



A Review on Barriers of Medication Adherence in the Chronic Diseases

M Kumaraswamy¹, Dr Samraksha M^{2*}, Dr Meghana M N², Dr Shreeharsha P B²

1. Associate Professor, Department of Pharmacy Practice, Sri Adichunchanagiri College of Pharmacy, B G Nagar, 571448, India.
2. Pharm D Intern, Sri Adichunchanagiri College of Pharmacy, B G Nagar, 571448, India.

*Corresponding author's E-mail: samraksha13@gmail.com

Received: 09-05-2022; Revised: 18-07-2022; Accepted: 26-07-2022; Published on: 15-08-2022.

ABSTRACT

Chronic illnesses are one of the world's most serious health problems, and the number of individuals affected is continually rising. Many of the most common chronic conditions, such as hypertension, diabetes, arthritis, and asthma, have a strong treatment component that includes medication adherence, physical exercise, and disease-specific behaviours. According to the World Health Organization (WHO), non-adherence is caused by five variables: socioeconomic factors, health-care system factors, therapy-related factors, condition-related factors, and patient-related factors. The results of treatment differed by 26% across patients with high and low adherence. Patients' morbidity, death, and preventable health-care expenses rise as a result of nonadherence. Lack of adherence was predicted to be responsible for almost 125,000 fatalities and 10% of hospitalizations in the United States in 2017. Low drug adherence is a major issue all around the world. In Hradec Kralove, the adherence rate to long-term drug therapy is reported to be between 40% and 50%. (Czech Republic). In the United States, more than 80% of persons aged 65 and up did not follow their prescription drug regimens, and more than half of patients using antihypertensive drugs ceased treatment within a year. Patients in India are only half as likely to take their medication as they should be, owing to a lack of effective education and patient counselling. Patients' timely medicine-taking behaviour has a greater impact on people's health than the need for new treatment options.

Keywords: Chronic conditions, medication adherence, non-adherence, barriers and facilitators to medication adherence.

QUICK RESPONSE CODE →

DOI:
10.47583/ijpsrr.2022.v75i02.003



DOI link: <http://dx.doi.org/10.47583/ijpsrr.2022.v75i02.003>

INTRODUCTION

Medication non-adherence is a widespread problem that causes high costs worldwide.¹⁻⁶ Especially in chronic conditions with long-term therapies, adherence is important to achieve target outcomes but is often low.⁶

Chronic illnesses are one of the world's most serious health problems, and the number of individuals affected is continually rising. Many of the most common chronic conditions, such as hypertension, diabetes, arthritis, and asthma, have a strong treatment component that includes medication adherence, physical exercise, and disease-specific behaviours.

Patient adherence, also known as compliance, refers to a patient's willingness to follow medical advice. Adherence could refer to the use of surgical instruments such as compression treatment, chronic wound care, self-directed physiotherapy activities, or counselling or other therapeutic courses.⁷ Medication adherence is defined by the World Health Organization (WHO) as "the degree to which an individual's behaviour corresponds to agreement

with any advice or suggestions from a health care professional who delivers health care."⁶

Non-adherence to therapy in patients with chronic conditions such as asthma, chronic obstructive pulmonary disease, diabetes, and cardiovascular disease frequently necessitates emergency care and hospitalizations, resulting in worse outcomes and higher treatment costs. Poor medication adherence is a major public health concern in the health-care system, particularly for non-communicable chronic conditions that necessitate lifelong pharmacological treatment.^{5,8}

Adherence and compliance are two terms that are frequently interchanged.⁹ The term concordance, which comes from the Latin word *concorder*, which meaning "to accord," was recently introduced in the United Kingdom. It is an agreement established following discussion between a patient and a health care practitioner that takes into account the patient's beliefs and wishes when deciding whether, when, and how to take medications. This is a reciprocal alliance in which health-care personnel acknowledge the primacy of the patient's decision regarding whether or not to take the prescribed medications.¹⁰

Noncompliance is classified as "deliberate" or "unintentional" according to NICE guidelines. Intentional nonadherence is defined as a patient's decision not to follow treatment recommendations, such as ignoring a doctor's advice, skipping or changing a dose, or stopping taking medication owing to negative effects. Unintentional



nonadherence occurs when a patient is prevented from taking medication due to factors beyond his or her control, such as a failure to perceive or accept the directions for use, inability to pay for treatment, or simply forgetting to do so.¹¹

According to the World Health Organization (WHO), non-adherence is caused by five factors: socioeconomic (e.g., low socioeconomic status, illiteracy, unemployment), health system-related (poor medication distribution, inadequate or non-existent reimbursement, or a lack of performance feedback), therapy-related (complexity of medical regimens, duration of treatments, or the immediacy of beneficial effects), and condition-related (severity of symptoms, racial discrimination) (knowledge and beliefs, motivations to manage or confidence).¹²

There are two types of drug adherence: adherence and perseverance. Although the two concepts are theoretically similar, adherence refers to the usage of a medicine during the course of treatment, whereas persistence refers to the duration of treatment.¹³

According to a study conducted in India, 55.14 percent of study participants were non-adherent to antidiabetic therapy, with ignorance of lifestyle change accounting for 83.78 percent of non-adherence. Due to a lack of self-discipline, 59.48 percent of them did not take their prescription medicine on time, the majority of them (85.71 percent) did not follow a diabetes diet, and fewer than half (46.61 percent) did not test blood glucose levels consistently. Non-compliance was significantly influenced by gender, occupation, and educational position.¹⁴

Females, illiteracy, urban population, irregularity of follow-ups, non-adherence to antidiabetic medication, non-adherence to exercise regimen, insulin, and insulin with oral metformin were all linked to therapeutic non-compliance in Saudi Arabia, with a prevalence of 67.9% (69.34 percent in males and 65.45 percent in females).¹⁵

In a study conducted by Gertrude Afriyie and colleagues at the University of Ghana, 34.7 percent of 259 patients between the ages of 26 and 88 years old did not take their diabetes medication, and associated factors that were statistically significant for non-adherence were age, educational level, presence of comorbidities, and financial support.¹⁶ While in Ethiopia, non-adherence was found to be 58.6% (95 percent CI: 54.7, 62.4), and major depressive disorder, one or more diabetes mellitus complications, and average income greater than 1000 birr were found to be independent predictors of medication non-adherence, respectively.¹⁷

Non-adherence to anti-diabetic medication was found to be prevalent in 31.2 percent of diabetes mellitus patients at a general hospital in Ethiopia, with side effects of medications, the complexity of the regimen, failure to remember, educational level, and monthly income being major associated factors identified in the study. In Uganda, there have been less research on non-adherence to anti-diabetic treatment.¹⁸

However, female gender, illiteracy, low social economic status, bad handwriting on prescriptions, and delayed intervals to follow up on treatments were all associated with a nonadherence incidence of 28.9% at Mulago hospital in Kampala district.¹⁹ As a result, the goal of this study was to determine the prevalence of non-adherence to anti-diabetes medication among patients in the Diabetes mellitus clinic at Mbarara regional referral hospital in southern Uganda, as well as to identify factors linked to non-adherence.

