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NARRATIVE REVIEW **PERIOPERATIVE MEDICINE**

Self-medication in general ailments and its potential risks

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ABSTRACT

Self-medication is thought to be very widespread, especially among adults and teenagers. It is the practice of using medications to treat conditions or symptoms that one has recognized or diagnosed oneself. The area of healthcare involving self-medication is becoming more and more significant. Self-medication is widely used for many common illnesses, including headaches, common cold, flu and diarrhea. During the COVID-19 pandemic, self-medication was also discovered to be very prevalent. However, self-medication with antibiotics is not considered as safe. People may self-medicate due to socioeconomic factors like lifestyle, drug availability, or financial hardship. Individuals who cannot afford the cost of a doctor's visit or clinical services can self-medicate because it is a less expensive option. Self-medication does, however, come with risks, such as the potential for prolonged use, misdiagnosis, overdosing, polypharmacy and drug interactions. This review describes the use of various drugs as self-medications in general ailments, in COVID-19 as well as use of antibiotics as self-medication and various risks associated with the self-medication.

Key words: Self-medication; Illness; COVID-19; Antibiotics; Headache

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1. Introduction

Self-medication is the practice which includes using medications to treat conditions or symptoms that one has identified or diagnosed for oneself. Self-medication is defined by the International Pharmaceutical Federation and World Health Organization (WHO) as the process by which a person chooses and employs medications to manage indications, symptoms, or minor health issues that they have independently identified as such.[1,2] The use of medications without a doctor's prescription is another way of defining self-medication.[3] Over-the-counter (OTC) and nonprescription medicines are those that are sold without a doctor's prescription for self-medication. Prescription products are those medications that require a doctor's prescription (Rx products). In order to differentiate it from the practice of getting and utilizing a prescription medication without a prescription written by a doctor, self-medication with OTC medications is sometimes referred to as "responsible"

self-medication. Inappropriate self-medication has been linked to resource wastage, and an increase in resistance to pathogens. Other major health risks include the possibility of developing extended discomfort, drug interactions, adverse drug responses and drug dependence.[4] Self-medication benefits healthcare systems in a way that it allows to imply clinical skills more effectively, increases easy approach to drugs and also helps to lower the cost of prescription drugs for health programs funded by the public. Self-medication also comes with some risks; for example, the misdiagnosis, prolonged use, overdosing, polypharmacy and drug interactions. It can be particularly harmful to elderly people.[5] For getting fewer side effects and maximum benefit, suggested strategies should be implemented such as a collaboration between patients, pharmacists and general physicians, monitoring systems and provision of information on safe use of medicines.[6,7] Even though self-medication may help to lower healthcare costs, it increases the risks of developing adverse drug reactions, alters the usage of prescription medications, and may cause drug interactions between non-prescription and prescription drugs.[8]

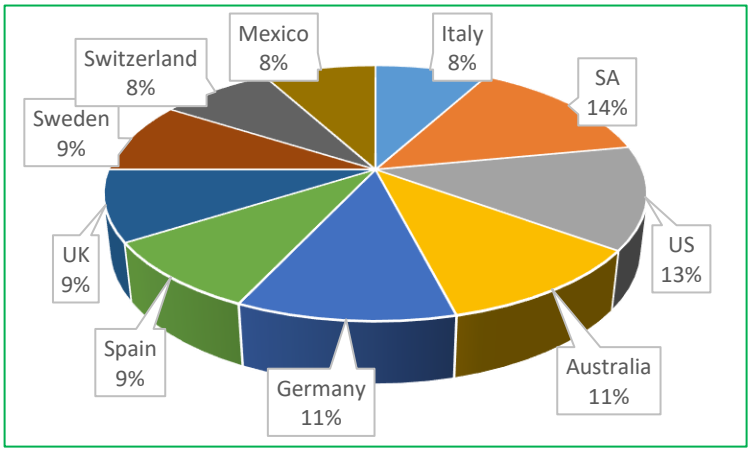

Figure 1: Prevalence of self-medication among different countries

1.1. Prevalence of self-medication

Self-medication has reportedly been increased across the globe.[9] People in the developing nations use both prescription and over-the-counter medications for self-medication without a doctor's supervision. WHO has emphasized the importance of properly teaching and controlling self-medication. Self-medication with OTC drugs, may give significant benefit to economies by preventing the time and money that is spent on travelling and by reducing the overall cost of a treatment. According to various research studies, self-medication is a widespread practice with an incidence rate of 32.5-81.5% globally.[10] Easy approach to non-prescribed medicines, on the other hand, may prompt the people to think that there is a drug for every major and minor illness.[11,12] Self-medication was found to be quite prevalent in a recent study conducted,[13] and Figure 1 depicts its frequency in various nations.[14]

