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Risk Factors for HIV/AIDS Incidence at the Imbi Health Center Jayapura City

Johanes Raja Pikir Siregar [a], Hasmi[b*], Novita Medyati[c], Sarce Makaba[d], Semuel Piter Irab[e], Yacob Ruru[f]

[a] *Master of Public Health Study Program, Faculty of Public Health, Cenderawasih University of Jayapura, Jl. Raya Sentani Abepura Jayapura Papua 9351*

[b,c,d,e,f] *Department of Master of Public Health Program, Faculty of Public Health, Uncen Jayapura*

[a]*Email: johanissiregar@gmail.com,*[b]*Email: hasmiuncen@yahoo.co.id*

Abstract

HIV/AIDS cases globally and in Indonesia from year to year increase due to individual characteristics including risk factors influenced by age, gender, education, occupation, ethnicity, partner status, number of sexual partners, and injecting drug use. The purpose of the study was to determine the Risk Factors for HIV/AIDS Incidence at the Imbi Health Center, Jayapura City. The type of case-control research on the respondent population that conducts HIV screening with a sample number of 1 : 3 or 100 samples, namely 25 HIV/AIDS case samples and 75 control samples was carried out from June 1 to 15, 2024 at the Imbi Health Center. Data were obtained using questionnaires and medical record data and analyzed using chi-square, fisher exact, and logistical binary regression.The results of the study obtained that the risk and significant factor with the incidence of HIV/AIDS at the Imbi Health Center in Jayapura City was age (p-value 0.027; OR = 3,431; CI95% (1,233 – 9,547), education (p-value 0.001: OR = 6,476; CI95% (2,121 – 19,770), occupation (p-value 0.001; OR =5,118; CI95% (1,949-13,441), tribe (p-value 0.049; OR =2,939; CI95% (1,099-7,861), while the factor that is not at risk and not significant with the incidence of HIV/AIDS at the Imbi Health Center in Jayapura City is gender (p-value 0.298: OR = 1,826; CI95% (0.718 – 4.645) and the most dominant factor is age with a p-value of 0.004 and OR 7.0 CI 95% (1.88-26.1).

Keywords:HIV/AIDS Risk Factors; Health Center.

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* Corresponding author.

1. Introduction

HIV cases in Indonesia are increasing year by year. Based on the 2023 Report on the Development of HIV/AIDS and Sexually Transmitted Diseases by the Ministry of Health of the Republic of Indonesia, the cumulative number of HIV cases reported in Indonesia until March 2023 is 546,000 people living with HIV with a prevalence of 0.34% in all age groups, 25,740 new infections and 26,501 deaths [1]. The number of AIDS reported from 2005 to 2023 tends to increase by 139,500 people. The most risk factors for transmission through sexual intercourse are heterosexual (69.3%), homosexual (9.6%), followed by the use of alternating syringes (9.1%) and unknown (7.5%). Nationally, the five provinces with the highest number of HIV/AIDS cases are Papua (25,215), East Java (21,952), Central Java (14,708), Special Districts of the City Jakarta (10,977), and Bali (10,089) [1].HIV/AIDS in men is higher than in women. HIV cases in 2023 are 64.50% male, while AIDS cases are 68.60% male. According to the age group, the age group of 25-49 years, or productive age is the age with the highest number of HIV sufferers every year. The highest increase in the risk of HIV infection among the at-risk population, which is Men with Male Sex (MSM), is 22 times and there is a distribution of new HIV sufferers due to MSM of 17% Reference [5].Risk factors for <40 years of age are 7,252 times greater risk of HIV/AIDS infection compared to those ≥40 years Reference[1]. Research by Widiastuti and colleagues in Semarang City found a significant age relationship with the incidence of HIV/AIDS at the age of 15-29 years [3]. This happens because at that age many are customers of sex workers. (Rahmawati & Syafrie, 2023) found that there is a significant relationship between gender and the incidence of HIV/AIDS in the Working Area of the Bengkulu City Reduction Health Center Reference [4].The incidence of HIV is also affected by low levels of education. Low education levels are 4,709 times more likely to affect the incidence of HIV/AIDS [1]. People with low education tend to engage in deviant behavior and tend not to know the impact they have. [5]. Jobs as factory workers, loading and unloading workers (TBKM), long-distance truck drivers, oil palm plantation workers, and domestic helpers, Individuals with at-risk occupations are 4,500 times more likely to be infected with HIV & AIDS than respondents with non-risky occupations [6].The incidence of HIV is also affected by low levels of education. Low education levels are 4,709 times more likely to affect the incidence of HIV/AIDS [1]. People with low education tend to engage in deviant behavior and tend not to know the impact they have. [5]. Jobs as factory workers, loading and unloading workers (TBKM), long-distance truck drivers, oil palm plantation workers, and domestic helpers, Individuals with at-risk occupations are 4,500 times more likely to be infected with HIV & AIDS than respondents with non-risky occupations [6].The people who experience the highest HIV/AIDS come from the Papuan tribe, which is 1,244 people (48.5%). The cultural condition of the Papuan people and the low level of education also support the risk of contracting HIV/AIDS in Papua. In addition, there are also other triggering factors such as economic factors, lifestyle, and broken homes [7]. Poor knowledge can increase the incidence of HIV/AIDS because lack of insight can lead to easy infection with HIV/AIDS [8,11]. Poor knowledge has a chance of being exposed to HIV/AIDS 2,821 times, unmarried people are 2.54 times more likely to be exposed to HIV/AIDS, and a high incidence of HIV/AIDS [1,9,10].The number of HIV cases in Jayapura City is still the highest in Papua Province from 2,344 in 2020, an increase in 2023 to 7,761 people. In 2020, 621 new cases were found, in 2021 there were 311 cases, in 2022 there were 637 cases, and in 2023 there were 775 cases [12]. The number of HIV/AIDS cases at the Imbi Health Center with the discovery of new cases in 2020 was 3 cases, in 2021 0 cases, in 2022 there were 7 cases and in 2023 there were 9 cases or an average increase of 28%. This shows an increase in the number of HIV cases.