While efficient communication between healthcare practitioners and patients is important for medication adherence, proper social support and contact between patients and their families has been found to help patients adopt positive health initiatives and improve their quality of life.²⁰ Friends and peers, as well as healthcare professionals and organisations, can provide social support in addition to family.²¹ As a result, social support is diverse and may assist patients in remaining active in their care when they are confronted with physical, social, or economic challenges.²²

There could be obstacles that the healthcare provider is unaware of. The patient may face challenges in self-managing their medication, such as difficulty injecting medications, remembering to take their medications on time while working, or fear of stigmatisation. Financial difficulties might often be difficult to disclose. To discuss pharmaceutical hurdles and concerns, health care practitioners should meet with the patient without any prejudices and in a safe setting.²³

Poor drug adherence, according to the research, hinders the desired therapeutic impact, raising the risk of hospitalizations and serious health outcomes in patients, all of which contribute to their financial burden. As a result, it is recognised that patient education and the use of medication adherence approaches and technologies may be effective in improving overall population health and, as a result, lowering healthcare costs. This paper discusses many techniques to improving medication adherence that could be utilised by health care practitioners in health settings to increase patient medication adherence.

Medication Adherence Influencing Factors

Despite the fact that adherence measurements are categorised as emotional and rational, they have been classed as direct and indirect in various research. As a result, predicting treatment adherence is difficult due to the fact that each patient's condition is different.²⁴

The elements that influence adherence or any health-related behaviour are divided into three groups based on scientific research:



Table 1: Factors affecting adherence.⁹

Factors	Description
Social/ Economic	<ol style="list-style-type: none"> 1. Patients with social support from family, friends, or caregivers who can help with prescription regimens have a higher rate of adherence. 2. Instable living environments such as homelessness, limited access to health care facilities, inability or difficulty accessing pharmacies, lack of financial resources, medication cost, cultural and lay beliefs about illness, treatment, and burdensome work schedules have all been linked to lower adherence rates.
Provider- patient / Health care system	<ol style="list-style-type: none"> 1. One of the most important health-care-related factors that has a good impact on medication adherence is the finest doctor-patient relationship. 2. Nonadherence can also be caused by a lack of communication about the medication's benefits, directions for usage, and adverse effects, particularly in elderly patients with memory issues.
Provider- patient / Health care system	<ol style="list-style-type: none"> 1. One of the most important health-care-related factors that has a good impact on medication adherence is the finest doctor-patient relationship. 2. Nonadherence can also be caused by a lack of communication about the medication's benefits, instructions for usage, and adverse effects, especially in elderly patients with memory issues.
Condition- related	<ol style="list-style-type: none"> 1. Patients with chronic illnesses (high blood pressure, osteoporosis, and hyperlipidemia) who require long-term medication administration have much lower adherence to treatment regimens over time. 2. There are few or no symptoms, which contributes to the decline. It is critical that the patient comprehends the sickness and is aware of the consequences of not receiving treatment.
Therapy- related	<ol style="list-style-type: none"> 1. The pharmaceutical regimen's complexity, which includes the number of concurrent drugs and daily doses necessary; duration of therapy, lack of rapid benefit of therapy, and treatment interfering with lifestyle and side effects have all been linked to lower adherence rates.
Patient- related	<ol style="list-style-type: none"> 1. Physical limitations such as vision, hearing, and cognitive impairments, as well as swallowing problems, may increase the chance of older people not adhering to their medications. 2. Poor medication adherence may be linked to a lack of understanding of the disease and the reasons for why medicine is required; a lack of drive, fear of possible adverse side effects, and substance addiction.

Factors that Predispose to Disease

Patients' demographics, as well as their knowledge, attitudes, and views of the condition, its severity, causation, prevention, and treatment regimens, are all factors to consider. The health belief model, introduced in 1974, predicted adherence or other health-related behaviour changes based on specific thought patterns.²⁵

The following is the sequence of belief events that must occur in this approach for the patients to remain adherent:

- Patients must believe their health is in risk, and they must assess the condition's potential in terms of symptoms, lost time at work, financial strain, and other factors.
- Patients should believe that the advantages of treatment outweigh the costs after considering their circumstances.
- Patients should feel obligated to take their medication exactly as directed.

Key Factors that Improve Medication Adherence

These are the skills and resources required for compliance. A patient's ability to adopt behaviours that will help them stick to their medicine regimen and, as a result, arrange an appointment with their doctor to obtain a prescription order is referred to as talent. The term "resources" refers to health-care facilities such as doctors, pharmacies, clinics, and hospitals, as well as their accessibility and reachability.²⁶

Factors that Emphasize the Medication Adherence

Patients would be supported by members of the local community, peers, and health-care providers, who would encourage them to take their prescriptions as prescribed by their doctor. These characteristics have an impact on whether the patient's family is willing to assist with medication adherence. Because some people are more influential than others, this support can be good or harmful, depending on the attitude or behaviour of those involved.²⁷

Barriers to Medication Adherence

1. Patient specific barriers
2. Illness specific barriers
3. Medication specific barriers
4. Healthcare and system specific barriers
5. Social and culture specific barriers
6. Logistical and financial barriers

1. Patient specific barriers:

Patients may lack the necessary knowledge or information to adequately recognize their pharmaceutical regimen. Patients may have given prescription information and adherence counselling at the start of their sickness, but there was little follow-up, resulting in forgetfulness.²⁸



It may be difficult to modify the information offered if the patient is really ill at the time of counselling, and misconceptions may develop. Patients may be unaware of the importance of taking their medications exactly as prescribed, and so may change their doses accordingly.^{29,30} They might have erroneous or wrong beliefs regarding drugs.³¹ They may be depressed and believe they have no control over the sickness.³² Lack of routines, stress, or changes in behaviours for special events are all risk factors for medication adherence, and can easily result in missed doses or sleeping through dosing periods.³³

