Therapeutic adherence in patients with chronic non-communicable diseases: diabetes, hypertension and obesity

La adherencia terapéutica en pacientes con enfermedades crónicas no transmisibles: diabetes, hipertensión y obesidad

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Abstract

Background. Chronic non-communicable diseases, particularly diabetes, hypertension and obesity, are diseases whose prevalence worldwide and in Mexico have taken on pandemic dimensions, since, despite the different clinical models of care applied, which are mainly based on nutritional and pharmacological treatments and lifestyle change recommendations, prevalence continues to grow. Identifying patient and health system barriers that affect therapeutic adherence for disease control will allow the development the development of programs with greater effectiveness and efficiency.

Objective: To carry out a review on the barriers of Therapeutic Adherence of patients with diabetes, hypertension and obesity in first level care clinics.

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Method: Bibliographic review, searching the PubMed, Science Direct, Springer, Virtual Health Library (VHL) and Google Scholar databases. Three types of primary sources were reviewed: systematic reviews, clinical trials, and review articles. For the search strategy, the terms Therapeutic adherence, barriers to therapeutic adherence, chronic non-communicable diseases, diabetes, obesity, and hypertension were used. The period selected for the bibliographic review is from 2005 to 2020.

Results: There are different barriers to compliance with therapeutic adherence that do not allow the control of the disease. These barriers may be specific to the patient, but also specific to the health system that provides the service, emphasizing the role of physicians in educating and guiding the patient regarding their disease and helping to adhere to it. To identify these barriers, there are different instruments, which have been designed for different diseases, so to select the appropriate one, the disease and the profile of the population in which the questionnaire will be applied must be considered.

Keywords: Barriers to adherence, chronic diseases, diabetes, obesity, hypertension.

1. Introduction

With the advance of medicine and technology, in the last 50 years the demographic transition has presented changes in survival and mortality rates, so that the diseases that affect the population have also changed, focusing on the reduction of infant mortality, mainly due to the reduction of infectious diseases, but, at the same time, the population in all regions of the world presents a greater aging (1).

In addition, lifestyle changes have led to an increase in the prevalence of chronic non-communicable diseases. The key determinants for the increase in this prevalence are urbanization, technology, living and working conditions, urban infrastructure, environmental quality and education, as well as access to health services and basic

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medicines. These conditions have resulted in an increase in smoking, unhealthy diets, sedentary lifestyles and harmful alcohol consumption (1) (2).

This paper will address three of the chronic non-communicable diseases: diabetes, obesity, and hypertension. These diseases, in the first instance, cause health problems such as myocardial infarction, cerebrovascular accidents, renal failure, lower limb amputations, heart failure, heart attacks, aneurysms, loss of vision and kidney damage. In addition, chronically ill patients suffering from these diseases present a gradual deterioration, dysfunction or failure of organs: eyes, kidneys, nerves, heart and blood vessels, with the ultimate consequences being premature disability and death (3). In a second instance, this condition of the patient brings with it socioeconomic problems that affect from the individual, the family, to society in general, since the high prevalence of these diseases has become a problem that causes the health systems to become incapable of attending these diseases, which, in turn, implies fewer services provided for these and other diseases, contributing to the poor quality of life of the population, generating a vicious circle that is difficult to break (4).

Suffering from these diseases not only implies a deterioration of health and, as a consequence, a poor quality of life; it also implies a high risk of death. According to the Ministry of Health (1), systemic arterial hypertension, ischemic heart disease, heart failure, degenerative calcific aortic valve stenosis, and congenital heart disease are the leading cause of death in the world. In relation to overweight and obesity, in 2015 these diseases contributed to four million deaths, representing 7.1% of mortality worldwide. As for diabetes mellitus, according to the World Health Organization, this disease caused 1.6 million deaths worldwide (5).

The health interventions recommended by the WHO (6) for the control of these diseases are focused on pharmacological treatments and general recommendations to take care of diet and adopt healthy lifestyles, but the growth in prevalence shows that

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until now these treatments have been insufficient; that is to say, the therapeutic adherence of patients suffering from these diseases is low. This low adherence is a consequence of personal therapeutic barriers and those of the health systems themselves.

