Assessing Adherence to Adjuvant Hormone Therapy in Breast Cancer Patients in Routine Clinical Practice

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Abstract

Background: Adjuvant hormone therapy (HT) in patients with hormone receptor-positive breast cancer (BC) increases overall survival (OS). A lack of adherence to adjuvant endocrine therapy is common, 31.0-73.0% of women discontinue endocrine treatment before 5 years. The aim of the study was to assess adherence to HT in routine clinical practice in patients assisted at the Clinical Oncology Department of the Hospital de Clinicas - Universidad de la Republica, Uruguay.

Methods: Patients treated with HT for stage 0-III BC between 2017 and 2019 were included. The medication possession (MPR) rate was calculated using pharmacy records, and the Morisky-Green Scale was applied to assess adherence. Adherent patients were those with MPR ≥ 0.80 and who correctly answered the Morisky-Green treatment adherence questionnaire. The association of adherence with polypharmacy, treatment, and patient characteristics was assessed using simple logistic models. The associations between qualitative variables and adherence were assessed using simple logistic regression model or Fisher's exact test. The association between quantitative variables and adherence was assessed using the Student's t-test. The odds ratio (OR) for non-adherence to treatment and its 95% confidence interval were estimated.

Results: Totally, 118 patients were included; 65.2% were treated with aromatase inhibitors (AIs), 36.0% presenting polypharmacy. The adherence rate at the end of 2 years was 81.0 %; and it was associated with age (P = 0.03, OR = 0.96 for non-adherence), with adherent

and non-adherent patients having a mean age of 65.0 and 60.3 years, respectively; however, adherence was not associated with polypharmacy, territory of origin, marital status, living alone, level of education, occupation, or stage. The adherence profile was similar for both drugs, but homemakers and retired women showed greater adherence to AI.

Conclusions: Adherence to HT was assessed in real life, with 19.0% of the patients not adhering to the treatment, despite the known benefit for OS, being a well-tolerated treatment, and being provided free of charge. Older patients were associated with being more adherent. The results show the need of the Pharmacy Service and Department of Clinical Oncology Medical Oncology combining efforts to develop coordinated strategies and interventions to increase adherence, given the impact that this may have on patients' OS.

Keywords: Adherence; Adjuvant hormonal therapy; Breast cancer

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Introduction

Adjuvant treatment with aromatase inhibitors (AIs) or tamoxifen (TMX) for 5 years in estrogen receptor (ER)- or progesterone receptor (PR)-positive breast cancer (BC) patients is known to increase disease-free survival (DFS) and overall survival (OS) [1]. However, adherence to hormone therapy (HT) in BC patients is poorly understood in routine clinical practice worldwide [2-9], posing a challenge with increasing interest. A limited number of different population-based studies have assessed adherence to adjuvant hormonal therapy among women with BC in routine clinical practice worldwide [2-8], posing a challenge with increasing interest [2-8].

A systematic review published in 2012 showed that 31.0-73.0% of patients discontinue HT [9], and other systematic review published in 2022 reported that adherence at 5 years of HT treatment ranged from 33.3% to 88.6%, resulting in an increased risk of relapse [10].

Treatment adherence depends on several factors. Some of these factors are related to the treatment itself (for example, its duration or certain adverse effects), and other factors are related to the patient (age, comorbidities, lack of understanding of the importance of continuous treatment, and the psychological profile and polypharmacy).

Treatment adherence is the most important modifiable factor impacting treatment outcomes. The present study is important since it is crucial to assess outcomes in routine clinical practice to improve the quality of care and provide the best possible care.

Main objective

The aim of this study was to assess adherence to HT in routine clinical practice.

Materials and Methods

This cross-sectional, descriptive study was performed at the Breast Health Unit of the Hospital de Clinicas, Uruguay, from May 2019 to May 2021. Patients aged 18 years or older, diagnosed and treated for stage 0-III ER/PR-positive BC and started HT between April 2017 and May 2019 were included. The follow-up period for each patient was 24 months from the first prescription. All patients signed an informed consent form by which they agreed to participate in the study and complete the questionnaire indicated below, in the medical consultation two year from start of HT, authorizing the use of the information arising from the questionnaire in this research.