The cumulative number of HIV/AIDS sufferers at the Imbi Health Center since 2020 is 28 cases. Based on this, the researcher is interested in conducting a study entitled "Risk Factors for HIV/AIDS Incidence at the Imbi Health Center, Jayapura City".

2. Research Methods

The study designed a case-control with a population of all suspects who were tested for HIV at the Imbi Health Center from 2020 to March 2024 as many as 234 people and HIV/AIDS positives at the Imbi Health Center as many as 28 people (11.96%) as a group of cases. Samples were taken using the Purposive Sampling Technique.

3. Research Results

3.1. Analisis Univariate

Table 1: Independent variable distribution

No	Variable	Frequency (n)	Presented (%)
1	Age		
	15-29 years old	55	55
	≥ 30 years	45	45
2	Gender		
	Legal Law	53	53
	Woman	47	47
3	Education		
	Low	17	17
	High	83	83
4	Work		
	Risk	32	32
	No Risk	68	68
5	Tribe		
	Papua	53	53
	Non Papua	47	47
	Sum	100	100

Source : Primary data, 2024

3.2. Bivariate Analysis

a.The Effect of Age on the Incidence of HIV/AIDS at the Imbi Health Center, Jayapura City

Table 2: The effect of age on the incidence of HIV/AIDS at the Imbi Health Center, Jayapura City

No.	Age	Incidence of HIV/AIDS				n	%	*p-value*	OR CI95%
		Positif		Negatif					
		n	%	n	%				
1	15-29 years	19	76	36	48	55	55	0,027	3,431 (1,233-9,547)
2	≥ 30 Years	6	24	39	52	45	45		
sum		25	100	75	100	100	100		

Source : Primary data, 2024

Table 2. shows that in the HIV/AIDS case group at the age of 15-29 years, as many as 19 people (76%) was higher than in respondents with the age of > 30 years as many as 6 people (24%). The results of the chi-square statistical test at a significance value of 95% ((= 0.05) were obtained with a p-value of 0.027 or $p < \alpha$ (0.05), thus a significant influence of age on the incidence of HIV/AIDS at the Imbi Health Center in Jayapura City. The OR value = 3.431; CI 95% (1.233 – 9.547) which is interpreted that the age of 15-29 years is 3.431 times at risk of HIV/AIDS compared to the age of > 30 years.

b.The effect of gender on the incidence of HIV/AIDS at the Imbi Health Center, Jayapura City

Tabel 3: The effect of gender on the incidence of HIV/AIDS at the Imbi Health Center, Jayapura City

No	Gender	Incindence HIV/AIDS				n	%	*p-value*	OR CI95%
		Positif		Negatif					
		n	%	n	%				
1	man	16	64	37	49,3	53	53	0,298	1,826 (0,718-4,645)
2	Woman	9	36	38	50,7	47	47		
sum		25	100	75	100	100	100		

