1% agree that OTC drugs can alter the action of other drugs.

58.5% of respondents agree that OTC drugs are cheaper and convenient to use and 118 respondents (45.4%) agree that self-medication is a part of self-care, 47.3% (123) believe it is okay to share OTC drugs with others.

There was a significant difference of opinion on supporting the sale of OTC drugs, 113 respondents (43.5%) supported the sale of OTC drugs for treating minor ailments, whereas 40.4% considered it was better to have a medical consultation before buying drugs. 111 of the total respondents (42.7) bought OTC drugs due to prior experience with the ailment and hence the medicines

About ¾ of the respondents (70.8%) state that OTC drugs can be affected by storage conditions, temperature, moisture, direct sunlight, etc.

Fever and headache were the most common illnesses for which OTC drugs were consumed, (88.8%) and 77.3% respectively, and the most common drugs brought were antipyretics and analgesics at 83.5% and 57.7% respectively.

Regarding the storage place for their medications, the majority of them reported in a medicine box (64.2%) followed by a bedroom table (18.1%), Furthermore, about 72.7% of the respondents reported that they always check the expiry date of the OTC medications before they took it.

Table 1: Questions regarding the knowledge of the participant towards self-medication with OTC drugs

What are OTC drugs (Over-the-counter drugs)?	1st year	2nd year	3rd year	4th year	Total
Don't Know	17	2	2		21(8.1)
Drugs that can be obtained only with the help of a prescription	5	11	2	2	20 (7.7)
Drugs that can be obtained without a prescription	53	63	71	32	219 (84.2)
OTC drugs are used usually for treating diseases like	1st year	2nd year	3rd year	4th year	Total
Chronic illness	3	2	1	1	7 (2.7)
Don't know	22	5	3	1	31 (11.9)
Minor illness/injuries	50	69	71	32	222 (85.4)
Continuous use of OTC drugs may result in dependency.	1st year	2nd year	3rd year	4th year	Total
Don't know	20	4	8	4	36 (13.8)
No	11	35	20	5	71 (27.3)
Yes	44	37	47	25	153 (58.8)
OTC drugs should be taken according to the recommended dose.	1st year	2nd year	3rd year	4th year	Total
Don't know	17	3	5	3	28 (10.8)
No, the correct dose is not necessary for OTC	8	35	7	14	64 (24.6)
Yes	50	38	63	17	168 (64.6)
The instructions on the label of the OTC drug must be followed.	1st year	2nd year	3rd year	4th year	Total
Don't know	10	4	3	1	18 (6.9)
No	3	4	1	2	10 (3.8)
Yes	62	68	71	31	232 (89.2)
OTC drugs could be used after their expiry date.	1st year	2nd year	3rd year	4th year	Total
Don't know	9	6	4	1	20 (7.7)
No	64	66	68	32	230 (88.5)
Yes	2	4	3	1	10 (3.8)
Do non-prescription drugs have side effects/adverse drug reactions (ADRs)?	1st year	2nd year	3rd year	4th year	Total
No, they are safe to use	7	13	4	7	31 (11.9)
They have minor ADRs which are tolerable	37	36	57	16	146 (56.2)
Yes, they are not safe to use	31	27	14	11	83 (31.9)
OTC drugs can cause drug interactions when taken along with other prescribed drugs you take.	1st year	2nd year	3rd year	4th year	Total
Don't know	41	5	18	5	69 (26.5)
No, OTC drugs are free of any drug interactions	10	38	8	15	71 (27.3)
Yes	24	33	49	14	120 (46.2)

Table 2: Questions regarding the attitude of the participant towards self-medication with OTC drugs

Self-medication is part of self-care	1st year	2nd year	3rd year	4th year	Total
Agree	22	54	21	21	118 (45.4)
Disagree	29	13	27	6	75 (28.8)
Neutral	24	9	27	7	67 (25.8)
Over-the-counter drugs are cheaper and convenient to use	1st year	2nd year	3rd year	4th year	Total
Agree	22	57	54	19	152 (58.5)
Disagree	10	4	5	1	20 (7.7)
Neutral	43	15	16	14	88 (33.8)
It is okay to share OTC medications with others.	1st year	2nd year	3rd year	4th year	Total
Agree	15	59	28	21	123 (47.3)
Disagree	31	5	21	3	60 (23.1)

Neutral	29	12	26	10	77 (29.6)
Over-the-counter drugs can modify or alter the action of another drug.	1st year	2nd year	3rd year	4th year	Total
Agree	36	51	53	24	164 (63.1)
Disagree	7	14	4	4	29 (11.2)
Neutral	32	11	18	6	67 (25.8)
Do you support the sale of OTC drugs?	1st year	2nd year	3rd year	4th year	Total
Can be sold only in an emergency if the doctor is unavailable	9	3	9		21 (8.1)
If my friends/ family are taking it, it is safe for me too	2	11	3	5	21 (8.1)
No, a medical consultation is always better before buying drugs	32	38	18	17	105 (40.4)
Yes, for minor ailments	32	24	45	12	113 (43.5)
Over-the-counter drugs are not affected by storage conditions, like temperature, moisture, and direct sunlight.	1st year	2nd year	3rd year	4th year	Total
Agree	6	14	9	9	38 (14.6)
Disagree	49	57	56	22	184 (70.8)
Neutral	20	5	10	3	38 (14.6)

Table 3: Questions regarding the practice of the participant towards self-medication with OTC drugs

