

Impact of Polypharmacy on Elderly Patients: A Comparative Study of Outcomes and Risk Management

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Abstract

Polypharmacy is particularly significant in elderly patients because it increases the risk of adverse drug reactions, drug-drug interactions, and medication non-adherence. The purpose of this review paper is to uncover the effect of polypharmacy interventions on the frail elderly patients by comparing the clinical indicators, such as hospitalization, morbidity, and mortality. It also looks at the possible complications including the impact of cognitive impairment, falls, and a decline in quality of life in older adults due to numerous medications. Further, this review presents ideas regarding risk management which include medication reconciliation, deprescribing, and a part of the provider's duty to monitor and educate patients. The study also brings out the need to develop and implement patient-specific actions to reduce the chances of polypharmacy and enhance the well-being of elderly patients. This paper focuses on reviewing and analyzing various sorts of strategies that have been developed by various healthcare systems in the treatment of elderly patients who have polypharmacy issues to make suggestions that can assist in promoting the safer care of older patients.

Key words: Adverse drug reactions, deprescribing, drug-drug interaction, elderly patient, polypharmacy, risk management

INTRODUCTION

In an era with rapid advancements in medicine and an increasing elderly population, chronic disease management is a top priority for healthcare practitioners.^[1] A concerning problem, identified by the World Health Organization is polypharmacy and other improper use of drugs; polypharmacy is a serious problem threatening people's health since medicines can cause harm in some cases.^[2] Polypharmacy is characterized by the concurrent use of an excessive quantity of medications, often indicative of a substantial and potentially irrational approach to medication management. The prevalence of polypharmacy varies among different populations and rises with age.^[3] Globally, over 40% of patients aged 65 and older

are engaged in polypharmacy, with estimates reaching as high as 65% in the United States. The prevalence in Europe varies from 26% to 40%, with comparable rates in Australia (36%), South Korea (42%), and India (49%).^[2,3] This global burden of polypharmacy underscores the urgent necessity of addressing its multifaceted effects, particularly its detrimental effects on quality of life, which disproportionately affect vulnerable populations, such as the elderly.

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The elderly people are a considerable part of the global demographic and are considered heavy users of prescription medicines.^[4] Since there is a high incidence of comorbidity including hypertension, diabetes Type 2, heart disease, and arthritis among older adults they are bound to experience some diverse health complications.^[5] These long-term diseases require the patient to take many drugs at the same time, this makes elderly patients more prone to be affected by drug-drug interactions (DDIs).^[6] A literature review of studies on causes of polypharmacy involving patients from developed nations indicated that there is a high probability of DDIs, hospital readmissions, and a higher healthcare expenses.^[7] Furthermore, polypharmacy has been linked with poor results indicated by frailty, hospitalizations, cognitive impairment, physical performance compromise, and higher mortality.^[8] Qualitative research indicates that polypharmacy imposes significant emotional and physical burdens on elderly individuals. For instance, studies have shown that managing multiple medications often leads to challenges such as poor adherence, which can ultimately diminish their quality of life.^[9]

The present review will consider the impact of polypharmacy on elderly patients with reference to its benefits and drawbacks. In addition, it will examine different approaches whereby other countries have sought to manage these risks. To this end, this paper will discuss different strategies and techniques for managing polypharmacy to understand which interventions are most effective for improving medication utilization by the elderly. The necessity of healthcare professional contribution, particularly pharmacists, in the elimination of the polypharmacy-related risks and the optimization of elderly patient care, will also be covered in the review.

DEFINING AND MEASURING POLYPHARMACY IN ELDERLY POPULATIONS

Research indicates a significant variation in the prevalence of polypharmacy, ranging from approximately 4–96.5%. These differences are influenced by factors such as the definition of polypharmacy, the healthcare setting, the population age groups studied, and regional or geographic variations.^[10] It is commonly defined in two ways: This could be both quantitative and qualitative. The quantitative definition refers to the regular administration of five or more medications; this concept is used clinically to define patients most prone to adverse drug reactions (ADRs) and DDIs.^[7] But the figure on its own does not squarely sum up the situation of polypharmacy. The qualitative definition emphasizes wastage and utilizing potentially incorrect medications that can bring more harm than benefit than doing nothing. The Beers Criteria and the Screening Tool of Older Persons Prescribed to Potentially Inappropriate Medications/Screening Tool to Alert doctors to Right Treatment (STOPP/START) are

currently applied to such medications, particularly in the elderly individuals by first establishing their suitability for use based on specific predictors such as the patient's age and health status, as well as the possible interactions between the medication in question and other medications which the patient might be taking.^[11] Recent research points to an estimate that 40–50% of elderly people are being treated with multiple medications, although some studies reveal that in residents of nursing facilities, this figure may reach 80%.^[12]

