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The Role of Pharmacists in Optimizing Medication Regimens for Patients with Polypharmacy

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Abstract

In order to maximise pharmaceutical regimens, reduce polypharmacy risks, and enhance patient outcomes, clinical chemists are in a unique position. Various facets of medication management fall under your purview, such as treatment, medication monitoring, and medication reconciliation. Clinical chemists and healthcare professionals work together to optimise prescription regimens, identify potential drug interactions, and customise treatment programs to meet the needs of each patient through collaborative practice agreements and interdisciplinary teamwork. Thus, there is compelling evidence to support the use of chemists in the provision of geriatric care to lessen polypharmacy and its clinical consequences, including hospitalisations, urgent or emergency room visits, medication errors, non-adherence, and adverse drug reactions. Due to the high rate of ADR recurrence, patients and the general public must bear a heavy financial burden and extended hospital stays. All social health professionals must collaborate to create clear and unambiguous evidence and, when necessary, report adverse drug reactions to pertinent intra-company, regional, or national surveillance authorities in order to lessen the impact and consequences of adverse drug reactions related to fear, mortality, and costs. To raise the frequency of adverse drug responses to medications, several nations have put in place pharmacovigilance programs. Voluntary ADR Reporting Systems (SADRRS) have also been expanded and implemented in a number of nations.

Keyword: Clinical Pharmacists, Medication Regimens, Drug Therapy, ADR Reporting System.

1 INTRODUCTION

The basic definition of polypharmacy is quite straightforward: the prescription or use of more medications than are clinically indicated. However, the term has developed over time and is frequently used in diverse settings with different meanings. The precise quantity of drugs taken does not always indicate polypharmacy because a patient may require all of the medications if they are clinically essential and suitable for them. But the chance of polypharmacy rises with the number of prescription drugs written down (Davies et al., 2020). According to a nationwide poll conducted in 2002, 25% of people in general consumed five or more prescription drugs each week. The simple definition of polypharmacy is the prescription or use of more medications than are clinically necessary, despite the fact that the term has developed over time and is now frequently used in various situations with varying meanings. Because all medications may be clinically required and suitable for the patient, the precise number of medications taken does not necessarily indicate polypharmacy. The chance of

polypharmacy, however, rises with the quantity of prescription drugs written. (Source:) 25% of people in general took five or more drugs each week, according to a 2002 nationwide poll.

Concerned about the safety, efficacy, and purity standards of pharmaceutical, biological, and related products that are traded internationally is the World Health Organisation (WHO). Following the tragedy of Thalidomide in 1961, when hundreds of thousands of congenital abnormalities resulted from the intrauterine injection of a harmful medicine intended for pregnant women, the most significant international initiatives to address drug-related issues were launched (O'Mahony et al., 2023). Following the adoption of an objective by the 16th World Health Assembly in 1963, which emphasised the need for prompt action to quickly distribute information on adverse drug reactions, the WHO established a pilot study of global drug surveillance in 1968. The idea behind this was to create a universal framework for identifying previously unknown or poorly understood adverse effects of medications.

In the past, doctors were the only ones who could handle complicated drug schedules and chronic illness treatment for patients (Dalton et al., 2020). By offering thorough medication reviews and education services to patients and doctors, chemists are now more and more in charge of overseeing patients' prescription regimens. Numerous research studies have examined the effects of chemist interventions on clinical and humanistic variables, as well as the reduction of polypharmacy. The research specifically took into account the quantity and kind of medications taken, the patients' compliance with treatment, their social and functional capacities, adverse drug reactions, and financial considerations such hospital and patient expenses. When examining patient outcomes, several of these studies have produced encouraging findings, which may point to publication bias (Bahat et al., 2020). Numerous scholarly works have demonstrated the ineffectiveness of chemist therapies. From this, it can be concluded that the risk of publication bias is minimal. Polypharmacy increases the likelihood of drug interactions, which can lead to adverse outcomes and treatment failure. Clinical pharmacists have the ability to identify potential drug interactions, evaluate their clinical significance, and implement risk mitigation strategies (Keller et al., 2024). By utilizing drug interaction databases, clinical decision support tools, and clinical judgment, pharmacists can help optimize medication regimens, minimize adverse drug events, and improve patient outcomes. Clinical pharmacist-led de-prescribing methods include discontinuing unnecessary or harmful medications. They assess appropriateness and work with patients and providers to safely reduce or discontinue substance use, reducing burden and improving patient outcomes.

