

Research Article

The Correlation between Antiretroviral Therapy Adherence and Quality of Life in Children with HIV/AIDS at Dr. Moewardi General Hospital Surakarta Indonesia

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ABSTRACT

Introduction: Human Immunodeficiency virus is a virus that attacks the body's immune system. To present day, HIV infection persists as a global health crisis on all range of ages including children. Antiretroviral therapy is the main therapy for HIV/AIDS where high medication adherence is one of its key success factors. The success of ARV therapy may provide improvement in the quality of life of an individual with HIV/AIDS. This study aims to determine the correlation between antiretroviral therapy adherence and quality of life in children with HIV/AIDS at Dr. Moewardi General Hospital Surakarta Indonesia.

Methods: This study was an observational analytic study with cross-sectional approach. Sampling was carried out at the pediatric polyclinic of Dr. Moewardi General Hospital Surakarta Indonesia which met the research criteria as many as 34 samples. The sampling technique used on this study is purposive sampling. Data obtained were analyzed by using the Chi-square test.

Results: From the result of bivariate analysis with Chi-square test, it was found the antiretroviral therapy adherence ($p=0.008$) and age ($p=0.020$) had a significant correlation to the quality of life in children with HIV/AIDS at Dr. Moewardi General Hospital Surakarta Indonesia.

Conclusion: There is significant correlation between antiretroviral therapy adherence and quality of life in children with HIV/AIDS at Dr. Moewardi General Hospital Surakarta Indonesia.

Keywords: antiretroviral therapy adherence, quality of life, children, HIV/AIDS

INTRODUCTION

Human Immunodeficiency Virus is an enveloped RNA retrovirus which causes deterioration in the body immune system and eventually resulted in Acquired Immune Deficiency Syndrome which is a combination of several symptoms inflicted by immune deficiency and also the final stage of HIV.¹ HIV is a global health crisis that continues to present day. According to the data announced by UNAIDS, in 2020 the total number of HIV new cases worldwide has reached 1,5 million cases where 150.000 patient aged less than 15 years old.² In Indonesia, the total number of cumulative cases found in March 2021 was reported at 427.201 cases meanwhile the total number of cumulative cases for AIDS were reported at 131.417 cases with Central Java as the province that ranked first with the highest number of HIV/AIDS cases found during January-March 2021 period was recorded at 1.125 cases.³

When an individual's immune system is weakened, the person is more vulnerable to diseases even mild diseases may be devastating to the person with immunocompromised.⁴ HIV has broad impact on community life, individual life and children life.⁵ A child infected with HIV/AIDS has the risk of developing low self-

confidence, emotional problems and issues on their behavior and social function. The aforementioned issues will affect the children's quality of life during their stages of development.⁶ A study shows the prevalence of poor quality of life on children with HIV/AIDS is at 30% based on child-self report and 41% based on parent-proxy report.⁷

Antiretroviral therapy is a therapy that aims to reduce mortality and morbidity rate, increasing life expectancy and improving the quality of life of people living with HIV/AIDS. The commonplace factor of failure in ARV treatment is low medication adherence, which indicates that the key success factor of successful ARV therapy is high medication adherence. A study proved that to reach maximum viral suppression requires high adherence of consuming 95% doses of medication given in ARV treatment, if the patient constantly forgetting to consume the medicine this may potentially increase the risk of failure in ARV treatment.⁸

A study conducted by Rihaliza et al (2019) shows significant relationship between medication adherence and the number of CD4 to the quality of life of people living with HIV/AIDS.⁹ Improving the quality of life of children living with HIV/AIDS is the current main focus and it can be done by optimizing medication adherence whereas the data of quality of life of children living with HIV and medication adherence in Indonesia is still limited to present day.

Based on the problem, the study therefore set out to evaluate the correlation between antiretroviral therapy adherence and quality of life of children living with HIV/AIDS in Dr. Moewardi General Hospital Surakarta Indonesia.

METHOD

Research Type and Design

This research is observational analytic with cross sectional approach.

Research Location

This research was conducted in Dr. Moewardi General Hospital located in Kolonel Sutarto Street No 132, Surakarta, Central Java, Indonesia.