Source : Primary data, 2024

Table 3 shows that in the case group, the incidence of HIV/AIDS in male respondents is 16 people (64%) higher than in female respondents as many as 9 people (36%). The results of the chi-square statistical test at a significance value of 95% (= 0.05) were obtained with a p-value of 0.298 or $p > \alpha$ (0.05), thus the influence of gender was not significant with the incidence of HIV/AIDS at the Imbi Health Center in Jayapura City. OR value = 1.826; CI 95% (0.718 – 4.645) which was interpreted that gender was not significant to the incidence of HIV/AIDS.

c.The effect of education on the incidence of HIV/AIDS at the Imbi Health Center, Jayapura City

Table 4: The effect of education on the incidence of HIV/AIDS at the Imbi Health Center, Jayapura City

No	Education	Incidence HIV/AIDS				n	%	*p-value*	OR
		Positif		Negatif					CI95%
		n	%	n	%				
1	Low	10	40	7	9,3	17	17	0,001	6,476 (2,121-19,770)
2	High	15	60	68	90,7	83	83		
sum		25	100	75	100	100	100		

Source : Primary data, 2024

Table 4 shows that in the HIV/AIDS case group, the incidence of HIV/AIDS in low-educated respondents is 10 people (40%) higher than in 15 respondents with higher education (60%). The results of the chi-square statistical test at a significance value of 95% (= 0.05) were obtained with a p-value of 0.001 or $p < \alpha$ (0.05), thus a significant educational influence on the incidence of HIV/AIDS at the Imbi Health Center in Jayapura City. When viewed from the value of OR = 6.476; The interpreted CI 95% (2,121 – 19,770) that a person with low education is 6,476 times more likely to develop HIV/AIDS compared to someone with a higher education.

d.The effect of work on the incidence of HIV/AIDS at the Imbi Health Center, Jayapura City

Tabel 5: The effect of work on the incidence of HIV/AIDS at the Imbi Health Center, Jayapura City

No	Work	Incidence HIV/AIDS				n	%	*p-value*	OR
		Positif		Negatif					CI95%
		n	%	n	%				
1	Risk	15	60	17	22,7	32	32	0,001	5,118 (1,949-13,441)
2	No risk	10	40	58	77,3	68	68		
sum		25	100	75	100	100	100		

Source : Primary data, 2024

Table 5 shows that in the case group of HIV/AIDS incidence in working respondents, the risk is 15 people (60%) higher than in respondents who work without risk as many as 10 people (40%). The results of the chi-square statistical test at a significance value of 95% (a = 0.05) were obtained with a p-value of 0.001 or $p < \alpha$ (0.05), thus a significant effect of work on the incidence of HIV/AIDS at the Imbi Health Center in Jayapura City. When viewed from the OR value = 5.118; The CI 95% (1,949-13,441) interpreted that a person whose occupation is at risk will be 5,118 times at risk of developing HIV/AIDS compared to someone whose occupation is not at risk.

e.The influence of tribes on the incidence of HIV/AIDS at the Imbi Health Center, Jayapura City

Table 6: The influence of tribes on the incidence of HIV/AIDS at the Imbi Health Center, Jayapura City

No	Tribe	Incidence HIV/AIDS				n	%	*p-value*	OR CI95%
		Positif		Negatif					
		n	%	n	%				
1	Papua	18	72	35	46,7	53	53	0,049	2,939 (1,099-7,861)
2	Non Papua	7	28	40	53,3	47	47		
Total		25	100	75	100	100	100		

Source : Primary data, 2024

Table 6. shows that in the group of HIV/AIDS cases in respondents from the Papuan tribe as many as 18 people (72%) is higher than in respondents from the Non-Papuan tribe as many as 7 people (28%). The results of the chi-square statistical test at a significance value of 95% (a = 0.05) were obtained with a p-value of 0.049 or $p < \alpha$ (0.05), thus a significant tribal influence on the incidence of HIV/AIDS at the Imbi Health Center in Jayapura City. OR value = 2.939; CI 95% (1,099-7,861) interpreted that respondents from the Papuan tribe were 2,939 times at risk of HIV/AIDS compared to respondents from non-Papua.

3.3 Multivariate Analysis

Of the 5 variables analyzed bivariate, there are only 4 variables that can be included in the multivariate analysis with a p-value category of < 0.25.

Table 7: Bivariate Analysis Between Dependent and Independent Variables

No	Variable	*p-value*	OR	95% CI	
				Lower	Upper
1	Age	0,027	3,431	1,233	9,547
2	Education	0,001	6,476	2,121	19,770
3	Work	0,001	5,118	1,949	13,441
4	Tribe	0,049	2,939	1,099	7,861

Source : Primary data, 2024

Table 7 above shows that the variables of age, education, occupation, ethnicity, and injecting drug users are

included in the p-value category < 0.25, so they are included in a multivariate model and tested together with the logistics binary test of the LR forward method. The results of the multivariate analysis obtained a p-value < 0.05 as shown in Table 9 below.