Medication adherence has been shown to be influenced by stress and feelings of helplessness.³⁴ Injectable medications can be uncomfortable to use, and some patients believe that injecting them would kill them.³² Physical limitations can also be a hindrance while administering medicine, which may necessitate good eyesight or a steady hand.³⁵ Poor health literacy makes adherence more difficult, and it can be difficult to interpret written language, especially if it is not written in the patient's native language.^{36,37} Non-adherence may be exacerbated by comorbidity.³⁸

Non-adherence was found in 40% of patients receiving antidepressants, 39% of those receiving oral blood glucose-lowering agents, 33% of those receiving blood cholesterol-lowering agents, and 24% of those receiving blood pressure-lowering agents in a study of Saskatchewan's senior population (aged 65+).³⁹ Patients who do not take their drugs on a regular basis have poorer outcomes than those who do. Patients who do not take their antihypertensive drugs as prescribed are half as likely to reach their goal blood pressure levels.³⁹ Similarly, poor adherence to cholesterol-lowering drugs is linked to a 25 to 27 percent increase in LDL levels and a 26 percent increased risk of experiencing cerebrovascular events.⁴⁰ Non-adherence to oral blood-glucose-lowering drugs is associated with a 58 percent increased risk of hospitalisation and an 81 percent increased risk of death in diabetic patients.⁴¹

2. Illness specific barriers:

The disease is not often the patient's top priority, contrary to healthcare professionals' expectations.^{42,33,43} It may be an unpleasant occurrence, but it is little in comparison to other concerns. A patient's emotional reaction to the sickness may be negative, and he or she may value life before the illness more highly. It's possible that making the necessary lifestyle modifications isn't a top priority. Patients may also rationalise that their illness isn't serious enough that they don't need to take their medication exactly as directed. The patient's decision to take or not take treatment may be influenced by how seriously they evaluate their situation.⁴⁴

Sometimes the problem is that the patient refuses to acknowledge his or her condition or believes it is the fault of someone else. Negative thoughts about illness or many diseases might increase medication adherence hurdles,

albeit this varies by situation.⁴⁵ Cancer is more life-threatening than diabetes, yet diabetes can have serious repercussions if it is not controlled properly. The condition itself can produce lethargy and exhaustion, which can make it difficult to stick to a treatment plan.⁴⁶

3. Medication specific barriers:

Patients may be unaware of their disease or the treatment they require at the time of commencement of illness.^{47,48} They may be perplexed regarding the duration and prognosis of their sickness.^{49,50} They may perceive treatment to be time-consuming and difficult. In the eyes of patients, taking medication is connected with being sick, which might have a detrimental impact on adherence.⁵¹ Patients may be unable to take their medication as prescribed due to difficulties integrating it into their daily lives. Working life may include shift work, and night hours can make maintaining a regular pattern difficult.⁵² Furthermore, the illness may not manifest itself in the form of observable symptoms, and patients may not feel ill.⁵³ Patients also worry that once they start taking a drug, they will have to take it for the rest of their lives.⁵⁴

If a patient's pharmaceutical information is insufficient and does not suit their needs, they can turn to additional sources of information, such as the internet.⁵⁵ It's possible that a patient information booklet included in a medicine packaging will be difficult to comprehend. The presence of side effect warnings on the package can lead to a patient deciding not to take the medication. Generic substitution might lead to doubts about a generic drug's effect when compared to the original medication, lowering adherence.⁵⁶ The media can also impact public perceptions of drug quality.⁵⁷ Patients' urge to self-regulate their life may cause them to utilise non-prescription substances rather than prescribed medications.⁵⁸

Side effects appear to be a common roadblock to drug compliance. Patients may refuse to take their medication out of fear of not being safe with it.⁴⁷ Physical hurdles to medication-taking exist as well: the size of the tablet can make it difficult to swallow, there may be an unpleasant metallic aftertaste, or there may be throat soreness.⁴⁸ Insulin injections can be hampered by needle fear. Patients may experience a disadvantage when switching from oral pills to injectable medicines.⁵¹

4. Healthcare and system-specific barriers:

Poor medication adherence is caused by a lack of access to healthcare and excessive wait times.⁵⁹ Treatment issues can be caused by fragmentation of treatment among many prescribers, a lack of communication between a general practitioner and a community pharmacist, and a lack of coordination between primary and secondary care. These factors can lead to the termination of treatment.^{59,60,61}

Adherence can be harmed by a lack of support and empathy from healthcare personnel, as well as a paternalistic attitude.^{52,62,63} Inadequate patient counselling results from poor patient-provider relationships, leaving the patient alone to deal with



medication issues.⁴² Patients cannot freely share side effects and other concerns about their medicine without trust-based patient-provider dialogue.^{64,65} Patients' self-efficacy can be impacted if healthcare personnel are unable to discuss adherence issues with them and take their concerns and experiences seriously.^{66,67} Lack of faith in doctors and scepticism of their expertise may exacerbate the illness's severity and have a significant impact on a patient's adherence behaviour.⁴⁷

According to the scoping review conducted by Kirsi Kvarnström et al, the person's sickness was not always a top priority. Many other things can take precedence in people's lives over their own ideal disease self-management. Healthcare practitioners must pay more attention to patients' thoughts and worries, as well as have more time to listen to their experiences with the disease, in order to improve drug adherence. Patients place a high importance on doctor-patient interactions built on trust.⁶⁶

5. Social and culture specific barriers:

In HIV/AIDS and non-communicable diseases, humiliation is a common factor for non-adherence.⁶⁸ It's possible that patients don't want their sickness to be known. The fear of being humiliated might be so strong that a patient will refuse to take their medication if they think someone is monitoring them. Work-illness balance can be tough.⁶⁹ The absence of significant others' support can have a major impact on adherence and disease control.^{70,71}

Traditional alternatives, such as homoeopathic treatments or procedures, are more "natural" than conventional medicine.^{65,72,73} Patients with a strong religious faith may choose to prefer religious practises over medication. Fasting during Ramadan and the usage of holy water can have a substantial impact on medication management and may be the primary reason for medication adjustments to match religious contexts and routines better.⁶⁸ Patients who feel that praying will cure them may stop taking their medication.⁷⁴

6. Logistical and financial barriers:

Medication expenses and financial hardship are important impediments to medication compliance.⁷⁵ Unemployment and financial hardship might have an impact on one's potential to purchase medications. Medicines are unlikely to be a top priority for a patient who does not have enough money to acquire basic essentials like food and clothing.⁷⁶ Traveling to the clinic might be challenging, especially in developing countries.⁴⁷

The expense of medicine can be burdensome if insurance coverage is insufficient or if there is no insurance at all.⁷⁶ Medicine shortages and availability at the clinic or pharmacy, particularly in underdeveloped countries, might pose a serious threat to patient continuity.⁴⁷