Research Subject

The subject of research utilized on this study is pediatric patient already diagnosed with HIV by a doctor and is undergoing treatment at the pediatric polyclinic in Dr. Moewardi General Hospital. The inclusion criteria includes: Pediatric patient with the ages between 8-18 years old who had been diagnosed with HIV and is undergoing ARV therapy with the minimum duration of six months. As for the exclusion criteria includes: pediatric patient experiencing acute physical discomfort resulting the subject to be ineligible to take part as respondent to this research and pediatric patient who declined to be a respondent for this research. The number of samples on this research is determined with the Slovin formula which produced the number of 34 samples required for the completion of this research. The sampling technique utilized on this research is the non-probability sampling technique with purposive sampling method. The purposive sampling utilized on this research is conducted by taking research subjects based on the previously regulated inclusion and exclusion

criteria for this research. The child patient selected as sample for this research subsequently classified into child patient with high, medium and low medication adherence groups. The life quality of the subject of this research also subsequently classified into both good life quality and poor life quality. The program utilized to analyze the data presented on this research is Statistical Product and Service Solution (SPSS) 26.0 for Windows. Bivariate analysis is utilized to provide explanation to the correlation between two variables. To discover the correlation between ARV therapy medication adherence and life quality, the author of this research utilized statistical test of chi-square test. Meanwhile, multivariate analysis uses binary logistic regression analysis.

All actions conducted for this research has been approved by the health research ethics committee at Dr. Moewardi General Hospital and has been permitted with an ethical clearance letter No:1089/VII/HREC/2022.

RESULT

A. Research Data Result

The subject of this research is pediatric patient diagnosed with HIV and is undergoing treatment at Dr. Moewardi General Hospital Surakarta with the age ranging between 8-18 years old. Data collection was conducted between September-October 2022. The number of research is provided on this research is 34 samples.

Table 1. Characteristics of Research Subject Pediatric Patients with HIV/AIDS

Characteristic	Frequency (n)	Percentage (%)
Age		
8-12 years old	19	55.9%
13-18 years old	15	44.1%
Gender		
Male	16	47.1%
Female	18	52.9%
Duration of ART		
>10 years	2	5.9%
≤10 years	32	94.12%
ARV Therapy Adherence		
High	10	29.4%
Medium	20	58.8%
Low	4	11.8%
Quality of Life		
Good	21	61.8%
Poor	13	38.2%

Based on the information displayed on Table 1, it is evident that the research subject with the age group between 8 to 12 years predominate the age category with the total number of 19 children (55.9%). Additionally, the gender category conveys that the number of females exceeded the number of males serving as the subject to this research with the total number of 19 female children (58.8%). Furthermore, the therapy duration category reveals that the majority of the children had spent <10 years for their therapy duration with the total number of 32 children (94.1%). Subsequently, the medication adherence category reveals that the children with medium

adherence dominated this category with the total number of 20 children (58.8%). Lastly, the majority of the research subject has good life quality with the total number of 21 children (61.8%).

Table 2. The Characteristics of Pediatric Patient with HIV/AIDS According to Life Quality Based on PedsQL™ Assessment

ARV Therapy Adherence	Quality of Life based on PedsQL™ Assessment				Total
	Good		Poor		
	N	%	N	%	
High	10	100%	0	0%	10
Medium	10	50%	10	50%	20
Low	1	25%	3	75%	4
Total	21	61.8%	13	38.2%	34

Based on Table 2, it is observable that all research subject with high level of medication adherence has good quality of life and none of the research subject has poor quality of life. Additionally, the research subject with medium level of medication adherence recorded 50% of the research has good quality of life and the remaining 50% has poor quality of life. Furthermore, the majority of the research subject with low level of medication adherence has poor quality of life with the total percentage of 75%.

Table 3. Quality of Life Score of HIV/AIDS Pediatric Patients based on PedsQL™ Assessment

ARV Therapy Adherence	Quality of Life based on PedsQL™ Assessment					
	Good			Poor		
	Min	Max	Mean	Min	Max	Mean
High						
Physical	86	100	91.6			
Emotion	70	100	90			
Social	87.5	100	95.5			
School	55	100	80.8			
Score total	81.5	99.5	89.7			
Medium						
Physical	76.7	96.9	88.1	42.2	87.5	72.8
Emotion	65	90	77.8	20	75	53
Social	77.5	100	88.5	50	95	62.8
School	52.5	77.5	64	20	67.5	46.5
Score total	73.9	85.3	80.7	48.4	66.3	60.6
Low						
Physical	78.1	78.1	78.1	18.8	76.6	50
Emotion	80	80	80	35	62.5	50.8
Social	70	70	70	52.5	60	56.7
School	67.5	67.5	67.5	50	60	55
Score total	74.5	74.5	74.5	43.5	59.2	52.7

B. Statistical Analysis

Based on Table 4, it is discovered that the interpretation result for hypothesis test for correlation is based on the value of P-value. If the calculation in bivariate analysis shows the value of $p < 0.05$ it means there is a significant correlation between both variables. The results of bivariate test shows a significant correlation between ARV therapy adherence ($p=0.008$) and age ($p=0.020$) to the quality of life of children with HIV/AIDS in Dr. Moewardi General Hospital Surakarta. Meanwhile, other variables such as gender ($p=0.134$) and duration of ARV ($p=0.724$) shows the absence of correlation to quality of life.