FACTORS CONTRIBUTING TO POLYPHARMACY

Polypharmacy is becoming more common among elderly patients due to the number of reasons.

Chronic diseases

Older patients have more than one disease with hypertension, diabetes, arthritis, dementia, and other diseases. These may need distinct pharmacological treatment, thus creating a densely layered medication schedule (Cohen *et al.*, 2021). Due to the tendency to address several diseases and conditions at once, polypharmacy is likely to lead to DDIs and ADRs.^[13]

Framgmented healthcare system

The elderly visits different healthcare facilities such as general physicians, specialists, and nurses, and there is little or no communication between the involved parties.^[14] Without the applicable protocols for the medication administration, the prescribers may revert to making new prescriptions rather than evaluating the existing protocols.^[15] Thus, this approach can lead to duplications of other care plans hence the risk of polypharmacy and related complications.^[16]

Over-prescription

Over-prescription can happen when medical professionals are unduly cautious or symptom-focused, which causes them

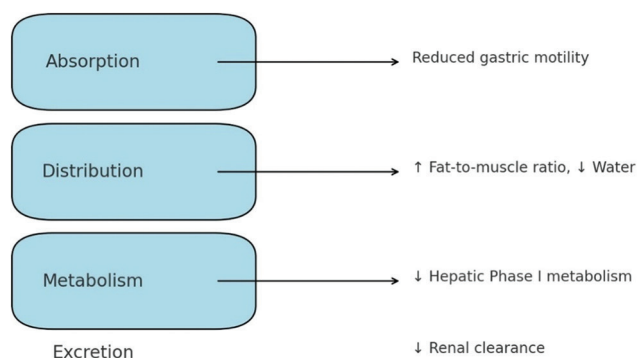


Figure 1: Impact of aging on drug metabolism

Table 1 : Strategies for optimizing medication use in the elderly

Number	Strategy	Description	Key elements/objectives
1	Deprescribing	Safely reducing or stopping unnecessary medications, especially in elderly patients who are on multiple medications	Risk-benefit analysis: Evaluate ADRs versus benefits Stepwise reduction: Gradual tapering of medications while monitoring closely
2	CGA	A patient-centered, interdisciplinary approach to assess an elderly patient's functional, physical, mental, and social health	Personalized care: Tailor interventions based on the patient's condition Interdisciplinary collaboration: Involve a team of specialists for well-rounded care
3	Patient education and shared decision-making	Involves educating elderly patients to engage them in understanding their medication plans, risks, and benefits	Improved adherence: Well-informed patients are more likely to follow through Empowerment: Involves patients in decisions, leading to more personalized care

CGA: Comprehensive geriatric assessment, ADR: Adverse drug reaction

Table 2: Challenges and barriers to risk management

Challenges and barriers to risk management	Description
Systemic barriers	Factors related to healthcare systems that hinder effective medication management in elderly patients
Lack of integrated care	Fragmented healthcare systems and incomplete medical records make medication management difficult
Time constraints	Limited time during doctor visits may prevent thorough medication review
Patient-related barriers	Factors related to the patients themselves affect medication management
Resistance to change	Elderly patients may be unwilling to stop long-term medications, even when they are no longer needed
Cultural attitudes	Cultural factors can create a reliance on medications as symbols of care, complicating deprescribing

to prescribe drugs that might not be absolutely necessary.^[17] Many elders persist with drugs that may have been prescribed sometime back but are not reviewed for continued necessity. The failure to do medication reviews from time to time means that there are medications that keep being used, which are no longer relevant or effective particularly due to change in the patient's health status.^[18]

IMPACTS OF POLYPHARMACY

There are three primary categories in which the effects of polypharmacy are classified.

