

Knowledge, Attitude and Practice of Medical Undergraduate Students towards Over the Counter (OTC) Drugs Usage: A Cross-Sectional Study**Devasish Panda¹, Bikas Ranjan Mohanty², Baijayanti Rath³, Om Gopal Mishra⁴, Dev Shivam Mishra⁵, Sandeep Yadav⁶, Surendra⁷**¹Assistant Professor, Department of Community Medicine, Bhima Bhoi Medical College & Hospital, Balangir.²Assistant Professor, Department of Pharmacology, Pandit Raghunatha Murmu Medical College & Hospital, Baripada³Assistant Professor, Department of Pharmacology, Pandit Raghunatha Murmu Medical College & Hospital, Baripada^{4,5,6,7}Final Year Undergraduate Student, Pandit Raghunatha Murmu Medical College & Hospital, Baripada

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Abstract

Introduction: The World Health Organization defines over-the-counter drugs as medications that can be bought without a prescription. They are generally used for common symptoms like fever, cough, cold, headache, toothache and are generally treated symptomatically and not as substitute for prescription drugs. But this also leads to an irrational use of over-the-counter drugs due to their easy availability and lack of proper knowledge about their adverse effects. Although OTC medicines allow greater access to treatment of people at large at lower cost for minor or self-limiting illnesses and it gives General Practitioners (GPs) more time to deal with serious health problems. There associated some risks of OTC medications which include Increase Drug Resistance, increase cost to the patients, failure to follow label instructions, increase risk of drug-drug Interactions and potential for misuse and abuse. The prevalence of usage of over-the-counter drugs world-wide varies between 32.5% to 81.5% while the same for India is 53.57%.

Objectives: The study was conducted to assess the knowledge, attitude, practice of MBBS undergraduate students on Over the Counter (OTC) Medicine along with prevalence of usage of OTC drugs in Undergraduate Medical Students of BBMCH.

Methodology: It was a cross-sectional observational Study conducted in a tertiary care teaching hospital among 405 undergraduate medical students. A questionnaire consisting of questions about knowledge, attitude, and practice toward OTC drugs was framed. After educational activities, the same questionnaire on knowledge and attitude aspects was shared to the participants in google form and their response was collected and analyzed.

Results: Out of the Total 405 MBBS undergraduate students who participated in the study, 87(21.5%), 83(20.5%), 83(20.5%), 90(22.2%), 62(15.3%) were belongs to 1st year, 2nd year, 3rd year, 4th year, 5th year of MBBS respectively. 246(60.7%) students were didn't have any relatives from medical background. Around 45(11.1%) students were having 1st degree (parents) relatives from medical backgrounds. At the same time 31(7.7%), 45(11.1%) students were having 2nd degree (Brothers, Sisters, Grandparents), 3rd degree relatives (Uncle, Aunt, Nephew, Nice) from medical background, respectively. Out of the 405 students only 250(61.7%) were previously heard about the term "Over the Counter" (OTC) medicine. Only 282(69.6%) out of 405 students answer correctly that the medicine that can be purchased without prescription is called OTC medicine. 153 (37.8%) students were of the opinion that availability of Over-the-counter medicine was beneficials to general publics. 364 (89.9%) participants were of the opinion that consumption of OTC medicine contributed to Antimicrobial Resistance. 282 (69.6%) were found purchased OTC medicines at least once during the last 3 months. Whereas 245(60.5%) students had purchased medicine for self-consumption, 122(30.1%), 83(20.5%) students purchased it for family members & friends respectively. OTC medicines were purchased most commonly for fever (51.6%) followed by Common cold/Cough (40.7%), Acidity/Gastritis (38%), Headache & myalgia (29.6%), Loose motion (26.2%), allergy (16.0%).

Conclusions: This study highlights the high prevalence of self-medication with OTC drugs among medical students. While many have basic knowledge, significant gaps remain regarding drug safety, regulations, and potential risks. The casual attitude toward OTC drug misuse—such as exceeding doses or ignoring expiry dates—is concerning. Raising awareness among medical students is crucial, as they will serve as future healthcare providers and influence public health behaviors.

