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# Adherence with hormonal therapy in women with breast cancer: a cross-sectional study in Medellin, Colombia

## Adherencia a la terapia hormonal en mujeres con cáncer de mama: un estudio transversal en Medellín, Colombia

**Katerin Puerta Alzate,**[1] **Camila Lema Calidonio,**[1] **Mauricio Lema Medina,**[1] **Paula Villa García**[2]

**1** Clínica de Oncología Astorga, Medellín, Colombia, **2** Universidad CES, Medellín, Colombia.

## Abstract

**Background:**

Although hormone therapy is a cornerstone in the treatment of breast cancer, low therapeutic adherence is commonly reported, and there is limited evidence on the predictors that contribute to improving adherence in this population.

**Objective:**

To identify factors associated with adherence to hormone therapy in women with breast cancer, in an oncology clinic in Medellín-Colombia (2019- 2023).

**Methods:**

Cross-sectional analytical study. Women >18 years old with hormone receptor-positive breast cancer who were undergoing hormone therapy were included. The MMAS-8 scale was used to measure and classify therapeutic adherence into three levels: low, medium, and high. Data was analyzed by multinomial logistic regression.

**Results:**

One hundred seventy-eight patients with a median age of 64.0 years were included. 50.0% were treated with tamoxifen. The prevalence of non-adherence was 48.9%. 70.2% had adverse effects of hormone therapy, and forgetfulness was the main reason for discontinuation (76.19%). Age was associated with therapeutic adherence, with older women being the most adherent (83.5%). Women with adverse effects, stage III-IV, low socioeconomic and educational level, and a lack of support network had lower therapeutic adherence.

**Conclusions:**

A high prevalence of moderate and low therapeutic adherence is demonstrated in younger women from lower socioeconomic and educational backgrounds. Preventive strategies are needed to mitigate factors that negatively influence therapeutic adherence.

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Adherencia; cumplimiento del tratamiento; adherencia a la medicación; Neoplasias de Mama; Tamoxifeno; Efectos Secundarios; Reacciones Adversas a los Medicamentos.

**Conflict of interest**

Los autores declaran no tener ningún conflicto de interés

**Corresponging author**

**Katerin Puerta Alzate.** Clínica de Oncología Astorga, Medellín, Colombia. Phone: +56229786513.
**E-mail:** kpuertaal@gmail.com


# Resumen

## Antecedentes:

La terapia hormonal es clave para tratar el cáncer de mama, pero se reporta baja adherencia terapéutica y existe poca evidencia sobre los predictores que contribuyen a mejorar esta adherencia terapéutica en esta población.

## Objetivo:

Identificar factores asociados a la adherencia a la terapia hormonal en mujeres con cáncer de mama, en una Clínica Oncológica de Medellín-Colombia.

## Métodos:

Estudio transversal analítico. Se incluyeron mujeres >18 años con cáncer de mama con receptores hormonales positivos, en tratamiento con terapia hormonal. Se aplicó la escala MMAS-8 para medir y clasificar a las mujeres en baja, mediana y alta adherencia terapéutica. Los datos fueron analizados mediante regresión logística multinomial.

## Resultados:

Se incluyeron 178 pacientes, con edad mediana de 64.0. El 50.0% estaba siendo tratado con tamoxifeno. La prevalencia de adherencia incompleta fue de 48.9%. El 70.2 % presentó efectos adversos por la terapia hormonal y el olvido fue el principal motivo por el que las pacientes dejaban de tomar el medicamento (76.2%). La edad se asoció con la adherencia terapéutica, siendo las mujeres mayores las más adherentes (83.5%). Las mujeres que presentaron efectos adversos, que pertenecían a estadios III-IV, a niveles socioeconómicos y educativos bajos y no contaban con red de apoyo mostraron tener menor adherencia terapéutica.

## Conclusión:

Se evidencia elevada prevalencia de mediana y baja adherencia terapéutica en las mujeres más jóvenes, de estratos socioeconómicos y niveles educativos más bajos. Se requieren estrategias preventivas que mitiguen factores que impactan negativamente en la adherencia terapéutica.

## Remark

### 1) Why was this study conducted?

This study stemmed from concerns among the clinical staff at the institution, who observed that patients—particularly younger women and those affiliated with Private Insurance—were not adhering to hormonal therapy, despite the benefits associated with this treatment. Upon reviewing the literature, we identified a knowledge gap regarding this specific population, both in sociodemographic and clinical terms.

### 2) What were the most relevant results of the study?

Our study found a high prevalence of adverse effects of treatment, mainly in the groups with low and medium adherence to treatment. We also observed that patients with more favorable sociodemographic conditions showed better therapeutic adherence. It was also confirmed that forgetfulness is the main reason why patients stop taking the drug.

### 3) What do these results contribute?

These findings provide valuable clinical and sociodemographic insights about this population and relevant evidence regarding behaviors and barriers that impact adherence to hormonal therapy. This knowledge is essential for designing and implementing strategies, interventions, or programs aimed at improving adherence to treatment.

