

## Patient safety and adherence to pharmacological treatment: a diagnostic study in the León Becerra Hospital of Guayaquil

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### Abstract

The growing number of scientific research and publications on patient safety has provided a solid evidence base that highlights the magnitude and impact of safety problems, and these studies have identified adverse drug events as critical factors. Students and teachers of the TES Pharmacy Assistance career, in response to this problem, conducted a diagnostic study as part of the research project "Promotion strategies on adherence to drug treatment", with the aim of characterizing the current status of patients with NCDs in relation to adherence to drug treatment at the León Becerra Hospital in Guayaquil, using direct methods such as the Morisky-Green Test (MAQ: Medication Adherence Questionnaire) and the questionnaire. The results conclude that patients' therapeutic non-adherence reveals a significant concern that should be urgently addressed; adherence to the prescribed therapeutic regimen is fundamental for the control of NCDs and the reduction of complications and mortality. Therapeutic nonadherence is a multifaceted problem influenced by a variety of factors, related to the patient, the treatment, the health system, health professionals, and socioeconomic conditions. Given this situation, it is necessary

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to implement strategies to increase adherence to treatment and patient safety. These actions should be supported by public health policies that facilitate access and continuity of treatment for patients.

**Keywords:** Patient safety, adherence, chronic non-communicable diseases.

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### **Seguridad del paciente y adherencia al tratamiento farmacológico: un estudio diagnóstico en el Hospital León Becerra de Guayaquil**

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#### **Resumen**

El creciente número de investigaciones y publicaciones científicas sobre seguridad del paciente ha proporcionado una sólida base de evidencia que pone de manifiesto la magnitud y el impacto de los problemas de seguridad, y estos estudios han identificado los eventos adversos a medicamentos como factores críticos. Estudiantes y docentes de la carrera de Asistencia Farmacéutica del TES, en respuesta a esta problemática, realizaron un estudio diagnóstico como parte del proyecto de investigación "Estrategias de promoción en la adherencia al tratamiento farmacológico", con el objetivo de caracterizar el estado actual de los pacientes con ECNT en relación a la adherencia al tratamiento farmacológico en el Hospital León Becerra de Guayaquil, utilizando métodos directos como el Test de Morisky-Green (MAQ: Cuestionario de Adherencia a la Medicación) y el cuestionario. Los resultados concluyen que la no adherencia terapéutica de los pacientes revela una preocupación significativa que debe ser abordada con urgencia; la adherencia al régimen terapéutico prescrito es fundamental para el control de las ENT y la reducción de las complicaciones y la mortalidad. La no adherencia terapéutica es un problema

multifacético en el que influyen diversos factores, relacionados con el paciente, el tratamiento, el sistema sanitario, los profesionales de la salud y las condiciones socioeconómicas. Ante esta situación, es necesario implementar estrategias para aumentar la adherencia al tratamiento y la seguridad del paciente. Estas acciones deben ser apoyadas por políticas de salud pública que faciliten el acceso y la continuidad del tratamiento de los pacientes.

**Palabras clave:** Seguridad del paciente, adherencia, enfermedades crónicas no transmisibles.

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## INTRODUCTION

Patient safety has gained great importance in recent years. Since 2019, World Patient Safety Day has been celebrated, with the aim of raising awareness of the relevance of this topic in all areas and sectors involved in healthcare. "Patient safety (PS), or the deliberate attempt to avoid harm to patients as a result of care, is an essential component of quality of care and a prerequisite for the performance of any clinical practice" Rocco & Garrido (2017) cited by (Lloacana, Vasquez, & William, 2023)..

According to the World Health Organization (2009), quality and safety in patient care constitute a technical and ethical obligation of those who provide the service, through the transparency of the processes and results of the actions developed by the aforementioned health systems. Quality of care being the degree to which health services provided to individuals and populations increase the probability that the intended health effects occur and these are consistent with the professional knowledge of the moment; cited by (Ecuador, Ministerio de Salud Pública, 2016).