The results of treatment differed by 26% across patients with high and low adherence.⁷⁷ Patients' morbidity, death, and preventable health-care expenses rise as a result of nonadherence.^{78,79} Lack of adherence was predicted to be

responsible for almost 125 000 fatalities and 10% of hospitalizations in the United States in 2017.⁸⁰ Low drug adherence is a major issue all around the world. In Hradec Kralove, the adherence rate to long-term drug therapy is reported to be between 40% and 50%. (Czech Republic).⁷⁷ In the United States, more than 80% of persons aged 65 and up did not follow their prescription drug regimens, and more than half of patients using antihypertensive drugs ceased treatment within a year.^{81,82}

Besides, financial support is a significant part of family support, as widely documented in existing literatures. According to Cohen and Wills,⁸³ Winemiller divided social support into 5 categories, one of which was fundamental support, referring to financial aid and material resources.²⁹

Facilitators to Medication Adherence

1. Informational, Motivational and Behavioural Factors
2. Healthcare and System-Specific Facilitators
3. Logistical and Financial Factors

1. Informational, motivational and behavioural factors:

Adherence requires a thorough awareness of the condition and its treatment, as well as how drugs improve quality of life.⁵⁸ In self-managing chronic illnesses, the ability to incorporate drugs into daily life enhances adherence.⁷⁵ Low toxicity, few side effects, and oral delivery appear to encourage treatment adherence.^{55,75} Pillboxes, clock or smartphone alarms, and taking pills during regular TV and radio programmes are some of the things that can help with medication taking.^{84,59}

A crucial facilitator is the patient's motivation. When a patient realises the medication's importance, motivation improves, and it leads to favourable health outcomes.⁷⁶ Medication adherence might be influenced by significant life events. When a significant consequence arises, the importance of avoiding problems and sustaining health is emphasised, and the patient's priorities may be re-evaluated.^{42,53,35} Medication adherence is aided by a strong desire to return to "normal life".⁸⁵

Concerns about sickness have been shown to promote adherence and motivation to take medication as directed.^{75,86} Medication adherence may improve if patients have lived through the experience of their condition and its subsequent detrimental impact on functional capacities.⁸⁶ Knowing that halting or altering prescriptions could worsen the disease can motivate people to better self-manage their medications.⁷⁵ The patient's treatment objectives must be realistic and attainable.³³

Adherence is aided by the support of family and friends, as well as co-workers. It may necessitate the patient's revelation of the disease, which can be frightening.^{47,68} The patient's ability to manage with the condition is aided by social acceptance.



When dealing with practical challenges in everyday life, self-efficacy is a necessary skill. The chances of improved adherence are higher if the patient takes ownership of self-managing the prescription and understands how to modify medications if the disease worsens.^{47,87} Self-empowerment and a good attitude toward medication are promoted by feeling accountable and having a strong belief in the efficacy of medication.⁴⁶

Moreover, the research by Turan et al. concluded that the level of perceived support from the families was higher than the perceived level of support from friends or other individuals.⁸⁸ These confirm the importance of enhancing family support for each hypertensive patient.

2. healthcare and system-specific facilitators:

Medication adherence is dependent on a trusting, collaborative, and respectful patient-provider relationship.⁵³ Patients require easy access to healthcare as well as adequate time for talks.⁵⁵ Adherence might also be aided by a desire to please or a fear of offending healthcare providers.⁵³ Patients want to communicate with health care providers in a personal manner and have a continuous communication with them.⁷⁹ Adherence appears to be encouraged by healthcare providers' support and easily accessible care.⁵²

3. logistical and financial factors:

Medication adherence requires financial flexibility. The household's earnings and expenditure balance allows them to purchase basic items like food, clothing, and medicine without having to prioritise.⁷⁵ Furthermore, having adequate insurance coverage ensures financial security, as opposed to having none at all.

Imparting Appropriate Knowledge

Understanding the treatment conditions of patients has consistently been linked to adherence, contentment, recollection, and the sort of information offered to caregivers by caregivers, according to study. According to several studies, people do not always understand prescription instructions and typically forget major amounts of what healthcare providers said concerning therapy.^{89,90} Doctors can give successful and beneficial patient education by limiting instructions to three or four primary issues during each talk. Simple ordinary language may be utilised by the healthcare practitioner, particularly when describing diagnosis and providing directions. Written materials could be used to supplement the doctor's advice. Family members and friends of the patient may be invited to participate in the doctor's discussion of the treatment plan or diagnosis. This is especially true for the millions of people who are illiterate.⁹¹

Modifying Beliefs and Human Behaviour

Patients' beliefs, intentions, and self-efficacy must all be addressed in today's world (perceived ability to perform action). Patients who perceive themselves to be at risk due to a lack of healthy behaviour adoption (perceived

susceptibility), who perceive their medical conditions to be serious (perceived severity), who believe in the positive effect of the suggested treatment (perceived benefits), who have channels to address their fears and concerns (perceived barriers), and who perceive themselves to have the necessary skills to perform the suggested treatment can all benefit from behaviour change (self-efficacy).^{99,100} As a result, knowing which of these beliefs is assumed to be important for effective adherence, the physician can tailor the treatment to each patient's specific needs.⁹²

Evaluating Adherence

Because adherence evaluation is so critical, it's crucial to accurately measure and analyse patient compliance. It can be done using a variety of methods, including patient self-reports, pill counting, and, in some situations, monitoring blood or urine drug levels. Patients can be highly accurate in reporting whether or not they are complying to their treatment regimens if physicians ask them directly, and regular assessments of patient adherence can lead to increased patient adherence.⁹³

Tips to Improve Medication Adherence

Physicians must create strong physician-patient relationships in order to promote patient adherence. In health-care education, improving adherence has been a never-ending loop. We asked patients to bring all of their medications to each office visit, as most practises do, so that the observers could accommodate them at the point where they had already started a programme to keep patients out of health-related problems and reduce readmissions. The medication adherence programme is used to assess and monitor each patient's compliance with their prescription medications.

The following points are stressed in order to determine whether they have problems filling, taking, or controlling the expense of their medicines.⁹⁴

1. Results are discussed.
2. Keep a record of it
3. Collaborate with patients
4. Consider the patient's financial worth.
5. Assess the effectiveness of well-being education
6. Reduce the degree of unpredictability
7. Reconnect with patients.

