

## Self-Reported Adherence to Oral Endocrine Therapy among Breast Cancer Patients in Jordan

Dear Editor,

Non-adherence to medications is a significant health issue, as it can reduce the efficacy of therapeutic management and increase the likelihood of relapse.<sup>1</sup> Ensuring that patients with breast cancer (BC) adhere to the prescribed duration of endocrine therapy (ET) is, however, difficult due to the long duration of treatment. Several studies have evaluated adherence to ET.<sup>2–4</sup> To the best of the authors' knowledge, no studies have been conducted in the Middle East to evaluate adherence to ET. Subsequently, the authors conducted a study to evaluate the level of adherence to ET among patients with BC. The study also aimed to describe the patients' perceptions of ET and associations between adherence and patient-related factors.

This study was conducted between October 2017 and July 2018 at King Hussein Cancer Center, Amman, Jordan and involved the administration of a questionnaire to patients being treated for BC. Patients were recruited at the hospital's outpatient pharmacy and the chemotherapy infusion clinic. Those who had a refill for ET (tamoxifen, anastrozole, exemestane or letrozole) and had been on therapy for at least one month were included.

The questionnaire was developed by a survey specialist at the institution since, to the best of the authors' knowledge, there was no validated, well-established questionnaire in Arabic. The questionnaire contained items that were reported by Pourcelot *et al.*<sup>2</sup> The questionnaire included questions on adherence (the number of missed doses of ET during the previous month) and type and duration of ET as well as perception about ET. The survey specialist and the clinical investigators assessed the items for clarity and relevance to the patients to establish the face and content validity of the questionnaire. The questionnaire was pilot-tested in a small group of patients for one week and modified based on the feedback received.

Continuous data were presented as means  $\pm$  standard deviation, while categorical data were presented as numbers and percentages. A  $P \leq 0.05$  was considered statistically significant. Analysis of variance test was used to determine any associations between adherence and continuous data while chi-squared test was used for categorical data.

Ethical approval was granted for this study by the institutional review board (17 KHCC 93). The questionnaire contained a statement in the first page which was considered a consent form; all included patients provided informed consent.

A total of 202 questionnaires were completed. The mean age of patients was  $45.8 \pm 10.7$  years [Table 1]. In the sample, there were 113 patients (55.9%) on tamoxifen, 34 (16.8%) on letrozole, 36 (17.8%) on anastrozole and 10 (5.0%) on exemestane. Four patients (2.0%) did not know the name of the ET they were taking, and five patients (2.5%) did not answer the question. ET had been taken for  $\leq 6$  months by 59 patients (29.2%), for 6–12 months by 51 patients (25.2%), for 1–3 years by 77 patients (38.1%) and for 3–5 years by 15 patients (7.4%).

In terms of patients' perceptions about ET, approximately two-thirds (62.9%) reported that they didn't know to what extent they needed ET and approximately half of the patients (47.2%) didn't know whether ET could help in reducing recurrence of BC. However, the majority of the patients were aware of their treatment plan (89.9%) and reported understanding of their disease (90.8%). Most of the patients (86.1%) reported that they had received information on the importance of ET from their physicians but only half of the patients (52.0%) reported having received medication counselling from a pharmacist. The only factor that was significantly associated with adherence was the duration of treatment ( $P = 0.048$ ); the shorter the duration of ET, the fewer reported missed doses.

This study found a relatively high rate of adherence to ET. Patients were considered adherent if they took at least 80% of their prescribed medication over a certain period.<sup>5</sup> The majority of patients in the current study (99.5%) reported adherence rates of 80% or more over one month. Studies have reported high as well as low rates of adherence.<sup>2,3,5</sup>

In the current study, most participants reported that they had received information on the importance of ET, but this information was mostly from their physicians rather than pharmacists. In addition, no association was found between the high adherence and the information provided by physicians; however, this may be due to the nature of the study as there was no objective measure of the physician's role in the patient's counselling. The

**Table 1:** Characteristics of patients with breast cancer on endocrine therapy in Jordan (N = 202)

Characteristic	n (%)
<b>Marital status (n = 200)</b>	
Married	163 (81.5)
Single	19 (9.5)
Widowed	13 (6.5)
Divorced	5 (2.5)
<b>Educational level (n = 199)</b>	
Bachelor's degree	59 (29.6)
High school	58 (29.1)
Diploma	51 (25.6)
Master's or doctoral degree	13 (6.5)
Others	18 (9.0)
<b>Area of residence (n = 190)</b>	
Amman	127 (66.8)
Outside Amman	55 (28.9)
Outside Jordan	8 (4.2)
<b>Family income per month in Jordanian Dinar (n = 190)</b>	
<500	98 (51.6)
500–1000	72 (37.9)
1000–2000	16 (8.4)
>2000	4 (2.1)
<b>Nationality (n = 199)</b>	
Jordanian	179 (89.9)
Other	20 (10.1)
<b>Family history of breast cancer (n = 199)</b>	
Yes	55 (27.6)
No	144 (72.4)
<b>On other medications (n = 187)</b>	
Yes	55 (29.4)
No	132 (70.6)

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only factor associated with adherence was the duration of treatment. A similar association was reported by Robinson *et al.*, who found that the rate of adherence decreased from year one of treatment to year five by 50%.<sup>4</sup> The present authors were unable to draw any conclusion about adherence over the course of ET because of the short duration of follow-up in this study.

Several studies have evaluated the association between adherence and patient-related factors<sup>2,5</sup> In a cross-sectional survey, the risk factors associated with non-adherence were comorbid conditions, poly-pharmacy and younger age.<sup>2</sup> In the current cohort, age and whether the patient was taking other medications were not significantly associated with adherence. However, the present study has some limitations. The use of a self-administered questionnaire, as there was no objective measure of adherence for more accurate assessment, might have resulted in an overestimation of adherence. In addition, there was a small number of patients that had taken ET for more than three years and the response rate was not calculated. Furthermore, the included patients were on ET for more than one month which might affect the adherence as the behaviours of patients would change over the period of treatment.

This study found a relatively high level of adherence to ET among patients with BC. However, there was a gap in the counselling provided by pharmacists. Further studies should be conducted to assess adherence for a longer duration and to further investigate the factors that may be associated with non-adherence such as socioeconomic status.

#### AUTHORS' CONTRIBUTION

NF and KA conceptualised and designed the manuscript. AG, MD, RA, HS, HS and RR collected and assembled the data. KA analysed the data. NF, AG and KA wrote the manuscript. All authors approved the final version of the manuscript.

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