Keywords: Attitude, Knowledge, Practice, Medical Undergraduate Students, Over-the-counter (OTC) drug.

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Introduction

The World Health Organization defines over-the-counter drugs as medications that can be bought without a prescription. They are generally used for common symptoms like fever, cough, cold, headache, toothache and are generally treated symptomatically and not as substitute for prescription drugs [1]. But this also leads to an irrational use of over-the-counter drugs due to their easy availability and lack of proper knowledge about their adverse effects [2]. The common reasons that induce people to take self-medications of OTC drugs over doctor's consultation seemed to be saving time, family member's advice, high consultation fees of doctor, lack of trust in doctors, nurse and pharmacist's advice and poverty [3]. Commonly used OTC drugs are Chlorpheniramine maleate, Phenylephrine, Paracetamol, Ibuprofen, Psyllium, scopolamine. Pseudoephedrine and Oxymetazoline. [1]

OTC medicines allow greater access to treatment of people at large at lower cost for minor or self-limiting illnesses. It gives General Practitioners (GPs) more time to deal with serious health problems which is extremely useful for countries like India, where the doctor-to-patient ratio is less. Improved Education of the consumer. Rapid access to effective medicines. Allowing an individual to oversee their health care benefits of OTC Medication [4] Risks of OTC medications include are Increase Drug Resistance, Increase cost to the patients. Failure to follow label instructions. Increase risk of drug-drug Interactions. Potential for misuse and abuse. Incorrect self-diagnosis. Delayed diagnosis. Incorrect treatment for serious illness. [4]

The prevalence of usage of over-the-counter drugs world-wide varies between 32.5% to 81.5% [5] while the same for India is 53.57% [6]. The prevalence of usage of over-the-counter drugs in our state Odisha was found to be 18.27% as per a study in Berhampur district [7].

Objective

1. To assess the knowledge, attitude, practice of MBBS undergraduate students on Over the Counter (OTC) Medicine.
2. The prevalence of usage of OTC drugs in Undergraduate Medical Students of BBMCH.

Materials and Methods

Study design: A cross-sectional descriptive study.

Study Site: Bhima Bhoi Medical College and Hospital, Odisha, India.

Study Period: 28th February 2025 to 28th August 2025

Study Population: Undergraduate (MBBS) students from Bhima Bhoi Medical College and Hospital.

Sample Size: Sample size was calculated to be 383 by taking prevalence rate of 53% from Panda A et al [7] by applying the formula $4PQ / d^2$. After adding a 10% non-completion or non-response rate, the total sample size becomes 422. After data collection it was found that 405 responses were found to be completed in all respect and hence they were considered for analysis.

Sampling Procedure: Convenience sampling was used to recruit students who voluntarily participated in the study.

Study Procedure:

- i. Informed consent was obtained from all participants before data collection.
- ii. A structured, self-administered questionnaire was distributed to students, covering demographic details and knowledge, attitude, and practices (KAP) related to OTC medicine usage.
- iii. Responses were collected electronically via Google Forms and analyzed.

Informed Consent and Study Tools:

- i. Participant Information Sheet (PIS) – Provided detailed information about the study.
- ii. Informed Consent Form (ICF) – Obtained voluntary consent from participants.
- iii. Questionnaire – A pre-validated questionnaire was used to assess KAP regarding OTC medicine use.

Study Tools: A structured questionnaire was used to assess students' knowledge, attitudes, and practices regarding OTC medicines introduced through Google Forms.

Data Analysis: Microsoft Excel v2013

Observation and Results

Table 1: Sociodemographic Characteristics of participant students (n=405)

