

Prevalence, Patterns, and Awareness of Over-the-Counter Drug Use among Adults in Mohali, Punjab: A Cross-Sectional Study

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ABSTRACT

Introduction: Self-medication practice involves using drugs to treat self-diagnosed ailments or continuing prescription drugs without supervision. Over-the-counter drugs are widely used globally, particularly in low-resource settings, as they are easily accessible and generally considered safe.

Aim: To assess the usage of OTC drugs among the general population in a selected area of Mohali, Punjab.

Methodology: A cross-sectional survey was conducted using purposive sampling to select 250 adults in Gharuan, Mohali. Data were collected using a self-structured, pre-tested questionnaire and analysed using descriptive statistics.

Results: Among 250 participants, 54% were male and 46% female; 50% were unmarried and 45% married. Most had secondary education or below, 46% were employed, and 58% lived in urban areas. Painkillers (42%) were the most commonly used OTC drugs, followed by antipyretics (24%) and antiallergics (18%). Usage patterns included night time intake (49%), twice daily (27%), and thrice daily (8%). The most common route of administration was oral (59%), followed by topical (28%). OTC drugs were mostly obtained from Pharmacies (45%), online sources (32%), and doctor's (14%). Influencing factors included healthcare advice (44%), family (18%), personal experience (14%), and friends (14%). Knowledge regarding analgesics, antipyretics, sleeping pills, and antispasmodics was generally high, while awareness of antifungals, antiemetics, cough suppressants, and calcium supplements was mixed.

Conclusion: OTC drug use is widespread among the general population. While general knowledge is moderate to high, there is a need for targeted education on safe use, possible hazards, and benefits. Promoting safe self-medication practices can reduce adverse effects and improve health outcomes.

Keywords: 'Over-the-counter medications', 'Awareness', 'Side effects.'

BACKGROUND AND OBJECTIVE:**Background of the Study**

Over-the-counter (OTC) medication is the use of medicine by a person for treating a perceived or real health problem without consulting a physician. The practice of OTC medication is common in India and many other parts of the world, especially in the economically deprived communities.(1)

Recently, there has been an increase in the use of over-the-counter (OTC) drugs. The consumption of these medicines can be unsafe, as incorrect self-diagnosis or the ingestion of inappropriate doses can lead to side effects and the occurrence of adverse reactions and drug–drug interactions. According to the World Health Organization (WHO), more than 50% of the drugs consumed worldwide are prescribed or dispensed inappropriately and almost 50% of patients use these drugs incorrectly, resulting in increased morbidity and mortality (2)

On a global scale, the misuse of OTC medications has been identified as a public health concern. Furthermore, there have been recent reports that various analgesics and OTC medication have been abused by university students.(3) In India, till date there are no guidelines for licensing of OTC medicines. There is no separate category allotted for OTC medicines in India and the drugs which do not come under the prescription medicines schedule are generally sold as over-the-counter medicines. (4)

The government of India has recognized the utmost need to develop a robust policy framework for the effective utilization of OTC drugs. Also, various initiatives toward modifying existing laws or developing new OTC drug policies has been taken.(5) Drug abuse is a global phenomenon, affecting almost every country, but its extent and characteristics differ from region to region. India too is caught in this vicious circle of drug abuse, and the numbers of drug addicts are increasing day by day. The bane of drug abuse in Punjab has acquired the proportions of a pestilence that has shaken the entire society in the state. The inappropriate use of medications, including over-the-counter drugs, is an emerging public health concern in Punjab. (6)

The misuse of over-the-counter (OTC) medications has become a major global public health concern, particularly in developing countries like India. These drugs are often misused for self-medication, recreational purposes, and dependency. For example: Codeine-based cough syrups are often consumed in large quantities for their euphoric effects, leading to addiction. Painkillers like paracetamol are overused causing severe liver damage and, in extreme cases, fatalities. Laxatives and weight-loss supplements are often misused, particularly among younger populations, leading to serious gastrointestinal and metabolic complications. (7)