Measures of adherence

Different methods are used to assess treatment adherence, and none of them are considered the "gold standard". Thus, combining several techniques is recommended.

Two methods were used in the present study: the pharmacy dispensing record and the Morisky-Green adherence questionnaire. The pharmacy dispensing record is a validated, simple, and reliable method since dispensing at the hospital is centralized and performed monthly. The medication possession rate (MPR) was calculated using the formula: sum of all the days the patient had the drug/number of days the physician prescribed the drug in the study period. For example, for 12 28-day dispensations of anastrozole in a 12-month interval, the MPR is 0.92 (336/365). An MPR ≥ 0.80 was defined as the threshold for good adherence to HT for its ability to predict hospitalizations in prevalent chronic diseases [11].

The Morisky-Green treatment adherence questionnaire assesses compliance directly with the patient, and its use has been validated for chronic diseases. It consists of four questions with a dichotomous answer (yes or no) that assesses the patient's behavior regarding treatment adherence: 1) Do you ever forget to take the drugs to treat your illness? Yes/no; 2) Do you take your drugs at the indicated times? Yes/no; 3) When you feel well, do you stop taking the drugs? Yes/no; 4) If you eventually feel sick, do you stop taking the drugs? Yes/no.

Patients are considered to adhere to treatment if they answer correctly to the four questions, that is, no/yes/no/no [12].

Adherent patients were those with an MPR ≥ 0.80 who correctly answered the Morisky-Green treatment adherence ques-

tionnaire, and non-adherent patients were those with an MPR < 0.80 or who did not correctly answer the said questionnaire.

The pharmacy dispensing record of our hospital was used to assess the number of drugs that patients receive concomitantly with their oncological drugs and for patients who collected medications from other hospital, and the data were collected through detailed study of medical histories.

Polypharmacy is defined as the use of multiple drugs by a patient, although there is no consensus on the minimum number of drugs to define it. At present, the most accepted definition considers the use of five or more drugs at any time, including over-the-counter drugs and dietary supplements [13, 14].

Demographic, work-related and tumor-specific variables that could have affected both adherence to treatment and treatment discontinuation were investigated.

Data were collected through a detailed analysis of medical records, ensuring patient anonymity using an Excel spreadsheet database in which each patient was assigned an identification number.

Study variables

Variables related to the patient, including age at diagnosis, marital status, occupation, the territory of origin (capital of the country or rest of the country) were recorded.

Variables related to the tumor, including histologic type and grade, pathological tumor size, axillary lymph node status, stage according to TNM classification, human epidermal growth factor receptor 2 (HER2)-positive, ER, and PR status studied by immunohistochemistry, were noted.

Similarly, variables related to the treatment, including the type of adjuvant HT (TMX vs. AI), were also recorded.

Data were extracted from both paper medical records and oncology electronic medical records. The number of drugs of any type collected by patients and whether they collected the prescribed oncological drug was assessed monthly using the information provided by the outpatient clinic.

Statistical analysis

In the data analysis, the quantitative variable "age" is described by measures of central tendency and dispersion. The qualitative variables (territory of origin, living with whom, level of education, occupation, marital status, stage, and the number of drugs) are described by their absolute and relative percentage frequencies.

The association between qualitative variables and adherence was assessed using the Chi-square test. The mean ages of both groups: adherent/non adherent was compared with Student's t-test.

The odds ratio (OR) for non-adherence to treatment (to any treatment and then discriminating according to type of treatment) and its 95% confidence interval were estimated. A significance level of $\alpha = 0.05$ was considered in all cases. All analyses were performed using R version 4.0.4.