ADRs

ADRs are a major and frequently negative concern among elderly patients, particularly those receiving polypharmacy.^[19] Multiple medications complicate treatment and combine the severity of potential side effects and adverse interactions between medications.^[20] Hence, more number of medications prescribed leads to a higher incidence of ADRs. It was identified that elderly patients who are on five or more medications suffer ADRs more than any other group and by estimates up to a third will suffer an ADR.^[21] Some of the more prevalent ADRs in this population include those involving balance and orientation, including dizziness; cognitive dysfunction; falls; and gastrointestinal complaints. This results in more hospitalization and other complications apart from the dangers that the elderly patient's nature them.^[22] ADRs are well-known to cause morbidity and mortality among elderly patients especially those on multiple drug therapies.^[23] According to a systematic review identified, 3.6% to a maximum of 15.6% of patients are admitted to the hospital due to ADRs.^[8] It has been reported that, out of all patients aged 65 and above, ADRs were a reason for 18.4% of the patients to the hospital, with about 16.5% of the cases caused directly by the ADRs as the primary cause or as a contributing factor to the admission. This proves that ADRs consume a lot of healthcare cost and affect the quality of life of the elderly individuals.^[24]

Functional decline

Polypharmacy is also associated with poor functional consequences in elderly patients.^[25] Polypharmacy increases confusion and client risk for falling, creates mobility issues, and further results in loss of independence.^[26] Studies have shown that polypharmacy in elderly persons is associated with a higher risk of functional impairment that impairs the elderly patient's ADLs including bathing, dressing, and meal preparation.^[27] A meta-synthesis revealed that increased

numbers of medicines are associated with greater reliance on carers and poor quality of life.^[28]

Moreover, polypharmacy is found to be a key risk factor with the elderly patient's cognitive capabilities.^[29] Some drugs also contribute to multiplied cognitive decline and thus dementia, including anticholinergics as well as sedatives.^[30] This relationship between polypharmacy and cognitive function is actually cyclic [Figure 1]: Polypharmacy induces a decline in cognitive function, which can then lead to poor medication adherence as well as more medication use.^[31]

Quality of life

A major concern of the study is that polypharmacy influences the quality of life of elderly patients. Self-reported medication discrepancies also have negative health effects; patients experience physical and psychological effects that can lower their life satisfaction. A polypharmacy state indicated by lower QoL is also associated with side effects arising from the interaction of multiple medications, visits to the healthcare facility, and multiple disease complexities in the elderly.^[32]

Work by Bories *et al.*^[6] showed that elderly patients using multiple drugs reported distress and depressive symptoms leading to poorer quality of life. Besides, ADR fear and multiple prescriptions management burden contribute to non-adherence that forms a cycle generating new health problems and QoL deterioration.^[33]

Cost implications

The costs associated with ADRs are high. ADRs result in longer hospitalization and subsequent readmissions, both of which compromise health systems and cause higher expenses. Furthermore, there are economic consequences that go beyond direct costs related to medication; ADRs negatively affect patient and caregiver's quality of life and productivity. About 40% of cases involve avoidable ADRs, which means that patients fail to have better medication management. These preventable reactions not only worsen the patient's condition but also contribute to the augmentation of overall healthcare costs.

RISK FACTORS ASSOCIATED WITH POLYPHARMACY

Polypharmacy interacts with significant risk factors that are associated with aging, the prevalence of multiple chronic diseases, and healthcare delivery systems. These risk factors cause complexity in handling medications hence increasing the vulnerability of older adults to the dangers of polypharmacy.

Pharmacokinetic and pharmacodynamic changes in the elderly

Drug metabolism and drug-receptor interaction; which are widely referred to as pharmacokinetics and pharmacodynamics respectively are influenced by aging to a greater extent.^[20] These alterations make the elderly more susceptible to ADRs and DDIs, especially with conditions of polypharmacy.

Absorption

Older people take longer to empty their stomachs, have less blood flow to the gastrointestinal tract, and could have changes in stomach acidity, all of which can slow the rate and extent to which a particular drug is absorbed into the bloodstream.

