

Factors Affecting Antiretroviral Therapy Adherence in Individuals with HIV in Kaimana District of Papua Barat

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Abstract

Objective: The present study aimed to identify factors affecting the adherence of individuals with human immunodeficiency virus-acquired immunodeficiency syndrome (HIV-AIDS) to antiretroviral therapy (ART) in Kaimana Hospital.

Methods: The study design was descriptive correlational with a cross-sectional approach. Consecutive sampling was employed to obtain 81 respondents. Data were analyzed using chi-square and multivariate logistic regression analyses.

Results: The results suggested that most respondents (74.1%) exhibited low medication adherence. The most significant factors that affect adherence were knowledge on HIV [odds ratio (OR) 10.748, $p = 0.001$], time since HIV diagnosis (OR 0.173, $p = 0.018$), alcohol consumption of 1–2 glasses/day (OR 0.184, $p = 0.033$), alcohol consumption of >2 glasses/day (OR 0.077, $p = 0.027$), and alcohol consumption of 0–1 glass/day ($p = 0.040$).

Conclusion: Patients with HIV-AIDS having better knowledge on HIV-AIDS and their own health condition had higher ART adherence. Moreover, patients with higher alcohol consumption with longer time since HIV diagnosis had lower medication adherence. The study result suggested improving the administration of antiretroviral regimen and increasing the knowledge of individuals with HIV-AIDS regarding their own health status as measures to improve adherence.

Keywords: Alcohol; ART adherence; knowledge on HIV; time since HIV diagnosis

Introduction

Human immunodeficiency virus (HIV) infects the leucocyte, thereby leading to deficiency in immunity of the human body.¹ HIV causes the infected individual to suffer from acquired immunodeficiency syndrome (AIDS). A significant decline in the number and function of T CD4⁺ cells results in increased susceptibility of opportunistic infections among individuals with HIV. Kaimana Hospital has revealed that 96 individuals had HIV-AIDS in 2015, and this number has almost doubled in 2016 with 158 individuals being diagnosed with HIV. Individuals with HIV require antiretroviral medication.²

Antiretroviral therapy (ART) uses antiretroviral medication for patients infected with HIV.³ The medication should be regularly consumed for a lifetime; hence, it requires a high treatment adherence. Individuals with HIV who did not comply strictly with the treatment had a considerably higher viral load beyond 1000 copies/mL than those who adhered to the treatment.⁴ ART

adherence is influenced by multiple factors, including age, sex, education, time since HIV diagnosis, alcohol consumption, and knowledge on HIV. A study has revealed that younger age was associated with ART nonadherence among individuals with HIV-AIDS.⁵ Furthermore, sex affects one's treatment adherence; women with HIV-AIDS had lower treatment adherence than men.⁶

Education plays a pivotal role in adherence. A study has suggested that most patients with HIV who received formal education for <8 years were unlikely to comply with the ART regimen.⁷ Moreover, time since HIV diagnosis may affect one's adherence. This statement was supported by a study that found that individuals with HIV who had been diagnosed for <5 years showed treatment nonadherence.⁵ The perception of boredom during medicine intake has a significant influence on treatment adherence.

Alcohol consumption may affect patient's ART adherence. Patients with HIV-AIDS having higher alcohol

consumption would be more likely to show ART nonadherence.⁸ The standard alcohol tolerance is as follows: beer, 12 oz (5% ABV); malt liquor, 8 oz (8% ABV); wine, 5 oz (12% ABV), and gin, vodka, and whiskey, 1.5 oz (40% ABV), with drinking frequency of one glass for women and two glasses for men.⁹ The District of Kaimana is a district in Western Papua with the highest prevalence of alcohol consumption above the national standard.¹⁰ In addition, knowledge about HIV contributes to patient's ART adherence. Poor HIV knowledge in patients with HIV-AIDS on ART resulted in poor medication adherence and increased drug resistance.¹¹

However, data on ART adherence in individuals with HIV residing in Kaimana, although 94% of them were on ART, is lacking. Kaimana Hospital is the only health facility in Kaimana that provides ART for all individuals with HIV-AIDS. Therefore, the present study was conducted to identify the level of adherence among individuals with HIV-AIDS and factors affecting their ART adherence.

