Abstract No: 135 ***ICT, Mathematics, and Statistics***

SURVIVAL ANALYSIS OF OVARIAN CANCER PATIENTS AND INFLUENTIAL SOCIO-DEMOGRAPHIC AND GENETIC FACTORS

S.L.S.F. Neelawansha[1*], H.T.K. Abeysundara[1], C. Dhanapala[2] and A. Wijeratne[3]

[1]Department of Statistics and Computer Science, Faculty of Science, University of Peradeniya, Sri Lanka
[2]Department of Molecular Biology and Biotechnology, Faculty of Science, University of Peradeniya, Sri Lanka
[3]Arkansas State University, Jonesboro, AR, USA
[*]shashikan@sci.pdn.ac.lk

Ovarian cancer is a fatal disease primarily affecting postmenopausal women, with the highest incidence in those over 50. Annually, approximately 190,000 new cases are diagnosed worldwide. Due to nonspecific symptoms and inadequate screening methods, the disease is often detected at advanced stages, leading to poor survival outcomes. Although less common than breast cancer, ovarian cancer-related deaths are projected to rise by 2040. This study aimed to estimate the survival probabilities of patients and assess how socio-demographic and genetic factors influence survival. Key socio-demographic variables include age at diagnosis (under 50, 51–70, and over 70), race (Asian, White, Black or African, and others), and ethnicity (Hispanic/Latino and others). Six overexpressed genes in 177 patients over a three-year follow-up period were evaluated. Kaplan-Meier estimates revealed survival rates of 84% in the first, 59% in the second, and 38% in the third year. The Log Rank test was used to compare survival curves and Cox proportional hazards models quantified relationships between the covariates. Results indicated that older age groups face significantly higher hazard rates, and White non-Hispanic/Latino patients exhibit poor survival. Significant risk factors include interactions between age and specific genes, as well as time-dependent gene expression. These findings emphasize the importance of tailoring treatment plans considering race, ethnicity, age, and genetic expression to improve patient care outcomes.

Keywords: Cox PH model, Genetic expression, Kaplan Meier method, Ovarian cancer, Survival analysis