## Introduction

The World Health Organization highlights that adherence involves the patient's active participation and cooperation in the treatment process. Adherence can be defined as the extent to which a patient follows the prescribed treatment regimen. It also notes that adherence is a dynamic phenomenon influenced by five interrelated dimensions, refuting the common notion that patients alone are responsible for taking their medication. Many factors influence individuals' behavior and their capacity to adhere to treatment. These dimensions include socioeconomic factors, healthcare team-related factors, disease-related factors, treatment-related factors, and patient-related factors [1].

For decades, hormonal therapy has demonstrated significant benefits in the management of hormone-sensitive breast cancer, particularly its ability to significantly hinder the spread of malignant cells. However, specialized literature reveals an alarming lack of adherence to this type of therapy, directly associated with increased relapse rates, disease progression, and long-term mortality [2]. A systematic review showed that women with breast cancer who adhere to hormonal therapy have a 5-year survival rate of 93.2%, compared to 75.9% to 83.4% among women who do not adhere [3].

Abandonment of hormonal therapy in this population has been documented to range from 31% to 73% within the first five years [4], which directly impacts mortality rates. According to Ministerio de Salud y Protección Social, breast cancer was the leading cause of death among women in Colombia in 2022, accounting for 4,725 deaths [4].

Although it is well recognized that multiple factors influence treatment adherence, there are no established strategies in Colombia specifically designed to address this issue. Furthermore, the available literature remains limited in characterizing or explains the determinants, behavioral patterns, or barriers impacting adherence within this population. It is necessary to generate scientific evidence that supports further research and the development of strategies to improve adherence and, consequently, survival rates. This study aims to identify sociodemographic, clinical, and pharmacological factors associated with adherence to hormonal therapy.

## Materials and Methods

A cross-sectional study was conducted using retrospective data. This study included women aged ≥18 years who were alive, had been diagnosed with hormone receptor-positive breast cancer between 2019 and 2023, had been prescribed hormonal therapy for at least three months prior to providing oral agreement, and were treated at the Clínica de Oncología Astorga in Medellín, Colombia. Women with a second active primary tumor or those who had initiated treatment at another institution were excluded.

Sample size was calculated based on an expected adherence rate of 73.0%, as reported in the literature [3]. Using a single population proportion formula, at least 178 patients were required for the study. A simple random probabilistic sampling was conducted using Epidat 4.2 and Microsoft Excel.

The dependent variable was adherence to hormonal therapy. The 8-item Morisky Medication Adherence Scale (MMAS-8) is used to assess adherence to treatment. It was administered via telephone to identify behaviors or barriers that interfered with adherence. Based on the score obtained, patients were categorized into high, medium, and low adherence levels [5]. For this study, these levels were defined as follows:

High adherence: Patients were considered adherent, meaning they followed medical instructions and treatment consistently without behaviors that negatively impacted adherence.

Medium adherence: These patients generally followed medical instructions but occasionally engaged in behaviors that negatively affected adherence.

Low adherence: Patients were considered non-adherent, consistently failing to follow prescribed instructions, demonstrating minimal or partial adherence to treatment.

Collected variables included sociodemographic data (age, educational level, socioeconomic status, type of health insurance, marital status, etc.), clinical data (stage at diagnosis, histology, etc.), and pharmacological data (medication, adverse effects, etc.). In Colombia, socioeconomic status is officially categorized from level 1 to 6, with 1 being the lowest and 6 the highest. For analysis, strata 1 and 2 were grouped as low, 3 and 4 as medium, and 5 and 6 as high. Health insurance is classified according to the method of access to the healthcare system: Contributive Regime for those able to pay; Subsidized Regime for those covered by the State due to limited resources; Special Regime for certain population groups such as police or university staff; and Private Insurance for those opting into higher-tier services.

Additionally, a 13-item survey was developed by the research team to collect missing sociodemographic data not available in medical records. Medical charts were reviewed for the remaining data. Qualitative variables were summarized using relative frequencies and prevalence, presented in tables and bar charts. The quantitative variables did not follow normal distribution. Therefore, they were reported as medians and interquartile ranges. Associations between variables were assessed using Chi-square and Kruskal-Wallis tests. Statistical significance was defined as a p-value $< 0.05$.

A multinomial logistic regression was conducted. The model selection was performed based on clinical plausibility and using criteria for statistical significance. Odds ratios (crude and adjusted) were used as epidemiological association measures.

The study was approved by the ethics committee of Universidad CES and the Clínica de Oncología Astorga. It was classified as minimal risk and did not require written informed consent. All participants had previously authorized access to their data and medical records through the institution's research unit, in accordance with institutional data protection mechanisms. Verbal informed consent was obtained during the telephone survey. The study adhered to ethical principles for research involving human participants, national regulations, and good clinical practice guidelines.