Patient safety is a crucial component in medical care and one of the major concerns in any health system; one of the causes that jeopardizes patient safety is lack of adherence to treatment; however, in clinical practice this fact is not considered as one of the main causes of therapeutic failure.

The World Health Organization (WHO) defines therapeutic adherence as "the degree to which a person's behavior-taking medication, following a dietary regimen, and executing lifestyle changes-matches the agreed-upon recommendations of a health care provider" cited by (Ortega, Sánchez, Óscar, & Ortega, 2018)..

A recent report by the World Health Organization (WHO), nonadherence is a "major global problem "cited by. (Ortega, Sánchez, Óscar, & Ortega, 2018).. In 2007 the National Council on Patient Information and Education indicated that, "one out of every two patients forgets to take their medication; three out of every ten patients stop taking their medication once treatment has started; and one out of every four patients takes a lower dose than prescribed by their physician; all of this, with the impact and economic expense that it entails" (Elizondo & Braceras, 2019).

Lack of adherence to treatment has been associated with poorer clinical outcomes in a wide variety of medical conditions. Lack of medication adherence can lead to inadequate disease control, increased complications, and frequent hospitalizations. It also has significant economic implications; several studies have shown that the costs associated with the medical care of patients who do not adhere to their treatments are significantly higher due to the need for additional medical interventions, more intensive treatments and hospitalizations.

Non-adherence is undoubtedly a significant cause that jeopardizes patient safety and can lead to therapeutic failure. However, in clinical practice, this reality is often overlooked due to

underestimates of the problem, a predominant focus on immediate clinical factors, limitations in resources and time, and deficiencies in patient communication and education. The present study aims to characterize the current state of adherence to pharmacological treatment in patients with NCDs at the León Becerra Hospital in Guayaquil.

The growing importance of patient safety in recent times reflects a broad and deep recognition of the challenges and opportunities in healthcare. The World Health Organization (WHO) and other international organizations have launched various initiatives and campaigns to improve patient safety and to raise awareness and promote global action in this regard.

Patient safety is critical to maintaining public confidence in the healthcare system; patients and their families must trust that they are receiving safe, quality care. Improving safety practices helps to strengthen this trust and ensure more effective and humane care. To improve therapeutic outcomes and patient safety, it is crucial to recognize and address treatment adherence as a central component of comprehensive medical care.

Non-adherence to treatment is a worldwide problem whose origin is multifactorial (Orueta et al., 2008). It is the cause of reduced health outcomes and rising healthcare costs (Dilla et al., 2009). It may be due to factors related to the pathology, the treatment, the patient, the healthcare professional or the socioeconomic environment (Pagès-Puigdemont and Valverde-Merino, 2018) cited by. (Villegas, 2022).

Despite pharmacological advances and research into the control of chronic diseases, health outcomes are not as expected due to lack of adherence, which considerably reduces the efficacy and efficiency of treatments. Some studies place it for patients with chronic diseases at 50%. Lack of adherence is as high as 75% in

psychiatric diseases, 70% in asthmatic patients, 50% in patients with arterial hypertension (AHT), cholesterol, or diabetes, and can decrease to 30% in acute pathologies (Rigueira, 2001 cited in (García, Gil, Murillo, Vázquez, & Vergoños, 2017)..

The degree of adherence and the effectiveness of treatments are closely related, and this relationship is critical to achieving optimal outcomes in medical care. Patients who adhere to their treatments generally experience an improvement in their quality of life due to better symptom control and a lower incidence of complications. This is vital to their emotional and social well-being.

Most authors refer to adherence as a dichotomous variable and classify patients as adherent or nonadherent. However, taking into account that patients may be adherent to some aspects of their treatment and not to others, it may sometimes be more interesting to take a quantitative approach to adherence and speak of degrees of adherence and of fully adherent, partially adherent, and predominantly nonadherent patients (García, Gil, Murillo, Vázquez, & Vergoños, 2017).

