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Adapun penelitian tersebut layak dilakukan dan menghasilkan output yang sangat baik, meskipun belum ada ***Uji Ethical Clearance*** karena merupakan penelitian yang menggunakan data sekunder.

Demikian surat keterangan ini kami buat untuk dapat dipergunakan sebagai persyaratan pengusulan Jabatan Fungsional Guru Besar.

Surabaya, 24 April 2023
Dekan

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Factors that Affect the Incidence of HIV/AIDS (An Analysis Using Tobit Regression)

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Abstract
HIV/AIDS had become a pandemic that was worrying people of the world, because it had a long asymptomatic phase, so that the number of reported cases was far less than the actual amount. This study aimed to analyze the factors that affect the incidence of HIV/AIDS by using to bit regression, because the data is censored. Data had been obtained from 20 sub-districts in Nganjuk, Indonesia in 2015. The risk factors studied were female sex workers, homosexuals, age 25-49 years old, and health facilities. The results of study showed that the factor that significantly affect the incidence of HIV/AIDS were female sex workers, with p-value = 0.000) and homosexual, with p-value = 0.004. In subsequent studies, were expected to also analyzed other risk factors on the incidence of HIV / AIDS, in the broader region, in order to obtain valid results.

Key words*: HIV/AIDS, determinant, tobit regression*

I. INTRODUCTION

HIV/AIDS has become a pandemic that is worrying people of the world, because: 1) has not found drugs and vaccines for this disease, 2) has a "window period" and a long asymptomatic phase. This condition causes number of reported cases is far less than the actual amount (KPA, 2010). In real terms, people living with HIV/AIDS haven't been recorded in its entirety. HIV/AIDS widely obtained from high-risk groups and people who are aware for a checkup. However, public awareness to undergo a test for HIV/AIDS is still very low, because of the stigma and discrimination. The fear of negative consequences, causing many people avoid testing for HIV/AIDS, so that the cases detected by the health center only a fraction of the actual cases.

UNAIDS (2015) have reported that at the end of 2014, there were 36.9 million people are living with HIV, 2 million people were newly infected with HIV, and 1.2 million people die due to AIDS. In 2013, a report by the Ministry of Health of the Republic of Indonesia about development of HIV/AIDS in Indonesia shows that there are 127,416 people infected with HIV and 52,348 people suffering from AIDS. Until recently, HIV/AIDS has spread in 386 districts in Indonesia. East Java Province are second with the highest cumulative number of HIV cases in Indonesia (19,249 cases) and was ranked second for AIDS cases (8,976 cases) (Kemenkes RI, 2014).

Cases of HIV/AIDS in Nganjuk District, Indonesia continues to increase from year to year. Until December 2015, recorded 96 new cases were spread over 17 sub districts, while in three other sub districts, there are no reported cases of HIV/AIDS during January to December 2015. This shows that data of HIV/AIDS in Nganjuk District is censored. Green (2008) states that the dependent variable, which has a value of zero for some observations, while for other observations have a certain value which varies, referred to as censored data. For this data, more appropriately analyzed using Tobit regression. Tobit regression parameter estimators are maximum likelihood estimation, which maximizes the value of the likelihood function by search for the parameters of regression which gives the highest value for the likelihood function (Gujarati, 1995 cit. Suhardi & Llewelyn, 2001).

Determinants of HIV/AIDS are grouped into: 1) the host, 2) agent, and 3) environment. Based on aspects of HIV/AIDS, heterosexual intercourse is the mode of transmission with the highest percentage (81.3%), followed by homosexual (5.1%) and perinatal (3.5%). Another determinant of HIV / AIDS is a age factor. HIV infection often occurs in the productive age (16421 cases) (Kemenkes RI, 2014).

Various government programs have been implemented to reduce the morbidity of HIV/AIDS, and one of these programs is a VCT (Voluntary Counselling and Test), a counseling service which provides psychological support, information and knowledge about HIV/AIDS, prevention of transmission of HIV, encourage the responsible behavior, ARV treatment, and solving problems related to HIV/AIDS (Kemenkes RI, 2010). Through VCT, expected to increase the awareness of the public who have a high risk for a checkup.