Role of Pharmacist in Medication Adherence

Patients' adherence to prescriptions is greatly improved by drug specialists. They can confirm that patients are taking the correct medications and that they are not taking any additional medications that could jeopardise the treatment plan's success. Drug treatment management can aid drug specialists in identifying patients at risk and assisting them in resolving prescription adherence problems.⁹⁵



They can teach patients on how to take their medications correctly and when to take them, as well as how to use the right drug store apps to get medication updates on their phones. Other clinical interventions that drug specialists can use to encourage their patients to take accurate measures on time, acquire refills on time, and manage symptoms of drugs in an emergency situation include.⁹⁶

Using the following strategies, the patient-pharmacist interaction can be improved:⁹⁷

1. Patients should be greeted by pharmacists who are courteous and approachable.
2. They must be able to successfully communicate.
3. The pharmacist must take into account the patients' physiological needs.
4. They should provide patient counselling and help patients learn more about their condition.
5. They should encourage each patient to express their problem without being interrupted or the session being ended prematurely.
6. They should get the patient's perspective on the sickness, as well as the sentiments and expectations that go along with it.
7. They should use the active listening method and demonstrate empathy with the patients.
8. They should provide patients with a clear explanation.
9. They should assess the patient's understanding of the ailment and the medications.
10. They should talk to the patients about therapy options.

CONCLUSION

We learned in this article that medical adherence refers to a person's willingness to follow a healthcare provider's instructions.

Adherence to prescribed drugs is linked to better clinical outcomes for chronic illness treatment and lower chronic disease mortality. When compared to individuals without comorbid disorders, patients with comorbid conditions had lower medication adherence. According to numerous research conducted over the last ten years, Medication side effects, presence of comorbidities and negligence of patients have been identified as a key cause of medication non-adherence in patients with chronic conditions. Patients are only half as likely to take their prescription as they should be, due to negligence, financial problems, lack of proper education and side effects of medications. The importance of patients taking their medications on time has a greater impact on their health than the need for new treatment choices.

In essence, adherence is a critical component of drug therapy management that must be addressed in the patient's care in order to achieve the best possible therapeutic result.

REFERENCES

1. Bitton A, Choudhry NK, Matlin OS, Swanton K, Shrank WH. The impact of medication adherence on coronary artery disease costs and outcomes: a systematic review. *The American journal of medicine*. 2013 Apr 1;126(4):357-e7.
2. Cutler RL, Fernandez-Llimos F, Frommer M, Benrimoj C, Garcia-Cardenas V. Economic impact of medication non-adherence by disease groups: a systematic review. *BMJ open*. 2018 Jan 1;8(1):e016982.
3. Laufs U, Böhm M, Kroemer HK, Schüssel K, Griese N, Schulz M. Strategien zur Verbesserung der Einnahmetreue von Medikamenten. *DMW-Deutsche Medizinische Wochenschrift*. 2011 Aug;136(31/32):1616-21.
4. Brown MT, Bussell JK. Medication adherence: WHO cares?. In *Mayo clinic proceedings* 2011 Apr 1 (Vol. 86, No. 4, pp. 304-314). Elsevier.
5. Hansen RA, Kim MM, Song L, Tu W, Wu J, Murray MD. Adherence: comparison of methods to assess medication adherence and classify nonadherence. *Annals of Pharmacotherapy*. 2009 Mar;43(3):413-22.
6. Sabate E. Adherence to long-term therapies: evidence for action: Weltgesundheitsorganisation; 2003. Available from: URL: <http://apps.who.int/iris/bitstream/handle/10665/42682/9241545992.pdf;jsessionid=533CE0804BE2E0722B919623C4C2E05?sequence=1>. Assessed 28.11.2018
7. Gallant MP. The influence of social support on chronic illness self-management: a review and directions for research. *Health education & behavior*. 2003 Apr;30(2):170-95.
8. Vrijens B, Antoniou S, Burnier M, De la Sierra A, Volpe M. Current situation of medication adherence in hypertension. *Frontiers in pharmacology*. 2017 Mar 1;8:100.
9. Horne R, Weinman J, Barber N, Elliott R, Morgan M, Cribb A, Kellar I. Concordance, adherence and compliance in medicine taking. London: NCCSDO. 2005 Dec;2005:40-6.
10. Banerjee S, Varma RP. Factors affecting non-adherence among patients diagnosed with unipolar depression in a psychiatric department of a tertiary hospital in Kolkata, India. *Depression research and treatment*. 2013 Dec 4;2013.
11. World Health Organization. Adherence to long-term therapies: evidence for action. World Health Organization; 2003.
12. Dias AM, Cunha M, Santos AM, Neves A, Pinto A, Silva A, Castro S. Adesão ao regime terapêutico na doença crônica: revisão da literatura. *Millenium-Journal of Education, Technologies, and Health*. 2016 Feb 3(40):201-19.
13. Bartlett EE, Grayson M, Barker R, Levine DM, Golden A, Libber S. The effects of physician communications skills on patient satisfaction; recall, and adherence. *Journal of chronic diseases*. 1984 Jan 1;37(9-10):755-64.
14. Bhattarai B, Bista B, Shrestha S, Budhathoki B, Dhamala B. Contributing Factors of Non-Adherence to Treatment among the Patients with Type II Diabetes Mellitus. *Journal of Manmohan Memorial Institute of Health Sciences*. 2019 May 14;5(1):68-78.
15. Khan AR, Lateef ZN, Al Aithan MA, Bu-Khamseen MA, Al Ibrahim I, Khan SA. Factors contributing to non-compliance among diabetics attending primary health centers in the Al Hasa district of Saudi Arabia. *Journal of Family and Community Medicine*. 2012 Jan;19(1):26.
16. Afriyie GE. *Non-Adherence to Medication and Associated Factors among Type 2 Diabetes Mellitus Patients Attending Tema General Hospital* (Doctoral dissertation, University of Ghana).
17. Kusa W, Tolessa D, Abdeta T. Type II DM Medication Non-Adherence in Adama Hospital Medical College, Central Ethiopia. *East African Journal of Health and Biomedical Sciences*. 2019 May 23;3(1):31-8.