However, these medicines are not harmless, and the abuse of OTC medicines, which means using them for nonclinical purposes, can lead to severe complications, such as addiction and even death. Additionally, misuse of OTC medicines, which occurs when these medicines are used for medical purposes and with honest intentions but in the wrong manner, can induce adverse clinical outcomes.(8)

Additionally, prolonged abuse can contribute to mental health disorders, including anxiety, depression, and cognitive impairments. Moreover, OTC drugs may temporarily relieve symptoms but can mask serious underlying health conditions, delaying proper diagnosis and treatment.(9)

Lack of strict regulations and easy accessibility of OTC drugs mainly contribute to their increased consumption in India. Flooding information on Internet and social media seemingly increased the OTC drug consumption. Improper practices and use of prescription-only-drugs including antibiotics are prevalent among population. Evaluation of OTC drug consumption assists for designing appropriate drug policies & awareness programs.(10)

The problematic use of OTC medicines is quite prevalent in adults, necessitating raising public awareness about their safe use. In addition, innovative harm minimisation models need to be developed, evaluated and implemented across health care settings. (11) The problem of drug abuse in youth of Punjab is a matter of serious concern as every third person is hooked to drugs other than alcohol and tobacco. The other striking observations were the high prevalence of heroin and intravenous drug abuse. (6)

It is observed that in Punjab, inappropriate use of medications, including over-the-counter drugs, has become an important public health concern, particularly among the general population. According to a survey, 66% of the school going students in the state consume “gutka” or tobacco; every third male and every tenth female student have taken to drugs on one pretext or another and seven out of ten college-going students are into drug abuse. (6)

The severity and frequency of adverse events associated with improper self-medication suggest that individuals may not exercise the same level of caution with over-the-counter drugs as they do with prescribed medications.

Therefore, this study aims to assess how individuals perceive the importance of adhering to prescribed and self-medication instructions. The findings indicate that individuals do not believe there is an initial difference in the consequences of not following the usage directions of a new and unfamiliar drug when it comes to compliance attitudes and intents. Observing medication guidelines in both classification scenarios.

Thus, the present study was carried out to determine the prevalence, usage patterns, and awareness of over-the-counter drug use among the general population in Mohali, Punjab.

This study has the potential to provide significant insights for future endeavours, add to the existing body of knowledge, and direct further research towards bridging the identified knowledge deficiencies.

This study encourages self-care and health literacy, can serve as keep an eye out for negative interactions or effects in patients.

Objectives of the Study

To assess the prevalence, usage pattern and awareness regarding over the counter drug (OTC) use among general population in selected area Mohali, Punjab.

METHODS

Study design and setting

A cross sectional survey was carried out from February, March, and May 2025 among general population in selected area Mohali, Punjab. The researcher received authorization from the selected area Mohali, Punjab, to carry out the final study. The community area was populated over 3000 population.

Population, Sample and Sample Size

The target audience included every member of the general public in the Mohali, Punjab, area, both male and female. Every sample, both male and female, in the selected area of Mohali, Punjab, who could read, write, and speak in Hindi and English, was evaluated for eligibility. The study included adults aged above 20 years who were present during data collection and had knowledge of over-the-counter drug use. Adults were excluded if they refused to take part.

The precision rate (0.2), α (0.05), and confidence level (i.e., at 95%, $Z = 1.96$), which were approximately estimated from the pilot research, were used to determine the sample size. The effect size that was calculated was 240. After taking attrition and other factors into account, the final sample size

was determined to be 240. The overall sample size needed, taking attrition into account, was found to be 250.

A total of 250 adults were selected using a purposive sampling technique from the Gharuan area of Mohali, Punjab. Adults were recruited for the study repeatedly until a sufficient sample size was obtained. The major outcome data for the current study were collected for 250 adults, who made up the analytic sample, who were evaluated for eligibility.

Measurement, Reliability, Validity and data collection.