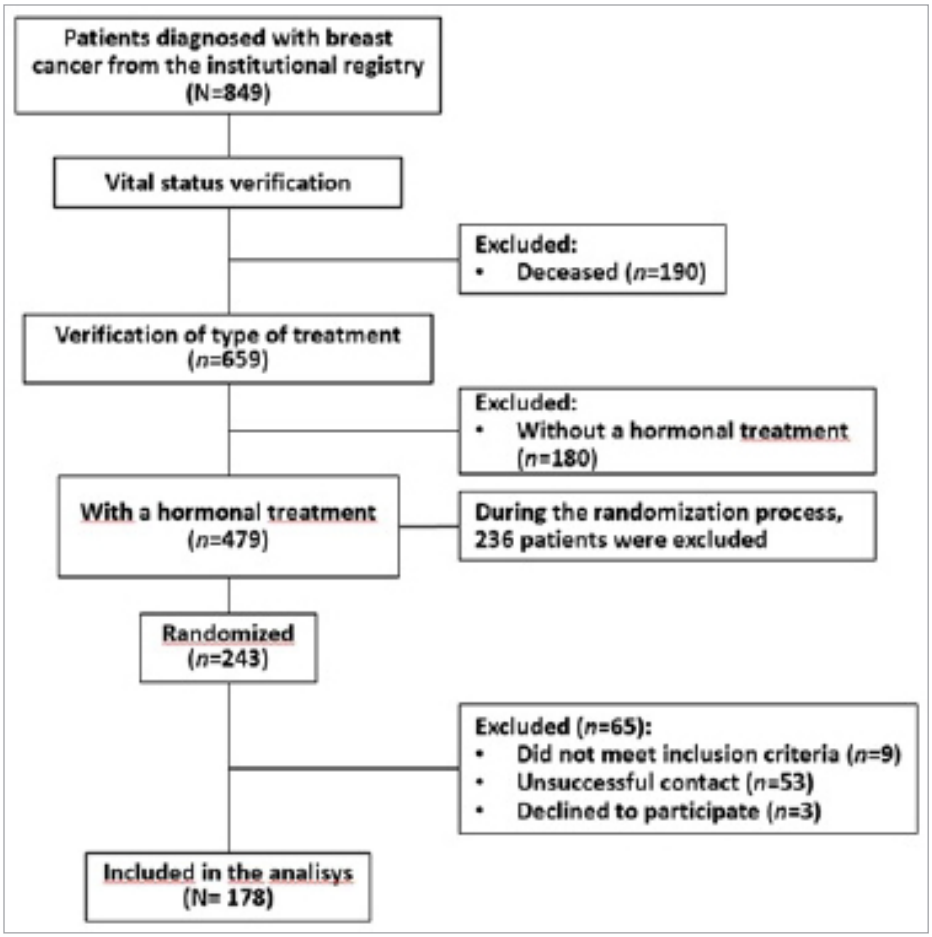


**Figure 1.** Patient selection flowchart

## Results

A total of 178 women were included (Figure 1), ranging in age from 33 to 92 years, with a median age of 64 years (IQR: 64.0-74.0). Over half were homemakers. A total of 56.7% had an educational level of high school or less, and 72.5% lived in the Valle de Aburrá, with 41.6% residing in the municipality of Medellín. About 49.4% were married or in a common-law marriage and most women belonged to socioeconomic strata 2 and 3. Approximately 48.3% lived with a partner and children or only with a partner, while 11.2% lived alone. The majority (70.2%) were affiliated with the contributory health regime. About 6.7% reported lacking a support network, whereas 92.1% indicated having one, primarily composed of family and friends (Table 1).

Most women (78.7%) had a diagnosis of infiltrating ductal carcinoma, and 77.5% were at stage I or II. A total of 168 women (94.4%) were on a treatment plan with curative intent. Half were prescribed tamoxifen, while nearly the other half (47.8%) received letrozole or anastrozole. Half began treatment within 117 days (IQR 61-175) of diagnosis. Of the total, 139 had between one and six comorbidities (median 2.0). Overweight and obesity were the most common (81.3%), followed by hypertension (64.8%) and dyslipidemia (33.1%) (Table 2).

More than 75.0% of those who had stopped taking their medication at least once cited forgetfulness as the main reason (Table 3).

**Table 1.** Sociodemographic characteristics of breast cancer patients treated with hormonal therapy at the Clínica de Oncología Astorga in Medellín, Colombia.