The study population was divided into two groups: ad-

Table 1. Epidemiological and Demographic Characteristics of All Patients Included in the Study (N = 118) and for Patients on AI (N = 74) and Tamoxifen (N = 44)

Variables	Total (n = 118)	AIs (n = 74)	Tamoxifen (n = 44)
	N (%)	N (%)	N (%)
Median age (SD), years	63.0 (11.12)	64.0 (11.13)	61.0 (11.12)
Marital status			
Married or living with a partner	41 (34.7)	28 (37.8)	13 (29.5)
Divorced	17 (14.4)	10 (13.5)	7 (15.9)
Widowed	20 (16.9)	15 (20.2)	5 (11.4)
Single	13 (11.0)	8 (10.8)	5 (11.4)
No data	27 (11.0)	13 (17.6)	14 (31.8)
Territory of origin			
Montevideo	72 (61.0)	46 (62.2)	26 (59.0)
Interior	42 (35.6)	25 (33.8)	17 (38.6)
No data	4 (3.4)	3 (4.0)	1 (2.3)
Level of education			
Incomplete primary	16 (13.5)	12 (16.2)	4 (9.0)
Complete primary	29 (24.6)	19 (25.7)	10 (22.7)
Incomplete secondary	17 (14.4)	11 (14.9)	6 (13.6)
Complete secondary	11 (9.3)	7 (9.5)	4 (9.0)
Tertiary	3 (2.5)	2 (2.7)	1 (2.3)
No data	42 (35.6)	23 (31.0)	19 (43.2)
Occupation			
Housewife	30 (25.4)	19 (25.6)	11 (25.0)
Retired or pensioner	51 (43.2)	33 (44.6)	18 (40.9)
Employed	15 (12.7)	10 (13.5)	5 (13.3)
No data	22 (18.6)	12 (16.2)	10 (22.7)

AIs: aromatase inhibitors; SD: standard deviation.

herent patients (patients with an MPR ≥ 0.80 who answered correctly to the four questions in the questionnaire) and non-adherent patients (patients with an MPR < 0.8 or who did not answer correctly to the four questions of the questionnaire).

Ethics approval and consent to participate

The study was approved by the Ethics Committee of the Hospital de Clinicas, Udelar. All participants signed an informed consent form before being included in the study. All procedures followed were in accordance with the ethical standards of the responsible committee on human experimentation (institutional and national) and with the Helsinki Declaration of 1975, as revised in 2008.

Results

The study included 118 patients diagnosed with early HR-positive BC candidate for adjuvant HT; 10 patients were excluded

because they did not initiate HT. The mean age at diagnosis was 52.45 years, with a standard deviation of 11.12 years.

Most patients, with data available, were living alone (42.3%) and resided in the capital city (61.0%) (Table 1).

Regarding the level of education, 60 patients (50.8%) completed primary education, 28 patients (23.7%) started secondary education, and three patients (2.5%) attended tertiary education. The remaining data are shown in Table 1.

All tumors were limited to the breast and axilla at the time of diagnosis; 57 patients had T1 tumors, 44 T2 tumors, representing 85.5% of the tumors. In the axilla, 60 patients were N0, and 39 were N1, representing 83.8% of the tumors. As for distribution by stage, 45 patients were classified as stage I (38.1%), 45 patients (38.1%) as stage II, 22 patients (18.6%) as stage III, two patients (1.7%) as stage 0. Regarding the biological profile, 98 patients (83.0%) were ER/PR-positive, and HER2-negative, and 20 patients (17.0%) were ER/PR-positive and HER2-positive (Table 2).

The patients started HT between 2017 and 2019. All study patients were treated with HT; 65.2% (77) received treatment with AI and the rest with TMX. A total of 36.0% (42 patients)

Table 2. Clinicopathologic Characteristics, Stage, and HER2 Status of All Patients Included in the Study (N = 118) and for Patients on AIs (N = 74) and Tamoxifen (N = 44)

