Introduction

- Breast cancer is the most common cancer among women.
- Mammography is the preferred standard-of-care for early detection of breast cancer.
- The MERIT cohort study is intended to improve breast cancer detection for women.
- Participants receive annual screening.
- Eligibility criteria includes being between ages 25-81 and having not had breast cancer.
- The study incorporates a questionnaire to the participants for additional data collection.

Methods

- MERIT cohort study – 6298 women taking part from 2017.
- Diagnostic screening is a regular part of the participants’ routine.
- Additional risk factors gathered include breast density, BMI, menopause status, and race/ethnicity.
- 101 cases noted through early detection used for the analysis.
- BCRAT tool applied using SAS to build Gail Model.
- Relative risk of breast cancer by risk factors analyzed using BCRAT (Breast Cancer Risk Assessment Tool).
- MCRM - an improvement over Gail model built using additional factors.
- Poisson GLM applied.

Results:

- The Gail Model showed significant risk factors. Using relative risks, the number of relatives ≥ 2 was significant (RR: 1.0006, 1.0031), 95% CI (1.0005, 1.00031).
- MCRM model demonstrates better results with additional risk factors like breast density, BMI, and menstrual status.
- The interaction between breast density and age category is significant for women less than 50 (RR: 1.0052, 1.0066).
- Women above the age of 50 have a higher incidence of both dense breast tissue.
- Women the ages of 25-28 have the highest occurrence of three or more relatives.
- Having two or more biopsies increases the risk of breast cancer.
- Logistic regression model implies that the relationships: number of biopsies and breast cancer risk, number of first-degree relatives, and breast cancer could be causal.

Conclusions:

- MCRM is the first model that is based entirely on data specific to the MERIT cohort.
- The MCRM model uses additional risk factors not included in the Gail Model.
- This model needs further investigation and improvements.

Next Steps:

- The MCRM model uses additional risk factors not included in the Gail Model.
- Validation of current logistic regression model to produce a more advanced model to exceed results at present.
- This model needs further investigation and improvements.

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