DRUG INTERACTIONS AND SELF-MEDICATION: RISKS OF THE INDISCRIMINATE USE OF MEDICATIONS WITHOUT PROFESSIONAL GUIDANCE

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Abstract

The present study aims to analyze, through a rigorous review of the scientific literature, the dangers inherent in the practice of self-medication, with an emphasis on potential and hazardous drug interactions. This approach is crucial, as self-medication has become established as a serious public health problem, driven by easy access to medications, the search for immediate symptom relief, and, often, the influence of unverified information. The methodology employed consisted of an in-depth analysis of scientific articles, systematic reviews, and epidemiological studies that address the consequences of the irrational use of drugs without proper guidance from a qualified healthcare professional. The main findings demonstrate an alarming scenario: self-medication not only increases the risk of adverse reactions and intoxications, but also significantly compromises the therapeutic effectiveness of treatments. The simultaneous or sequential intake of different medications, without knowledge of pharmacokinetic and pharmacodynamic interactions, may result in toxic effects, nullify the expected therapeutic action, or mask the diagnosis of underlying diseases. Additionally, an impact of extreme relevance to public health is the increase in antimicrobial resistance, frequently associated with the inappropriate and indiscriminate

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use of antibiotics without prescription. This irresponsible practice directly contributes to the emergence of so-called “superbugs,” limiting treatment options for future infections and increasing global morbidity and mortality. In conclusion, minimizing these complex and multifaceted risks is imperative. Investment in robust public policies that promote continuous public education on the rational use of medications is essential, highlighting the fundamental role of the pharmacist in counseling and pharmaceutical care. Professional guidance and the strengthening of access to medical consultations are essential pillars to ensure the safe and effective use of drugs, protecting individual and collective health against the silent dangers of self-medication.

Keywords: Adverse reactions, Patient safety, Public health, Polypharmacy.

INTRODUCTION

Self-medication is a recurring practice across different social classes, favored by easy access to medicines and the mistaken perception that certain drugs are harmless. However, the indiscriminate use of medicines without proper professional guidance can result in significant health consequences, such as adverse reactions, resistance to active principles, tolerance, and drug interactions. This behavior compromises therapeutic efficacy, may aggravate preexisting diseases, and constitutes a relevant public health problem (Mota; Santos; Andrade, 2024).

Drug interactions, in turn, occur when two or more drugs administered simultaneously modify their effects in the body, potentially enhancing or reducing therapeutic action, in addition to increasing the risk of toxicity. This phenomenon may also involve foods and natural substances, which increases its complexity. The lack of knowledge about these interactions, combined with indiscriminate medicine use, considerably raises health risks, especially among polymedicated patients, older adults, and children (Pinto et al., 2020; Castro; Lacerda; Marquez, 2024).

In this context, it becomes imperative to promote public awareness regarding the dangers of self-medication and the importance of professional guidance in medicine use. The role of healthcare

professionals, especially pharmacists, is essential to ensure the rational use of medicines, prevent drug interactions, and optimize treatment effectiveness (Ferreira; Terra Júnior, 2018).

In addition to clinical risks, self-medication brings relevant social and economic implications, as it may generate complications that overload the public health system, increase hospital costs, and reduce the population's quality of life (Mota; Santos; Andrade, 2024).

What are the main risks associated with self-medication and drug interactions, and how can professional guidance contribute to reducing these problems?

Thus, this study aims to analyze the risks related to self-medication and drug interactions, highlighting the relevance of professional guidance for the safe use of medicines. Based on a literature review, it seeks to identify the main consequences of this practice and discuss preventive strategies, contributing to the rational use of medicines and the reduction of harm to public health (Rocha et al., 2023).

DEVELOPMENT

METHODOLOGY

This study aimed to conduct a bibliographic review. For its execution, a search was carried out in the scientific literature available on the SciELO and Google Scholar websites, using the terms "drug interactions," "self-medication," "rational use of medicines," and "polypharmacy." Articles published in the last 15 years (2010–2025) that addressed the topics of self-medication and drug interactions and discussed the risks of indiscriminate medicine use without professional guidance were included. Articles that were not relevant to the topic or that presented outdated information were excluded. The selected articles were read and analyzed in order to identify and discuss the main risks associated with medicine use without the guidance of a healthcare professional, as well as to analyze the most common drug interactions and their consequences for population health.