Variables	Total (n = 118) N (%)	AIs (n = 74) N (%)	Tamoxifen (n = 44) N (%)
Tumor size			
TIS	2 (1.7)	0 (0)	2 (4.5)
T1	57 (48.3)	42 (56.7)	15 (34.0)
T2	44 (37.2)	23 (31.0)	21 (47.7)
T3	8 (6.7)	5 (6.7)	3 (6.8)
T4	7 (5.9)	4 (5.4)	3 (6.8)
Axillary status			
N0	60 (50.8)	35 (47.3)	25 (56.8)
N1	39 (33.0)	26 (35.1)	13 (29.5)
N2	12 (10.2)	8 (10.8)	4 (9.0)
N3	7 (5.9)	5 (6.7)	2 (4.5)
Stage			
0	2 (1.7)	0 (0)	2 (4.5)
I	45 (38.1)	33 (44.6)	12 (27.2)
II	45 (38.1)	28 (37.8)	17 (38.6)
III	22 (18.6)	12 (16.2)	10 (22.7)
No data	4 (3.4)	1 (1.3)	3 (6.8)
HER2 status			
HER2-positive (3+/2+, FISH+)	20 (17.0)	14 (18.9)	6 (13.6)
HER2-negative (1+/2+, FISH-)	98 (83.0)	60 (81.0)	38 (86.3)

HER2: human epidermal growth factor receptor 2; AIs: aromatase inhibitors; TIS: tumor *in situ*; FISH: fluorescence *in situ* hybridisation.

experienced polypharmacy, and 81.0% (96) adhered to the treatment.

All study participants completed the Morisky-Green questionnaire between 2019 and 2021. The analysis of the questionnaire response showed that 12.2% of the non-adherent patients (MPR < 0.8) considered that they adhered to the treatment based on their questionnaire responses. Of the adherent patients, according to the MPR, 25.0% were non-adherent based on the Morisky-Green questionnaire, and the most frequent reason was forgetting to take the drug (85.0%).

The adherence rate (combined adherence measure: Morisky-Green questionnaire and MPR) for patients who completed in 2 years was 81%.

Adherence was associated with age (P = 0.03), with a mean age of 65 vs. 60.3 years for adherent and non-adherent patients, respectively. However, it was not associated with polypharmacy, considering all thresholds used to define polypharmacy, specifically 2 -5 drugs, 5 - 9 drugs, 10 or more drugs, and ≤ 5 drugs or > 5 drugs, neither was associated with the territory of origin, marital status, living alone, level of education, occupation, or stage (Table 3).

The analysis of the factors associated with non-adherence to treatment (to any of them: TMX or AI) showed that the likelihood of non-adherence decreased with age (OR = 0.96), with a lower adherence in younger patients. The adherence profile

was similar for both drugs, but the likelihood of non-adherence to treatment decreased in homemakers or retired women compared to employed or self-employed women in the case of patients treated with AI. No statistically significant associations were found between the rest of the variables and adherence to treatment in the group treated with TMX (Table 4).

Discussion

Despite Latin America being a diverse region with significant differences among countries in terms of economic development, healthcare systems, and health policies, BC remains one of the leading causes of cancer in women in Latin America. Its incidence has been increasing in the region due to various factors, including population aging, lifestyle changes, and urbanization.

The fight against BC in Latin America requires a comprehensive approach that includes improvements in early detection, access to healthcare, public awareness, and the implementation of effective health policies to enhance outcomes and quality of life for those affected by this disease. In this context, understanding the adherence to HT in BC is essential to ensure the best possible outcome for patients [15, 16].

Adherence to HT in BC patients is reported at a systematic

Table 3. Univariate Associations Between Characteristics of the Sample of 118 Patients Diagnosed With Early ER/PR-Positive BC Treated at the Breast Health Unit and Adherence

	Adherence to treatment		P
	No	Yes	
	N (%)	N (%)	
Mean age^a	60.3 (11)	65.0 (10.9)	0.03*
Territory of origin			
Interior	13 (31.7)	31 (40.8)	0.33
Montevideo	28 (68.3)	45 (59.2)	
Living with whom			
Not alone	33 (82.5)	58 (77.3)	0.52
Alone	7 (17.5)	17 (22.7)	
Level of education			
Primary	21 (52.5)	41 (55.4)	0.53
Incomplete secondary	8 (20.0)	19 (26.7)	
Complete secondary/tertiary	11 (27.5)	14 (18.9)	
Occupation			
Employed/self-employed	11(28.2)	10 (13.3)	0.21
Unemployed	4 (10.3)	13 (17.3)	
Housewife	9 (23.1)	16 (21.3)	
Retired	15 (38.5)	36 (48.0)	
Marital status			
Married/partnered	23 (56.1)	32 (42.1)	0.51
Divorced/separated	6 (14.6)	13 (17.1)	
Single	7 (17.1)	16 (21.1)	
Widowed	5 (12.2)	15 (19.7)	
Stage			
I	19 (48.7)	26 (35.6)	0.30
II	12 (30.8)	33 (54.2)	
III	8 (20.5)	14 (19.2)	
Number of drugs			
Less than 2	10 (24.4)	16 (21.6)	0.17
2 to 5	19 (46.3)	31 (41.9)	
6 to 9	12 (29.3)	19 (25.7)	
10 or more	0 (0.0)	8 (10.8)	
Number of drugs			
5 or less	29 (70.7)	47 (63.5)	0.43
6 or more	12 (29.3	27 (36.5)	

