Comparison of Weibull Survival Model with Log Logistic Survival Model in Modeling Survivorship of Acute Liver Failure Patients

Alan Jose and Anil C Mathew

Department of Biostatistics, St. Thomas College, Pala

Email: alanjoseaykkara@gmail.com

Introduction: Development of statistical models for graduating mortality of various diseases has continues to receive considerable attention. The primary interest of this study is to appraise the recent proposals of Weibull survival model and log logistic survival model in modeling the survival of acute liver failure patients. These distributions have been fitted to a set reliable primary data collected from PSG Hospitals, Coimbatore. A total of 41 patients suffering from ALF who visited the hospital between January 2016 and May 2017 were reviewed. The factors studied were age, sex, total serum bilirubin, serum creatinine, serum albumin, urea, aspartate aminotransferase (AST), alanine aminotransferase (ALT) and recent hepatitis E virus infection. A complete house to house survey was then conducted to find the actual survival of the patients. The survival data were obtained from the relatives for those who have died.

Materials: Weibull model and log logistic model were then fitted and goodness of fit were estimated and compared.

Results: In Akaike Information Criterion statistics, the AIC value for Weibull model is 138.20 and for Log-Logistic model is 137.90. It also found that the R2 value for Weibull model is 90.2 percentages and for the Log-Logistic model is 91.8 percentages. The Anderson-Darling value for Weibull model is 1.507 and for log-logistic model is 1.492. In conclusion, we observed a fairly good fitness of fit for both log logistic model and Weibull model in modeling the survival of acute liver failure patients.

Conclusion: Out of these two models, log-logistic model having better goodness of fit while comparing with Weibull survival model in modeling survival of acute liver failure patients.