Pharmacists' Role

Just four of the 17 studies that were included discussed the interventions of chemists. Two research explicitly addressed the simplification of intricate treatment regimens, whereas the third study concentrated on MHRPS and included MRC as one of the variables. Clinical chemists may be able to simplify medication regimens for elderly hospital patients if they receive prior training in this area

(Fellenor et al., 2021). MHRP was decreased by chemist MTM phone programs. Pharmacists can identify older persons with complex drug plans using MRCI; however, there is no proof that RMMR significantly lowers MRC. Nevertheless, additional included research indicated that pharmacists might play a part in MRC, noting that "clinical pharmacists have the ability to simplify the majority of prescription plans. In order to raise awareness of the chemist's role in aiding medication management and the potential to simplify complicated regimens, educational strategies are required." (page 1011);

2 RELATED WORK

The issue of polypharmacy has garnered a lot of attention lately, and numerous qualitative research on drug self-management have been carried out. Nevertheless, drug self-management in polypharmacy cannot be fully and accurately captured by the findings of isolated qualitative investigations. While some research has provided an overview of patients' experiences with pharmaceutical self-management in polypharmacy, the viewpoint of healthcare practitioners is absent, and the findings typically concentrate on medical management rather than other aspects of self-management (Fellenor et al., 2021). Reviews must be updated as research on medication self-management progresses in order to better inform clinical practice. Consequently, using the TEDSS framework and taking into account the viewpoints of both patients and healthcare providers, the goal of this systematic review is to obtain a thorough understanding of the obstacles and enablers that affect medication self-management. The findings of this thorough investigation may offer important insights for the planning and efficient execution of medication self-management programs for patients with polypharmacy, thereby enhancing patients' quality of life and lowering drug burden.

A variety of services are provided as part of the complicated and significant process of medication self-management with the goal of enhancing therapeutic results. Completing medication reviews and health assessments, keeping an eye on treatment plans and their efficacy and safety, educating patients and encouraging self-management are some of the services offered by this group. Medication adherence alone is not enough in this process (Cadel et al., 2021). The three domains of self-management are role management, emotional management, and medical management. Through a rigorous conceptual examination and conversations with patients suffering from neurological illnesses. The goal of this framework is to give patients a systematic understanding of the methods they employ on a daily basis to manage their health. The TEDSS framework consists of five goal-oriented domains (internal, social interaction, activity, health behavior, and disease management) and two extra support domains (processes and resources). These domains correspond to the traditional concepts of medical, emotional, and role management in self-management.

Inappropriate polypharmacy, which is defined as the use of needless or perhaps hazardous medications, can have serious negative effects. Appropriate polypharmacy is essential for managing complicated health issues (Ciudad-Gutiérrez et al., 2023; Gillies et al., 2007). The probability of drug-related issues, such as drug-drug and drug-disease interactions, adverse drug responses, and even

incorrect pharmaceutical use, rises virtually exponentially with the number of medications used. Lack of shared records throughout healthcare systems frequently results in patients receiving several prescriptions for the same medication or prescriptions that interact with one another, as well as occasionally additional medications to address adverse drug reactions (Cossart et al., 2022). In addition to increasing the likelihood of adverse pharmacological events like falls, cognitive, physical, and emotional problems, and even rehospitalisation, the use of many medications has a major financial impact on healthcare systems (Delara et al., 2022; Chang et al., 2020). Furthermore, a decreased ability to control drugs is linked to a rise in the quantity of prescriptions prescribed. Managing several medications can be complicated, especially if they require various dosage schedules or unique storage conditions (Kim et al., 2024; Holbrook et al., 2021). This can make it harder for people to self-manage and diminish their pharmaceutical literacy. Prescription costs can be prohibitive, especially for individuals without sufficient insurance coverage (Holbrook et al., 2021). Patients may stop taking their medicine or skip doses due to psychological stress caused by side effects or fear of interactions, as well as social constraints such social stigma and disturbed routines (Hannum et al., 2021). This can lead to improper drug usage, which can compromise the efficacy of treatment.