a. Quantitative variables are presented as means (standard deviation). *P < 0.05. ER: estrogen receptor; PR: progesterone receptor; BC: breast cancer.

review [9], which indicates that only 40.0% to 70.0% of patients with BC finish their recommended courses of hormonal therapy. Our group has previously assessed adherence to HT in patients treated at the Breast Health Unit in real life, showing a reduction of 30.5% in 5 years [17].

A meta-analysis published in 2011 showed that adjuvant HT for 5 years reduces the risk of relapse and death from BC [1]. Poor adherence and early discontinuation of HT are associated with higher relapse and mortality rates [18, 19]. In addition, treatment adherence is the most important modifiable factor that impacts treatment outcomes. It is crucial to assess such outcomes routinely to improve the quality of care and

Table 4. Univariate Logistic Models for Non-Adherence to Treatments in the Sample of 118 Patients Diagnosed With Early ER/RP-Positive BC Treated at the Breast Health Unit

	Total (n = 118)	AIs (n = 74)	Tamoxifen (n = 44)
	OR (95% CI)	OR (95% CI)	OR (95% CI)
Age	0.96 (0.92, 0.99)	0.96 (0.91, 1.01)	0.99 (0.94, 1.06)
Territory of origin			
Interior	1.0		
Montevideo	1.48 (0.67, 3.37)	1.60 (0.51, 5.63)	1.24 (0.35, 4.40)
Living with whom			
Not alone	1.0		
Alone	0.72 (0.26, 1.87)	0.71 (0.15, 2.60)	1.00 (0.19, 5.71)
Level of education			
Primary	1.0		
Incomplete secondary	0.82 (0.29, 2.15)	0.67 (0.09, 3.15)	0.64 (0.13, 3.28)
Complete secondary/tertiary	1.53 (0.59, 3.97)	5.00 (0.34, 19.65)	0.24 (0.05, 1.11)
Occupation			
Employed/self-employed	1.0		
Unemployed	0.28 (0.06, 1.09)	-	1.20 (0.19, 7.77)
Housewife	0.51 (0.15, 1.66)	0.15 (0.02, 0.80)	2.40 (0.40, 16.64)
Retired	0.38(0.13, 1.08)	0.15 (0.03, 0.68)	1.60 (0.33, 8.22)
Marital status			
Married/partnered	1.0		
Divorced/separated	0.64 (0.20, 1.89)	0.79 (0.15, 3.42)	0.73 (0.12, 4.63)
Single	0.61 (0.21, 1.67)	0.95 (0.21, 3.79)	0.44 (0.07, 2.18)
Widowed	0.46 (0.14, 1.39)	0.18 (0.01, 1,10)	-
Stage			
I	1.0		
II	0.50 (0.20, 1.31)	0.86 (0.23, 3.19)	0.29 (0.07, 1.10)
III	0.78 (0.27, 2.21)	0.97 (0.21, 4.11)	2.15 (0.25, 46.59)
Number of drugs			
Less than 2	1.0		
2 to 5	0.98 (0.27, 1.35)	0.62 (0.12, 3.54)	2.00 (0.50, 8.28)
6 to 9	1.01 (0.37, 2.65)	1.41 (0.31, 7.66)	2.00 (0.29, 18.08)
10 or more	-	-	-
Number of drugs			
5 or less	1.0		
6 or more	0.72 (0.31, 1.62)	1.37 (0.45, 4.25)	0.88 (0.17, 5.09)

ER: estrogen receptor; PR: progesterone receptor; BC: breast cancer; AIs: aromatase inhibitors; OR: odds ratio; CI: confidence interval.

provide the best possible care. Hence, the importance of the present study.