According to intentionality, intentional NA is that in which the patient is aware of the action, and this decision may be influenced by the patient's attitudes, expectations and beliefs. In unintentional NA, patients, due to certain limitations and without intending to do so, become NA (García, Gil, Murillo, Vázquez, & Vergoños, 2017)..

By temporal factors, several categories are defined taking into account the time and how it occurs (Rubio-Valera, 2012 cited by. (García, Gil, Murillo, Vázquez, & Vergoños, 2017):

- Non-initiation or lack of primary adherence, in which the initial medication is not withdrawn.
- Late initiation is the delay in starting treatment.

- Early discontinuation is the interruption of treatment earlier than prescribed.
- Underdosing is the administration of insufficient doses to achieve the desired result.
- Overdosage, includes excessive doses to achieve the desired therapeutic effect.

For the WHO cited by (Pagès & Valverde, 2020) there are five interacting dimensions that influence therapeutic adherence:

1. Socioeconomic factors.
2. Treatment-related factors.
3. Patient-related factors.
4. Disease-related factors.
5. Factors related to the health care system or equipment.

It is very important to investigate these dimensions in depth in practice in order to influence the community through promotional actions; taking into account that the lack of adherence to treatment in the context of Chronic Non-Communicable Diseases is considered a serious health problem worldwide

## **METHODOLOGY**

A polymodal or mixed methodology was used, combining qualitative and quantitative methods and techniques, to obtain reliable information from patients with NCDs at the León Becerra Hospital in Guayaquil, in relation to adherence to pharmacological treatment.

The research is field-based, allowing the researchers to interact directly with patients with NCDs at the León Becerra Hospital in Guayaquil, which guarantees a more accurate and relevant data collection, accurately reflecting the current state of adherence to pharmacological treatment.

Descriptive and hermeneutic research is also followed, because it focuses on the interpretation of the data obtained to characterize the current status of patients with NCDs in relation to adherence to pharmacological treatment.

The theoretical methods used are: analytical-synthetic and inductive-deductive; the empirical methods used are observation, interview, survey and test, which allow characterizing the current state of adherence to pharmacological treatment in patients with NCDs at the León Becerra Hospital in Guayaquil.

The study population consisted of 92 patients with NCDs at the León Becerra Hospital in Guayaquil and 8 health professionals (4 pharmacists, 2 physicians, 2 nurses).

The Morisky-Green Test (MAQ: Medication Adherence Questionnaire) and the questionnaire were selected from among the various methods used to measure therapeutic adherence. The first version of the Morisky-Green Test (MAQ), which consists of 4 questions (4-item Morisky Medication Adherence Scale: MMAS-4) with dichotomous yes or no answers, was selected. The Morisky-Green test is one of the best known and has been validated for chronic diseases; in the present study it is applied to patients with NCDs at the León Becerra Hospital in Guayaquil to measure adherence to drug treatment.

The questionnaire is also used because it is very useful to determine adherence to pharmacological treatment in patients with NCDs at the León Becerra Hospital in Guayaquil, and it is a simple and inexpensive method. The questionnaire is subjected to a validation process by experts to evaluate the effectiveness of the items determined and formulated.



## RESULTS

Once the data collection instruments were applied, the results were processed, tabulated and analyzed; in this process it was identified that 68% of the population is female and 32% male. Age is another very important factor; many studies have shown that older people have greater adherence to pharmacological treatment, data that are corroborated in this study; 42% of the research population is 60 years or older, 32% is in the range of 49 to 59 years, between 29 and 48 years is 18% of patients and from 18 to 28 8%, see Table 1.

