Literature Review

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Is Polypharmacy Pandemic Coming, or is it Already Here?

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Abstract

Polypharmacy is an important and growing problem in the modern world. With increasing life expectancy and the advances in medicine, multiple drugs are increasingly being prescribed to patients with chronic diseases. Many of them suffer from negative consequences associated with the excessive use of medications. As the number of medications prescribed grows, the risks of adverse drug reactions and the likelihood of harm increases, reaching as high as 100% for those taking eight or more medications simultaneously.

Regular review of the therapeutic regimen, better communication between medical professionals, and patient education are key to managing polypharmacy and reducing the associated complications. Physicians should pay special attention to the indications, benefits, and potential risks in patients taking multiple medications. These risks can be minimized by identifying the problem, especially among high-risk patients. Physicians have the obligation to address this problem through a variety of methods and means to improve patients' quality of life.

Keywords: polypharmacy, polypragmasia, drug interactions, chronic diseases, adverse drug reactions.

Introduction

Polypharmacy or polypragmasia is the simultaneous use of multiple medications, most commonly defined as the regular use of five 5 or more medications. The term is also associated with the misuse of multiple medications [1]. In different sources, the number of medications varies considerably, from two to eleven or more [2].

Although polypharmacy may be necessary for treatment or health maintenance, it also poses a number of risks such as adverse drug reactions and drug-drug interactions. Polypragmasia is an important and growing problem in the modern world. With increasing life expectancy and advances in medicine, multiple drugs are increasingly being prescribed to patients with chronic diseases. Many of them suffer from negative consequences associated with the excessive use of medications [1].

There is a great heterogeneity in the definition of polypragmasia - from the number of medications taken to duration of therapy and patient condition. Some sources use the terms minor, moderate, major or excessive polypharmacy, and appropriate or necessary polypharmacy [3]. Previously, polypragmasia referred to the mixing of many drugs in one prescription [4].

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Appropriate polypharmacy is the prescribing of multiple medications needed by one person for multiple different diseases. Problematic polypharmacy is associated with cases of prescribing multiple drugs without these being appropriate or cases in which the intended benefits of taking the drugs are not achieved [5]. Oligo-pharmacy is the attempt to avoid the overuse of medications, or to reduce their use to less than 5 per day [6]. Hyperpolypharmacy is a term referring to the prescription of ten or more drugs [7].
The lack of a clear, uniform definition of polypharmacy makes it challenging when health professionals have to ascertain or assess the side effects, the efficacy, the adequacy, and the safety of the therapy administered [2].

Distribution

A number of studies have shown that the eldest people take more medicines than any other age group - one third of all prescriptions. The American Association of Retired Persons reported that 87% of patients over 65 years of age regularly take prescription drugs, with an average of four medications per person[1].
Its prevalence ranges from 4% in older people living in community to more than 96% in hospitalised patients [3]. Studies have shown that the percentage of patients aged 65 years and older using more than 5 medications increased from 24% to 39% between 1999 and 2012 [8].
Between 1988 and 2010, the average number of prescripted drugs used among adults over 65 increased twice from two to four, and the proportion taking more than five drugs tripled from 12.8% to 39%. This is mainly due to the increasing use of cardioprotective and antidepressant drugs. Over the same time period, the use of potentially inappropriate medications decreased from 28.2% to 15.1% [9].
Polypharmacy is common among the elderly, nursing home residents, and those undergoing hospital treatment [10].

Risk groups

Older age, presence of more chronic diseases, higher frequency of visits to health professionals are associated with increased odds of using more medications. Increased body mass index, lower income, history of smoking were associated with more frequent use of more than 5 medications [9]. People aged 80-84 years, female, living in an urban area, with at least four chronic diseases and at least two hospitalizations in the past five years were most likely to suffer from the condition [11].
Data reveal an inverse relationship between physical activity and polypharmacy in older adults [12].
Polypharmacy is the result of simultaneous observation by different physicians of the same patient, each of whom seeks to treat the disease for which they are most competent. Increasingly, it may be the result of drugs advertising, and easy access. Not rarely it is caused by self-medication. Some patients believe that more medications taken lead to better control of their health condition.
Physicians should be aware of patient groups that have an increased likelihood of suffering from polypragmasia and efforts should be put into reviewing the appropriateness of prescribed medications and the occurrence of adverse effects potentially associated with it. The gender and the geographic location are not associated with differences in the prevalence of the condition [13].

