

Original Article

PREVALENCE AND AWARENESS OF OVER-THE-COUNTER MEDICATION: ADDRESSING THE ALARMING SURGE OF SELF-MEDICATION IN YOUNG POPULATION

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ABSTRACT:

Globally, over-the-counter (OTC) drugs are commonly used as nonprescription medications. Among these, analgesic agents are most frequently consumed, though their indiscriminate use can lead to serious health complications. The use of OTC medicines without prescription and proper awareness has now become a public health concern world-wide. The objective of this study was to assess the awareness, prevalence and handling of OTC medicines among the students of a local university. A cross-sectional survey based study was conducted using a structured open-ended questionnaire, distributed randomly among university students in Karachi, Pakistan. A total of 300 students participated in the study. The questionnaire aimed to evaluate participants' knowledge and usage patterns of common analgesics such as paracetamol, ibuprofen, and aspirin. Out of 300 participants 69% were females and 31% were males, aged between 18 to 30 years. Among them, 56% reported that paracetamol, ibuprofen, and aspirin were used for pain relief, while 44% were unaware of its indication. Pain was the most commonly reported reason for OTC drug use (29%). Awareness of adverse effects was also assessed, with gastrointestinal (GI) complications being the most reported side effect at 43%. The OTC are commonly reported to be taken for pain.

Keywords: Over the Counter (OTC) medications, awareness, adverse effects, cross-sectional study, analgesics

INTRODUCTION

Self-medication is defined as the *active management by individuals of their own treatment, symptoms, lifestyle, and physical or psychological consequences from acute or chronic conditions*(1). Self-medication is viewed as a potential solution to alleviate the growing strain on healthcare and social resources while lowering associated costs, with the assumption that effective self-care reduces the need for healthcare services (2-3). This approach has gained prominence in health policy discussions in the United Kingdom (4).

Pain, a common human experience, is defined by the International Association for the Study of Pain as "an unpleasant sensory and emotional experience associated with actual or potential tissue damage, or described in terms of such damage"(5). This definition acknowledges both the sensory and emotional aspects of pain. Pain is now recognized as the fifth vital sign in clinical assessments and is one of the most significant symptoms prompting individuals to seek medical attention (6).

The use of non-prescription drugs (NPDs), including over-the-counter (OTC) medications, is widespread globally (7). These medications are used to treat a variety of mild to moderate conditions such as pain, fever, and behavioural issues like irritability or restlessness (8). The OTC drugs are available to consumers without a prescription, in contrast to prescription-only medications that require a valid prescription from a healthcare provider (9). The accessibility of OTC medications enables individuals to treat many ailments independently, without the supervision of a healthcare professional (10).

While OTC drugs offer benefits like ease of access and self-management, they also pose risks such as misdiagnosis, overdose, and drug interactions (11). In many countries, certain analgesics are available OTC without a prescription. When used correctly and in recommended doses, OTC medications are considered safe and effective for the general population (12). Paracetamol (also known as acetaminophen) is one of the most widely used OTC analgesics, known for its mild analgesic and antipyretic properties. It is available in both prescription and non-prescription forms (13).

Other commonly used analgesics include non-steroidal anti-inflammatory drugs (NSAIDs), which are frequently self-administered for both acute and chronic pain (14). The NSAIDs, which inhibit cyclo-oxygenase (COX) enzymes, are used for a wide range of conditions, from short-term relief of common ailments like colds, flu, headaches, and muscular pain to long-term management of chronic inflammatory diseases like rheumatoid arthritis (15,16). Some NSAIDs, such as aspirin and ibuprofen, are available OTC in many countries, including the United States (17).

The NSAIDs are available in both prescription-only and OTC formulations, often with the same dosage but marketed under different names or packaging for different uses (18). Despite their widespread use due to their analgesic and anti-inflammatory properties, NSAIDs are associated with serious adverse drug events, particularly affecting the gastrointestinal, cardiovascular, and renal systems (19, 20).

To manage the risks associated with OTC medications, healthcare professionals and patients must be educated about safe usage. A report from the British Medical Association (BMA) has highlighted the increasing trend of switching more potent medications from prescription-only status to OTC availability. This shift underscores the importance of enhancing education and awareness to ensure the safe use of these drugs (21). Therefore, this study was conducted to extent of the use of OTC and awareness of the users.

METHODS:

This study was based on a survey based approach to determine the awareness, prevalence and general understanding of the participants regarding the use of OTC drugs and their adverse effects. The handling of OTC drugs and reasons for purchasing OTC drugs were also investigated in this survey. The study was conducted from January 2024 to June 2024. Minimum sample size of the study was 300 and sample size was calculated by precision analysis technique ($n = Z^2 p (1-p)/d^2$).