Distribution

Changes in body composition, such as increased body fat and decreased lean muscle mass, and total body water, alter drug distribution. Fat-soluble drugs may accumulate in fatty tissues, leading to prolonged effects, while water-soluble drugs may reach higher concentrations in the blood, raising the risk of toxicity.

Metabolism

Liver function normally decreases with age due to the reduced hepatic blood flow and a decrease in the activity of enzymes. This actually means that first-pass metabolism drugs are metabolized slowly thus, increasing the concentration of active drug in the body leading to side effects.

Excretion

Age-related decreases in renal blood flow and glomerular filtration rate reduce kidney function. This impairs the excretion of drugs and their metabolites, particularly for medications primarily eliminated through the kidneys, leading to drug accumulation and an increased risk of toxicity.^[34]

In addition to changes in drug metabolism, elderly patients experience pharmacodynamic alterations, which refer to the body's response to drugs. As patients age, receptor sensitivity to medications may change, leading to altered drug efficacy or increased susceptibility to side effects.^[35] For instance, elderly patients may become more sensitive to the effects of certain drugs, such as anticoagulants or sedatives, even at standard doses, raising the risk of bleeding, falls, or cognitive impairment.

Comorbidities

One of the leading drivers of polypharmacy in older adults is the presence of multiple chronic conditions, known as

comorbidities.^[36] Studies show that nearly 80% of older adults have at least one chronic condition, and more than 60% have two or more.^[15] The presence of comorbidities often leads to complex treatment regimens. Patients are prescribed multiple medications to control symptoms, prevent disease progression, and manage complications. While each medication serves a specific purpose, the combined effects can lead to DDIs and cumulative side effects, such as hypotension, electrolyte imbalances, or renal impairment. Since the patients often receive medications for multiple diseases, there is a high possibility of DDIs. In such situations, one drug may either enhance or diminish the impact or elimination of another.^[31] This is of particular importance in elderly patients with cardiovascular disease due to possible interference between anticoagulants and antiplatelets and medications, risks of bleeding, falls, or stroke.^[37]

Healthcare fragmentation

The elderly patients often suffer from various conditions that need care from several different specialists and thus they are prescribed medicine from various caregivers who may not have a complete view of the patient's medication regimen.^[38] For instance, a cardiologist is usually expected to administer drugs for heart disease, an endocrinologist specializes in managing diabetes, while a rheumatologist manages arthritis.^[37] Thus, polypharmacy is easily developed when there is no proper exchange of information and cooperation between these providers, and no one specialist is aware of the medications prescribed by another one.^[39]

In most models of delivering care, there is fragmentation of caregivers with little or no communication. This fragmentation can lead to patients' lack of awareness on medication changes and possible polypharmacy-related complications.^[40] Healthcare fragmentation, therefore, exacerbates the challenges of polypharmacy by making it difficult to ensure cohesive, well-monitored, and safe medication regimens for elderly patients. Comprehensive care coordination and communication between healthcare providers are essential to reducing the risk of polypharmacy-related complications.^[41]

COMPARATIVE STUDIES ON POLYPHARMACY IN ELDERLY POPULATIONS

This section explores more recent works as seen in the literature comparing polypharmacy-related issues as well as the impact and roles of healthcare practitioners.

Prevalence of polypharmacy across different regions

Polypharmacy does not occur uniformly all over the world and the degree of its occurrence may vary considerably from

one region to another. Many comparative analyses have shed light on the geographical and historical conditions that are behind these disparities.

According to a study conducted on patients in North America, Europe, and Asia by Delara *et al.*^[30] polypharmacy prevalence rates among elderly patients have been described. This study shows that polypharmacy is present to a different extent in these regions. In North America where access to health care like in the USA and Canada has almost maximized and there has been considerable research on new pharmaceuticals, the prevalence of polypharmacy in the elderly was reported to be between 40% and 45%. The study also pointed out that polypharmacy in this area is in major part due to the treatment of multiple comorbidities including hypertension, diabetes, and cardiovascular diseases, as well as increased availability of medicines used to treat these diseases.^[28]

