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PARENTAL SELF-MEDICATION IN THE FORMATION OF MEDICATION-RELATED RISKS IN CHILDREN

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Abstract: This article analyzes the issue of parents self-medicating their children without consulting a physician—a significant medical and social problem. Self-medicating children is a common practice, driven by the accessibility of pharmaceutical products, a desire among parents to alleviate symptoms on their own, and a lack of awareness regarding potential adverse reactions. Age-related characteristics of pharmacokinetics and pharmacodynamics increase the vulnerability of a child's body to errors in the use of medicinal products.

Keywords: parental self-medication, children, medication-related risks, adverse drug reactions, rational pharmacotherapy, drug safety, pharmacovigilance.

Relevance:

Ensuring the safety of pharmacological treatment in children is a fundamental principle in modern pediatrics and clinical pharmacology. Medications are widely used to treat acute respiratory infections, fever, pain, allergic conditions, and other common health issues. The efficacy and safety of such treatment depend not only on the pharmacological properties of the drug itself but also on its appropriate selection, correct dosage, method of administration, and duration of use [6, 8, 12, 14].

Objectives and Tasks: To analyze current perspectives on how parental self-medication contributes to drug-related risks in children, identify the primary factors leading to the unsafe use of medications, and outline strategies for preventing drug-induced complications.

Materials and Methods: This review is based on an analysis of scientific literature concerning the issue of parental self-medication and the associated drug-related risks in children.

Results and Discussion:

1. Parental self-medication as a factor in drug-related risk

Parental self-medication arises from a complex interplay of medical, social, and behavioral factors. Common drivers include the desire to provide rapid relief for a child's symptoms, difficulties in accessing a physician, prior positive experience with a specific medication, the influence of advertising and online resources, and the common misconception that over-the-counter (OTC) drugs are inherently safe. The World Health Organization defines the rational use of medicines as the administration of drugs that are appropriate to a patient's clinical needs, in doses that meet their individual requirements, for an adequate period of time, and at the lowest possible cost [6, 25]. In pediatric practice, adhering to these principles is particularly critical; a child is not merely a "miniature adult"—the processes of drug absorption, distribution, metabolism, and excretion evolve as the child grows and develops. Research on self-medication in children indicates that the independent use of medicinal products occurs across various countries; however, its prevalence and patterns differ

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significantly depending on the child's age, socioeconomic conditions, access to medical care, and the specific regulatory framework for pharmaceuticals. It has been noted that when assessing the risks of self-medication, one must consider parental behavior and the availability of medicinal products [5, 20, 22].

Self-medication becomes a risk factor when decisions are made without regard for the diagnosis, the child's body weight, underlying health conditions, other medications already being taken, or potential contraindications. Consequently, when evaluating self-medication by parents, it is important to distinguish between the responsible use of approved over-the-counter (OTC) products—in accordance with their instructions—and the potentially dangerous practice of independently initiating a course of drug therapy.

2. Age-Related Characteristics of the Pediatric Body

The developmental characteristics of a child's body necessitate an individualized approach to drug therapy. In newborns and young children, the metabolic and excretory processes for many substances have not yet reached the level of a mature organism. As a child grows, enzyme activity, renal function, the composition and volume of bodily fluids, and the sensitivity of specific organs and systems to medicinal substances all change. Therefore, using an adult dosage—even with an arbitrary reduction in the amount—does not always guarantee safety. For many medications, the dose must be calculated based on body weight, age, clinical indications, the functional status of the organs responsible for drug elimination, and the maximum allowable daily intake. There is no universal formula for converting an adult dose into a pediatric one [6, 10].

Situations are particularly dangerous when parents use household spoons instead of proper measuring devices, misinterpret the concentration of a syrup, or administer a subsequent dose without accounting for the timing of the previous one. Such errors can lead to either ineffective treatment or an overdose [6, 11].

3. Major Groups of Medications and Associated Risks

Antipyretics and Analgesics. Paracetamol and ibuprofen are widely used to relieve pain and reduce fever. However, exceeding the recommended dose of paracetamol can cause severe liver damage. Under certain circumstances—particularly in cases of dehydration—ibuprofen can increase the risk of acute kidney injury. This risk is further heightened by incorrect dosing, overly frequent use, or the simultaneous use of multiple products containing the same active ingredient [1, 15, 24].

Antibacterial Agents. The use of antibiotics without a clear medical indication can lead to allergic reactions, diarrhea, and other adverse effects. A significant additional concern in medicine today is the development and spread of antimicrobial resistance among microorganisms [17, 18, 19, 21, 23]. Antibiotics are ineffective against viral infections; therefore, their use for most uncomplicated viral respiratory illnesses provides no benefit [2, 7].

Antitussives and Combination Cold Remedies.

Concurrent use of antitussives and mucolytics: This is considered a critical error in the treatment of a cough. Thinning mucus with mucolytics (such as ambroxol) while simultaneously suppressing the cough reflex with centrally acting antitussives (such as butamirate or codeine) causes infected secretions to stagnate in the bronchial tubes. This significantly increases the risk of developing secondary bacterial pneumonia [3, 4].

