

# Analyzing the Effect of Estrogen Deprivation Therapy Type on Sleep in Breast Cancer Survivors

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## INTRODUCTION

Existing research demonstrates that Breast Cancer Survivors (BCS) report changes in sleep, fatigue, and cognition as side effects of estrogen deprivation therapy (EDT).<sup>1,2</sup>

Evaluation of sleep using both actigraphy and questionnaires may clarify the relationship between EDT and sleep disturbances in BCS. Despite their potential importance, these validated and objective measures of sleep are not yet widely incorporated into breast cancer research.

## METHODS

### Pre-Test

- Participants meeting study criteria complete ISI (Insomnia Severity Index) and PSQI (Pittsburgh Sleep Quality Index).
- Provided wrist worn actigraphy device without access to companion mobile app.

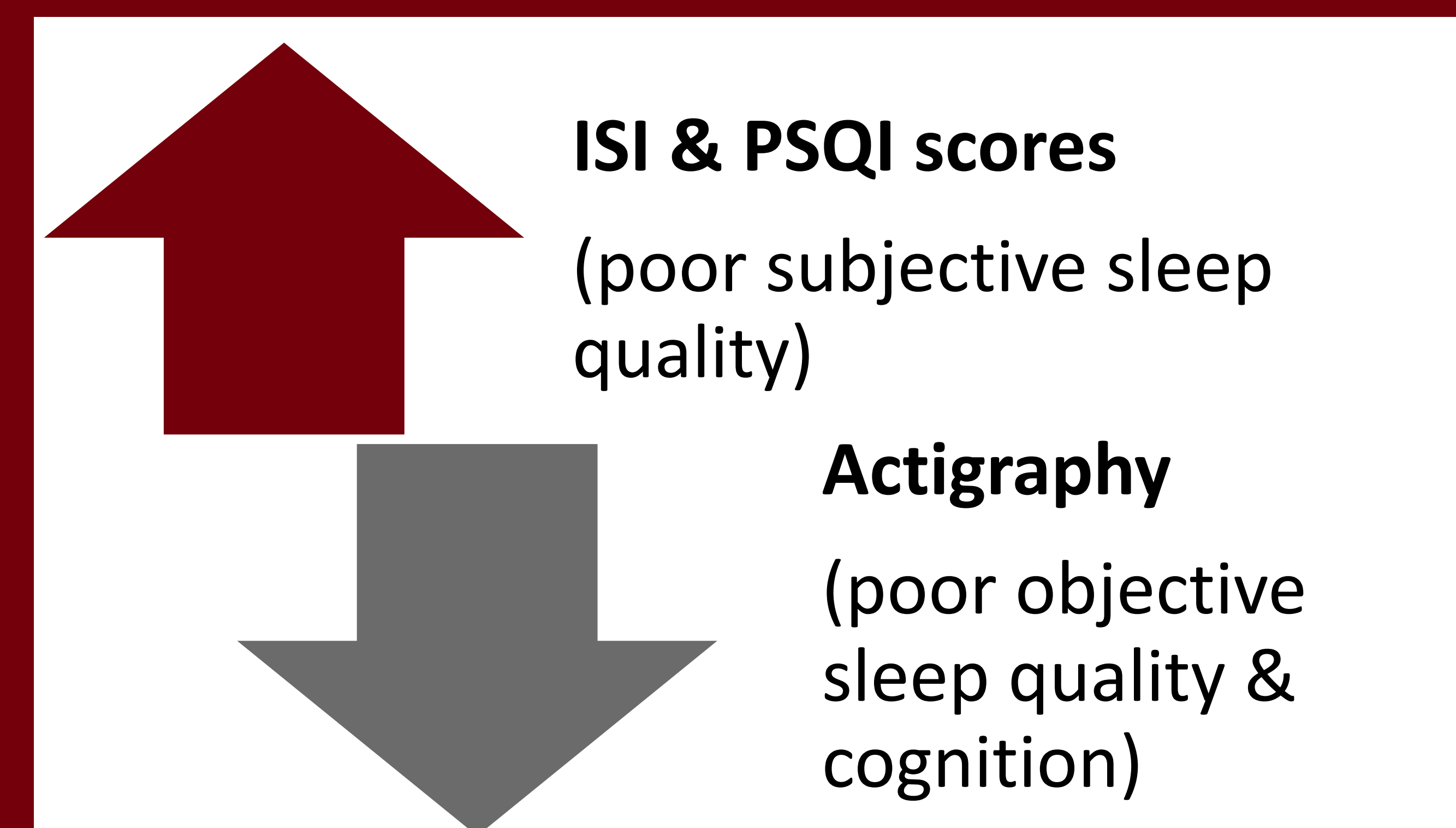
### End of Month 1

- Complete repeat ISI and PSQI.
- Participant given access to companion mobile app. in which they could view their real time sleep and cognition data.

### End of Month 2

- Complete final ISI and PSQI.
- Readiband Retrieved.

Factorial MANOVA showed that participants receiving **Anastrozole & Tamoxifen** had:



BCS patients taking **Anastrozole & Tamoxifen** show decreased sleep quality using both objective & subjective measures.

