

Medication Adherence: How Important is It?

Medication nonadherence is the most prevalent and complex problem. Nonadherence to medication causes considerable morbidity and mortality, with unavoidable health care costs.¹ In 2003, it was estimated by the World Health Organization (WHO) that in developed countries, adherence averages to only 50% in patients suffering from chronic medical illness while in developing countries, the problem is greater.^{2,3}

The term “adherence” is defined as the extent to which patients’ treatment-related behaviors (taking medication, following a diet, modifying habits, or attending clinics) correspond to health care professional’s advice. Compliance is defined as the extent to which patients follow the instructions and prescriptions given by health care professionals or the extent to which the patient’s behavior or attitude exactly matches with the prescriber’s recommendations.

The word “compliance” comes from the Latin word “compiler,” which means to fill up and hence, to complete an action or process.⁴ Often, adherence and compliance are used interchangeably.⁵ The term “concordance” that comes from the Latin word “concorde,” which means to agree, was introduced recently and is predominantly used in the United Kingdom.

Compliance is an agreement to which health care professionals recognize the primacy of patient’s decision about taking the prescribed medications.⁶ Reduction in treatment benefits is seen with low adherence. Several determinants are reported to influence adherence, and they include nature and duration of therapy, characteristics of disease, side effects of medication, treatment cost, characteristics of health service facilities, relation between physician and patient, patient characteristics (socioeconomic factors), and patients’ perspective about their illness and therapy.⁷ The National Institute for Health and Care Excellence (NICE) guidelines refer to two types of nonadherence: Intentional and unintentional.

Patients deciding not to follow treatment recommendations which include deliberately omitting prescriber’s advice, skipping or altering a dose, or ceasing to take medication due to certain side effects is referred to as intentional nonadherence. When the patient is prevented by specific barriers outside the patients’ control, which includes failure to comprehend or understand instructions for use, inability to pay for treatment, or simply forgetting to take medication, is referred to as unintentional nonadherence.⁸

The determinants of nonadherence as per the WHO are classified into five factors: Socioeconomic (e.g., poor socioeconomic status, illiteracy, unemployment), health system related (poor medication distribution, inadequate or nonexistent reimbursement, or lack of feedback on performance), therapy related (complexity of medical regimens, duration of treatment, or immediacy of beneficial effects), condition related (severity of symptoms, rate of progression, or level of disability), and patient related (knowledge and beliefs, motivations to manage, or confidence).⁹

In the absence of a gold standard, there are multiple tools utilized to assess adherence. It has been found that the medication diaries are only of limited use for evaluation of adherence. This is because the majority of patients do not follow instructions or fill diaries immediately before their physician appointments.⁴

It has also been reported that pills or refill count may overestimate adherence, as patients tend to discard pills, instead of taking medication.¹⁰ In comparison with the intake, the computerized pharmacy databases are more informative about medication acquisition. Patients’ or caregiver’s reports are subjective and may overestimate the adherence.

It has been further reported that consumption of medication under direct supervision can be accomplished only at once-daily regimens, for inpatients, or for patients under continuous care. Adherence questionnaires are commonly used in clinical practice.¹¹ According to the WHO,⁹ nonadherence to the medication is one among the major clinical problems in the management of patients with chronic illness. Adherence is a multidimensional phenomenon determined by the interaction of several different factors, termed “dimensions” by the WHO. The factors that affect adherence are:

- Social/economic: Lack of family or social support network with unstable living environments like homelessness, limited access to health care facilities, inability or difficulty in accessing pharmacy, lack of financial resources, medication cost, myths and misconceptions about illness, treatment, and burdensome work schedules have all been associated with reduced adherence rates.



Better adherence is observed in patients who have support from family, friends, or caregiver who can assist with medication regimens.

- **Provider–patient/health care system:** The best relationship of doctor–patient is one of the important health care system-related factors that has a more positive impact on medication adherence.

Poor communication regarding the beneficial effect of taking medication, instructions for use, and side effects of medications may also lead to nonadherence, especially in elderly patients with memory problems.

- **Condition related:** Adherence to treatment regimens declines significantly over time in patients suffering from chronic illness (high blood pressure, osteoporosis, and hyperlipidemia), which requires long-term administration of drugs. This decline is mainly because of few or no symptoms.

It is important that patients understand their illness and know the consequences of being nonadherent to treatment.

- **Therapy related:** The complexity of medication regimen includes taking a number of concomitant medications and required daily doses; duration of therapy, lack of immediate benefit of therapy, and treatment interfere with lifestyle and side effects have been associated with this.
- **Patient related:** Physical impairments, such as visual, hearing, and cognitive impairments and swallowing problems can increase the risk of nonadherence in elderly patients. Lack of knowledge about disease and understanding are reasons for which medication is needed; lack of motivation, apprehension about possible adverse side effects, and substance abuse may be associated with poor medication adherence. There are several available methods for measuring medication adherence.

