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Mapping of stomach, colorectal and bladder cancers in Iran, 2004-2009: Applying Bayesian Polytomous Logit model

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Abstract

Introduction & Aim: According to the last report of Iran cancer registry, stomach, colorectal and bladder cancers are the most prevalent cancers. The present study focused on modeling the geographical variation of incidence and risk factors of mentioned cancers in Iran.

Method: In this study data consisting of stomach, colorectal and bladder cancer, in 30 provinces of Iran during 2004-2009 are considered. These data are analyzed by Polytomous Logit model. The incidence of stomach cancer acts as the reference category (the surrogate for smoking). Then, the log odds are decomposed into shared and specific structured spatial and unstructured spatial components. These latent components help to detect shared and disease-specific risk factors.

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Result: Central, south, east and southwestern provinces are supposed as high risk regions for shared risk factor for colorectal and bladder cancers. This shared risk factor is slightly associated more with bladder than with colorectal cancer. North, northwestern and central regions and also three borderline province in southwestern are high risk regions for colorectal cancer. Central, eastern, southern and western strip of the country expect Ilam are found as the high risk regions of bladder cancer.

Conclusion: After considering known shared risk factor of the three cancers, it turns out that colorectal and bladder cancer have unknown shared risk factor and also they have different specific spatial patterns that are due to other risk factors. The joint model achieves a great improvement in DIC over the univariate model. It could be due to fewer estimated parameters.

Key words: Polytomous logit model, shared component model, stomach cancer, colorectal cancer, bladder cancer

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