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ORIGINAL RESEARCH

THE RELATIONSHIP OF BASIC CLINICAL STATUS WITH THE QUALITY OF LIFE OF HIV AND AIDS PATIENTS

Hubungan Status Klinis Dasar dengan Kualitas Hidup Pasien HIV dan AIDS

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ABSTRACT

Background: The success of individual antiretroviral drug (ARV) treatment in patients with human immunodeficiency virus (HIV) and acquired immune deficiency syndrome (AIDS) was determined by conducting a routine evaluation of the patients' Cluster of Differentiation 4 (CD4) count. The indicators used to measure the success of the HIV and AIDS treatment were mortality, mobility, and quality of life (QoL). **Purpose**: The purpose of this research was to analyze the relationship between clinical status (smoking status, duration of ARV therapy, the CD4 count, and body mass index [BMI]) and the QoL of patients with HIV and AIDS who were stable during treatment. **Methods**: This type of research was quantitative analytical research with a cross-sectional design. This research was conducted at Dr. Soetomo Hospital, Surabaya, from September to November 2017. The study population was patients with HIV and AIDS in Dr. Soetomo Hospital, Surabaya. The research sample was taken by purposive sampling with the inclusion criteria being patients with HIV and AIDS who had been treated for ≥6 months with adherence ≥95% and who came directly to the hospital. **Results**: The majority of respondents were female (53.36%), junior/senior high school graduates (66.67%), married (62.22%), non-smoking (75.56%), had undergone ARV therapy for ±10 years (77.78%), and had a QoL in the adequate category (62.22%). The basic clinical status with a significant relationship with the respondents' QoL were the CD4 count (p = 0.00) and BMI (p = 0.00). **Conclusion**: There was a relationship of the CD4 count and BMI with the QoL of the patients with HIV and AIDS.

ABSTRACT

Latar Belakang:*Evaluasi keberhasilan pengobatan Anti Retroviral Virus (ARV) secara perorangan pada pasien dengan HIV / AIDS adalah dengan melakukan pemeriksaan rutin jumlah CD4 pasien. Indikator yang digunakan sebagai tolok ukur keberhasilan*

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pengobatan pada penyakit HIV AIDS adalah angka mortalitas, morbiditas, danQuality of Life(QoL) atau kualitashidup. ***Tujuan****: Penelitian ini bertujuan untuk menganalisis hubungan antara status klinis (status merokok, lama ARV, jumlah CD4 dan BMI) dengan kualitas hidup pasien HIV/AIDS yang sudah stabil selama pengobatan.* ***Metode****: Jenis penelitian ini adalah penelitian analitik kuantitatif dengan rancang bangun cross sectional. Penelitian ini dilaksanakan di RSUD Dr. Soetomo Surabaya pada bulan September-November 2017. Populasi penelitian adalah pasien HIV AIDS di RSUD Dr. Soetomo Surabaya. Responden untuk penelitian ini diambil dengan purposive sampling dengan criteria inklusi pasien HIV/AIDS yang sudah berobat lebih dari ≥6 bulan, dengan adherence ≥95% dan datang secara langsung ke rumah sakit.* ***Hasil****: Mayoritas responden berjenis kelamin perempuan (53,36%), berpendidikan menengah (SMP/SMA) (66,67%), berstatus menikah (62,22%), tidak merokok (75,56%), sudah menjalani terapi ARV ± 10 tahun (77,78%) dan memiliki kualitas hidup berada pada kategori cukup (62,22%). Status klinis dasar yang memiliki hubungan signifikan dengan kualitas hidup responden adalah jumlah CD4 (p=0,01) dan BMI (p=0,01).* ***Kesimpulan****: Terdapat hubungan antara jumlah CD4 dan BMI dengan kualitas hidup pasien HIV/AIDS.*

INTRODUCTION

Human immunodeficiency virus (HIV) is an infection by a virus that attacks human immunity; if it continues, the infection will cause a collection of symptoms called acquired immune deficiency syndrome (AIDS). Cases of HIV and AIDS are showing increasing numbers, both in the world and in Indonesia in East Java and Surabaya. In 2016, East Java ranked number one with the highest HIV cases in Indonesia (Xia et al., 2017).

