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## Review article on Medication adherence

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The World Health Organization (WHO) defines adherence to long-term therapy as “the extent to which a person’s behaviour taking medication, following a diet, and/or executing lifestyle changes- corresponds with agreed recommendations from a health care provider”<sup>[1]</sup>. The word “adherence” is preferred over to the word “compliance” by many health care providers, because “compliance” suggests that the patient is passively following the doctor’s recommendations<sup>[2]</sup>.

Medication adherence is a growing concern to healthcare systems all over the world as nonadherence to medications has been associated with adverse outcomes both to the patient and to the health system. The consequence of nonadherence includes waste of medications, disease progression, reduced functional abilities, lower quality of life, and increased use of medical resources such as hospital visits and hospital admissions<sup>[3]</sup>.

### ***The magnitude of the problem***

Despite the clear benefits of medications for Non-communicable Diseases (NCDs), up to 50% of patients do not take their medications as prescribed. This fact has been proven by many researchers worldwide over the last several decades<sup>[4-7]</sup>.

Medication nonadherence is likely to grow as the population ages since patients need to take more medications to treat chronic conditions<sup>[8]</sup>. The situation would aggravate with older people as they may experience a decline in the cognitive and physical abilities.

Adherence to treatment for NCDs in developed countries averages 50% and the rates are even lower in developing countries. Interventions to improve medication adherence may have a far greater impact on the health of the population than any improvement in specific medical treatments. Improving the access to medications is insufficient for the successful treatment of disease. There is a tendency in the medical fraternity to focus on patient-related factors as the causes of problems with adherence while neglecting the provider and health system-related determinants which have a major effect on adherence. Therefore, healthcare providers must be given specific training in adherence management. A multidisciplinary approach is needed to make progress in medication adherence. This will require coordinated action from health professionals, researchers, health planners and policy makers.

### ***Types of medication nonadherence***

There are several types of nonadherences<sup>[3]</sup>. The first type is known as primary nonadherence, where the doctor writes the prescription, but the medication is never initiated. The second type of nonadherence is known as non-persistence in which a patient starts taking medications but decides to stop taking them after some time, without a health professional’s advice. The third type of nonadherence is known as non-conforming, in which medications are not taken as prescribed.

Patients are generally considered adherent to their medication if their medication

adherence percentage, defined as the number of pills absent in a given time period (“X”) divided by the number of pills prescribed by the physician in that same time period, is greater than 80% [2].

### ***Factors affecting the adherence***

WHO publication in 2003 “Adherence to long-term therapies: evidence for action” identify five categories of factors (social and economic, health care team and system-related, condition-related, therapy-related, and patient-related factors) affecting the medication adherence.

### ***Assessment of medication adherence***

Accurate assessment of adherence behaviour is essentially the first step in any project aimed to improve the medication adherence. There is no “gold standard” for measuring adherence behaviour of patients and the use of a variety of strategies has been reported in the literature. Brown and Bussell classify the assessment methods in to three categories namely, subjective measurements, objective measurements, and biochemical measurements in their review article in 2011 [9]. In subjective measurements, information about the patient’s medication use was obtained by asking patients, family members, caregivers, and physicians. Pill counts, pharmacy refill records, or electronic medication event monitoring systems were used for objective assessment of adherence. Biochemical measurements were cumbersome and obtained by adding a nontoxic marker to the medication and detecting its presence in blood or urine or measurement of serum drug levels.

### ***Interventions to improve medication adherence***

A review to evaluate the effectiveness of interventions aiming to improve adherence to treatment in patients taking antihypertensive medications identifies five categories of interventions [10]. They are education of caregivers and patients, simplification of dosage regimens, involvement of allied health professionals such as nurses and pharmacists, special monitoring (e.g., vial caps, blood pressure), and motivation of patients. Out of all interventions, simplification of dosing regimens was the most effective strategy (increased adherence in seven out of nine studies).

Unless a satisfactory level of medication adherence is ensured, full benefits of the prescribed medicines are not realized.

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