

## Role of Clinical Pharmacist in Improving of Medication Adherence and Quality of Life in Chronic Disease Patients: A Brief Overview

Shakeel Ahmed<sup>1\*</sup>, SS Bridar<sup>2</sup>, Aejaz Ahmed<sup>3</sup> and Shantveer Halcher<sup>4</sup>

<sup>1</sup>Assistant Professor, Luqman College of Pharmacy Kalaburagi, India

<sup>2</sup>Associate Professor, HKEs MTRIPS, Kalaburagi, India

<sup>3</sup>Professor, Luqman College of Pharmacy, Kalaburagi, India

<sup>4</sup>Associate Professor, RMES College of Pharmacy, Kalaburagi, India

**\*Corresponding Author:** Shakeel Ahmed, Assistant Professor, Luqman College of Pharmacy Kalaburagi, India.

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### Abstract

Chronic diseases causes major health issues and a large number of deaths globally. The ill patients with chronic issues should be handled by a team of healthcare expertise including of general practitioners, medical superspecialists, nurses, and clinical pharmacist's. However, the role of clinical pharmacist in the existing healthcare team has not been adequately investigated. This study, therefore, thoroughly reviewed the role and importance of clinical pharmacist as members of the healthcare team in improvement of medication adherence and quality of life in patients with chronic diseases. A vigorous online search is done using possible available database and research articles to revealed and conclude the role of clinical pharmacist. After doing vigorous literature survey referring 140 articles 19 relevant research articles are referred in the present study. The immense contribution of clinical pharmacist in the health care expertise is evident to be vital to improve health care services. Clinical pharmacist can play a vital role by getting involved with healthcare team with his collaborative efforts and he can play integral part by serving as a therapy consultant. The clinical pharmacist's participation as a member of the healthcare team emphasises the importance of health care professionals working together to provide clinical services to patients with chronic conditions. This study mentions the importance of clinical pharmacist in improving medication adherence in chronic disease patients, resulting in increased therapeutic levels of medications and an overall improvement in patient quality of life.

**Keywords:** Chronic Disease; Clinical Pharmacist; Medication Adherence; Medication Compliance; Quality of Life; Non-adherence; Adverse Drug Event

### Abbreviations

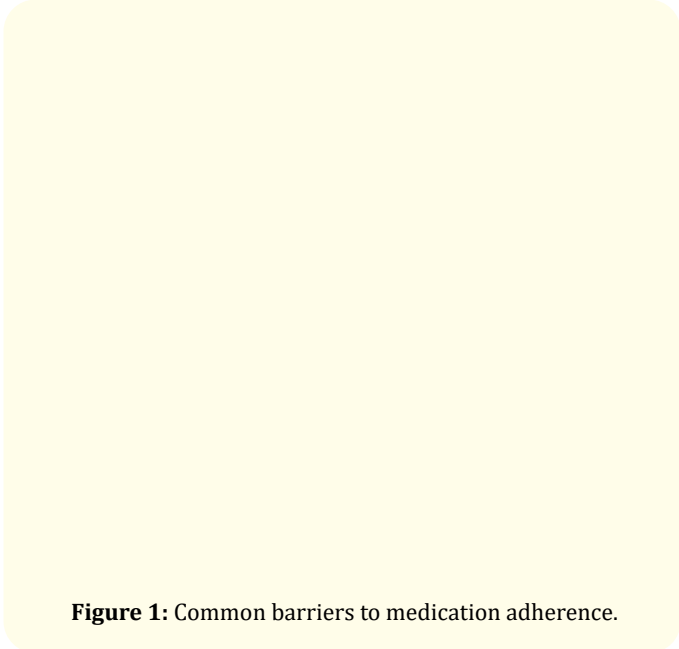
ADR(s): Adverse Drug Reaction(s); WHO: World Health Organization; HRQOL: Health Related Quality of Life; ADEs: Adverse Drug Events; QOL: Quality of Life

### Introduction

The amount to which patients take medications as prescribed by their health care professionals is referred to as medication

adherence. Non-adherence to drug therapy are very common phenomenon in chronic disease patients. There are so many factors contribute in patient non-adherence such as patient views and characters, illness, social issues, service provided to them. Patients who do not take their prescriptions as directed are at a higher risk of illness progression, mortality, and increased healthcare costs. Adherence can influenced by variety of factors. Patient, provider, and health-care-system issues, as well as interactions between

them, could be addressed as adherence barriers (Figure 1). To increase drug adherence, it will be required to identify individual barriers for each patient and to use appropriate ways to overcome them. Physicians, pharmacists, and nurses, play a crucial role in promoting patient medication adherence in their daily practices [2].