The individuals who participated in the study were selected from various departments of a public university in Karachi, Pakistan. The majority of the participants were females compared to males. All the protocols were according to standard practices.

Data was collected by using a questionnaire which was designed to obtain demographic details and to investigate the awareness of the participants about OTC drugs and their adverse effects. The content of the questionnaire was reviewed by the researchers and minor revisions were made for accuracy of questionnaire. Participants were asked about demographic information such as age and gender. They were also inquired about the general OTC drugs they are using and the adverse effects of those drugs after using for a certain period of time. Several questions regarding the perception and handling of OTC drugs was also included in the questionnaire. The study included both male and female participants aged 18 years and above. Those individuals who were below 18 years and who decline to participate were excluded from the study.

Statistical analyses

Data were analysed using Statistical Package for Social Sciences (SPSS version 20.0 Armonk, NY: IBM Corp) and were subjected to descriptive analysis where non-parametric test, i.e. chi-square test were applied. All the values were considered significant when $P < 0.05$. The results were presented in the form of frequencies, graphs and tables to facilitate easy interpretation.

RESULTS:

During the study period, 300 individuals participated in the study, including 207 females and 93 males. The age range of respondents were between 18 to 20 years (38%), 21 to 25 years (41%) and 26 to 30years (20%) respectively. The demographic information is shown in Table 1. Analgesics were most frequently used which included paracetamol, ibuprofen and aspirin. The survey results revealed that 56% people were aware about the indications of these analgesics whereas, 44% were unaware (Figure 1). The results showed that females had statistically significantly higher more knowledge about analgesics as compare to male (Table 2). The consumption of some commonly used OTC drugs such as Paracetamol, ibuprofen and aspirin was also investigated. It was found that Paracetamol was most commonly used (23%) among different analgesics however the use of other analgesics was below or up to 10% i.e. ibuprofen (6%), aspirin (10%) for pain and some other analgesic drugs are consumed up to 5% as shown in figure 2. The consumption of OTC medications for various illnesses was also evaluated.

According to the survey result, 29% participants used analgesics for various pain illness. 24% uses analgesics to relieve headache. For muscular aches and fever in 22% and for joint pain in 5% participants (Figure 3). Excessive use of OTC medications was also reported to be associated with various adverse effects including gastrointestinal (GI) complications such as diarrhea, vomiting in 43%, stomach bleeding in 2% and Renal complications and kidney failure was 12% and 11% respectively. Some other complications was also found which was up to 10%. It was found that 56% youngsters were well aware about addiction and dependence caused by the analgesic agent where as 14% were not aware while 22% participants have no idea about the addiction as shown in figure 4. Table 4 displays the results of an investigation about perceptions of the safety of over-the-counter medications. In addition, a great majority of responders (i.e. 59.66%) failed to verify expiration dates. About 18% of respondents confirmed that they read medicine leaflets that were placed in drug packaging prior to utilizing over-the-counter medications. Table 5 represents several reasons for which the respondents' purchases of over-the-counter medications for self-medication. According to 71% of participants, visiting the hospital is a waste of time, and 53.33% think they can take care of themselves if there is minor illness. When asked how long they keep over-the-counter medications at home before throwing them away, 230 (76%) said they keep them for less than a year, while 53 (17%) say they keep them for more than a year.

Table 1. Demographic characteristics of the study population

Sociodemographic Features		Frequency	Percentage
Gender	Male	93	31%
	Female	207	69%
Age	18-20 years	114	38%
	21-25 years	123	41%
	26-30 years	61	20.3%
Marital Status	Married	77	25.6%
	Unmarried	223	74.3%
Qualification	Undergraduate	245	81.6%
	Post Graduate	55	18.3%

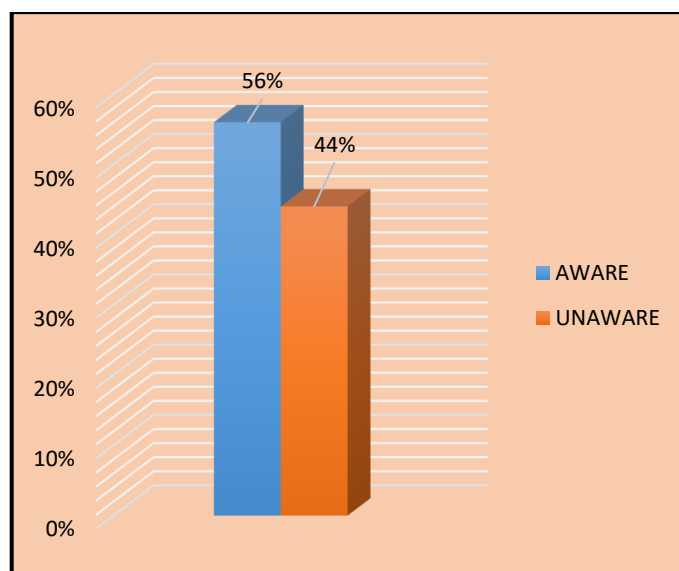


Figure 1. graphical presentation of responses

Table 2. Comparison of response of males and females

Gender	n (%)	n (%)	p-value
Male	19 (20)	74(80)	0.001
Female	157(76)	50(24)	
Total	176(58.6)	124(41.33)	

