# Impact of Self-medications and Medications Misuse on Health Outcomes

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## Abstract

**Introduction:** The availability of prescription drugs as OTC medications is also becoming more common. However, self-medication carries risks such as misdiagnosis, use of excessive drug doses, prolonged use, and drug interactions. This review aimed to collect evidence about the impact of self-medications on health outcomes.

**Methods:** The systematic review in this study involved several steps to identify and assess relevant research. The search phase involved finding potentially relevant studies in various databases such as PubMed, PsychInfo, EBSCO Medline, BioMed central, and Science Direct. The screening phase involved applying predetermined inclusion and exclusion criteria to determine which studies were appropriate for the review. To conclude the selection process, the full text of the articles was reviewed to determine whether they met the inclusion criteria. Additionally, the full text of

review articles was reviewed to identify any additional articles that might be relevant and included in the review.

**Results:** A total of 17 studies were found that met the inclusion criteria. The majority (11/17) of these studies were cross-sectional and relied on self-report. The combined sample size of the 17 studies was 28,628 (ranging from 5 to 5,426), and the average response rate was 66%. In 76% of the studies, reported self-treatment was 50% (ranging from 12% to 99%). Overall, only one or two respondents were registered with a general practitioner (GP) or primary care physician (mean of 56%, ranging from 21% to 96%). In the 13 studies that provided information on self-prescription, the mean percentage of physicians reporting self-prescription was 61% with a standard deviation of 25% and a range of 9% to 99%.

**Conclusions:** Although many patients view over-the-counter (OTC) medications as completely safe, their use always carries some degree of risk for the consumer. This is especially true for patients who do not follow the instructions on the label or package insert.

**Keywords:** Misuse, Self-medications, Antibiotics, Opioids, Analgesics.

## Introduction

Self-medication refers to when patients take a greater role in managing their own minor health concerns by using non-prescription pharmaceutical products. These products are often available for purchase at pharmacies or retail outlets, increasing their accessibility to the general population. The use of self-medication has both benefits and risks, and this paper aims to discuss how to maximize the benefits and minimize the risks. In compiling the paper, the authors utilized a search strategy that focused on the use of non-prescription drugs, which may be restricted to pharmacy sales or available at retail outlets such as supermarkets in certain countries [1]. The deregulation of certain products, including levonorgestrel, has been supported by the

pharmaceutical industry, pharmacy profession, and government health policymakers, as well as the belief that patients should have more control over their treatment choices. Self-medication is a growing area within the pharmaceutical industry and is promoted by the strategic policies of many pharmacy professional bodies. In some countries, self-medication is seen as a way to control healthcare costs, although this is not always the case. There has been limited research on the long-term effects of self-medication and more studies are needed to fully understand its potential impact on healthcare [2].

Governments and health insurers are promoting selfcare, including self-medication when appropriate. Self-medication is becoming more common globally, including the use of prescription drugs without supervision in developing countries. The World Health Organization has emphasized the importance of teaching and controlling responsible self-medication, which is limited to over-the-counter drugs and can provide economic benefits through cost savings and reduced time for treatment [3]. However, there is also the potential for misuse and abuse of nonprescription drugs in developing countries. The terms "misuse" and "abuse" refer to the incorrect or nonmedical use of drugs, respectively. Non-prescription drugs, also known as general sales medicines in the UK, may be sold at retail outlets such as supermarkets with restrictions on the quantity and strength of medication that can be purchased [4]. The deregulation of these products, including levonorgestrel, has been supported by the pharmaceutical industry, pharmacy profession, and government health policymakers as a way to give patients more control over their treatment choices. The expansion of self-medication within the pharmaceutical industry and the promotion of self-medication by the strategic policies of many pharmacy professional bodies has led to increased deregulation. In some European countries, self-medication is primarily the responsibility of pharmacists, but in the UK, for example, doctors have become more supportive of self-medication due to the

deregulatory process and the ability of pharmacists to diagnose, treat, and refer patients as needed. In some countries, self-medication is seen as a way to control healthcare costs, but this is not always the case. There has been limited research on the cost-effectiveness of self-medication compared to other models of care. Self-medication can be convenient, effective, and economical for patients, but it can also pose risks if the drugs are used incorrectly or for non-medical purposes. The overall extent of the problem in the population is difficult to quantify, but it is clear that self-medication can have negative consequences if not used responsibly [5].

