**Medication Adherence and Patient Compliance**

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**Abstract**

Medication Adherence and patient compliance to treatment is a key factor in treatment success. About half or more of patients with chronic disease and disorder or psychiatric illnesses either do not take their medications correctly or stop taking them altogether. The problem of poor initial compliance or compliance is often compounded by a steady decline in compliance/acceptance over time. Non-adherence is a serious problem that affects not only the patient, but also the healthcare system. Patient non-adherence results in significant disease progression, death and increased healthcare costs. A number of factors are likely to influence engagement. Barriers to adherence can be considered as factors of the patient, provider and healthcare system and the interactions between them. To improve medication adherence, it is necessary to identify barriers specific to each patient and apply appropriate techniques to overcome them. Healthcare professionals such as Physicians, pharmacists and nurses play an important role in improving patient medication management in their daily work.

Keywords: Medication adherence, Chronic Disease and Disorder, psychiatric illnesses, compliance, Non-adherence, Death, Physicians, pharmacists and nurses.

**1.0 Introduction:**

Medication adherence and patient compliance work together and, therefore, medication adherence is defined by the World Health Organization as "the degree to which a person's behavior is consistent with established recommendations." agreed upon 'health care provider' aspect of treatment success Non-compliance is a serious problem affecting the health system Various factors influence Despite barriers to compliance, they can be seen as patients, providers, and elements of the healthcare system, with their interactions. Real barriers for individual patients and applying the right techniques to improve adherence. Healthcare professionals such as doctors, pharmacists, and nurses have an important role to play in their daily practice to improve patient compliance. Patient compliance comes down to two keywords: patient means a person with the illness and abnormal symptoms, and compliance is completing the patient's illness with treatment in the manner indicated concerning the duration of his medication, both defining duties and responsibilities to advise a health care provider on the adequacy and adequacy of dosage and therapy remedy. Thus, we can simply define “patient compliance as completion of appropriate therapy by curing the arising symptoms that caused the disease and disorder”. In short, the patient's understanding of a drug, their motivation to take the prescription drug, and the belief that the prescriber and the drug prescribed will benefit their health. Although common, in both developing and undeveloped areas, there are cases where doctors, nurses, and pharmacists do not provide adequate instructions or inappropriately present them. The patient understands. Understanding a patient's medication use is not trivial and appropriate steps should be taken to provide patients with the information and guidance they need to get the most out of their medication and as safe as possible. In a recent survey of Americans 65 and older who used drugs, researchers found that 51% of them regularly used at least 5 different prescription drugs and  4 out of 4 types from 10 to 19 tablets per day. 57% of respondents admitted to forgetting to take their medication. Among those taking 5 or more medications, 63% reported missing doses compared with 51% among those taking fewer medications. For patients prescribed medication for a chronic illness, after six months, most either took less medication than was prescribed or stopped taking it altogether. There are federal and state laws that prohibit the use or sharing of prescription drugs. Here are some common observations of sick patients: If someone takes a pill that has been prescribed for or given to someone else, it is not only illegal but extremely dangerous. As such, patient compliance is not only the primary responsibility of a healthcare provider but also an understanding and consultation of the true value of patient compliance in healthcare with their best health. If the patient does not use or have appropriate treatment measures, it will lead to drug resistance. Regarding patient non-compliance - the patient is not taking the medication as recommended by the healthcare provider's treatment design. A 2018 systematic review of medication adherence studies published in the British Medical Journal (BMJ) estimated the cost of medication non-adherence in several chronic diseases, based on the standard adjustments that have been widely accepted standards of cost-effectiveness analysis criteria in diabetics is $6,907 per year; and in patients with respiratory illness $6,689 per year. (All adjusted mean estimates, in 2015 dollars, as calculated by BMJ Systematic Review)

