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Empowering Hemodialysis Patients through Pharmacist-Led-Medication Adherence Programs: A Narrative Review

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ABSTRACT: Chronic kidney disease (CKD) is a significant worldwide health concern, characterized by renal injury or a glomerular filtration rate persistently below 60 mL/min/1.73 m2 for a minimum of three months. Pharmacists have a pivotal role in the management of CKD through provision of medication details, instruction and presenting individualized drug suggestions enhancing health results for CKD patients. Obstacles of medication adherence includes unpleasant taste of the medication, expenses, Illiteracy, dietary and fluid restrictions and social discomfort. These obstacles can be overcome by literate competence, medication guidance, cost effectiveness, and interpersonal communication with the patients. Thus, pharmacists can contribute to cost reduction by creating and enhancing drug protocols, as well as conducting evaluations of drug usage to identify opportunities for recommending more economical alternatives that maintain the same high standard of patient care. This review highlights the significance of pharmacist in enhancing medication adherence in haemodialysis patients.

KEYWORDS: Hemodialysis, Medication adherence, Pharmacist intervention,

I. INTRODUCTION

Chronic kidney disease (CKD) presents a significant global health challenge, leading to adverse consequences such as kidney failure, cardiovascular disease, and premature mortality.[1]The kidney play a crucial role in eliminating a large proportion of medications and their byproducts, and any impairment in renal function can lead to changes in drug metabolism, potentially increasing the risk of adverse drug reactions and making elderly individuals with CKD more susceptible to drug-related problems.[2] Hemodialysis is a therapeutic intervention that involves the extracorporeal circulation of a patient's blood to address issues such as azotemia, fluid imbalances, electrolyte disturbances, and acid-base abnormalities commonly seen in uremic syndrome.[3]Patients with CKD often experience a range of comorbidities and complications, such as hypertension, diabetes, kidney stones, infections, anemia, and hyperphosphatemia, which can significantly impact their quality of life if not managed effectively.[4] Pharmacists play a crucial role in the care of CKD patients by providing drug information, patient education, identifying and resolving drug-related problems, monitoring treatment progress, and offering personalized recommendations for medication regimens.[2]The complexity of managing multiple medications, coupled with issues like poor adherence, drug interactions and treatment cost, underscores the importance of pharmacists in reducing the occurrence of drug-related problems, ultimately enhancing clinical outcomes and quality of life.[5]

Incorporating pharmacists into multidisciplinary healthcare teams and engaging them in activities like medication therapy management, medication reviews, and reconciliation has been shown to enhance patient adherence to medications and dietary instructions, thereby reducing the risks associated with polypharmacy.[6] Collaborative medication management involving pharmacists and physicians has been recognized as an effective approach for mitigating medication-related clinical, social, and economic burdens. Studies have demonstrated that a collaborative care model with pharmacist involvement leads to improvements in health and a reduction in hospitalizations compared to standard care models lacking pharmacist input.[7] Pharmacist's involvement in healthcare teams has proven to be instrumental in optimizing medication management and overall patient well-being.[8]

II. PERCEIVED OBSTACLES IN COMPLIANCE OF MEDICATION:

The most frequently cited explanations for non adherence by the patients were issues like forgetfulness, poor tolerance to side effects, the

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burden of multiple pills, and the large size of pills. Additionally, patients also mentioned other hindrances such as unpleasant taste of the medication, complexity of the regimen in terms of frequency and dosage, challenges in opening the medication container, the process of prescription refills, medication expenses, transportation issues, limited knowledge about phosphate binder medications, dietary and fluid restrictions, understanding the significance of medication adherence, lack of motivation, feelings of monotony, being away from home, and social discomfort.[9]The World Health Organization identifies five key factors that play a crucial role in determining patient adherence to medication. These factors are categorized in the donut model into: patient-related factors, socioeconomic factors, healthcare system and healthcare professional factors, medication-related factors, and condition-related factors.Consider the patients' and caregivers' beliefs regarding medication use. It is crucial to understand their views on medication necessity to tailor adherence recommendations and develop monitoring plans for medication regimens accordingly.[10]

Expenditure: Apart from medication cost other expenditures play a significant role in influencing adherence negatively. A mere 21% of physicians are aware of their patients' out-of-pocket expenses.[11] While reducing the costs can enhance adherence, research indicates that even when medication is free or other expenditures are reduced, the impact on adherence improvement is minimal.[12,13]

Generic name of the medications: The prevalence of generic medications has increased access and reduced costs, with approximately 80% of prescribed medications now being generic. However, U.S. trademark laws result in generic pills looking different. Changing sources of generic drugs may lead to variations in appearance at each refill, resulting in a highly variable pill appearance over time.[14]

