Modeling Time to Death of HIV Infected Patients on Antiretroviral Therapy in case of Hossana Queen Elleni Mohammad Memorial Hospital, SouthEthiopia

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Abstract

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. Numerous researches have also been conducted that tried to address many of the issues that arise in connection with the HIV epidemic. The main aim of this study is modeling the factors that affect survival time of HIV infected patients by using Cox ph and parametric survival regression models.

Methodology andtheoretical orientations**:** This study is a retrospective cohort study based on data from the ART clinical in Hossana Queen Elleni Mohamad Memorial Hospital , south Ethiopia. All HIV positive patients who are 15 years old and above placed under ART in between February 2011 to January 2016 were population in this study. 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 log-normal survival regression models were applied to compare efficiency of the models.

Findings: 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. For future researchers on this area should apply Weibull survival regression model because Weibull distribution is unique that means only one that simultaneously both proportional and accelerated and also it predicts well the covariate that are associated with high risk of mortality.

Conclusion & Significance: For modeling time to death of HIV patients Exponential, Weibull, lognormal and log logistic parametric regression models were applied. Among these using Cox-

Snell residuals plot and AIC for model comparison, the Weibull survival regression model was better fitted model for time to death of HIV infected patients in case of Hossana Queen Elleni Mohamad Memorial Hospital than the other remaining parametric models. 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, coinfection with TB and substance abuse are the categories that reduce the survival probability of HIV infected patients. Finally, The Weibull survival regression model provides better predictions to the survival probability of HIV patients.

Biography

The author of this study was born at Duna Woreda in Hadiya Zone of Southern Nation Nationality Regional State of Ethiopia from his mother Bekelech Abemo and his father Handiso Arficho in Mar 16,1988. He attended his school education at Kenkicho Elementary, Gimbichu Junior Secondary and Senior Secondary Schools. He joined Statistics Department of Natural Science Faculty of Hawassa University in November 2009 and graduated in July 2011 with Bachelor of Science Degree in Statistics. He then he joined the MSc programme in Biostatistics at the School of graduate studies, Jima University, in Jun 23,2016 with sponsorship Minister of Education of Ethiopia. From October 04 2016 up to June 30 2018, I have served as Lecturer academic rank and investigator at Department of Statistics, Wolaita Sodo University. From July 01 2018 up to now, I have served as Lecturer academic rank and investigator at Department of Statistics, Wachamo University.

About Research Topic

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). There are two types of HIV: HIV-1 and HIV-2. Both types are transmitted by sexual contact, through blood, and from mother to child, and they appear to cause clinically indistinguishable AIDS. However, it seems that HIV-2 is less easily transmitted, and the period between initial infection and illness is longer in the case of HIV-2.Worldwide, the predominant virus is HIV-1, and generally when people refer to HIV without specifying the type of virus they will be referring to HIV-1. The relatively uncommon HIV-2

type is concentrated in West Africa and is rarely found elsewhere (Marlink*et*, 1994). HIV/AIDS have caused the world most distressing tragedy and danger. More than 25 million people worldwide have died of AIDS since 1981. According to UNAIDS, around 33.4 million people are living with HIV throughout the world, including the approximately 2.7 million newly infected in 2008 and over 2 million have lost their lives to the disease leaving behind orphaned children and ravaged communities in 2008 Joint (UNAIDS, 2009). There are 34.2 million people living with HIV, 2.5 million new HIV infections and 1.7 million deaths due to AIDS in 2011 worldwide (WHO, 2012).

About institution

Wachemo University is one of the public higher educational institutions, which was found in 2009 G.C. It is located 230 km southwest of Addis Ababa, at Hosanna town in the area of over 200 hectares. The University commenced its function in 2012 admitting 538 students in 12 departments under 4 colleges. Currently, the University has admitted over 18,400 students in regular and continuing education programs in 48 departments under 6 Colleges. The university is committed to excel in teaching, assuring peaceful teaching, research and community service for the benefit of the citizens of Ethiopia and the world. The mission of wachamo university is to deliver proficient Graduates equipped with knowledge, skill and attitude by providing relevant and quality education; produce new knowledge and technology by conducting problem solving research; transform community livelihoods by strengthening community-industry partnership, technology transfer and advisory, training healthy services; enhance sustainable institutional capacity and integrated leadership. It is dedicated to the discovery, development, communication and aspirations of knowledge and range of academic and professional fields.

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