**1.1 Theory**

* Adherence is a growing concern for clinicians, health systems, and other stakeholders such as payers due to increasing evidence that non-adherence is common and associated with adverse events and higher costs.
* Medication non-adherence is likely to increase as the worldwide population ages and patients take more medications for chronic diseases. In addition, outcome measures that reward quality based on achievement of treatment goals (eg, blood pressure and low-density lipoprotein) will increase. (LDL) levels or outcomes such as one-year mortality after hospitalization for conditions such as acute myocardial infarction increase the importance of long-term follow-up.
* Unlike other quality measures that are more directly under the control of caregivers and health systems (eg, post-discharge prescribing), achieving long-term care and outcome goals requires a partnership with patients.
* To date, measuring patient adherence and using interventions to improve adherence in routine clinical practice is rare. Therefore, medication adherence has been called the "next frontier for quality improvement" and is an important component of cardiovascular outcomes research. The objectives of this report are to discuss different methods to measure adherence, the prevalence of registration. Non-adherence to treatment, the relationship between treatment non-adherence and outcomes, reasons for non-adherence, and finally interventions to improve adherence
* Patient compliance is a complex issue that can occur when taking any drug medication process including seeing a doctor, taking medication process and lifestyle modifications such as exercise and diet.
* The factors that may affect adherence, including socioeconomic factors, related to the health care team disease-related factors, treatment-related factors, and patient factor. However, some of these factors can somehow be labelled as country-specific, such as access to health care or lack of transportation, which in some less developed countries with underdeveloped transport and health systems account for important predictor of compliance.
* The use of certain drugs (multi-drug) is associated with an increased risk of adopting a complex dosing regimen. The need to manage potential drug interactions can also lead to complex dosing regimens. For example, tetracycline or bisphosphonates must be separated from calcium, aluminum, magnesium or iron salts.
* Bisphosphonates and thyroid hormones should be taken at least half an hour before breakfast. On the other hand, some medications should not be taken on an empty stomach but should be taken with meals, which forces the patient to follow a complicated schedule.
* Non-compliance predictors can contribute to non-compliance detection and type.
* Gender and socioeconomic status do not appear to affect non-adherence to treatment. On the other hand, some studies show a decrease in adherence to treatment among ethnic minorities.
* Factors that may predict non-adherence to treatment include distraction, illiteracy, and understanding wrong targets. Treatment, not seeing treatment is necessary, lack of confidence during treatment and lack of understanding of the effects of treatment. In addition, psychiatric problems including depression, cognitive limitations, missed visits and poor relationships with health care providers also contribute to non-compliance. Some of these factors are associated with wilful noncompliance, while others are more likely to be associated with unintentional noncompliance.
* Medication negligence is a major impediment to effective delivery of health services. About a third and a half of patients receiving long-term treatment do not take their medications correctly, which in turn increases the human and financial burden of chronic, long-term illness.
* Pharmacists must remember that many factors can influence a patient's decision to take medication. By identifying barriers to medication adherence and providing information about prescribed medications, pharmacists can support and encourage their patients to take their medications safely and effectively.
* All pharmacists who interact with patients in relation to prescribing, dispensing, counselling or evaluating medicines. The purpose of this guide is to help pharmacies help patients participate in medication decisions, improving adherence and strengthening lines of communication between health professionals.
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* All pharmacists who interact with patients in relation to prescribing, dispensing, counselling or evaluating medicines. The goal of this guide is to help pharmacies help patients participate in medication-related decisions, improve medication adherence, and strengthen lines of communication between healthcare professionals. 1Understand each patient's medication behavior
* Ask patients if they are having trouble filling, taking, or purchasing their medications. For example, ask, "What prescription medications are you taking? or "I know it must be difficult to take all your medications regularly. How often do you forget to take them? Create a guilt-free environment so patients feel comfortable talking openly and honestly. Providers can't help their patients if they don't know the problem exists. Discuss side effects
* Patients who experience side effects are less likely to stop taking the drug if they are aware of the potential side effects. Providers should talk about these side effects and explain how to avoid them. How likely are these side effects, do they usually go away without intervention, and how does the treatment plan change if they don't improve? Ask patients to repeat key points and give patients an opportunity to ask questions. 3. Write it down
* Many patients do not retain verbal instructions, so it is important to write down the information. For example, provide medication calendars, pillboxes, charts or graphs detailing when and how to take medications.
* At what time of day would it be better for the patient to take the medication? If the medication does not come with specific instructions (ie, take one pill in the morning), brainstorm ideas with the patient. Ideally, this would be a time when the patient knows they are generally free from other responsibilities and distractions. For example, if the mornings are chaotic when taking the kids to daycare, a night class might be a better option so they don't forget. Consider the patient's financial burden
* If patients cannot afford their medications, they can simply stop taking them or lower their dosage. To combat this, providers can connect patients with drug company assistance plans, government assistance plans, and pharmacies that offer 30-day coverage for widely prescribed drugs. Some EHRs also include formulary information that helps providers determine whether certain medications are covered by a patient's insurance. Prescribing cheaper generic drugs is also helpful. Assess health literacy
* Health literacy, the extent to which people can obtain, process, and understand basic health information and services, is a social determinant of health that can significantly influence patient compliance with medications. Use this AHRQ tool to assess health literacy and determine appropriate interventions to help patients understand when, how and why they should take their medications.
* Reducing the complexity of medication management increases the likelihood that patients will continue to take their medications correctly. For example, offering packaged products is one way to do this. Another option is to prescribe medication once a day instead of multiple daily doses. Monitor patients
* Send medication reminders via text message, email or direct mail, or during a scheduled appointment for Chronic Care Management Services. Also schedule follow-up appointments to discuss medication adherence. Make sure they understand why they need to take their medication as directed, even if they are asymptomatic. Contact the pharmacy
* Not only can pharmacists, nurses provide patient education and help patients find low-cost or even free medications, but they can also remind doctors to follow up on their patients who don't fill their prescriptions, helping providers address adherence issues before they get out of control.
* For example, e-pill medication (eg, automatic pill dispensers, pill boxes and timers, and alarm clocks) can help improve patient compliance. The Bluetooth pill case can even send a remote monitoring message to providers when the patient opens the pill case. This provides doctors with information that helps those spot problems with medication adherence.
* Medication adherence may have a more direct impact on patient outcomes than a specific treatment; it is estimated that about chronic medications. Maintaining a guilt-free environment and praising patients for achieving goals are essential to a trusting and effective pharmacist-patient relationship. Effective interventions include face-to-face counselling, cell phone text messaging, medication regimen simplification, package usage, side effect minimization, ease of access, and team involvement. Improving adherence can ultimately have significant clinical and financial benefits.