Sl. No.	Credentials	Number (n=405)	Percentage (%)
1	Year of MBBS		
	1st Year	87	21.5
	2nd year	83	20.5
	3rd year	83	20.5
	4th year	90	22.2
	Final Year	62	15.3
2	Gender of students		
	Boy	234	57.8
	Girl	171	42.2
3	Religion		
	Hindu	391	96.5
	Muslim	7	1.7
	Christian	7	1.7
4	Caste (n=391)		
	General	173	44.2
	OBC	124	31.7
	Schedule Cast	46	11.8
	Schedule tribe	48	12.3
5	Type of Family the students belongs to		
	Nuclear	302	74.6
	Joint	78	19.3
	Three Generation	25	6.2
6	Socio economic Status of the Family		
	Upper	148	36.5
	Upper Middle	215	53.1
	Lower Middle	29	7.2
	Upper lower	13	3.2
7	Residence		
	Rural	209	51.6
	Urban	196	48.4
8	Having relatives with Medical Background (multiple option)		
	First degree (Parents)	45	11.1
	Second degree (Brother, Sister, Grandparents)	31	7.7
	Third degree (Uncle, Aunt, Nephew, Nice, Great Grandparents)	45	11.1
	Fourth degree (Cousin, Great uncle& aunts)	55	13.6
	None	246	60.7

Table-1 described the socio-demographic characteristics of the participated undergraduate students.

Out of the Total 405 MBBS undergraduate students who participated in the study, 87(21.5%), 83(20.5%), 83(20.5%), 90(22.2%), 62(15.3%) were belongs to 1st year, 2nd year, 3rd year, 4th year, 5th year of MBBS respectively. Out of the 405 students 234(57.8%) were boys and rest 171(42.2%) were girls. 391(96.5%) students were belonged to Hindu religion whereas 7(1.7%) students belong to Muslim & Christian community each. Out of 391 students who were found to following Hinduism, 173(44.2%), 124(31.7%), 46(11.8%), 48(12.3%) were belongs to General, OBC, Schedule cast, Schedule tribe categories. Majority i.e. 302(74.6%) students were living with their nuclear family, whereas 78(19.3%), 25(6.2%) belongs to joint and

Three generation family respectively. According to Modified Kuppaswamy socioeconomic scale 2024, out of the 405 students 215(53.1%), 148(36.5%) belongs to Upper middle & Upper Socioeconomic group respectively. And 29(7.2%), 13(3.2%) were found belongs to Lower Middle and upper Lower socioeconomic group respectively. 209(51.61%) undergraduate students used to live in rural areas whereas rest 196(48.4%) used to live in urban localities. 246(60.7%) students were didn't have any relatives from medical background. Around 45(11.1%) students were having 1st degree (parents) relatives from medical backgrounds.

At the same time 31(7.7%), 45(11.1%) students were having 2nd degree (Brothers, Sisters, Grandparents), 3rd degree relatives (Uncle, Aunt, Nephew, Nice) from medical background, respectively.

Table 2: Knowledge of Undergraduate students on “Over the Counter Medicine” (n=405)

Sl. No.	Questions	Characteristics	Number (n=405)	Percentage (%)
1	Have you heard the term “Over-The-Counter” (OTC) medicines before?	Yes	250	61.7
		No	155	38.3
2	What do you understand by OTC medicines? (Multiple option Allowed)	Medicines that can be purchased without a prescription	282	69.6
		Herbal and home remedies	9	2.2
		Medications available at pharmacy but require a prescription	17	4.2
		Not sure	106	26.2
3	Which regulatory body in India governs the classification of OTC medicines?	CDSCO (Central drug standard control organisation)	164	40.5
		MCI (Medical council of India)	32	7.9
		IPC (Indian pharmacopoeia commission)	31	7.7
		Not sure	182	44.9
4	What is the primary function of OTC medications?	To treat only severe conditions	47	11.6
		To treat common minor illness	314	77.5
		To be used only in emergency situations	68	16.8
5	Select common health problem for which OTC medicines are used.	Hypertension	124	30.6
		Diabetes	90	22.2
		Hyperlipidaemia	47	11.6
		Heart failure	47	11.6
		Menopausal disorder	44	10.9
		GI reflux diseases	112	27.7
		Muscle sprain	180	44.4
		Constipation	238	58.8
		Diarrhoea	270	66.7
		Skin diseases	94	23.2
		Fatigue	202	49.9
6	What are the risks associated with OTC medicine use?	No risk	31	7.7
		Adverse drug reaction	220	54.3
		Drug interactions	191	47.2
		Anti-microbial resistance	167	41.2
		Masking of serious underlying conditions	159	39.3
		Habituation/addiction	157	38.8
		Accidents	58	14.3
7	What are the primary reasons people misuse OTC medications?	Convenience/ easily available	261	64.4
		Peer influence	97	24.0
		Pleasure	78	19.3
		Showmen	19	4.7
		I am not sure	92	22.7
8	What are your sources of knowledge about OTC medicines the most?	Health care professional, Pharmacist	197	48.6
		Advertisement, Internet/ social media	206	50.9
		Family, Friends, Seniors	214	52.8
		Own medical knowledge	126	31.1
		Other	10	2.5
9	OTC antibiotics causes Superinfection.	TRUE	212	52.3
		FALSE	125	30.9
		Missing	68	16.8
10	Drug under schedule H can be sold without prescription.	TRUE	83	20.5
		FALSE	153	37.8
		Don't know	169	41.7
11	OTC drugs can be used after	TRUE	17	4.2

