

Over-the-counter medicine abuse – A pharmacist's emerging responsibility

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ABSTRACT

Self-medication is an essential component of the healthcare system. Over-the-counter medications (OTC) are components of self-medication. The administration of OTC medications in patients increases the risk of abuse of these drugs. With pharmacists being as accessible as they are, pharmacists are the first line of contact in purchasing OTC medications and have an upper hand in ensuring safety, and efficacy and preventing abuse in patients. This review aims to give brief information on OTC medications along with their abuse. The importance of patient and pharmacist interaction has been discussed. In addition, the potential for a behind-the-counter drug category and its prospective role in improving pharmacist-patient relations have been elaborated. This review gives knowledge on the barriers faced by pharmacists in OTC medication abuse and how it can be controlled and managed effectively. The current health system should work more effectively to provide a striking balance between the purchase of OTC medications and their abuse.

Key words: Over-the-counter, abuse, misuse, pharmacists

Medications provided by pharmacists without the prescription of a doctor are known as over-the-counter (OTC) medications. It is defined as 'medications that can be purchased without a prescription and are safe and effective when used according to the directions on the label, and as directed by a health care professional.' In recent years there is an expanding trend of self-medication with OTC medicines and is becoming an increasingly popular practice around the world. As per recent estimates, the global prevalence of self-medication ranges from 11.2% to 93.7% [1].

OTC medications are employed for common ailments and provide a cure for a wide range of conditions but not limited to headache, fever, muscular pain, heart-burn, common cold, and allergies [2]. OTC drugs have an advantage for the healthcare system as it boosts pharmacists' skills along with the reduction of prescribed drug costs for the public. Pharmacists are the first point of care while dispensing OTC medications. However, the increasing availability of OTC medicines increases the patient's risk of subjecting to interactions and adverse effects of drugs. Patients are encouraged to self-treatment which may lead to potential misuse of the medications [3]. The risk of OTC medicines may include self-diagnosis, incorrect treatment, addiction in the long run, drug interactions, and poly-pharmacy. This may be particularly more dangerous in vulnerable populations such as the elderly [4].

The majority of patients don't discuss the consumption of OTC medicines with their treating physicians therefore they tend to be unaware of the potential risks of the medications. The

increased administration of drugs by patients has increased drastically in the absence of professional help. OTC medicines are consumed by customers and are not even recorded in many pharmacies [5]. The abuse of OTC drugs is not often intentional and it can arise due to incorrect information about the drugs such as improper dosage form, lack of knowledge, drug-drug or drug-food interactions, and improper duration of the dose. There is a constant rising concern about the harms that can be associated with the use of OTC medications.

The objective of this review is to give a brief understanding of the potential abuse caused by OTC medications. This review elaborates on the role of Pharmacists in managing OTC medications along with future steps that need to be taken to restrain the issue of OTC medications worldwide. This review gives a perspective to the pharmacists to reduce OTC medication abuse and strategies to implement betterment in the future.

Abuse of OTC medications: The abuse of OTC medications is a cause of a significant rate of morbidity and mortality [6]. Most commonly abused OTC medications include caffeine, antihistamine, antitussives, expectorants, ephedrine, pseudoephedrine, steroids, etc. Tinsley JA et al reported a case study of a thirty-three-year-old woman who was admitted for inpatient treatment of ephedrine abuse [7]. It was reported that the patient took 25 mg of a capsule every day for appetite suppression. This OTC ephedrine medication was lifted by the patient from the place where she worked which also led to her termination. The patient consumed the drug for 18 months.

Even after the patient's numerous attempts to discontinue the drug she failed due to constant rebound. This addiction also interfered with her daily chores and children's duties. The findings on the patients' data were unremarkable. This implicates the need to address the lingering threat of OTC abuse within the public domain.

From the worldwide abuse of OTC medications cold or cough products consisting of dextromethorphan, analgesics, antihistamines, and hypnotics are widely highlighted for their potential abuse [8]. A rising number of cases have been reported with the abuse and misuse of propylhexedrine (Benzedrex), and OTC nasal decongestants. Misuse of propylhexedrine is associated with cardiac and psychiatric adverse effects [9]. Cough and antihistamines are the most highly abused OTC medication and sometimes the patients aren't even aware of the abuse until they find the uncontrollable urge to consume medications. Similarly, dimenhydrinate is an anti-histamine OTC indicated for nausea and vomiting. It is more often misused for its psychotropic effects, including hallucinations and euphoria. In addition to frank abuse, there is also a potential for drug dependence upon long-term misuse [10]. Although, there is a general trend in OTC abuse of drugs from many different therapeutic classes and numerous dosage forms and drug delivery systems are implicated in OTC drug abuse.