**1.2 Healthcare Provider Roles and Responsibilities**

Optimum disease management requires taking medication in the required dosage at the right time as advised by health care practitioners (HCPs). Patients, however, fail to adhere to the prescription even though they have some idea about the benefits. The World health organization declared that resolving treatment non-adherence will have a far greater impact on human health than improving any specific treatment modalities. The onus of non-adherence is assumed to lie with the patient. However, clinical studies report a myriad of reasons for this behavior. Chief among them – the one that always features on top of the list – is the communication discordance and a lack of trust between the patient and the HCPs. As they say “a good beginning is half done business”, if the patients are provided with comprehensive information about the disease and therapy in the beginning, they are likely to rate higher adherence. IPEC (Interdisciplinary Education Partnership (IPEC)) established standard core competencies for effective interdisciplinary collaborative practice). Competency relates to the roles and responsibilities of health professionals and indicates: "Use knowledge of one's own role and that of other professions to assess and respond appropriately to the health care needs of patients and to promote and improve the health of populations.”

**1.2.1 Components Responsibility of Healthcare providers**

1. Communicate roles and responsibilities to patients, families, community members, and other professionals.
2. Realize limits in terms of skills, knowledge, and abilities. Collaborate with a variety of professionals who complement their expertise, along with related resources, to develop strategies to meet your specific health and fitness needs. Patients and the community.
3. Explain to the health care provider how the team works together to provide care, promote health, and prevent disease effective, efficient, and equitable care.
4. Communicate with team members to clarify each member's responsibilities for implementing components of a public health intervention or treatment plan inside and outside the health system to improve, care advanced care and learning, performance, and collaboration.
5. Utilize new and advanced technology from all team members to optimize healthcare and patient care.