3 METHODS OF PHARMACOVIGILANCE

In India, patients may voluntarily use the CDSCO Adverse Drug Reaction Reporting Form to report suspected adverse drug reactions to a healthcare provider or to themselves. These comprise the suspected drug, the suspected adverse drug reaction, the reporter's information, and the patient's information who is experiencing the adverse reaction. If an adverse drug reaction results in organ damage or abnormalities, disability, mortality, or life-threatening issues, it is considered significant and necessitates intervention. Any medical practitioner, including a physician, nurse, or chemist, can report such reactions to the closest clinic. Creating medical experiments is the most significant approach to lower the risks connected with medications before they are introduced. These clinical trials are suboptimal due to the small study sample size in comparison to the large population that the medication will be introduced to. Information regarding specialised populations, such as the elderly, women, and people with certain diseases, cannot be obtained through clinical studies.

Acquiring Accurate Medication Information

Healthcare professionals, in particular primary care doctors, should educate themselves to recognise trustworthy information sources and broaden their knowledge through interdisciplinary collaboration. To give patients accurate information, health care professionals must collaborate better and make better use of local resources. When providing training, it's critical to take the patients' requirements and cultural background into account while choosing the best teaching strategies. Furthermore, it is critical to encourage family participation in the patient's care and to give patients more social support.

Many patients wish to adjust their current medication regimens, seeking to control their condition with fewer doses or fewer types of medication. However, they have concerns about the potential risks

of such adjustments and therefore desire comprehensive medication review and optimization. Some patients suggest using combination medications to reduce the complexity of management, but this approach may also pose challenges in monitoring and making necessary adjustments.

Medication Management Strategies

Our health system employs a number of medication management techniques, such as transferring patients from intravenous (IV) to oral medication, switching to IV medication administration, assessing the appropriate timing of standard medication administration, re-evaluating the use of nebulisers and mseveraletered dose inhalers (MDIs), and offering substitutes in case of emergency. Reducing and de-escalating prescriptions to eliminate needless medications, treating patients during multidisciplinary visits, reviewing adequate prophylaxis for venous thromboembolism, and eliminating medication shortages. Based on the literature, each important medication management technique was determined and put into practice. During the COVID-19 pandemic, several of the best practice efforts that were already a part of our clinical pharmacy program were further optimised. Our implementation efforts in healthcare are described with relevant findings and examples. Clinical pharmacist medication management example guidance is provided to assist others to successfully implement these medication management strategies. In figure 1 displays the Clinical Medication Management below.

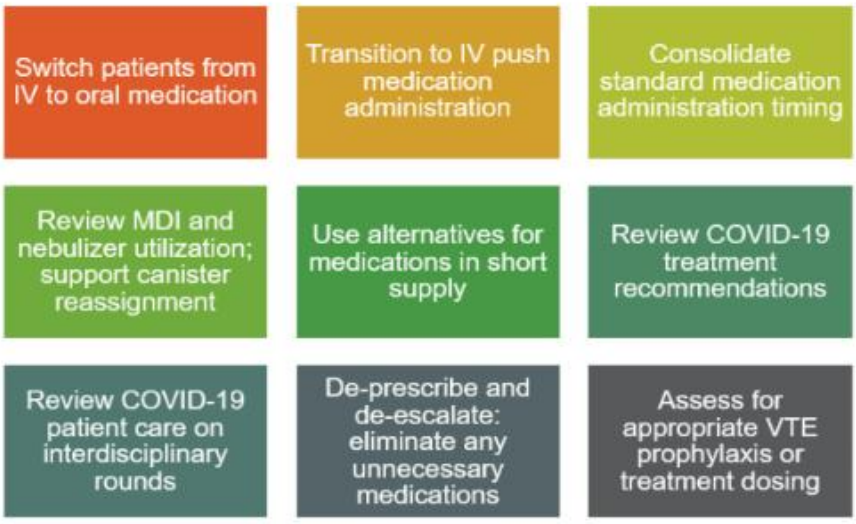

Figure 1: Clinical Medication Management

De-prescribing and de-escalating for 174 hospitals within our health system was evaluated. Of the 4,451 patients who qualified to have their prescriptions for H2 receptor antagonists and proton pump inhibitors for patients in intensive care units revoked, 2,479 (55.7%) of them did so. 3,952 patients (57.1%) out of 6,916 who had the opportunity to de-escalate their antibiotic use in March 2020 had done so. In order to optimise pharmaceutical regimens and enhance patient outcomes, de-prescribing and de-escalating entails stopping possibly unsuitable medications. The risk of falls, psychosis, depression, lethargy, adverse drug events, hospital admissions, and death is increased in polypharmacy. Clinical chemists should evaluate de-prescribing and de-escalation opportunities by taking into account

