



## Self-medication; An Emerging Trend

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### Authors' contributions

*This work was carried out in collaboration between all authors. Authors AM and AUR designed the study. Authors MZ wrote the first draft of manuscript and managed the literature search. Authors JI and SSUH have done the proof reading and final editing of the manuscript. All authors read and approved the final manuscript.*

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### ABSTRACT

Self-medication involves the use of medicinal products by the individuals to treat self-recognized diseases or symptoms or the intermittent or continuous use of medication prescribed by a physician for chronic or recurrent disease or symptoms. Self-medication also involves acquiring medicines without a prescription or resubmitting old prescriptions to purchase medicines, sharing medicines with relatives or members of one's social circle or using left over medication or failing to comply with the professional prescription, either by prolonging it or interrupting it too early or decreasing or increasing the originally prescribed dose. It is practiced significantly worldwide, even though its type, extent and reasons for its practice may vary. No data are available on the current status of self-medication practices among health sciences. It is a worldwide sensation and probable contributor to antimicrobial resistance to antibiotics. The adversative results of such practices should always be highlighted to the public and steps to restrain it. Extensive irrational use of antibiotics without medical direction may result in bigger possibility of unsuitable, improper, or unwarranted therapy, false finding, and delays in proper treatment, pathogen resistance and amplified morbidity. This review focused on the self-medication of various drugs through internet. The purpose of this review is to provide awareness to the readers about the hazardous and worse consequences of the drug misuse through self-medication. Various research and review articles are reviewed for collection of information about self-medication.

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## 1. INTRODUCTION

Self-medication is defined as the use of medication, whether modern or traditional, for self-treatment. Self-medication can also be defined as obtaining and consuming drugs without the advice of a physician either for diagnosis, prescription or surveillance of treatment [1]. Self-medication is irresponsible, unethical, and dangerous pharmacy practice. Professionals in the field of medicine say that “a doctor who treats himself is a fool for a patient, and even bigger fool for a doctor” [2]. Combination of knowledge and drug availability can lead health care professionals to a false sense of confidence. It has been observed that self-medication correlates with the “paradox of familiarity” where a person with partial pharmaceutical knowledge and without complete understanding of associated risks, believes an indemnity for drugs abuse.

Till now, many studies have been highlighting the issue of self-medication, however self-medication associated with controlled substances was appeared for the first time in “The Apothecary” in 1988, which stated, “The bane of drug clerks (today known as staff pharmacists) is a tendency to have two great besetting vices - tipping, and opium eating” [3].

Self-medication is an issue for two reasons. First, it is the very serious practice for bad outcomes when one is involved in diagnosing and treating one’s own illnesses. The other and more important is the addiction that is often missed, as addiction is a disease while self-medication is a choice.

A large number of people, when they fall sick, do not consult the physician. They either consult a chemist and obtain a medicine from his shelf, or may consult a neighbour who may be having some tablets left over from his previous illness, and readily spares them. We noticed that right from popular magazine editors to a domestic servant think that he or she is a medical authority. If you have a fever, cold, cough, constipation or indigestion, your friends or even total strangers advise you to take medicine like expert physicians. Almost everyone you meet has an excellent remedy for whatever ails you. In short, it is self-medication [4].

Medicines for self-medication are often called 'nonprescription' or 'over the counter' (OTC) and

are available without a doctor's prescription through pharmacies. In some countries OTC products are also available in supermarkets and other outlets. Medicines that require doctor's prescription are called prescription products (Rx products). Every day, everywhere, patients approach for self-care products to cure their common health problems. They do so because it may be easier for them, it may be more time efficient, they may not feel benefits of making an appointment with a healthcare professional, they may not judge the extremes of situation, or they may not have other options [5].

We also know people are taking a more active role in their healthcare through self-medication. For example, huge percentage of Americans polled say they are more likely to treat their own health condition now than they were years ago. A large number, would rather treat themselves at home than see a doctor, and six in 10 say they would like to do more of this in the future [6].