Nurses communicate with several people during a typical shift. For example, during inpatient care, nurses can communicate with patients and their family members; pharmacists and pharmacy technicians; suppliers of various specialties; physiotherapists, speech therapists, and occupational therapists; dietary support; respiratory therapist; chaplain; social worker; records management staff; supervising nurse, nurse in charge  and other nurses at the bedside; support staff; Ayurveda; nursing instructor; guard; Laboratory staff; radiology, ultrasound technicians; and members of the surgical team. Providing comprehensive, quality, safe, and effective care means that each member of the patient care team must work collaboratively and understand the knowledge, skills, and scope of practice of the patient other members of the group. Coordinating and delivering safe, quality patient care requires teamwork and trusted collaboration between organizations and communities. Customers often have many visits to many suppliers working in different organizations. Communication errors between healthcare facilities, departments, and team members are a leading cause of patient harm. The healthcare system is becoming increasingly complex and requires cooperation between different members of the healthcare team. The goal of good collaboration among professionals is to improve patient outcomes, as well as increase job satisfaction for professionals on the healthcare team. Patients receiving care with poor teamwork were nearly five times more likely to experience complications or die. Hospitals where employees report higher levels of teamwork have lower rates of work-related illness and injury, fewer incidents of harassment and workplace violence, and rates of lower employee turnover. Assessing and understanding the roles of team members are important steps in establishing good teamwork among professionals. Another step is to learn how to communicate effectively with members of an interdisciplinary team.

**1.3 Importance of Medication adherence and Patient compliance**

Many patients do not follow their doctor's instructions on how to take their medications for a variety of reasons. For example, not understanding instructions, forgetting, multiple medications with different regimens, unpleasant side effects or medications that don't seem to work. Cost can also be a reason for non-adherence – patients cannot afford to fill the prescription or decide to take a lower dose to extend the validity of the prescription. "However, it is very important to help you get the best results from your medication if you take it as directed. Healthcare management is a very serious topic globally, and it has become imperative to identify the root causes of conditions affecting a patient's health and to treat them wisely. The most important factor determining the effectiveness of treatment and treatment results is that the patient takes the drug exactly as indicated. In medicine, it is called patient compliance and describes the degree to which a patient follows medical advice accurately. Usually, it refers to medication use or adherence, but it can also apply to other situations such as the use of medical devices, self-care, self-guided exercises, or therapy sessions. Weather. It is well known and understood that, while essential, patients who receive prescriptions do not necessarily need to take prescription drugs.

1. Taking prescription medication or sticking to it is important for managing chronic diseases, treating temporary conditions, and ensuring long-term health and well-being. Healthcare professionals such as doctors, pharmacists, and nurses have an important role to play in their daily practice to improve patient compliance. A personal relationship with a healthcare provider or pharmacist is an important part of medication adherence. The factors that contribute to poor adherence are numerous and can begin at any time. They can be thought of as patient, provider, and health system factors, with interactions among them. These problems range from low health literacy and lack of participation in treatment decision-making on the patient's part to complex, unclear, or lack of communication regimens, limited access to care, and a lack of health information technology on a broader basis. Given the complexity of barriers, solutions to improve compliance must be multifactorial. Identifying patient-specific barriers and applying appropriate techniques to overcome them is essential to improve medication adherence.
2. Therefore, asking key questions through motivational interviewing is imperative to reveal challenges to adherence, and empathetic listening helps find patient-centered solutions to overcome these challenges. Patient education and ongoing communication are essential for the patient to understand and persist in taking the medication.
3. As healthcare becomes digital and patients more powerful than ever, digital healthcare solutions have become a necessity. One of the platforms applying technology solutions to improve healthcare delivery is digital therapy (DTx). DTx delivers medical interventions directly to patients using clinically evaluated, evidence-based software to treat, manage, and prevent a wide variety of diseases and disorders. They are used alone or in combination with other drugs, devices, or therapies to optimize patient care and health outcomes. These greatly contribute to medical compliance and benefit patients, caregivers, and healthcare providers. While patients can access easy-to-understand, informative, and supportive technologies; it helps physicians manage complex dosing regimens, share information, and expand access to care. Plus, it also helps to reduce overall costs and improve the experience. Non-compliance and non-compliance have become a cause of growing concern in modern times, thereby increasing the number of cases of drug resistance, morbidity, and mortality.
4. Non-adherence to treatment has many consequences, including wasted medication, disease progression, and reduced ability to function, decreased quality of life, and increased use of health resources such as nursing homes, hospital visits, and hospitalization. It can also lead to serious health consequences, which have been supported by various studies. Negative consequences affect not only the patient, but also health care providers, physicians, and families. The first step in addressing noncompliance is recognizing that collaboration is required between pharmaceutical companies, healthcare providers, and patients. The potential burden of drug non-adherence makes it a significant public health concern. So helping people to follow the guidelines is beneficial for the community and the government at large.