the patient's list of medications and therapy indication, the total risk of medication-induced harm, the likelihood and urgency of medication discontinuation, and the implementation and monitoring of a medication discontinuation regimen.

Medication-Error Prevention during Transition Points

Prescription errors that can be avoided are common when caring for elderly patients, regardless of whether they are being cared for at home, at a hospital, rehabilitation facility, or nursing home. Medication mistakes that occur repeatedly are widespread in nursing homes (37.3%). These errors are more damaging than ones that are not repeated, and they are more prevalent in elderly adults (over 75 years of age) who have cognitive impairment. Dosage and administration errors were the most frequent types of errors. In the US, a study was conducted on medication errors and the switch to nursing homes. During the transition phase, 11% of the almost 27,000 pharmaceutical mistakes that were recorded over a three-year period happened. The study's authors discovered using multivariate logistic regression that mistakes made inside the transition period hurt patients more than mistakes made outside of it.

Over the course of two months, integrated medication management services offered by chemists at the points of admission, hospitalisation, and discharge strongly decreased duration of stay by two days (P=.027) and increased time to readmission by twenty days (P=.027). Twelve patients were determined to require therapy after data from the integrated medication management service was analysed. In a patient-centered care setting, Kilcup et al. looked into the impact of chemists reconciling medications over the phone after discharge and the potential cost savings. Considerable decreases in readmission rates after 7 and 14 days were attained, leading to a $35,000 financial benefit for every 100 patients that took part in the intervention. The good results of pharmacist-led medication reconciliation at the time of transfer, which included lower readmission rates and lower costs, may apply to older patient populations that are more susceptible to medication errors associated to transfers. This study's inclusion of multiple studies that concentrated pharmacist efforts at the transition point and discovered effects that were clinically significant validates the importance of pharmacists.

4 RESULT

The majority of the pharmacies were individual ones, next group pharmacies, and finally pharmacies close to medical facilities like clinics or hospitals. Each pharmacy has a different daily average for the number of prescriptions filled. 40% of pharmacies receive 5–10 prescriptions a day, while the remaining 40% receive between 5 and 10 prescriptions a day (figure 2).

Figure 2: Adverse Drug Reactions and its Monitoring Methods

Every chemist handled a different number of patients each day; most pharmacists (52.5%) see fewer than 30 patients daily, while 29.3% of pharmacists see between 30 and 50 patients every day. 18.2% of chemists handled more than 50 patients throughout their working hours, and they were quite busy. Most of the chemists who took part in the survey (98.6%) reported that they had no training on adverse drug reactions (ADRs) or how to monitor them after starting their current jobs. (Picture 2) Conversely, a sizable portion of the study group (55.55%) were familiar with adverse drug responses and the techniques for monitoring them during their studies rather than later on in their professional careers.