**Table 1.** *General data*

GENRE		
Female	63	
Male	29	
AGE		
18-28	7	8%
29-48	17	18%
49-59	29	32%
60 or more	39	42%

Eighty percent of the patients surveyed suffer from some NCD (see Figure 1), of whom more than 40% are 60 years of age or older; this data reinforces the existing knowledge that NCDs are more prevalent in older persons. Advanced age is a non-modifiable risk factor, and this age group tends to have a greater accumulation of risk factors and exposure throughout their lives. Another significant fact is that only 12% of patients with NCDs are in the 18-28 age range. Although this percentage is lower, it should not be

underestimated. The presence of NCDs in young adults could indicate the emergence of early health problems, possibly related to unhealthy lifestyles adopted from an early age.

Chronic Non-Communicable Diseases (NCDs) represent a significant burden for health systems and people's quality of life. These diseases include pathologies such as hypertension (77%), diabetes (70%), respiratory diseases (54%), cardiovascular diseases (53%), digestive diseases (36%), osteoporosis (30%). These diseases, in many cases, are linked to modifiable risk factors such as smoking, sedentary lifestyle, poor diet, and alcohol consumption.

Effective management of NCDs depends to a large extent on patients' knowledge of their condition, including causes, symptoms, treatment options, and prevention and self-care measures. However, 51% of NCD patients surveyed indicate that they know nothing about their disease and 28% consider that they know something. This data is alarming because it suggests that more than half of the patients are completely uninformed about their condition, which can lead to poor disease management, worsening of symptoms, and an increase in associated morbidity and mortality.

58% of patients surveyed report that their diseases affect their quality of life. This indicates that a significant majority of patients experience a marked decrease in their well-being and ability to perform daily activities due to their disease. This can include physical limitations, chronic pain, fatigue, and emotional problems such as depression and anxiety. Thirty-one percent of patients indicate that their condition has affected their life somewhat. Although this group is not as severely affected as the previous group, there is still a noticeable impact on their quality of life.

Chronic Non-Communicable Diseases (NCDs) are long-term conditions that require continuous and often intensive management; pharmaceutical treatment is essential to control symptoms, prevent complications and improve patients' quality of life. The fact that 80% of the patients surveyed follow a pharmaceutical treatment to treat their disease is positive in the sense that most patients are receiving some type of medical intervention to manage their condition. The remaining 20% of patients indicate that they are not following any treatment; this is concerning because it suggests that one-fifth of patients with NCDs are not receiving the necessary treatment, which may lead to poor disease control, more rapid disease progression, and an increased risk of serious and potentially life-threatening complications.

Patients on pharmaceutical treatment are more likely to keep their disease under control, reduce symptoms and prevent complications. This can translate into improved quality of life, increased ability to perform daily activities and a reduction in hospitalizations and emergency visits.

However, analysis of the results of the survey on the patients' perception of the effectiveness of their health treatments reveals a complex and worrying situation; only 24% of the patients surveyed consider that the treatment they are undergoing greatly improves their state of health, which suggests that, for this group, the treatment meets their expectations and possibly the therapeutic objectives set. Forty-seven percent of those surveyed say that the treatment somewhat improves their state of health, which indicates that, although there is a perception of improvement, it is not significant enough.

The most alarming finding is that 29% of the patients surveyed indicated that they have not improved at all with treatment; this percentage reflects significant dissatisfaction and raises serious

concerns about the effectiveness of the treatments administered. The reasons behind this perception could be varied: from inadequate or poorly administered treatments, lack of accurate diagnosis, to more structural problems of the health system such as access and quality of service.

These results underscore the need for a thorough evaluation of the treatments being offered. It is crucial to investigate the causes behind patients' perception of little or no improvement in order to implement strategies to increase the effectiveness of treatments and patient satisfaction. It may be necessary to adjust protocols, personalize treatments and improve the training of healthcare professionals, as well as to ensure closer follow-up of patients to adjust therapies according to their evolution. In addition, it is essential to consider patients' opinions and experiences as an integral part of the process of improving health services.