**Figure 1:** Common barriers to medication adherence.

Patients may be non-adherent at various stages of treatment. Medication non-adherence is frequent in individuals with chronic diseases such as diabetes, hypertension, geriatric patients with several co-morbidities, and patients who are on multiple pharmacological therapies. i.e. multiple drug therapy and patients with psychiatric disorders or any other disability. Non-adherence with medication can lead to inadequate therapeutic outcomes, which can have a significant impact on a patient's Health-Related Quality of Life (HRQOL) and indirectly increases healthcare expenditures. According to research studies, 50 percent of people with a chronic ailment do not take their prescriptions as prescribed, with adherence rates ranging from 17% to 80% [3].

Poor adherence to prescribed regimens might have major health consequences. According to a recent study, patients with diabetes, hypercholesterolemia, hypertension, or congestive heart failure who did not take their medications as prescribed had a hospitalisation risk that was more than twice that of the general population.

Medication adherence is becoming a major concern for both doctors and patients. Globally, non-adherence is quite prevalent, and affecting the healthcare of patients leading to inadequate response to treatment and augmented healthcare cost. With the advent of improvised practices in clinical care, patient-related problems mainly non-adherence have been conquered to a greater extent. Clinical practice is changing over a period contributing more towards patient care. Expansion of clinical pharmacy activities with a focused approach towards patient care especially optimized pharmaceutical care has seen a tremendous revolution in modern era. According to a study, 50% of chronic disease patients do not take their prescriptions as prescribed, with adherence rates ranging from 17% to 18%. Drugs used for asymptomatic chronic conditions have been shown to have low adherence rates.

The risk of non-adherence has been shown to rise rapidly with the beginning of chronic treatment, particularly in the first year of its commencement. Medication non-adherence is one of the most common cause for inadequate response to drug therapy, Initial hospitalization, frequent hospital visits and Adverse Drug Events (ADEs) leading to inappropriate therapeutic outcome and in turn, raised healthcare cost. Due to lack of adequate support, there is a significant reason for concern among healthcare providers to take the initiative and increase medication adherence practises.

Clinical pharmacists' efforts in this regard have been appreciated and documented, with clinically validated evidence of improved health-related quality of life for patients. Patient aids such as pill reminders, alarming system, dose indicator, standard day-wise schedule, colourful pills etc. have brought about a pill revolution with the goal of improving medication adherence practices all across the world. The current requirement is to observe such patients in clinical practise and motivate them to follow medication-related recommendations and, at the very least, stick to their drug regimen [5].

The clinical pharmacist evaluates each medication for indication, efficacy, safety, and convenience. They ensure there are no duplications and the doses are correct. They will also be able to determine whether there are any possible drug-dug or drug-disease interaction. They can also talk about outcomes (both clinical and patient-expected), adherence issues, side effects, and cost. Clinical pharmacists must be considered as an essential part

of healthcare system. Patient counselling is effective to resolve the problems associated with medication non-adherence and quality of life [6].

### Reasons for non-adherence

Some reasons for not taking medication are involuntary, such as forgetfulness. Some of them are voluntary, such as fear of ADRs or a negative attitude toward medications in general. Other reasons include high cost; complex regimen; lack of education; poor quality of life; busy schedule; poor patient-physician relationship; perceptions of disease severity and drug effectiveness; asymptomatic disease (e.g., hypertension, diabetes, hyperlipidemia); depression; stress; lack of social support; poor coping skills; substance abuse; and low literacy (Figure 2) [7].

