



DETERMINANT FACTORS AFFECTING QUALITY OF LIFE OF CHILDREN WITH HIV/AIDS

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Abstract: HIV/AIDS causes physical problems, such as recurrent infections, growth disorders and malnutrition. HIV/AIDS also causes psychosocial problems, such as being shunned by friends and getting discriminatory behavior. All of the problems described earlier affects children's mental growth and development which will affect the quality of life of children with HIV/AIDS.

This research is a cross sectional study, conducted at the Intermediate Care Unit of Infection Disease of Children Outpatient Clinic in Dr. Soetomo General Hospital Surabaya and Voluntary Counselling and Testing Outpatient Clinic in Gresik General Hospital, Probolinggo General Hospital and Trenggalek General Hospital in November 2019-May 2020. Data collected was descriptively, then statistically analyzed by bivariate and multivariate analysis.

According to bivariate analysis, factors significantly related to quality of life of children with HIV/AIDS were age, monthly caregiver income, distance between diagnosis and therapy, immunological status, nutritional status and treatment adherence. Multivariate analysis showed that age ($p=0,014$, Odds Ratio [OR] 18,780, confidence interval [CI] 1,810-194,844) and treatment adherence ($p=0,010$, OR 7,823, CI 1,631-37,516) had a significant relationship with the quality of life of children with HIV/AIDS ($p < 0.05$).

In conclusion, age, monthly caregiver income, distance between diagnosis and therapy, immunological status, nutritional status and treatment adherence are significantly related to the quality of life of children with HIV/AIDS. Age and treatment adherence have the most significant relation with the quality of life of children with HIV/AIDS.

Keywords - HIV infection, determinant factors, quality of life.

I. INTRODUCTION

Children with HIV/AIDS encounter some problems including physical, mental and social problems. Physically, children may experience recurrent infection, malnutrition, and growth disturbance. Children also may face mental problem, such as unconfident, fear, depression, anxiety, anger, desperation, social withdrawal or other emotions. Unsupportive social environment may give them discriminative behavior, excommunication, stigmatization, and rejection. Mental and social problems may cause distress and decrease of immune system that may worsen their condition.^[1,2]

Children's parents may also face problems in rising their children due to recurrent infection, growth disturbance, malnutrition, sadness, rejection, denial, guilt, anxiety, anger and other emotional feelings. Lack of affection given to children with HIV/AIDS may worsen children's condition.^[1,4]

Previous researches has analyzed several variables that may affect quality of life of children with HIV/AIDS. Nevertheless, similar research is still hard to find in Indonesia. Therefore, this research was held to find determinant factors influencing the quality of life of children with HIV/AIDS so that intervention can be given to increase the quality of life.

II. MATERIAL AND METHODS

This research used cross sectional study and held in Dr. Soetomo General Hospital in Surabaya, Gresik General Hospital, Probolinggo General Hospital, and Trenggalek General Hospital from November, 2019 to May, 2020.

Sampling method used was total sampling technique, including pediatric HIV/AIDS patients meeting certain criteria. The inclusion criteria were children that had been diagnosed with HIV/AIDS, had results of CD4 test in the last 6 months, were able to fill PedsQL questionnaire and agreed to sign the informed consent form. The exclusion criteria were patients that had other chronic disease, had no CD4 test results in the last 6 month, and only fill less than half of PedsQL questions.

The independent variables analyzed were age, sex, caretakers' income, caretakers' education, caretakers' job, first diagnosis, duration between being diagnosed and getting therapy, immunodeficiency, nutritional status, stage when diagnosed, adherence to therapy, availability of medical center, care provider, facilities and supplies, occurrence of opportunistic infection when being diagnosed, and antiretroviral (ARV) category. The dependent variable is quality of life assessed using PedsQL.

Patients qualifying the criteria were listed. Information for consent were explained to the subject and caretakers and informed consent form was signed by the caretakers. Data needed were collected. Subsequently, subjects were asked to fill PedsQL questionnaire.