Adults that took part in the study had their features recorded on a structured data sheet. In Section One, standardised, closed-ended questions about age, gender, type of family, education, occupation and residence and living situation were used to gather sociodemographic data. In order to gain information of over the counter drugs medicine, including 09 self-structured questionnaires, tool - 2 gathered data related to usage of over the counter drugs.

Under the direction of experts and in accordance with the study's objectives, the study protocol and tools were created based on the literature review that was already in existence.

A group of professionals collaborated to build the study's data gathering tool, which was based on the body of current literature. The tools items were assessed for correctness, appropriateness, and clarity by Cronbach alpha method. It was found that the tool content validity was 0.8. After a pilot test with twenty five adults, no changes were made to the tool questionnaire. Prior to the main investigation, a pilot study was conducted to ascertain the feasibility and practicality of the research identify any potential roadblocks that might occur throughout the study, and finalise the sample size and data analysis techniques. The pilot study's findings showed that over the counter drugs were taken at night, and the people had knowledge about over the counter drugs.

Following the pilot study, no modifications were made to the study protocol. Sound sample methods, established survey instruments, anonymous data collecting, and appropriate statistical analysis were used to remove any potential bias or contamination.

Statistical analysis

In study 250 samples were used for the final analysis Data analysis was done with SPSS-16.0. Data were examined for missing values, anomalies, wild codes, and outliers. The variables were summarised using descriptive statistics such as frequency, percentage, mean, and standard deviation.

Ethical considerations

The Institution Ethics Committee of the SPHE College of Nursing gave its approval to the study (IEC/SPHE/0010/2025). The Indian registry Official authorisation from hospital management was acquired. Before being enrolled and receiving their informed written consent, adults were informed about the study's nature, goal, and anticipated results. They were free to leave the study at any moment and were given enough opportunity to clear up any questions. Being a part of the study was entirely optional. Confidentiality and privacy were maintained throughout the research.

RESULTS

**Table 1 describes the study sample's demographic characteristics
(n=250)**

Variables	Option	(f)	(%)
Age	Mean±SD 32.01±8.76		

Gender	Male	135	54
	Female	115	46
Marital Status	Single	126	50
	Married	113	45
	Divorced	07	03
	Widowed	04	02
Education	No formal education	51	20
	Primary	80	32
	Secondary	95	38
	Higher Secondary and above	24	10
Occupation	Employed	115	46
	Unemployed	49	20
	Student	58	23
	Retired	28	11
Residence	Urban	145	58
	Rural	105	42
Living Situation	With family	250	100
	Alone	-	-

Interpretation - The majority of participants were young to middle-aged people, as indicated by the respondents' mean age of 32.01 years with a standard deviation of 8.76 years. Male respondents made up 54% of the sample, while female respondents made up 46%. In terms of marital status, 50% of respondents were single, 45% were married, and only a small proportion was widowed (2%) or divorced (3%). Only 10% had completed higher secondary education or above, and 20% had not attended any formal schooling. In terms of educational attainment, the majority had attended primary (32%) or secondary (38%) levels.

In terms of occupation, 46% of the respondents were employed, 11% were retired, and a sizable portion remained unemployed (20% and another 23% group). Of the participants, 42% lived in rural areas and 58% lived in urban areas. None of the respondents reported living alone, and nearly all of them (100%) lived with their families, showing robust family support networks in this group.

Table 2: Frequency and percentage of over the counter drugs (OTC) related to medication information.
(n=250)

Variables	Options	(f)	(%)
Do you use over the counter drugs (OTC)?	No	-	-
	Yes	250	100
Medication name	Painkiller	106	42
	Antiallergic	44	18
	Antipyretics	61	24
	Others	39	16
Have you experienced any side effects?	No	51	20
	Yes	199	80