**1.4 Factors affecting non-compliance**

Most non-adherence to treatment is intentional, with patients making the rational decision not to take the medication based on their knowledge, experience, and beliefs. Here are eight common reasons for willful non-compliance. Fear Patients may fear potential side effects. They may also have had side effects with the same or similar medications before. In addition, patients said they did not take the medication because they may have witnessed the side effects of a friend or family member taking the same or similar medication. Seeing these side effects in other people may lead them to believe that the medication is causing these problems. Discover four keys to treating high blood pressure and stroke in your black patients, including non-adherence due to side effects.

1. **Medication Cost**

* A major barrier to adherence is often the cost of the medication prescribed to the patient. High costs can keep patients from buying more drugs in the first place. They can even ration what they fill to expand their supply.
* Many moving parts can lead to medication neglect: social determinants of health such as food insecurity, medication literacy, and access to treatment and pharmacy deserts add to the burden. But one of the main problems is the price. "If a patient can't afford a drug, they'll choose other things," says Rose. "If you have to choose between food or medicine, or between food and the price of going to the pharmacy, that's a barrier.
* The federal government is rolling out regulatory changes to try to alleviate this with Real Time Benefit Tools, which require drug pricing transparency. One of the regulations was introduced in 2021 and required doctors to have access to maintenance drugs that can replace more expensive drugs.
* In theory, when a doctor prescribes drugs, an EHR integrated with a real-time reimbursement tool should notify the provider if there is a more affordable drug option for the patient. To remedy this, check to see if the medication you are prescribing is listed on the patient's insurance form. Selecting and prescribing a drug known to be on the discount list can lower costs, regardless of insurance coverage. Learn how getting an annual refill of your prescription promotes medication adherence.

1. **Medication misunderstanding**

* Noncompliance can also occur when patients do not understand the need for medication, the nature of side effects, or the time it takes to see results. This is especially true for patients with chronic conditions – taking daily medication to reduce the risk of something serious happening can be confusing.
* The optimal outcome of treatment depends to a large extent on patient compliance. Poor patient compliance and the subsequent unintended misuse of prescription drugs is the root cause of medication errors, poor adherence to treatment and worse health outcomes. So is the duration of treatment and dosing schedule, so the timing of medication administration is considered an important part of medication therapy.
* Medication administration is not a common problem in hospitals where medications are administered by medical staff. However, in outpatient treatment, the patient's best source of information about the drugs prescribed to him is the information on the label

1. **Over prescription**

* When a patient is prescribed more than one medication with a higher frequency, the likelihood of them being non-adherent increases. Doctors may try to simplify a patient's medication schedule by adjusting the medication so that it can be taken at the same time of day.
* The more medications a person takes, the greater the chance that one or more of them will have unwanted or harmful effects.
* It occurs if:

1. A better alternative is available but not prescribed to ill people.
2. The medicine is suitable for the disease, but not for the particular patient, because some people have systemic allergies to some drugs.
3. In case of tuberculosis patients the condition changes and the medication is no longer appropriate.
4. The patient no longer needs the drug along with the drug but is still prescribed by physicians.
5. Wrong diagnosis by healthcare professionals.