Therapeutic barriers are directly related to the social determinants of health, since risk factors are much higher in poor populations, due to the inequity existing in these populations in terms of access to education and health services. These precarious socioeconomic conditions mean that patients do not always have access to medicines and laboratories. To this must be added the presence of myths and beliefs in people against treatment, violence, lack of family support, sedentary lifestyles and alcohol consumption mainly (2).

Lack of therapeutic adherence is a problem of great impact worldwide, predominating especially in patients with chronic diseases, whose long-term adherence has been estimated at 50%, but is even lower in developing countries (7). As a result, there are higher hospitalization rates, increased healthcare costs and therapeutic failures, resulting in higher prevalence, poorer disease control and, therefore, poor quality of life (8).

2. Development

a) Definition

There are different definitions of «therapeutic adherence», as mentioned by Pisano (9). Names such as *adherence, therapeutic adherence, compliance, obedience, concordance, therapeutic alliance, willingness to improve the management of one's own health or adherence*, among others, are used.

In the development of this concept and to understand its complexity, it must be considered that adherence is a complex and multifactorial phenomenon, because it involves a great variety of situations (taking medication, going to appointments, risk beha-

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viors, the environment family, socio-economic level, etc.), and it is not a behavior that is permanent, because it may or may not occur temporarily, since therapeutic adherence implies a relationship centered on the needs of the person, in which there is to consider her values and knowledge, inform her adequately and respect the choice of her therapeutic alternatives; In other words, it is necessary to migrate from the paternalistic model, in which the patient does not have active participation, to a model of shared decisions. Therefore, it is considered an error to hold a patient responsible as non-compliant or non-compliant, attributing exclusively responsibility for a problem as complex and multifactorial as therapeutic adherence (9).

In 1985, according to Jay (10), the terms «adherence» and «compliance» could be used interchangeably with «compliance»; and he defined the latter *as the extent to which a person's behavior (in terms of taking medications, following diets or making lifestyle changes) coincides with medical or health advice.* In 2007, DiMatteo (11) defined «patient adherence» as following medical treatment recommendations prescribed by a physician. This author mentions that other similar terms can be used, such as: *adherence, compliance, follow-up, continuation of treatment and acceptance of medical recommendations.*

On the other hand, Conthe (12) uses the term «compliance» and defines it as the extent to which the patient assumes the rules or advice given by the physician or other health professional, both from the point of view of habits or lifestyle, as well as the prescribed pharmacological treatment itself, and which expresses the degree of coincidence between the guidelines given by the health professional and those carried out by the patient, following a fully reasoned decision by the latter.

Some health systems, such as the National Health Services of the United Kingdom (13), define adherence as the extent to which the patient's behavior coincides with the recommendations agreed by the prescriber. In its 2005 annual report, it emphasizes that it has adopted this term in an attempt to emphasize that the patient

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is free to decide whether to adhere to the prescriber's recommendations, and that failure to do so should not be a reason to blame the patient.

Given the different definitions and complexity of the term adherence, the World Health Organization (WHO), in an effort to unify, and at the same time simplify the understanding of this concept, defines «therapeutic adherence» as *the degree to which the behavior of a person –taking the medicine, following a diet and making lifestyle changes– corresponds to the recommendations agreed by a healthcare provider* (2).

b) Implications of lack of adherence

The immediate impact of non-adherence is clinical, but also economic and social, so its effects are observed at two levels: the first, directly on the patient and their family, and the second, at the sanitary level systems. Regarding the impact on the patient, the obvious affectations are the clinical ones. The degree of these affectations will depend in the first place on whether a treatment is started or not when the disease is detected, since, even if said treatment is not started, what will be observed in the patient's health will be the clinical conditions of the natural disease, which, in the medium or long term and depending on the type of disease, will cause the consequences of the deterioration to be irreversible and even fatal. In the event that treatment is interrupted or partially followed, it will depend on the severity and chronicity of the disease whether the patient deteriorates to a greater or lesser degree (14).

On the other hand, the lack of therapeutic adherence can cause inadequate evaluations of the real effectiveness of the medication, which can lead to prescribe more drugs and modify the doses, causing major alterations in the patient's condition, thus reducing the effectiveness of the treatments and the probability of therapeutic success (12).