Discharge from care: Hospital Discharge is a complex and challenging process that can be confusing for patients and caregivers, contributing to medication nonadherence, errors, and adverse events.[15]Nearly half of patients experience a medical error post-discharge, often related to medications, and 12-23% face adverse drug events.[16]Physicians tend to quickly review medication lists and use medical terminology when explaining the discharge plan, which can add to the confusion.[17,18]

Skepticism: Mistrust towards healthcare systems from factors like lack of continuity with personal physicians, conflicting medical information, cost containment strategies limiting access, unethical research disclosures, medical errors, and malpractice.[19]

Illiteracy: Low health literacy poses a significant obstacle to population health, often concealed during healthcare interactions. More than 85% of patients hide their reading limitations out of embarrassment, even from coworkers and about 50% from their children.[20]

Drug Consequences:Patients' concerns about medication harm and side effects, either experienced personally or observed in others, greatly influence their behaviour. When faced with choosing between side effects and managing asymptomatic markers, patients may intentionally not adhere to medication regimens.[21]

Patients' melancholy:Depression significantly impacts medication adherence and health behaviours, with depressed patients being three times more likely to have poor adherence and health outcomes.[22]

Slip of memory: Forgetfulness is a common reason for nonadherence, accounting for only 30% of cases, yet providers often overestimate its role in nonadherence.[23]

III. RECTIFICATION OF MEDICATION ADHERENCE

Literate competence: In terms of education and health literacy, patients often remember only about 50% of the information discussed during medical visits. Therefore, effective patient education should be personalized, comprehensive, and delivered through various methods and settings beyond the clinic.[24]

Interpersonal connection: Establishing a trusting relationship through patient-centered communication can foster trust and encourage active patient participation in medical decision-making. Building long-term relationships between physicians, pharmacist and patients is crucial for trust, effective communication, and continuity of care, leading to improved information sharing and understanding of the patient's medical history and medication use.[25]

Neglectful: Involving the family is important as unsupportive family members can negatively impact a patient's adherence to their medication regimen. Recognizing the role of family support and addressing nonsupportive behaviours are essential.[26]

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Cost access:To lower costs and improve access, policy interventions such as reducing co-payments or enhancing prescription drug coverage can enhance medication adherence. Implementing value-based insurance design with lower co-payments for services and medications can lead to better adherence, disease management, and reduced healthcare expenses.[27]

Medication Reconciliation: Medication Reconciliation at hospital discharge involves discussing medication plans with patients before they leave the hospital. Patients should be informed about insurance coverage, potential medication costs, and changes to their medication regimen to prevent discrepancies that could result in adverse drug events. This reconciliation process should begin upon admission and continue through discharge, clearly noting any adjustments to dosages, frequencies, new medications, or discontinued home medications for patients' understanding.[28]

Medication Guidance: When prescribing or dispensing medication, it is crucial to communicate key information to the patient. This includes details about the medication such as what it is for, why it is being prescribed, when to take it, how to take it, and for how long. Additionally, it is important to inform patients about common side effects and any significant ones they should be aware of to prevent non-adherence.[29]

Medication Review: Encourage rational, conservative prescribing, which is an essential but not sole measure. One crucial approach to enhance adherence is to ensure patients are on the most suitable medications. Review the medication regimen to confirm its appropriateness, which may involve discontinuing unnecessary medications or adjusting doses, simplifying the regimen, and reducing costs. Commence new medications only after careful consideration of the risks and benefits for both the patient and caregiver.[10]Avoid falling into the "prescribing cascade." If a patient develops new symptoms after starting a medication can be seamlessly included in patient encounters.[30,31]

IV. OBLIGATIONS OF CLINICAL PHARMACIST:

Clinicians have the opportunity to enhance patient adherence and potentially improve disease control by recommending patients for co-management with clinical pharmacists, provided they are accessible within their practice or healthcare system.[32] Utilizing clinical pharmacist consultations for disease co-management, as well as implementing strategies like medication-taking reminders through methods such as telephone calls to encourage refills, can significantly contribute to patient outcomes.[33] It is advisable to engage clinical pharmacists for various crucial tasks, including educating patients on disease-specific objectives to minimize complications, overseeing and documenting disease-specific metrics through telephonic or face-to-face follow-up consultations, adjusting medications based on home measurements, and making refill reminder calls.[34,35]Leveraging the expertise of clinical pharmacists in these ways can greatly enhance patient care and treatment outcomes, ultimately leading to better disease management and overall health for the patients involved.[36]

V. PHARMACIST CONTRIBUTION IN MEDICATION THERAPY MANAGEMENT (MTM):

The responsibility of providing MTM services falls on the pharmacist, encompassing five essential components: medication therapy review (MTR), personal medication record, medication-related action plan, referral or intervention, and lastly, the documentation of activities.[37]Various studies conducted in Western countries have highlighted the positive impact of MTM on pediatric and geriatric populations, particularly in individuals with chronic illnesses and those managing multiple medications.[38]

