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RISK ANALYSIS OF ATTRIBUTES, PREVALENCE RATIO OF ADHERENCE TO TAKING ANTIRETROVIRAL DRUGS (ARV) IN TUBERCULOSIS-HIV PATIENTS IN JAYAPURA CITY

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Abstract

Compliance with taking ARV drugs in TB-HIV patients is a challenge for patients and the government, which directly contributes to therapy failure, increased viral load, and the risk of continued HIV transmission. The purpose of the study was to analyze Risk Attributes, Prevalence Ratio of Medication Adherence in TB-HIV Patients in Jayapura City. This type of study is quantitative with a sample of 296 from secondary data The research instrument uses observation sheets and data is analyzed with the formula of risk attributes and prevalence ratio, The results of the study found that the risk attributes of age, gender, ethnicity and occupation in weight are -4%, -9%, -6% and 4% and the prevalence ratio in order is 0.92, 0.83, 0.8 and 1.0 or the prevalence ratio is not significant. The results of the chi-square test of the four variables were also not significant in adherence to taking ARV medication. It was concluded that the Risk Attribute, Prevalence Ratio, and chi-square of age, gender, ethnicity, and occupation were not significant to adherence to taking ARV medication.

Keywords: TBC- HIV, ARV, Compliance

Introduction

Human Immunodeficiency Virus *(HIV)* infection remains a significant global health problem, as these two diseases interact with each other and worsen patients' clinical outcomes. HIV infection increases the risk of progression from latent TB to active TB, while TB is one of the leading causes of death in people with HIV/AIDS (1).

The WHO report (2025) is around 10.7 million tuberculosis patients by 2024. The global incidence rate is around 131 cases per 100,000 population, and deaths due to tuberculosis are estimated at 1.23 million people by 2024. WHO reports that 30 countries account for about 87% of global TB cases, with the largest contributors being India (25%), Indonesia (10%)(2). According to the Ministry of Health (3), until August 2025, as many as 508,994 (47%) new cases have been found. Based on data until mid-2025, Papua Province faces serious challenges with the new TB case discovery rate reaching around 40%, far below the national target of 70%. (4).

Coinfection with TB-HIV is a double burden of global health problems. According to the WHO Global Tuberculosis Report 2025, by 2024, the prevalence of TB in people with HIV will be around 5.8%. This is equivalent to around 600 thousand more cases of TB-HIV coinfection globally. tuberculosis and TB (5). In Indonesia, with an estimated 1.08 million TB cases per year and the proportion of TB-HIV around 2–3%, it is estimated that there are around 21,000–32,000 cases of TB-HIV coinfection every year (6).

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Late initiation of ARV therapy can lead to a 2.4-fold increase in mortality among TB-HIV patients (7). Medication adherence in TB-HIV patients plays an important role in reducing viral load, improving immune status, preventing drug resistance, and improving the success of TB therapy (8). The success of ARV and OAT therapy is largely determined by adherence to taking medication. The WHO stipulates that a minimum of ≥95% compliance is required to achieve optimal viral suppression, prevent drug resistance, and reduce morbidity and mortality (1). However, ARV compliance rates globally are still below ideal standards, especially in groups of patients with TB-HIV coinfection who face a dual treatment burden and more complex side effects (9)

The Ministry of Health of the Republic of Indonesia targets the success rate of TB-HIV treatment to be above 80%, but the achievement of 1 TB Prevention Therapy (TPT) is still low (around 8% of the target of 72%), which risks reducing compliance and recovery rates (6). This low adherence directly contributes to therapy failure, increased viral load, and the risk of continued HIV transmission (10). Although the coverage of ARV and OAT therapy continues to increase, the national viral suppression rate has still not reached the global target of 95-95-95, one of the main causes of which is medication adherence problems (11) ; (10).

Studies in various regions in Indonesia, such as studies in Central Java and South Sulawesi, reported that the prevalence of ARV compliance ranged from 65–82% (12). In TB-HIV patients, the risk of non-compliance is reported to be higher than in HIV patients without TB (13). Epidemiological research by (14) shows that the prevalence of HIV in TB patients in Papua can reach more than 20%, much higher than the national prevalence of TB-HIV which is below 5%.

Papua Province is the region with the highest prevalence of TB-HIV in Indonesia, with transmission rates consistently above the national average. TB-HIV patients in Papua Province in 2024 will be 782 (70.1%) (15). Jayapura City has a significant burden of TB-HIV cases. TB-HIV patients in Jayapura City in 2024 will be 256 (69.4%), and in 2025, there will be 344 (72.3%). In January – February, as many as 296 people will be registered at Jayapura Hospital (16)

Factors such as duration of TB treatment, drug side effects, economic status, proximity to health facilities, and social support have significant risk factors for non-adherence to medication in TB-HIV patients (17,18).