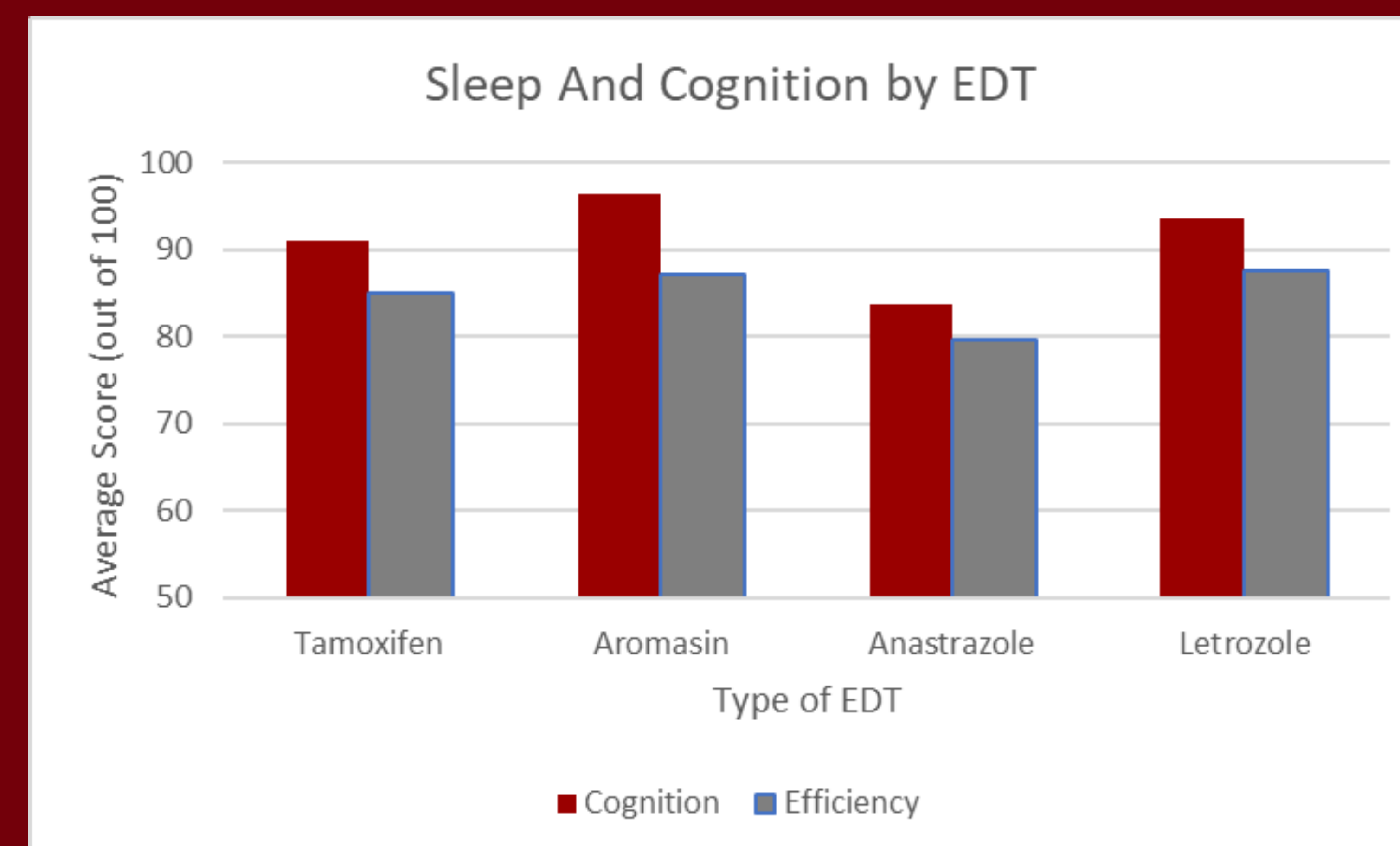


Figure 1. Sleep quality and Cognition (as measured by Readiband™) for BCS across the two-month period, averaged by type of EDT

## RESULTS

Participants showed a significant decrease in ISI across the duration of the study.

Four main types of pharmacotherapy were identified as EDT for the participants (n=22):

- 1) Anastrozole (36%)
- 2) Exemestane (14%)
- 3) Letrozole (18%)
- 4) Tamoxifen (32%)

Participants receiving Anastrozole and Tamoxifen had statistically significant ( $p < 0.001$ ) decreases in sleep quality (as measured by ISI, PSQI, and actigraphy).

## CONCLUSIONS

Pharmacotherapy type may impact both the subjective and objective BCS experience of sleep during EDT.

This study's findings may help inform future clinical conversations surrounding sleep in BCS as well as strategies for mitigation of sleep disturbances in this population.

## REFERENCES

1. Berkowitz, M. J., et al. (2021). How patients experience endocrine therapy for breast cancer: an online survey of side effects, adherence, and medical team support. *Journal of cancer survivorship : research and practice*, 15(1), 29–39.
2. Martin, T., et al. (2022). Rest activity rhythms characteristics of breast cancer women following endocrine therapy. *Sleep*, 45(4), zsab248.

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