| Variable | | n (N=178) | % |
|---|---|---|---|
| Age at the time of the survey - Median (IQR) | 64.0 years (55.0-74.0) | | |
| Occupation | Homemaker | 95 | 53.4 |
| | Employed/Self-employed | 45 | 25.3 |
| | Retired | 38 | 21.4 |
| Educational level | High school or less | 101 | 56.7 |
| | Technical/Technological | 25 | 14.0 |
| | University/Postgraduate | 52 | 29.2 |
| Municipality City of residence | Valle de Aburrá | 129 | 72.5 |
| | Other* | 49 | 27.5 |
| Socioeconomic status | Low | 66 | 37.1 |
| | Middle | 77 | 42.1 |
| | High | 35 | 19.7 |
| Affiliation type to the healthcare system | Subsidized | 5 | 2.8 |
| | Contributive | 122 | 68.5 |
| | Special | 2 | 1.1 |
| | Prepaid | 49 | 27.5 |
| Area of residence | Rural | 15 | 8.4 |
| | Urban | 163 | 91.6 |
| People the patient lives with | Lives alone | 20 | 11.2 |
| | Partner with or without children or other† | 86 | 48.3 |
| | Children and/or other | 47 | 26.4 |
| | Siblings; other relatives; other | 25 | 14.0 |
| Marital status | Single | 42 | 23.6 |
| | Common-law/Married | 88 | 49.4 |
| | Divorced | 19 | 10.7 |
| | Widowed | 29 | 16.3 |
| Type of support network | No support network | 12 | 6.7 |
| | Formal support network | 2 | 1.1 |
| | Informal support network | 164 | 92.1 |

*Other municipalities/cities of residence outside the Valle de Aburrá, such as Apartadó, Carmen de Viboral, Puerto Berrío, Rionegro, Chocó, Venecia, among others.
†Other refers to third- or fourth-degree relatives or individuals with no family ties.

Regarding adverse effects, 126 women reported experiencing some side effects after initiating hormonal therapy (Table 4). The most prevalent symptoms were hot flashes and fatigue. Sixty-one women also reported pain, dizziness, and skin dryness.

The prevalence of high adherence was 51.1% (95% CI: 43.5-58.7), medium adherence was 34.3% (95% CI: 27.0-51.5), and low adherence was 14.6% (95% CI: 9.1-20.1).

Among the independent variables, age was the only one significantly associated with adherence (p= 0.034) (Annex A).

In the explanatory model, women over 56 years of age were found to be 4.9 times more likely to have high adherence compared to those under 44 years, and this difference was of statistical significance (p= 0.04, 95% CI: 1.08-31.55) (Table 5). Additionally, women from medium and high socioeconomic strata tended to show better adherence than those from low strata, although this difference was not statistically significant.

Women without adverse effects also showed better adherence than those who experienced side effects, though this difference was not statistically significant (OR= 1.22; 95% CI: 0.38-3.90; p= 0.73). Finally, women with a support network had a 20.0% to 30.0% higher likelihood of having greater adherence compared to those without such support (Table 5).

**Table 2. Clinical characteristics of breast cancer patients treated with hormonal therapy at the Clínica de Oncología Astorga in Medellín, Colombia.**

| Variable | | n (N=178) | % |
|---|---|---|---|
| Histology | Ductal | 140 | 78.7 |
| | Lobular | 20 | 11.2 |
| | Mixed | 2 | 1.1 |
| | NOS (Not Otherwise Specified) | 8 | 4.5 |
| | Other | 6 | 3.4 |
| | Unknown | 2 | 1.1 |
| Treatment intent | Curative | 168 | 94.4 |
| | Palliative | 10 | 5.6 |
| Stage at diagnosis | I | 70 | 39.3 |
| | II | 68 | 38.2 |
| | III | 34 | 19.1 |
| | IV | 5 | 2.81 |
| | Unknown | 1 | 0.6 |
| Comorbidities | Yes | 139 | 78.1 |
| | No | 38 | 21.4 |
| | Unknown | 1 | 0.6 |
| | | **n=139*** | **%** |
| | Arterial hypertension | 90 | 64.8 |
| | Dyslipidemia | 46 | 33.1 |
| | Diabetes/Prediabetes | 29 | 20.9 |
| | Thyroid gland disorders | 38 | 27.3 |
| | Overweight | 71 | 51.1 |
| | Obesity (Class I, II, III) | 42 | 30.2 |
| Number of comorbidities - Median (IQR) | | 2.00 (1.00 - 3.00) | |
| Time (days) from diagnosis to start of treatment - Median (IQR) | | 117 (61.00 - 175.90) | |
| Medication | Tamoxifen | 89 | 50.0 |
| | Letrozole | 51 | 28.7 |
| | Anastrozole | 34 | 19.1 |
| | Other † | 4 | 2.3 |
| Years since diagnosis - Median (IQR) | | 4.0 (3.0 - 5.0) | |
| Years on treatment- Median (RIQ) | | 4.0 (3.0 - 5.0) | |

** Patients reported having between 1 and 6 comorbidities; thus, each one may or may not be represented in the different categories of this variable.
†Fulvestrant y Exemestano.

## Discussion

This study identified potential sociodemographic, clinical, and pharmacological factors associated with adherence to hormonal therapy in women with breast cancer treated at the Clínica de Oncología Astorga in Medellín, Colombia.

The World Health Organization recognizes that adherence is a dynamic process not solely dependent on the patient and that it is shaped by various dimensions including socioeconomic status, healthcare team, disease characteristics, treatment, and the individual patient [1]. This study corroborates that framework by identifying an association between adherence and age. Other factors associated with greater adherence—though not statistically significant—included high socioeconomic level, higher education level, and absence of treatment-related adverse effects. These trends suggest the presence of both facilitating and limiting factors for adherence.