18. Kassahun A, Fanta Gashe EM, Rike WA. Nonadherence and factors affecting adherence of diabetic patients to anti-diabetic medication in Assela General Hospital, Oromia Region, Ethiopia. *Journal of pharmacy & bioallied sciences*. 2016 Apr;8(2):124.
19. Kalyango JN, Owino E, Nambuya AP. Non-adherence to diabetes treatment at Mulago Hospital in Uganda: prevalence and associated factors. *African health sciences*. 2008 Sep 10;8(2).
20. Turan GB, Aksoy M, Çiftçi B. Effect of social support on the treatment adherence of hypertension patients. *Journal of Vascular Nursing*. 2019 Mar 1;37(1):46-51.
21. Ford ME, Tilley BC, McDonald PE. Social support among African-American adults with diabetes, Part 2: A review. *Journal of the National Medical Association*. 1998 Jul;90(7):425.
22. Adisa R, Olajide OO, Fakeye TO. Social support, treatment adherence and outcome among hypertensive and type 2 diabetes patients in ambulatory care settings in Southwestern Nigeria. *Ghana medical journal*. 2017 Aug 23;51(2):64-77.
23. Chen X, Du L, Wu R, Xu J, Ji H, Zhang Y, Zhu X, Zhou L. The effects of family, society and national policy support on treatment adherence among newly diagnosed tuberculosis patients: a cross-sectional study. *BMC infectious diseases*. 2020 Dec;20(1):1-1.
24. Cramer JA. Enhancing patient compliance in the elderly. *Drugs & aging*. 1998 Jan;12(1):7-15.
25. Wilensky GR. The growing challenge of Medicare: the Congressional Budget Office projects Medicare spending will grow at an average annual rate of 9 percent over the next 10 years, reaching \$766 billion by 2015. *Healthcare Financial Management*. 2005 Apr 1;59(4):34-6.
26. Dhanireddy KK, Maniscalco J, Kirk AD. Is tolerance induction the answer to adolescent non-adherence?. *Pediatric transplantation*. 2005 Jun;9(3):357-63.
27. DiMatteo MR. Patient adherence to pharmacotherapy: the importance of effective communication. *Formulary (Cleveland, Ohio)*. 1995 Oct 1;30(10):596-8.
28. Axelsson JM, Hallager S, Barfod TS. Antiretroviral therapy adherence strategies used by patients of a large HIV clinic in Lesotho. *Journal of Health, Population and Nutrition*. 2015 Dec;33(1):1-9.
29. Meraz R. Medication nonadherence or self-care? Understanding the medication decision-making process and experiences of older adults with heart failure. *The Journal of cardiovascular nursing*. 2020 Jan;35(1):26.
30. Al-Qazaz HK, Hassali MA, Shafie AA, Sulaiman SA, Sundram S. Perception and knowledge of patients with type 2 diabetes in Malaysia about their disease and medication: a qualitative study. *Research in social and administrative pharmacy*. 2011 Jun 1;7(2):180-91.
31. Tranulis C, Goff D, Henderson DC, Freudenreich O. Becoming adherent to antipsychotics: a qualitative study of treatment-experienced schizophrenia patients. *Psychiatric services*. 2011 Aug;62(8):888-92.
32. Ågård A, Ranjbar V, Strang S. Diabetes in the shadow of daily life: factors that make diabetes a marginal problem. *Practical diabetes*. 2016 Mar;33(2):49-53.
33. Evon DM, Golin CE, Bonner JE, Grodensky C, Vellozo J. Adherence during antiviral treatment regimens for chronic hepatitis C: a qualitative study of patient-reported facilitators and barriers. *Journal of clinical gastroenterology*. 2015 May;49(5):e41.
34. Shaw Y, Metes ID, Michaud K, Donohue JM, Roberts MS, Levesque MC, Chang JC. Rheumatoid arthritis patients' motivations for accepting or resisting disease-modifying antirheumatic drug treatment regimens. *Arthritis care & research*. 2018 Apr;70(4):533-41.
35. Stryker JE, Beck AD, Primo SA, Echt KV, Bundy L, Pretorius GC, Glanz K. An exploratory study of factors influencing glaucoma treatment adherence. *Journal of glaucoma*. 2010 Jan;19(1):66.
36. Schatz E, Seeley J, Negin J, Weiss HA, Tumwekwase G, Kabunga E, Nalubega P, Mugisha J. "For us here, we remind ourselves": strategies and barriers to ART access and adherence among older Ugandans. *BMC Public Health*. 2019 Dec;19(1):1-3.
37. Huang YM, Pecanac KE, Shiyanbola OO. "Why am I not taking medications?" Barriers and facilitators of diabetes medication adherence across different health literacy levels. *Qualitative Health Research*. 2020 Dec;30(14):2331-42.
38. Ho SC, Jacob SA, Tangiisuran B. Barriers and facilitators of adherence to antidepressants among outpatients with major depressive disorder: a qualitative study. *PloS one*. 2017 Jun 14;12(6):e0179290.
39. Sackett DL. The hypertensive patient: 5. Compliance with therapy. *Canadian Medical Association Journal*. 1979 Aug 4;121(3):259.
40. Shalev V, Goldshtein I, Halpern Y, Chodick G. Association Between Persistence with Statin Therapy and Reduction in Low-Density Lipoprotein Cholesterol Level: Analysis of Real-Life Data from Community Settings. *Pharmacotherapy: The Journal of Human Pharmacology and Drug Therapy*. 2014 Jan;34(1):1-8.
41. Ho PM, Rumsfeld JS, Masoudi FA, McClure DL, Plomondon ME, Steiner JF, Magid DJ. Effect of medication nonadherence on hospitalization and mortality among patients with diabetes mellitus. *Archives of internal medicine*. 2006 Sep 25;166(17):1836-41.
42. Maffoni M, Traversoni S, Costa E, Midão L, Kardas P, Kurczewska-Michalak M, Giardini A. Medication adherence in the older adults with chronic multimorbidity: A systematic review of qualitative studies on patient's experience. *European geriatric medicine*. 2020 Jun;11(3):369-81.
43. Rowell-Cunsolo TL, Hu G. Barriers to optimal antiretroviral therapy adherence among HIV-infected formerly incarcerated individuals in New York City. *PloS one*. 2020 Jun 1;15(6):e0233842.
44. Koh JJ, Cheng RX, Yap Y, Haldane V, Tan YG, Teo KW, Srivastava A, Ong PS, Perel P, Legido-Quigley H. Access and adherence to medications for the primary and secondary prevention of atherosclerotic cardiovascular disease in Singapore: a qualitative study. *Patient preference and adherence*. 2018;12:2481.
45. Jarab AS, Mukattash TL, Al-Azayzih A, Khmour M. A focus group study of patient's perspective and experiences of type 2 diabetes and its management in Jordan. *Saudi pharmaceutical journal*. 2018 Mar 1;26(3):301-5.
46. Gassmann C, Kolbe N, Brenner A. Experiences and coping strategies of oncology patients undergoing oral chemotherapy: First steps of a grounded theory study. *European Journal of Oncology Nursing*. 2016 Aug 1;23:106-14.
47. Habte BM, Kebede T, Fenta TG, Boon H. Barriers and facilitators to adherence to anti-diabetic medications: Ethiopian patients' perspectives. *African journal of primary health care & family medicine*. 2017;9(1):1-9.
48. Harrold LR, Mazor KM, Velten S, Ockene IS, Yood RA. Patients and providers view gout differently: a qualitative study. *Chronic illness*. 2010 Dec;6(4):263-71.
49. Garavalia L, Garavalia B, Spertus JA, Decker C. Exploring patients' reasons for discontinuance of heart medications. *The Journal of cardiovascular nursing*. 2009 Sep;24(5):371.
50. Garavalia L, Ho PM, Garavalia B, Foody JM, Kruse H, Spertus JA, Decker C. Clinician-patient discord: Exploring differences in perspectives for discontinuing clopidogrel. *European Journal of Cardiovascular Nursing*. 2011 Mar;10(1):50-5.
51. Vaanholt MC, Weernink MG, von Birgelen C, Groothuis-Oudshoorn CG, Ijzerman MJ, van Til JA. Perceived advantages and disadvantages of oral anticoagulants, and the trade-offs patients make in choosing



