

Accounting for misclassification outcomes in binary regression models using multiple imputation with internal validation data

Deskripsi Lengkap: <https://lib.fkm.ui.ac.id/detail.jsp?id=102129&lokasi=lokal>

Abstrak

Outcome misclassification is widespread in epidemiology, but methods to account for it are rarely used. We describe the use of multiple imputation to reduce bias when validation data are available for a subgroup of study participants. This approach is illustrated using data from 308 participants in the multicenter Herpetic Eye Disease Study between 1992 and 1998 (48% female; 85% white; median age, 49 years). The odds ratio comparing the acyclovir group with the placebo group on the gold-standard outcome (physician-diagnosed herpes simplex virus recurrence) was 0.62 (95% confidence interval (CI): 0.35, 1.09). We masked ourselves to physician diagnosis except for a 30% validation subgroup used to compare methods. Multiple imputation (odds ratio (OR) = 0.60; 95% CI: 0.24, 1.51) was compared with naive analysis using self-reported outcomes (OR = 0.90; 95% CI: 0.47, 1.73), analysis restricted to the validation subgroup (OR = 0.57; 95% CI: 0.20, 1.59), and direct maximum likelihood (OR = 0.62; 95% CI: 0.26, 1.53). In simulations, multiple imputation and direct maximum likelihood had greater statistical power than did analysis restricted to the validation subgroup, yet all 3 provided unbiased estimates of the odds ratio. The multiple-imputation approach was extended to estimate risk ratios using log-binomial regression. Multiple imputation has advantages regarding flexibility and ease of implementation for epidemiologists familiar with missing data methods.