Method

Quantitative research with the type of analytical observational research with a cross-sectional design is a study that aims to study the dynamics of the correlation between risk factors and effects, by approaching, observing, or collecting data at the same time (19). The population in this study is all TB-HIV patients who are registered and receive ARV and OAT therapy treatment, as many as 296 people at Jayapura Hospital, all of whom are then used as samples or saturated sampling.

Results

1. Univariate analysis

Table 1. Independent variable distribution

No	Variable	Frequency (n)	Percentage (%)
1	**Age**		
	Productive	280	94.6
	Non Productive	16	5.4
2	**Gender**		
	Male	143	48.3
	Female	153	51.7
3	**Tribe**		
	Papua	202	68.2
	Non Papua	94	31.8
4	**Jobs**		
	Not working	229	77.4
	Work	67	22.6
5	**Medication Compliance**		
	Non- Compliant	158	53.4
	Obedient	138	46.6
	Total	296	100,0

Based on table 1, it shows that out of 296 respondents of TB-HIV patients, most of the respondents came from productive age as many as 280 people (94.6%), women as many as 153 people (51.7%), Papuans as many as 202 people (68.2%), most of them did not work as many as 229 people (77.4%). As for those who do not comply with taking ARV and OAT drugs, 158 people (53.4%).

2. Bivariate Analysis

Table 1. Risk Attribute, Chi-Square Analysis, and Prevalence Ratio

No	Variable	Medication Compliance				P value	AR	*RP* Lower-Upper
		Obedient		Non-Compliant				
		n	%	N	%			
1	**Age**							
	Productive	130	46.4	150	53,6	0.98	-4%	0.92 (0.5-1.5)
	Non Productive	8	50	8	50			
2	**Gender**							
	Female	65	42,5	88	57.5	0.17	-9	0.83 (0.65-1.0)
	Male	73	51	70	49			
3	**Tribe**							
	Papua	40	42.6	54	57.4	0.40	-6%	0.8 (0.6-1.1)
	Non Papua	98	48.5	104	51.5			
4	**Jobs**							
	Working	33	49.3	34	50.7	0.72	4%	1.0 (0.8-1.4)
	Not Working	105	45.9	124	54.1			

The results showed that the relationship between age (p=0.92), gender (p=0.83), tribe (p=0.8), and jobs (p=0.72) were not significantly related to the Medication Compliance.

Discussion

Theoretically, age is one of the important determinants in medication adherence behavior. From the perspective of *Life Course Theory*, individuals at a young age tend to have a level of emotional stability, responsibility, and self-management that is not optimal compared to adults (20). This can have an impact on adherence to long-term therapies such as ARVs. In addition, in *the theory of Self-Regulation*, more mature individuals generally have better self-regulation abilities, including in managing treatment schedules and understanding health consequences (21).

The results of this study are in line with a national study by Pratama (22), which found that young HIV patients have a higher rate of non-compliance than adults, mainly due to lifestyle factors, high mobility, and lack of awareness of the importance of long-term therapy. Research by Sari (23) also shows that adolescent and young adult age groups tend to have low adherence due to psychological factors such as rejection of diagnosis, stigma, and low social support.

The results of the *Risk Attribute* (AR) analysis of -4%, meaning that in the productive age group, there was a decrease in the proportion of non-compliance by 4% compared to the unproductive age group. In other words, productive age tends to be slightly more compliant in consuming ARVs. However, the small magnitude of the AR value suggests that the influence of age on compliance is relatively weak. This is in line with the results of insignificant statistical tests, so age is not the main factor that determines adherence to taking ARV drugs. This condition can be influenced by other factors that are more dominant, such as family support, medication side effects, access to health services, and the patient's level of knowledge. Productive age does have high activity, but also has better health awareness, so that they maintain medication adherence.

The results of this study show that there is no significant relationship between age and compliance with taking ARV drugs in TB-HIV patients in Jayapura City, because compliance with taking ARV drugs can occur in all patients. Medication adherence is more influenced by multidimensional factors, so the interventions carried out need to be comprehensive and not only focus on the age aspect. In the local context of Jayapura City, the insignificance of the age relationship can also be influenced by HIV service programs that are relatively evenly distributed across various age groups. Treatment *support* and continuing education programs allow patients of different age groups to receive the same information and support.