Have you ever purchased OTC drugs?	1st year	2nd year	3rd year	4th year	Total
Yes	75	76	75	34	260
Why do you prefer buying OTC drugs rather than consulting a physician?	1st year	2nd year	3rd year	4th year	Total
Illness too trivial for consultation	15	23	14	10	62 (23.8)
It is convenient and easy to buy	14	6	18	4	42 (16.2)
Lack of time to visit a physician	15	15	8	7	45 (17.3)
Prior experience with the ailment and its medicine	31	32	35	13	111 (42.7)
How frequently do you purchase OTC drugs?	1st year	2nd year	3rd year	4th year	Total
As and when required	55	38	51	6	150 (57.5)
Once every month	4	8	7	9	28 (10.8)
Once every two weeks	4	26	4	13	47 (18.1)
Once every week	1	1	2	5	9 (3.5)
Once in six months	11	3	11	1	26 (10)
Which form of OTC drugs do you prefer?	1st year	2nd year	3rd year	4th year	Total
Brand Drugs	17	51	21	12	101 (38.8)
Generic drugs	14	10	35	12	71 (27.3)
No preference	44	15	19	10	88 (33.8)
Do you procure OTC drugs in proper dosage while purchasing?	1st year	2nd year	3rd year	4th year	Total
Consult books for doses and then buy	5	8	7	8	28 (10.8)
Consult a friend/relative on the phone and then buy	13	13	7	3	36 (13.8)
No, just buy randomly	7	24	15	11	57 (21.9)
Refer to the internet and then buy	5	7	3	4	19 (7.3)
Yes always	45	24	43	8	120 (46.2)
Where do you usually store OTC drugs?	1st year	2nd year	3rd year	4th year	Total
Bedroom /an open table	11	9	21	6	47 (18.1)
Kitchen	2	23	3	7	35 (13.5)
Medicine box	55	42	50	20	167 (64.2)
Refrigerator	7	2	1	1	11 (4.2)
While procuring drugs, do you ever check the expiry date of medicine?	1st year	2nd year	3rd year	4th year	Total
No, never	5	22	6	3	36 (13.8)
Sometimes	8	12	8	7	35 (13.5)
Yes, always	62	42	61	24	189 (72.7)
Have you experienced any side effects with OTC drugs?	1st year	2nd year	3rd year	4th year	Total
Do not know if it was related to self-medication	18	14	20	16	68 (26.2)
Never	44	44	40	9	137 (52.7)
Sometimes	13	18	15	9	55 (21.2)

DISCUSSION

Our study showed that 87.3 % of the medical students of a Medical College in Kerala who participated in the study had at least one episode of self-medication during the past 6 months. This result was slightly higher when compared to similar studies conducted in various medical colleges in Pakistan, Serbia, and

India in which the prevalence of SM was 76%, 79.9%, and 78.6% respectively.^[9-11] Self-medication, when adopted effectively, can be beneficial as it may relieve acute pain, and reduce treatment cost and physician interaction time.

In the present study, the most common reasons for the utilization of SM with OTC medications were for ailments (85.4%, the most common being Fever and

Headache at 88.8% and 77.3% respectively. The most common reasons why the respondents preferred self-medication was prior experience with the disease and its medications (42.7%), the second being they considered the illness too trivial to visit a consultant (23.8%), This is evident because the study participants being medicine and health science students make them familiar with diseases and their treatment (medications) which will in turn make them opt to treat themselves without consulting regular physicians.

In the current study, 47.3% of the respondents were positive about the appropriateness of sharing OTC medications with others. This should be a concern as medical students have the responsibility to be role models and advise others on the negative impacts of sharing medications. Medication sharing is one of the major reasons for the various adverse health consequences such as unmonitored adverse drug events, complications in clinical diagnosis, drug resistance, and delay in care-seeking.

There was awareness about buying the drugs in proper dosage and completing the course of medication was present, similarly awareness about drug interactions among various drugs was present with medical students which can be attributed to pharmacology books and medical teaching which lays a lot of stress on these issues to prevent irrational drug use, But about 13.8 % of the respondents in the current study reported that they never check the expiry date of the OTC medications they took, this is alarming because not checking the expiry date of the medications may lead to the accumulation of those expired medications in the area, and the medications to would develop other adverse reactions following further intake This finding was higher than a similar study conducted in Asmara, Eritrea in which 7.5% of the study participants reported that they never checked expiry dates.^[11]

Regarding storage of the medications they took, a significant number of the respondents reported a medicine box (64.2%), and though it was not significant, some of them also reported storing them in the kitchen (13.5%). Besides the dangers of accidental poisoning by children and other related risks associated with improper storage of medications, these are not ideal places to store medications due to heat and humidity which can contribute to loss of potency and shortening of the shelf life of the medications, to which about ¾th of the respondents agree (70.8%).

These findings emphasize the need for targeted educational interventions to address gaps in safe self-medication practices, such as checking expiry dates, avoiding medication sharing, and ensuring proper storage conditions. Promoting awareness among medical students is particularly crucial as they are future healthcare professionals who must model and advocate for rational drug use. Strengthening these

practices can help mitigate the risks associated with self-medication and enhance overall patient safety.

CONCLUSION

Self-medication with Over-the-counter (OTC) drugs is widely practiced among medical students. Significant problems and inappropriate practices were identified such as; the sharing of OTC medications, the use of expired medicines, the storage of OTC medications, etc. Many studies in the past have highlighted similar issues. However responsible self-medication is one of the main strategies to reduce healthcare costs, so it seems that the role of medical students is particularly important in this regard. Hence medical students, as future health professionals, should be more educated about good pharmacy practice and responsible self-medication. Also, the health regulatory authorities should exercise strict control over the injudicious sale of these drugs without a proper prescription by the doctor which will further promote rational use of these drugs.

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