II. RESEARCH METHOD

The purpose of this study was to analyze the factors that significantly affect the incidence of HIV/AIDS in Nganjuk District by using Tobit regression. The design used was a non-reactive, because there was no direct involvement in the data collection in order to obtain information from the subject of research. Data about the incidence HIV/AIDS and homosexuals were obtained from the the Regional AIDS Commission of Nganjuk, and data about aged 25-49 years old was obtained from the the Central Statistics Agency of Nganjuk. The unit of analysis were 20 sub districts in Nganjuk District, Indonesia in 2015. The variables studied were the incidence of HIV/AIDS (Y), female sex workers (X1), homosexuals (X2), age 25-49 years old (X3), and health facilities (X4). Data were analyzed using Tobit regression, because it uses the censored data.

III. RESULTS

Table 1 described the data of each of variables. The table shows that the mean of the incidence of HIV/AIDS = 74.37 cases/1,000,000 population, with standard deviation = 66.867; the mean of the female sex workers = 24.75 people, with standard deviation = 68.629; the mean of the the homosexual = 7.85 people, with standard deviation = 5.112; the mean of the age 25-49 years old = 19613.15 people, with standard deviation = 8392.296; while the mean of the the health facilities = 6.50, with standard deviation = 3.137.

Table 1: Description of The Variables

Variables	Mean	Standard Deviation
Incidence of HIV/AIDS	74.37	66.867
Female sex workers	24.75	68.629
Homosexuals	7.85	5.112
Age 25-49 years	19613.15	8392.296
Health facilities	6.50	3.137

Table 2 shows that the incidence of HIV/AIDS were affected by female sex workers, with p-value = 0.0000 (<0,05) and homosexual, with p-value = 0.0042 (<0,05).

Tabel 2: The Result of Analysis by Using Tobit Regression

Variable	Coefficient	z-Statistic	Prob. Z-Stat.	Significance (α=0,05)
Constant	-44.29490	-1.338955	0.1806	Not significant
Female sex workers	0.642097	9.879382	0.0000	Significant
Homosexuals	5.930864	2.861558	0.0042	Significant
Age 25-49 years old	0.002311	0.339481	0.7342	Not significant
Health facilities	2.759735	1.101537	0.2707	Not significant
Like lihood Ratio	-	25.5243	0.0003	Significant
R-Square	0.7209	-	-	-

IV. DISCUSSION

The female sex workers is the groups of people who are at risk for contracting HIV/AIDS, together with the customer of them, drug user who use needles, and homosexuals. The risk of sexual contact is a sexual intercourse with someone who has the potential to transmit HIV. People who potentially transmit HIV, can be from drug users who use needles and their partners; female sex workers and their customers and partners; and homosexual groups. Heterosexual behavior is the group with the highest risk for the spread of HIV/AIDS, because of the men who frequent sexual intercourse without condoms, both within and outside marriage, or having sex with women who frequently change partners, such as female sex workers (Arifin, 2007).

When sexual intercourse occurs, the vagina walls or penis can suffer injury as a result of friction. The injuries can lead to transmission of HIV, if the vaginal fluid and/or sperm containing the HIV virus touch the wound, so that the HIV virus enters the body. A similar report submitted by Hounton et al. (2005), as well as Nwokoji & Ajuwon (2004) that that many sexual partners and do not use condoms when engaging in sexual activity is a major risk factor for transmission of HIV/AIDS.

Meanwhile, homosexuals generally have anal sex while performing sexual intercourse. Different from the vagina, anus does not release of fluids, so that the friction that occurs in the anus is more severe and potentially lead to injury, both on the walls of the anus and penis, and these injuries can result in the transmission of HIV. According to UNAIDS (2015), HIV infection is more often suffered by gay and bisexual men, rather than the normal adult. Sexual intercourse through the anus allows the transmission of HIV from thean infected person as much as 18 times greater than with vaginal intercourse. In any time unprotected anal sex, there can be an increased risk of HIV transmission is 1.4%.

The coefficient of determination (R-square) on a tobit regression test is 0.7209. These number indicate that predictor variables (female sex worker, homosexual, age 25-49 years old and health facilities) together able to explain changes in the incidence of HIV/AIDS by up to 72.09%. While other variables may explain the change in the incidence of HIV/AIDS amounted to 27.91%.

V. CONCLUSION

Factors that affect the incidence of HIV/AIDS in Nganjuk District, Indonesia are a female sex workers and homosexuals, as both groups perform risky sexual habits.

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