- anticoagulant therapy and adhering to their drug regimen. Patient education and counseling. 2018 Nov 1;101(11):1982-9.
52. King-Shier KM, Singh S, Khan NA, LeBlanc P, Lowe JC, Mather CM, Chong E, Quan H. Ethno-cultural considerations in cardiac patients' medication adherence. *Clinical Nursing Research*. 2017 Oct;26(5):576-91.
 53. van Loggerenberg F, Gray D, Gengiah S, Kunene P, Gengiah TN, Naidoo K, Grant AD, CAPRISA 058 Study Team. A qualitative study of patient motivation to adhere to combination antiretroviral therapy in South Africa. *AIDS patient care and STDs*. 2015 May 1;29(5):299-306.
 54. Hayden C, Neame R, Tarrant C. Patients' adherence-related beliefs about methotrexate: a qualitative study of the role of written patient information. *BMJ open*. 2015 May 1;5(5):e006918.
 55. Pettersen TR, Fridlund B, Bendz B, Nordrehaug JE, Rotevatn S, Schjøtt J, Norekvål TM, CONCARD Investigators. Challenges adhering to a medication regimen following first-time percutaneous coronary intervention: a patient perspective. *International journal of nursing studies*. 2018 Dec 1;88:16-24.
 56. McKillop G, Joy J. PATIENTS' EXPERIENCE AND PERCEPTIONS OF POLYPHARMACY IN CHRONIC KIDNEY DISEASE AND ITS IMPACT ON ADHERENT BEHAVIOUR. *Journal of Renal Care*. 2013 Dec;39(4):200-7.
 57. Kobue B, Moch S, Watermeyer J. "It's so hard taking pills when you don't know what they're for": a qualitative study of patients' medicine taking behaviours and conceptualisation of medicines in the context of rheumatoid arthritis. *BMC Health Services Research*. 2017 Dec;17(1):1-2.
 58. Gassmann C, Kolbe N, Brenner A. Experiences and coping strategies of oncology patients undergoing oral chemotherapy: First steps of a grounded theory study. *European Journal of Oncology Nursing*. 2016 Aug 1;23:106-14.
 59. Jeragh-Alhaddad FB, Waheedi M, Barber ND, Brock TP. Barriers to medication taking among Kuwaiti patients with type 2 diabetes: a qualitative study. *Patient preference and adherence*. 2015;9:1491.
 60. Souter C, Kinnear A, Kinnear M, Mead G. Optimisation of secondary prevention of stroke: a qualitative study of stroke patients' beliefs, concerns and difficulties with their medicines. *International journal of pharmacy practice*. 2014 Dec;22(6):424-32.
 61. Manges MA, Masip M, Gabriele G, Fernández-Maldonado L, Blancafort S, Tuneu L. Patients' perspective of medication adherence in chronic conditions: a qualitative study. *Advances in therapy*. 2016 Oct;33(10):1740-54.
 62. Bezabhe WM, Chalmers L, Bereznicki LR, Peterson GM, Bimirew MA, Kassie DM. Barriers and facilitators of adherence to antiretroviral drug therapy and retention in care among adult HIV-positive patients: a qualitative study from Ethiopia. *PloS one*. 2014 May 14;9(5):e97353.
 63. Lambert-Kerzner A, Havranek EP, Plomondon ME, Fagan KM, McCreight MS, Fehling KB, Williams DJ, Hamilton AB, Albright K, Blatchford PJ, Mihalko-Corbitt R. Perspectives of patients on factors relating to adherence to post-acute coronary syndrome medical regimens. *Patient preference and adherence*. 2015;9:1053.
 64. Saleem F, Hassali MA, Shafie AA, Atif M. Drug attitude and adherence: a qualitative insight of patients with hypertension. *Journal of Young Pharmacists*. 2012 Apr 1;4(2):101-7.
 65. Rifkin DE, Laws MB, Rao M, Balakrishnan VS, Sarnak MJ, Wilson IB. Medication adherence behavior and priorities among older adults with CKD: a semistructured interview study. *American Journal of Kidney Diseases*. 2010 Sep 1;56(3):439-46.
 66. Van Geffen EC, Hermsen JH, Heerdink ER, Egberts AC, Verbeek-Heida PM, Van Hulst R. The decision to continue or discontinue treatment: experiences and beliefs of users of selective serotonin-reuptake inhibitors in the initial months—a qualitative study. *Research in Social and Administrative Pharmacy*. 2011 Jun 1;7(2):134-50.
 67. Kvarnström K, Westerholm A, Airaksinen M, Liira H. Factors Contributing to Medication Adherence in Patients with a Chronic Condition: A Scoping Review of Qualitative Research. *Pharmaceutics*. 2021 Jul;13(7):1100.
 68. Van Geffen EC, Hermsen JH, Heerdink ER, Egberts AC, Verbeek-Heida PM, Van Hulst R. The decision to continue or discontinue treatment: experiences and beliefs of users of selective serotonin-reuptake inhibitors in the initial months—a qualitative study. *Research in Social and Administrative Pharmacy*. 2011 Jun 1;7(2):134-50.
 69. Alhomoud F, Dhillon S, Aslanpour Z, Smith F. South Asian and Middle Eastern patients' perspectives on medicine-related problems in the United Kingdom. *International journal of clinical pharmacy*. 2015 Aug;37(4):607-15.
 70. Dehdari L, Dehdari T. The determinants of anti-diabetic medication adherence based on the experiences of patients with type 2 diabetes. *Archives of Public Health*. 2019 Dec;77(1):1-9.
 71. Rahmawati R, Bajorek B. Understanding untreated hypertension from patients' point of view: A qualitative study in rural Yogyakarta province, Indonesia. *Chronic Illness*. 2018 Sep;14(3):228-40.
 72. Alodhaib G, Alhusaynan I, Mirza A, Almogbel Y. Qualitative Exploration of Barriers to Medication Adherence Among Patients with Uncontrolled Diabetes in Saudi Arabia. *Pharmacy*. 2021 Mar;9(1):16.
 73. Lyimo RA, de Bruin M, van den Boogaard J, Hospers HJ, van der Ven A, Mushi D. Determinants of antiretroviral therapy adherence in northern Tanzania: a comprehensive picture from the patient perspective. *BMC public health*. 2012 Dec;12(1):1-8.
 74. Chen LC, Chen TC, Huang YB, Chang CS. Disease acceptance and adherence to imatinib in Taiwanese chronic myeloid leukaemia outpatients. *International journal of clinical pharmacy*. 2014 Feb;36(1):120-7.
 75. Goldsmith LJ, Kolhatkar A, Popowich D, Holbrook AM, Morgan SG, Law MR. Understanding the patient experience of cost-related non-adherence to prescription medications through typology development and application. *Social science & medicine*. 2017 Dec 1;194:51-9.
 76. Hromadkova L, Soukup T, Vlcek J. Quality of life and drug compliance: their interrelationship in rheumatic patients. *Journal of evaluation in clinical practice*. 2015 Oct;21(5):919-24.
 77. Asawavichienjinda T, Sitthi-Amorn C, Tanyanont W. Compliance with treatment of adult epileptics in a rural district of Thailand. *Journal of the medical Association of Thailand= Chotmaihet Thangphaet*. 2003 Jan 1;86(1):46-51.
 78. Enríquez-Cáceres M, Soto-Santillana M. Non-compliance with pharmacological treatment in patients with epilepsy. *Revista de neurologia*. 2006 Jun 1;42(11):647-54.
 79. Huang J, Jiang Z, Zhang T, Wang L, Chu Y, Shen M, Liang H, Liu S, Zhang Y, Liu C. Which matters more for medication adherence among disabled people in Shanghai, China: family support or primary health care?. *INQUIRY: The Journal of Health Care Organization, Provision, and Financing*. 2019 Oct;56:0046958019883175.
 80. Osamor PE, Owumi BE. Factors associated with treatment compliance in hypertension in southwest Nigeria. *Journal of health, population, and nutrition*. 2011 Dec;29(6):619.
 81. Jean-Pierre R, inventor; Stratamed Labs Inc, assignee. Prescription drug compliance monitoring system. United States patent US 7,295,890. 2007 Nov 13.
 82. Cohen S, Wills TA. Stress, social support, and the buffering hypothesis. *Psychological bulletin*. 1985 Sep;98(2):310.
 83. Winemiller DR, Mitchell ME, Sutliff J, Cline DI. Measurement strategies in social support: A descriptive review of the literature. *Journal of clinical psychology*. 1993 Sep;49(5):638-48.