Data collected were descriptively analyzed and presented in the form of table and graph. Variable were analyzed statistically using Chi square. Variables proven significantly related to quality of life then analyzed using logistic regression test and presented as Odd Ratio. Subsequently, variables significantly correlated to Quality of Life was analyzed using determination and calibration test. Statistical analysis was done using SPSS.

III. RESULTS AND DISCUSSION

The sample size was 52. The results of descriptive analysis are shown in Table 1 and 2. The most of the subjects were male, more than 5 years old, lived outside Surabaya, and had good quality of life according to PedsQL questionnaire. This study has the advantage of being able to find out quickly how the quality of life of children with HIV / AIDS because it is done at one time, this study also focuses not only on children living in a big city such as Surabaya but several other cities such as Gresik, Trenggalek, and Probolinggo.

Table 1. The Descriptive Analysis of Characteristic of Children with HIV/AIDS.

Characteristic		Results	
		n	%
Sex	Male	28	53.8
	Female	24	46.2
Age	2-5 years old	9	17.3
	>5 years old	43	82.7
Address	Surabaya	8	15.4
	Outside Surabaya	44	84.6
PedsQL	Good	31	59.6
	Bad	21	40.4

Table 2. Descriptive analysis of Determinant Factors of Children with HIV/AIDS

Determinant factor		Results	
		n	%
Caretakers	Parents	29	55.8
	Not parents	23	44.2
Caretakers' education	Elementary school or not graduated	26	50
	Junior high school or higher	26	50
Caretakers' income	less than 1 million IDR	31	59.6
	1-5 million IDR	21	40.4
Caretakers' job	Housewife or unemployed	10	19.2
	Employed	42	80.8
First diagnosis	Less than 2 years ago	18	34.6
	More than 2 years ago	34	65.4
Duration between diagnosis and therapy	Less than 6 months	41	78.8
	More than 6 months	11	21.2
Immunodeficiency	None to mild	39	75
	Moderate to severe	13	25
Nutritional status	Good	31	59.6
	Bad	21	40.4
Stage when diagnosed	1-2	28	53.8
	3-4	24	46.2
Adherence to therapy	Good	38	73.1
	Bad	14	26.9
Medical care provider	Available	49	94.2
	Unavailable	3	5.8
Medical centers	Available	49	94.2
	Unavailable	3	5.8
Medical facilities and supplies	Available	49	94.2
	Unavailable	3	5.8
Opportunistic infection when diagnosed	Occurred	20	38.5
	Not occurred	32	61.5
ARV category	First line	50	96.2
	Second line	2	3.8

The most of the subjects were cared by parents. Their caretakers were mostly employed and have under 1 million IDR per month. Most of them was first diagnosed more than 2 years ago and treated less than 6 months after being diagnosed, have none to mild immunodeficiency, good nutritional status, first diagnosed with stage 1-2, good adherence to therapy, access to medical care provider, medical center, facilities, and supplies, and get first line of ARV therapy. Most of them have no opportunistic infection when diagnosed.

The results of bivariate analysis using Chi Square are shown in Table 3. Variables correlated to the quality of life has p value less than 0.05.

Table 3. The Results of Bivariate Analysis between the Determinant Factors and Quality of Life of Children with HIV/AIDS