One of the main notable reasons for OTC medication abuse is an increase in access to medications [11,12]. Medications are made accessible by converting from prescription to OTC medications. These switches are done when a firm's patent expires. However, in the case of prescription antihistamines like Claritin, Zyrtec, and Allegra, Blue Cross was petitioned to be switched to OTC by the parent companies [13]. Patient autonomy is increased by switching medications which eventually increases the decisions of healthcare. A record of total of 12.9 billion dollars in profit was generated for the switch of cold, allergy, analgesics, and dermal products. The exact reason for this switch to OTC medications has led to the abuse of medications.

Table 1- List of most commonly abused OTC medications

Class of drugs	Examples	References
Antihistamines	Diphenhydramine and Coricidin	[14]
Cough medicines	Cough medicines containing dextromethorphan	[15]
Codeinecontaining products	Compound analgesics (codeine with ibuprofen or paracetamol) and cough medicines	[15]
Analgesics	Aspirin and acetaminophen	[16]

Hypnotics	Sominex and nytol	[14]
Laxatives (oral and rectal)	Sodium phosphate laxatives and laxatives containing bisacodyl	[17]
Decongestants	Pseudoephedrine	[18]

The role of a pharmacist in OTC medications: A patient has easier access to the pharmacist when compared to a general physician. Numerous issues that are faced by the patients can be easily resolved such as indecision in the brand name of OTC medication, proper medication use, and the exact duration of consumption of medications. There are many marketing strategies for different products which tend to confuse patients. One of the common marketing strategies is line extension [19]. A huge amount of capital is invested in OTC medication advertisements and in-line extensions. Once a manufacturer claims a brand name, other products under the manufacturer are sold under the same brand name which is called a line extension. For example, the brand name Tylenol has many extensions under the same brand name as Tylenol PM, Tylenol cold, and Tylenol cough. Line extensions of the same brand can sometimes be confusing for patients due to multiple ingredients in the formulations.

Interaction of the patient with a pharmacist before buying any OTC medications or even prescription medications can help in better decision-making for the administration of the drug. Advertisements of OTC medication can usually be misleading as the advertisement focuses more on the advantages of the drug with minimal information on drug interactions and safety concerns [20]. This advertisement may also be a cause of poly-pharmacy in patients. A pharmacist can give a better insight into the drug along with information on the side effects and safety concerns. In the recent years, there have been an evolving trend in the role of clinical pharmacists as a patient safety agent. As the pharmacists have a significant impact on public health and on improving patient's quality of life, there is need to incorporate minute details such as OTC medications, medication adherence and many others to ensure positive patient outcomes [21].

The role of a Pharmacist in OTC medication abuse: Since ancient times pharmacists have always focussed on the drug distribution system. Over the past few years, there is an increasing number of incidences of chronic illness which has led to the prevention of the complex utilization of drugs and this has increased responsibility on the shoulders of pharmacists in providing broader services [22]. Pharmacists have demonstrated a productive impact on hospitals by obtaining medical history and medical reconciliation of patients [23]. There is an increasing demand for healthcare to increase a pharmacist's role. Pharmacists are the initial point of contact while purchasing OTC medications. Pharmacists require regular monitoring of OTC medication in a specific population [8]. For

example, for elderly patients pharmacists should be on a better lookout and also for patients who ask for frequent refills [24].

Pharmacists can manage the abuse of OTC medications by proactively improving their clinical skills and by giving oral and written information about the OTC medications to the patients. There are various programs for the management of prescription drugs along with refills of prescription drugs such programs should also be formulated for OTC medications. Various methods were used by pharmacists in the past to control OTC medication abuse, the most common three methods are keeping the compromised medications out of sight, questioning pharmacists upon refills of the medication, and refusing to sell any compromised products [4]. It was also proved that 62% of the pharmacists take measures to reduce OTC medication abuse by not displaying implicated medications and refusing the sale of such medications. In a study conducted by Frank et al to demonstrate the clinical management of dextromethorphan abuse [25].

It was found that dextromethorphan is an antitussive, inexpensive OTC medication and that the abuse of this drug was reported by dissociative effect. Huge amounts of ingestion of the drug can cause hypertension, tachycardia, and respiratory depression. Therefore, pharmacists should be well aware of the dissociative effects of the abuse of dextromethorphan. Pharmacists should also interview the patients before dispensing such medications with potential abuse. Other techniques used by pharmacists are reporting OTC medication abuse to a physician. Similarly, programs like prescription drug monitoring log information about a patient upon visiting the pharmacy for refills.

