Silent Drug Therapy Problems Caused by Over-The-Counter Medicines: A Clinical Pharmacy Perspective

Gaurav. U[1], Vyshnavi. G[1], Praneetha. K[1], Dr. Padige Srivarsha[2]

[1]Pharm. D, Malla Reddy College of Pharmacy, Maisammaguda, Hyderabad, Telangana

[2]Assistant Professor, Clinical Pharmacy, Malla Reddy College of Pharmacy, Maisammaguda, Hyderabad, Telangana

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ABSTRACT

Modern self-care relies heavily on over-the-counter (OTC) medications, which are frequently used to treat minor illnesses without a doctor's direct supervision. Despite the widespread belief that these drugs are safe, there is mounting evidence that improper use of over-the-counter (OTC) pharmaceuticals significantly contributes to drug-related disorders (DRPs), which frequently go unreported and stay clinically quiet. From a clinical pharmacy viewpoint, this narrative review investigates the kind, prevalence, and clinical importance of silent drug treatment issues related to over-the-counter medications. Inappropriate self-diagnosis, improper product selection, excessive dosage or prolonged use, therapeutic duplication, unidentified contraindications, drug–drug interactions, and misuse or abuse—particularly with regard to high-risk drug classes like analgesics, cough and cold remedies, antihistamines, and combination products—are among the major problems found. The analysis also identifies significant obstacles to OTC safety monitoring, such as inadequate recording of nonprescription medication usage, a lack of expert oversight, and methodological flaws in pharmacovigilance systems. Pharmacists are ideally positioned to identify, prevent, and resolve most OTC-related DRPs through systematic evaluation, patient counselling, and prompt intervention, frequently before clinical damage occurs, according to evidence from community pharmacy practice. The results highlight the necessity of implementing standardised counselling models, improving safety surveillance systems, strengthening pharmacist education in nonprescription pharmacotherapy, and formally including OTC drugs into thorough medication reviews. In a time when self-medication is becoming more common, it is crucial to acknowledge over-the-counter medications as pharmacologically active agents rather than naturally harmless goods in order to lower avoidable morbidity and enhance patient safety.

Keywords: Over-the-counter medicines, drug-related problems, self-medication, clinical pharmacy, medication safety, pharmacist intervention, pharmacovigilance

INTRODUCTION: OTC MEDICINES AND THE HIDDEN CLINICAL RISK

Over-the-counter (OTC) drugs are a major part of modern self-care and are frequently used for disease prevention, minor sickness treatment, and symptom alleviation. Easy availability, no need for a prescription, and a general sense of safety have all contributed to the rise in self-medication worldwide. While this change promotes patient autonomy and lessens the strain on healthcare systems, mounting data indicates that it has also resulted in a significant burden of drug therapy issues that are still not adequately acknowledged in standard clinical practice. [1]

The level of professional supervision required for over-the-counter medications is essentially different from that of prescription medications. OTC medication selection, start, and continuation are mostly patient-driven, with little clinical evaluation or follow-up. This setting encourages the emergence of drug therapy issues, which frequently develop subtly and stay clinically "silent" until negative consequences arise. Because these issues are often left out of official prescription histories and seldom manifest as acute emergencies, they are especially challenging to identify. [2]

Common OTC-related drug therapy problems identified in the literature include:

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- Inappropriate drug selection and self-diagnosis
- Incorrect dosing and extended duration of use
- Therapeutic duplication with prescription medicines
- Unrecognised contraindications and drug–drug interactions

These worries are made worse by the growing availability of high-risk over-the-counter drugs. Despite their well-established propensity for severe side effects, agents such nonsteroidal anti-inflammatory medications, cough and cold remedies, sedative antihistamines, laxatives, and multi-ingredient formulations are often utilised. Furthermore, a number of over-the-counter medications have the potential to be abused, which might lead to toxicity, dependence, and needless hospital stays. Despite these dangers, self-selection bias, fragmented data sources, and methodological difficulties in pharmacoepidemiological research restrict post-marketing safety surveillance, and adverse events associated with OTC usage are significantly underreported. [3]

From a clinical pharmacy perspective, OTC-related drug therapy problems represent a critical yet insufficiently explored area of medication safety. Pharmacists are uniquely positioned to detect and mitigate these risks through:

- Structured patient assessment at the point of sale
- Integration of OTC medicines into comprehensive medication reviews
- Targeted patient counselling and risk communication
- Timely intervention, referral, or refusal to supply when appropriate

However, the lack of integrated monitoring systems, irregular OTC usage reporting, and variation in clinical practice limit the efficacy of these approaches.