Opioids are a class of pain-relieving medications that are highly effective, but their use can sometimes be associated with misuse, addiction, and tolerance to their therapeutic effects. In the past, the use of opioid medications has been discouraged due to concerns about their potential for addiction [6].

the Journal of the American Medical Association stated that the use of opioids in terminal cancer patients should be avoided due to the negative side effects, including addiction. However, more recently, the use of opioids for pain management has been more widely accepted, as long as they are used responsibly and with caution [7].

Self-medication is often motivated by the high cost of private doctor consultations, particularly in rural or disadvantaged areas with limited health resources. Over-the-counter (OTC) drugs are intended for self-medication and are generally safe and effective, but their inappropriate use can have serious consequences, especially for vulnerable groups such as children, elderly, pregnant women, and lactating mothers. The negative effects of self-medication can include waste of resources, increased antibiotic resistance, and serious health hazards such as adverse reactions, drug interactions, and prolonged suffering. Patients taking nonsteroidal anti-inflammatory drugs or antiplatelet drugs are at risk for gastrointestinal toxicity [8].

The availability of antibiotics and other complex drugs without a prescription is a significant concern due to the risk of antimicrobial resistance. Nonsteroidal antiinflammatory drugs (NSAIDs) and aspirin have been associated with an increased risk of adverse drug events, hospitalization, and death, particularly in the elderly. Some over-the-counter (OTC) medications can also have serious interactions with prescribed medications, such as omeprazole and folic acid. Self-treatment can hide the symptoms of serious and potentially fatal diseases, leading to missed diagnoses by physicians. Studies in Spain have shown that self-medication is more common among women, people who live alone, and those living in large cities. Substance abuse and misuse, including the use of tobacco, alcohol, cannabinoids, opioids, stimulants, club drugs, dissociative drugs, hallucinogens, anabolic steroids, and inhalants, is also a concern. In several developing countries, truck drivers have been known to misuse and abuse the OTC medication chlorpheniramine maleate [9].

The consequences of low health literacy include poorer overall health, lack of knowledge about medical care and conditions, difficulty understanding medical information, lack of use of preventive services, poorer self-reported health, poor compliance with treatment, increased hospitalizations, and higher health care costs. In recent years, there has been an increase in self-medication with non-prescription drugs, also known as over-the-counter (OTC) medicines, which are available in pharmacies and retail outlets. The label on these medicines provides information about their intended use, who should or should not take them, and how to use them. The availability of prescription drugs as OTC medications is also becoming more common. However, self-medication carries risks such as misdiagnosis, use of excessive drug doses, prolonged use, and drug interactions [10]. This review aimed to collect evidence about the impact of self-medications on health outcomes.

## Methods

The systematic review in this study involved several steps to identify and assess relevant research. The search phase involved finding potentially relevant studies in various databases such as PubMed, PsychInfo, EBSCO Medline, BioMed central, and Science Direct. The screening phase involved applying predetermined inclusion and exclusion criteria to determine which studies were appropriate for the review. The data-extraction phase involved examining the quality of the selected studies and extracting the necessary evidence. The inclusion and exclusion criteria were based on a review of relevant papers in the field, discussions among the authors, and the development of a checklist. Studies included in the review had to be written in English, conducted between 1990 and 2010, focused on the self-treatment behavior of physicians and medical students, and reported statistical data such as sample sizes, response rates, and methodology.

The following keywords were used in electronic databases to search for information on the topic: physician use of healthcare, health status, doctors' personal healthcare choices, doctors as patients, selftreatment, self-medication, self-prescription, doctors' illness behavior, doctors' health, healthcare-seeking behavior, and attitudes towards health. To conclude the selection process, the full text of the articles was reviewed to determine whether they met the inclusion criteria. Additionally, the full text of review articles was reviewed to identify any additional articles that might be relevant and included in the review.

## Results and Discussion

A total of 17 studies were found that met the inclusion criteria. The majority (11/17) of these studies were cross-sectional and relied on self-report. The combined sample size of the 17 studies was 28,628 (ranging from 5 to 5,426), and the average response rate was 66%. In 76% of the studies, reported selftreatment was 50% (ranging from

