

Breast Cancer Risk Factors in a Defined Population: Weighted Logistic Regression Approach for Rare Events

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Abstract

Purpose

This study aimed to determine out risk factors for female breast cancer in a low socioeconomic population in Iran.

Methods

Between 2007 and 2009, a total of 25,592 women who were ensured by the Imam Khomeini Relief Foundation participated in this screening program. The characteristics of patients diagnosed with breast cancer (n=111) were compared with those of control cases (n=25,481). In this study, we used relogit analysis (rare event logistic regression) with a weighting method using program Zelig.

Results

Of 25,592 women, 3.9/1,000 had breast cancer, from which 38 were diagnosed during screening and 73 had already been diagnosed. The mean and standard deviation of age in breast cancer patients and in healthy controls were 49.18 ± 8.86 years and 46.65 ± 9.40 years, respectively. The findings based on the multivariate model revealed that the past history of ovarian cancer, hormone therapy, and first relatives with breast cancer were associated with increased risk for breast cancer. However, the use of oral contraceptive pills was found to be associated with reduced risk for breast cancer.

Conclusion

Due to the rarity of the event in the population, relogit with a weighting method was used to investigate the major risk factors for breast cancer. These factors include oral contraceptive pill use, a history of ovarian cancer of the person under study, first relatives with breast cancer and hormone therapy.

Keywords: Breast neoplasms, Logistic models, Risk factors, Screening program