Frequency and time.(How many times patient take over the counter (OTC) drugs.	BD	67	27
	HS	122	49
	TDS	21	08
	Others	40	16
Do you have any medical condition. (e.g. hypertension, diabetes mellitus?)	No	102	41
	Yes	148	59
Route	Orally	147	59
	Topical	71	28
	Inhalation	32	13
How do you usually obtain over the counter (OTC) drugs?	Pharmacist	113	45
	Online	79	32
	Doctor	34	14
	Other	24	10
How do you decide which over the counter (OTC) drugs?	Personal Experience	36	14
	From health care	111	44
	From family	46	18
	Friends	34	14
	Advertisement	23	09
Related to over the counter (OTC) drugs.	No	07	03
	Yes	243	97

Interpretation -

All participants reported using at least one over-the-counter medication in their lifetime. The most popular over-the-counter medications were painkillers (42%), followed by antipyretics (24%) and antiallergics (18%). The majority of participants (80%) reported experiencing side effects, indicating a high prevalence of adverse outcomes. The majority had pre-existing medical conditions (59%), and nearly half used over-the-counter medications at night (49%). The most popular methods were oral (59%) and Topical (28%). Pharmacists were the primary source of medication (45%), with internet purchases coming in second (32%).

OTC usage decisions were most influenced by medical expert recommendations (44%), however friends and family also had a significant impact. Nearly all participants (97%) reported having some awareness of OTC drugs, although the depth of knowledge varied across drug categories.

Table 3 : Frequency & Percentage distribution level of over the counter drugs (OTC). (n=250)

CRITERIA MEASURE OF OTC SCORE				
		Score	(f)	(%)
Higher	Above mean	(>13)	36	14
Moderate	Average	(12)	137	58
Mild	Below mean	(9-10)	4	1.6

Interpretation - Among the 250 participants, **86% (214)** scored between 7 and 12 on the OTC usage scale, indicating that the majority have a moderate level of self-drugs usage or knowledge. Only **14% (36)** scored in the higher range (>13), suggesting high OTC drug usage or knowledge. Only 1.6% of participants fell into the lower score category (9-10). The total score ranged from 0 to 18, with higher scores indicating greater usage or awareness. This distribution demonstrates that most of the general population in the surveyed area falls within a moderate usage or awareness category, with a smaller group exhibiting high usage or familiarity with over the counter (OTC) medications.

DISCUSSION

Out of 250 respondents 135 (54%) were male and 115 (46%) were female. (Table 1). More than half of them were Bachelors 126 (50%) and 113 (45%) were married, some of them had secondary education 95 (38%). Most of participants were employed 115 (46%) and very few 28 (11%) retired from their job. All participants (100%, 250) reported that they use self-medication. All participants in the present study reported using at least one form of over-the-counter medication, which may be attributed to the inclusion of individuals already familiar with or exposed to self-medication practices. This result also supported by study done by **Sowmya Borugadda Blessy D et.al (2024)** found that Prevalence of OTC drug usage was 75.8% with males comprising 54% and females 46%. (10) Similar result found in study conducted by **Mourya Aluri et.al (2019)** he also found that 77.33% practicing self-medication the majority of self-medication practice was found to be among females (54.83%) reported use of OTC products more in comparison to males (44.66%). (12) These findings are consistent with **Sánchez-Sánchez Eduardo et.al (2021)** and **Abdelwahed et.al (2023)** he also found Egypt had the highest prevalence of self-medication practice (72.1%), while Palestine had the lowest prevalence (40.4%). (13) Another Study done by **Patel S et.al** with 98% of the 379 individuals, who ranged in age from 18 to 27 years, acknowledged self-medication (57% female, 43% male). (2)

In our study majority of participants using painkiller 106 (42%), participants frequency of using OTC was at bed time only 122 (49%). Similar result found in study conducted by **Mourya Aluri et.al (2019)** reported that Meftal spas (4.65%), Anti-pyretic/pain relievers (37.41%) were the most commonly used class of drug. (12) Another study by **Sowmya Borugadda Blessy D et.al (2024)** also found same results. (10) Similar results were reported by **Sánchez-Sánchez Eduardo et.al (2021)** he also reported that analgesics were the most consumed OTC drugs (49.1%) (2) while this contrasting by findings of **Panda A (2017) conclude that** younger age, male gender, lower income, and poor lifestyle were the predictors of OTC medication. (1) Many other studies also find similar **Alfarhan Moaddey et.al (2025)(14)** **P. Kulkarn Prerana (2024)** (15) earlier study done by **Alduraibi et.al (2022)** more than half (63.9%) of the students reported that they practice self- medication in the last 6 months. Pain killers were the most common medication used for self- medication by the majority of the students (88.29%). (16)