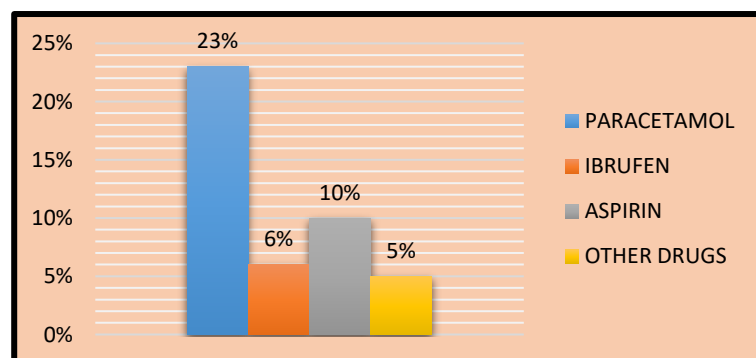


Figure 2 : Consumption of Different Analgesics by participants

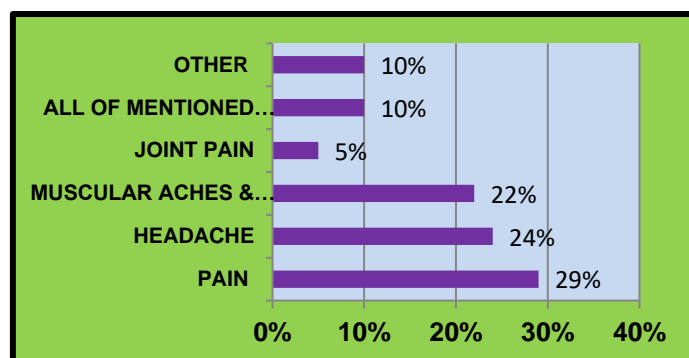


Figure 3: Different reported illnesses for which analgesics were used by participants

Table 3. Statistical analysis of adverse effects associated with analgesics

Adverse effects	Responses	Yes(%)	No (%)	Chi Square
GI* Complications	43	26	17	0.004
Renal Complications	12	8	4	
Kidney Failure	11	5	6	
Stomach bleeding	8	3	5	
Other complications	10	6	4	