In low income countries, people are crazy about the use of medicine and almost every person is involved in taking medicine without proper prescription. People vary greatly in their sensitivity to drugs; an appropriate dose for one person can be an overdose for another. Sometimes, even skilled physicians may fail to avoid such reactions. Thus, the self-medicating persons are at the risk of being ill-advised subjecting themselves to potentially dangerous outcomes [7-9].

Proprietary drugs which are sold over-the-counter include pain relievers, cough remedies, anti-allergic, laxatives, vitamins, tonics, antacids and many others. Even dangerous drugs like the antibiotics and the hormones are freely available, somehow or the other, without a valid prescription [10-12].

## 2. TYPES OF SELF-MEDICATION

Self-medication can be of different types and in different ways; there are many reasons of self-medications (Table 1) may include;

When people feel sick they do not want to visit a doctor for consultation, due to one of the reasons that may be due to:

- Shortage of time,
- Doctor's high consultation fees, or
- Non availability of doctor at that time,

So they directly go to the chemist and get medicine.

**Table 1. Reason for self-medication**

Serial number	Factors
1	Problem not serious
2	Previous experience
3	Lack of time
4	Advice from friends
5	Unavailability of transport
6	Cost of consultation
7	Urgency of problems

Sometimes they share their disease or condition with his/her neighbor who may be having medicine for his own treatment considering the same type of symptoms of his/her own disease or condition with that person. Some people read medical journals and magazines and suggest some medication for him and others as well. Some people in their busy schedule can't spare time to consult any physician so they use internet at their workplace /home and search medicine for their treatment.

This self-medication leads to drug abuse especially in the students [13,14]. When an individual persistently uses alcohol or other drugs despite problems related to use of the substance, substance dependence may be diagnosed. Compulsive and repetitive use may result in tolerance to the effect of the drug and withdrawal symptoms when use is reduced or stopped. These, along with substance abuse are considered Substance Use Disorders [15].

Drug abuse is also a big problem in our society that creates when we consult a Quake (Hakim, Peer, non-qualified paramedics) or chemist at local pharmacies and take medicine, rather than to consult a Qualified Medical practitioner. One reason for this can be the no availability of Qualified Medical Practitioner, especially in rural areas. As no one wants to work in rural areas, and second reason is of economic conditions and illiteracy because people in rural areas are not so economically strong and mostly are illiterate, and people prefer to consult the Quake, their neighbors, friends or take medicine by themselves. This way they can get medicine by spending only small amount of money [16,17]. Physician Sir William Osler (1849-1919) who said, "One of the first duties of the physician is to educate the masses when not to take medicines" [18].

## 2.1 Online Self-Medication

The increasing amount of freely available health-related web content generates, on one hand, excellent conditions for self-education of patients as well as physicians, but on the other hand entails substantial risks if such information is trusted irrespective of low competence or even bad intentions of its authors. There's no control in cyberspace. So there are plenty of web sites containing information about different diseases and conditions which are common in society like vitamin therapy, weight loss and sexual health etc. You can find advice to take something called "super blue- green algae" to lose weight. Or you can find information on mega doses of vitamin C to help treat lung cancer. When we got online, we found plenty of emails and web sites regarding information about different diseases and medicines. But beware from such type of emails and web sites because anyone can log onto the Internet, the World Wide Web, or other servers, creates its web site and can say anything on any topic. According to report of National Council against Health Fraud, Government should protect people from harmful medical advice online. The doctors are only in a position to know when people go for self-medication, but the general public is not [19,20]. Physician Dr. Tom Ferguson, in his book "Health Online" said that online medical resources are only internet surfing or just an electronic way of socializing. There might be some very good information you get and there might be some really off the wall information you get and people need to make the choice that what is correct and to what extent and be discriminating [21-24].