The sample size in this study is comparable to other studies conducted in China and Mexico, which included younger participants [6,7]. No previous studies were found characterizing the sociodemographic profile of this population in Colombia.

Compared to prior studies reporting high adherence rates between 60.0% and 80.0% [8-11], the adherence rate in this study was slightly over 50.0%. However, when adherence was stratified into three levels using MMAS-8, our findings aligned with similar prevalence reported in other studies [6,7,12].

**Table 3.** Reasons for discontinuing medication among breast cancer patients treated with hormonal therapy at the Astorga Oncology Clinic in Medellín, Colombia

| Variable | | n (N=178) | % |
|---|---|---|---|
| Has stopped taking the medication at least once | No | 94 | 52.8 |
| | Yes | 84 | 47.2 |
| | **Reasons** | **n= 84*** | **%** |
| | Forgetfulness | 64 | 76.2 |
| | Medical indication/Event | 9 | 10.7 |
| | Delay in delivery/Administrative issues | 21 | 25.0 |
| | Other | 9 | 10.7 |
| | Unknown | 1 | 1.2 |

*The total number of reasons does not match n (84) because some patients reported more than one reason for discontinuing medication.

**Table 4.** Reported adverse effects of hormonal therapy in the study population.

| Variable | | n (N=178) | % |
|---|---|---|---|
| Experiences adverse effects from treatment | No | 52 | 29.2 |
| | Yes | 126 | 70.8 |
| Category | Adverse effects | n=126* | % |
| Gastrointestinal disorders | Nausea | 18 | 14.3 |
| | Vomiting | 7 | 5.5 |
| | Other | 5 | 4.0 |
| Nervous system disorders | Headache | 6 | 4.8 |
| | Dizziness | 9 | 7.1 |
| | Other | 10 | 7.9 |
| Musculoskeletal disorders | Pain | 14 | 11.1 |
| | Other | 5 | 4.0 |
| Skin and subcutaneous tissue disorders | Skin dryness | 11 | 8.7 |
| | Other | 3 | 2.4 |
| General disorders | Fatigue | 50 | 39.7 |
| | General discomfort | 5 | 4.0 |
| Vascular disorders | Hot flashes | 82 | 65.1 |
| | Worsening of varicose veins | 1 | 0.8 |
| Other disorders† | Emotional disturbances | 4 | 3.2 |
| | Changes in weight and appetite | 5 | 4.0 |
| | Ocular or vision changes | 5 | 4.0 |
| | Cough | 4 | 3.2 |
| | Vaginal dryness | 1 | 0.8 |
| Number of specific adverse effects - Median (IQR) | | 2 (0.0-3.0) | |

*The "n" corresponds to the total number of women who reported experiencing symptoms. Therefore, the sum of frequencies does not reflect this total, as each participant reported a different number of symptoms. †Other disorders include: respiratory, thoracic, and mediastinal disorders; psychiatric disorders; additional examinations; metabolic and nutritional disorders; reproductive system and breast disorders; and ocular disorders

The medium adherence group was the second most prevalent and was characterized by a high frequency of adverse effects, low socioeconomic and educational levels, and forgetfulness as the main reason for non-adherence. These findings closely resemble those in the low adherence group, indicating a potential risk profile that could be used for early identification of patients at risk of non-adherence.

Age was significantly associated with adherence. Consistent with Brito's study, women over 56 years of age had higher adherence compared to younger women [10]. Regarding treatment-related adverse effects, Villareal et al. found a significant association between these symptoms and incomplete adherence to endocrine therapy [13]. This supports our findings, particularly the high prevalence of side effects among patients in the medium and low adherence groups. Younger women showed the highest prevalence of adverse effects, possibly due to menopausal symptoms that are harder to manage at younger ages, thereby contributing to poor adherence [14]. This suggests that adverse effects may represent a significant barrier to adherence, supporting findings from other studies linking side effects with incomplete adherence [12,15].

Interestingly, women with comorbidities had a higher prevalence of high adherence (53.0%), which aligns with Liu's findings that the presence of at least one comorbidity increased the likelihood of adherence [16]. Patients with multiple health conditions may be more aware of the consequences of non-adherence, leading to better compliance [17].

