A Review of Methods for Handling Missing Data in the Formof Dropouts in Longitudinal Clinical Trials

Authors : A. Satty, H. Mwambi

Abstract : Much clinical trials data-based research are characterized by the unavoidable problem of dropout as a result of missing or erroneous values. This paper aims to review some of the various techniques to address the dropout problems in longitudinal clinical trials. The fundamental concepts of the patterns and mechanisms of dropout are discussed. This study presents five general techniques for handling dropout: (1) Deletion methods; (2) Imputation-based methods; (3) Data augmentation methods; (4) Likelihood-based methods; and (5) MNAR-based methods. Under each technique, several methods that are commonly used to deal with dropout are presented, including a review of the existing literature in which we examine the effectiveness of these methods in the analysis of incomplete data. Two application examples are presented to study the potential strengths or weaknesses of some of the methods under certain dropout mechanisms as well as to assess the sensitivity of the modelling assumptions.