**Figure 2:** Reasons for medication non-adherence.

### Adherence issues in elderly patients

It is quite natural older adults increase the use of medication to address specific symptoms, improve quantity of life, or heal curable conditions. Almost one-fifth of the elderly (those aged 65 and more) take ten or more drugs. For some elders, underlying conditions require multiple drugs from different classes, which leads to polypharmacy, causes severe health complications, this polypharmacy is unnecessary and unpleasant. Unfortunately, multiple medication use creates and contributes to adherence issues in the elderly [8].

### Methods to improve adherence

The effectiveness of therapeutic regimen depends upon both the efficacy of a medicine and patient adherence to the treatment

plan. Thus, healthcare provider as well as health care system have a great role in improving the medication adherence. Improving in single factor cannot provide 100% success rate in medication adherence. There is need to use combination of various techniques to improve patient’s adherence to their prescribed treatment (Figure 3). Following are some approaches that can be implemented to improving medication adherence.

**Figure 3:** Improving medication adherence in patients with chronic diseases.

### Level of prescribing

For improving the adherence there is need to introduce two way approaches during prescribing the medicine. Before prescribing the medicine, doctor should discuss or ask the patient for convenient preparation/dosage form and according to physibility, doctor should prescribe or change the treatment.

### Communication with the patient

- At the time of prescribing or dispensing of drugs the health care provider should explain the key information such as what, why, when, how, and how long to take medicine.
- Inform the common side effects and those that patient should necessarily know (Patient’s would be more worried and lead to non adherence due to side effects that was not cautioned to them in advance by health care professionals)
- Adherence to prescribed medications is improved : Focus on providing medication calendars or schedules that specify when to take medications, as well as prescription cards,

medication charts, or medicine-related information sheets, as well as specific packaging such as pill boxes, 'unit-of-use' packaging, and special containers that indicate the time of administration.

- Provide behavioural intervention: Assist the patient in implementing the treatment regimen into his or her daily routine (essential in those on complex drug regimens, those having unintentional difficulties in adherence e.g. elderly).

### During follow ups

Patient follow-up criteria should be established to check patient adherence to medication therapy. There are several methods as mentioned earlier can be used to measure the patient compliance during follow up of patients. This should be done by both doctors and clinical pharmacist.

- Arrange for appropriate follow up as needed: Monitoring medication adherence should be a factor when arranging patient follow-up appointments.
- Evaluate adherence during subsequent follow ups: Measure adherence by various methods which may be dependent on patient as well as drug characteristics. Assess the effectiveness of medication adherence aids used, if any. This should be done by both doctors and clinical pharmacist's.
- Identify the problems and obstacles related to adherence.
- Deal with the issues.
- Inform the patients about how the issues were resolved [9].

### Patient adherence rates by chronic conditions

Poor medication adherence to appropriate drug therapy has been shown to result in complications, death, and increased health care costs. Medication adherence in patients with chronic conditions such as diabetes, hypertension, hyperlipidemia, asthma, and depression is a significant problem requiring intervention. According to the World Health Organization's (WHO) World Health Report 2003, the incidence of medication nonadherence is so high and the consequences are so severe that promoting medication adherence might benefit more people around the world than finding new medical therapies. In fact, a number of studies have found that, in developed countries, patients with chronic diseases have adherence rates of 50% to 60%, despite evidence that medication improves quality of life and avoids death [10].

### Methods to measure adherence

Measurement of adherence has been done in a variety of ways. They're used to assess how well people take their medications. The methods of measuring the medication adherence can be classified into direct and indirect techniques of measurement. Each technique has benefits as well as some drawbacks. But no one consider as a gold standard to measure patient adherence. The basic technique of measuring adherence is from the patients self-report. Adherence of drugs in children can be done by asking questions to caregiver. Questioning patients, reviewing patient diaries, and evaluating clinical response are all simple ways to measure drug adherence. Among these questioning to patient regarding adherence indicates misinterpretation and results in overestimating the patient compliance.

Methods of assessing adherence include:

#### Direct method

- Measuring the concentration of the drug in body fluids
- Measuring the pharmacological effect.

