

Ovarian Cancer Risk Factors in a Defined Population Using Rare Event Logistic Regression

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Abstract

Background: This study evaluated the role of family history of cancer and gynecologic factors in relation to the etiology of ovarian cancer in a low socioeconomic population in Iran.

Methods: From 2007-2009 we conducted a screening program on women with insurance coverage provided by the Imam Khomeini Relief Foundation. A total of 26788 women participated in this study of whom 76 cases had ovarian cancer and 26712 were considered as controls. We used rare event logistic (ReLogit) regression analysis with a prior correction method that used the Zelig package in R to obtain odds ratio estimates and confidence intervals.

Results: Ovarian cancer was more frequent among postmenopausal than premenopausal (odds ratio: 2.30; confidence interval: 1.17-4.49) women. We observed increased risk for this disease in women with histories of hormone replacement therapy compared to those with no history (odds ratio: 2.36; confidence interval: 1.13-4.91). A greater increase in ovarian cancer was observed in women with family histories of breast (odds ratio: 2.88; confidence interval: 1.44-5.77), ovarian (odds ratio: 11.27; confidence interval: 5.63-22.54) and all cancer sites (odds ratio: 2.95; confidence interval: 1.71-5.08). However, the use of oral contraceptive pills was significantly associated with lower risk for ovarian cancer (odds ratio: 0.47; confidence interval: 0.28-0.79). There was no association between ovarian cancer and age, marital status, occupation, education level, age at menarche, age at first pregnancy and number of pregnancies.

Conclusion: Ovarian cancer was considered a rare event. Thus we deemed it necessary to explore the associated risk factors using ReLogit with a prior correction method. The risk factors for ovarian cancer were menopause, history of hormone replacement therapy and family history of cancer of the breast, ovaries and other sites. Oral use of contraceptive pills showed a protective effect on risk for ovarian cancer.