Across the European countries reviews, a high polypharmacy index was noted, with indices more than 50% in Italy and Sweden.^[42] More aggressive treatment approaches toward the disease, a growing elderly population, and increased availability of treatment in countries with a health care fragmentation were some of the reasons cited for this high prevalence.^[43] However, there were differences even within Europe with Southern and Northern European countries having higher proportions of people with polypharmacy compared to Eastern Europe where people may otherwise have little access to health care or medicines.^[30]

On the other hand, Asian countries' polypharmacy prevalence was relatively low and ranged from 25% to 35%.^[10] The study claimed that this is due to cultural attitude to taking medicines and complied that people of Asian origin were less likely to use Medicines as compared with the Western countries.^[21] For example, in Japan and South Korea, traditional approaches to heal this condition include dietary changes and traditional medicine products, and not multiple medications, whence a lower prevalence of multiple medication.^[44] The cultural perspectives on non-pharmacological treatments underscore the substantial influence of societal norms and beliefs on drug adherence. Conversely, Western cultures, especially in North America and certain regions of Europe, prioritize contemporary medical procedures, placing greater emphasis on pharmaceutical remedies for chronic ailments. Furthermore, research in Ireland and the UK indicates that older people frequently weigh the perceived necessity of prescriptions against apprehensions regarding side effects. This deliberate approach may differ among cultures, where reliance on traditional medicine or holistic care diminishes compliance with polypharmacy regimens. The organization of healthcare systems is crucial; for instance, accessible and well-structured healthcare systems in Western regions may enhance adherence to polypharmacy through regular follow-ups and professional support, whereas under-resourced areas may experience lower rates of polypharmacy due to reliance on alternative therapies and limited access to care.^[4,5] In addition, the degree of freedom

in prescription in some Asian countries appears to be relatively restrained as prescribing for the elderly population often avoids the use of any medication which would cause possible adverse effects or potential DDIs.^[45]

The study conducted by Wang *et al.*^[27] also noted that these geographic variations of polypharmacy are partly explained by organizational structure of healthcare systems, cultural attitude toward medications, and the older persons' demographic characteristics in those geographical areas. As existing life circumstances continue to improve, polypharmacy is more likely to be seen in areas where elderly patients undergo more comprehensive medical examinations and receive more prescriptions.^[42] On the other hand, in areas where healthcare access is more restricted, polypharmacy rates tend to be lower, but this may also lead to under-treatment of chronic conditions.

Clinical outcomes of polypharmacy in various populations

The review of clinical databases focusing on polypharmacy and the outcomes of different populations underlines the differences in the risk factors and health consequences. A narrative review by Pazan and Wehling^[10] compared the experiences of the elderly in nursing homes who took multiple medicines with the elderly who lived independently. In the context of the findings of the study, nursing home residents had a greater proportion of ADRs and hospitalizations due to polypharmacy than did community dwellers, which points toward the necessity for different interventions regarding a range of living environments.^[46]

Systematic reviews on polypharmacy management strategies

Several studies synthesized in systematic reviews have examined the efficacy of multiple management approaches to polypharmacy in diverse settings. A review of medication review comprised medication reconciliation, regular medication reviews, and pharmacist-led clinics in the United States, Canada, and the United Kingdom. This review showed that pharmacist intervention in polypharmacy management reduced medication-related issues and enhanced patients' outcomes in all the regions under study though the effect differed depending on the region's policies and practices.

Comparative analysis of deprescribing practices

Polypharmacy management contains deprescribing as the systematic process of discontinuation of unnecessary medications.^[14] The recent works showed that the country with formal deprescribing protocols such as Australia and Canada had better results in the reduction of polypharmacy-related adverse effects than the area without such protocols.^[47]

Cultural perspectives on polypharmacy

Social and cultural practices relating to the use of drugs also have a central role in determination of polypharmacy among the elderly.^[48] A recent cross-sectional survey focused on the attitude toward polypharmacy with the discovery that cultural beliefs and perceived stigma influence medication adherence and the doctor-patient relationship.^[49] Some cultural groups prefer to take traditional remedies over prescribed drugs even in the presence of polypharmacy, meaning that culturally competent health care is needed. In some cultures, there is a tendency to prioritize traditional remedies over-prescribed medications, even when polypharmacy is present, indicating a need for culturally sensitive healthcare approaches.