Table 2- Common strategies by Pharmacists to control OTC medication abuse [8, 26]

Specific locations	Strategies initiated by pharmacists
Pharmacy	<ol style="list-style-type: none"> 1. Declining sales of implicated OTC medications 2. Immediately contact other pharmacies of the suspicious behaviour of the patient abusing OTC medication 3. Declaring products were out of stock 4. Prevent medication by hiding the supplies 5. Giving only a few amounts of medication
Patient Participation	<ol style="list-style-type: none"> 1. Providing counselling to the patients on the potential abuse of the OTC medications 2. Raising awareness through the internet and support groups for advising patients

Involvement of the doctor and other services

3. Giving out information leaflets
 1. Providing consultation and
 2. Engagement by the doctor
 3. Giving referral to the physician
- Utilizing the services of private clinics
4. Using special services of drug and alcohol abuse

Barriers to preventing OTC medication abuse: There are many challenges faced by pharmacists in monitoring OTC medication abuse. Pharmacists are never in the practice of keeping records of OTC medications and this creates a barrier to the necessary information for proper counselling decisions. In 2005 a survey was conducted by Adrea et al to evaluate drug-related problems [25]. The survey was conducted on community pharmacists and the pharmacists were constructed to record basic statistics of the patients such as drug interactions, prescription, and non-prescription drugs along with patient data. The results of the pharmacists showed 10,427 drug-related problems. Most of the drug-related problems were associated with drug-drug interactions. The conclusion of this study was that pharmacists are responsible for the proper use of prescription and OTC medications however the role of pharmacists in healthcare still needs to be recognized.

Keeping in mind the potential abuse of OTC medications the US federal law government passed the Combat Methamphetamine Epidemic Act of 2005 (CMEA) [27]. This act was enacted to minter the amount the pseudoephedrine a person can purchase from a pharmacy. The main focus of this act was to decrease the illegal use of methamphetamine which can be produced from medications like ephedrine and pseudoephedrine which are commonly used cough and cold OTC medications. The CMEA has kept a limit on the purchase of nine grams of pseudoephedrine in a period of one month. The lack of pharmacists in monitoring the use of OTC medications has led to further open doors for abuse of OTC medications. Moreover, the legal laws of OTC medication distribution are not maintained and the laws are also not revised to keep up with pharmacists' needs [25].

For example, a study conducted by Tommy et al proved that in community pharmacies the pharmacists were overworked. The increased workload of pharmacists caused reduced attention for the patient's OTC medication abuse. Pharmacists are present in limited numbers and pharmacy technicians play an important role in preventing OTC medication abuse as well, they give an extra layer to patient safety [28].

Behind the counter [BTC] medications – A change maker: BTC medications are medications that are the third category of drugs that are available after consultation with the pharmacist. The pharmacist performs screening, necessary tests, and counselling before dispensing the BTC medication to the

patient. Patients consuming BTC medications could be suffering from increased blood pressure (BP), allergies, inflammation, and pain. OTC medication with the potential risk of high abuse can be included in the BTC medications list. If the pharmacists work in a collaborative manner with the patients they can lead to a safer use of medications. BTC medications serve as a bridge between OTC medications and prescription drugs.

CONCLUSION

This review concluded the essential role of pharmacists in OTC medication abuse. Pharmacists need to be well informed about the OTC medications along with their abuse. Pharmacist vigilance can help reduce OTC medication abuse. A better communication practice between pharmacists and patients can help in understanding the core of OTC medication abuse. Above all, the current health care system calls for more regulation on OTC medications, particularly the ones with identified potential abuse. There needs to be a striking balance between access to OTC medication and their risk of abuse.

Table 3- Potential drugs that can be shifted from OTC medications to BTC medications.

Medications	Example	Reference
High cholesterol	Statins	[29]
Hyperglycaemia	Insulin	[30]
Cold remedies	Pseudoephedrine and ephedrine	[7,27]
Schedule V cough syrups	Certain codeinecontaining products	[30]
Emergency contraceptives	Plan B	[29,30]
Painkillers	Painkillers with small amounts of codeine (up to 12.8 mg per tablet) and aspirin	[23]
Sleep aid/allergy	Diphenhydramine	[31,32]

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How to cite this article: Martin Baby John, Alasandra Rose MS, Janice Jacson Mandumpala. Over-the-counter medicine abuse – A pharmacist's emerging responsibility. *Indian J Pharm Drug Studies*. 2022; 1(3) 92-96.

Funding: None

Conflict of Interest: None Stated