Method

The study was conducted from April 21, 2017, to May 27, 2017, at Kaimana Hospital and has a cross-sectional design. Independent variables were age, sex, educational degree, time since HIV diagnosis, alcohol consumption, and knowledge about HIV. The dependent variable was ART adherence in individuals with HIV-AIDS.

The study sample included individuals with HIV-AIDS seeking medical assistance in Kaimana Hospital from April through May 2017 who met the inclusion and exclusion criteria. Individuals with HIV-AIDS aged ≥ 18 years who were undergoing ART for at least 1 month were included in the study. Meanwhile, pregnant women on ART were excluded. Subjects were selected through consecutive sampling technique.

Three instruments were employed in the present study: a questionnaire of participant demographic characteristics (age, sex, educational degree, alcohol consumption, and time since HIV diagnosis), KQ-18 for assessing a participant's knowledge about HIV¹², and Morisky scale for determining medication adherence.¹³ Data obtained were examined for completeness of answers, assigning of codes for confidentiality, software processing, and re-checking.

Data were analyzed using chi-square test to determine the relationship between independent and dependent variables. Logistic regression analysis was performed to identify factors affecting ART adherence. The present study was conducted in compliance with the principles of research ethics that includes respect for human dignity, respect for participant's privacy and confidentiality, justice, and assessing the benefit and harm of the study.

Results

Data were obtained from 81 participants. Univariate analyses were performed to identify the distribution of both independent and dependent variables. As can be seen from Table 1, most participants were of age 29–38 years (43.2%). Women comprised 63.0% of the study population; 43.2% of the study population was high school graduates.

Table 1. Distribution of participants based on demographic characteristics, knowledge about HIV, and ART adherence in Kaimana Hospital (N=81)

Variable	n	Percentage
Age		
19–28 years old	26	31.1
29–38 years old	35	43.2
39–49 years old	13	16.0
>49 years old	7	8.6
Total	81	100
Sex		
Male	30	37.0
Female	51	63.0
Total	81	100
Educational degree		
Did not finish elementary school	4	4.9
Elementary school	12	14.8
Middle school	20	24.7
High school	35	43.2
Diploma III/bachelor	9	11.1
Post-graduate	1	1.2
Total	81	100
Alcohol consumption		
0–1 glass(es)/day	57	70.4
1–2 glasses/day	17	21.0
>2 glasses/day	7	8.6
Total	81	100
Time since HIV diagnosis		
<2 years	48	59.3
≥ 2 years	33	40.7
Total	81	100
Knowledge about HIV		
Poor	44	55.6
High	37	44.4
Total	81	100
ART adherence		
Low	60	74.1
High	21	25.9
Total	81	100

Most participants consumed 0–1 glass of alcohol per day (57%), had been diagnosed with HIV for <2 years (48%), had a poor level of knowledge about HIV (44%), and low ART adherence (60%) (Table 1).

For the bivariate analysis, because the variables age and educational degree failed to meet the conditions of the chi-square test, authors combined values of these variables. Result of this analysis suggested significant correlation between alcohol consumption, knowledge about HIV, and ART adherence in individuals with HIV-AIDS ($p \leq 0.05$). In addition, the result indicated no significant correlation between age, sex, educational degree, time since HIV diagnosis, and ART adherence in individuals with HIV-AIDS ($p \geq 0.05$).

Logistic regression analysis was applied for independent variables with p value ≤ 0.25 , which included knowledge about HIV, alcohol consumption, and age. The first logistic regression analysis revealed that variables with p value ≥ 0.05 were alcohol consumption and age. Age had the highest p value; hence, it was excluded from the second analysis. After exclusion, the result of the second logistic regression analysis is presented in Table 2.