VI. PHARMACIST ENGAGEMENT IN MEDICATION THERAPY REVIEW:

During the MTR process, the patient is required to present all their medications to the pharmacist, including prescriptions, over-the-counter medications, herbal remedies, and any dietary supplements. The pharmacist then conducts a comprehensive evaluation of all medications for medication-related problems (MRPs), adherence issues, and collaborates with the physician to address any identified MRPs.[39]Clinical pharmacists can address a broad spectrum of concerns related to CKD patients, such as dose adjustments in CKD, protein management, anaemia management, phosphate balance, vaccination, fluid balance, corrected calcium levels, potassium management, metabolic acidosis, sodium regulation, MRPs, and effectively managing these issues can enhance the clinical, economic, and humanistic outcomes for CKD patients. Dosing errors stand as the primary cause of MRPs in CKD patients, emphasizing the importance of correct dosage for therapeutic

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efficacy, reduced toxicity, and decreased burden. Some medications necessitate dose adjustments based on glomerular filtration rateto impede further progression of CKD.[38]

VII. PHARMACIST INVOLVEMENT IN DOSE ADJUSTMENT OF CKD PATIENTS:

The majority of CKD patients experience hypertension, which serves as both a contributing factor to the disease and a consequence of it. Controlling hypertension is vital for individuals with CKD as it aids in slowing disease progression and diminishing the risk of heart ailments.[40]Due to inadequate elimination of most drugs from the body in CKD patients, dose adjustments are imperative for hypertensive individuals with CKD based on GFR to prevent adverse drug reactions and adverse drug events. Dose adjustment is required for the management of diabetes mellitus in patients with chronic kidney disease to prevent toxicity or adverse effects induced by antidiabetic medications.[41]Certain medications must be entirely avoided based on GFR, such as metformin, which should be completely avoided in individuals with GFR below 30 mL/min/1.73m2 due to the highest risk of lactic acidosis. Incretin mimetics like exenatide should be avoided in CKD patients due to the potential to induce acute renal failure and exacerbate the chronic renal condition, as evidenced in post-market investigations.[38]

VIII. NECESSITY OF PHARMACIST IN DIALYSIS PATIENTS:

The average quantity of medications that a patient undergoing hemodialysis might receive is typically 10 prescription items along with 2 non-prescription items. This situation presents a significant challenge in terms of managing the usage of these medications effectively within a single healthcare professional team.[41] The medications used in dialysis units, such as erythropoietin, are often costly and necessitate regular monitoring of laboratory tests, adjustment of drug dosages, evaluation of both the drug's efficacy and any adverse effects, and providing guidance to the patients.

One of the challenges that arise in such scenarios is the occurrence of drug-drug interactions, given the poly-pharmacy nature of the medications consumed by these patients. These interactions can lead to various complications such as drug-drug or drug-disease interactions, emphasizing the necessity of offering appropriate consultations to prevent any undesirable consequences stemming from such interactions.[42]Considering the multitude of medications prescribed to End-Stage Renal Disease patients and the intricacies involved in their medication regimen, pharmacists play a pivotal role in carrying out a range of activities that are vital for the healthcare team. These activities encompass participating in team rounds, providing counselling upon hospital discharge, monitoring the patient's medication profile, ensuring compliance with the prescribed regimen, educating staff members, offering preceptor training, overseeing quality assurance measures, contributing to protocol development, optimizing drug utilization, and engaging in research activities.[43]

IX. CONCLUSION:

The impact of pharmacist intervention on enhancing the quality of life and patient compliance can be determined as the main conclusion drawn from the study. The current treatment system primarily focuses on enhancing the functional capabilities of patients for as long as possible, without considering the progression of Health-Related Quality of Life among the patient population. Therefore, there is a critical need to enhance educational initiatives related to different treatment methods and dispel any misconceptions surrounding various disease conditions. The research findings indicate that regular counselling sessions conducted by a clinical pharmacist at specified intervals can lead to a notably positive influence on the enhancement of quality of life, ultimately resulting in improved medication outcomes. Enhancing medication adherence could potentially have a more significant impact on public health than any groundbreaking medical breakthrough. Adhering to prescribed treatment regimens for individuals dealing with chronic illnesses can play a crucial role in preventing or delaying the onset of complications, lowering the risks of hospitalization, and ultimately reducing overall healthcare expenditures. Interventions aimed at bolstering patients' comprehension of the advantages of their medications, improving their access to prescribed treatments, and building trust in their healthcare providers and the healthcare system at large must be integrated into multifaceted strategies designed to enhance medication adherence.

CONFLICT OF INTEREST

No conflict of interest associated with this work.

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ABBREVIATIONS

CKD-Chronic Kidney Disease
MTM-Medication Therapy Management
MTR-Medication Therapy Review
MRP-Medication Related Problems
GFR-Glomerular Filtration Rate

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