#### Indirect method

- Tablet counting
- Patient self report
- Patient diaries
- Refilling prescription
- Recording devices etc.

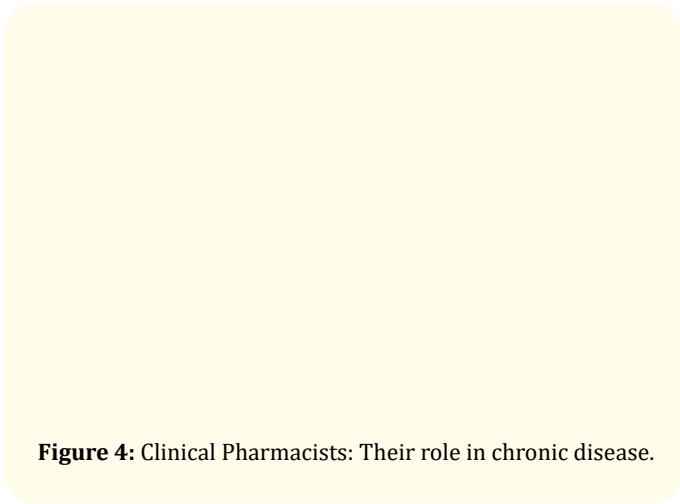
Measuring the patient adherence by using direct methods are most accurate techniques but they are very expensive and generally used in clinical trials and research.

Indirect methods for assessing the adherence include patient questionnaires, pill count, patient self report, rate of prescription refills and checking patient diaries [11].

### Clinical pharmacist interventions

A clinical pharmacist can assist the patient in achieving a better treatment outcome after determining the reasons for non-adherence. Many interventions, such as counselling, patient education, medication history interview, clinical review, ward round participation, and memory augmentation, are frequently

used to increase adherence. Clinical pharmacist have a valuable role in the management of chronic diseases (Figure 4) [12]. Several studies have been conducted to determine whether clinical pharmacist interventions can increase medication adherence and treatment outcomes. In a major meta-analysis performed to determine medication adherence (along with several other outcomes), clinical pharmacist interventions were found to enhance medication adherence (P = .001) [13].



**Figure 4:** Clinical Pharmacists: Their role in chronic disease.

Individual patients' adherence levels and the challenges they confront in taking their prescription correctly should be determined by clinical pharmacists. The patient must be informed about the benefits of adherence as well as the risks of non-adherence.

Patients' medication adherence and understanding of chronic illnesses improve as a result of a medication history questionnaire, clinical pharmacist counselling regarding the importance of medication adherence, and the distribution of information leaflets and pill cards [14].

**Medication history interview**

Patient medication history interview is a practice associated with collection and recording of information by reviewing/ interviewing of patient past and present medication used.

It provides the valuable information on patients allergic tendency, patient adherence and self medication.

**Clinical review**

Clinical pharmacists must assess medication therapy during clinical review to ensure that the patient is receiving the most suitable dose, dosage form, and duration of therapy for their medical/disease status. In order to provide better patient care, he must also correlate the patient's signs and symptoms, test results, medical diagnosis, and treatment goals with the drug history.

**Patient counselling**

Patient counselling is the process that provides oral or written medication information to patients or their representatives, including instructions on how to use the prescription, suspected adverse effects, preventive measures, food, and lifestyle changes. Clinical Pharmacist may provide information regarding the patient's present clinical condition/proceedings and teach him about safe and proper medication use, thereby improving his therapeutic outcomes. In general, patients have many inquiries concerning disease, medicines, lifestyle changes, food, treatment, therapy duration, and medical gadgets.

E.g.- Metered dose inhalers for asthma patient's or Insulin pen for diabetics.

As part of clinical practise, the clinical pharmacist can educate patients on all of these topics. A Clinical Pharmacist may give information on appropriate treatment to the patient in order to ensure drug supply, medication concordance assistant, communication of particular issues, accurate dosage monitoring, and minimal risk.