2. Specific self-medications

2.1. Use of Anesthetics

Most commonly misused anesthetics are topical ocular anesthetics among. In a recent study, 80.5% of population have declared that during their working lives they had used topical anesthetics for at least once.[15] Surprisingly, all were Men. Typically, most of the patients used to prefer self-treatment over pursuing assistance from a physician, for financial as well as cultural reasons. Most frequently used topical anesthetic was found to be tetracaine.[16] This topical ocular anesthetic misuse has been associated with numerous harmful adverse effects. In another study, a case report stated a 40-year-old patient in Saudi Arabia has often self-administered topical oxybuprocaine drops and had developed ocular ultrastructural alterations.[17]

2.2. Cold and flu

The most prevalent infections that affect people are the cold and flu, which can be brought on by a variety of viruses.[18] Symptoms may vary from mild to severe. The signs of a cold or the flu include a nasal congestion, throat pain, runny nose, sneezing, muscle aches, chills, and fever. When treating cold and flu symptoms, the majority of people prefer OTC medications.[19] To choose the proper OTC medication for the treatment, they require assistance.[20] Some OTC drugs such as ibuprofen, aspirin and paracetamol are commonly used for treating the symptoms of flu or common cold. In addition to analgesics, other OTC medications for the treatment of colds and the flu include antihistamines, decongestants, and anticholinergics.[21] Acute overdoses of OTC medications and their improper administration over extended periods of time are strongly linked to morbidity and even mortality.[7,22,23]

2.3. Headaches

One of the most prevalent, incapacitating neurological conditions is headache. Migraine headaches and the other prevalent types of headache typically include feed-forward activation of peripheral inflammatory or of the muscular contractile mechanisms, hyperactivity of peripheral or central neural nociceptive substrates

Table 1: Ailments and the self-medication generally used

Ailment	Self-medication
Cold and Flue	Ibuprofen; Aspirin and Paracetamol; Antihistamines; Decongestants; and Anticholinergics
Headaches	Paracetamol; Acetylsalicylic Acid; Ibuprofen; Triptans; Opioids
Diarrhea	Anti-diarrheal; Anti-histamines; Antibiotics; Analgesics
COVID -19	Hydroxychloroquine; Azithromycin; Ivermectin; Doxycycline

followed by the dysfunction of central pain regulatory systems.[24] Ninety percent of people experience a headache episode at least once a year, making headaches the second most common cause of absence from work with a disability globally.[25] A previous study had shown the most commonly used medications for headache are paracetamol (62%), acetylsalicylic acid (15%), ibuprofen (9%), triptans (8%), opioids (2%), combination analgesics (2%) and others (2%).

2.4. Diarrhea

Adults commonly experience diarrhea. The majority of diarrhea patients don't seek medical attention, but those who have had symptoms for a longer period of time or who also have a fever, prostration, or rectal bleeding are more likely to do so.[26] Infectious diarrhea can be categorized as either noninflammatory or inflammatory diarrhea according to its symptoms and pathogenesis. Infectious diarrhea can be categorized as either noninflammatory or inflammatory diarrhea according to its symptoms and pathogenesis.[27,28] Several host defense mechanisms prevent infection in the intestine and disease-causing pathogens should bypass these mechanisms. A previous study had shown that the most common type of drugs used as self-medication for diarrhea are anti-diarrheal, anti-histaminics, antibiotics, and various analgesics.[29]

2.5. COVID-19

As the COVID-19 pandemic spread, a number of drugs were used as self-medication for potential treatments, the majority of which neither improve the condition of patients nor shows any side effects.[4,30,31] For instance, hydroxychloroquine attracted a lot of interest as a potential treatment for COVID-19 because it showed potential beneficial results in small uncontrolled investigations or in-vitro experimentation. A cross-sectional study demonstrated that the rate of self-medication of antimicrobial medicines such as doxycycline (40.25%) and azithromycin (54.15%) was substantially higher during the COVID-19 outbreak relative to their use before the pandemic, with the reported ratio of 21% for doxycycline and 25% for azithromycin respectively.[32] All through past years, azithromycin had been a popular antibiotic, self-medicated by the fifth largest percentage of people, but it has now become the most commonly used antibiotic during the COVID-19 outbreak. In another study, 77.15% of responders self-medicated with ivermectin which is the anti-parasitic drug.[33] During the COVID-19 outbreak, the majority of respondents self-medicated with antibiotics for fever, followed by dry cough and throat pain, although few respondents really had no complains at all. Administering inappropriate antimicrobials and supplemental drugs (vitamin D, zinc and calcium) without a prescription increases the risk of drug side effects and has become the major cause of resistance to antimicrobials.[34-36]