Table 2. Factors affecting ART adherence among individuals with HIV-AIDS in Kaimana Hospital (N = 81)

Variable	ART adherence				OR	p value
	Low		High			
	n	%	n	%		
Age						
Older age	25	65.9	13	34.1	2.275	0.132
Younger age	35	81.4	8	19.6		
Sex						
Male	22	73.3	8	26.7	0.801	0.780
Female	38	74.5	13	25.5		
Educational degree						
High	34	72.3	13	27.7	1.243	0.799
Low	26	76.5	8	23.5		
Time since diagnosed with HIV						
<2 years	32	66.7	16	33.3	0.357	0.077
≥ 2 years	28	84.8	5	15.2		
Alcohol consumption						
>2 glasses/day	14	93.3	1	6.7	0.105	0.005
1–2 glasses/day	21	87.5	3	12.5	0.210	
0–1 glass/day	25	59.5	17	40.5		
Knowledge about HIV						
High	20	54.1	17	45.9	8.500	0.000
Poor	40	90.9	4	9.1		

Note: p values < 0.05 implied significance of correlation

As can be seen from Table 3, the final analysis revealed that the odds ratio (OR) value of alcohol consumption (1) was 0.077 (95% CI: 0.007–0.809); this suggested that participants who used to drink 1–2 glasses of alcohol per day were more likely to comply with the regimen by 0.077 times greater than those who used to drink >2 glasses of alcohol per day. The OR value of alcohol consumption (2) was 0.184 (95% CI: 0.037–0.924), indicating that participants who used to drink 0–1 glass of alcohol per day were more likely to adhere to the regimen by 0.184 times greater than those who used to drink 1–2 glasses of alcohol per day.

The result of the second logistic regression analysis showed no change in the OR value of $>10\%$ in each variable after excluding age. This implied that age had no influence on other variables (Table 3). Each variable has p value ≤ 0.05 ; therefore, it was concluded that alcohol consumption, time since HIV diagnosis, and knowledge about HIV had significant effects on ART adherence among individuals with HIV-AIDS. The second analysis was the final logistic regression analysis.

Table 3. Results of the second logistic regression analysis

Variable	B	S.E	Wald	df	OR	95% CI	p value
Alcohol consumption			7.237	2			0.027
Alcohol consumption (1)	-2.56	1.201	4.564	1	0.07	0.007–0.809	0.033
Alcohol consumption (2)	-1.69	0.822	4.227	1	0.18	0.037–0.924	0.040
Time since HIV diagnosis	-1.75	0.743	5.570	1	0.17	0.017–0.743	0.018
Knowledge about HIV	2.375	0.726	10.703	1	10.7	2.591–44.58	0.001
Constant	-1.16	0.587	3.933	1	0.31	0.047–2.591	0.047

The variable of time since HIV-AIDS diagnosis had an OR value of 0.173 (95% CI: 0.040–0.743); this indicated that patients who had been diagnosed with HIV for <2 years demonstrated better odds to comply with the treatment at 0.173 times greater than those who had been diagnosed with HIV-AIDS for >2 years. Knowledge about HIV had an OR value of 10.748 (95% CI: 2.591–44.581), demonstrating that participants with a higher level of knowledge about HIV had are more likely to adhere to ART than those who had poor level of knowledge.

The final analysis result revealed that knowledge about HIV had the highest OR value, implying that it has the most influence on ART adherence among individuals with HIV-AIDS.