Patients continue to find new ways of searching health information on the web and more than four out of ten health information seekers say the material they found, affects their decisions about their health [25,26]. However, it is difficult for health information consumers, such as the patients and the general public, to assess by themselves the quality of the information because they are not always familiar with the medical domains and vocabularies. They only concentrate on the benefits highlighted on the web. These activities not only promote self-medication but also lead to many complexities. As a source for medical information, the Internet is not only a concern for health care professionals but also for the people who got online. The number of people who are seeking information about health related problems is growing. This means new opportunities for

patients to become well informed and to take an active part in their own treatment process. However, patient's use of the Internet also means many challenges e.g. quality of the information available and the relationship between patients and health care providers [27, 28]. Many individuals seeking health information for themselves and their loved ones perform online information searches before seeing a doctor, perhaps to see what the diagnosis might be [29-31]. People are often inaccurate when they try to self-diagnose [32]. Searching for information in the absence of a specific diagnosis without the help of doctor is particularly challenging for general public as many people are not familiar with the medical terminologies.

Self-medication through internet also called auto medication that can be of three types;

- Total auto medication
- Partial auto medication
- False auto medication

## 2.2 Self-Medication Aspects

Self-medication has Positive and negative aspects.

### 2.2.1 Positive aspects

Self-medication can readily relieve acute medical problems (Table 2), can save the time spent in waiting to see a doctor, may be economical and can even save lives in acute conditions if it is used appropriately. There are numerous drugs that can be used by the consumers by themselves (Table 3). Sometimes responsible self-medication can be beneficial for patients, healthcare providers, the pharmaceutical industry and governments [33,34]. The World Health Organization (WHO) has also pointed out that responsible self-medication can help prevent and treat ailments that do not require medical consultation and provides a cheaper alternative for treating common illnesses [35,36]. However, it is also to be kept in mind that self-medication must be accompanied by appropriate health information. Encouragement of self-medication and self-care is seen as giving patients every opportunity to take responsibility and build confidence in their ability to manage their own health. Patient empowerment is viewed as a positive step in the development of relationship between patient and healthcare provider and is considered as an important health policy concept [37,38].

**Table 2. Problems treated through self-medications**

Serial number	Problems
1	Headache
2	Fever
3	Flue
4	Cough and Cold
5	Pain disorder
6	Allergic Conditions
7	Sleep disorders
8	Diarrhea
9	Constipation

**Table 3. Commonly self-medicated drugs**

Serial number	Class of the drug
1	Pain killer
2	Antipyretic
3	Antibiotics
4	Anti-allergic
5	Sleeping pills
6	Vitamins
7	Antidiarrheal
8	Indigestion drugs

Online self-medication can offer enormous benefits to consumers. But there are still substantial risks [39]. In buying prescriptions online, consumers will be well advised to adhere to some basic advice. First, as this comment makes clear, be extremely cautious when visiting online drug shops or self-diagnosis through web site unless they are not familiar with the medical terminologies. Avoid shopping of drugs which are unapproved for sale without prescription and lies under the category of controlled drugs, buying drugs from these sites may do more harm than good. Second, the legal status of many prescribing based sites is still uncertain and may vary from state to state. Therefore, it may not be a great idea to use these sites as a way of purchasing medicines from a new doctor that has not first performed a proper physical examination. Instead, perhaps the best use of these sites may be either to get refills of prescriptions or to get personal medical advice or to crosscheck the doctor's diagnosis [40].

### 2.2.2 Negative aspects

Paracelsus (1493-1541), in the 16th century observed that all drugs are poisons if they are misused. In several studies it has been found that inappropriate self-medication results in wastage of resources, increases resistance of pathogens and generally entails serious health hazards such as adverse drug reactions,

prolonged suffering and drug dependence [41,42], and this aspect may lead to the following risks [43].