12% to 99%). Overall, only one or two respondents were registered with a general practitioner (GP) or primary care physician (mean of 56%, ranging from 21% to 96%). In the 13 studies that provided information on selfprescription, the mean percentage of physicians reporting self-prescription was 61% with a standard deviation of 25% and a range of 9% to 99%. Four key themes were identified as contributing to the inappropriate self-treatment behaviors of physicians and medical students: (i) avoiding the role of patient, (ii) acceptance of self-treatment as the norm (for various reasons, the alternative of seeing another doctor is less acceptable and less attractive), (iii) work performance or pressure to remain at work, and (iv) protecting or keeping things within the control of the individual professional or a small group of chosen colleagues - there is a strong incentive to maintain the privacy of health issues. For example, a pilot study of medical students found that students had concerns about confidentiality and about experiencing a dual role as both student and patient at their training institution. They believed that their academic standing would be jeopardized if they developed certain health problems. The literature also indicated that medical students used informal care paths, seeking informal. A 9-year follow-up study in Norway found that selfprescribing during internship, somatic complaints, mental distress, subjective health complaints, and not seeking help from a general practitioner were significant predictors of self-prescribing in the ninth postgraduate year [11]. Medical students also often feel that it is appropriate for doctors to self-investigate, self-refer, and self-medicate. Surveys of US neurologists and Australian physicians found that a high percentage believed it was acceptable to self-treat acute and chronic conditions and to prescribe medication for themselves and their families. A Finnish study found that doctors' self-medicated conditions were largely chronic diseases. Many doctors report that self-treatment behaviors are driven by the pressure to continue working, with 76% of US residents reporting using amphetamines to enhance work performance. A survey of trainee GPs found that 92% had self-prescribed medication at least once and almost half felt that they

neglected their own health. Surveys also found that 66% of UK junior doctors and two-thirds of Hong Kong physicians reported selftreating when ill [12]. Some physicians engage in self-medication or self-treatment due to a variety of factors, such as avoiding the role of patient, a belief that selftreatment is normal, work-related pressures, and a desire to keep health issues private.

Multiple studies have found that a significant number of physicians self-medicate or self-treat, particularly for acute minor illnesses or chronic conditions. Some doctors may also prescribe or treat their family members. Many physicians are also not registered with a primary care physician or GP and may instead seek informal consultations with friends or colleagues [13]. There is evidence that some physicians may be reluctant to report colleagues who are experiencing suicidal depression or severe drug abuse, potentially due to concerns about being seen as a whistleblower. The misuse of opioids is evident in the growing number of emergency department visits related to prescription opioid misuse, the increase in admissions for treatment of prescription opioid addiction (which rose from 0.9% to 5% of addiction treatment requests nationally at federally funded treatment centers and from 1.1% to 20% in West Virginia, an area with high rates of prescription opioid abuse), and the increased involvement of opioid medications in overdose deaths. A recent online survey of over 3,500 college students found that 13.9% reported using opioid medications that were not prescribed to them at some point in their lives, and 7.2% reported using them in the past year [14]. Among lifetime users, 42.4% reported using the medications only to relieve pain, 23.9% reported using them to get high, and 33.9% reported using them for a selftreatment and recreational purposes.
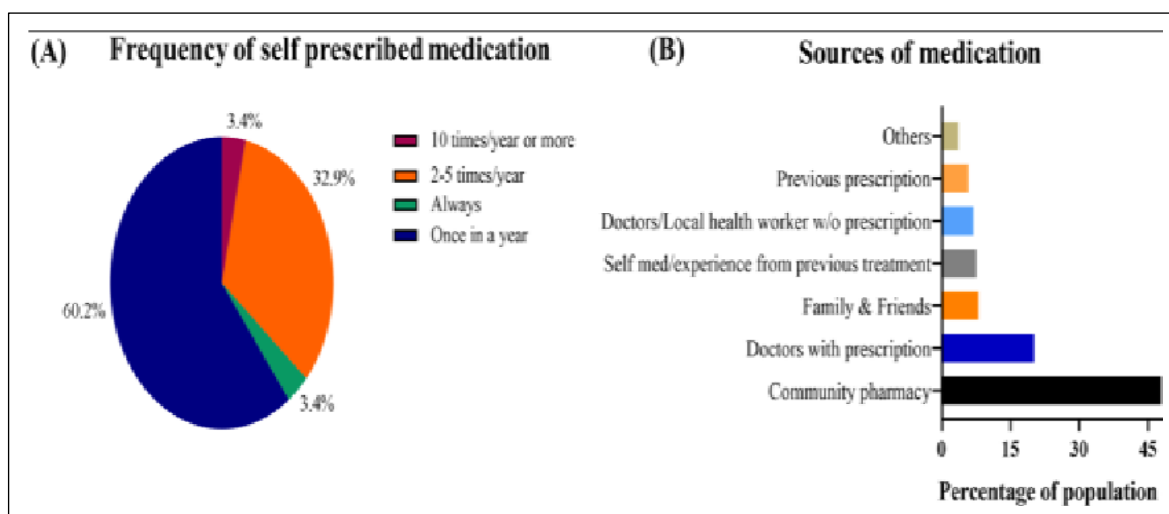
Figure (1): Self-medication Statistics