Regular medical check-ups are an essential component of effective disease management and pharmaceutical treatment follow-up. These check-ups allow health professionals to closely monitor the evolution of the disease and the patient's response to treatment. According to the data obtained in the survey, 47% of patients always attend their medical check-ups, 40% do so regularly and 13% never attend their medical check-ups. Although this last figure represents a small percentage, it is of great concern because it limits the opportunities for early detection of complications associated with the disease; regular medical control helps to identify subtle changes in the patient's state of health that may indicate the onset of complications, allowing timely intervention that can prevent the deterioration of the patient's condition.

Physical activity is another essential component for maintaining health and well-being at all ages, especially in older adults. It is concerning that only 17% of the patients surveyed confirm always

engaging in physical activity, regularly engage in physical activity 35%, and 48% indicate that they never engage in physical activity. The fact that almost half of the patients surveyed do not participate in any form of physical activity is of concern, as sedentary lifestyles are associated with a variety of health problems, such as cardiovascular disease, type 2 diabetes, obesity, loss of muscle and bone mass, and cognitive impairment. Physical inactivity can also negatively affect a patient's mood and quality of life.

The survey reveals important information about the eating habits of the NCD patients surveyed, a positive aspect such as the fact that 45% confirm practicing good eating habits and areas of concern because 34% state that they only sometimes follow healthy eating practices, and 21% never do so, this group of patients who do not practice healthy eating habits are at greater risk of developing health problems related to poor diet, such as obesity and nutritional deficiencies, among others; which further complicates their health status; and highlights the need for specific interventions to educate and support this segment of the population in adopting better eating habits.

Finally, respondents were asked to list the most important factors that they considered caused their illness, listing them in order of importance, and these are the results obtained:

Forty-nine percent of the respondents indicated unhealthy diet as the first. Diets high in saturated fats, sugars and salt, and low in fruits, vegetables and fiber, contribute to the development of obesity, hypertension, type 2 diabetes and cardiovascular disease.

40% consider physical inactivity to be the main cause of their disease. Lack of physical activity is associated with an increased risk of cardiovascular disease, type 2 diabetes, some types of cancer and obesity.

52% believe that the practice of unhealthy habits is one of the causes of their disease. Unhealthy habits such as tobacco use is one of the main risk factors for NCDs, especially for cardiovascular diseases, cancer (especially of the lung, mouth, throat and esophagus) and chronic respiratory diseases such as chronic obstructive pulmonary disease. On the other hand, there is the excessive and regular consumption of alcohol, which leads to liver disease, cancer, high blood pressure and heart problems.

38% indicate that one of the causes of their health condition is non-adherence to medical treatment, self-medication and inappropriate use of medications. This is crucial, as self-medication and non-adherence to prescribed medications can lead to adverse effects, dangerous drug interactions and ineffectiveness of treatment. Adherence to treatment is fundamental to the successful management of chronic noncommunicable diseases.

Analysis and discussion of the main results of the Morisky-Green Test (MAQ) applied to patients with NCD at the León Becerra Hospital in Guayaquil.

The evaluation of the degree of therapeutic adherence through the Morisky Green Test identified that more than 55% of the patients surveyed were not adherent to the therapeutic regimen prescribed for their disease.

A patient is considered to be adherent when the sequence of answers to the test questions is: No-Yes-No-No. In this case this sequence is not complied with: in the first question 61% of the patients answer Yes, which indicates non-adherence; in the second question more than 50% answer No; the third and fourth questions the results behave in the same way more than 50% answer Yes; as shown in Table 2.

This finding is of great concern because therapeutic adherence is essential for the effective management of chronic diseases and prevention of complications. Lack of adherence means that patients are not taking their medications consistently and appropriately, which can result in inadequate control of their condition. In addition, it directly impacts treatment efficacy and patient health outcomes.