The clinical pharmacist may advice/educate the patient on the following:

- Generic name, brand name of the drug
- Dosage to be taken
- Indications/Benefits of the medication, and action that is predicted
- Proper storage is essential
- How should they take medication
- When and how long should to take medications
- Information on a medicine that has been discontinued or a medication that has been introduced

- Precautions to be taken with the medicine
- Adverse Drug Reactions that are common
- What should do, if forget to take a dose?
- Drugs and/or foods to be avoided.

Patient satisfaction, medication error prevention, improved clinical outcomes, and psychological support for the patient are all advantages of patient counselling. When it comes to chronic diseases, patient education is very vital.

Diabetes, hypertension, dyslipidemia, and other diseases present big challenges for India, and patient education and counselling are critical in all of these situations.

### Ward rounds participation

- Ward rounds participation The clinical pharmacist can participate in ward rounds as a member of the medical team.
- The objectives are to gain a better grasp of the patient's history, progress, and clinical details, as well as to provide information on clinical elements of the patient's treatment and to assist discharge planning.
- The clinical pharmacist can also assist in decision-making to select high-quality, low-cost medicines, improve patient care and clinical outcomes, and ensure that medicines are chosen according to formulary and local recommendations [15].

### Methods

The above study was done through web databases, and it included a detailed textual assessment of the roles and importance of clinical pharmacists in improving medication adherence and quality of life in chronic diseases such as diabetes, hypertension, hyperlipidemia, asthma and depression. The majority of the significant review and research publications were retrieved from websites such as Google, Google scholar, MEDLINE, Wiley library, MEDSPACE, and others. For our search, we used terms like adherence, clinical pharmacist, quality of life, and chronic disease. Only articles that focused on clinical pharmacist interventions in adherence and enhancing clinical outcomes were included.

### Results

A total of 140 articles relating to the topic of interest were found. 19 were thoroughly examined, with ten being excluded

following a thorough examination since they did not meet the inclusion criteria. Various clinical pharmacist treatments have been demonstrated in literature studies in order to improve drug therapy and obtain better clinical outcomes, safety, effectiveness, and economy.

### Discussion

Chronic diseases are diseases of long duration and generally slow in progression, Chronic disease has become a public health burden and one of the leading cause of mortality and disability in hospitals. Chronic diseases are managed by health care team comprises of general practitioners, medical specialists, nurses and clinical pharmacist [16]. A clinical pharmacist often uses a unique approach to use the drugs than a physician, and can provide useful additional information, such as drug interactions, ADRs, during the physician's decision-making process concerning potential changes of and the follow-up of the medication. Pharmaceutical care emphasizes the pharmacist's role for achieving the greatest possible patient outcomes from prescription therapy. They possess thorough knowledge of drugs, as well as good understanding of biological, pharmacological, socio-behavioral, and clinical sciences [17]. To achieve desired therapeutic goals, clinical pharmacist applies evidence-based therapeutic guidelines, emerging sciences, developing technology, and related legal, ethical, social, cultural, economic, and professional principles to achieve therapeutic goals. In accordance, clinical pharmacists assume responsibility and accountability for managing medication therapy in direct patient care settings. Their responsibilities include comprehensive medication management (i.e., prescribing, monitoring, and adjusting drugs), non - pharmacologic advising, and coordination of care. In many different clinical settings, such as chronic disease management, primary care, or specialty care, interdisciplinary collaboration clinical pharmacists to give direct patient care or consultations via telecommunication. Clinical pharmacists can help with chronic or acute disorders involving the endocrine, cardiovascular, pulmonary, gastrointestinal, and other systems. Clinical pharmacist researchers create, disseminate and apply new knowledge that contributes to improved health and quality of life in patients with chronic diseases [18].

### Conclusion

This study highlights the importance of clinical pharmacists in promoting medication adherence in chronic disease patients,

resulting in higher therapeutic doses of medications and improved patient outcomes. According to our findings the key services provided by the clinical pharmacist in hospital settings are the means for a clinical pharmacist to participate in the health care team,. These types of research will be performed in the future for all forms of chronic diseases in order to strengthen relationships between health care personnel, resulting in better patient care.

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### Conflict of Interest

No potential conflicts were reported regarding the manuscript.

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