Factors of HIV and AIDS transmission in Indonesia and several other countries in the world are Men who have Sex with Men (MSM), injecting drug use, and other factors such as tattoos and transmission from mother to child. Specific strategies are needed to address the trend of HIV and AIDS transmission (Kumar, 2016).

Currently, HIV and AIDS is one of the targets of the sustainable development goals (SDGs) (Wahyuningsih, 2018; WHO, 2015). The government has also regulated the issue of HIV and AIDS by issuing Republic of Indonesia Decree No. 782 of 2011 concerning the Referral Hospital for People with HIV and AIDS (PLWHA), which appointed Dr. Soetomo Hospital as the final referral hospital for PLWHA in East Java (Minister of Health RI, 2011).

At present, HIV and AIDS cannot be cured but can be controlled by taking antiretroviral drugs (ARVs) regularly for one's lifetime. The results of a cohort study at Regional Public Hospital (RSUD) Dr. Soetomo within 2011–2016 showed decreased mortality and morbidity if PLWHA routinely consume ARVs. The disease is a chronic infection that, if managed properly, will be able to maintain the quality of life of PLWHA. Indicators used as benchmarks for the success of HIV/AIDS treatment are mortality, mobility, and quality of life (QoL) (Minister of Health RI, 2014).

Quality of life is a term used to indicate wellbeing, which includes happiness and life satisfaction of someone who is thoroughly identified. Things that affect the QoL of PLHIV patients are physical health conditions, access to services to get ARVs, psychological and social support, survival strategies, spirituality, and psychological comorbidities due to the stigma and discrimination that greatly affect perceptions. The World Health Organization (WHO) translates QoL as a person's perception of their position in culture and value systems to then form goals, standards, expectations, and life concerns (Muhammad, Shatri, Djoerban, & Abdullah, 2017).

The current management of HIV is the consumption of ARVs for life following the dose

determined by HIV service doctors. Lifelong ARV consumption requires very high adherence. Patient adherence must always be monitored and evaluated routinely at every visit to a health care facility. Guidelines for ARV management state that ARV adherence is classified into three levels, namely adherence ≥95% (≤3 instances of not taking the prescribed ARV doses), adherence 80%–95% (>3 to <12 instances of not taking the prescribed ARV doses), and adherence ≤80% (≥12 instances of not taking the prescribed ARV doses) (Minister of Health RI, 2014).

The provision of information about HIV and AIDS must be clear. The provision of information can be done through counseling. Counseling is very necessary for HIV and AIDS, especially for the initiation of ARV therapy. Information needed by patients to adhere to the dose of ARV consumption is about concrete evidence of the success of antiretroviral therapy (ART) (Masyfufah, 2016). The success of ART can be measured by measuring the QoL and the basic clinical status of patients with HIV and AIDS (functional status, weight, and CD4 count) (Minister of Health RI, 2014). Many previous studies compared the QoL between patients with HIV who had and had not yet taken ARV therapy, but there is no research measuring the QoL of patients with HIV who have taken ARVs for at least six months at RSUD Dr. Soetomo. The results of the observations in several cases showed that patients with HIV at RSUD Dr. Soetomo have a good functional status but low clinical status (body weight). This study aimed to analyze the relationship between clinical status and the QoL of patients with HIV and AIDS who stabilized during the treatment period.