	expiry date	FALSE	315	77.8
		Don't know	73	18.0
12	OTC drugs should be most cautiously used during	Pregnancy:	302	74.6
		Lactation:	231	57.0
		Adolescents	116	28.6
		Elderly	134	33.1
		Children	202	49.9
13	If suspected side effects are seen, then one should	Immediately stop using the drug	291	71.9
		Take low doses until side effects subside	59	14.6
		Continue taking the drug regardless of side effects	23	5.7
		Report to a doctor or pharmacist	291	71.9

Table-2 described about the knowledge of participants on OVER the Counter (OTC) medicine.

Out of the 405 students only 250(61.7%) were previously heard about the term "Over the Counter" (OTC) medicine. Only 282(69.6%) out of 405 students answer correctly that the medicine that can be purchased without prescription is called OTC medicine. Out of the 405 undergraduate students 164(40.5%) had some ideas about CDSCO (Central drug standard Control Organization) which is responsible for classification of OTC drugs in India. 314(77.5%) students consider treatment of common minor illness is the primary function of OTC drugs followed by 68(16.8%) students, who consider OTC drugs should be used in emergency situations, whereas 47(11.6%) students thought that OTC medicine should be used in severe condition only.

As per the 270(66.7%) participant Diarrhea is the most common health condition where OTC drugs were used. 238(58.8%), 202(49.9%), 180(44.4%), 124(30.6%), 112(27.7%), 94(23.2%), 90(22.2%) participants were of the opinion that Constipation, Fatigue, Muscle sprain, Hypertension, Gi Reflux diseases, Skin Diseases, Diabetes were the commonest health conditions, where OTC medicines were frequently used. On assessing the knowledge about the risks associated with

consumption of OTC medicine, 220(54.3%), 191(47.2%), 167(41.2%), 159(39.3%), 157(38.8%) were of the opinion that, Adverse Drug reaction, Drug interaction, Anti-Microbial resistance, Masking of serious underlying conditions, habituation/addiction were the major risks respectively. 31(7.7%) participants at the same time opine that there will be no risk associated on consumption of OTC drugs. 261(64.4%) were of the opinion that easy availability was the main reason behind misuse of OTC medicine followed by peer influence (24%). On inquired about the source of knowledge on OTC medicine, it was found that Family, Friends, seniors (52.8%) followed by Advertisement, Internet/social media (50.9%), Health care professional including Pharmacist (48.6%) were found to be major source. Similarly, 52.3% students were opined that antibiotics purchased and consumed by OTC may cause superinfections. Out of the 405 participants, only 83(20.5%) were found to have appropriate knowledge on Schedule H drug. Out of 405 participants, 302(74.6%), 231(57%), 202(49.9%) were opined that, OTC medicine should be used cautiously among pregnant, lactation, children respectively. 291(71.9%) were states that OTC drugs should be immediately stopped if any suspected side effects appeared. And similar number (71.9%) were stated that, consulting a doctor/ pharmacist on appearance of side effects.

