



## Correlation of Side Effects of ARV (Antiretroviral) Drugs with ARV Therapy Compliance in PLWHA at KDS Jombang Care Center Plus of Jombang Regency

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### ABSTRACT

Human Immunodeficiency Virus (HIV) attacks white blood cells, leading to a weakened immune system. Acquired Immune Deficiency Syndrome (AIDS) refers to the set of symptoms caused by the decline in immunity due to HIV. Antiretroviral therapy (ART) is used to suppress viral replication, with treatment success largely dependent on adherence to therapy. However, side effects of antiretroviral drugs can negatively impact adherence by causing unwanted symptoms that discourage patients from continuing treatment. This study aims to analyze the correlation between the side effects of antiretroviral drugs and adherence to antiretroviral therapy among people with HIV/AIDS in the Jombang Care Center Plus Peer Support Community, Jombang Regency. This study used a cross-sectional design with purposive sampling, involving 38 respondents. Adherence to ART was assessed using the Morisky Medication Adherence Scale-8 (MMAS-8) questionnaire, while the side effects of antiretroviral drugs were evaluated using the Group Clinical Trial AIDS questionnaire. Statistical analysis was performed using Somers' D test. The Somers' D test showed a significant correlation between the side effects of antiretroviral drugs and adherence to therapy ( $p = 0.002$ ,  $p < 0.05$ ). This study concludes that side effects of antiretroviral drugs are significantly associated with adherence to antiretroviral therapy among people with HIV/AIDS in the Jombang Care Center Plus Peer Support Community.

## INTRODUCTION

HIV (Human Immunodeficiency Virus) is a virus that infects white blood cells and can damage the immune system. AIDS (Acquired Immunodeficiency Syndrome) is the impact of the development of the HIV virus in the human body (Kemenkes RI, 2020). HIV/AIDS is an infection caused by the Human Immunodeficiency virus which is a group of retroviruses (Anwar et al,2018). Transmission of HIV/AIDS can be through casual sex, the use of tattoo needles, piercings that are not sterile and used interchangeably, pregnant women who are HIV positive which can be transmitted to their babies (Nurarif and Kusuma, 2015).

HIV/AIDS is a serious health problem throughout the world, including in Indonesia. Based on prevalence data from WHO in 2021, there were 38.4 million HIV cases worldwide and most of them occurred in women, 19.7 million and men, 16.9 million (WHO, 2021). According to the UNAIDS Overview Human Immunodeficiency Virus (HIV), a retrovirus that targets the immune system, is the source of HIV/AIDS infection (Anwar et al., 2018). Unprotected sexual activity, the use of non-sterile needles for tattoos or piercings, and the nursing or childbearing of HIV-positive mothers may all result in HIV transmission (Nurarif & Kusuma, 2015).

HIV/AIDS is still a serious worldwide health issue, which also affects Indonesia. WHO (2021) estimates that there were 38.4 million HIV cases globally, 19.7 million of which were in women and 16.9 million of which were in males. Globally, there were 37.7 million HIV patients and 1.5 million new infections in 2021, according to the UNAIDS study. 36,902 cases of HIV/AIDS were recorded in Indonesia in 2021; the majority of these infections were in the productive age range of 15–49 years (Kemenkes RI, 2022). 5,538 HIV/AIDS cases were recorded in East Java in 2021 (Profil Kesehatan Jatim, 2021). With 152 HIV cases and 32 AIDS cases recorded in 2021—an increase from 2020—Jombang Regency is second only to Surabaya City in East Java for the greatest number of HIV/AIDS cases (Dinkes Jombang, 2021).

The STOP approach (Education/Campaign, Test, Treat, Maintain) is emphasised in the Minister of Health Regulation No. 21 of 2013 as a means of preventing and controlling HIV/AIDS. By 2030, the objective is to attain "Three Zeros": Zero AIDS-related fatalities, zero new infections, and zero prejudice towards individuals living with HIV/AIDS (PLWHA) (Na'mah, 2022).