In this study we found that urban people more used OTC as compared to rural. Similar results were reported by **Sowmya Borugadda Blessy D et.al (2024)** he also found that OTC drug consumption is more in urban areas (44.7%) (10) Another study done by **Sánchez-Sánchez Eduardo et.al (2021)** in his study revealed that most consumed OTC drugs especially in women were urban (2) while in New Zealand, low-dose ibuprofen (200 mg) is available OTC for minor pain, while higher doses (400–800 mg) require a prescription for conditions like arthritis. (17)

Most of them experienced Side effects of OTC drugs 199 (80%) These findings are consistent with **Mourya Aluri et.al (2019)** shown that very few out of 580 participants, 108 (18.62%) experienced side effects from OTC drugs in which 21 reported side effects. (12) Similar results found by another study **S. Alharthi Mohammed et.al (2024)** revealed that majority of participants, 297 (88.2%), were aware that inappropriate use of over-the-counter medications might have negative implications.(3)

According to them self-medication is done mainly for 148 (59%) the comorbidities like hypertension, diabetes mellitus another study by **Panda Abinash et.al (2017)** revealed that respondents already using prescription medicines were less likely to use OTC drugs, a statistically significant finding. Chronic conditions like hypertension and diabetes notably increased this likelihood.(1) another study by **Agarwal (2021)** also found the majority of self-medication were for minor illnesses, but **11.6%** of participants self-diagnosed and self-medicated for serious conditions such as heart disease, diabetes, cancer, psychological problems). (18) This result highly supported by **Rahmawati Riana (2017)** reported that anti-hypertensive medications are listed among the 11% of products that patients reportedly obtain over-the-counter (OTC) for self-medication.(19)

Additionally the route of drug they preferred most was orally 147 (59%) of subjects and 71 (29%) consuming through topical application. This result is supported by **Murdan Sudaxshina (2023)** In a survey across 21 countries, researchers found that while the oral route was the most commonly preferred method of administration, followed by topical and inhalational routes, which is consistent with the nature of most OTC medications.(20) While in study of reporting that (39% oral) demonstrates that different people prefer different routes, which aligns directly.(21)

Usually, 113(42%) responded that they had bought an OTC drug on the prescription from doctors. In addition, many consumers 79 (32%) use the internet to search for information concerning the use of OTC drugs or products and brought it online. This result supported by study **Agarwal (2021)** the survey found that **59.8%** of respondents used the Internet to obtain health-related information and practiced self-medication.(18) Similar findings in study by **Taylor Jeffrey G. et.al (2023)** reported that consumers are somewhat more likely to seek information on OTC medicines than non-medicine products, with a mean search likelihood of 5.0 on a 10-point scale. They also observed that information-seeking was higher for certain medication categories, such as eye-infection drops and children's fever medicines.(22) In our study most participants (86%) showed a moderate level of OTC drug use or awareness, while only 14% demonstrated high usage. No one scored low, indicating that the population generally has a moderate understanding of OTC medications. similar findings in study by **Nemat Arash et.al (2023)** their study similarly found that most Kabul respondents possessed a reasonable level of knowledge, with 65.2% classified as having "good knowledge" regarding OTC medicines. In addition, a very high proportion correctly recognized important aspects of OTC use—such as the need for proper guidance (96.2%) and the potential for long-term side effects (93.6%)—indicating general awareness rather than advanced or expert-level understanding.(23) another study by **Kumar et al. (2013)** observed that although self-medication was common among medical students (78.6%), the knowledge guiding their practices was largely basic to moderate, as most relied on old prescriptions or partial pharmacological understanding rather than comprehensive drug knowledge.(24) The entire, results of this study are consistent with previous research, demonstrating that OTC drug usage and self-medication are common practices with moderate awareness levels and significant hazards associated with improper use. This unexpected finding highlights a critical gap in public understanding of OTC medications and underscores the need for stricter regulation and public education regarding safe drug use