COMPARATIVE STUDY: APPROACHES TO RISK MANAGEMENT IN POLYPHARMACY

Polypharmacy continues to be a major concern in elderly patient management across the world and given the emerging trends in the adverse effects of polypharmacy, different countries and or regions have developed specific approaches toward managing the issue.

GLOBAL PERSPECTIVE ON RISK MANAGEMENT STRATEGIES

To minimize the dangers imposed by polypharmacy healthcare systems in all countries have adopted different strategies based on the region due to differences in healthcare structures, rules and regulations, and patients' population. In the United States, one of the most common strategies of managing polypharmacy risk has been comprehensive medication reviews in the framework of Medicare's Medication Therapy Management (MTM) program.^[50] This approach is the key to improving therapeutic outcomes by adapting drug prescriptions to the patient's needs and monitoring the need to adjust therapy, exclude the use of drugs with a low level of effectiveness, and avoid adverse drug effects.^[51] A study reveals that MTM services have brought down the risk of ADRs and hospitalization among elderly people. In addition, the Beers Criteria is another tool in which the American Geriatrics Society outlines potentially geriatric medications that are used by care providers.^[52] These criteria are regularly updated as evolving evidence of medication risks in older populations is incorporated into clinical practice.^[53]

In Europe, countries such as Sweden and the United Kingdom are moving toward more of a deprescribing emphasis in an effort to reduce the amount of medication burden in elderly populations.^[54] National guidelines have been developed to encourage the regular review of medication regimens, in particular of patients on five or more medications.^[55] The

European Union has also implemented policies that mandate the integration of clinical pharmacists into patient care teams to ensure a more systematic approach to medication reconciliation.^[56] Furthermore, the STOPP/START criteria are applied in most European countries to identify potentially inappropriate medication therapy and to indicate appropriate therapeutic options for elderly patients.^[57]

The GCC region has also achieved some advances in handling the polypharmacy issues mainly in KSA and the UAE.^[58] The GCC countries have put in place the following regulatory measures that have been intended at enhancing the rational use of medicines to older adults.^[59] Polypharmacy monitoring programs have been developed and these include checking of prescriptions that are often given to patients who are attending different specialists for care.^[60] Furthermore, the GCC countries have adopted national prescribing guidelines regarding medication management with substantial focus on reviewing medications; especially those taken by elderly patients as well as calling for collaboration between the different caregivers to minimize on DDIs.^[61] Expansion of the role of pharmacists in providing pharmaceutical care services to patients has also been encouraged through the integration of these services in hospitals and primary health care centers so as to foster a proactive role of pharmacists in reducing the risk of polypharmacy.^[59]

ROLE OF PHARMACISTS IN RISK MANAGEMENT

The role of pharmacists in risk management, especially in the context of polypharmacy, has grown significantly in recent years.^[62] Clinically-oriented practitioners such as pharmacists are participating in medication reconciliation and deprescribing processes and resulting patient benefits.^[63]

MEDICATION RECONCILIATION

Pharmacists are critical in comprehensive medication reconciliation processes, whereby any mismatch between the medication profile of the patient and the medications he or she is currently on is detected and rectified. A paper by Daliri *et al.*^[64] reveals that medication reconciliation interventions by pharmacists have been proven to minimize medication mistakes, especially at moments of care coordination, including hospital discharge and nursing home admissions. A hospital case study showed that the implementation of pharmacist-led medication reconciliation resulted in a 35% reduction in prescription mistakes and a 15% decrease in readmission rates. This success narrative underscores the beneficial influence pharmacists exert in averting adverse drug events and maintaining precise medication records.^[6]

DEPRESCRIBING INITIATIVES

Pharmacists have also played the leading role in deprescribing interventions targeting elders and other vulnerable patients. In the study by Que *et al.*,^[65] the deprescribing programs led by the pharmacist have helped to reduce the number of medications and have shown better clinical results in elderly patients. A noteworthy accomplishment story originates from a nursing home where pharmacists evaluated the drug regimens of 200 senior people. Through the deprescribing of superfluous medications, a 20% decrease in polypharmacy was attained, accompanied by significant enhancements in patients' cognitive function and a decline in fall incidents.^[7,8]

TECHNOLOGICAL INTERVENTIONS

Electronic health records (EHRs)