Because they prevent HIV replication and lower the death rate associated with AIDS, antiretroviral (ARV) medications are essential for enhancing the quality of life for people living with HIV/AIDS (Achappa et al., 2013). For ARV therapy to be successful virologically, adherence is essential. Patients who do not comply to their medication may face treatment failure and the development of their illness, as well as an increase in viral load and viral resistance.

Studies conducted in West Java discovered that treatment failure was indicated by medication resistance and viral loads more than 400 copies/ml in PLWHA who did not comply to their treatment plans (Fibriani, 2013). In a similar vein, Salma (2020) documented that six PLWHA's noncompliance led to a 100% therapeutic failure rate, with all patients exhibiting viral loads higher than 400 copies/ml. Some PLWHA discontinue or postpone treatment because to the side effects of ARV medications, which provide a serious obstacle to adherence. In addition to causing physical pain, these side effects make it difficult to go about everyday tasks (Puspasari, Wisaksana, & Ruslami, 2018).

In January 2023, a preliminary survey conducted at the Jombang Care Centre Plus registered 1,160 cases of HIV/AIDS, of whom 349 were active members of PLWHA. Patients who get ARV medication report experiencing a range of adverse effects, such as weight gain, decreased haemoglobin levels, and dizziness, according to PLWHA interviews. The purpose of this research is to examine the connection between PLWHA at Jombang Care Centre Plus, Jombang Regency, and adherence to ARV medication in terms of side effects.

## METHOD

This research used a cross-sectional design and a correlational analysis strategy. In March 2023, the study was carried out in Jombang Regency's KDS Jombang Care Centre Plus. People living with HIV/AIDS (PLWHA) who actively participated in KDS Jombang Care Centre Plus activities made up the sample. A purposeful sampling technique was used to choose 38 participants. Utilising the AIDS Clinical Trial Group (ACTG) questionnaire to determine the adverse effects of ARV medications experienced by the respondents and the modified Morisky Medication Adherence Scale-8 (MMAS-8) to evaluate adherence to antiretroviral (ARV) treatment among PLWHA were the methods used for data collecting. The data was analysed using bivariate analysis using Somers' D statistical test to evaluate the association between adherence to ARV treatment and side effects of ARV drugs, and univariate analysis to characterise the frequency distribution of each variable. SPSS version 25 was used to process the data. The Chakra Research Ethics Committee of the Brahmanda Lentera Foundation granted ethical permission for this research, with approval number No.015/028/II/EC/KEP/LCBL/2023.

## RESULT

Table 1. Distribution of Respondent Characteristics Data (n=38)

Respondent Characteristics	n	%
Age		
15-25 years	13	34.2
26-35 years old	10	26.3
36-45 years old	15	39.5
Gender		
Man	32	84.2
Woman	6	15.8
Marital status		
Not married yet	25	65.8
Marry	5	13.2
Widower	4	10.5
Widow	4	10.5
Education		
Elementary school	3	7.9
Junior high school	7	18.4
Senior high school	22	57.9
Diploma	2	5.3
Bachelor	4	10.5
Work		
Doesn't work	16	42.1
Work	22	57.9
Income		
No income	16	42.1
Rp.500,000-Rp.1,000,000	11	28.9
> Rp. 1,000,000	11	28.9
Long diagnosed		

< 1 year	25	65.8
1-2 year	13	34.3
Transmission		
Free sex	18	47.4
Same sex	16	42.1
Etc	4	10.5
Types of ARV		
TLD	21	55.3
TLE	17	44.7

Based on table 1, the characteristics of respondents based on age, the majority were between 36-45 years old, there were 15 respondents (39.5%). Most gender was male, 32 respondents (84.2%) and female, 6 respondents (15.8%). The marital status in this study was that most respondents were unmarried, amounting to 25 respondents (65.8%). The majority of PLWHA's education was senior high school, 22 respondents (57.9%). Many respondents worked 22 respondents (57.9%) and did not work 16 respondents (42.1%) and had an income between Rp. 500,000–Rp. 1,000,000/month 11 respondents, > IDR 1,000,000/month 11 respondents and 16 respondents (42.1%) had no income. The majority were diagnosed with HIV/AIDS < 1 year 25 respondents (65.8%), the source of infection was the majority contracted through free sex 18 respondents (47.4%), and the type of ARV therapy used by the majority was TLD 21 respondents (55.3%) and TLE 17 respondents (44.7%).