A study conducted by Hershman et al showed that 60.0% of the patients complied with TMX or AI 2 years after starting it [20]. However, the numbers in our study were higher, 81.0% of the patients continued to receive treatment 2 years after starting it. The high rates of adherence to HT in BC can be attributed to the combination of its availability at no economic cost, ease of administration, good tolerance, demonstrated efficacy, and the perception of its importance in fighting the disease.

BC patients undergoing adjuvant HT are often assumed to be satisfactorily complying with the treatment since they face a serious, life-threatening disease, and the treatment is effective, easy-to-use, and well-tolerated. However, our results indicate that 19.0% of the patients did not adhere to the treatment.

The results also indicate no important difference between the patients' self-reported adherence based on the Morisky-Green questionnaire and the MPR. According to the results of this questionnaire, only 12.2% of non-adherent patients (MPR < 0.80) considered they adhered to the treatment according to their answers to the questionnaire, indicating good correspondence between both measures of adherence.

Although multiple studies have shown a relationship between treatment adherence and age, with a lower adherence among younger patients (under 45 years of age) because of fertility [21], and the oldest patients (over 65 years of age), because of factors including comorbidities, health-literacy, cognitive function, and lack of social support [22, 23], our results showed that the oldest patients were the most adherent.

Although our study did not find an association between adherence and polypharmacy, regardless of the number of dispensed drugs, the available evidence on this issue is contradictory. In a systematic review assessing adherence to treatment with oral antineoplastic drugs, seven studies showed that polypharmacy was associated with lower adherence, and four concluded the opposite [24]. An explanation for the discrepancy between studies may be the lack of a consensus on the definition of polypharmacy [25]; however, our conclusions were the same regardless of the number of drugs.

However, when analyzing adherence, consideration was not given to the effect of polypharmacy on adherence according to the type of drug. In this regard, patients who use other treatments, such as lipid-lowering and antihypertensive drugs, can be more adherent, presenting greater adherence to HT. This is consistent with other studies that have also concluded that the simultaneous use of multiple chronic drugs for cardiovascular disease is associated with greater adherence to treatment for chronic myeloid leukemia [26]. Emotional distress and psychiatric symptoms, such as depression, anxiety, and post-traumatic stress disorder, frequently occur in BC patients and are associated with a worse quality of life and outcomes in the different treatments [27]. Therefore, the treatment used for these conditions may be associated with lower adherence. In fact, the frequent use of psychotropic drugs is associated with lower adherence to HT. Mental illness is a known risk factor for non-adherence to medical treatment, and consequently poor disease control [28]. In particular, depression and anxiety are strong predictors for poor adherence to HT in BC patients [29].

There are various studies on the influence of living with a partner on the patient's treatment adherence. Some studies conclude that such fact contributes to greater adherence [30, 31], but there are also studies with the opposite conclusion [7, 32]. The present study found no significant difference in adherence to treatment between those who lived with a partner and those who were divorced, widowed, or single. In our study, no association was observed between educational level and treatment adherence. While a higher educational level is usually linked to greater adherence due to increased awareness of treatment importance and better understanding of instructions provided by the medical team; enhanced ability to comprehend complex medical information and improved communication skills with the medical team, enabling asking questions and resolving doubts; it is important to consider that these associations are not absolute, and treatment adherence is a multifactorial issue influenced by various factors such as social support, cultural beliefs, and personal circumstances. The same result was obtained when comparing patients from Montevideo to those from the country's interior. Thus, there are no cultural differences between the two environments nor difficulty in accessing means of transportation, although, in this regard, the geographical dimension of the country should be considered, which is negligible in South America. As for the association between adherence to treatment and tumor stage, our study found no such association, although a significant association between the two has been reported, with greater adherence in patients with more advanced tumors [20, 30].

