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IMPACT OF CLINICAL PHARMACIST MEDIATED CLINICAL OUTCOMES IN GERIATRICS

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Abstract

Geriatric patients are highly susceptible to adverse clinical outcomes due to age-related physiological changes, multiple chronic illnesses, and the frequent use of multiple medications, commonly known as polypharmacy. These factors significantly increase the risk of drug-related problems (DRPs), adverse drug reactions (ADRs), medication non-adherence, hospital readmissions, and reduced quality of life. Clinical pharmacist-mediated interventions have emerged as an effective strategy to improve therapeutic outcomes and ensure safe medication use in elderly patients. Clinical pharmacists play a crucial role in geriatric care through medication review, medication reconciliation, identification and prevention of inappropriate prescribing, monitoring of adverse drug events, and patient counselling. Their involvement also supports improved medication adherence, optimization of treatment plans, and reduction in unnecessary healthcare utilization such as emergency department visits and prolonged hospital stays. Furthermore, pharmacists contribute to interdisciplinary healthcare teams by collaborating with physicians, nurses, and caregivers to provide patient-centered care tailored to geriatric needs. However, several barriers such as limited awareness of pharmacist services, cognitive impairment among elderly patients, poor health literacy, and financial constraints continue to affect the successful implementation of these interventions. Strengthening the role of clinical pharmacists in geriatric healthcare settings and promoting collaborative practice models are essential for improving patient safety and clinical outcomes. This review highlights the importance of pharmacist-led interventions as a valuable component of comprehensive geriatric care and emphasizes the need for broader integration of pharmacists into elderly patient management to address the increasing healthcare demands of the aging population.

Keywords: Geriatric patients, Clinical pharmacist, Polypharmacy, Drug-related problems, Medication adherence, Adverse drug reactions, Pharmaceutical care.

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INTRODUCTION

Geriatrics is the branch of general medicine that focuses on the social, preventive, therapeutic, and clinical aspects of illnesses in older adults. However, elderly individuals are often excluded from clinical studies, resulting in limited information regarding the safety and effectiveness of many medications [1].

Globally, the population aged 60 years and above is increasing rapidly. It is estimated that by 2030, approximately 1.4 billion people worldwide will be aged 60 years or older, compared to 1 billion in 2020. This number is expected to rise to 2.1 billion by 2050. Furthermore, by 2050, more than two-thirds of older adults will reside in low- and middle-income countries.

Aging is associated with significant physiological and cognitive changes that alter pharmacokinetic and pharmacodynamic processes. It is estimated that nearly 95% of the elderly population worldwide suffers from multimorbidity. According to the Longitudinal Ageing Study in India (LASI), multimorbidity is more prevalent among the elderly population than among middle-aged individuals in India. As the number of medical conditions increases, polypharmacy-the simultaneous use of multiple medications-also becomes common. Consequently, older adults are at a higher risk of adverse drug reactions (ADRs) and drug-drug interactions compared to other age groups.

The Comprehensive Geriatric Care Model highlights the role of clinical pharmacists in addressing polypharmacy, reducing medication-related errors, recommending deprescribing, ensuring appropriate therapy, and educating patients to improve medication adherence.[2] Pharmacist-led medication reviews have been associated with improved medication adherence and a reduction in drug-related problems (DRPs) and potentially

inappropriate medications (PIMs). Overall quality of life among elderly patients has also improved. However, studies have shown no significant association between pharmacist medication reviews and reduced hospitalizations or falls [3].

Nevertheless, evidence strongly supports the role of pharmacists in geriatric care in reducing polypharmacy and associated clinical consequences such as medication errors, nonadherence, adverse drug events, drug interactions, emergency visits, and hospitalizations [4].

This review critically discusses the clinical outcomes among geriatric patients.

MEDICATION RECONCILIATION

Medication reconciliation is the process of comparing a patient's medication orders with all the medications the patient has been taking. The purpose of this process is to prevent medication errors such as omissions, duplications, dosing errors, and drug interactions.

Medication reconciliation also refers to the actions taken by pharmacists to ensure accurate medication lists during every transition of care, thereby improving patient safety [6].

POLYPHARMACY

Polypharmacy is commonly defined by the number of medications prescribed, with the use of six or more drugs often considered the threshold [7]. Patients receiving multiple medications are at a significantly greater risk of adverse drug reactions (ADRs) and other medication-related complications.

Older adults are particularly vulnerable to ADRs due to age-related physiological changes and multiple comorbidities. ADRs affect approximately 7% of the general population and 10–20% of hospitalized patients, with higher rates observed among the elderly population. Given their generally poorer health status, older adults are more likely to experience severe consequences from polypharmacy.

Therefore, interventions aimed at reducing inappropriate medication use are essential, and pharmacists are well-positioned to fulfill this role [8].

REDUCED DRUG-RELATED PROBLEMS (DRPS)

A drug-related problem (DRP) is defined as “an undesirable patient experience involving drug therapy that actually or potentially interferes with desired patient outcomes” [9].

