

Survival analysis on end stage renal disease patients in Polonnaruwa district

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Chronic Kidney disease (CKD) is one of the major health issues in Sri Lanka, especially in the North Central Province. Further, End stage renal disease (ESRD) is the advanced stage of CKD. The purpose of this study is to identify the influential demographic and clinical characteristics factors on survival rate of ESRD patients. Time from disease diagnosis to the death of an ESRD patient was treated as a response variable while age, gender, area, diabetes and hypertension were treated as covariates. Data were collected from the records of the ESRD patients from the General Hospital, Polonnaruwa over the period from January 2016 to May 2018. Survival functions for categories of qualitative variables were estimated by using Kaplan Meier estimation method. Log rank test was applied to investigate whether there is a difference between the survival function among categories. In addition, Cox proportional hazard (Cox PH) model was applied to explore the association between survival rate of ESRD patients and covariates. It was observed that survival rate of ESRD patient is significantly related with age (HR = 2.321, $p = 0.0203$), diabetes (HR = 1.828, $p = 0.0676$), hypertension (HR = 2.289, $p = 0.0221$) and interaction between age and hypertension (HR = -1.847, $p = 0.00648$) at 10% significance level. Moreover, from Kaplan Meier estimator, it was observed that ESRD patients without diabetes have high survival rate than ESRD patients with diabetes. Furthermore, it can be concluded that for the patients whose age is less than 50, hypertension reduces the survival rate whereas for the patients from other age category, hypertension does not affect the survival rate.

Keywords: cox proportional hazard model, Kaplan Meier estimator, log-rank test and survival time of ESRD patients

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