The nature, frequency, and clinical importance of silent drug treatment issues related to over-the-counter medications are all rigorously examined in this study. The study emphasises the critical role chemists play in lowering avoidable damage and enhancing the safety of nonprescription drug use by synthesising data on self-medication habits, high-risk OTC medicines, misuse and abuse trends, and safety monitoring problems. [4]

METHODOLOGY

With a focus on safety, abuse, pharmacoepidemiology, and the role of chemists in prevention and monitoring, a narrative literature analysis was carried out to investigate drug-related issues connected to over-the-counter (OTC) drugs. Major electronic databases, such as PubMed, Scopus, and Google Scholar, were searched for relevant material in an organised manner.

Over-the-counter medications, self-medication, drug-related issues, OTC abuse, pharmacovigilance, pharmacoepidemiology, and pharmacist intervention were among the keyword combinations used in the search. Review papers, observational studies, regulatory reports, and major safety notifications were given precedence over other pertinent English-language publications. In order to find more pertinent sources, the reference lists of the chosen papers were also carefully examined.

Studies that addressed OTC medication-related safety concerns, improper use, misuse, abuse, adverse effects, or monitoring difficulties were considered. Articles that just discussed prescription drugs and had nothing to do with over-the-counter usage were not included. Formal quality assessment or meta-analysis was not done because the review was narrative in nature, however the relevance, clinical importance, and consistency of findings across sources were highlighted.

To find important trends and knowledge gaps in silent drug-related issues, pharmacist-led treatments, and the shortcomings of existing surveillance systems, the chosen literature was thematically synthesised. An integrated

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debate of clinical, regulatory, and public health viewpoints on the safety of over-the-counter medications was made possible by this method.

Self-Care and Nonprescription Drug Use: Scope and Practice

Self-Medication and Self-Care Practices

Self-care refers to the measures performed by individuals to preserve health, avoid disease, and treat minor symptoms without the direct supervision of healthcare experts. Self-medication is an essential component of self-care, involving the selection and use of over-the-counter (OTC) medications for self-identified symptoms or diseases. Self-medication has become more common across the world, owing to greater health awareness, widespread access to medication-related information, and widespread availability of nonprescription medications.

OTC medicines are most commonly used for the management of:

- Pain and fever
- Gastrointestinal complaints
- Allergic conditions
- Respiratory symptoms

Patients frequently see self-medication as favourable owing to its ease, lower healthcare expenditures, and quick symptom alleviation. Self-medication, when used responsibly and within proper boundaries, has the potential to eliminate needless physician visits and assist the effective use of healthcare resources.

However, successful self-care is predicated on certain assumptions that are frequently violated in real-world practice. For optimal use of OTC pharmaceuticals, patients must appropriately interpret symptoms, estimate the degree of disease, decide the suitability of self-treatment, and correctly choose and utilise prescriptions. Evidence shows that these competences are frequently poor, posing clinically significant hazards. [1,3]

Common factors contributing to inappropriate self-medication include:

- Misinterpretation or underestimation of symptoms
- Reliance on previous experience, advertising, or non-professional advice
- Delayed medical consultation for potentially serious conditions
- Masking of underlying disease due to symptomatic relief

Furthermore, self-medication is commonly coupled with a lack of knowledge about contraindications, potential drug-drug interactions, and patient-specific risk factors such advanced age, pregnancy, chronic disease, or concurrent prescription therapy. The nonprescription status of OTC medications encourages a sense of inherent safety, promoting extended or repeated use without proper evaluation of therapeutic efficacy or side effects.

Self-care and self-medication are two sides of the same coin, according to clinical chemists. While they increase patient autonomy and system efficiency, they also provide circumstances for the emergence of silent drug-related disorders. The lack of rigorous monitoring, documentation, and follow-up separates OTC medication usage from prescription therapy and accounts for many of the drug-related issues reported in community pharmacy practice. [2]

Nonprescription Pharmacotherapy in Modern Pharmacy Practice

Medication usage, including prescription and nonprescription drugs, imposes a significant clinical and economic burden. Inadequately administered over-the-counter (OTC) medication leads to avoidable adverse drug events,

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treatment failure, and higher healthcare utilisation. Despite the extensive use of OTC medications, their integration into complete medication management is patchy, allowing drug therapy issues to arise outside of official professional control.

Pharmacists, being the most accessible drug experts, are expected to specialise in non-prescription pharmacotherapy. To ensure safe OTC use, nonprescription medications must be used with prescription prescriptions, herbal items, and nutritional supplements. Failure to evaluate the full pharmaceutical profile raises the possibility of drug-drug interactions, therapeutic duplication, and improper self-medication.