**Table 2.** *Results of the Morisky-Green test.*

<b>1.- Do you ever forget to take your medications to treat your illness?</b>		
YES	56	61%
NO	36	39%
<b>2.- Do you take your medications at the indicated times?</b>		
YES	42	46%
NO	50	54%
<b>3.- When you feel well, do you stop taking the medication?</b>		
YES	53	58%
NO	39	42%
<b>4.- If you ever feel sick, do you stop taking it?</b>		
YES	58	63%
NO	34	37%

According to the health professionals interviewed, many of the patients suffer from more than one NCD. Similarly, all those

interviewed consider that the NCDs with the highest prevalence are: arterial hypertension, diabetes mellitus, hypothyroidism, heart and respiratory diseases, while those with the lowest incidence are rheumatoid arthritis, osteoporosis and digestive diseases, data that coincide with those obtained by the patients under study.

Regarding the main causes of NCDs, most of the interviewees agree that they are related to age, poor eating habits and excessive consumption of alcohol and tobacco. Other interviewees consider genetic predisposition, stress and mental health, such as depression and anxiety, as possible causes that influence the onset and management of NCDs.

The evaluation of the degree of therapeutic adherence reveals a significant concern among health professionals, as most of them consider it to be low. According to those interviewed, more than 50% of their patients do not follow the prescribed treatment for their diseases. This information is alarming considering that adherence to treatment is fundamental for the effective control of Chronic Non-Communicable Diseases (NCDs). When patients do not follow the recommended therapeutic regimen, the treatment loses effectiveness, which can lead to a worsening of the disease and an increase in the appearance of complications.

Respondents believe that adherence to treatment not only improves clinical outcomes, but can also improve quality of life by reducing symptoms and complications associated with NCDs. Patients who adhere to their treatments often experience an improvement in their overall well-being, which in turn may motivate them to continue with their therapeutic regimen.

Finally, health professionals were asked about the factors that influence therapeutic nonadherence; the responses were diverse, indicating that therapeutic nonadherence is a multifaceted problem influenced by a variety of factors, such as:



- Lack of patient knowledge and understanding: patients who do not attach importance to treatment and are unaware of the consequences of not adhering to treatment.
- Forgetfulness: forgetting to take medications is a common cause of non-adherence, especially in complex treatments or with multiple daily doses.
- Side effects: adverse effects of medications may lead patients to stop taking them or reduce the dosage on their own.
- Duration of treatment: long-term treatments can be discouraging and difficult to maintain, especially if patients do not see immediate improvements in their condition.
- Access to medications: difficulty in obtaining medications, whether due to problems of availability, high costs or geographic barriers, can affect adherence.
- Educational level: educational level is associated with understanding of the disease and the therapeutic regimen, which can negatively affect adherence.
- Social environment and family support: the lack of family support, friends or caregivers makes it difficult to follow medical treatment.

## CONCLUSIONS

The study made it possible to characterize the current state of patients with chronic non-communicable diseases in relation to therapeutic adherence at the León Becerra Hospital in Guayaquil, through the use of direct methods such as the Morisky-Green Test (MAQ: Medication Adherence Questionnaire) and the questionnaire.

The high prevalence of NCDs in people over 60 years of age suggests the need to strengthen geriatric health systems,

implement early detection programs, and develop appropriate treatment and management strategies for this population. It is also necessary to promote education on self-care and the adoption of healthy habits to prevent complications.

The high percentage of patients with NCDs who are unaware of their disease or have only partial knowledge is a serious problem that affects both individual and public health. It is critical to address this knowledge gap through education, access to information, and ongoing support to improve the management of NCDs.

The low perception of patients regarding the effectiveness of their medical treatments underscores the need to conduct a thorough evaluation of the treatments being offered; to investigate the causes behind this fact in order to implement strategies to increase the effectiveness of treatments and patient safety.

The evaluation of the degree of therapeutic adherence reveals a significant concern that should be addressed urgently, given that adherence to treatment is the most relevant element for the control of NCDs and the reduction of complications and mortality. Given this situation, efforts should be redoubled to improve adherence to treatment. This includes both interventions at the individual level and public health policies that facilitate access and continuity of treatment for patients with NCDs.

Non-adherence to treatment is a multifaceted problem influenced by a variety of factors, including those related to the patient, the treatment, the health care system, health care professionals and socioeconomic conditions.

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