84. Ming LC, Hassali MA, Shafie AA, Awaisu A, Hadi MA, Al-Haddad M. Perspectives of heart failure patients in Malaysia towards medications and disease state management: findings from a qualitative study. *Journal of Public Health*. 2011 Dec;19(6):569-77.
85. Peláez S, Bacon SL, Lacoste G, Lavoie KL. How can adherence to asthma medication be enhanced? Triangulation of key asthma stakeholders' perspectives. *Journal of Asthma*. 2016 Nov 25;53(10):1076-84.
86. Jaffray M, Cardy AH, Reid IC, Cameron IM. Why do patients discontinue antidepressant therapy early? A qualitative study. *The European Journal of General Practice*. 2014 Sep 1;20(3):167-73.
87. Turan GB, Aksoy M, Çiftçi B. Effect of social support on the treatment adherence of hypertension patients. *Journal of Vascular Nursing*. 2019 Mar 1;37(1):46-51.
88. Richardson JC, Liddle J, Mallen CD, Roddy E, Hider S, Prinjha S, Ziebland S. A joint effort over a period of time: factors affecting use of urate-lowering therapy for long-term treatment of gout. *BMC Musculoskeletal Disorders*. 2016 Dec;17(1):1-8.
89. Katz JR. Back to basics: providing effective patient teaching. *AJN The American Journal of Nursing*. 1997 May 1;97(5):33-6.
90. Roter DL, Hall JA, Merisca R, Nordstrom B, Cretin D, Svarstad B. Effectiveness of interventions to improve patient compliance: a meta-analysis. *Medical care*. 1998 Aug 1;1138-61.
91. Frankel R, Beckman H. Evaluating the patient's primary problem (s). *Communicating with medical patients*. 1989:86-98.
92. Sarriff A, Aziz NA, Hassan Y, Ibrahim P, Darwis Y. A study of patients' self-interpretation of prescription instructions. *Journal of clinical pharmacy and therapeutics*. 1992 Apr;17(2):125-8.
93. Stewart MA, McWhinney IR, Buck CW. The doctor/patient relationship and its effect upon outcome. *The Journal of the Royal College of General Practitioners*. 1979 Feb 1;29(199):77-82.
94. Singh J, Alam MS, Malik A, Tyagi SS, Tousib M, Alam N, Jain A. Ways to Improve Medication Adherence in Chronic Disease Patients--A Review. *Journal of Evolution of Medical and Dental Sciences*. 2021 Sep 6;10(36):3171-8.
95. Ponnusankar S, Surulivelrajan M, Anandamoorthy N, Suresh B. Assessment of impact of medication counseling on patients' medication knowledge and compliance in an outpatient clinic in South India. *Patient education and counseling*. 2004 Jul 1;54(1):55-60.
96. Rosenstock IM, Strecher VJ, Becker MH. Social learning theory and the health belief model. *Health education quarterly*. 1988 Jun;15(2):175-83.
97. Roter DL, Hall JA. Why physician gender matters in shaping the physician-patient relationship. *Journal of Women's Health*. 1998 Nov;7(9):1093-7.

Source of Support: The author(s) received no financial support for the research, authorship, and/or publication of this article.

Conflict of Interest: The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

For any question relates to this article, please reach us at: globalresearchonline@rediffmail.com
 New manuscripts for publication can be submitted at: submit@globalresearchonline.net and submit_ijpsrr@rediffmail.com