Evidence suggests that pharmacy school has historically undervalued pharmacist-assisted self-care and nonprescription pharmacotherapy, resulting in varying graduation preparation. Given the widespread use and abuse of over-the-counter medications, this disparity is troubling. Strengthening clinical reasoning, organised OTC evaluation, and patient-centered counselling skills is consequently critical. As prescription reimbursement decreases, chemists must position themselves as evidence-based providers of nonprescription pharmacotherapy rather than product wholesalers. [1,3,4]

Nature of Drug-Related Problems (DRPs) in OTC Medication Use

Types of Drug-Related Problems in Self-Medication

Over-the-counter (OTC) drug self-medication frequently results in drug-related problems (DRPs). Research indicates that around 20% of self-medication interactions entail at least one clinically relevant DRP, highlighting the fact that unsupervised OTC usage is not always safe. The majority of DRPs are caused by incorrect product selection and inappropriate self-diagnosis. Prolonged use, incorrect dosage, abuse or misuse, and unidentified drug interactions also increase risk, especially when it comes to pharmacologically active medications like NSAIDs, which can have major negative effects when used improperly.[5]

Vulnerable groups, such as elderly individuals, children, pregnant women, and patients with chronic diseases or polypharmacy, are more likely to develop DRP. Repeat product-based requests account for a sizable number of recorded DRPs, demonstrating that familiarity with an OTC medication does not guarantee safe use. Although most DRPs may be treated with chemist intervention, the considerable difference in detection rates reflects poor counselling procedures, emphasising the importance of systematic self-medication assessments. [6]

Table 1: Common Drug-Related Problems in OTC Self-Medication [6]

Category	Description	Clinical Implication
Inappropriate selfmedication	Self-treatment when medical referral is required	Delayed diagnosis, masking of disease
Incorrect product selection	OTC drug unsuitable for symptoms or patient	Treatment failure, adverse effects
Excessive duration of use	Prolonged or repeated use, including misuse	Cumulative toxicity, dependence
Incorrect dosing	Dose higher or lower than recommended	Reduced efficacy or toxicity
Drug–drug interactions	Interaction with prescription or OTC drugs	Serious adverse drug reactions
High-risk populations	Elderly, children, pregnancy, polypharmacy	Increased susceptibility to harm
Repeat product requests	Continued use based on familiarity or advertising	Persistent, unrecognised DRPs

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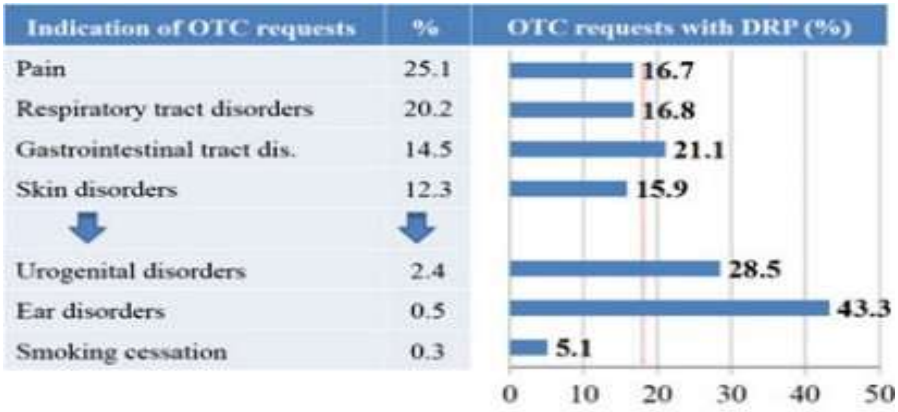
Frequency and Patterns of OTC-Related DRPs in Community Settings

Drug-related problems (DRPs) are common in self-medication with over-the-counter (OTC) medications, with community pharmacy studies indicating DRPs in 18-20% of patients and self-medication encounters. This consistency across contexts demonstrates that OTC medication usage is frequently linked to clinically meaningful risk.

Figure 1: Percentage of drug related problems (DRPs) by indication [5]



Note: The red line indicates the average rate of detected DRPs (17.6%).