Table 2. Distribution of Respondent Data Based on ARV Side Effects

ARV Side Effects	Amount	
	f	%
Low	24	63.2
Moderate	11	28.9
High	3	7.9
Total	38	100.0

Based on table.2 ARV side effects felt by PLWHA, the majority felt low side effects, 24 respondents (63.2%), 11 respondents (28.9%) felt moderate side effects, and 3 respondents (7.9%) experienced high side effects.

Table 3. Distribution of Respondent Data Based on Adherence to ARV Therapy

Adherence to ARV Therapy	Amount	
	f	%
Low	4	10.5
Moderate	12	31.6
High	22	57.9
Total	38	100

Based on table 3, 22 respondents (57.9%) had high adherence to ARV therapy for PLWHA, 12 respondents (31.6%) had moderate ARV therapy adherence, and 4 respondents (10.5%) had low adherence to ARV therapy.

Table 4. Distribution of Data on the Relationship ARV Side Effect and Adherence to ARV Therapy among PLWHA in KDS Jombang Care Center Plus Jombang Regency

ARV Side Effects	Adherence to ARV Therapy						Total	
	Low		Moderate		High		f	%
	f	%	f	%	f	%		
Low	1	2,6	5	13,2	18	47,4	24	63,2
Moderate	1	2,6	6	15,8	4	10,5	11	28,9
High	2	5,3	1	2,6	0	0,0	3	7,9

$p = 0,002; n=38$

Based on table 4, the results of the analysis of the relationship between ARV side effects and adherence to ARV therapy among PLWHA show that PLWHA who experienced low ARV side effects with low adherence to ARV therapy were 1 respondent (2.6%), moderate therapy adherence was 5 respondents (13, 2%), and high adherence to ARV therapy by 18 respondents (47.4%). Meanwhile, PLWHA who experienced moderate ARV side effects with low ARV therapy adherence was 1 respondent (2.6%), moderate ARV therapy adherence was 6 respondents (15.8%), and high ARV therapy adherence was 4 respondents (10.5%). Then PLWHA who experienced high side effects with low adherence to ARV therapy were 2 respondents (5.3%) and moderate adherence to ARV therapy was 1 respondent (2.6%). Based on the results of statistical tests using the test *somerd's* significant results were found, namely *p-value* 0.002 - 0.05 which means there is a relationship between ARV side effects and adherence to ARV therapy among PLWHA in KDS Jombang *Care Center Plus* Jombang Regency.

## DISCUSSION

Based on the research results presented in Table 2, many respondents (63.2%) experienced mild side effects from antiretroviral (ARV) therapy. The side effects of ARV drugs can play a significant role in treatment decisions, including changes in medication regimens among people living with HIV/AIDS (PLWHA). Each individual experiences side effects differently and at varying times. According to Nursalam (2018), up to 25% of PLWHA discontinue ARV treatment within the first year due to side effects, and another 25% reduce their prescribed doses out of fear of these adverse effects. Similarly, Chim et al. (2018) reported that some PLWHA in Cambodia stopped ARV therapy because their side effects worsened over time, leading to a perceived decline in health.

In this study, a questionnaire completed by 20 respondents revealed that while most respondents reported experiencing side effects, these symptoms were generally not highly bothersome. However, some respondents reported mild discomfort from symptoms such as nausea, vomiting, insomnia, skin rashes, and weight gain. These findings align with the research by Hadisaputro and Sofro (2020),

which indicated that PLWHA at VCT Undata Hospital Palu experienced similar ARV side effects, including nausea and vomiting (50%), itching (69.4%), and insomnia (69.4%). The CDC (2020) also notes that common ARV side effects include dizziness, fatigue, nausea, and rashes, although not all individuals experience these symptoms.

