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## Modeling evolution of HIV/AIDS disease progression: A parametric Semi-Markov model with interval censoring

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The introduction of Highly Active Anti-Retroviral Therapy (HAART) for the treatment of AIDS patients has made significant improvements in patient survival and quality of life during late 1990. Thus, this work focused on estimation of HIV/AIDS disease progression using parametric Semi-Markov models and to assess factors affecting HIV/AIDS disease progression of individuals who are following ART therapy during 2008-2015 with time-dependent covariates in Yirgalim General Hospital, Ethiopia. The findings of this study indicate that HIV/AIDS disease progression can vary greatly according to patient's gender, body mass index and weight gain/loss during the follow-up, age of the patient and other unknown factors associated. By including time-dependent covariates, we show that these factors had significant differences in HIV/AIDS disease progression. Finally, these results underscore the need for selecting appropriate waiting time distribution for each transition in order to accurately estimate disease progression. In our study, we found that parametric Semi-Markov models are a powerful approach for studying chronic diseases and using appropriate waiting times for specific transitions of disease progression.

### Biography

Tilahun Ferede Asena is pursuing his PhD at the Department of Statistics, College of Natural and Computational Sciences, Hawassa University, Ethiopia. He has completed his Masters in Applied Statistics and a Bachelor's degree in Statistics from Hawassa University, Ethiopia. He has worked as a Lecturer and worked as a Graduate Assistant from at Arba Minch University. His research interests are in disease progression modeling.

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