Table 8: Analysis of Multiple Logistic Regression Variables

No	Variabel	B	*p-value*	OR	95% C. I. for Exp(B)	
					Lower	Upper
1	Age	1.947	0,004	7.009	1.881	26.125
2	Education	1.908	0,007	6.738	1.702	26.668
3	Work	1.621	0,005	5.057	1.617	15.815
	Constant	-7.545	0,000	0,001		

Source: Primary Data, 2024

Table 9 above, the values of the three variables are age, education, and occupation with a p-value of < 0.05 and an OR value of > 1 which is interpreted that age, education, and occupation are the dominant factors for the incidence of HIV/AIDS and the most dominant factor is age with a p-value of 0.004 and OR 7.0 CI 95% (1.88-26.1).

3. Discussion

a. Effect of Age on HIV/AIDS Incidence

The results of this study found that age significantly affects the incidence of HIV/AIDS where the age of 15-29 years is 3,431 times more likely to be exposed to HIV/AIDS compared to the age of > 30 years. This result is in line with Widiastuti's research which found that the age of 15-29 years was significant with the incidence of HIV/AIDS in Semarang City. This happens because at that age many are customers of sex workers [3].

This happens because at a productive age, it is associated with high activity of having sexual intercourse, more access to finding a partner, and having a relationship[13]. According to Sumini, the incidence of HIV at the age of 15-29 years is high because they have had sexual intercourse for the first time at the age of less than 20 years Reference[14]. According to research by Rohmatullailah and his colleagues, (2021) those < 40 years old are 7,252 times more likely to be infected with HIV/AIDS compared to those ≥ 40 years old. According to Aziz and his colleagues, (2023), their young age causes them to not think about the effects of HIV disease which causes decreased endurance, due to the period of transmission and transmission of the virus in 5-10 years. [15].

Age is one of the characteristic traits about people which in epidemiological studies is a fairly important variable because quite a lot of diseases are found with various variations in frequency caused by age. Age also has a close

relationship with exposure. Age also has a relationship with the magnitude of the risk of certain diseases, as is the case with HIV/AIDS [16]. The greater chance of contracting HIV/AIDS is those who have unprotected intercourse, injecting drug users, and those who like to do piercings [20].

b. Effect of gender on HIV/AIDS incidence

Sex is the biological difference between males and females. Gender determines how and what men and women should know about sexuality issues, including sexual behavior, pregnancy, and sexually transmitted diseases (STDs) [17].

The results of the study showed that gender was not significant in the incidence of HIV/AIDS at the Imbi Health Center, Jayapura City. The results of this study are in line with the research conducted by Nugraha [8] at the Simpur Health Center that there is no meaningful relationship between the type and the incidence of HIV/AIDS. The factor that makes the HIV-AIDS rate more men is that men do not often use safety or condoms compared to women. In addition, men tend to be unfaithful and often change partners compared to women and use a lot of injectable drugs [18].

In contrast to the research of Novita and his colleagues, (2022) in Merauke Regency, it was found that the highest gender of people with HIV was women with a total of 1,333 people (52%). This is to the theory [19] that the female sex is more susceptible to contracting HIV compared to men from a biological point of view, the shape of the female reproductive organs contains more sperm fluid that is likely to have HIV. Women's condoms are not yet sold over the counter are much more expensive than men's condoms and are less in demand. Women with their various activities take care of the household so that women do not have time to take care of themselves and their health conditions.

Susceptibility to HIV transmission during sexual intercourse, especially when not using condoms, causes susceptibility to infection through genital fluids. This vulnerability is higher when done in the anal area, which further increases the risk of HIV/AIDS transmission [18].

c. The effect of education on the incidence of HIV/AIDS

Education is the process of changing the attitude and behavior of a person or group of people in an effort to mature human beings through teaching and training efforts. The higher a person's education, the easier it is for them to receive information, and in the end, the more knowledge they will have [20].

The results of the study showed that education was significant in the incidence of HIV/AIDS at the Imbi Health Center, Jayapura City with the result of a large risk achievement that a person with low education was 6,476 times at risk of HIV/AIDS compared to someone with higher education. The results explain that low levels of education pose more risks compared to those who are highly educated. These results are in line with previous research by Rohmatullailah and his colleagues, (2021) that the incidence of HIV is also influenced by low levels of education. Low education levels are 4,709 times more likely to affect the incidence of HIV/AIDS.