Our results clearly show that adherence to HT is suboptimal in patients diagnosed with early BC treated at the Breast Health Unit of the Hospital de Clinicas, although such treatment is provided free of charge, easy to administer, and generally well tolerated. However, it should be noted that our results are similar and even superior to those reported in various international studies.

This study emphasizes the need to develop interventions to improve the adherence rate. Some actions are very simple but no less important, such as reminder text messages or phone calls to patients, paying particular attention to cases in which they fail to attend the consultation or take excessive time before doing so [32, 33].

Although our study did not reveal significant correlations with specific factors expected to influence adherence (marital status, extent of injury), this is probably due to the relatively small sample size, thereby not providing sufficiently strong conclusions.

The strengths of this study include the population-based design that includes all patients who were treated at the Breast Health Unit of the Oncology Service of the Hospital de Clinicas, Uruguay; that is, patients treated in routine clinical practice are represented.

However, when interpreting the study results, it should be considered that there is no standard for assessing adherence and that the only way to ensure adherence is to confirm that the patient takes the drug. For this reason, our study estimated adherence with subjective data provided by the patients using the Morisky-Green questionnaire combined with the measurement of MPR, an objective criterion. In this regard, although neither dispensing the drug nor attending the consultation guarantees that the patient takes the drug, we consider it unlikely that patients continued to attend consultations, requesting prescriptions, and collecting the drug if they did not intend to use it. Another aspect to consider is volunteer bias, when a particular sample contains only those participants who are actually willing to participate in the study.

When interpreting the obtained results, it should be kept in mind that the survey was performed on patients assisted at the Breast Health Unit of the Oncology Service of the Hospital de Clinicas, which could have introduced biases, and consequently limits the possibility of extrapolating the results to the general population. Therefore, further studies to assess adherence to HT in routine clinical practice including patients assisted in private institutions and from the interior of the country, are required.

Finally, this is a retrospective study, so the groups were not prospectively randomized.

Our results were similar and even superior to those reported in various clinical studies. However, 19.0% of the patients did not adhere to the treatment, despite the known benefits on DFS and OS, being a well-tolerated treatment, and being provided free of charge, since Uruguay has achieved universal health coverage for its entire population.

The current study sheds light on adherence to adjuvant hormonal therapy among women with BC in routine clinical practice in our country.

Finally, the need for the medical oncologist to create awareness among patients about the consequences of treatment non-adherence should be emphasized. This implies adequate advice on how to conduct the treatment and the intervals at which the drugs should be taken since all these correlate with the best possible outcomes. Future studies should be designed to identify patients with risk for non-adherence and conduct timely interventions to maintain and improve adherence.

Conclusions

Our study assessed adherence to HT in patients diagnosed with early BC who were treated at the Breast Health Unit of the Hospital de Clinicas. The results were similar and even superior to those reported in multiple prior studies. However, 19.0% of the patients did not adhere to the treatment, despite the known DFS and OS benefits, being a well-tolerated treatment, and provided free of charge. The most adherent patients were the oldest. We should further investigate the reasons for treatment discontinuation, identify patients at risk of discontinuing, and expand our efforts to improve adherence. It is particularly important to provide the most accurate explanation possible to patients, so they can understand the undeniable benefits of treatment adherence beyond the adverse effects, which are less significant than the benefits. The benefits are more evident in patients who are reluctant to continue treatment regularly. The present study is expected to increase awareness about the importance of investigating adherence to HT in routine clinical practice, thereby improving the quality of care and, consequently, survival.

Conflict of Interest

The authors declared no potential conflict of interest with respect to the research, authorship, and/or publication of this article.

Informed Consent

Informed consent was obtained.

Author Contributions

NC, CC, AB, PE, MC and GK contributed to the conception and design of the work. NC, CC, CT, NS, SP, GH and NR did the analysis of data and the draft of the article. MC and GK critically revised the article. All authors were responsible for the acquisition of the data and approved the final version of the article.

Data Availability

The data supporting the findings of this study are available from the corresponding author upon reasonable request.

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