METHODS

This type of research was a quantitative analytic cross-sectional design. This research was conducted at Dr. Soetomo Hospital, Surabaya, from September to November 2017. The study population was patients with HIV and AIDS at RSUD Dr. Soetomo Hospital. The samples were taken by purposive sampling, with the inclusion criteria of patients with HIV/AIDS who had been treated for more than six months with adherence ≥95% and who had come directly to the HIV and AIDS outpatient service at Dr. Soetomo. Outpatients are an uncertain population or infinite, so the sample calculation was done using the proportion estimation method, resulting in 45 respondents.

The instrument used in this study was the QoL questionnaire formulated by WHO which was WHO-Quality of Life-Bref (WHOQOL-BREF). The data collection was carried out by interviews and observations of medical records. The variables studied were respondent characteristics including gender, education level, marital status, smoking status, and length of ARV treatment. The second variable was the clinical status, which included the body mass index (BMI), functional status, and CD4 cell count. The third variable was the QoL as measured using the WHOQOL-BREF questionnaire. All data, except the CD4 cell counts, were collected using a questionnaire that was given to the respondents (primary data). The variable CD4 cell counts were taken from the latest CD4 data contained in the respondents' medical records.

The characteristic variables were determined through a questionnaire that was given to the respondents and included sex, categorized as male and female. Education was the last formal school level, categorized as basic education (not going to school, dropping out in elementary school graduating elementary school), middle education (junior high school or high school), and higher education (graduating college with either a diploma or undergraduate degree or a higher level). Marital status based on the respondents' confessions was categorized into married, divorced (dead or alive), and single. Smoking status was based on the respondents' categorization of smoking and not smoking. The variable duration of ART could be divided into 0–6 months, 7–12 months, 13–120 months, and 121–240 months.

The clinical status variables consisted of BMI, functional status, and CD4 cell count. The BMI data were obtained by measuring the respondents' weight and height directly and then calculated using the formula weight (kg)/height (m2). Thus, BMI could be categorized into low BMI (<18), normal (18.50–24.90), pre-obesity (25–29.90), obesity level one (30–34.90), obesity level two (35–39.90), and obesity level three (>40) with units kg/m2. The functional status was the physical condition of the respondents when they came to health facilities, categorized as normal if they could come independently, ambulatory if they needed help, and lying down if they could not do anything. The variable CD4 cell counts were examined in a laboratory, and the results were recorded in a medical record and then taken as data. The data obtained were categorized into CD4 <200, CD4 200–349, and CD4 ≥350 μ/l.

The last variable was the QoL of the respondents, which was asked using the WHOQOL-BREF questionnaire. This questionnaire consisted of four aspects: physical, psychological, social, and environmental relations. The measurement results were categorized into good (score 66.7–100), moderate (score 33.40–66.60), and bad (score 0–33.30). The data processing was done by doing a descriptive analysis in the form of cross-tabulation and Kendall's Tau-b non-parametric statistics (α = 0.05).

RESULTS

Characteristics of Respondents

Table 1 shows the data of the characteristics of the patients who were research respondents. The total number of respondents who met the inclusion criteria was 45. The majority of respondents were female (53.36%), had middle education (66.67%), were married (62.22%), did not smoke (75.56%), had ARV therapy for ±10 years (77.78%), and had a QoL in the moderate category (62.22%). The shortest treatment period of the respondents was 5.70 months (towards six months), while the longest treatment period of the respondents was 168 months or 14 years.

Table 1
Characteristics of Respondents

Variable	n	%
Sex		
Male	21	46.67
Female	24	53.33
Level of education		
Basic education	6	13.33
Middle education	30	66.67
Higher education	9	20.00
Marital status		
Married	28	62.22
Single	10	22.22
Divorced	7	15.56
Smoking Status		
Smoke	11	24.44
Do not smoke	34	75.56
Duration of ART (month)		
0 – 6	1	2.22
7 – 12	3	6.67
13 – 120	35	77.78
121 – 240	6	13.33
Range (5,07 – 168,43)		
Mean±SD (56,43±43,58)		
Total	45	100.00

Clinical Status of Respondents

Table 2 shows the clinical status of the respondents, including their BMI, functional status, and CD4 cell count. Most respondents had a normal BMI. The variation of the respondents' BMI was quite interesting because there were wide variations, ranging from low BMI (15.32 kg/m^2) to obesity level one (32.85 kg/m^2). It appears that patients with HIV are not always have low BMI and some are obese.