Discussion

Correlation between age and ART adherence

The study results suggested that most participants were young. The bivariate analysis using chi-square test revealed no significant correlation between age and ART adherence among individuals with HIV-AIDS. This result was supported by studies that have reported no significant correlation between age and ART adherence in individuals with HIV-AIDS.^{14,15}

Age does not have a direct contribution to patient's treatment adherence, although it is associated with individual's maturity level to rationalize and recognize issues, including health issues. However, age does not consistently influence medication adherence because it was affected by other factors, including knowledge, activity, and medical condition.¹⁶ Younger age affected the regularity of and adherence to medication intake because younger individuals had numerous activities to be completed, whereas medication nonadherence in the older population was affected by memory loss.¹⁷

Correlation between sex and ART adherence

Although there was no significant difference in the number of men and women with HIV-AIDS, most participants in the present study were women. Regarding data of individuals with HIV-AIDS in Indonesia, no significant disparity in the prevalence of HIV-AIDS was found between men and women.³

The bivariate analysis revealed no significant correlation between sex and ART adherence among individuals with HIV-AIDS. This result was consistent with that of a study that has demonstrated no significant correlation between sex and ART adherence.¹⁸ In contrast, a study has found significant correlation between ART adherence and sex.¹⁹ The factors affecting ART nonadherence among women were the cost of ART service and availability of free ART service.⁶ Kaimana Hospital provides free and equal access to ART service to both men and women with HIV-AIDS.

Correlation between educational degree and ART adherence

The findings suggested that most participants had low educational level. The bivariate analysis indicated no significant correlation between educational degree and ART adherence among individuals with HIV-AIDS. Some studies have reported no significant correlation between educational degree and ART adherence among patients with HIV-AIDS.^{14,20}

Education is a formal means to acquire knowledge, learn to analyze, and solve issues in an erudite manner. Individuals with higher level of education are expected to be able to analyze a situation or condition that requires appropriate behavior because they have the appropriate level of knowledge. Most individuals with HIV-AIDS in Kaimana District were high school graduates with no access to information; this could be attributed to the topography of Kaimana District where each region is separated by sea, resulting in the challenges faced by individuals with HIV-AIDS for accessing information about HIV and its treatment, albeit they were high school graduates.

Correlation between time since HIV diagnosis and ART adherence

The analysis result indicates that most participants had been diagnosed with HIV for <2 years. The bivariate analysis implied a significant correlation between time since HIV diagnosis and ART adherence among individuals with HIV-AIDS. The longer the time since the patient was diagnosed with HIV, the lower the patient's ART adherence would be.⁵ This variable may affect ART adherence because medications should be regularly taken for a lifetime, which may lead to boredom in taking medicines.

Correlation between alcohol consumption and ART adherence

The study result suggested that most participants used to drink 0–1 glass of alcohol per day. The bivariate analysis revealed a significant correlation between alcohol consumption and ART adherence. A study has found a

significant correlation between severe alcohol abuse in past month and ART adherence among individuals with HIV.²¹

The result of the multivariate analysis demonstrated that alcohol consumption affected ART adherence in individuals with HIV-AIDS. Patients with HIV-AIDS with higher alcohol consumption would have higher degree of ART nonadherence. Furthermore, more frequent alcohol consumption can lower their ART adherence.²²

Correlation between knowledge about HIV and ART adherence

Most respondents had a poor level of knowledge about HIV. The analysis revealed a significant correlation between knowledge about HIV and ART adherence in individuals with HIV-AIDS. Proper knowledge about HIV might improve patients' awareness regarding their own treatment.²³ Another study has found that nonadherence was associated with patients' poor knowledge about HIV.²⁴ However, a good knowledge about disease could improve an individual's ability during decision-making for their own diseases—in this case, making a decision regarding ART adherence.²⁵

Most determinant factor affecting ART adherence among individuals with HIV-AIDS

The analysis result revealed that knowledge about HIV was the most determinant factor affecting ART adherence among individuals with HIV-AIDS. Knowledge about one's own disease causes patient to recognize the risks associated with the disease, reason to undergo treatment, and benefits of the treatment, which allow them to ensure adherence while undergoing treatment.²⁶ Furthermore, patients may decide to adhere to the medication by recognizing the risk of his or her own disease.

Conclusions

The findings of his study suggest that participants had a lower ART adherence, and among factors including knowledge about HIV, alcohol consumption, and time since HIV diagnosis, knowledge about HIV was the most determinant factor affecting ART adherence.

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