*GI= Gastrointestinal complications

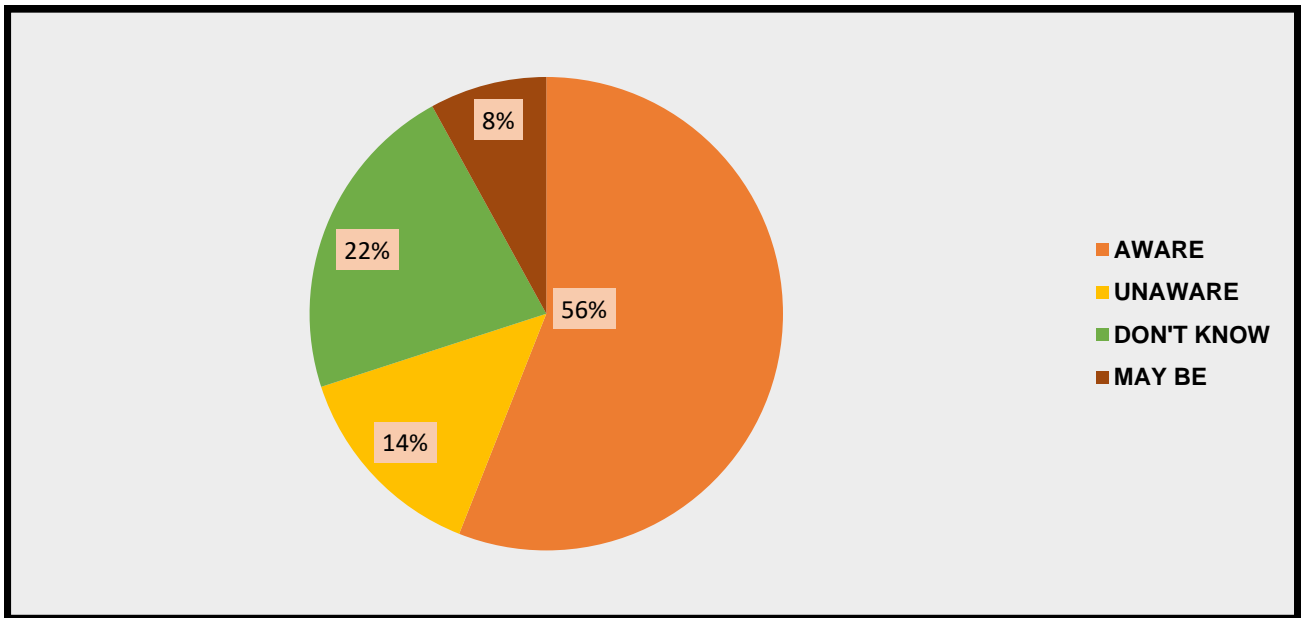


Figure 4. Awareness about addiction and dependency of Over The Counter (OTC) drugs.

DISCUSSION

According to the World Health Organization (WHO), nonprescription medicines are drugs that have been approved by health authorities for treating minor ailments and symptoms and available without prescription. These OTC medications are deemed safe and effective when used as directed, either according to the package instructions or on the advice of a pharmacist (22). The OTC medicine self-medication is a practice that poses a global public health concern. The prevalence of self-medication varies by target population and country (23, 24).

In this study we have examined OTC drug use patterns and assessed patients' perception about OTC drugs use in university students. The main finding of this study showed analgesics were the most commonly used as OTC drugs, where 56% of participants were aware about OTC medications, however, 44% participants were completely unaware. The most frequently used medications were paracetamol, ibuprofen and aspirin. Headache, fever and joint pain were the most frequent conditions for which OTC drugs were purchased. These findings are consistent with previously reported studies (25, 26).

When used properly, self-medication using over-the-counter medications can be advantageous as it can lessen various pain conditions and cut down treatment expenses and doctor visits (27). However, if used improperly, it can also pose a risk to human health and cause serious health issues. The participants reported that gastrointestinal issues, renal difficulties, kidney failure, stomach hemorrhage, and other complications were among the several complications caused by OTC drugs.

According to the participants, the most frequent reasons for using over-the-counter drugs were the low severity of the disease, easy access to the pharmacy, and time-consuming hospital visits. Numerous studies have documented various reasons why people self-medicate with over-the-counter drugs (28, 29). Regarding the expiration dates, majority of respondents stated that they do not verify the expiration date before using over-the-counter medications while others responded that they dispose them away if they observe a change in the medications' physical appearance. Just a small percentage of participants, however, stated that they see a pharmacist if over-the-counter medications fail to relieve a symptom or if the medication's color, smell, or form changes. These results suggest that community pharmacists need to adequately inform their patients about the expiry and physical changes of over-the-counter medications.

Despite the fact that the majority of respondents handled over-the-counter medications well, nearly all of them engaged in risky practices. Moreover, a few respondents stated that they do not read drug information leaflets prior to using over-the-counter medications. This research highlights the necessity of pharmacists counselling and educating consumers about OTC medications and the risks they pose if misused.

Community-based pharmaceutical counseling is especially important when people buy medications OTC without a doctor's prescription. Many customers in this survey believe that OTC medications are safe when used in excess of the recommended dosage, and the remaining respondents agree that OTC medications are generally safe regardless of their use. These findings suggest that participants most likely lack a thorough understanding of a number of risk factors associated with OTC medications, including those about drug-drug and drug-release interactions. According to previous studies, users tend to underestimate the hazards associated with OTC drugs and believe they are harmless (30, 31).

In general, patients have a positive perception of community pharmacists, though in certain situations, their understanding of pharmaceutical care services remains limited. Many patients are unaware of the risks associated with improper OTC medication use. Therefore, it is crucial for pharmacists to provide counselling at the time of purchase, ensuring the safe and effective use of these medications (32).

Since this study was cross sectional, the results of the study are dependent on the responses given by the study participants thus, there may possibility of respondent bias. The sample size was limited to university students and may not be representative of the general population.

CONCLUSION

The study revealed that a significant proportion of participants rely on non-prescribed medications rather than prescribed ones. It was found that paracetamol is considered as the safest and most effective first-line agent for pain relief, with 60% of participants choosing it. However, the routine use of nonprescription medications for various reasons could lead to complications and even addiction. The misuse of OTC drugs is alarmingly high, emphasizing the need for community pharmacists to promote proper use through counselling. Additionally, drug regulatory authorities should strictly enforce laws related to drug dispensing.

Conflict of Interest

Authors declare no conflict of interest.

Ethical consideration

The study was approved by local research ethics committee of University of Karachi and conducted according to the ethical principles and participants were informed about the purpose and scope of study. The consent was obtained from each respondent and the responses were kept confidential and anonymous.

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