

Risk of Dementia Associated with Hormone-Modulating Breast Cancer Therapies Use in Older Women: A Nested Case-Control Study

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BACKGROUND

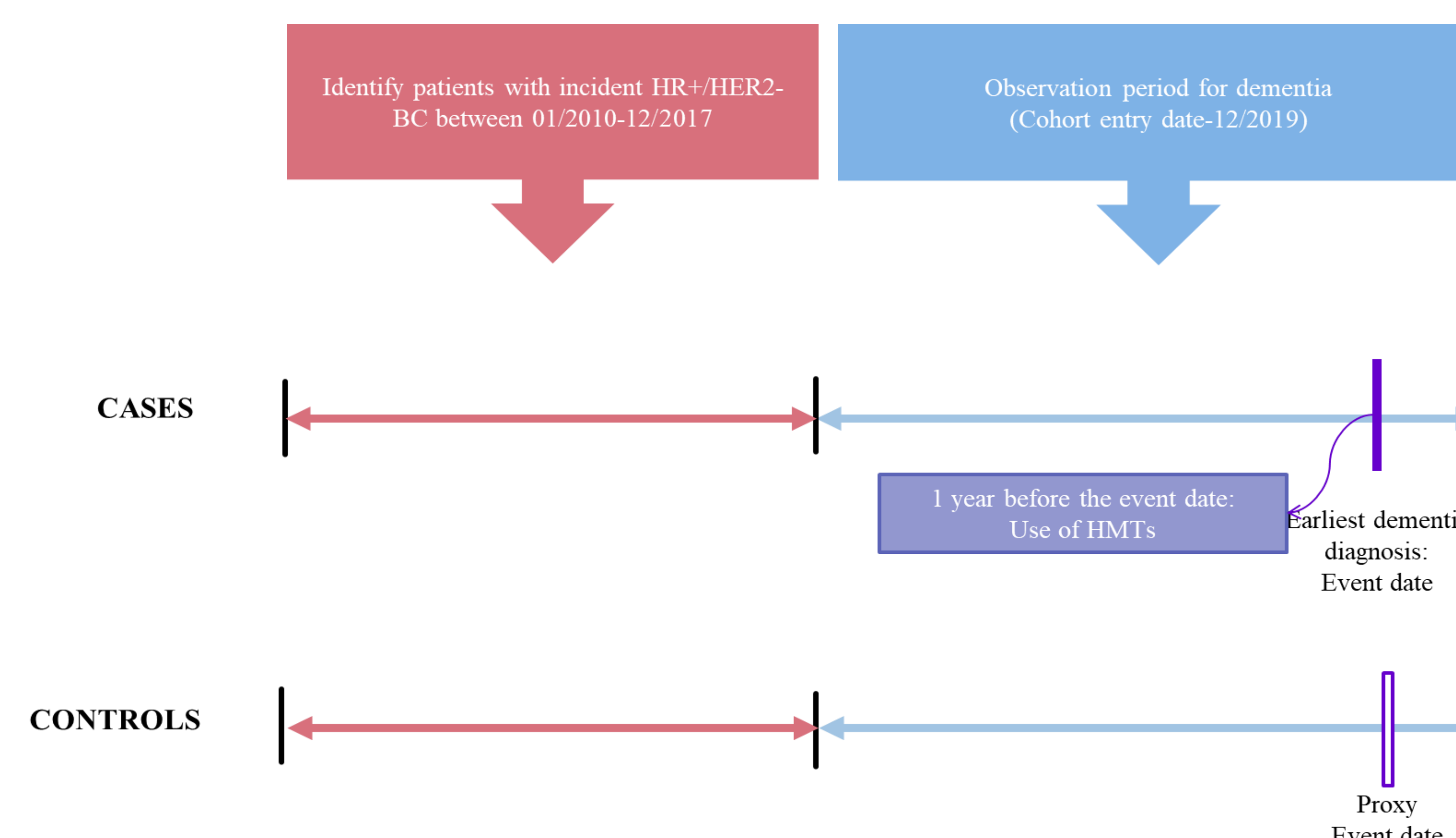
- Approximately 12.8% of women will develop breast cancer (BC) throughout their lifetime.
- In US, the most prevalent subtype of BC was hormone-receptor-positive /human epidermal growth factor receptor 2 negative (HR+/HER2-) counts 68% of all BC cases.
- The introduction of hormone-modulating therapies (HMTs) has revolutionized the treatment of BC patients which significantly improved the overall survival rate.
- With increasing survival rates in BC due to effective pharmacotherapies, it is crucial to evaluate the potential and long-term adverse effects of HMTs on age-related neurodegenerative diseases (NDDs).
- In the United States, about 1 in 9 older adults have dementia with a significant impact on caregivers and every aspect of patients' life (i.e., quality of life, physical, mental, and social well-being).
- There is inconsistent real-world evidence regarding HMTs' safety and a significant data gap for **HR+/HER2- BC patients**.

OBJECTIVE

- Considering the high prevalence rate, increased life expectancy, and high overall survival, this study aimed to evaluate the association between **HMT use** and the **risk of dementia** among **HR+/HER2- BC patients** in the US.



METHODS



Study design and data source

- This study is a nested-case control study using the 2010-2019 Surveillance, Epidemiology, and End Results (SEER) Medicare Linked Database.

Study population

- Female patients aged 66 years or older with HR + /HER2- BC.

Exposure

- Any use of HMT (SERMs: tamoxifen and raloxifene and aromatase inhibitors: steroidal, exemestane, nonsteroidal, anastrozole, and letrozole) within 12 months before the event date.