**Table 5.** Multivariate analysis (multinomial regression) including variables selected based on clinical plausibility and statistical significance (p ≤0.05)

| Adherence level | Predictor | p | Crude Odds Ratio | Adjusted Odds Ratio | 95% Confidence Interval | |
|---|---|---|---|---|---|---|
| | | | | | Lower | Upper |
| Medium vs. Low | Age | | | | | |
| | 45-55 vs. ≤44* | 0.9 | 1.06 | 0.91 | 0.19 | 4.37 |
| | ≥56 vs. ≤44* | 0.98 | 1.56 | 1.02 | 0.23 | 4.53 |
| | Educational level | | | | | |
| | Technical/Technologist vs. High school or lower* | 0.55 | 1.56 | 1.7 | 0.3 | 9.66 |
| | University/Postgraduate vs. High school or lower* | 0.98 | 1 | 1.02 | 0.26 | 4.06 |
| | Socioeconomic status | | | | | |
| | Medium vs. Low* | 0.47 | 1.44 | 1.52 | 0.48 | 4.76 |
| | High vs. Low* | 0.87 | 0.96 | 1.15 | 0.21 | 6.18 |
| | Support network | | | | | |
| | Yes vs. No* | 0.74 | 1.86 | 1.32 | 0.25 | 6.94 |
| | Adverse effects since the start of treatment | | | | | |
| | No vs. Yes* | 0.09 | 2.72 | 2.77 | 0.86 | 8.97 |
| High vs. Low | Age | | | | | |
| | 5-55 vs. ≤44* | 0.45 | 2.28 | 2.02 | 0.33 | 12.25 |
| | ≥56 vs. ≤44* | 0.04 | 6.75 | 5.84 | 1.08 | 31.55 |
| | Educational level | | | | | |
| | Technical/Technologist vs. High school or lower* | 0.24 | 2.61 | 2.73 | 0.51 | 14.48 |
| | University/Postgraduate vs. High school or lower* | 0.84 | 1.06 | 0.87 | 0.23 | 3.34 |
| | Socioeconomic status | | | | | |
| | Medium vs. Low* | 0.18 | 2.49 | 2.14 | 0.71 | 6.46 |
| | High vs. Low* | 0.29 | 1.85 | 2.38 | 0.48 | 11.91 |
| | Support network | | | | | |
| | Yes vs. No* | 0.83 | 2.24 | 1.2 | 0.23 | 6.18 |
| | Adverse effects since the start of treatment | | | | | |
| | No vs. Yes* | 0.73 | 1.42 | 1.22 | 0.38 | 3.9 |

*Reference value. ≥56: Greater than or equal to 56 years. ≤44: Less than or equal to 44 years.

Socioeconomic status also showed a trend toward better adherence among women from medium and high strata. This is consistent with other studies indicating that low socioeconomic status is associated with poor adherence and worse treatment outcomes [11,18]. Similarly, education level followed this trend, with better adherence among those with an education beyond high school. This may be explained by greater understanding of disease and treatment among more educated individuals. However, other social determinants—such as household workload, financial stress, and access barriers—could indirectly impact adherence but were beyond the scope of this study.

This study also suggests that having a support network positively impacts adherence. Prior studies confirm that lack of support increases the risk of poor adherence, while the presence of support networks is associated with better compliance [12,15,19]. This may be because support systems provide emotional reinforcement, resilience tools, and help in understanding treatment instructions and disease management.

Another key finding was that forgetfulness was the most common reason for discontinuing medication in both the low and medium adherence groups. This is in line with findings from other studies, which also identified forgetfulness as the leading cause of non-adherence [7,8]. Notably, patients in the high adherence group did not report forgetfulness as a reason for missed doses.

This study's main limitations include the sample size, which, while homogeneous, limited the ability to detect significant associations in subgroups with imbalanced frequencies. Additionally, the cross-sectional design and single time-point measurement did not capture longitudinal changes in adherence. Telephone administration of the questionnaire and use of a single measurement tool could have led to over- or underestimation of adherence levels. Moreover, the underrepresentation of patients from the subsidized health regime limits the generalizability of findings to that population. Despite these limitations, the study provides reliable and valuable insights into factors affecting adherence in a population not previously described in this context.

## Conclusion

This study provides previously unavailable prevalence data in Colombia and helps identify potentially modifiable factors that may positively influence adherence to hormonal therapy. It also reveals that younger patients have lower adherence. Other factors, such as low socioeconomic status, low educational level, absence of a support network, presence of disease-related symptoms, and forgetfulness -although not statistically significant- were highly prevalent among patients with low adherence.

Future studies should explore strategies to improve adherence among younger women, including close monitoring and direct contact with pharmacovigilance teams. Efforts to reduce forgetfulness, such as mobile phone alarms or pill organizers, should also be evaluated for their effectiveness in improving adherence.