Determinant factor		PedsQL		P value n	Odd ratio (CI 95%)
		Good	Bad		
Sex	Male	17 (54.8)	11 (52.3)	0.862	0.906 (0.298-2.751)
	Female	14 (45.1)	10 (47.6)		
Age	2-5 years old	1 (3.2)	8 (38)	0.001*	18.462 (2.090-164.046)
	>5 years old	30 (96.7)	13 (61.9)		
Domicile	Surabaya	6 (19.3)	2 (9.5)	0.335	2.280 (0.413-12.579)
	Outside Surabaya	25 (80.6)	19 (90.4)		
Caretakers	Parents	20 (64.5)	9 (42.8)	0.123	2.424 (0.779-7.542)
	Not parents	11 (35.4)	12 (57.1)		
Caretakers education	Elementary school or not graduated	13 (41.9)	13 (61.9)	0.158	2.250 (0.724-6.989)
	Junior high school or higher	18 (58)	8 (38)		
Caretakers income	less than 1 million IDR	14 (45.1)	17 (54.8)	0.010*	5,161 (1,408-18,912)
	1-5 million IDR	17 (54.8)	4 (45.1)		
Caretakers job	Housewife or unemployed	4 (12.9)	6 (28.5)	0.160	2.7 (0.657-11.102)
	Employed	27 (87)	15 (71.4)		
First diagnosis	Less than 2 years ago	9 (29)	9 (42.8)	0.304	1.833 (0.574-5.855)
	More than 2 years ago	22 (70.9)	12 (57.1)		
Duration between diagnosis and therapy	Less than 6 months	29 (93.5)	12 (57.1)	0.002*	0.092
	More than 6 months	2 (6.4)	9 (42.8)		
Immuno-deficiency	None to mild	28 (90.3)	11 (25.3)	0.002*	0.118 (0.027-0.511)
	Moderate to severe	3 (9.6)	10 (47.6)		
Nutritional status	Good	23 (74.1)	8 (38)	0.009*	4.673 (1.1417-15.401)
	Bad	8 (25.8)	13 (61.9)		
Stage when diagnosed	1-2	19 (61.2)	9 (42.8)	0.191	0.474 (0.154-1.461)
	3-4	12 (38.7)	12 (57.1)		
Adherence to therapy	Good	27 (87)	11 (52.3)	0.006*	3.136 (1.583-23.789)
	Bad	4 (12.9)	10 (47.6)		
Medical care provider	Available	30 (96.7)	19(90.4)	0.339	3.158 (0.268-37.270)
	Unavailable	1 (3.2)	2 (9.5)		
Medical centers	Available	30 (96.7)	19(90.4)	0.339	3.158 (0.268-37.270)
	Unavailable	1 (3.2)	2 (9.5)		
Medical facilities and supplies	Available	30 (96.7)	19(90.4)	0.339	3.158 (0.268-37.270)
	Unavailable	1 (3.2)	2 (9.5)		
Opportunistic infection when diagnosed	Occurred	11 (35.4)	9 (42.8)	0.592	0.733 (0.236-2.282)
	Not occurred	20 (64.5)	12 (57.10)		
ARV category	First line	30 (96.7)	20 (95.2)	0.777	0.667
	Second line	1 (3.2)	1 (4.7)		

According to Chi-square test, age, monthly caregiver income, distance between diagnosis and therapy, immunological status, nutritional status and treatment adherence had a significant relationship with PedsQL. With the increase of nutritional status, a child's immunity will also increase, this can improve the health of children with HIV / AIDS both physically and mentally so that can improve their quality of life. This study uses the latest CD4 / CD4% data and measurements of nutritional status were done at the time of sampling, so that we can find out the relationship of the patient's current immunological status and nutritional status with their current quality of life.

Those variables eventually underwent multivariate analysis using logistic regression test. Multivariate analysis results are shown in Table 4.

Table 4. Multivariate Analysis using Logistic Regression Test

	Variable	B	P value	OR	CI	
					Upper limit	Lower limit
Step 1 ^a	Age	3,048	0,042*	21,076	1,113	399,275
	Caretakers	0,706	0,466	2,027	0,303	13,555
	Caretakers' education	-0,628	0,498	0,534	0,087	3,276
	Caretakers' income	-1,469	0,138	0,230	0,033	1,600
	Caretakers' job	-0,951	0,439	0,386	0,035	4,288
	Duration between diagnosis and therapy	1,001	0,656	2,721	0,033	223,523
	Immunodeficiency	-0,283	0,890	0,753	0,013	42,200
	Nutritional status	0,841	0,336	2,319	0,418	12,865
	Stage when diagnosed	0,705	0,406	2,024	0,383	10,693
	Adherence to therapy	2,032	0,075*	7,632	0,816	71,403
	Constant	-3,536	0,089	0,029		
Step 8 ^a	Age	2,933	0,014*	18,780	1,810	194,844
	Caretakers' income	-1,286	0,094	0,276	0,061	1,245
	Adherence to therapy	2,057	0,010*	7,823	1,631	37,516
	Constant	-2,741	0,053	0,065		