RESULTS AND DISCUSSION

The practice of self-medication has been widely studied worldwide and is recognized as a risk behavior that impacts public health. In Brazil, self-medication is strongly associated with the occurrence of drug interactions, which can generate clinical complications, increased morbidity and mortality, and severe adverse effects (Arrais et al., 2016). Easy access to non-prescription medicines, combined with recommendations from family members and the search for quick solutions, favors inappropriate use, often without individuals being aware of the risks involved (Domingues et al., 2017). According to the Ministry of Health (2022), approximately 35% of the Brazilian population uses medicines on their own initiative, a percentage higher than that observed in developed countries such as Canada and Germany, where self-medication rates range between 20% and 25% (WHO, 2023). This difference highlights not only cultural issues, but also structural factors that directly affect the prevalence and risks associated with the practice.

The culture of self-medication in Brazil is influenced by socioeconomic and educational factors. Low educational attainment, difficulty accessing healthcare services, and economic vulnerability increase the likelihood of risk behaviors, including the inappropriate combination of drugs without professional supervision (Domingues et al., 2017). A survey conducted by IBGE (2021) indicated that approximately 18% of the population earning up to one minimum wage resorts to self-medication, demonstrating the relationship between economic vulnerability and inappropriate medicine use. The sharing of medicines among family members and acquaintances, a common practice, intensifies the risk of interactions, which may result in hospitalizations and increased costs for the healthcare system (Arrais et al., 2016).

The indiscriminate use of antibiotics is one of the main concerns related to self-medication. Studies indicate that self-medication with antibiotics increases the selection of resistant strains, prolongs hospital stays, and raises mortality (Revista Pesquisa FAPESP, 2023; BJIH, 2021). National data show that antibiotic-resistant infections already account for approximately 15% of complications in large hospital units, mainly affecting older adults and patients with multiple comorbidities (Domingues et al.,

2017). Antimicrobial resistance is exacerbated by the simultaneous use of multiple antibiotics without monitoring, increasing the risk of adverse interactions such as hepatotoxicity and severe gastrointestinal effects. The use of over-the-counter analgesics and anti-inflammatory drugs is highly prevalent in self-medication. Studies show that repeated intake or high doses may lead to complications such as gastritis, gastric ulcers, acute kidney failure, and increased cardiovascular risk (Arrais et al., 2016; Silva et al., 2020). Drug interactions with anticoagulants or antihypertensives are common and may result in bleeding or loss of blood pressure control. The combination of these drugs without professional guidance represents a significant risk, especially among older adults who already experience polypharmacy.

Self-medication with herbal medicines and dietary supplements also deserves attention. Although often considered natural and harmless, these products may interact with continuous-use medicines, reducing therapeutic efficacy or increasing toxicity (Domingues et al., 2017). A survey conducted by ANVISA (2023) indicated that 42% of herbal medicine users are unaware of possible interactions with conventional medicines. Examples include interactions between ginkgo biloba and anticoagulants, which increase bleeding risk, or between St. John's wort and antidepressants, which may induce serotonin syndrome. In addition to clinical consequences, self-medication generates significant economic impacts. Inappropriate medicine use results in intoxications, adverse reactions, and hospitalizations, increasing emergency care costs and corrective treatments (Silva et al., 2020). Data from the Ministry of Health (2023) indicate that approximately 12% of hospital admissions are related to problems resulting from drug interactions or inappropriate medicine use. A study in the Federal District estimated that expenditures on medicines reached approximately BRL 3 billion in 2023, reflecting the significant financial impact on public and household budgets (Correio Braziliense, 2023).

Vulnerable populations, such as older adults and patients with chronic diseases, are particularly susceptible to the adverse effects of self-medication. WHO data (2023) indicate that approximately 50% of older adults use five or more medicines simultaneously, significantly increasing the risk of clinically

relevant drug interactions (Domingues et al., 2017). This polypharmacy compromises treatment adherence, hinders pharmacotherapeutic monitoring, and favors the occurrence of adverse events.

Regarding the understanding of package inserts, studies indicate that the technical language used on labels and instructions makes correct interpretation difficult for a large portion of the population. A survey by IDEC (2022) revealed that 62% of users reported difficulty understanding package inserts, which increases the risk of administration errors and inappropriate use. The literature emphasizes the need to investigate more effective communication strategies capable of improving understanding and reducing risks associated with self-medication (Silva; Silva; Almeida, 2020).