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## Anexx A

Bivariate analysis of the association between various factors and therapeutic adherence.

| Variable | | Adherence level | | | | | | Total | | *p* |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Low | | Medium | | High | | | | |
| | | (n= 26) | % | (n= 61) | % | (n= 91) | % | (n= 178) | % | |
| Sociodemographic factors | | | | | | | | | | |
| Age | <44 | 4 | 15.38 | 7 | 11.48 | 3 | 3.3 | 14 | 7.87 | 0.034† |
| | 45-55 | 7 | 26.92 | 13 | 21.31 | 12 | 13.19 | 32 | 17.98 | |
| | >56 | 15 | 57.69 | 41 | 67.21 | 76 | 83.52 | 132 | 74.16 | |
| Occupation | Homemaker | 14 | 53.85 | 33 | 54.10 | 48 | 52.75 | 95 | 53.37 | 0.896 |
| | Employed | 7 | 26.92 | 17 | 27.87 | 21 | 23.08 | 45 | 25.28 | |
| | Retired | 5 | 19.23 | 11 | 18.03 | 22 | 24.18 | 38 | 21.35 | |
| Marital status | Single | 6 | 23.08 | 14 | 22.95 | 26 | 28.57 | 42 | 23.60 | 0.156 |
| | Married/Common-law union | 17 | 65.38 | 28 | 45.9 | 43 | 47.25 | 88 | 49.44 | |
| | Divorced | 1 | 3.85 | 11 | 18.03 | 7 | 7.69 | 19 | 10.67 | |
| | Widowed | 2 | 7.69 | 8 | 13.11 | 19 | 20.88 | 29 | 16.29 | |
| Educational level | High school or lower | 16 | 61.54 | 36 | 59.02 | 49 | 53.85 | 101 | 56.74 | 0.703 |
| | Technical/Technologist | 2 | 7.69 | 7 | 11.48 | 16 | 17.58 | 25 | 14.04 | |
| | University/Postgraduate | 8 | 30.77 | 18 | 29.51 | 26 | 28.57 | 52 | 29.21 | |
| Affiliation type to the healthcare system | Contributory | 17 | 65.38 | 43 | 70.49 | 62 | 68.13 | 122 | 68.54 | 0.809 |
| | Private | 8 | 30.77 | 17 | 27.87 | 24 | 26.37 | 49 | 27.53 | |
| | Other | 1 | 3.85 | 1 | 1.64 | 5 | 5.49 | 7 | 3.93 | |
| Place of residence (municipality) | Valle de Aburrá | 20 | 76.92 | 41 | 67.21 | 68 | 74.73 | 129 | 72.47 | 0.513 |
| | Other | 6 | 23.08 | 20 | 32.79 | 23 | 25.27 | 49 | 27.53 | |
| Socioeconomic status | Low | 13 | 50.00 | 27 | 44.26 | 28 | 30.77 | 66 | 37.08 | 0.297 |
| | Medium | 8 | 30.77 | 24 | 39.34 | 43 | 47.25 | 75 | 42.13 | |
| | High | 5 | 19.23 | 10 | 16.39 | 20 | 21.98 | 35 | 19.66 | |
| Area of residence | Rural | 1 | 3.85 | 6 | 9.84 | 8 | 8.79 | 15 | 8.43 | 0.644 |
| | Urban | 25 | 96.15 | 55 | 90.16 | 83 | 91.21 | 163 | 91.57 | |
| People they live with | Lives alone | 3 | 11.54 | 4 | 6.56 | 13 | 14.29 | 20 | 11.24 | 0.276 |
| | Partner; Partner and children; Partner, children or other relative* | 16 | 61.54 | 26 | 42.62 | 44 | 48.35 | 86 | 48.31 | |
| | Children; Children and others | 5 | 19.23 | 22 | 36.07 | 20 | 21.98 | 47 | 26.4 | |
| | Siblings; Other relatives; Other | 2 | 7.69 | 9 | 14.75 | 14 | 15.38 | 25 | 14.04 | |
| Support network | Yes | 23 | 88.46 | 57 | 93.44 | 86 | 94.51 | 166 | 93.26 | 0.554 |
| | No | 3 | 11.54 | 4 | 6.56 | 5 | 5.49 | 12 | 6.74 | |
| **Pharmacological factors** | | | | | | | | | | |
| Adverse effects since the start of treatment | No | 5 | 19.23 | 24 | 39.34 | 23 | 25.27 | 52 | 29.21 | 0.084 |
| | Yes | 21 | 80.77 | 37 | 60.66 | 68 | 74.73 | 126 | 70.79 | |
| | adverse effects | (n=21) | % | (n=37) | % | (n=68) | % | (n=126) | % | |
| | Hot flashes | 14 | 66.67 | 26 | 70.27 | 42 | 61.76 | 82 | 65.08 | 0.63 |
| | Fatigue | 14 | 66.67 | 11 | 29.73 | 30 | 44.12 | 50 | 39.68 | 0.097 |
| | Nausea | 3 | 14.29 | 6 | 16.22 | 9 | 13.24 | 18 | 14.29 | 0.966 |
| | Dry skin | 3 | 14.29 | 2 | 5.41 | 6 | 8.82 | 11 | 8.73 | 0.333 |
