



Modeling Time to Death of HIV Infected Patients on Antiretroviral Therapy in case of Hossana Queen Eleni Mohammad Memorial Hospital, South Ethiopia

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Abstract

The main aim of this study was modeling the factors that affect survival time of HIV infected patients by using Cox ph and parametric survival regression models. The analytical methodologies were used the Kaplan-Meier and Log Rank Test to estimate Descriptive analysis, Cox's regression model was employed to identify the covariates that have a statistical significant effect on the survival time of HIV infected patients and exponential, weibull, log logistic and lognormal survival regression models were applied to compare efficiency of the models. The overall mean estimated survival time of patients was 51.5 months. The Cox Proportional Hazards Regression Model result revealed that baseline weight, ART adherence, baseline CD4 count, WHO clinical stage, level of education, substance use and TB co-infection of patients are the major factors that affect significantly survival time of HIV infected patients. Among the parametric regression models, based on model Comparison methods, the Weibull regression model is better fit. The Weibull regression model results revealed that baseline weight < 50 kg, low CD4 count at baseline, no education, WHO stages III and IV, poor ART adherence, co-infection with TB and substance abuse are the categories that reduce the survival probability of HIV infected patients.

Background of the study: A pattern of highly unusual infection in otherwise healthy young adults emerged in the early 1980s in the United States of America. This pattern or clusters of diseases that appeared in those whose immune system being attacked came to be called Acquired Immune Deficiency Syndrome (AIDS). Between the 1983 and 1994 a new virus called Human Immunodeficiency Virus (HIV) has been identified as a cause of AIDS (UNAIDS, 2005). Human Immunodeficiency Virus (HIV) is the virus that causes Acquired Immune Deficiency Syndrome (AIDS). People are said to be HIV positive when the HIV antibody is detected in their blood. HIV attacks and destroys certain types of white blood cells that are essential to body's immune system, the biological ability of the human body to fight infections. HIV infects primarily vital cells in the human immune system such as helper T cells (to be specific, CD4+ T cells), macrophages, and dendritic cells that are necessary to activate B-lymphocytes

and induce the production of antibodies. The infected person becomes susceptible to a wide range of opportunistic infections, such as tuberculosis and Pneumocistic Carinii Pnemonia, and rare cancer such as Caposis Sarcoma (WHO, 2007). From the total number of people who have died due to HIV/AIDS in 2006 alone was 88,997 and in 2007 it was estimated that 71,902 people would die (FMOH, 2007). In 2010, AIDS related death is expected to decline to 28,073. which might be as a result of ART. Currently an estimated 1,217,903 people are living with HIV/AIDS. It is estimated that 398,717 of the HIV positive cases are in need of ART out of which 26,053(6.5%) are children under 15 years of age. It is also estimated that the all ages HIV prevalence in SNNPR in 2013 is 0.9% with 18,557 male and 27,221 female cases who live with the virus, currently an estimated 45,778 people are living with HIV/AIDS this may increase the number of HIV positive patients in the region (NAIDSR, 2014).

Statement of the Problem: Today, Ethiopia has made progress in reducing the number of HIV/AIDS death nationally, but the observed changes are not sufficient enough compared to the desired goals of the response against the epidemic. Investigating the existence of significant associations between the different factors and HIV/ADIS mortality can provide evidence for informed protection mechanisms. Most of the researches conducted previously in Ethiopia focused more on the prevention of people from infection by HIV/AIDS (NAIDSR, 2010), but it seems that little attention has been given to study high risk factors that facilitate mortality of those people living with HIV/AIDS. Furthermore, modeling time to death of HIV infected patients on ART is helpful to identify covariates that facilitate mortality of those people living with HIV/AIDS (Leigh et al., 2009).



Biography:

Getachew Tekle, Working as a lecturer at Wachemo University, Hossana, Ethiopia. Teach Statistics and Bio-statistics courses. Like researching. Have been working on generalized linear models, Longitudinal data analysis, Survival data analysis, and design of experiments. Rich in Statistical Software skills. Now PhD in Statistics student at Yazd University, Iran.

Speaker Publications:

1. “Statistical Analysis of CD4+ Cell Counts progression of HIV-1-positive Patients enrolled in Antiretroviral Therapy at Hossana District Queen Elleni Mohamad Memorial Hospital, South Ethiopia”. *Biometr Biostat Int J*, published in 2016, volume 3, pages 17-25
2. “Assessment of Factors Those Induce Females to Engage into Prostitution In case of Hossana Town, South Ethiopia”. *Biomedical Journal of Scientific & Technical Research*, Volume 23, Issue 4, Published in 2019.
3. “Application of GLM (logistic regression) on serological data of malaria infection”. *Biom Biostat Int J* 8 (1), 1-4
4. “Assessment of Factors Those Induce Females to Engage into Prostitution In case of Hossana Town, South Ethiopia”. *Biomedical Journal of Scientific & Technical Research* 23 (4), 17565-17573.

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