Risks associated with polypharmacy

Adverse drug reactions can occur when taking even a single drug. They can range from relatively mild (localised changes, mucositis, xerostomia) to life-threatening - anaphylaxis, bleeding [1]. As the number of

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medications prescribed grows, the risks of adverse drug reactions and the likelihood of harm increases [4], reaching as high as 100% for those taking eight or more medications simultaneously [14]. The specific number of medications taken alone is not indicative of the appropriateness of the therapy.

Medications must be evaluated for indications, efficacy, harmfull effects, interactions with each other (not in isolation), and possible pharmaceutical interactions [15, 16]. Risks and benefits should be assessed, and benefits should outweigh risks [17, 18]. It is important to identify any inappropriate medication and to optimize the medication use in each patient, especially during a perioperative period [19]. Combining medications can lead to adverse interactions, with some medications amplifying or reducing the effects of others. A drug used to positively affect one disease may worsen another.

Polypharmacy is not necessarily negative, but can often lead to negative outcomes or poor treatment effectiveness. It is more often harmful than beneficial or poses too much risk for too little benefit. The condition requires monitoring, reviewing, and analysis to determine whether taking all medications is necessary. It is associated with reduced quality of life, reduced mobility and cognition, memory problems, functional limitations and limitation of activities of daily living [4]. Elder people taking multiple medications have poorer health status compared to those taking fewer medications [9].

Taking more drugs increases the risk of adverse reactions in older individuals due to delayed metabolism and prolonged half-life, even when there are no drug interactions. The risk increases in the presence of diseases such as renal or hepatic pathology, diabetes, asthma, malnutrition.

Patients may be unaware of the drugs they are taking. The elderly often have low health literacy, especially those aged 85 years and older. They are rarely aware of the effects, the indications, the contraindications, and the side effects of medications they are taking [20].

Additional problems caused by polypharmacy are: inability to assess the effect of one drug; increase in the number of side effects; strain on the liver or kidneys; decrease in the effectiveness of drugs when they interact with others; decreased willingness to adhere to treatment, xerostomia [21].

Patients taking a large number of medications may have difficulty adhering to complex dosing regimens, leading to inappropriate medication intake. The use of multiple medications increases the costs for patients and health systems, especially when they involve expensive medications or chronic therapy [1].

Polypragmasia is associated with multiple adverse clinical outcomes and is a growing challenge for clinical practice [3, 22].

Solving the problem

- Seeking for alternative treatment options;
- Taking analogues of a drug with a single daily intake instead of multiple;
- Prescribing combination of drugs containing several active ingredients;
- Prohibiting self-medication, taking advice from neighbours, acquaintances, even pharmacists;
- Limiting the uncontrolled use of drugs;
- Improving patient-doctor communication;
- Remedy should only be prescribed by a doctor;
- Allow sufficient time for so-called 'drug history';
- Healthy lifestyle;
- More physical activity;
- Change in the diet, reduction of harmful habits;
- Taking only medicines with proven effectiveness;
- Use clinically tested medication, not homemade ones;

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- When prescribing new drugs, pay attention to whether they will interact with those already prescribed, with which they will be taken at the same time;
- Reading the instructions for the medicine before taking it;
- When clinical status changes, and periodically, clinicians should consider modifying the dose of a prescribed medication when the risks begin to outweigh the benefits;
- Treatment with herbs, dietary supplements interact with medications;
- Prevent health complications assosiated with xerostomia;
- When the health record is available, the doctor prescribing the therapy will be able to see what the patient has been treated with. An electronic record can help detect potential drug interactions and optimize treatment;
- Motivating the patients to look after their own health;
- Clear, legible instructions on what to take - under what conditions, how often, how;
- For patients with physical disabilities and difficulty opening medication, provide easier form to open and take;
- The person or carer should consult the doctor or pharmacist if they have any questions;
- Document any problems, side effects;
- Monitoring medication compliance;
- Regular review and reassessment of treatment to optimize treatment;
- Effective communication between physicians treating the patient to avoid unnecessary or conflicting prescriptions;
- Development of methods to safely and effectively reduce or stop unnecessary medications;
- Everyone should be informed about the benefits, risks and possible side effects of the medication [21-27].

Conclusion

Polypharmacy poses a major challenge in the modern world and is inevitable when treating patients with multiple chronic diseases. Multidrug therapy can be useful in the control of various diseases, but it also carries significant risks. Regular review of the therapeutic regimen, better communication between medical professionals and patient education are key to managing polypharmacy and reducing associated complications. Physicians should pay special attention to the indications, benefits, and potential risks in patients taking multiple drugs [28]. These risks can be minimized by identifying the problem, especially among high-risk patients. Physicians have an obligation to address this problem through a variety of methods and means to enhance patients' quality of life [3].

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