The results showed that there was no significant relationship between sex and compliance with taking ARV drugs in TB-HIV patients in Jayapura City. Theoretically, gender is often associated with differences in health behaviors. From the perspective of *Gender and Health* theory, men and women have differences in how they interpret health, seek treatment, and adhere to medical therapy (24). Men are often associated with risky behaviors and low utilization of health services, while women tend to be more concerned about health but also face social burdens and dual roles that can affect medication adherence.

The results of this study are in line with a national study by Rahmawati (25), which found that women with HIV have a higher rate of non-compliance than men, mainly due to family burdens, economic dependence, and limited access to health services. Research by Sihotang and Marbun (26) also showed that women are more susceptible to psychological disorders such as anxiety and depression, which have an impact on compliance with ARV therapy.

The results of this study show that there is no significant relationship due to the relatively equal access to health services for men and women. Public service-based HIV/AIDS programs and the involvement of health workers in providing education and mentoring allow both groups to receive equal treatment.

The results showed that there was no significant relationship between tribe variables and adherence to taking ARV drugs in TB-HIV patients in Jayapura City. Theoretically, medication adherence in HIV/AIDS patients, including antiretroviral therapy and anti-tuberculosis drugs, is

influenced by a variety of multidimensional factors, such as individual, socio-cultural, access to health services, and social support (27). Within the framework of health behavioral theories such as *the Health Belief Model* and *Social Determinants of Health*, ethnic or ethnic factors can influence perceptions of disease, trust in treatment, and interactions with health care systems (28).

These results are in line with research by (12) in Indonesia, which found that there was no significant relationship between demographic factors such as ethnicity or ethnicity and adherence to ARV therapy, but rather factors such as family support, knowledge level, and access to health services were more influential. Similarly, a study by Putra and Wulandari (29) stated that ARV adherence is more influenced by psychosocial factors and health care systems than by cultural background.

The results of this study showed that there was no significant relationship between tribe variables and adherence to taking ARV drugs in TB-HIV patients in Jayapura City, because adherence to taking ARV drugs can occur in all tribal groups and is not only influenced by the patient's ethnic background. Community-based interventions in Papua are able to improve HIV treatment adherence through local cultural approaches and community leader involvement. Compliance is more influenced by other factors such as social support, access to health services, and psychological factors.

The results of the study showed that there was no significant relationship between work and compliance with taking ARV drugs in TB-HIV patients in Jayapura City. Theoretically, employment status is one of the important social determinants of health in influencing individual health behavior. Within the *framework of Social Determinants of Health*, work is closely related to income, economic stability, access to health services, and individual psychosocial conditions (30). Working individuals generally have better economic resources so that they can more easily access health services, including transportation to health facilities and the fulfillment of nutritional needs during therapy. However, work can also be a factor inhibiting compliance. In *Role Strain* theory, working individuals often face job demands, time pressures, as well as role conflicts that can interfere with adherence to long-term medication (31). Working patients may have difficulty managing a regular schedule of medication, especially if the job is informal or has irregular hours.

The results of this study show that there is no significant relationship between work and compliance with taking ARV drugs in TB-HIV patients in Jayapura City due to the existence of ARV service programs provided free of charge by the government, thereby reducing the influence of economic factors on access to treatment. In addition, the community-based service approach and health worker support also assist patients in undergoing therapy regardless of employment status.

Conclusion

1. The age variable did not show a significant relationship with medication adherence in TB-HIV patients in Jayapura City.
2. Gender variables did not show a significant relationship with medication adherence in TB-HIV patients in Jayapura City.
3. The tribe variable did not show a significant relationship with medication adherence in TB-HIV patients in Jayapura City.
4. The occupational variable did not show a significant relationship with medication adherence in TB-HIV patients in Jayapura City.

References

[1] WHO. Global Tuberculosis 2023. January. 2023.

[2] WHO. WHO Global Tuberculosis (TB) Report 2025. 2025.

[3] Kemenkes RI. Menkes dan Mendagri menegaskan komitmen percepatan eliminasi tuberkulosis (TBC) dengan dukungan pemerintah daerah. 2025.

[4] Dinkes Prov. Papua. Deteksi TBC di Papua masih rendah, baru 40%. 2025.

[5] WHO. Global tuberculosis report 2025. 2025.

[6] Kemenkes RI. Berani Tes, Berani Lindungi Diri, Kemenkes Targetkan Eliminasi HIV dan IMS Tahun 2030. 2025.