In health systems, the economic and social consequences of no or low therapeutic adherence are mainly: higher costs of drugs that

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are taken inappropriately or not even used; an increase in days and duration of hospitalizations, as well as in emergency room admissions; complementary tests and use of other drugs, all of which translate into a considerable increase in costs for the health system or, even, for the direct cost of the patient (2, 12). In other words, exclusively clinical interventions and investments aimed at disease control have a low return in primary care (disease prevention) and secondary care (disease control) (15). In view of the above, it is of utmost importance to highlight Neiman's statement (16): improving adherence is a public health priority and could reduce the economic and health burden of many chronic diseases and conditions.

c) Factors that influence therapeutic adherence and its management

As Amy Hai comments, non-adherence is a complex set of behaviors, which always begins to be analyzed at the patient level, and here it can be said that there are both intentional and unintentional causes. Unintentional non-adherence occurs when the patient wants to adhere but is unable to do so because he or she lacks capacity or resources; for example, lack of understanding of instructions or forgetting the treatment. Intentional nonadherence occurs when the patient decides not to follow the recommendations, a situation that could be better understood in terms of the factors of perception, beliefs, and preferences that influence the motivation to start and continue with treatment (17).

According to Conthe, it has been possible to define a profile of the non-compliant patient: the most frequent cause of non-compliance is forgetting to take the medication; the lack of health education about the disease; the complexity of the treatment received; the inadequate doctor-patient relationship; the lack of knowledge about the use of the medication; the appearance of adverse reactions; and the lack of social and family support. Elderly patients are the biggest consumers of drugs, and are a group particularly susceptible to very low levels of therapeutic adherence (12).

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It is important to mention that barriers to behavior change vary depending on the chronic disease or comorbidities; for example, according to Burges (15), it was found that in overweight patients the main barriers include lack of motivation; environmental, social and family pressures; lack of time; physical and health limitations; negative thoughts/moods; socioeconomic limitations; gaps in knowledge/awareness and lack of enjoyment of exercise, while for adherence in diabetes, patients' attitude, cultural beliefs and knowledge about diabetes significantly affect the control of this disease (18).

d) Socioeconomic factors

Although socioeconomic status has not been systematically found to be a predictor of adherence, in developing countries, low socioeconomic status can place patients in the position of having to choose between the priority of attending to their health or their basic needs, such as attending to the needs of the children or parents they care for (2). In addition to the above, it has been observed that socioeconomic levels classified as poverty levels go hand in hand with illiteracy, low educational level, unemployment, lack of effective social support networks, unstable living conditions, remoteness from the treatment center, high cost of transportation, cost of medication that makes it unaffordable, changing environmental situations, culture and popular beliefs about the disease, treatment and family dysfunction (7, 19).

In recent years, adherence research has focused on patients' obstacles to adherence. In this perspective, the physician's responsibility for optimizing adherence to treatment was not considered important, but research in recent years has shown that the lack of adherence is multifactorial. Physicians have been identified as playing a central role because, if they do not effectively communicate basic information about treatment plans and their importance to

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their patients, patients may be left with concerns about adverse drug effects and a lack of understanding of the disease and treatment, which negatively affect their adherence (18, 20). Lack of health education has also been identified as a central factor negatively affecting adherence (21). The impact of this lack of health education is observed in socially disadvantaged patients as well as in those without socioeconomic problems, which could explain why chronic diseases have become a worldwide problem at all levels (22).

Various multifactorial analyses have identified factors that affect therapeutic adherence (8, 12, 18, 19, 20, 23, 24, 25): some of them are listed and grouped below.

1) Patient characteristics:

- Unconcerned attitude towards the disease and/or treatment.
- Low degree of knowledge (health education) of the disease and/or treatment.
- Lack of confidence in the efficacy of the treatment.
- Lack of knowledge or distrust about the side effects of medications.
- Low motivation to recover health.
- Illness perceived as not serious.
- Extreme ages: children and the elderly.
- Low educational level and economic status.
- Lack of knowledge of the consequences.
- Emotional instability, depression, hypochondriac personality.
- Myths and beliefs about the disease and about treatments (social and religious).
- Resistance to changes in exercise routine and to change the type of diet.

2) Characteristics of the therapeutic regimen:

- Polytherapy.
- Complex and/or uncomfortable dosage guidelines.
- Incomprehension of the therapeutic regimen.

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- Occurrence of side effects.
- Unpleasant organoleptic characteristics.
- Pharmaceutical forms and/or packaging of complex use.
- Cost of the medication.
- Oral versus parenteral administration.
- Preventive/prophylactic treatments.
- Chronic and/or recurrent treatments.