Drug-related difficulties (DRPs) are not uniformly distributed during self-medication interactions; they are more common during product-related enquiries, especially those involving repeat purchases, suggesting that familiarity with an over-the-counter medicine does not guarantee proper or safe usage. Additionally, DRP prevalence varies by indication; whereas common diseases like pain and respiratory symptoms account for greater absolute numbers, other complaints—particularly urogenital and ear problems—show disproportionately high DRP rates, indicating limited eligibility for self-medication. The detection of DRPs varies greatly amongst pharmacies, which suggests that the real frequency may be underestimated and reflects variations in pharmacist participation, counselling methods, and recordkeeping. However, the majority of DRPs can be fully or substantially cured in community pharmacies, highlighting the importance of rigorous self-medication evaluation and structured therapy. [7,8]

Table 2: Frequency and Patterns of DRPs in OTC Self-Medication [8]

Aspect	Observed Pattern	Clinical Interpretation
Overall prevalence	~18–20% of encounters	OTC self-medication carries significant risk
Type of request	Product-based > symptom-based	Familiarity promotes inappropriate use
Repeat purchases	High DRP detection	Ongoing unsafe self-medication
Therapeutic indication	Higher rates in urogenital, ear disorders	Poor suitability for self-care
Inter-pharmacy variation	Wide detection range	Underreporting, inconsistent counselling
Resolution of DRPs	Majority manageable in pharmacy	Importance of pharmacist intervention

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High-Risk Over-the-Counter Medications

High-Risk OTC Drug Categories

High-risk over-the-counter (OTC) medications account for a disproportionate share of drug-related problems (DRPs) found during self-medication. Evidence from community pharmacies shows that a small number of regularly used medication classes—most notably analgesics—account for a significant percentage of DRPs, with NSAIDs and paracetamol accounting for more than one-quarter of reported instances. Their frequent involvement suggests both high use and a major pharmacological danger when taken incorrectly.

High-risk OTC medicines are typically characterised by:

- A narrow margin between therapeutic benefit and harm
- High potential for drug–drug interactions
- Repeated or prolonged use without medical supervision

NSAIDs have been linked to gastrointestinal, cardiovascular, and renal damage, whereas paracetamol, which is frequently thought to be harmless, can offer substantial concerns if maximum daily dosages are exceeded or numerous medications having the same active ingredient are used concurrently. Misinterpretation of brand names, a lack of knowledge of cumulative dose, and undiagnosed contraindications are all major contributors to these DRPs. [9]

Other high-risk OTC drugs include vasoconstrictive nasal decongestants, which are routinely taken for longer periods than indicated. Prolonged usage may cause tolerance, rebound congestion, and mucosal injury, demonstrating that risk is influenced not only by inherent toxicity but also by patterns of overuse.

Overall, high-risk OTC drugs are especially troublesome in vulnerable groups such as older persons, those with chronic diseases, and those who use several medications, emphasising the importance of pharmacist-led screening and monitoring. [10]

Drug-Related Problems Associated with High-Risk OTC Medicines

Uncertainty regarding indication, improper duration or overuse, and drug-drug interactions are the most common drug-related problems (DRPs) linked to high-risk over-the-counter (OTC) medications. These DRPs reflect patients' limited capacity to correctly self-diagnose and assess the appropriateness of self-medication without expert assistance. Even though they are seldom fatal, chronic use of vasoconstrictive nasal decongestants, for example, might result in clinically significant side effects, a worse quality of life, and rebound symptoms if symptoms are not reevaluated. A significant percentage of DRPs are caused by drug-drug interactions, especially those containing NSAIDs. Better detection is probably associated with higher pharmacist awareness through high-risk OTC categorisation and education, particularly in patients with polypharmacy. [11]

Pharmacist-led interventions successfully manage the majority of DRPs associated with high-risk OTC medicines. The most common actions include:

- Targeted patient counselling
- Switching to a more appropriate or safer alternative
- Referral to a physician or refusal to supply an inappropriate medicine

Importantly, a significant majority of treatments are preventative in nature, taking place before the patient uses the medication incorrectly. This proactive role is critical for avoiding adverse medication events, decreasing needless healthcare use, and enhancing patient outcomes. However, limited access to follow-up and outcome data continues to make assessing the long-term effectiveness of these treatments challenging.

Overall, the significant incidence of DRPs associated with high-risk OTC medications highlights the crucial role of chemists in overseeing self-medication. Many of these issues would go unnoticed if chemists were not involved, lending credence to the notion that high-risk OTC drugs should be kept to pharmacy-controlled settings rather than being widely available via retail shops. [12]

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Abuse and Misuse of Over-the-Counter Medicines

OTC Medicines with Abuse Potential

A large variety of over-the-counter (OTC) medications have clinically substantial misuse and abuse potential. International data consistently indicates numerous drug types that are often abused due to their psychoactive effects, convenience of availability, and perceived safety. Antihistamines, sleep aids, caffeine-containing drugs, ephedrine and pseudoephedrine, antitussives and expectorants (especially dextromethorphan), laxatives, anabolic steroids, and sildenafil are among the most often misused over-the-counter medications. [13]