[7] Maemun S, Mariana N, Rusli A, Mahkota R, Purnama TB. Early Initiation of ARV Therapy Among TB-HIV Patients in Indonesia Prolongs Survival Rates. J Epidemiol Glob Health. 2020;10(2020):164–7.

[8] Purnamasari D, Budi DTS, Palebangan CN. Aspek diagnosis dan tatalaksana pasien koinfeksi human immunodeficiency virus (HIV) dengan tuberkulosis (TB): Tantangan bagi klinisi di daerah perifer. J Penyakit Dalam Udayana. 2022;6(2):25–30.

[9] Bangsberg DR, Deeks SG, Grant RM. Antiretroviral adherence and treatment outcomes among people living with HIV. Lancet HIV. 2021;8(5):e301--e310.

[10] UNAIDS. Global AIDS Update 2023. 2023.

[11] Kementerian Kesehatan Republik Indonesia. Laporan perkembangan HIV/AIDS dan TB Indonesia. 2023.

[12] Sari E, Elina. Faktor-Faktor yang berhubungan dengan kejadian tuberkulosis paru di wilayah kerja Puskesmas Talang Pangeran, Kecamatan Pemulutan Barat, Kabupaten Ogan Ilir, tahun 2019. J Kesehat Bina Husada. 2021;13(2):55–61.

[13] Putri RA, Handayani L, Widodo S. Determinan kepatuhan terapi antiretroviral pada orang dengan HIV/AIDS di Indonesia. Kesmas J Kesehat Masy Nas. 2023;18(2):95–103.

[14] Pontororing GJ, Kenangalem E, Lolong DB, others. The burden of HIV among tuberculosis patients in Papua, Indonesia. Int J Tuberc Lung Dis. 2020;24(5):456–63.

[15] Dinkes Prov. Papua. Profil Kesehatan Papua. Dinkes Prov. Papua, 2025.

[16] Dinkes Kota Jayapura. Profil Kesehatan Jayapura. Dinkes Kota Jayapura; 2025.

[17] Gebremedhin KB, Gebrehiwot TT, Desta AA. Adherence to antiretroviral therapy and associated factors among TB-HIV coinfected patients in low-income settings. BMC Infect Dis. 2022;22(1):1–10.

[18] Tola HH, Holakouie-Naieni K, Mansournia MA, Yaseri M. Poor adherence to antiretroviral therapy among HIV-infected individuals and its predictors. PLoS One. 2021;16(7):e0254318.

[19] Hasmi. Metode Penelitian Epidemiologi edisi 2. 2023.

[20] Ben-Shlomo Y, Kuh D. A life course approach to chronic disease epidemiology. Int J Epidemiol. 2021;50(6):1839–45.

[21] Baumeister RF, Vohs KD. Handbook of self-regulation: Research, theory, and applications. 3rd ed. Guilford Press; 2020.

[22] Pratama RA, Siregar FA, Hutagalung J. Hubungan karakteristik individu dengan kepatuhan terapi ARV pada pasien HIV/AIDS. J Kesehat Komunitas. 2023;9(2):112–20.

[23] Sari NP, Handayani S, Lestari T. Determinan kepatuhan minum obat antiretroviral pada ODHA di Indonesia. J Epidemiol Kesehat Indones. 2022;6(1):45–53.

[24] Courtenay WH. Constructions of masculinity and their influence on men’s well-being: A theory of gender and health. Soc Sci \& Med. 2020;50(10):1385–401.

[25] Rahmawati D, Prasetyo B, Hidayati N. Perbedaan kepatuhan terapi ARV berdasarkan jenis kelamin pada ODHA di Indonesia. J Kesehat Reproduksi. 2022;13(2):101–9.

[26] Sihotang H, Marbun R. Faktor psikologis dan kepatuhan terapi ARV pada perempuan dengan

HIV/AIDS. J Keperawatan Indones. 2023;26(1):33–41.
[27] WHO. Adherence to long-term therapies: Evidence for action. WHO, 2021.
[28] Glanz K, Rimer BK, Viswanath K. Health behavior: Theory, research, and practice. 5th ed. Jossey-Bass; 2020.
[29] Putra AR, Wulandari D. Faktor-faktor yang berhubungan dengan kepatuhan terapi ARV pada pasien HIV/AIDS di Indonesia. J Kesehat Masy Nas. 2021;16(2):85–92.
[30] Marmot M, Allen J. Social determinants of health equity. Am J Public Health. 2020;110(S2):S54--S56.
[31] Goode WJ. A theory of role strain. Am Sociol Rev. 2021;25(4):483–96.