The result of multivariate analysis using logistic regression test showed that age and patient's adherence to therapy plays significant role. This research found that children aged more than 5 years old had 18 times better Quality of Life compared to 2-5 years old and children with good adherence to therapy had 8 times better Quality of Life than bad adherence to therapy. This result was similar to previous study held by Burack.^[5]

Table 5. The Results of Determination and Calibration Test

Evaluation	Criteria	Results
Determination test	Nagelkerke R Squate test	47,1%
Calibration test	Hosmer-Lemeshow test	p = 0.884

Based on determination and calibration test, both of those factors had influence 47,1% towards the Quality of life of children with HIV/AIDS.

The majority of the study subjects were male and had a mean age of 8.2 ± 3.64 years. This is in accordance with the statistical description of new case finding of children with HIV/AIDS in Indonesia in 2020, where boys have a higher percentage than women (56.7% compared to 43.2%) with the majority aged less than 14 years.^[6]

This research found that the older the age, the higher is the quality of life. This result was similar with research held in Africa which children aged more than 5 years old had better quality of life and no psychosocial problems.^[7]

In previous study, the independent variables in this research had been observed and correlated to the quality of life. A research found that the older the children, the better the quality of life and less psychosocial problem.^[6] Parents play important role in life to improve the quality of life of children with HIV/AIDS.^[8] Early diagnosis and ARV therapy has proven useful for prevention, clinical benefit, increases life expectancy, and reduces the incidence of HIV-related infections in the population.^[9,10] Starting ARVs at a higher CD4 or CD4% can maximize the potential for immunological recovery.^[10] Immunology and opportunistic infection also played role in the quality of life in pediatric HIV/AIDS.^[11] According to a study, nutritional status was also significantly correlated with quality of life. Children with HIV/AIDS who experience malnutrition have an impact on poor quality of life.^[12] Patient's adherence to therapy improves patient's condition and prevents infection, so that it improves the quality of life of children with HIV/AIDS.^[13] Research by Bolton-Moore showed that proper medical center, medical care workers and medical facilities can provide good outcomes for children with HIV/AIDS.^[14]

In this study, age and adherence to therapy has proven for having a role in patient's quality of life. Children aged more than 5 years old were proven to have 18 times better Quality of Life compared to 2-5 years old. This may be due to the fact that by the age increasing, the level of adherence to treatment will increase so that in the end it can also improve the Quality of Life of children with HIV / AIDS. This result was in accordance with study held by Hidayat.^[6]

Based on this research, children with good adherence to therapy had 8 times better Quality of Life than bad adherence to therapy. Adherence to therapy is a complex health behavior influenced by drug regimens, patient and family factors, and patient-medical personnel relationships.^[13] The better patient's adherence to therapy, the higher success rate in therapy. Therefore, the quality of life of children with HIV/AIDS will improve. In contrast, bad adherence to therapy will cause side effects related to ARVs and immunological and viral complication, which will lead to a decrease in quality of life.^[15]

Despite of the results, this research still has some weakness. Bias may be caused by subjectivity due to interview. Besides, this study has not excluded all chronic diseases so it is very likely that it can affect the quality of life. Last, this research was only conducted at one time so that the subjects were unable to observe in a certain period.

IV. CONCLUSION

Mostly of children with HIV/AIDS who have received ARV therapy have a good quality of life. Age, monthly caregiver income, distance between diagnosis and therapy, immunological status, nutritional status and treatment adherence are significantly related to the quality of life of children with HIV/AIDS. Age and treatment adherence have the most significant relation with the quality of life of children with HIV/AIDS.

V. CONFLICT OF INTEREST

There is no conflict of interest.

VI. FUNDING

No funding was earned.

VII. ETHICAL CLEARANCE

Ethical clearance was obtained from the Research Ethical Clearance Committee of Dr. Soetomo General Hospital No. 1607/KEPK/X/2019

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