* The choice of a long-acting drug can also be helpful if the burden of dosing is too complex. Also, if possible, group drugs together with combination products. Learn more about how to improve adherence to antihypertensive medication to control blood pressure, with advice on prescribing fixed-dose combinations when appropriate.
* Overprescribing reflects the prescribing of unnecessary drugs. Doctors uselessly prescribe injections, multivitamins and painkillers. This is mainly due to the difference between the actual practice of prescribers and the recommended prescribing practice. The most prescribed drugs in the world are anti-inflammatory drugs. These agents are considered the least harmful of all therapeutic classes, but they actually cause many gastrointestinal diseases. Overuse of antibiotics, antivirals is also widely associated with irrational prescribing, excessive use of parenteral is also common among drug prescribers.

1. **Absence of symptoms**

* As noted above, non-adherence can occur in the absence of symptoms. Patients who do not feel any difference when starting or stopping treatment may see no reason to take it.
* Also, when the patient's condition is under control, they may think the problem has been resolved and may stop taking the medication. It is important to inform your patient that he may need to take the medication for a long time.

1. **Medication Doubt**

* Nowadays, the marketing efforts of most pharmaceutical companies influence the prescribing habits of doctors. This lingering suspicion can lead patients to question a doctor's motives for prescribing certain medications.
* There is a lack of communication between the patients’s with various healthcare providers. More prescriptions are often written for what appears to be a new disease, when in reality the prescribers are dealing with the side effects of another medication. This "regulatory cascade" can lead to a cycle of weakness and even death
* Important risk factor for treatment non-adherence in patients with schizophrenia and bipolar disorder. Poor comprehension is also a risk factor for schizophrenia. The results indicate that cognitive dysfunction is not a risk factor for treatment non-adherence in these diagnostic groups.

1. **Medication distress**

* Early identification and appropriate follow-up of patients with psychological problems can improve health behaviors and treatment. In the long term, identifying and treating psychological problems can lead to cost savings by reducing secondary events. However, the challenge is that access to social work or psychosocial counselling services may not be available, as these services are already in high demand and underrepresented in many media.
* It would be interesting to investigate whether promoting the availability of these services and programs could ultimately be profitable by preventing additional events and readmissions. However, the meaning of perceived life chaos and the novelty of the concept are less clear. It is well established that psychosocial factors are associated with medication no adherence in patients with cardiovascular disease and that medication no adherence is a risk factor for cardiovascular outcomes. Some elements of perceived life chaos overlap significantly with related psychological concepts such as locus of control (i.e., the extent to which a person believes their actions are effective in managing or controlling the environment).
* An individual suffering from external control believes that life is controlled by external factors beyond his control. A person with an internal locus of control believes they are in control of their environment. Another personality trait is conscientiousness (i.e., the ability to be responsible and disciplined), which is not surprisingly associated with positive health outcomes, including better medication. If a patient is afraid of becoming addicted, this can also lead to non-compliance. One way to overcome this is to improve communication between patients and doctors. Inadequate communication may be the cause of 55% of medication non-adherence, making it important to understand why patients are not compliant.

1. **Depression**

* Patients with depression are less likely to take prescribed medications. Doctors and other healthcare professionals can learn by sharing problems and asking patients if they are related. To reduce embarrassment, express that many patients have similar difficulties. Research has shown that every dollar spent on improving compliance saves seven dollars in total healthcare costs. Learn more with the AMA STEPS Forward® Toolkit, "Drug Compliance: Improve patient outcomes and reduce costs.
* With this toolkit, doctors and others will learn to: Identify medication adherence and its importance to patient health Recognize the importance of developing a routine for understanding medication adherence Explain the importance of an approach individual for medication adherence and patient participation in the treatment plan. Share clinical notes with patients.
* The Centers for Disease Control and Prevention (CDC) estimates that non-adherence causes 30-50% of chronic disease treatment failures and 125,000 deaths each year in this country. 25 to 50% of patients treated with a statin (a cholesterol-lowering drug) who stop treatment within a year have an increased risk of death of up to 25%.