3) Disease characteristics:

- «Silent» or poorly symptomatic disease.
- Chronic, recurrent and/or relapsing disease.
- Mild disease and/or absence of complications.
- Coexistence of other associated diseases.

4) Characteristics of the family and social environment:

- Existence of interfamilial or social communication problems.
- High degree of conflict between family/social norms and the behavior to be followed (violence or lack of support for disease management).
- Lack of primary caregiver when the patient is not independent.
- Poor supervision in taking medication.
- No history of illness within the family or friends.
- Loneliness (living alone).

5) Characteristics of the health structure:

- Administrative bureaucracy.
- Doctor changes.
- Difficulty of access to health centers.
- Cost of medical care.
- Outpatient versus inpatient treatment.

6) Characteristics of the health professional: doctor, nurse and/or pharmacist:

- Mistrust or poor cooperation between patient and healthcare professional.

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- Professional with negative skills and attitudes to present information that demotivate the patient.
- Lack of empathy towards the emotional condition of patients.
- Absence of written instructions.
- Overly technical language.
- Little or no cooperation between the physician and the pharmacist.
- Intensification of unnecessary treatments or tests that may put the patient at risk.

Of the above factors, two are crucial: the health professionals and the family environment. Poor adherence cannot be framed only in terms of the fears and ignorance of patients, who obviously decide for themselves; it is also a responsibility of health professionals to generate adequate and effective communication with the patient to adequately address his or her disease and concerns (20). However, the lack of knowledge of physicians to identify and manage the psychological well-being of patients has been documented, and some studies have even identified that physicians themselves acknowledge that they lack effective communication tools and skills in counseling and shared decision making (18).

Taking the above into consideration, and according to the WHO (26), health professionals should be specifically trained in achieving patients' therapeutic adherence, since they can have a significant impact by assessing the risk of non-adherence and intervening in a timely manner to optimize it. However, this is not simply because they are physicians and have clinical knowledge; to achieve this effectiveness in their interventions, health professionals must have access to specific training in adherence care (24), since even physicians' attitudes toward diabetes management may be more important than their actual knowledge of the disease. This training should have three main focuses: knowledge (information on adherence), reasoning (the clinical decision-making process), and action (behavioral tools for health professionals) (18). Patients should be

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active partners with health professionals in their own care, and such good communication between the two is an essential requirement for effective clinical practice (14).

Regarding family support, the WHO also mentions that it is a key factor for success in improving therapeutic adherence, since they play an active role in the daily routine of patient care, in accompanying the patient in understanding the disease, which impacts on health outcomes and patient behavior, since some studies have even shown that this active participation of the family is reflected in health professionals reducing the time dedicated to the care of chronic patients (2).

As for healthcare systems, according to Horne (13), current levels of noncompliance imply an inability to address patients' needs and preferences, and represent a fundamental inefficiency in the delivery and organization of services, and that increasing the effectiveness of adherence interventions can have a much greater impact on population health than any improvement in specific medical treatments, yielding benefits such as: better care tailored to patient needs, higher rates of adherence to appropriate medication, fewer unwanted and unused prescriptions, more effective chronic disease management, greater patient safety and satisfaction, and fewer emergency admissions.

e) Measurement

For the management of chronic diseases, it is important and necessary to routinely assess therapeutic adherence in patients during their treatment. In order to be able to assess adherence, direct or indirect techniques are used. The direct ones can be the determination of the drug or its metabolites in blood, urine or other biological fluid, clinical parameters determined through laboratory studies. Meanwhile, the indirect ones consider the counting of tablets, attendance at scheduled appointments, assessment of therapeutic efficacy, assessment of side effects, electronic monitoring of medi-

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cation and clinical interview techniques, which are based on directly asking the patient about his compliance or are self-reporting questionnaires (2). The latter method is recommended because of its ease of application and because it does not involve any cost; but it is necessary to recognize that there is no instrument that can be considered the «gold standard», so that, in order to select the instrument to be used, the disease, the population and its characteristics, as well as the dimension of adherence to be evaluated, should be considered (12, 27).