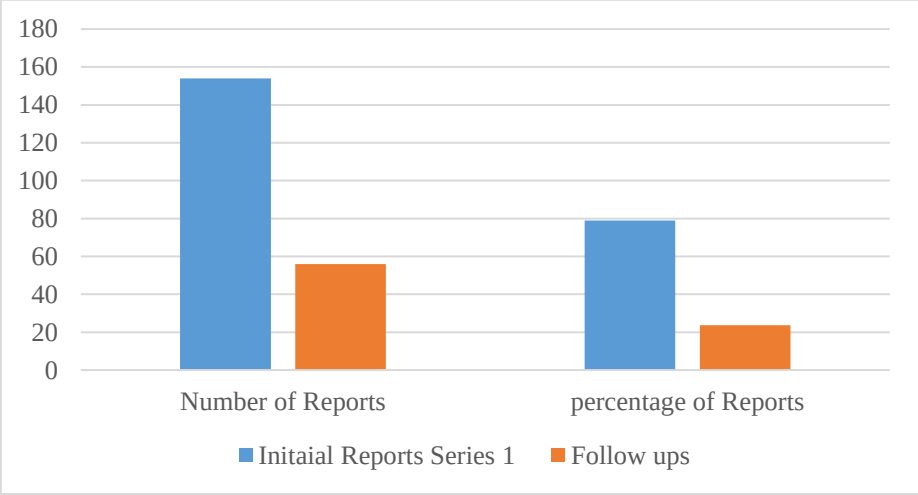

Figure 3: Distribution of ADR by Type of Reports

During the training, the 360 local chemists who made up the study population were given a pamphlet and an opportunity to speak with the researchers in person if they had any questions. (Show Figure 3) After that, they could self-report any side effects. During the short study period, 195 reports in all were received from the study population. Reports are categorised based on whether they were reported originally, initially, or during a follow-up. Out of the 195 reports, chemists submitted 15 (78.46%) initial reports and 42 (21.54%) follow-up reports.

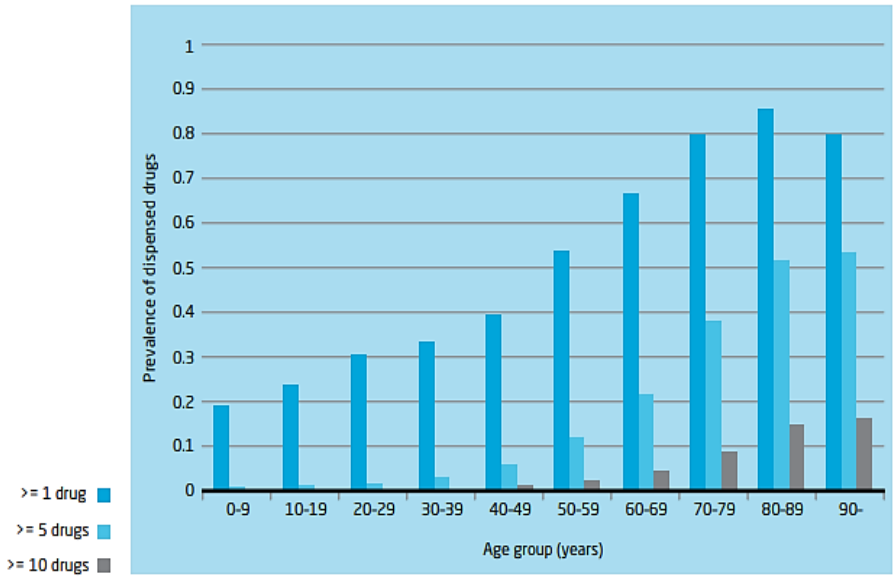

Figure 4: Polypharmacy

Geographical region as well as age differences contributed to some of the diversity (figure 4). These data, which track both routine and emergency prescriptions over the course of three months, may be applicable to other wealthy nations. According to a US population drug usage survey, 29% of patients between the ages of 57 and 85 were using five or more prescription medications concurrently. The number rose as the age and gender of the females grew.

5 CONCLUSION

Drug safety and pharmacovigilance are still in their infancy, despite the fact that India is one of the nations that produces the greatest amount of pharmaceuticals. Local chemists are still regarded, at least in certain places, as wholesalers or sellers of pharmaceuticals and medical supplies. In industrialised nations, they can play a significant role as members of the healthcare team and serve as the primary point of contact for patients. This might be feasible provided they can satisfy patients' expectations in terms of professional practice, knowledge, and attitudes about all facets of safe medication administration. A standardised questionnaire was used to evaluate participants' knowledge, attitudes, and practices related to pharmacovigilance during the study. It was discovered that throughout their academic careers and professional practises, neighbourhood chemists were not given enough knowledge or instruction in this area. The frontline pharmacists were offered a training intervention following the collection of baseline data, and remarkably, the post-intervention data revealed a considerable improvement in the KAP of the taught pharmacists in comparison to the baseline data. One of the most important fields of study that can improve the quality of life for individuals taking medication is pharmacovigilance. In an effort to lower patient morbidity and death from adverse drug reactions, frontline chemists in India should start monitoring adverse drug reactions (ADRs).

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