Measurement falls into two common categories: Direct and indirect. The direct measurement includes (a) Drug monitoring, (b) Detection of drug or its metabolites in biological fluid, and (c) Direct observation therapy. These approaches are accurate methods of adherence measurement but are expensive. At times, variations in drug metabolism can give false impression about adherence.

The second method is the indirect measurement. It includes pill counts, self-reports, rates of prescription refills, measurement of physiologic markers, assessment of patients' clinical response, and patient diaries. Methods are employed to increase adherence to medication. The efficacy of medication and adherence to therapeutic routine determine the effectiveness of treatment.

Several studies have mentioned that simple interventions can facilitate improvement in adherence.¹² Interventions promoting adherence have been classified under a mnemonic SIMPLE in a study done by Atreja et al.¹³ The components of SIMPLE (simplifying, imparting, modifying, patient communication, leaving the bias, and evaluating the adherence) can be described as follows:

- **Simplifying the regimen:** Treatment regimen complexity can sometimes affect medication adherence.

Several strategies can be used to simplify the regimen which has become a well-standardized routine. This practice is more important in physicians to use simple language and ask the patient to repeat the instructions, in order to ensure proper understanding of long-term medication adherence.

These regimens can be simplified for better, clearer understanding by end-users or physician without altering therapeutic intent of the regimen.¹³ Several adherence aids are available to help patients to organize their medications (e.g., medication boxes) and remember dose time (alarms). Microelectronic devices give feedback to the patients whether they are taking their medications as prescribed.

In instances, such as administering insulin injection, administering eye drops and pressurized inhalers, and applying topical preparations, patients can also use devices designed to improve adherence, etc. The advantages of simplification of regimen include reduced risk of treatment failure, long-term medication adherence, and improved quality of life.¹³

- **Imparting appropriate knowledge:** The research has constantly confirmed that understanding the patients' treatment conditions is directly associated with adherence, satisfaction, recall, and type of information given to caretakers by caregivers. Many studies have shown that patients do not always comprehend prescription instructions and frequently forget significant portions of what health care practitioners explained about treatment.^{13,14}

By limiting instructions to three or four major points during each discussion, physicians can provide effective and valuable patient education. Particularly when explaining about diagnosis and giving instructions, simple everyday language may be used by the health care practitioner. The physician could supplement oral instructions with written materials.

The patient's family members and their friends may be involved in the discussion with physician about treatment pattern or diagnosis. This is very true for millions of citizens with low literacy skills.¹⁵

- **Modifying beliefs and human behavior:** In modern lifestyle, it becomes important to address patients' beliefs, intentions, and self-efficacy (perceived ability to perform action).

The physician can optimize behavior change by ensuring that patients perceive themselves to be at risk due to lack of healthy behavior (perceived susceptibility), perceive their medical conditions seriously (perceived severity), belief in positive effect of the treatment (perceived benefits) and counsel them and address their fears and concerns (perceived barriers), perceive themselves as having requisite skills to perform the healthy behavior (self-efficacy).^{13,16} Thus, by knowing which of these beliefs is necessary for good adherence, the provider may suit the unique needs of each patient.

- Patient communication and trust: It involves procedures ranging from physician–patient communication, sending mail or telephonic reminder, and involving patients’ families in the discussion with the clinicians. Of these, the more problematic is physician–patient communication.¹⁷ At least 50% of caretakers leave their doctor’s clinics because of not knowing what physicians exactly explained about the treatment.

Studies have shown that 50% of psychosocial and psychiatric problems are missed by physicians, as there could be communication gap; 54% of patients’ problems and 45% of patient concerns are either neglected by the physician, or not disclosed by the patient and 71% of patients stated poor relationships for their malpractice claims.

Studies devised the following suggestions after conducting a review of physician–patient communications: These are: Ask a patient about his feelings and concerns and their view about psychological factors to adherence and understanding the nature of the problem.^{13,18} Then provide valuable information about all areas that the individual finds comfortable and encourage them to share self-decision-making attitude.

At the same time, communication with the patient’s family and friends and patient’s own perception of social support are significantly related to adherence. The family’s role becomes most important if the patient is suffering from chronic disabling condition requiring continued support and understanding.

- Leaving the bias: Many review studies have said that there is no relationship between adherence and race, sex, educational experience, intelligence, marital status, occupational status, income, and cultural background.¹⁹

Although some other studies say that there is relation of adherence with sex and education, the effect is small and can be overcome by training and educating patients with their understanding. The fact is that an individual’s level of medication adherence can vary over time and between different aspects of treatment.

- Evaluating adherence: The evaluation of adherence is very important and hence, it becomes important to measure and evaluate patient adherence reliably.