1. **Irrational Practice**

* Irrational practices include not only excessive prescriptions, prescriptions of multiple drugs, use of unnecessarily expensive drugs, overconsumption of antibiotics and injections, but also the behavior of prescribers in a particular area. To solve such problems, the WHO has recommended various prescription indicators that could be the first step to promote the rational use of medicines. In order to improve the economic and health status of the population, it is necessary to improve the factors influencing drug use.
* More research is needed to assess the sociocultural factors that influence drug use patterns, particularly from the perspective of clinicians. There is already a lot of information about this word to evaluate such a practice. Prescribing problems in developing countries need to be identified. Therefore, it is useful to suggest actions to solve these problems. Rationalization measures can reduce costs, which in turn makes prices affordable for a larger part of the population.
* General Prescribing practices and prescriber’s behaviors in any country or region play a key role in deciding the health future of the community. For proper medication every member of the community is dependent upon physicians of his/her locality. Physicians of any society have the freedom to make decisions regarding medication of the patients. As all the drugs are chemicals so should be taken with precautionary measures. Over and under use of these agents may lead to dependence and resistivity respectively. Rational use of drugs means that patients must receive medications that are accurate for their clinical needs in terms of doses that meet their individual demands, for sufficient periods of time, and at the lowest cost. The demands for rational use will be met if the process of prescribing is appropriately followed. This process includes steps in assessing a patient's problems, deciding effective and safe treatments, selecting appropriate drugs, dosage, and duration.
* The rational use of drugs thus implies to take the medication at the right time with the right frequency, having the right dose and at the lowest cost. Therefore prescribing practices in the context of irrational drug use should be monitored properly. For the quality of a prescription to be assessed, the World Health Organization (WHO) has recommended core indicators overall.

**1.5 Positive approaches to medication adherence and patient compliance**

Adherence to treatment is a key factor in treatment success. Non-adherence is a serious problem that affects not only the patient, but also the healthcare system. Patient non-adherence results in significant disease progression, death and increased healthcare costs. A number of factors are likely to influence engagement. Barriers to adherence can be considered as factors of the patient, provider and healthcare system and the interactions between them. To improve medication adherence, it is necessary to identify barriers specific to each patient and apply appropriate techniques to overcome them. Healthcare professionals such as doctors, pharmacists and nurses play an important role in improving patient medication management in their daily work. The effectiveness of treatment depends on both the effectiveness of the drug and the patient's compliance with the treatment regimen. Patients, healthcare providers, and the healthcare system all have a role to play in improving medication adherence. A single approach cannot improve adherence, but a combination of different adherence techniques must be used to improve patient adherence. A systematic approach that can be established to improve medication adherence is as follows;

**1) Prescribing Limit**

* Introduce a collaborative approach with the patient at the level of prescribing whenever possible, involve patients in decision-making regarding their medications so that they have a sense of ownership and they are partners in the treatment plan. Simplify medication taking
* Use the most possible simplified regimen based on patient characteristics at the first level of drug use. Prescription Culture - Advertisements that associate prescription drugs with happiness and health, the increased medicalization of normal human ageing, the rapid pace of medical care, and the desire to do something about both health care professionals and patients have fueled a common expectation that "Pills for every ailment.
* Physicians and patients lack the critical knowledge and skills they need to evaluate the evidence and make informed decisions about medications.

**2) Interface with the patient:**

* Explain key information when prescribing/ dispensing a medicine Address the key information about the drugs (what, why, when, how, and how long).
* Inform the common side effects and those that patients should necessarily know (Patients would be more worried and lead to non-adherence due to side effects that were not cautioned to them in advance by health care professionals)Use medication adherence improving aids Provide medication calendars or schedules that specify the time to take medications, drug cards, medication charts, or medicine-related information sheets or specific packaging such as pill boxes, 'unit-of-use' packaging, and special containers indicating the time of dose.
* Provide behavioral support Collaborate with a patient to incorporate the medication regimen into his/her daily regimen (essential in those on complex drug regimens, those having unintentional difficulties in adherence e.g. elderly)

**3) In the course of follow-ups**

* Schedule appropriate follow up Monitoring medication adherence should also be a criterion while scheduling patients to follow up Assess adherence during consequently follow-ups Measure adherence by various methods which may be dependent on the patient as well as drug characteristics.
* Verify the effectiveness of medication adherence support measures, if any. This should be done by the doctor as well as the pharmacist. Research has shown that pharmacists, both in clinical settings and in the community, can have a positive impact on medication adherence.
* Pharmacists have easy access to and regular contact with patients in need of medications for chronic illnesses, allowing them to establish relationships50. While each of the following strategies holds promise, a combination of these strategies may prove more effective.

