

Aromatase inhibitors: assessment of knowledge, adherence, and associated factors among Iraqi women with breast cancer

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ABSTRACT

Adherence to aromatase inhibitors (AIs) as oral anticancer therapy remains a significant challenge in the management of hormone receptor-positive breast cancer. Despite their proven efficacy in reducing disease recurrence, many patients struggle to maintain long-term adherence. This study aimed at evaluating the patients' knowledge and beliefs regarding AIs and their influence on non-adherence. An observational cross-sectional study was conducted in order to assess adherence and its association with patients' beliefs, knowledge, and sociodemographic and clinical characteristics. Eligible breast cancer patients receiving AIs (either anastrozole or letrozole) on a monthly basis at the Babylon Oncology Center were recruited between 18 February and 1 October 2024 (N=70). Validated, tailored questionnaires were administered through structured interviews. The mean age of the participants was 56.1 ± 9.6 years. With respect to educational attainment, 48.6% had completed primary school, 25.7% had attained secondary education, 12.9% were illiterate, and 12.9% held a bachelor's degree. Most patients (98.6%) were married. A majority (62.9%) resided in rural areas, while 37.1% lived in urban settings. Adherence showed a strong positive correlation with the patients' knowledge of AIs ($R=0.638$, $p<0.001$). It was also positively associated with the perceived necessity of therapy ($R=0.64$, $p=0.025$), and negatively associated with concerns regarding adverse effects ($R=-0.74$, $p<0.001$). These findings suggest that breast cancer patients who exhibit greater awareness and a stronger sense of personal responsibility toward their treatment regimen are more likely to adhere to AI therapy. The study underscores the importance of addressing both perceived benefits and concerns in order to enhance adherence outcomes.

1. Introduction

Approximately 70% of breast cancer (BC) cases are hormone receptor-positive, and aromatase inhibitors (AIs) form the basis of therapy to reduce BC recurrence and improve overall survival (OS) among postmenopausal women¹. Despite the convenience and flexibility offered by oral anticancer agents such as AIs, adherence to treatment is critical for maximizing therapeutic effectiveness and enhancing OS². Several factors (such as regimen complexity, prolonged treatment duration, adverse effects, drug-drug and drug-food interactions, medication cost, and forgetfulness) significantly influence adherence to oral anticancer therapies^{3,4}.

Additionally, patients' beliefs and knowledge regarding the medication regimen and its potential side effects are modifiable determinants that affect adherence⁵. This study aimed at assessing the knowledge and beliefs of women with BC regarding AIs and their relationship to non-adherence.

2. Methodology

An observational cross-sectional study was conducted in order to evaluate adherence and its association with beliefs, knowledge, and sociodemographic and clinical characteristics among women with BC receiving monthly AI therapy (either anastrozole or letrozole) at the Babylon Oncology Center, between 18 February and 1 October 2024. Seventy patients meeting the inclusion criteria were recruited. Eligibility required women aged 18 years or older with a confirmed BC diagnosis, irrespective of stage or grade. Exclusion criteria comprised patients who had been on AIs for less than one month, individuals under 18, and those with psychological disorders impairing their ability to understand and accurately complete the questionnaire.

Tailored, validated questionnaires were administered through structured interviews. Data collection included sociodemographic and clinical variables, as well as assessments of AI-related knowledge and treatment adherence. To evaluate beliefs surrounding AIs, the Beliefs about Medicines Questionnaire - Specific (BMQ-Specific), encompassing Specific-

ic-Necessity and Specific-Concerns subscales, was employed⁶. The instrument was adapted from previously validated studies^{7,8}.

Ethical approval was obtained from the Scientific and Ethical Committee of the Faculty of Medicine of the University of Kufa (ref.: MEC-18; date: 14 February 2024). Verbal informed consent was obtained from all eligible participants.