This is possible by patients’ self-reports, which is the most widely used tool, pill counting, and measuring serum or urine levels in drug in some cases.²⁰ It has been found that patients can be very precise in reporting if they are adherent to their treatment regimen or not if physicians asked patients directly.²¹ Poor adherence to medication regimens is the most common problem, which contributes to substantial worsening of disease and death, with increase in the health care costs.

Physicians should always identify the patients with poor adherence and help to enhance by emphasizing value of a patient’s regimen by keeping the regimen simple, customizing the regimen to patient’s lifestyle. Enquiring patients by being nonjudgmental about medication-taking behavior is a practical strategy for identifying poor adherence.

A collaborative approach both by physicians and by patients is important to take care regarding the augments of adherence. Patients who undergo difficulty in maintaining adequate adherence require more strict strategies than those patients who have less difficulty with adherence. An innovative method of managing adherence in patients with chronic diseases has some success in improving adherence in cases where regimen is difficult to follow.

REFERENCES

1. Gabra WM, Shams ME. Adherence to medication among outpatient adolescents with epilepsy. *Saudi Pharm J* 2015 Jan;23(1):33-40.
2. Sabate, E. Adherence to long-term therapies: evidence for action. Geneva: World Health Organization; 2003.
3. DiMatteo MR. Variations in patients adherence to medical recommendations: a quantitative review of 50 years of research. *Med Care* 2004 Mar;42(3):200-209.
4. McDonald HP, Garg AX, Haynes RB. Interventions to enhance patient adherence to medication prescriptions. *JAMA* 2002 Dec;288(22):2868-2879.
5. Lehane E, McCarthy G. Medication non-adherence—exploring the conceptual mire. *Int J Nurs Pract* 2009 Feb;15(1):25-31.
6. Medicines Partnership. 2001. [cited 2001 May 27]. Available from: <http://www.concordance.org>.
7. 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. *Depress Res Treat* 2013;2013:809542.
8. National Institute for Health and Care Excellence (NICE). Medicines adherence: involving patients in decisions about prescribed medicines and supporting adherence. NICE Clinical Guideline 76. London: NICE; 2009.
9. WHO. Adherence to long-term therapies: evidence for action. Technical Report Series. Geneva: World Health Organization; 2003.

10. Ferrara CM, de Sousab RM, Castroc LH. Factors associated with treatment non-adherence in patients with epilepsy in Brazil. *Seizure* 2013 Jun;22(5):384-389.
11. Dias AM, Cunha M, Santos AM, Neves AP, Pinto AF, Silva AS, Castro SA. Adesão ao regime Terapêutico na Doença Crónica: revisão da literatura. *Millennium* 2011;40(16): 201-219.
12. van Dulmen S, Sluijs E, van Dijk L, de Ridder D, Heerdink R, Bensing J; International Expert Forum on Patient Adherence. Furthering patient adherence: a position paper of the international expert forum on patient adherence based on an Internet forum discussion. *BMC Health Serv Res* 2008 Feb;8:47.
13. Atreja A, Bellam N, Levy SR. Strategies to enhance patient adherence: making it simple. *MedGenMed* 2005 Mar;7(1):4.
14. Hall JA, Roter DL, Katz NR. Meta-analysis of correlates of provider behavior in medical encounters. *Med Care* 1988 Jul;26(7):657-675.
15. Sarriff A, Aziz NA, Hassan Y, Ibrahim P, Darwis Y. A study of patients' self-interpretation of prescription instructions. *J Clin Pharm Ther* 1992 Apr;17(2):125-128.
16. Katz JR. Back to basics: providing effective patient teaching. *Am J Nurs* 1997 May;97(5):33-36.
17. Roter DL, Hall JA, Merisca R, Nordstrom B, Cretin D, Svarstad B. Effectiveness of interventions to improve patient compliance: a meta-analysis. *Med Care* 1998 Aug;36(8):1138-1161.
18. Frankel, R.; Beckman, H. Evaluating the patient's primary problem(s). In: Stewart M, Roter D, editors. *Communicating with medical patients*. Newbury Park (CA): Sage Publications; 1989. pp. 86-98.
19. Stewart MA, McWhinney IR, Buck CW. The doctor/patient relationship and its effect upon outcome. *J R Coll Gen Pract* 1979 Feb;29(199):77-81.
20. Blake PG, Korbet SM, Blake R, Bargman JM, Burkart JM, Delano BG, Dasgupta MK, Fine A, Finkelstein F, McCusker FX, et al. A multicenter study of noncompliance with continuous ambulatory peritoneal dialysis exchanges in US and Canadian patients. *Am J Kidney Dis* 2000 Mar;35(3):506-514.
21. Duong M, Piroth L, Grappin M, Forte F, Peytavin G, Buisson M, Chavanet P, Portier H. Evaluation of the Patient Medication Adherence Questionnaire as a tool for self-reported adherence assessment in HIV-infected patients on antiretroviral regimens. *HIV Clin Trials* 2001 Mar-Apr;2(2):128-135.

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