Covariate Selection

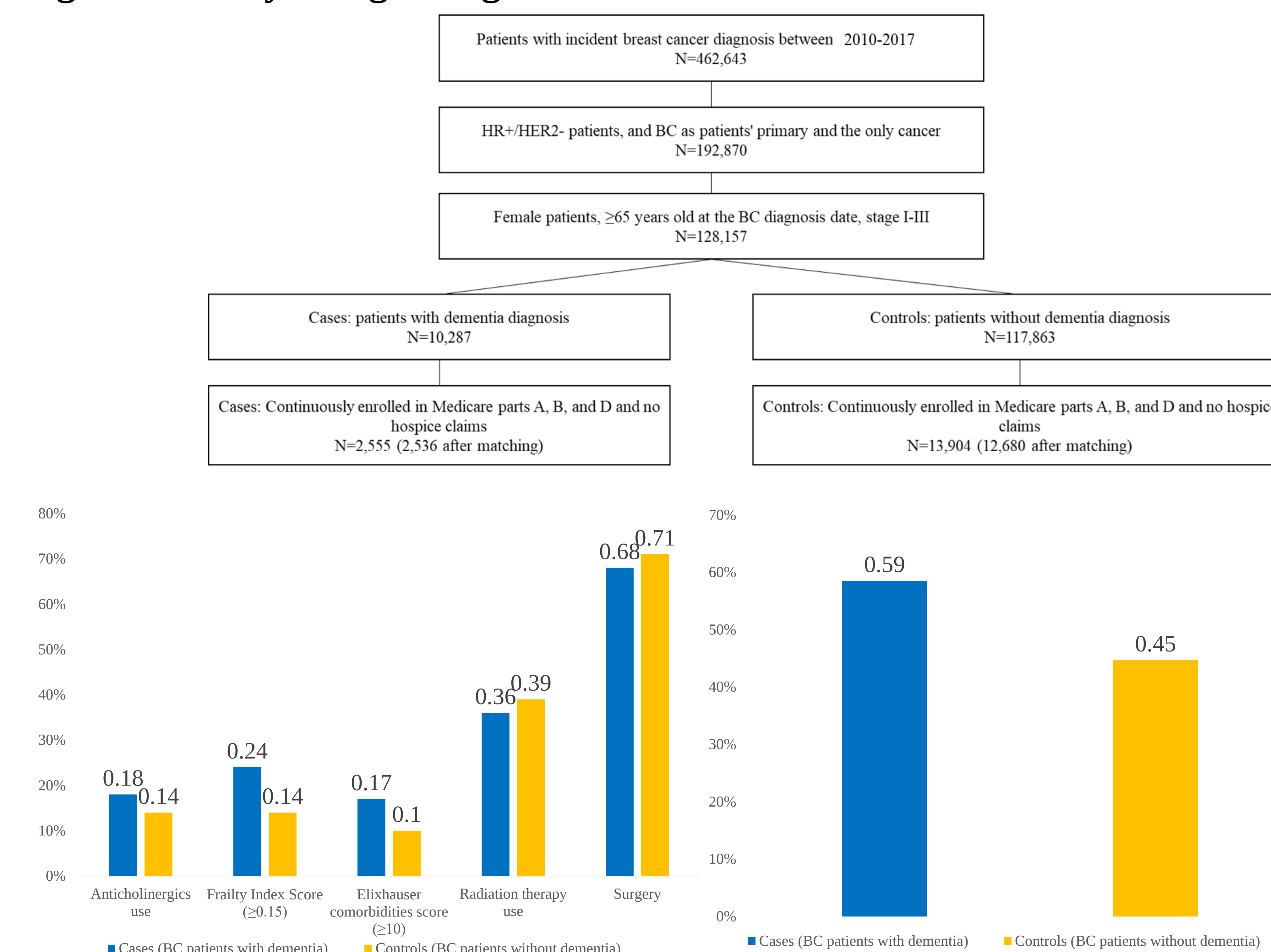
- Andersen Behavioral Model was used for covariates selection.
- Predisposing factors included: Age, Race/ethnicity, Marital status
- Enabling factors included: Time-period of BC diagnosis, Region, Poverty level
- Need factors included: Elixhauser comorbidities, Stage of cancer, BC-related treatments, Use of anticholinergics
- Healthcare utilization, Frailty Index Score

Statistical methods

- Descriptive analysis to compare cases and controls in sociodemographic characteristics, comorbidities conditions, BC-related factors, use of anticholinergics, and frailty index score.
- Conditional logistic regression model to assess the risk of dementia with HMT use

RESULTS

Figure 1. Study Design Diagram



- A significantly higher proportion of cases were exposed to the HMTs than controls (58.52% and 44.68%, $p < 0.0001$).
- The exposure of HMTs exhibited significantly higher risks of dementia among HR +/HER2- BC patients compared to patients without the use of HMT (adjusted odds ratio [aOR]=1.86, 95% CI=1.69-2.05, $p < 0.0001$).

DISCUSSION & CONCLUSIONS

- Among HR+/HER2- BC patients, the use of HMTs was associated with an increased risk of dementia.
- Similar findings were observed both in Denmark and Taiwan studies. Cognitive impairment was found after BC patients initiated with the HMTs in a clinical study based on the patient reported outcomes (PRO).
- Future studies should focus on understanding the role of HMTs in age-associated NDDs to generate a comprehensive evaluation of the risk-benefit profile of HMTs.

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