Direct objective methods are generally specific; however, they are expensive and require infrastructure, are more associated with disease control, and do not always directly reflect the level of adherence, so they are not entirely practical and easy to apply. Indirect methods, on the other hand, show deviations, since patients frequently report non-compliance, fearing that this will affect the relationship with the physician. Therefore, the choice of the best measurement strategy to obtain an approximation of adherence behavior must meet basic psychometric standards of acceptable reliability and validity. In addition, they must be developed in such a way that patients answer them honestly, without bias and without fear of being judged for their behavior. There are different questionnaires that have been developed and validated for different diseases. Those most frequently identified in the literature are described below (2, 13, 27, 28, 28, 29, 30, 31, 32, 33, 34):

a) *Self-reported compliance test or Haynes-Sackett test:* this questionnaire is based on asking the patient about the difficulties he/she has in taking his/her medication and compliance with the prescribed treatment. If he/she answers that he/she has difficulties in either of the two, he/she is classified as non-adherent.

b) *Morisky-Green test*: this method, validated for various chronic diseases, evaluates medication adherence. It consists of four contrasting questions with dichotomous answers as to whether patients comply with taking their medications as prescribed; if any of them are answered in the negative, the patient is considered to be

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non-adherent. In 2008, a new version was generated in which 4 questions were added, also related to medication adherence.

c) *The «bogus pipeline» test*: this consists of asking the patient to bring a urine sample, indicating that it is to calculate the amount of medication taken. If the patient has difficulty in performing the test and states that he/she does not take the medication, he/she is a non-compliant patient.

d) *Battle Test (test of the patient's knowledge of the disease*): the degree of knowledge that the patient has of his disease is analyzed, assuming that a greater knowledge of it generates a greater degree of compliance. The test consists of 3 questions, and considers an adequate level of compliance if three correct answers are given, and inadequate if less than three are given.

e) *Hermes test*: this is a questionnaire made up of 8 questions, exclusively on medication, four of which can be scored with one point each, and those who score a total of 3 or 4 points are considered to be compliant.

f) *SMAQ (The Medication Adherence Questionnaire) compliance test:* a questionnaire validated for the Spanish population with acquired immunodeficiency syndrome, consisting of six questions on medication. The questionnaire is dichotomous until the fourth question; therefore, any response in the sense of non-compliance is considered non-compliance. Question five can be used as a semi-quantitative question, assigning a percentage of compliance according to the response.

g) *The Medication Adherence Report Scale (MARS*): this questionnaire has several versions. Initially, only five items were considered; later it was expanded to 10 and, given the results, a questionnaire was developed consisting of 30 questions, comprising items on health beliefs, experiences and behavior of the patients surveyed. It allows the identification of predictors of medication adherence in patients with chronic diseases and contrasts self-referred good adherence. A score of 25 indicates good compliance, while a lower score reveals suboptimal compliance.

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h) *Brief Medication Questionnaire (BMQ):* this is a tool for assessing therapeutic compliance. It consists of 3 sections: the first contains questions on the intake of medications; the second contains two questions on the discomfort that the medications cause the patient; the third asks about five problems that may arise when taking each of the medications. Although it is not very long and is highly sensitive, it is a complex questionnaire to score in order to determine whether the patient is adherent.

i) *Other questionnaires:* other questionnaires were identified that are not used as frequently or are not validated. In general, they are based on counting tablets, attendance at scheduled appointments, collection of prescriptions for drug delivery, evaluation of attitudes towards the medication process or measurement of clinical factors to determine the therapeutic efficacy achieved.

j) *The different strategies for its improvement*

As a result of research and meetings in different countries, the WHO has recognized that interventions to eliminate barriers to therapeutic adherence must become a central component of efforts to improve population health worldwide (23, 32, 30). Indeed, even considering that there will initially be a possible increase in spending on drugs and education strategies, the impact of chronic disease control will significantly decrease the overall health budget, due to the reduced need for other more costly interventions (42, 55). This assertion has been substantiated by multiple studies that consistently demonstrate cost savings and significant increases in the effectiveness of health interventions that are attributable to low-cost interventions to improve adherence. Therefore, efforts should focus on increasing the effectiveness of adherence interventions, and this will have a much greater impact on population health than any improvement in specific medical treatments (56, 57, 58, 20).

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Speaking at the level of health systems, the WHO (46) refers to five interacting dimensions that influence therapeutic adherence: 1) those related to the health care system or team; 2) socioeconomic; 3) those related to treatment; 4) those related to the patient; and 5) those related to the disease. If interventions aimed at positively impacting these factors are implemented, adherence will improve.

