

## Introduction & Problem

- Breast cancer is the most prevalent type in the United States<sup>1,2</sup>
- Second-highest cause of all cancer deaths - 268,600 new cases and 41,760 deaths in 2019<sup>1-2</sup>
- Medication nonadherence (NA) issues<sup>3</sup>
  - Medication-NA costs = \$20.5 billion in 2020<sup>4</sup>
  - 30% increased risk of mortality due to cancer recurrence<sup>4</sup>



- 75-80% of breast cancer patients take oral endocrine therapy (OET)
- Highest medication-NA rates
  - >59% for tamoxifen
  - >50% for AIs (Aromatase Inhibitors)<sup>5</sup>
- Older women (≥ 65 years) with breast cancer
  - Increased importance from growing older populations<sup>6</sup>
  - Unclear rate and determinants of medication-NA

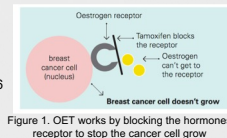


Figure 1. OET works by blocking the hormones receptor to stop the cancer cell grow

## Purpose

The purpose of this study is to identify the rate of OET-NA and the multi-level determinants influencing OET-NA for older women with breast cancer.

## The contribution to nursing

Determining rates and multi-level determinants of OET-NA will be the first step in developing and testing interventions to improve OET-NA with breast cancer in older women, which has the potential to decrease morbidity, mortality, and medical cost and increase Quality-of-Life (QOL).

## Gaps

- Lack of diverse samples
  - Limited "OET-NA rate" studies utilizing diverse samples (i.e., ethnic backgrounds, socio-economic factors)<sup>7-13</sup>
  - Predominately single site samples from small clinics or hospitals within the United States and Europe<sup>7-13</sup>
- Majority of retrospective OET-NA studies have utilized small electronic databases (i.e., <10,000)<sup>13-18</sup>
  - Limited generalizability
- Difficult to determine effects of multi-level influences on medication adherence
  - Existing literature on OET-NA rates has largely focused on patient-level influences on medication adherence
    - For example: psychosocial barriers<sup>19-29</sup>
  - Breast cancer OET-NA is influenced by social environments (i.e., family, friends, community, and culture) as well<sup>30</sup>

## Literature Review

Younger age, non-White ethnic background, comorbidities, cognitive and psychological problems, and financial constraints.

Older age, having side-effects, type of medication, and dosage, duration of medication, and having financial constraints

Same as cancer with stronger influences of side-effects than other cancer medications



## The RESILIENT Study: A Retrospective, Descriptive, Correlational Investigation of Rate and Correlates of Oral Endocrine Therapy Adherence in Older Women with Breast Cancer

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## Theoretical Frameworks

- Bronfenbrenner's ecological system theory (EST)**: explains the interrelation between individuals and the environment to evaluate the impact of a patient's behavior on their health<sup>31</sup>
- The Five dimensions of Adherence**: adherence is a multidimensional phenomenon determined by the World Health Organization<sup>32</sup>

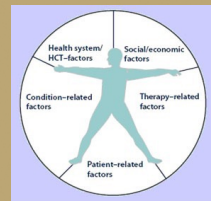
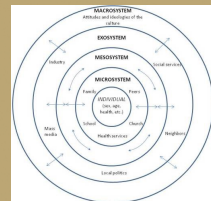


Figure 2. Bronfenbrenner's ecological system theory (left) and The Five dimensions of Adherence (right)

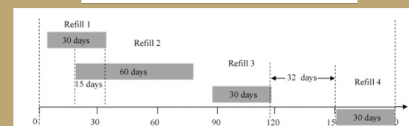
## Method

- Cross-sectional, correlational study, Secondary data analysis of SEER-Medicare database

## Data analysis

- OET-NA is calculated as a ratio and this data will be computed by using PDC in SEER-Medicare data. Descriptive statistics will be applied to the extracted data and calculated percentages of OET-NA

$$PDC = \left( \frac{\text{Number of days in period "covered"}}{\text{Number of days in period}} \right) \times 100\%$$



For example, PDC = (30+60-15+30+30)/180 X 100 = 75%

- The OET-NA is the main outcome variable and nominal level of data.
- The Phi coefficient of bivariate statistical test will be computed to assess the relationship between multi-level determinants and OET-NA at a significance level of 0.05.