Table 4. Bivariate Analysis

	Quality of Life		P-Value
	Good	Poor	
ARV Treatment Adherence			
High	10	0	0.008
Medium	10	10	
Low	1	3	
Age			
8-12 years old	15	4	0.020
13-18 years old	6	9	
Gender			
Male	12	4	0.134
Female	9	9	
Duration of ART			
>10 years	1	1	0.724
≤10 years	20	12	

The variables that has the p-value of <0.25 is eligible for multivariate analysis which means the variables that qualified for this analysis is ARV medication adherence variable, age variable and gender variable. Based on Table 5, it clearly indicates that medical adherence (X_1) has the significance value 0.029 ($0.029 < 0,05$) which implies that medication adherence significantly affects the quality of life of the child. Meanwhile, age (X_2) and gender (x_3) has the significance value greater than 0,05 which implies that age and gender does not significantly affect the life quality of the child.

Table 5. Multivariate Analysis

Variable	Koefisien	P-Value	OR
ARV Therapy Adherence	2.494	0.029	12.106
Age	1.442	0.119	4.227
Gender	1.333	0.161	3.793
Constant	-9.625	0.008	0.000

DISCUSSIONS

The Effect of ARV Medical Adherence on Quality of Life

The result obtained from chi-square test between medication adherence and quality of life is $p=0.008$ ($p<0.05$). The acquired value indicates the presence of significant correlation between both variables. The results is in accordance with a study conducted in Sierra Leone, West Africa which suggested that one of the factor that specifically affects the physical improvement of the child's life quality is adherence in the ARV therapy.¹⁰ High medication adherence can reduce the rate of viral replication, reduce the incidence of resistance to ART, reduce the risk of HIV transmission, and improve clinical health and immunological conditions.¹¹

The Effect of Age on Quality of Life

The result obtained from chi-square test between age and quality of life is $p=0.020$ ($p<0.05$). The acquired value indicates the presence of significant correlation between both variables. The result is in accordance with a study conducted in Indonesia which suggested that age has significant influence in the life quality with the value of $p=0.01$ ($p<0.05$). Older child have longer diagnosis period where both factors will aggravate their quality of life. In addition, older child have better comprehension about HIV and how the disease affects their social life.⁷

The Effect of Gender on Quality of Life

The result obtained from chi-square test between gender and quality of life is $p=0.134$ ($p>0.05$). This indicates the absence of significant correlation between the quality of life of a child and gender variable. Similar findings was also found on a research published by Aурpibul et al (2016) which measures the life quality of a child living with HIV, without HIV and hematology malignancy. The research did not acknowledge any significant correlation between gender and quality of life.¹² Other research conducted by Gupta et al. (2013) in India summarizes the absence of significant correlation ($p=0.44$, $p>0.05$) between gender and the quality of life of a child living with HIV/AIDS.¹³ A study conducted by Adnyana et al. (2019) in Indonesia indicates that gender does not affect the quality of life of pediatric patient with HIV/AIDS.⁷ This may be attributable to the demands of gender roles expectations in the globalization era and the presence of modification in supporting factors.

The Effect of Duration of ARV on Quality of Life

The result obtained from chi-square test between therapy duration and quality of life is $p=0.724$. This indicates the absence of significant correlation between the quality of life of a child and duration of therapy. The results is in accordance with a study conducted by Aурpibul et al (2016) in Thailand which summarized that the duration of therapy does not affect the quality of life of adolescents living with HIV/AIDS.¹¹ However, a research conducted by Salako et al. (2020) opposed the idea and conveyed the finding of a significant correlation between the ARV therapy duration and the quality of life of the child.¹⁴ This insignificant result may be enabled from other factors such as medication adherence which means the patient has good quality of life due to high level of medication adherence regardless of the short period of treatment in the ARV therapy.

The Effect of Medical Adherence, Age, and Gender on Quality of Life

After conducting multivariate analysis using binary logistic regression analysis, the data shows that medication adherence has more significant correlation with quality of life with P-Value 0.029 ($p<0.05$) compared to correlation with age and gender with P-Value >0.05 . This finding is in accordance with the theory that medication adherence is the key success factor of HIV/AIDS treatment which brings impact to the quality of life of the patients. Research suggests that to reach maximum viral suppression requires high compliance of consuming 95% doses of medication given in ARV therapy, if the patient constantly forgetting to consume his medicine this might potentially increase the risk of failure in ARV therapy.⁸

CONCLUSION

There is significant correlation between antiretroviral therapy adherence and quality of life in children with HIV/AIDS at Dr. Moewardi General Hospital Surakarta Indonesia

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