CONCLUSION AND IMPLICATIONS FOR TRANSLATION**NURSING IMPLICATION**

1. Evaluate patients' understanding and application of self-medication.
2. Inform patients about interactions, possible adverse effects, and appropriate usage.
3. Advise patients to carefully read and abide by labels.
4. Talk to patients about the advantages and possible hazards.
5. Keep an eye out for negative interactions or effects in patients.
6. When required, refer patients to medical professionals.
7. Encourage self-care and health literacy.
8. Urge patients to seek advice from medical professionals.

NURSING EDUCATION

1. Stress possible dangers, adverse effects, and interactions.
2. Put your attention on advancing patient education techniques and health literacy.
3. Provide information on interactions, possible adverse effects, and appropriate dose.
4. Provide instruction on how to safely store medications, read labels, and get rid of those that aren't needed.
5. Encourage critical thinking and comprehension of health facts.
6. Collaborate with pharmacies, libraries, and community centers to reach a range of demographics.

NURSING RESEARCH

1. Examine the frequency and trends of self-medication use in various populations.
2. Examine the risks and safety of using self-medication, considering side effects.
3. Evaluate the general public's attitudes and understanding on over-the-counter drug use.
4. Surveys should be conducted to gather information on attitudes, knowledge, and OTC drug use.
5. To find trends and patterns, apply statistical and thematic analysis.
6. Use study findings on over-the-counter drug use to inform nursing practice and policy.
7. Create focused educational initiatives to encourage self-medication use.

NURSING ADMINISTRATION

1. Create policies and procedures for the safe use of Over-the-counter drugs in different healthcare environments.
2. Educate and teach medical professionals on the usage, safety, and possible interactions of over-the-counter medications.
3. Track self-medication use and side effects to pinpoint areas that need work.
4. Put patient safety measures into action to lower the side effects related to self medication.
5. Work together with doctors, pharmacists, and other medical specialists to encourage the safe use of medications.
6. Work with organizations and community leaders to increase knowledge and educate people related to use of over-the-counter drugs.
7. Healthcare professionals have enough personnel and assistance to handle problems relating to over-the-counter drugs.

LIMITATIONS

- A. Generalizability may be limited by the sample's potential lack of representativeness of the overall population.
- B. The study design limits the ability to infer causality because it only records a single moment in time.
- C. Participants might not give specific details about the amount and length of time they have used over-the-counter drugs.
- D. The classification of certain medications as OTC was based on participant self-report, which may have led to misclassification, particularly for injectable drugs that are typically prescription-only.
- E. Results may vary depending on how OTC drug use is defined.
- F. The study might not have taken into account the socioeconomic, linguistic, and cultural variety of the general population.
- G. The study may not adequately represent vulnerable populations, such as older adults, children, or those with chronic conditions.

RECOMMENDATIONS

1. Launch public education initiatives to increase knowledge of the advantages, possible hazards, and safe OTC medicine use.
2. Before using over-the-counter treatments, speak with your doctor, particularly if you use prescription drugs or have underlying medical concerns.
3. Recognize any adverse effects and let your doctor know about them.
4. Offer individualized advice on possible interactions, adverse effects, and safe over-the-counter medication use.
5. Encourage community organizations, legislators, and healthcare professionals to work together to support safe use.

CONCLUSION

This study highlights that OTC drug use is highly prevalent among the general population, with painkillers being the most commonly used medications. Although awareness exists, variations in knowledge and unsafe practices indicate the need for targeted educational interventions and stricter regulation to promote safe self-medication.

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