**4) Medication synchronization**

* Medication synchronization services allow patients to retrieve all of their prescription medications in one visit to the pharmacy, rather than individual visits when prescriptions run out.
* Approximately 11% of retail pharmacies, medication synchronization programs often include monthly appointments with pharmacists and have led to modest increases in prescription days covered.
* Providing flexibility and patient autonomy in the choice of refill timing data helps improve adoption.
* Medication synchronization is the proactive collection of all of a patient's medications, usually for a monthly pickup. To achieve this monthly pharmacy visit, patients often receive a partial dose of medication to meet subsequent refills. Patients enrolled in Med Sync programs receive a phone call or text message reminding them to take their medications, and many pharmacies offer monthly appointments with a variety of additional services. For example, pharmacists can use pre-visit reminder calls to discuss vaccination status and the store's vaccination services.
* Many pharmacies conduct monthly visits with comprehensive medication reviews to identify and resolve medication-related problems. Some pharmacies even combine this service with the patient's other care providers. For example, after a hospital stay, pharmacists receive a discharge order to coordinate medications with the primary care physician to ensure a smooth transition of care.
* Pharmacists may also offer screenings such as blood pressure and cholesterol levels to assess pharmacotherapy gaps and communicate this information, as well as any acute health changes, to primary care physicians.

**5) Medication reviews**

* Medication reviews combined with education and counselling by pharmacists have been used to improve medication adherence, as well. This approach requires close coordination between the pharmacist and the clinical team, as well as the provision of adequate resources for the pharmacist to access sufficient clinical information.
* Pharmacist-led medication evaluations can be effective intervention in primary health care improves medication knowledge and adherence in elderly patients taking chronic medications. But further research shows effectiveness of drug evaluation in cultivation, knowledge retention and continuous engagement.
* A longer time is justified. This is important because adherence rates are typically lower among patients with chronic conditions. Medication non adherence is also likely to grow as the population ages, and as patients take more medications to treat chronic conditions.
* This study has shown that about 70% of the study population reported non-adherence to chronic medications at some point in time.

**6) Motivational interviewing by pharmacists**

* Motivational interviewing (MI) by pharmacists has been shown to improve medication adherence in chronic disease management. While motivational interviewing can be completed over the phone and face-to-face, in-person interactions were found to have a more positive effect.
* MI has been shown to be useful in enhancing motivation to change behavior and promoting adherence in patients with a variety of behavioral health problems. It can be used to optimize medical procedures.
* Further research is needed on its specific mechanisms of action, its effectiveness in reinforcing health-promoting behaviors, the different indications for different patient populations, and the cost-effectiveness of the technique in all disorders where it is used.
* The strategies are engaging rather than pushy, supportive rather than argumentative, and any healthcare professional can learn to use the four-step framework. The first step is to start a conversation, so the factors affecting engagement can be identified in a supportive environment where the possibility of change is raised.
* Expressing empathy through reflective listening (thinking about the river's message and sometimes expressing your own thoughts about its meaning) is an important part of this.
* Using MI as a technique to increase medication adherence has been subject to particular scrutiny in the past decade, with good evidence emerging in conditions such as major chronic disease For example AIDS.

**7) Medication reminders and automated messaging (text messaging, robocalls):**

* Refill reminders communicated to patients by postcard, phone calls, and text messages have found mixed results but may be more effective when combined with patient education or other strategies.
* Low-cost reminders did not improve adherence in patients taking up to three medications for common chronic conditions. Devices may have been more effective if they were combined with measures to ensure consistent use, or if they targeted individuals at even greater risk of neglect.
* Automated messaging, whether by phone calls, text messages, or emails to clinicians has been used to increase adherence. However, more advanced technologies may improve the pharmacist-patient relationship further and lead to better monitoring and adherence

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