### **2.2.3 Risk of misdiagnoses**

The first risk is that they might miss something, about their problems or issues which would, in turn, cause them to misdiagnose themselves, possibly with disastrous results. For example, someone might think they have an anxiety condition of some sort, but closer professional examination might uncover an underlying serious medical problem such as heart arrhythmia. The affected person might treat them-selves as though they have an uncomplicated anxiety problem (e.g., with relaxation exercises) and completely miss the fact that they have a serious medical condition that requires medical treatment. There is really no good way to reduce this type of risk except to go to a professional for a professional diagnosis [44,45].

### **2.2.4 Risk of wrong treatment [46,47]**

The second risk of self-treatment is that people might treat themselves with methods that don't work at all, which are inefficient, which are totally wrong for their problems, or which actually cause harm. This risk is heightened when treatments and methods that people consider using are inherently dangerous when misused. For example, someone might try to treat his weight problem with pills that were prescribed for someone else or illegally obtained on the street. They might alternatively decide that the best way to lose weight is to starve themselves by fasting (not a good idea at all!) or by engaging in strenuous physical workouts on a regular basis. Research shows that starving yourself is unlikely to result in any weight loss, and may cause other problems to develop, including irregular eating patterns which can lead to eating disorders like Bulimia. A non-health-professional person might not know this important fact and starve themselves anyway. Similarly, strenuous exercise might be appropriate and even healthy for some people, but it might provoke a heart attack in someone else, or simply lead to severe pain conditions that would discourage them from pursuing further healthier methods for weight loss [48,49].

With online self-medication, customers can simply go to the site, get a price list of various drugs, and place an order. There is no examination of the patient because there is no

interaction with doctor at all and equally as troubling, there is no disclosure of potential side effects of the medicine being purchased. The location and sources of such type of online drug shops are not available as well as webs containing medical information are not also authenticated and the information they contain is doubtful, so that persons who are not familiar with the medical terminologies and domains cannot diagnose the exact condition [48]. Such type of websites can confuse consumers even some controlled medicines that are not available at pharmacy shops without prescription, they are freely available in online shops and when people use such type of medication without doctor's advice they become addicted with the passage of time. The risks with prescribing based sites are real and perhaps the biggest risk with the patient's health. Some prescribing based sites offer a brief conversation between doctor and patient about consulting the problem, so in this way these sites are trying to establish patient doctor relationship to some extent, but there are some concerns about the qualification of consulting doctor [50]. However, some prescribing based sites do offer a very thorough Internet "exam" through video conferencing, rejecting inappropriate patients and only prescribing certain non-controlled substances. This of course can lead to deadly consequences for the person who is unaware of a condition which otherwise would have been exposed by a physical examination. Perhaps, this is why the American Medical Association, along with the Federation of American Medical Boards has taken the notice that an online questionnaire is no substitute for a genuine examination. By getting medical information from the computer also poses clear dangers for consumers if they self-medicate inappropriately. As the Internet population continues to grow, steering patients away from sources of bad information may one day become a standard part of preventive medicine [51].

### **2.2.5 Self-medication trends**

Self-medication trend is influenced by many factors, such as education, family, society, law, availability of drugs and exposure to advertisements [30]. A high level of education and professional status has been mentioned as predictive factors for self-medication. The reasons for self-medication mostly are mild illness, previous experience of treating similar illness, economic considerations and a lack of availability of healthcare personnel [52]. Self-

medication is an area where governments and health authorities need to ensure that it is done in a responsible manner, ensuring that safe drugs are made available over the counter and the consumer is given adequate information about the use of drugs and when to consult a doctor. Unlike other aspects of self-care, self-medication involves the use of drugs, and drugs have the potential to do good as well as cause harm. In this context, the pharmacist also has an important role in setting the trends of self-medication [53,54].

### 3. CONCLUSION

The frequency of self-medication, especially through internet is alarming. Self-medication is more frequent among the educated community. So the need is to properly communicate and provide awareness amongst the population, so, they may become aware about the hazards of self-medication.

### CONSENT

It is not applicable.

### ETHICAL APPROVAL

It is not applicable.

### COMPETING INTERESTS

Authors have declared that no competing interests exist.

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