From a regulatory perspective, RDC No. 44/2009 establishes minimum criteria for good practices in pharmacies and drugstores, focusing on safety, quality, and rational medicine use (BVSMS, 2009). Recent studies indicate, however, that inspection and enforcement of these standards still present limitations, especially in regions with lower densities of healthcare professionals, contributing to the persistence of indiscriminate self-medication (Gov.br, 2023).

Among the most common drug–drug interactions, the combination of anticoagulants such as warfarin with NSAIDs (ibuprofen, diclofenac) stands out, significantly increasing the risk of hemorrhage due to their simultaneous effects on coagulation. Another important example is the concomitant use of SSRIs (such as sertraline) with opioid analgesics (tramadol), which may trigger serotonin syndrome, characterized by agitation, tremors, and autonomic changes. Additionally, anticonvulsants such as carbamazepine may reduce the effectiveness of oral contraceptives through hepatic enzyme induction, and azole antifungals such as ketoconazole may increase plasma concentrations of anticoagulants, raising bleeding risk. The interaction between proton pump inhibitors (omeprazole) and anticoagulants, which may alter the therapeutic action of the latter, is also relevant (Oliveira; Silva; Costa, 2018).

Regarding drug–food interactions, antibiotics such as tetracycline and ciprofloxacin are noteworthy, as their absorption may be reduced by the concomitant intake of dairy products (Silva et al., 2017). MAOIs such as phenelzine may cause hypertensive crisis when combined with foods rich in

tyramine, such as aged cheeses and processed meats. In addition, antibiotics such as rifampicin may reduce the effectiveness of oral contraceptives due to enzyme induction that accelerates contraceptive metabolism (Silva et al., 2018).

Among drug–beverage interactions, metronidazole associated with alcohol causes a disulfiram-like reaction, characterized by nausea, vomiting, and tachycardia. Anticoagulants such as warfarin may have their effects enhanced by the consumption of cranberry juice, increasing bleeding risk (Costa, 2024). Lithium presents increased urinary excretion in the presence of caffeine, reducing its therapeutic efficacy and increasing the risk of treatment instability (Rosa et al., 2025).

Interactions involving medicines and supplements or herbal products also deserve attention. Ginkgo biloba, when used together with anticoagulants, may increase bleeding risk (Souza; Lima, 2021). St. John's wort, when combined with antidepressants, increases the risk of serotonin syndrome. In addition, garlic, ginger, and ginseng may intensify anticoagulant effects, once again increasing bleeding risk (Nicoletti, 2005).

These interactions demonstrate the complexity of using multiple medicines and natural products without professional guidance. Indiscriminate self-medication increases the likelihood of clinical complications and adverse effects, reinforcing the importance of studies investigating patterns of inappropriate medicine use and their impacts on public health (Melo et al., 2021).

In countries with more structured healthcare systems, such as Canada and Germany, supervision of medicine sales and the availability of reliable information result in lower rates of self-medication (WHO, 2023). In Brazil, regional, cultural, and economic inequalities hinder the reduction of this behavior, reflected in high rates of inappropriate medicine use, bacterial resistance, and increased clinical complications associated with drug interactions (Arroyo et al., 2024).

CONCLUSION

This study sought to analyze the risks of self-medication and drug interactions, highlighting how this widespread practice compromises the safety and effectiveness of pharmacological treatments. The objectives were achieved by demonstrating that indiscriminate medicine use, combined with the lack of professional guidance, generates serious consequences for public health, including an increased occurrence of adverse reactions and difficulties in therapeutic control among polymedicated patients.

In light of the research problem, it was found that self-medication is sustained by cultural, social, and economic factors that favor inappropriate drug use. It was observed that, despite existing efforts in educational campaigns and awareness actions, the practice remains frequent, especially among vulnerable groups such as older adults and individuals with chronic diseases. This scenario reinforces the need to expand public guidance policies, strengthen the role of the pharmacist, and invest in more accessible and continuous health education strategies.

As limitations, the dependence on studies available in scientific databases is highlighted, which may restrict the coverage of certain regional contexts or specific populations. It is recommended that future research further explore the relationship between self-medication and emerging social factors, such as the indiscriminate use of supplements and herbal medicines, as well as evaluate the impact of pharmaceutical care programs on daily population life. In this way, this study contributes to broadening reflection on the importance of rational medicine use and the need for more effective strategies to prevent risks associated with drug interactions.

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