Table 3: Attitude of Undergraduate students towards usage of "Over the Counter Medicine" (n=405)

Sl. No.	Questions	Categories	Number (n=405)	Percentage (%)
1	What is your opinion about safety of OTC medicines over prescription medications?	OTC medications are safer	60	14.8
		Both are equally safe	56	13.8
		OTC medications are less safe	157	38.8
		I don't know	132	32.6
2	Do you think the availability of OTC medicines without prescription is beneficial as well as effective for the general public?	Yes	153	37.8
		No	252	62.2
3	Do you think OTC drug use contribute to Anti-microbial Resistance?	Yes	364	89.9
		No	41	10.1
4	How comfortable do you feel using an	Comfortable	325	80.2

	OTC medication for common health issues?	Uncomfortable	80	19.8
5	Would you recommend an OTC medication to a friend or family member for a minor health issue?	Yes	361	89.1
		No	44	10.9
6	What is your general opinion on the role of social media in the promotion of OTC medications?	Social media plays a positive role by increasing awareness	96	23.7
		Social media often promote the misuse of OTC drugs	119	29.4
		Social media has no significant Influence	29	7.2
		I am unsure	161	39.8
7	How do you feel about OTC medications being advertised on television or social media platforms?	I believe they should be regulated more strictly	141	34.8
		I believe they should not be advertised at all	67	16.5
		I think they should be advertised, but with proper safety information	174	43.0
		I believe advertising OTC medication is acceptable	23	5.7
8	In your opinion, what should be the role of healthcare professionals (e.g. doctor, pharmacists) in educating patient about safe use of OTC medications?	Healthcare professional should take an active role in educating patients	268	66.2
		They should provide information, but only when asked	44	10.9
		They should have no role in educating patients about OTC medications	12	3.0
		I am unsure	81	20.0
9	Do you think self-medication with OTC drugs could lead to an increased burden on the healthcare system?	Yes, it could lead to more serious health problems requiring treatment	193	47.7
		No, it doesn't contribute significantly to healthcare burdens	74	18.3
		I am unsure	138	34.1
10	Do you think there is adequate education on the risk of OTC medication misuse in medical schools?	Yes, the curriculum is adequate	132	32.6
		No, more education is needed	125	30.9
		I am unsure	148	36.5
11	How strongly do you feel about the need for more regulation of OTC medications in your country?	Strongly agree	102	25.2
		Agree	181	44.7
		Neutral	93	23.0
		Disagree	12	3.0
		Strongly Disagree	17	4.2

Table 3 described the attitude of undergraduate MBBS students towards consumption of OTC medicines.

Out of the 405 participants 157(38.8%) were of the opinion that OTC medicine consumption was less safe than prescribed medicine. At the same time 60(14.8%) were cited that OTC medicines were safer than prescribed medicine & 56(13.8%) were of the opinion that both OTC as well as prescribed medicine were equally safe. 153(37.8%) students were of the opinion that availability of Over-the-

counter medicine was beneficials to general publics. 364 (89.9%) participants were of the opinion that consumption of OTC medicine contributed to Antimicrobial Resistance. 325(80.2%) students were comfortable in using OTC medicine, whereas around 80(19.8%) felt uncomfortable while using it.

In the study it was found that 361(89.1%) participants were ready to recommend OTC medication to friends & family member for minor health problems. While 96(23.7%) thought that

social media plays a positive role by increasing awareness on OTC medicine, 119(29.4%) thought that social media promoted misuse of OTC medicine. At the same time 29(7.2%) were denied any role of social media in it. Only 23(5.7%) students believed that advertising OTC medications in television or social media platforms is acceptable, whereas 67(16.5%) were completely against it. 141(34.8%), 174(43.0%) students were of the opinion that the advertisement should be properly regulated and with proper safety information respectively. 268(66.2%) students were accepted that there is active role of healthcare professional like doctors/pharmacist in educating

the patients on use of OTC medicine. Out of 405 participants 193(47.7%) opined that self-medication with OTC drugs leads to more serious health problems requiring advance treatment, which in turn increases the burden on healthcare system. 132(32.6%) participants thought that the current medical curriculum was sufficient in educating undergraduate students on risk of misuse of OTC medication whereas 125(30.9%) were found dissatisfied with the current educational curriculum on OTC medicine misuse. Around 181(44.7) were found agreed, that there should be more stringent regulation needed regarding OTC medication in our country.

