Original Paper

Application of multilevel zero-inflated Poisson regression for assessing the risk factors of excess hospitalization among patients undergoing abdominal surgeries in Shiraz, Iran

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Abstract

Background and Objective: Prolonged hospitalization lead to considerable financial burden for patients as well as health care system. This study aimed to identifying important factors resulting in excess hospitalization days in patients undergoing abdominal surgeries using the multilevel zero-inflated Poisson regression model.

Methods: In this descriptive - analytic study, 485 patients from five teaching and private hospitals in Shiraz (southern Iran) were selected based on convince sampling method. Multilevel zero-inflated Poisson regression model was used to determine the risk factors of excess hospitalization day. Maximum likelihood method was used to estimate parameters of the model. Moreover, Akaike Information Criterion (AIC) and Bayes Information Criterion (BIC) indices were applied to assess the goodness of fit of the model.

Results: The primary analysis of data showed that 81.2% of the patients did not undergo excess hospitalization days. Based on findings, age, respiration rate, blood infusion, fever, smoking and drug abuse did not affect excess hospitalization days. In contrast, gender, renal diseases, operation history, laparoscopic gallbladder removal, prostate surgery and ileus significantly led to excess hospitalization days ($P<0.05$). Laparoscopic gallbladder removal, prostate surgery increased the chance of excess of hospitalization days to 4.64 and 9 times, respectively ($P<0.05$).

Conclusion: Geder, renal diseases, operation history, laparoscopic gallbladder removal, prostate surgery and ileus significantly led to excess hospitalization days.

Keywords: Multilevel Poisson regression, Abdominal surgery, Excess hospitalization day

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