The higher the level of education, the easier it is for a person to receive, process, and absorb the information about HIV/AIDS obtained so that they can increase their knowledge and be able to behave well in HIV/AIDS prevention Reference [3].

According to Iskandar and his colleagues, (2023), the level of education affects a person's level of knowledge understanding, insight, and behavior. The better the knowledge, the better a person understands, is aware, and maintains his health. Therefore, a person's education level has a great influence on HIV transmission. The higher the level of knowledge and education, the better a person's behavior. However, it is possible that in the present day socio-cultural and economic factors can also affect risky behavior towards the individual [21]. A study has shown that those with higher education are less susceptible to the risk of HIV/AIDS transmission than those who are less educated or drop out of school, but all of this is influenced by their occupational and socioeconomic risks [16].

d. Effect of work on HIV/AIDS incidence

Work is something that is done to earn a living, a livelihood [1]. Risky jobs are jobs related to transmission risk factors, including people who work in entertainment venues, drivers, fishermen, crew members, prostitutes, factory workers, construction workers, and hawkers. Meanwhile, the type of work that does not include the job is categorized as a non-risky job, such as civil servants, teachers, lecturers, doctors, TNI/Polri [2]

The results of the study obtained a significant work influence on the incidence of HIV/AIDS at the Imbi Health Center in Jayapura City. With the results of the interpretation of OR, it was obtained that a person whose job is at risk will be at risk of being exposed to HIV/AIDS 5.118 times compared to someone whose job is not at risk.

In line with the research of Oktaseli and his colleagues, (2019); Sary and his colleagues, (2019) and Nubabi and his colleagues, (2024) that occupations are at risk for the incidence of HIV & AIDS. Their employees as factory workers, loading and unloading workers (TBKM), long-distance truck drivers, oil palm plantation workers, and their domestic assistants engage in risky sexual behaviors such as changing sex partners and having sex without the use of condoms, on the grounds that they are far from married couples so they commit these acts. Individuals with at-risk occupations were 4,500 times more at risk of HIV & AIDS infection than respondents with non-at-risk occupations [3] [25].

e. Tribal influence on HIV/AIDS incidence

Ethnicity is a social unit that can be distinguished from other social units based on the awareness of the identity of cultural differences, especially language [1]. Risk factors that can increase the acceleration of HIV/AIDS cases include economic, social, and cultural aspects (e.g., occupation, ethnicity/ethnicity, belief in a particular culture) Reference [26].

The results of the study obtained a significant tribal influence on the incidence of HIV/AIDS at the Imbi Health Center, Jayapura City. The results of the odds ratio value were interpreted that respondents from the Papuan tribe were 2,939 times at risk of HIV/AIDS compared to respondents from non-Papua

The people who experience the highest HIV/AIDS come from the Papuan tribe, which is 1,244 people (48.5%). The cultural condition of the Papuan people and the low level of education also support the risk of contracting HIV/AIDS in Papua. In addition, there are also other triggering factors such as economic factors, lifestyle and broken homes [1].

According to Pessiwarissa's research, the factor of the high incidence of HIV/AIDS in Papua compared to non-Papuans is due to the behavior of having more than 1 wife, in addition to the number of couples who are not valid religiously and customarily, making it easy for them to change partners if they are not compatible. This makes them vulnerable to the risk of HIV/AIDS transmission [1].

4. Conclusion

The results of the study obtained that the risk and significant factor with the incidence of HIV/AIDS at the Imbi Health Center in Jayapura City was age (p-value 0.027; OR = 3,431; CI95% (1,233 – 9,547), education (p-value 0.001: OR = 6,476; CI95% (2,121 – 19,770), occupation (p-value 0.001; OR =5,118; CI95% (1,949-13,441), tribe (p-value 0.049; OR =2,939; CI95% (1,099-7,861), and the most dominant factor is age with a p-value of 0.004 and OR 7.0 CI 95% (1.88-26.1).

5. Recommendations

a. Increase awareness of significant risk factors, such as age, education, occupation, and ethnicity in HIV/AIDS prevention efforts in the Imbi Health Center area, Jayapura City.
b. Conducting education and socialization programs on the importance of understanding HIV/AIDS-related risk factors, especially in the context of age, education, employment, and ethnicity.
c. Engage local communities in HIV/AIDS prevention and control efforts with an approach that focuses on the risk factors that have been identified in research.

6. Research Weaknesses

a. This study has limitations, namely a case control design where research variables are measured by looking back based on the respondents' memories which of course can be biased, this can affect the validity and reliability of the research results.
b. Difficulties in variable control: In a case-control study design, it is difficult to control for external variables that are not obtained from respondents' answers. This can lead to unwanted bias in the analysis.

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