## Settings

- Utilizing the Surveillance, Epidemiology, and End Results (SEER)-Medicare database
  - Health Insurance Portability and Accountability Act (HIPAA)-compliant multifacility, United States data warehouse<sup>33</sup>
  - Containing over 9 million cancer cases with over 470,000 new cases added to the database every year in the United States<sup>34</sup>
  - The SEER database has been linked to Medicare data that includes (a) claims-based measures of comorbidities, (b) screenings and evaluation tests, and (c) detailed treatment and outcomes data, with a collaborative effort by the National Cancer Institute (NCI), SEER registry, and the Centers for Medicare and Medicaid Services (CMS)<sup>35</sup>

## Selection criteria

1. American women, 65 years of age or older, who are enrolled in Medicare Part D

Exclusion criteria: a breast cancer diagnosis that was noted in a death certificate or autopsy

2. Diagnosed with breast cancer stages I-III using ICD-9 174 (10 codes) and ICD-10 C50 (female, 36 codes) from 2014-2019

3. Prescribed one of the following oral endocrine medications: tamoxifen, anastrozole, exemestane and letrozole.

## Operational Definition

|  |                       |   |
|--|-----------------------|---|
| Macro-level  | HCT/HST-related       | the data include health care professional and health care system characteristics                        |
| Meso-level   | Therapy-related       | medication effects or regimens that include types and doses of medications, and duration of treatment   |
| Micro-level  | Socioeconomic-related | the data social/environment factors, economic factors and lifestyle factors                             |
| Individual-level                                       | Condition-related     | the data includes disease control related conditions, disease characteristics, and co-morbidities       |
|  | Patient-related       | activities or issues that the patient had direct control of such as psychological or behavioral factors |
| Multi-level determinants factor correlated with OET-NA |                       |   |

## Results of Literature Review

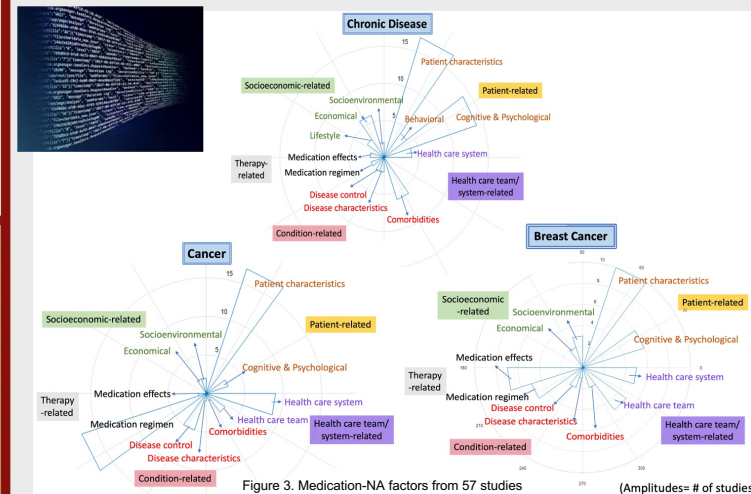


Figure 3. Medication-NA factors from 57 studies (Amplitudes = # of studies)

## Discussion & Conclusion

- The SEER-Medicare database has been validated for 35,000 women with breast cancer prescribed tamoxifen, anastrozole, exemestane and letrozole medications annually and adherence rates are expected as 80% from 2014-2019.
- Multi-level determinants are included as patient-related, condition-related, therapy-related, social/economic-related, and health care team/system-related factors. Patient and therapy related factors were stronger for breast cancer patients.
- Determining multi-level influences is critical because nurses are uniquely positioned at all levels to guide and support women with breast cancer to achieve better OET medication adherence to treat breast cancer.
- This study will be the first to measure the OET non-adherence rate and explore multi-level influences on OET non-adherence in women with breast cancer utilizing a large database.
- Determining rates and multi-level determinants of OET adherence will be the first step in developing and testing interventions to improve OET adherence with breast cancer, which has the potential to decrease morbidity and mortality and increase QOL.

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