The most common culprits include cough and cold medications, as well as analgesics. Dextromethorphancontaining drugs are frequently abused for their dissociative and euphoric effects at supratherapeutic levels, whereas sedative antihistamines are abused for psychoactive effects. Laxatives are frequently abused for nontherapeutic aims, such as weight management, rather than for valid medical reasons. [14]

In nations where they are legally accessible, opiate-containing OTC combination medications, particularly those containing codeine, are a major source of worry. Although codeine is not accessible over-the-counter in the United States, it is nevertheless one of the most often misused nonprescription medications worldwide. Excessive dose and non-medical use of these drugs dramatically raises the risk of dependency, toxicity, and withdrawal. [15]

Key drivers of OTC medicine abuse include:

- Increased accessibility following prescription-to-OTC switches
- Absence of prescriber oversight
- Patient self-diagnosis and prolonged unsupervised use

While OTC changes have provided significant cost benefits, particularly for analgesics and cold/allergy medications, they have also increased the number of pharmaceuticals available for abuse. For example, the OTC availability of paracetamol has been linked to an increase in incidence of severe hepatotoxicity when taken incorrectly.

From a clinical pharmacy standpoint, OTC drug misuse is still underreported. Limited pharmacist attention and poor counselling may allow hazardous patterns of usage to continue. To prevent the development to major clinical damage, chemists must actively monitor transactions, recognise early indicators of abuse, and provide prompt intervention. [13,14,15]

Scale and Patterns of OTC Medicine Abuse

The variability of data sources and methodology makes it difficult to estimate the real scale of over-the-counter (OTC) pharmaceutical usage. Pharmacist opinions, treatment and poison centre records, sales statistics, selfreported usage, and studies of specific demographics all contribute to the available evidence. These methodologies are frequently geographically constrained and methodologically inconsistent, complicating international comparisons and adding to ambiguity about the worldwide impact of OTC drug usage. [16]

In the United Kingdom, the majority of evidence comes from community pharmacy surveys. Across various studies, more than two-thirds of chemists reported the existence of OTC misuse or abuse in their practice, with some detecting multiple suspected cases each week. Higher rates have frequently been seen in metropolitan pharmacies. Data from online support groups for codeine abuse indicate significant participation, albeit the lack of comprehensive demographic and clinical data restricts analysis. [17]

National statistics in the United States reveal unique patterns of usage, notably among teens. Large surveys show that over-the-counter cough and cold medications, namely dextromethorphan, are widely used in the non-medical community. Emergency department tracking reveals that teens had more OTC-related admissions than other age groups. However, treatment admission statistics consistently demonstrate that OTC medications are rarely used

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as primary substances of abuse, instead being categorised as secondary or tertiary drugs. Inconsistent recording techniques and difficulty identifying products further limit interpretation.

Evidence from other locations, including as Australia, France, Hungary, Nigeria, Jordan, South Africa, and India, shows the global character of OTC usage while exhibiting significant regional variation. According to pharmacy based surveys and public questionnaires, a significant minority of people have abused over-the-counter medications or witnessed misuse in their social milieu. Codeine-containing products and analgesics are most commonly implicated. [18,19]

Individuals afflicted by OTC usage have diverse demographic features. The findings vary between research, with no clear age or gender trend. Individual-level statistics indicate a greater vulnerability among younger people, those with lesser educational attainment, less work stability, concurrent illicit substance use, or a family history of substance abuse.

Harms associated with OTC medicine misuse include:

- **Direct pharmacological and psychological effects** (dependence, withdrawal, neuropsychiatric toxicity)

