

**BREAST CANCER PREVENTION: IS IT POSSIBLE TO IMPROVE THE
SELECTION BY GAIL MODEL USING THE FUZZY LOGIC
METHODOLOGY? A RETROSPECTIVE STUDY**

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- *ABSTRACT: Patients' reaction to chemotherapy is directly related to the state of their hormonal receptors. In most cases, studies on the chemoprevention of breast cancer use women with a not necessarily hormone-sensitive high risk of breast cancer (using the Gail Model). This study compared the capabilities of a new hybrid model and the Gail model in selecting women to chemoprevention. The objective was to determine the better method to select women who should be benefited with breast cancer chemoprevention. The new hybrid model was constructed using fuzzy sets classification of risk factors and crispy rules (constructed by translating physicians' perceptions of hormone-sensitive breast cancer's risk). This model considered age, age at menarche, number of previous biopsies, number of relatives affected by breast cancer, and age at first live birth. Since the new model had been developed, we calculated and compared the risks by Gail Model and by fuzzy hybrid model. The data used refer retrospectively to five years before the disease's diagnosis. The fuzzy hybrid model presented better results and improved significantly the accuracy of predicting hormone-sensitive breast cancer (20.5%). However, we believe that it is necessary to validate it with a large and prospectively sample before be used clinically.*
- *KEYWORDS: Breast cancer; hormone receptor; fuzzy logic; chemoprevention.*

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