The NSDUH study found that among people who reported nonmedical use of opioids, 70.5% obtained the drugs from friends or relatives, 19.1% had prescriptions from one doctor, 1.6% had prescriptions from multiple doctors, 3.9% obtained them from a dealer or stranger, and 0.1% acquired them online. Several studies have shown that the increase in self-medication is due to various factors such as socioeconomic factors, lifestyle, easy access to drugs, the ability to manage certain illnesses through selfcare, and the greater availability of medicinal products. Other factors that can influence self-medication include a patient's satisfaction with their healthcare provider, long waiting times, the cost of drugs, educational level, age, and gender. In one study, prior familiarity with an illness and the perceived nonseriousness of the illness were the top two reported reasons for self-medication, and reading materials were the most common source of information [16, 17].

Another study conducted in Nigeria identified the patient's assessment of their illness as minor as one of the major factors for self-medication. Other dangers of self-medication may include drug dependence and addiction (e.g., addiction to cough syrups), problems due to misdiagnosis (e.g., sinusitis being misdiagnosed as an allergy), over- or under-dosing (e.g., liver toxicity from taking too much paracetamol), and adverse effects of certain drugs. A study found that more female students than male students obtained drugs for self-medication. Another study conducted in Mexico found that females were more likely to selfmedicate (61.9%) than males (38.1%), and identified women as a key group in the consumption of drugs and the use of self-medication. Additionally, there has been a trend of deregulating more products for purchase without a prescription [18]. Researchers conducted a study in which they recorded 414 primary care medical visits and found that only half of the patients who had used over-the-counter (OTC) analgesics (the most commonly used OTC medications) in the 30 days prior to the visit reported it to their physician, while physicians inquired about OTC medication use in only 37% of the visits. The most common therapeutic categories used in self-medication practices were analgesics, gastrointestinal medications, vitamin or mineral supplements, cardiac medications, and antiallergics. Out of the 10 interactions involving OTC medications that were identified, 5 were classified as highly severe and 1 was classified as moderately severe. Nine of the drugs used in self-medication were considered inappropriate for use in the elderly according to Beers' updated criteria. On average, each person took 3.2 medications [19, 20].

Again, the most commonly consumed drugs were analgesics, gastrointestinal and metabolic agents (including supplements), and cardiovascular drugs. The study found a mean of 6.8 (SD=3.4) medications per patient, as well as 63 (4.6%) potentially inappropriate medications according to Beers' criteria. Out of a total sample of 143 patients, 58 women reported using at least one herbal medication and

at least one OTC or prescription drug concurrently. These women had a mean of 8.7 (SD=3.9) medications per patient. The mean number of prescription, OTC, and herbal medicines per patient was 2.8 (SD=2.1), 3.7 (SD=2.0), and 2.2 (SD=1.8), respectively. At least one potential moderate or high-risk drug-drug interaction was found in 43 (74%) of the participants, with a total of 136 interactions identified. 52% of these interactions involved OTC medications, with 63% of them involving non-steroidal anti-inflammatory drugs (NSAIDs). Of the interactions that were classified as high-risk, only 4 involved two prescription drugs [21].

## Conclusions

Although many patients view over-the-counter (OTC) medications as completely safe, their use always carries some degree of risk for the consumer. This is especially true for patients who do not follow the instructions on the label or package insert. Educational interventions that aim to make patients aware of the potential risks of OTC medications and the importance of disclosing their use of OTC and alternative medicines to their physician and/or pharmacist are commonly proposed as a way to reduce the dangers associated with self-medication practices.

Interventions should also educate the general public on the importance of following the dosage, indication, duration of treatment, and other instructions on the label or insert, and the need to consult a physician if symptoms persist. Other strategies for promoting safe self-medication include improving the understanding of the label and insert by using true pictograms, graphs, larger typography, and simpler instructions, and providing oral instructions from healthcare professionals, especially for elderly or low-literate patients who may have difficulty understanding written instructions.

## Conflict of Interests

The authors declared no conflict of interests.

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