EHRs have provided a convenient way to record and monitor patients' medication history/defined care records. When EHR systems include clinical decision support (CDS) features, it will notify the healthcare provider on the potential DDIs, unsuitable prescriptions, as well as duplicated therapies.^[66] A case study demonstrated that the implementation of EHR-based CDS tools in a long-term care facility decreased the occurrence of DDIs by 25%, attributable to pharmacist intervention in examining alarms and modifying prescriptions.^[9]

Medication management software

Electronic tools including artificial intelligence-based medication management system assist clinicians and pharmacists in specific elder patients to fine-tune medication protocols. For instance, AI-based software can predict ADEs and alert the clinician of possible better alternatives.^[67] IBM Watson for Health exemplifies the application of AI in analyzing clinical data to offer individualized treatment alternatives, hence assisting physicians in minimizing prescription errors and enhancing patient outcomes. The MedAware system uses machine learning algorithms to identify atypical medicine prescriptions and highlight any errors or bad interactions. Moreover, platforms such as Epic Systems and Cerner's PowerChart – both prevalent EHR systems – are integrating AI-enhanced CDS functionalities to alert healthcare professionals regarding potential DDIs, inappropriate prescriptions, and redundant therapies. These AI solutions facilitate real-time updates and collaborative access among diverse teams, thereby augmenting coordination and boosting patient care.^[10,11]

STRATEGIES FOR OPTIMIZING MEDICATION USE IN THE ELDERLY

Deprescribing

This concept is implemented through safely reducing or stopping medication that patients may no longer need or could potentially harm them; the latter is especially important in elderly patients who are much more likely to be on multiple medications.^[65] It is a slow process which focuses on the patient's health status and profile, his or her current medications, and risk factors.^[54] Key elements include [Table 1]:

- Risk-benefit analysis: Evaluating the risk of ADRs versus the potential benefits.
- Stepwise reduction: Gradual tapering, often one medication at a time, while monitoring the patient closely to avoid withdrawal or rebound symptoms.

Comprehensive geriatric assessment (CGA)

CGA is a global, patient-centered, and person-specific model of assessment of an elderly patient's functional status, physical health, mental health, and social context.^[68] It involves a team of healthcare professionals, including physicians, pharmacists, and social workers. Key objectives include:

- Personalized care: Tailoring interventions based on a thorough understanding of the patient's condition.
- Interdisciplinary collaboration: Involving specialists from various fields to ensure well-rounded care that addresses physical, psychological, and social needs.

Patient education and shared decision-making

Older patient engagement in the conversation about medication plans helps them adhere to the plans and clearly understand potential risks and benefits.^[69] Studies suggest that:

- Improved adherence: When patients are well-informed, they are more likely to follow through with medication adjustments.
- Empowerment: Educating patients about their treatment options encourages them to take an active role in decision-making, leading to more personalized and effective care.

Involvement of the patient is important particularly when the client is on several medications as this causes a higher challenge in management.^[70]

CHALLENGES AND BARRIERS TO RISK MANAGEMENT

Several systemic and patient-related factors that limit effective risk management in medication use among elderly patients include the following [Table 2].

Systemic barriers

- Lack of integrated care: Fragmented healthcare systems and siloed medical records often lead to incomplete information, making it harder to manage medication effectively.
- Time constraints: The doctors may not spend adequate time with the patients to explore most of the medications during general checkups.

Patient-related barriers

- Resistance to change: Older patients are often unwilling to stop taking a medication that has been prescribed to them for years, perhaps it is not required anymore, or may even be dangerous.
- Cultural attitudes: In some cultures, there is a strong reliance on medication as a symbol of care, which can make deprescribing difficult.

CONCLUSION

Polypharmacy increases with the aging population, incorporating complications such as ADRs, cognitive decline, and mortality. Proper medication management can improve quality of life, but poor management leads to severe complications. Key strategies include medication reconciliation, deprescribing, and geriatric assessments, supported by clinical pharmacists and technology like EHRs. Future research should focus on AI to predict drug reactions and policy reforms to improve care coordination. Multidisciplinary collaboration and patient-centered care are crucial to balancing the benefits and risks of polypharmacy in elderly patients.

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