Use of centrally acting agents for productive (wet) cough: Medications that suppress the cough center in the brain (such as codeine-containing preparations, dextromethorphan, or butamirate)

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are indicated exclusively for dry, hacking, or pertussis-like (whooping) cough. Attempting to treat a typical cold-related cough with these agents hinders the natural clearing of the airways [16]. The use of such drugs requires careful consideration of the patient's age, the product's composition, and the evidence supporting its efficacy. Certain agents may cause drowsiness, agitation, heart rhythm disturbances, or other adverse reactions. Furthermore, the use of combination products increases the risk of inadvertently duplicating active ingredients.

Antihistamines: An inappropriate choice of medication or dosage can lead to excessive drowsiness, agitation, or other undesirable effects. Some first-generation antihistamines exhibit significant sedative and anticholinergic properties, necessitating extra caution when administered to children.

Herbal remedies and dietary supplements: The common belief that a "natural" origin guarantees safety is a misconception. Herbal components can trigger allergic reactions, interact with other medications, and often have inconsistent compositions. For many such products, there is limited evidence regarding their efficacy and safety, particularly in children.

4. Dosing Errors and Drug Interactions

One of the most significant factors contributing to medication-related risk is dosing error. This may stem from an incorrect calculation of the dose based on body weight, the use of an inappropriate solution concentration, failure to adhere to the prescribed dosing intervals, or exceeding the maximum allowable daily dose of a medication.

An additional risk arises from the use of medications left over from a previous illness. In such cases, parents may overlook factors like expiration dates, proper storage conditions, changes in the child’s clinical status, and the need for a re-evaluation of the diagnosis.

Drug interactions are a particular concern for children with chronic conditions who are on long-term therapy. Adding a new medication without consulting a physician or pharmacist can alter the efficacy and safety of the primary treatment regimen.

5. Potential Consequences of Parental Self-Medication

Medication-related risks associated with the independent use of drugs can be broadly categorized as follows:

- Toxic reactions: damage to the liver, kidneys, or other organs resulting from an overdose or improper use.
- Allergic reactions: skin rashes, hives (urticaria), angioedema, and, in rare instances, anaphylaxis.
- Gastrointestinal disturbances: nausea, vomiting, diarrhea, and abdominal pain.
- Compromised treatment efficacy: due to an insufficient dose, an inappropriate choice of medication, or failure to follow the prescribed regimen.
- Antimicrobial resistance: the irrational use of antibiotics, which promotes the selection of resistant microorganisms.
- Delayed diagnosis: a temporary reduction in symptoms may create a false sense of well-being, leading to a delay in seeking professional medical care.

It should be noted, however, that not every adverse event is necessarily a direct result of self-medication. Establishing a causal link requires an assessment of clinical circumstances, dosage, the timing of symptom onset, concomitant factors, and other potential causes.

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6. The Role of Parental Health Literacy

Parental health literacy is a crucial prerequisite for the rational use of medications. It encompasses the ability to understand instructions, calculate dosages correctly, recognize contraindications, and identify situations that require consultation with a healthcare professional. [9, 27]

A lack of adequate knowledge can lead to misconceptions—such as the belief that increasing a dose will accelerate recovery, that antibiotics are effective for any type of infection, or that herbal preparations are free from adverse effects. [13, 21]

7. Prevention of Medication-Related Risks

Preventing unsafe self-medication requires a comprehensive set of interconnected measures:

1. Increasing parental awareness regarding age-related restrictions, dosing guidelines, and the potential toxicity of medications.
2. Expanding access to qualified consultations with pediatricians and pharmacists, particularly when treating young children or patients with chronic conditions.
3. Fostering a responsible approach to the use of antibiotics and clarifying that the decision to prescribe them is based on specific clinical indications.
4. Encouraging the use of calibrated syringes or other dosing devices specifically designed for a given medication, as well as verifying the active ingredients in combination products.
5. Developing a pharmacovigilance system to identify, record, and analyze suspected adverse drug reactions and medication errors. Data on such incidents help identify recurring issues and improve preventive strategies. [25, 26]

Conclusion

Parental self-medication is a significant factor contributing to medication-related risks in childhood. The primary causes of unsafe medication use include dosing errors, self-medication, the irrational use of antibiotics, the duplication of active ingredients, a failure to adequately account for age-related factors, and limited health literacy among parents.

Preventing medication-related complications requires not only public education but also improved collaboration between parents, pediatricians, and pharmacists. Key priorities include ensuring access to reliable information, adhering to age-specific restrictions, ensuring correct dosing, promoting the rational use of antimicrobial agents, and the timely identification of adverse drug reactions.

Thus, enhancing the safety of pharmacotherapy in children should be viewed as a shared responsibility involving families, the healthcare system, and regulatory authorities overseeing medicinal products.

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