This review identified that, given that therapeutic adherence is a complex process and some of the strategies require considerable investments, two dimensions are those that, if addressed, will give effective results in the short and medium term for disease control: a) those related to the patient, and b) those related to the health care system or team (23, 32, 38).

Patient-related: for patients to cope effectively with the treatment-related demands imposed by their disease, they must be informed, motivated and trained in the use of cognitive and behavioral self-regulatory strategies. Effective delivery of care for chronic processes requires mobilizing the patient and the supporting community, but it is important to recognize that, for health systems, this is one of the most difficult elements to provide in the long term (23, 32, 41). Health education in patients is a crucial element, since it has been shown that it can modify health care habits and generate confidence in medical treatment, especially in those sectors in which schooling is low, since this is associated with low therapeutic adherence (59).

In addition to the above, health education programs should be comprehensive and not only elaborated with clinical academic elements, since barriers to behavioral change should be addressed at the beginning of treatment with a focus on lifestyle change, and not only as general recommendations, but with strategies and activities achievable by patients and that take into account their culture and beliefs (31, 34). Additionally, it is considered crucial to develop programs that involve the family, because family support can be an

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important facilitator of adherence to self-care. Indeed, it has been found that higher levels of family support can also improve the ability to overcome barriers to healthy behavior (45).

3. Discussion

Assuming that therapeutic adherence is defined as *the degree to which a person's behavior –taking medication, following a diet and making lifestyle changes– corresponds to the agreed-upon recommendations of a health care provider* (2), adherence becomes one of the cornerstones of health care models, since it depends on the patient's attitudes towards following medical indications whether treatments are effective in controlling and preventing disease (1).

Therapeutic adherence becomes even more critical for the control of chronic diseases such as diabetes, hypertension and obesity, since, if treatments are not followed, patients slowly deteriorate, affecting their quality of life and eventually die as a consequence of the effects of the disease not adequately treated (1, 3, 7).

There are multiple factors that do not allow a patient to adhere to the therapy prescribed by health professionals. These factors are referred to as barriers to therapeutic adherence. Numerous studies have identified and grouped the barriers to therapeutic adherence into five dimensions: 1) those related to the health care system or team; 2) socioeconomic; 3) treatment-related; 4) patient-related; and 5) disease-related (26).

Despite having identified the barriers to therapeutic adherence, no national or local programs have been created to eliminate or reduce them, since the medical guidelines for treating chronic diseases such as diabetes, obesity and hypertension are based mainly on pharmacological treatments, controlled diet and recommendations on a healthy lifestyle (45, 46, 47). The consequence of not addressing these diseases in a comprehensive manner is an increase in the

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prevalence of these diseases. This increase has been constant, until it has become a pandemic, affecting sufferers with a poor quality of life and premature death (1).

There are different instruments (direct and indirect) to measure therapeutic adherence and identify its barriers (30, 33). However, not all instruments assess all spheres of adherence. Additionally, these instruments are little used, so most health care models are not evaluated in a comprehensive manner and, therefore, do not identify the multifactor of low patient adherence (41).

Health systems, although they cannot generate strategies to influence the socioeconomic factors of the patient and the disease itself, can and should work especially on the barriers related to physicians' skills, so as to enable them to develop skills for effective communication and an attitude of empathy that, in turn, facilitate patient education (26), as well as generate models of medical care centered on patients and their families, including, in addition, their preferences within their cultural context, in order to involve patients in the decision making process of their medical treatment and change of lifestyle, which will result in the prevention and control of these diseases in the long term (43 ,44).

4. Conclusions

To increase the efficiency and effectiveness of treatments for the prevention and control of diseases, health systems should generate health care models that are centered on the patient and his or her family. Therefore, the training of health care personnel should include strategies that develop personal skills that allow them to educate the patient, include him or her in decision-making about treatment, and create awareness of the importance of adhering to medical treatments and lifestyle changes for the prevention and control of chronic non-communicable diseases, such as diabetes, hypertension, and obesity.

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On the other hand, health systems should also include as routine processes the measurement of therapeutic adherence with designed and validated instruments that contemplate the different spheres of adherence, especially those related to the health care system or team and the patient in the face of the disease, which is what can influence it, since if only instruments that only evaluate one dimension are applied, all the barriers are not correctly identified; therefore, the health care models do not achieve disease prevention and control.

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