Table 4: Practices of Undergraduate students on “Over the Counter Medicine” usage (n=405)

Sl. No.	Questions	Categories	Number (n=405)	Percentage (%)
1	Whether you have ever used medicine / purchased medicine from the pharmacy store without prescription?	Yes	311	76.8
		No	94	23.2
2	If yes, how many (approximately) times with in last three months?	Not a Single time	123	30.4
		1-5 times	227	56.0
		5-10 times	30	7.4
		10-15 times	16	4.0
		more than 15 times	9	2.2
3	If yes, for whom, did you purchase medicine for?	Self	245	60.5
		Family	122	30.1
		Friend	83	20.5
		Others	50	12.3
4	If yes, for which health conditions/diseases have you purchased?	Fever	209	51.6
		Loose Motion	106	26.2
		Acidity	154	38.0
		Headache, Body ache	120	29.6
		Allergy	65	16.0
		Skin Conditions	26	6.4
		Common cold, cough	165	40.7
		Minor Injury	53	13.1
		Sleep Disturbances	15	3.7
Others	26	6.4		
5	Why did you purchase OTC medicine?	Safe & quick relief	163	40.2
		Mild symptoms, so don't bother to visit a doctor	177	43.7
		Emergency illness	65	16.0
		Taking long time to wait for a doctor	26	6.4
		Previous experience with the medication	115	28.4
		Too much distance from a Clinic / Hospital	39	9.6
6	When you use OTC medications, how do you typically decide which one to use?	Based on personal knowledge or experience	193	47.7
		By reading the labels or instructions	68	16.8
		Based on advice from friends and family	123	30.4
		I usually consult a healthcare provider first	117	28.9
7	Type of OTC medicine you prefer to buy	Branded	144	35.6
		Generic	109	26.9
		Anything suggested by the Pharmacist	95	23.5
		Not filled	57	14.1
8	Have you ever taken more	Yes	80	19.8

	than the recommended dose of the OTC medicine?	No	325	80.2
9	What did you do, if OTC drugs show a change in shape, colour or odour?	Immediately discard the drug	295	72.8
		Continue using it till it expire	47	11.6
		Continue using it even after expiry	18	4.4
		Unresponsive	45	11.1
10	Do you check expiry date, before using OTC medicines?	Always	295	72.8
		Sometimes	46	11.4
		Never	64	15.8
11	Before using OTC medications, do you check for potential drug interactions or side-effects?	Always	134	33.1
		Sometimes	154	38.0
		Never	117	28.9
12	How do you ensure OTC medications are used safely in your household?	A regularly review drug levels and keep track of usage	135	33.3
		I ensure all household members are informed about proper use	167	41.2
		I store medication in a safe and secure place	95	23.5
		I don't actively monitor medication use	73	18.0
13	How often do you read the label on dosage instructions before using an OTC medication?	Always	156	38.5
		Often	134	33.1
		Rarely	51	12.6
		Never	65	16.0

Table 4 described about the Practices the undergraduate MBBS students were following.

Out of the 405 participant 311(76.8%) were found either purchased himself/herself or used OTC medicine purchased by others. The frequency of use was varied from 1 time to more than 15 times during the last three months. But 123(30.4%) were found not purchased OTC medicines during the last 3 months. Whereas 245(60.5%) students had purchased medicine for self-consumption, 122(30.1%), 83(20.5%) students purchased it for family members & friends respectively. OTC medicines were purchased most commonly for fever (51.6%) followed by Common cold/Cough (40.7%), Acidity/Gastritis (38%), Headache & myalgia (29.6%), Loose motion (26.2%), allergy (16.0%).