The specific side effects encountered by respondents are related to the ARV drug regimens they were prescribed. For instance, nausea and vomiting are common gastrointestinal side effects caused by tenofovir, a nucleoside reverse transcriptase inhibitor (NRTI). Holly et al. (2018) found that tenofovir frequently causes nausea, vomiting, and diarrhea. Similarly, lamivudine, another NRTI, can lead to nausea. Insomnia, on the other hand, is associated with dolutegravir, a second-generation integrase strand transfer inhibitor (INSTI). Mackenzie et al. (2014) observed that dolutegravir use could result in headaches, insomnia, and weight gain. The skin rash reported by respondents is linked to efavirenz, a non-nucleoside reverse transcriptase inhibitor (NNRTI). Corbet and Diana (2016) reported that between 5% and 26% of PLWHA experience dermatological side effects, such as itching and rashes, when using efavirenz.

The data presented in Table 3 shows that 57.9% of respondents had high adherence to ARV therapy. Adherence to ARV therapy is critical to treatment success, as uninterrupted medication use improves the quality of life, reduces viral resistance, and enhances overall health outcomes (Fachriati et al., 2021). Education level emerged as one of the factors influencing adherence, with the majority of respondents having a high school or vocational school education (57.9%). This finding is consistent with Nurhaida (2022), who found that individuals with low educational attainment have a 1.3 times higher risk of non-adherence compared to those with higher education levels.

The questionnaire responses provided insight into the adherence challenges faced by respondents. In response to the question, "Do you sometimes forget to take your medication?" 55% of respondents admitted to occasionally forgetting their doses. This was often attributed to their busy schedules, particularly among those with work commitments. Work schedules that conflicted with medication times resulted in delayed or missed doses. Puspasari et al. (2018) similarly reported that 41.8% of respondents missed doses due to work-related distractions. Additionally, 50% of respondents indicated that they often forgot to take their medication, reinforcing the finding that occasional lapses contributed to more frequent non-compliance. Fatimatuzahro et al. (2023) noted that 36.7% of PLWHA failed to adhere to ARV schedules due to frequent forgetfulness.

Table 4 shows a significant relationship between ARV side effects and adherence among PLWHA at KDS Jombang Care Center Plus. This finding aligns with research by Djumadi and Gobel (2023),

which demonstrated a significant relationship between ARV side effects and non-compliance among HIV patients at Bhayangkara Hospital, Makassar, with a p-value of 0.018. Sitorus et al. (2021) also found that PLWHA experiencing side effects were 2.131 times more likely to be non-compliant with therapy. In Semarang, Arisudhana et al. (2019) similarly observed that ARV side effects negatively impacted adherence. Uswatu (2014) reported a statistically significant relationship ( $p = 0.045$ ) between ARV side effects and adherence at the VCT clinic of Dr. Soebandi Hospital, Jember.

While side effects pose challenges for PLWHA, they should not discourage the initiation or continuation of ARV therapy. The Ministry of Health (2012) emphasized that managing side effects is essential, as untreated HIV presents far greater risks, including mortality. Effective side effect management, including adjusting treatment regimens, is critical to maintaining adherence and ensuring long-term health benefits for PLWHA.

## CONCLUSION

At KDS Jombang Care Centre Plus, PLWHA usually had strong adherence to ARV treatment; 22 responders (57.9%) showed good compliance. Furthermore, the majority of responders ( $n=24$ ; 63.2%) said they had experienced minor adverse effects from ARV medications. With a p-value of 0.002, the research discovered a strong correlation between ARV medication side effects and PLWHA at KDS Jombang Care Centre Plus adherence to ARV treatment. This finding implies that even minor side effects may have an impact on adherence, emphasising the need of tracking and controlling side effects to guarantee ongoing and successful ARV therapy.

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