| | Pain | 1 | 4.76 | 6 | 16.22 | 10 | 14.71 | 17 | 13.49 | 0.097 |
| Before starting the treatment, did you experience any of these adverse effects? | Had never experienced these adverse effects before | 5 | 20.83 | 24 | 39.34 | 23 | 24.73 | 52 | 29.21 | 0,051 |
| | No | 18 | 75 | 36 | 59.02 | 56 | 60.22 | 110 | 61.8 | |
| | Yes | 3 | 12.5 | 1 | 1.64 | 12 | 12.9 | 16 | 8.99 | |
| | Previous adverse effects | (n=3) | % | (n=1) | % | (n=12) | % | (n = 16) | % | |
| | Vascular disorders | 2 | 66.67 | 0 | 0 | 7 | 58.33 | 9 | 56.25 | 0,210 |
| | Nervous system disorders | 0 | 0 | 1 | 100 | 1 | 8.33 | 2 | 12.5 | |
| | Musculoskeletal and connective tissue disorders | 0 | 0 | 0 | 0 | 1 | 8.33 | 1 | 6.25 | |
| | General disorders | 1 | 33.33 | 0 | 0 | 0 | 0 | 1 | 6.25 | |
| | Eye disorders | 0 | 0 | 0 | 0 | 1 | 8.33 | 1 | 6.25 | |
| Number of specific adverse effects reported - Median (IQR) | | | | | 2.00 (0.00-3.00) | | | | | 0,130 |
| Time (years) on treatment - Median (IQR) | | | | | 4.00 (3.00-5.00) | | | | | 0.829 |
| Clinical factors | | (n=21) | % | (n=37) | % | (n=68) | % | (n=126) | % | |
| Comorbidities | Unknown | 0 | 0 | 0 | 0 | 1 | 1.1 | 1 | 0.56 | 0,540 |
| | No | 8 | 30.77 | 14 | 22.95 | 16 | 17.58 | 38 | 21.35 | |
| | Yes | 18 | 69.23 | 47 | 77.05 | 74 | 81.32 | 139 | 78.09 | |
| | | (n= 18) | % | (n= 47) | % | (n= 74) | % | (n= 139) | % | |
| | Hypertension | 9 | 50 | 27 | 57.45 | 54 | 72.97 | 90 | 64.75 | 0,100 |
| | Dyslipidemia | 4 | 22.22 | 15 | 31.91 | 27 | 36.49 | 46 | 33.09 | 0.509 |
| | Diabetes/Prediabetes | 5 | 27.78 | 11 | 23.4 | 13 | 17.57 | 29 | 20.86 | 0,830 |
| | Thyroid gland disorders | 6 | 33.33 | 13 | 27.66 | 19 | 25.68 | 38 | 27.34 | 0.908 |
| | Overweight/Obesity | 14 | 77.78 | 41 | 87.23 | 58 | 78.38 | 113 | 81.29 | 0.742 |
| Number of comorbidities - Median (IQR) | | | | | 2.00 (1.00-3.00) | | | | | 0.523 |
| Stage at diagnosis | I | 5 | 19.23 | 26 | 42.62 | 39 | 42.86 | 70 | 39.33 | 0.326 |
| II | 15 | 57.69 | 21 | 34.43 | 32 | 35.16 | 68 | 38.2 | | |
| III | 6 | 23.08 | 11 | 18.03 | 17 | 18.68 | 34 | 19.1 | | |
| IV | 0 | 0 | 2 | 3.28 | 3 | 3.3 | 5 | 2.81 | | |
| Unknown | 0 | 0 | 1 | 1.64 | 0 | 0 | 1 | 0.56 | | |
| Histology | Ductal | 22 | 84.62 | 50 | 81.97 | 68 | 74.73 | 140 | 78.65 | 0.429 |
| | Lobular | 3 | 11.54 | 6 | 9.84 | 11 | 12.09 | 20 | 11.24 | |
| | Mixed | 0 | 0 | 0 | 0 | 2 | 2.2 | 2 | 1.12 | |
| | NOS | 0 | 0 | 2 | 3.28 | 6 | 6.59 | 8 | 4.49 | |
| | Other | 1 | 3.85 | 1 | 1.64 | 4 | 4.4 | 6 | 3.37 | |
| | Unknown | 0 | 0 | 2 | 3.28 | 0 | 0 | 2 | 1.12 | |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Treatment intent | Curative | 25 | 96.15 | 58 | 95.08 | 85 | 93.41 | 168 | 94.38 | 0,830 |
| | Palliative | 1 | 3.85 | 3 | 4.92 | 6 | 6.59 | 10 | 5.62 | |
| Other identified factors | | | | | | | | | | |
| Time (days) from diagnosis to treatment initiation - Median (IQR) | | | | | 117 (61.0-175.9) | | | | | 0.153 |
| Delays in medication delivery | Yes | 10 | 38.46 | 13 | 21.31 | 22 | 24.18 | 45 | 25.28 | 0.332 |
| | No | 16 | 61.54 | 48 | 78.69 | 69 | 75.82 | 133 | 74.72 | |

$\chi^2$ tests. ≤44: Younger than 44 years. ≥56: Older than 56 years. IQR = Interquartile range
* Other includes third- and fourth-degree relatives or individuals with no family ties.
† p-values <0.05.
** Me= Mediana. RIQ= Rango intercuartílico.