Statistical analysis was performed using SPSS version 24 and Microsoft Excel 2019. Knowledge levels were classified as high (71%–100%), moderate (51%–70%), or low (0%–50%)⁹. Categorical variables were presented as frequencies and percentages, while numerical variables were reported as means, standard deviations, medians, and ranges. Distribution normality was assessed using the Kolmogorov-Smirnov test. Linear regression analysis, including analysis of variance (ANOVA), was conducted in order to evaluate correlations between demographic / clinical variables, knowledge, beliefs, and adherence. A *p*-value below 0.05 was considered as statistically significant.

3. Results and Discussion

The mean age of women receiving adjuvant hormonal therapy with AIs was 56.1 ± 9.6 years. Educational attainment varied: 48.6% had completed primary school, 25.7% had attained secondary education, 12.9% were illiterate, and 12.9% held a bachelor's degree. Marital status analysis revealed that 98.6% were married, with only 1.4% single. A majority (62.9%) resided in rural areas, while 37.1% lived in urban settings.

A first-degree family history of BC was reported by 37.1% of patients, whereas 42.9% had no such history. Most participants (62.9%) reported no history of infertility. In terms of disease stage, 51.4% were diagnosed at stage II and 24.3% at stage III. Regarding molecular subtype, 68.6% had luminal A BC, while 14.3% and 11.4% had luminal B BC with HER2-positive and HER2-negative profiles, respectively. Treatment durations of one, three, and four years were each reported by 14.3% of participants. Hypertension (43.3%) and diabetes mellitus (21.7%) were the most prevalent comorbidities.

Table 1. Association between adherence scores and sociodemographic characteristics, clinical variables, knowledge levels, BMQ-Necessity scores, and BMQ-Concerns scores, based on the data of the current study.					
Variable	Adherence scores				
	Unstandardized coefficients		Standardized coefficients		p-value
	B	SE	Beta	t	
Age	-0.033	0.012	-0.314	-2.711	0.009 *
Marital status	-1.222	0.968	-0.143	-1.262	0.211
Educational level	0.294	0.131	0.252	2.240	0.029 *
Family history	-0.169	0.128	-0.149	-1.318	0.192
Stage of breast cancer	0.264	.1200	0.248	2.209	0.031 *
Number of medications (excluding anticancer ones)	-0.116	0.148	-0.095	-0.784	0.436
Duration of treatment / months	-0.001	0.008	-0.012	-0.095	0.925
Knowledge scores	0.611	0.090	0.638	6.828	<0.001 *
BMQ-Necessity scores	0.062	0.027	0.249	2.300	0.025 *
BMQ-Concerns scores	-0.117	0.022	-0.572	-5.279	<0.001 *

AI-related knowledge was low in 57.1% of the study’s participants and moderate in 42.9% of them. Adherence levels were categorized as high ($\geq 80\%$) in 17.1%, low (0%–59%) in 18.1%, and moderate (60%–79%) in 64.3%. Analysis of adherence scores provided further insight into influencing factors (Table 1).

Adherence was positively correlated with knowledge ($R=0.638$, $p<0.001$). Previous studies support that patients with a stronger understanding of treatment use, regimen structure, side effects, and AI interactions tend to be more compliant with prescribed therapy^{8,10}.

Beliefs significantly influenced adherence: specifically, a positive association was observed with belief in the necessity of AIs ($R=0.64$, $p=0.025$), while concerns about adverse effects were negatively associated ($R=-0.74$, $p<0.001$), as shown in Table 1. Comparable findings indicate that patients who perceive treatment as beneficial are more likely to adhere, whereas apprehensions about side effects or long-term risks may reduce adherence^{5,7}.

4. Conclusion

The study demonstrates that women with BC who

exhibit higher levels of treatment-related knowledge and personal accountability are more likely to adhere to AI therapy. Enhancing educational outreach may therefore be a key strategy for promoting adherence. Furthermore, patients’ beliefs about the benefits of medication were positively associated with adherence, while their concerns about adverse effects showed a negative correlation; addressing both domains (i.e., perceived necessity and concerns) is critical to improving adherence outcomes.

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Conflicts of interest

None exist.

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