Most common reason for purchasing of the OTC medication was "mild symptoms, so don't bother to visit doctor" (43.7%) followed by "safe & quick relief" (40.2%), "previous experience with medication" (28.4%), "emergency" (16%). Majority i.e. 193(47.7%) used their personal knowledge & experience while purchasing OTC medicine followed by advice from family/friends (30.4%) & advice from healthcare provider (28.9%). Around 144(35.6%) participants opined that they preferred branded medicine over generic drugs (26.9%). 80(19.8%) students accepted that they have ever consumed more than the generally prescribed doses. 295(72.8%) students described that they discarded the drugs, if there is any change shape, color, odor. 295(72.8%) were replied that

they always checked for expiry date before purchasing as well as before consuming the OTC drugs. Only 33.1% students were aware of & regularly checked for drug interaction before consuming the OTC medicines, whereas 27(6.7%) students never checked for drug interaction and at the same time 90(22.2%) students didn't have knowledge of drug interaction and how to check for it. 156(38.5%) were found to have always checked the Labeling of drugs before consumptions, whereas 65(16%) students were found who never checked for labels of the package before consuming OTC medicine.

Discussions

In the present study, the prevalence of self-medication with OTC medications was found to be 76.8%. This result was consistent with similar studies conducted in Pakistan and Serbia in which the prevalence of self-medication was 76%, and 79.9% respectively. [8] Majority (69.6%) of the subjects understood the meaning of OTC medicine. In a similar study conducted in Kerala, this response was a little higher 84.2% [9]

In our study, a majority (77.5%) responded that OTC drugs are used to treat common minor illness followed by it is used only in emergency situations (16.8%) and it is used only in severe conditions (11.6%). In a similar study in Ethiopia, a majority (62.9%) responded that OTC drugs are usually used for treating minor illness or injuries followed by chronic illness (32.3%).[10]

The sources of knowledge to OTC medicine include advertisement/ Internet/ social media (50.9%), Healthcare professional including pharmacist (48.6%), Family, friends & seniors students (52.8%), own medical knowledge (31.1%). In a study conducted in Kathmandu Medical knowledge the source of self-medication during the exam time was majorly Textbook 37.5% followed by Internet (25%), pharmacy 12.5%, friends/senior suggestions 12.5% and others 12.5%.[5]

In this study, when asked whether or not OTC drug can be used after expiry date, a majority (77.8%) responded in negative. In a similar study conducted in Ethiopia, this was quite in contrast as 70.9% of subjects responded positive.[17]

Majority (74.6%) of the subjects agreed that caution should be taken while consuming OTC drug during pregnancy whereas in the study mentioned above in Ethiopia, a majority (83.3%) responded that caution should be taken in specifically in adolescent/ middle aged adults.[17] In case of suspected side effects being seen, 71.9% participants opted for immediately stop using the drug followed by reporting to a doctor or pharmacist, similar to the results found in the study in Ethiopia.[17]

In our study, 41.2% of the subjects believed that OTC drug use significantly contributes to anti-microbial resistance, the development of drug resistance to many antibiotics has also been associated with the frequent and inappropriate use of those medications that could be available without a prescription. [22]. whereas 54.3% opine that OTC medicine consumptions were mainly responsible for Adverse Drug reaction. 47.2% & 39.3% participant were of the opinion that issues like drug interaction and masking of serious underlying cause. Occurred due to OTC medicine consumption. Nearly similar results were found in a study of Self-medication amongst university students of Karachi. [14]

In the present study, Diarrhoea 66.7%, Constipation 58.8%, fever 51.6%, Fatigue 49.9%, Muscle sprain 44.4%, common cold / cough 40.7% and acidity 27.7% were the most common illnesses for which the respondents consume OTC medications. This finding was consistent with two studies conducted in Addis Ababa community of Ethiopia.[30] A study conducted in Jordan, also reported that headache (81.9%) was the most common reason for which students go for self-medication.[13] This could be because these are the most prevalent illnesses that frequently affect many people and for which medications are usually available in pharmacies on as OTC.

In the present study, the most common reasons for the utilization of OTC drugs were for treatment of mild symptoms (43.7%), safe and quick relief (40.2%). Similar findings were reported by a study conducted in Saudi Arabia [21]and Pakistan[8] in which in the former case, a desire to avoid long waiting time to see physician (39%) followed by a need to not burden the physician for minor illness (26%) were the commonest reasons for self-medication, while in the latter one, mild nature of the disease (34.3%) followed by the easy availability of the drugs (30.1%) were the most common reasons for self-medication practices.

