STATISTICAL TEST FOR STRONG IGNORABLE CONDITION THROUGH INSTRUMENTAL VARIABLE

Z. Cai[†1], M. Kuroki[2]

[1] *Kyoto University, Kyoto, Japan*
[2] *Osaka University, Osaka, Japan*

[†] E-mail: *cai@pbh.med.kyoto-u.ac.jp*

Evaluation of treatment effects from randomized clinical trials where compliance is not perfect is a hot topic in recent research. We propose a new method to statistically test the strongly-ignorable-treatment-assignment (SITA) condition suggested by Rosenbaum and Rubin (1983) by using the instrumental variable. According to our result, when a set of observed covariates satisfies the SITA condition, we can apply it to estimate treatment effects instead of using the instrumental variable (IV) method, which has been widely used to correct noncompliance in randomized trials. In addition, a new IV estimator based on stratified analysis is proposed, which can be used even if the stratified factor does not satisfy the SITA condition. We compare the above estimators in terms of asymptotic variance. Both simulation experiments and a clinical trial for coronary heart disease are used to illustrate our method. These results introduce a new application of SITA condition from observational studies to experimental studies, and provide a simple and reliable method to estimate treatment effects in the presence of noncompliance.