Clinical pharmacists provide pharmaceutical care services to elderly patients to improve medication adherence, optimize therapeutic outcomes, and minimize DRPs. Pharmacist interventions have been shown to reduce the frequency of adverse drug reactions (ADRs) and hospital visits, as many drug-related problems are preventable [10].

Medication Adherence

According to the World Health Organization (WHO), medication adherence is defined as “the extent to which a person's behavior corresponds with agreed recommendations from a healthcare provider”.

Medication adherence occurs when patients take their medications exactly as prescribed by their healthcare professionals. Medication nonadherence has long been a major concern, particularly among older adults. Due to multiple comorbidities, elderly patients are more likely to experience polypharmacy, increasing the risk of nonadherence.

Poor medication adherence can lead to disease progression, reduced therapeutic benefits, increased physician visits, higher hospitalization rates, greater healthcare costs, and even overtreatment [11-13].

REDUCTION OF HOSPITAL READMISSIONS

Hospital readmission refers to the rehospitalization of a patient within a specified period after discharge [14].

Clinical pharmacists play an important role in reducing emergency department visits and hospital readmissions through patient-centered interventions [15]. Medication reconciliation programs led by clinical pharmacists have been associated with reductions in prescription errors, adverse drug events, emergency room visits, and hospital readmissions [16].

CHALLENGES AND BARRIERS IN GERIATRICS

Lack of Awareness and Understanding

The general health status and cognitive abilities of elderly individuals significantly affect medication adherence. Patients with cognitive impairment may forget to take medications, administer them incorrectly, or fail to understand their therapeutic benefits.

Many elderly patients also lack adequate knowledge regarding their medications, including indications, dosage instructions, and side effects. Instead of identifying medications by name, they often recognize them based on color or shape [17].

Cost

Clinical pharmacists contribute significantly to cost reduction by thoroughly evaluating medication regimens in elderly patients with multiple medical conditions. Rational prescribing reduces unnecessary medication use and minimizes adverse drug events (ADEs), which are often associated with prolonged and costly hospital stays [18].

Medication Reconciliation

Clinical pharmacist interventions have proven effective in reducing medication errors and adverse drug events after hospital discharge. Through therapeutic education strategies, pharmacists empower patients and improve adherence to prescribed treatment regimens during hospitalization and after discharge [19].

DISCUSSION

Drug-related problems (DRPs) are increasingly recognized as a major public health concern. Elderly individuals are especially vulnerable to DRPs due to factors such as inappropriate prescribing and polypharmacy [20-21].

Identifying and preventing DRPs in this population is therefore essential. Studies have shown that approximately 81% of elderly patients experience DRPs. Similar findings were reported by Ramanath K et al. in an Indian rural tertiary care hospital, where the prevalence of DRPs was 83.4% [22].

Polypharmacy, commonly defined as the use of five or more medications daily, has become a growing healthcare concern, especially among older adults. Since elderly patients frequently suffer from multiple chronic diseases, they are often prescribed numerous medications. However, polypharmacy is associated with serious health risks, including adverse drug reactions, drug-drug interactions, and poor medication adherence [23].

Polypharmacy may also be defined as the administration of more medications than clinically necessary or the use of multiple inappropriate medications [24]. It increases the risk of adverse drug events (ADEs), medication duplication, and inappropriate medication use.

Studies have also demonstrated a strong association between polypharmacy and increased fall risk among elderly individuals, either due to the effects of specific medications or the cumulative burden of multiple prescriptions [25].

Interventions involving medication reconciliation and pharmacist counseling have significantly reduced preventable adverse drug events within 30 days after discharge compared with conventional care. However, these interventions showed minimal impact on overall healthcare resource utilization [26].

CONCLUSION

Clinical pharmacists play a crucial role in optimizing medication management and improving clinical outcomes among geriatric patients. Their interventions—including medication reconciliation, polypharmacy management, medication adherence support, and reduction of drug-related problems (DRPs)—greatly enhance patient safety and therapeutic effectiveness.

Pharmacist-led deprescribing programs effectively address polypharmacy, a major issue among elderly individuals, by minimizing unnecessary medication exposure and reducing adverse effects. Pharmacists also contribute to improving the overall quality of life of older adults by resolving medication-related issues and enhancing adherence. Despite these benefits, several challenges remain, including limited awareness, high healthcare costs, and difficulties in medication reconciliation. Strengthening healthcare policies, promoting interdisciplinary collaboration, and improving patient education are essential to overcoming these

barriers and enhancing the effectiveness of clinical pharmacist services.

Ultimately, integrating clinical pharmacists into geriatric care teams is vital for reducing hospital admissions, ensuring safe and effective medication use, and improving health outcomes among the elderly population.

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CONFLICTS OF INTEREST

The authors declare no conflict of interest.

AUTHOR CONTRIBUTION

All are contributed equally

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