About 15.8% of the respondents in the current study reported that they never check the expiry date of the OTC medications they took. This finding was lower than a similar study conducted in Asmara, Eritrea in which 7.5% of the study participants reported that they never checked expiry dates. [39] This is concerning because the practice of not checking the expiry date of the medications may lead to the accumulation of those expired medications in the household and the many detrimental effects of the medications.[26]

when asked about what they will do if OTC drugs show a change in shape, colour and or odour, 11.6% of the respondents had reported continue using till it expires and 4.4% of them reported continue using even after the expiry date. This is very much concern because of the professional background of the study participants who are expected to be role models to others and condemn these types of malpractices. Some ongoing researches showed that if stored under optimal conditions, many drugs retain 90% of their potency for at least five years after the labelled expiration date, and sometimes longer. (36)

However, The WHO has recommended that expired or unused pharmaceuticals should never be reused [25] and many other studies have also reported the dangerous consequences of taking expired medications. Due to a change in chemical composition or a decrease in potency, expired medications can be less effective or risky. Some products may also get degraded if used after their expiration date and the products of degradation are significantly more toxic than the original active pharmaceutical ingredient. [27]

When asked about “when you use OTC medication, how do you typically decide which one to use” majority of them reported that they decide based on their personal knowledge or experience 47.7% followed by advice from friends/family 30.4%, and 28.9% usually consult a health care provider first. Where as in a study conducted in Ethiopia, the majority of the respondents 174 (57.4%) reported that they consult pharmacists, followed by doctors 107 (35.3%), friend/relatives 82 (27.1%), internet

and mobile applications 60 (19.8%), drug leaflets 27 (8.9%) and 46 (15.2%) reported they never consult anyone.[17]

About 35.6% of the participants preferred Branded OTC medicine whereas 26.9% preferred Generic medicine. Similar results were reported in a study conducted in Kerala.[43]

In our study, 19.8% of the participants responded that they have taken more than the recommended dose of OTC which is quite higher than the findings of a study conducted in Brunei, in which the response was only 8.7%.[16]

On being asked about how often do you read the label on dosage instructions before using an OTC medication, 16% responded that they never read. This is quite low to the results of a study conducted in Asmara in which a large portion 31.3% reported that they never read the label.[39]

Summary

This study investigates the Knowledge, Attitude, and Practice (KAP) of undergraduate medical students at Bhima Bhoi Medical College and Hospital (BBMCH) regarding Over-the-Counter (OTC) drug usage. The research was conducted as a cross-sectional, questionnaire-based study among students of the 2021 batch.

Key findings include:

- **Knowledge:** 63.7% of students had heard of OTC drugs, while 71.4% understood their purpose. Commonly used OTC drugs include pain relievers, cough/cold medications, antihistamines, and antacids. However, gaps in knowledge exist, particularly regarding regulatory bodies and drug classifications.
- **Attitude:** While 40.7% of students believed OTC drugs are beneficial, 50% recognized their contribution to antimicrobial resistance. Most students agreed on the need for stricter regulation and healthcare professionals' role in patient education.
- **Practice:** The prevalence of self-medication among students was 78%, mainly for fever, acidity, and common cold. Convenience, quick relief, and previous experience were key factors influencing self-medication. Alarmingly, 4.4% reported using OTC drugs after expiry, and 20.3% had taken more than the recommended dose.

The study findings were compared with similar research conducted in India, Pakistan, Ethiopia, Jordan, and other countries, showing comparable trends in OTC drug use and self-medication practices.

Conclusion

This study highlights the high prevalence of self-medication with OTC drugs among medical students. While many have basic knowledge, significant gaps remain regarding drug safety, regulations, and potential risks. The casual attitude toward OTC drug misuse—such as exceeding doses or ignoring expiry dates—is concerning.

Recommendations:

- Incorporating structured education on OTC drug risks in medical curricula.
- Encouraging responsible self-medication and awareness of antimicrobial resistance.
- Strengthening regulations and pharmacist involvement in OTC drug distribution.

Raising awareness among medical students is crucial, as they will serve as future healthcare providers and influence public health behaviours.

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