2.6. Use of antibiotics

Self-medication of antibiotics of various classes has been reported. Amoxicillin was the most often consumed antibiotic for self-medication, followed by macrolides, fluoroquinolones, cephalosporins, and metronidazole.[37] Fluoroquinolones and amoxicillin are widely used, which may be related to their inexpensive cost, easy access, and moderate side effect profiles. The most often prescribed antibiotics are also fluoroquinolones, amoxicillin and macrolides, and patients frequently resort to these medications when they experience a similar ailment in the future.[38] Resistance and treatment failure are caused by widespread and irrational use. People are more susceptible to drug-resistant tuberculosis because of self-medication and improper ciprofloxacin use.

According to a recent study,[39] metronidazole was the most frequently prescribed antibiotic. In that study, food poisoning (36.02%), dysentery, diarrhea, food poisoning (36.02%), cold, fever and cough (28.24%), infection (12.97%), dental pain and toothache (9.22%), acne (4.32%), irritable bowel syndrome (3.46%), acne (4.32%), throat and ear pain (2.31%), asthma (1.73%), sinusitis (0.86%) and ring worm (1.15%) were the main pathological factors that forced the participants to buy antibiotics on their own. In a similar study in Mongolia, Arab Emirates and Nigeria.[40] penicillins, particularly amoxicillin and ampicillin were more frequently used ahead of metronidazole for a variety of conditions by people as self-medication. Table 1 describes the most commonly used drugs as self-medication.

3. Factors Influencing Self-medication

Self-medication is influenced by many factors such as education, family, society, law, availability of drugs and exposure to advertisements.[40,41]

3.1. Socio-economic factors

People who usually opted for the option of self-medication tended to be uneducated. Public health policies should take care to address the issue of older adults who self-medicate.[41,42] Antibiotic self-medication (SMA) is a global problem that is more prevalent in low- and middle-income nations.[43] Advice from relatives or friends, the ability to self-manage the symptom, comfort, the absence of a doctor, the urgency of the issue, and having enough information were additional justifications for self-medication.[44]

3.2. Environmental factors

Self-regulation vulnerabilities, such as issues with controlling affects, self-esteem, relationships, and self-care, are the causes in which self-medication factors emerge.[45,46] People with substance use disorders suffer greatly when it comes to their emotions, either by experiencing unpleasant feelings or inability to feel anything at all.[41,47] Thus, these people can experience relief by using addictive substances and according to the clinical observations and empirical research these psychological factors play a significant role in the use of, or a relapse to addictive substances and becoming more dependent on such substances.[44,48]

4. Potential risks

The risks of self-medication are numerous. In particular, the average user typically lacks specialized knowledge of pharmacology, therapy, or the unique properties of the medication being used.[49,50] As a result, there are some inherent risks of self-medication, including dangers at work or in sports, inappropriate dosage or dosage increase, incorrect self-diagnosis, delay in seeking prompt medical advice, selecting the wrong course of treatment, failing to recognize specific pharmacological risks, neglecting to inform the prescribing doctor about current self-medication (risk of double medication or harmful interaction),[51] failing to detect or report adverse drug reactions, ignoring the fact that the same active ingredient is being consumed under different names (products with different trademarks may have the same active ingredient) , negative interactions and side effects, storage beyond the recommended shelf life, inappropriate route or method of administration, excessively long use, dependence and abuse risk, interactions between food and drugs.[37,52]

Inappropriate self-medication could increase drug-induced disease. It is essential to recognize that most of the above-mentioned problems are not specific to self-medication, they can also arise from medication obtained by prescription, particularly in the case where patient sees multiple doctors for the same condition or receives no counselling in therapy. Thus, self-medication should be done carefully in order to get maximum benefits and minimum side effects.[53,54]

5. CONCLUSION

Community pharmacies frequently sell a variety of medications without a prescription. Pakistan also needs to implement policies that will effectively track the sale of pharmaceuticals. It is imperative that the general public learns about rational medication and the restrictions on advertising drugs. People need to be advised about the side effects and drug interactions that result in negative outcomes. Self-medication benefits healthcare systems because it decreases load on the system, and has the potential to reduce the cost of prescribed drugs. However, self-medication carries risks such as polypharmacy, overdosing, incorrect diagnosis, and long-term drug use. The latter could be especially harmful to the elderly. Monitoring systems, collaboration between patients, doctors, and pharmacists, and the provision of education and information to all parties on safe self-medication are all strategies for maximizing benefit and minimizing risk.

6. Conflict of interest

The author reports no professional, commercial or academic conflict of interest.

7. Authors contribution

All the authors took part in concept, literature review, data collection, data analysis, and manuscript preparation.

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