

## PRESCRIPTIONS AND DRUGS: RATIONAL USE, CLINICAL CHALLENGES AND PUBLIC HEALTH IMPLICATIONS.

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### **Abstract:**

*The rational use of prescriptions and drugs is a cornerstone of effective healthcare systems. However, irrational prescribing, polypharmacy, antimicrobial resistance, and self-medication continue to pose serious global health threats. This study examines the principles of appropriate drug use, evaluates common prescribing errors, and analyzes their clinical and public health consequences. Using qualitative analysis of medical literature and international guidelines, the research identifies key factors influencing drug misuse, including lack of patient awareness, insufficient regulatory control, and healthcare system limitations. The findings highlight the need for evidence-based prescribing, patient education, and stronger pharmaceutical policies. Improving rational drug use can significantly enhance treatment outcomes and reduce healthcare costs.*

**Keywords:** *prescriptions, drugs, rational use, polypharmacy, antimicrobial resistance, patient safety, pharmacotherapy, healthcare systems*

### **Introduction.**

Prescriptions and pharmaceutical drugs are fundamental components of modern healthcare, enabling the prevention, diagnosis, and treatment of diseases. A prescription serves as a legally authorized document issued by a licensed healthcare professional, ensuring that patients receive appropriate medication tailored to their clinical condition. Despite medical advancements, irrational use of drugs remains a critical issue worldwide. The World Health Organization (WHO) estimates that more than half of all medicines are prescribed, dispensed, or sold inappropriately, while nearly 50% of patients fail to take them correctly. This leads to ineffective treatment, increased morbidity, and unnecessary healthcare expenditures. One of the major concerns is polypharmacy, particularly among elderly patients, where multiple medications are prescribed simultaneously, increasing the risk of drug interactions and adverse effects. Additionally, the misuse of antibiotics has accelerated

the development of antimicrobial resistance (AMR), making infections harder to treat. Another growing issue is self-medication, driven by easy access to drugs, online information, and lack of awareness. In many developing countries, prescription drugs can be obtained without proper medical authorization, further exacerbating the problem.

This study aims to: Analyze rational and irrational drug use. Identify key prescribing errors and their causes. Evaluate the impact of drug misuse on patient safety and public health. Suggest strategies to improve prescription practices.

### **Methods.**

This research adopts a qualitative and analytical approach based on a comprehensive review of academic literature, clinical guidelines, and international health reports. Data Sources: World Health Organization (WHO) reports. Peer-reviewed medical and pharmacological journals. Clinical prescribing guidelines. Pharmacology textbooks. Research Approach: Comparative analysis of rational vs irrational drug use. Evaluation of real-world prescribing practices. Analysis of patient behavior and medication adherence. Inclusion Criteria: Studies related to prescription errors. Research on drug safety and adverse, drug reactions. Reports on antimicrobial resistance and self-medication. The collected data were systematically analyzed to identify patterns, challenges, and possible solutions.

### **Results.**

The study revealed several significant findings:

#### **1. High Prevalence of Irrational Prescribing.**

In many healthcare settings, prescriptions often include unnecessary medications, inappropriate drug combinations, or incorrect dosages. Overprescription of antibiotics and painkillers is particularly common.

#### **2. Polypharmacy and Drug Interactions.**

Polypharmacy increases the likelihood of drug-drug interactions, especially in elderly patients. This can lead to reduced effectiveness or harmful side effects.

#### **3. Rising Self-Medication Practices.**

A large proportion of patients engage in self-medication, often using leftover drugs or recommendations from non-professional sources. This behavior increases the risk of incorrect treatment and delayed diagnosis.

#### **4. Antimicrobial Resistance (AMR).**

Improper use of antibiotics contributes to the emergence of resistant microorganisms, posing a major threat to global health. Infections that were once easily treatable are becoming more difficult to manage.

#### **5. Adverse Drug Reactions (ADRs).**

Medication errors, including incorrect dosage and improper administration, lead to adverse drug reactions. These can range from mild side effects to life-threatening conditions.

#### 6. Lack of Patient Awareness and Compliance.

Many patients do not follow prescribed instructions due to misunderstanding or negligence. Non-adherence to treatment reduces therapeutic effectiveness.

#### 7. Weak Regulatory Systems.

In some regions, insufficient regulation allows unauthorized sale of prescription drugs, contributing to misuse and abuse.

### **Discussion.**

The findings emphasize that irrational drug use is a multifactorial problem requiring a comprehensive approach. The findings highlight the urgent need for improving prescription practices and promoting rational drug use. Healthcare professionals must follow evidence-based guidelines when prescribing medications. This includes accurate diagnosis, selecting appropriate drugs, and considering patient-specific factors. Patient education is equally important. Individuals should be informed about the risks of self-medication and the importance of following medical advice. Pharmacists can also play a key role in guiding patients and preventing misuse. Moreover, governments and healthcare institutions should strengthen regulations to control the distribution of drugs. Implementing digital prescription systems and monitoring drug use can help reduce errors and misuse. In conclusion, rational use of prescriptions and drugs is essential for ensuring patient safety and improving healthcare outcomes. Collaborative efforts between healthcare providers, patients, and policymakers are necessary to address current challenges.

#### 1. Importance of Rational Prescribing.

Healthcare professionals must follow evidence-based guidelines when prescribing medications. Rational prescribing involves: Accurate diagnosis. Appropriate drug selection. Correct dosage and duration. Consideration of patient-specific factors.

#### 2. Role of Healthcare Professionals.

Doctors, pharmacists, and nurses play a critical role in ensuring safe medication use. Pharmacists, in particular, can help prevent drug interactions and educate patients.

#### 3. Patient Education and Awareness.

Educating patients about proper drug use is essential. Awareness programs should focus on: Risks of self-medication. Importance of completing prescribed courses. Understanding side effects

#### 4. Technological Solutions.

Digital health systems, such as electronic prescriptions (e-prescriptions), can reduce errors and improve monitoring. Clinical decision support systems (CDSS) can assist doctors in making informed prescribing decisions.

#### 5. Strengthening Regulations

Governments should enforce stricter regulations on drug distribution and sales. Monitoring systems can help track prescription patterns and identify misuse.

6. Combating Antimicrobial Resistance. Efforts to reduce AMR include: Rational antibiotic prescribing, Public awareness campaigns. Development of new antimicrobial agents

#### Conclusion.

The rational use of prescriptions and drugs is essential for ensuring patient safety and improving healthcare outcomes. However, challenges such as irrational prescribing, self-medication, and antimicrobial resistance continue to threaten global health. This study highlights the need for: Evidence-based prescribing practices. Improved patient education. Stronger regulatory frameworks. By addressing these issues, healthcare systems can enhance the effectiveness of treatments, reduce adverse drug reactions, and promote overall public health.

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