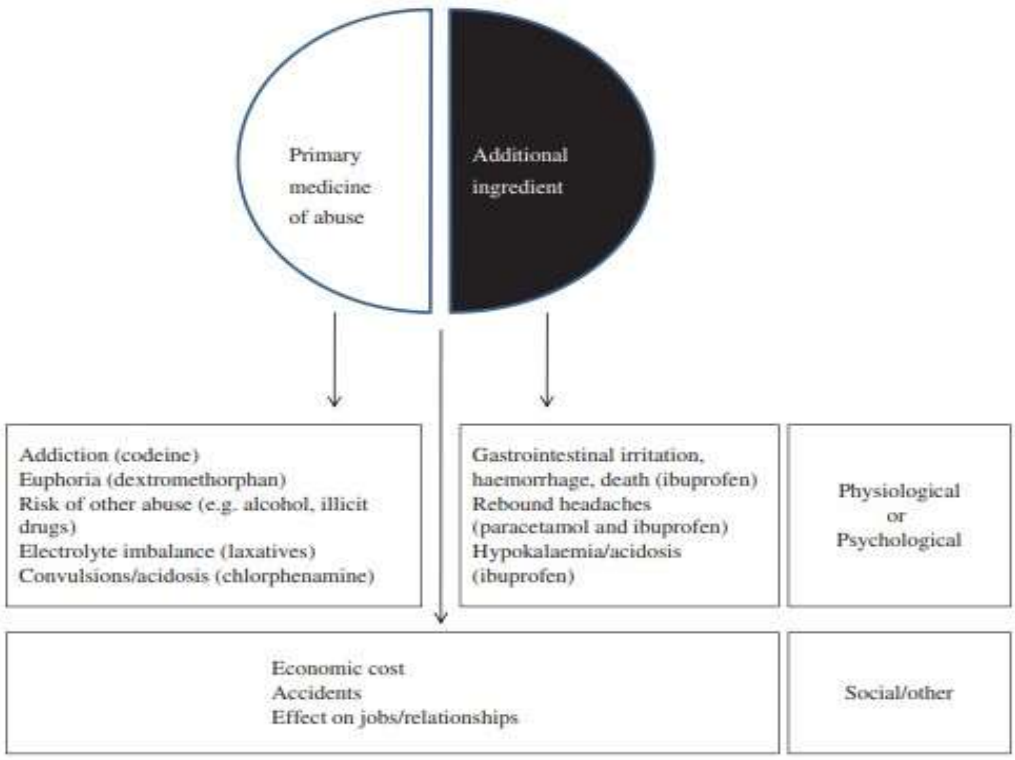
- **Toxicity from combination products**, particularly codeine–paracetamol or codeine–ibuprofen (gastrointestinal injury, renal failure, electrolyte disturbances, death)

- **Broader social and economic consequences**, including healthcare utilisation, occupational impairment, and family disruption

Interventions to combat OTC usage are mostly pharmacy-based, and include quantity restrictions, sales refusal, patient counselling, and referral to medical treatment. Broader harm-reduction techniques, including as public awareness campaigns, online sales monitoring, and expanded warning labels, have been proposed, although the evidence for their usefulness is lacking.

Finally, the literature demonstrates significant terminology inconsistency, with words like misuse, abuse, dependence, and addiction being used interchangeably and with little definition. The absence of definitional clarity impedes study comparability, monitoring, and clinical responsiveness. Standardised criteria and reporting systems are critical for better understanding and management of OTC drug usage. [16,18,19,20]

Figure 2: Examples of types of harm associated with OTC medicine abuse [16]



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Safety Monitoring Challenges in OTC Medicines

Differences Between OTC and Prescription Medicines

The little participation of medical experts during the acquisition and usage of over-the-counter (OTC) drugs has a major impact on their safe use. OTC medications, especially those from general retail stores, are frequently purchased without a doctor's supervision, in contrast to prescription medications. Since chemists are not usually needed to directly handle the transaction, direct professional interaction may be limited even in the case of pharmacist-only medications. Opportunities for clinical evaluation and patient education are limited by this decreased engagement. [21]

As a result, several important safety functions are often compromised, including:

- Assessment of therapeutic appropriateness,
- Identification of contraindications and potential drug interactions, and
- Provision of individualized counselling based on patient-specific factors.

In addition to limited professional oversight, public perception plays a critical role in OTC drug use. Medications that are easily accessible without expert guidance are often assumed to be inherently safer than prescription drugs. This perception can encourage inappropriate patterns of use, such as:

- Consumption by a broader and less clinically suitable population,
- Use of higher-than-recommended doses,
- Prolonged or repeated use without medical review, and
- Concurrent use with contraindicated prescription or otc medications.

Another major concern is the absence of systematic documentation of OTC medication use. Unlike prescription drugs, OTC purchases are generally not recorded or linked to healthcare data systems. Consequently, OTC drug use is rarely integrated with information on:

- Existing comorbid conditions,
- Prescribed medications, or
- Patterns of concurrent substance use.

Clinical practice patterns exacerbate this lack of integration. Patients may not consider over-the-counter medications to be medically important or worthy of disclosure, and healthcare professionals frequently fail to ask about their usage during consultations. OTC medications may therefore exacerbate or conceal clinical symptoms, which might result in incorrect interpretation of results, a delayed diagnosis, and needless diagnostic testing. [22]

From a wider angle, it is challenging to detect long-term inappropriate use, deliberate misuse, or abuse due to the fragmented structure of OTC medication distribution, which is marked by numerous retail locations and no professional control. This is a lost chance for organised safety monitoring, especially in light of the growing number of drugs moving from prescription-only to over-the-counter status. [21,22]

