

# **Survival analysis of cervical cancer patients in Malaysia: assessing the proportional hazards assumption**

## **ABSTRACT**

In Malaysia, cervical cancer ranks as the third most prevalent and the fourth most lethal cancer among women. It continues to be a major concern among clinicians. Nonetheless, there were hardly any published studies on the assessment of the proportional hazard (PH) assumption for these patients in Malaysia before the development of the Cox model. The application of survival analysis method is crucial in addressing this issue. Therefore, the aim of this study is to assess the PH assumption in the survival analysis of Malaysian cervical cancer patients. In this study, data was collected from Universiti Sains Malaysia Hospital (HUSM) throughout a seven-year period. The log cumulative hazard plot and the Schoenfeld residuals test with the `cox.zph` function was applied to assess the PH assumption of cervical cancer patients. From the log cumulative hazard plot, only primary treatment and stage of cancer satisfied the PH assumption. Meanwhile, from the Schoenfeld residual test, the p-values for variable ethnicity, lymph node involvement, histology, primary treatment, stage of cancer, and age category were not significant at the 5% significance level, which indicates that these six variables meet the proportional hazard assumption. It is worthwhile to note that in the Cox model, the assumption is that the hazard for any other individual is proportional to the hazard for any other individual, where the constant proportionality is independent of time. Therefore, before applying the Cox model, it is necessary to check for the PH assumption, as demonstrated in this study.