Methodological Issues in Monitoring OTC Drug Safety

Despite the requirement for precise information on drug usage, clinical outcomes, and confounding factors to provide trustworthy safety assessment, pharmacoepidemiological evaluation of over-the-counter (OTC) drugs remains intrinsically difficult due to significant limitations in exposure and outcome data. Assessing medication exposure in particular is difficult because consumer-reported data is frequently erroneous or incomplete due to

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forgetfulness, a failure to identify over-the-counter goods as medications, a misreading of the composition of the product, or deliberate non-disclosure. The potential for the same active ingredient to be accessed concurrently through both OTC and prescription channels, which frequently goes unnoticed in study designs, can exacerbate exposure misclassification and biassed risk estimations. [23]

There are more difficulties in determining outcomes. Even when healthcare services are contacted, the role of OTC pharmaceutical usage may not be recognised or documented, and many adverse events linked to OTC medications may not trigger medical treatment. External variables like media attention and published safety alerts also have an impact on reporting. These elements can raise awareness among healthcare workers and lead to selective or stimulated reporting, which exacerbates reporting bias.

Several observational approaches are theoretically applicable to OTC drug safety evaluation, including:

- Spontaneous adverse event reporting systems,
- Cohort studies, and
- Case–control studies.

But in the OTC context, these techniques have been underutilised. Only a small percentage of recorded adverse events are linked to over-the-counter products, and spontaneous reporting systems in particular suffer from significant under-reporting. Although patient-reported reporting systems can increase detection rates to some extent, they frequently lack the clinical precision and complexity of reports provided by medical experts.

As a result, despite significant variations in target groups, dosage patterns, length of use, and monitoring, safety evidence for many over-the-counter drugs is mostly derived from prescription-based data. This dependence makes it more difficult to adequately describe the hazards connected with over-the-counter medications in the real world and causes critical safety signals to be missed. [23,24]

Real-World Examples of OTC-Related Risks

Widespread nonprescription use has led to clinically significant safety concerns despite stringent regulatory requirements for moving medications from prescription to over-the-counter (OTC) status. This highlights the shortcomings of pre-marketing evaluations and the necessity of thorough post-marketing surveillance. Examples include phenylpropanolamine, which was taken off the market in the US due to a higher risk of hemorrhagic stroke, and terfenadine, which was brought back to prescription-only status when cardiotoxicity surfaced after widespread OTC usage; regulatory reactions varied elsewhere. Because of their widespread usage, frequent overdosing, and related gastrointestinal, renal, and cardiovascular hazards, over-the-counter (OTC) nonsteroidal anti-inflammatory medicines (NSAIDs) continue to be a significant issue, especially for users with contraindications such asthma or peptic ulcer disease.

Another high-risk category includes nutritional supplements and herbal drugs. Adverse events associated with products like St. John's wort, which causes clinically significant drug interactions through enzyme induction, and kava kava, which has been connected to hepatotoxicity and liver transplantation, underscore the challenges posed by insufficient regulation and surveillance. The need for improved monitoring techniques is highlighted by reports of serious adverse events linked to nutritional supplements, such as myocardial infarction, liver failure, seizures, and death.

These incidents show that even medications that are considered safe for over-the-counter use can pose serious risks in the real world, particularly when given to vulnerable populations, used improperly, or combined with other therapies. Good monitoring, healthcare provider expertise, and patient reporting—areas that are still overlooked in the over-the-counter setting—are crucial for the early diagnosis of such risks. [25,26,27]

Role of the Pharmacist in Identifying Silent Drug Therapy Problems

Since they are sometimes the only medical experts available to people who self-medicate, chemists play a crucial role in recognising, preventing, and resolving silent drug-related problems (DRPs) linked with over-the-counter (OTC) drugs. They can identify improper OTC usage that could otherwise go unreported and clinically

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undetected because of their frontline location. Inappropriate self-selection, improper dosage, extended or repeated usage, unidentified contraindications, drug-drug interactions, and misuse or abuse are major causes of silent OTC-related DRPs. Pharmacist screening at the point of supply is a crucial opportunity for early diagnosis because many of these issues do not cause acute symptoms and hence elude medical intervention.

Since continued use does not always imply safety or appropriateness, chemists must shift from a product-focused role to a patient-centered clinical approach that includes symptom assessment, confirmation of indication, evaluation of patient-specific risk factors like age, pregnancy, comorbidities, and concurrent therapies, as well as structured questioning during repeat purchases.

Pharmacist interventions have been shown to prevent or resolve the majority of DRPs associated with self-medication, most often through targeted counselling, dose modification, therapy substitution, referral to a physician, or refusal to supply when necessary. Beyond individual care, pharmacists contribute to public health by identifying patterns suggestive of misuse or dependency and facilitating early intervention. Despite challenges such as time constraints, limited data access, and lack of standardized documentation, strengthening pharmacist involvement in OTC medicine management remains essential for reducing the burden of silent DRPs and improving patient safety. [5,9,10,13,26]

Implications for Clinical Pharmacy Practice

Over-the-counter (OTC) drugs are a major but underappreciated cause of drug-related disorders (DRPs), many of which are clinically silent, according to this review. Failure to appropriately handle OTC-related DRPs runs the danger of jeopardising patient safety and undermining larger pharmaceutical safety and control initiatives as self-medication continues to spread around the world.

The necessity of completely including over-the-counter medications into normal pharmacotherapy evaluation is a significant consequence. A prescription-focused approach to clinical pharmacy practice has limits, as seen by the high frequency of inappropriate OTC use, misuse, and abuse. To increase consistency in DRP identification across practice settings, it is crucial to regularly include over-the-counter medications, herbal items, and dietary supplements in medication histories along with standardised and methodical counselling techniques.

In order to prevent improper long-term use, undetected drug-drug interactions, the concealment of serious illness, and the transition from misuse to abuse, the results also support a change in chemists' duties towards proactive risk prevention. To improve OTC drug management and sustain public confidence in pharmacy practice, it is imperative to uphold high ethical and professional standards, enhance documentation and safety monitoring, and strengthen education in nonprescription pharmacotherapy.

Novel Contribution of This Review

By recognising over-the-counter (OTC) drugs as a significant and underappreciated source of clinically silent drug-related disorders (DRPs), this review provides a unique contribution by redefining self-medication as a central issue of clinical pharmacy practice rather than a peripheral one. This review focusses on evidence pertinent to daily pharmacy practice, emphasising how inappropriate OTC use, misuse, and unmonitored long-term use contribute to avoidable medication-related harm, even though existing literature frequently addresses OTC safety from regulatory or public health perspectives.

Integrating pharmacoepidemiological difficulties with actual clinical findings to explain why OTC-related DRPs often go unnoticed is another innovative contribution. The review makes clear the structural and practice-level variables that impede early diagnosis by combining data on exposure misclassification, monitoring system constraints, and variation in DRP detection among pharmacies. Additionally, it identifies high-risk over-the counter medications, recurring purchases, and specific symptom-driven self-medication situations as critical areas where chemist intervention may have the biggest influence.

Lastly, by moving the emphasis from reactive issue solving to proactive risk reduction in the use of over-the counter medications, this study promotes clinical pharmacy practice. It suggests that pharmacist responsibility, regular counselling, and organised evaluation are crucial components of pharmaceutical treatment in self-medication. The study offers a practice-oriented paradigm that supports chemists' expanding clinical roles and

enhances their contribution to drug safety throughout the healthcare continuum by establishing them as major safeguards against silent OTC-related DRPs.

CONCLUSION

Over-the-counter (OTC) medications are increasingly important in self-care and modern healthcare delivery. While their convenience and perceived safety are obvious advantages, this analysis indicates that OTC medications are a substantial source of silent drug treatment issues that frequently go undiagnosed in ordinary clinical practice. Inappropriate self-medication, prolonged or excessive usage, drug-drug interactions, misuse, and abuse all contribute to unnecessary morbidity and healthcare burden, especially when over-the-counter medications are used without proper professional supervision.

Evidence from community pharmacy practice and international research suggests that high-risk OTC medications, notably analgesics, cough and cold preparations, antihistamines, and combination products, have a significant role in bad outcomes. Safety monitoring challenges, such as limited engagement of healthcare professionals, the lack of integrated prescription data, and methodological limits in pharmacovigilance, exacerbate the situation. As a result, many of the negative effects and abuse patterns linked with over-the-counter medications are likely to be underestimated.

Clinical chemists are well positioned to address these concealed dangers. Pharmacist-led evaluation, counselling, and early intervention have shown promise in preventing or resolving the majority of OTC-related medication treatment issues, frequently before damage occurs. However, varied practice methods, educational deficiencies, and a lack of rigorous documentation impede the full realisation of this position.

Addressing silent drug treatment issues produced by OTC medications necessitates a paradigm change in how self-medication is seen and managed. Integrating over-the-counter medications into regular clinical assessments, expanding pharmacist training in nonprescription pharmacotherapy, establishing structured counselling models, and improving safety monitoring systems are all critical steps towards safer self-care practices. Recognising OTC drugs as pharmacologically active agents rather than intrinsically innocuous items is critical to decreasing unnecessary morbidity and improving patient safety in an age of increasing self-medication.

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