The functional status of the respondents showed that 100% of the respondents were functioning. The functioning in question was that the respondents did not experience obstacles in carrying out daily activities. All respondents in this study were able to come to the hospital independently or without the help of others.

From the CD4 cell count, it could be seen that as many as 40% of the respondents had a low CD4 cell count (<199 µ/l). The respondents' CD4 counts were almost proportional if categorized into three parts, namely low, medium, and high. The respondents' CD4 cell counts had a large variation, from 3 µ/l to 773 µ/l (Table 2).

Table 2
Distribution of Basic Clinical Status of Respondents

Variable	n	%
***Body Mass Index* (BMI) (kg/m^2)**		
Low	12	26.67
Normal	27	53.33
Pre-Obesity	4	8.89
Obesity level one	2	4.44
Obesity level two	0	0.00
Obesity level three	0	0.00
Range (15,32 – 32,85 kg/m^2)		
Mean±SD (21,84±3,9)		
Functional Status		
Normal	45	100.00
Ambulatory	0	0.00
Lying down	0	0.00
CD4 cell count (µ / l)		
<199	18	40.00
200-349	14	31.11
>350 µ/l	13	28.89
Range (3 – 773 µ/l)		
Mean±SD (281,98±194,72)		
Total	45	100.00

QoL of Respondents

The measurement of the QoL of the respondents was carried out using the WHOQOL-BREF questionnaire that had been validated by other researchers. The QoL of the respondents was

generally in the good category (68.89%). This was then supported by 60.00% of respondents feeling satisfied with their health (Table 3).

The four aspects indicated that the majority of respondents stated the quality in the psychology and social relations aspects was good, namely 64.44% and 51.11% respectively. The quality was sufficient for the physical and environmental aspects at 84.44% and 62.22%, respectively. The QoL of the respondents was in the sufficient category (62.22%) when calculated by doing a composite of the physical, psychological, social, and environmental aspects (Table 3).

Relationship of Characteristics and Clinical Status to Respondents' Quality of Life

Table 4 shows the result of the analysis of the relationship of the smoking status factors, duration of ARV treatment, CD4 cell count, and BMI with the QoL of respondents. The variables that showed a significant relationship were the CD4 cell count ($p = 0.00$) and BMI ($p = 0.01$).

DISCUSSION

Characteristics

The results of current study mentioned that the number of male respondents was lower than that of female respondents, while the results of the observations showed that the number of male patients was higher than that of female patients. This is because female patients are easier to find because usually female patients wait in the waiting room of an outpatient clinic while male patients tend to go to the canteen if the queue is still long. The education level of the average respondent was secondary education, both junior high school and senior high school; respondents with higher education ranked second. It has been proven that HIV and AIDS can attack in all educational settings (Larrabee, 2016). The majority of respondents were married (28 people [62.22%]). Patients with a chronic disease who have a partner will tend to have better life support than unmarried patients (Tedrus, Fonseca, & Pereira, 2015).

Most respondents stated that they did not smoke (34 people [75.56%]). These respondents did not smoke because they were aware of the dangers of smoking. As a condition of decreased immunity, HIV makes patients more vulnerable to ride infections or opportunistic infections (Putri, Darwin, & Efrida, 2015). If the respondents added damage to their body with cigarettes, then the decline in immunity will be more severe (Bekele et al., 2017; Gamarel et al., 2017).

The majority of respondents had been on ARV therapy for a long time, i.e., 1–20 years. The study criteria were HIV patients with ART for more than six months, so the participating respondents met these requirements. This study also proved that the lifespan of patients with HIV and AIDS can reach 20 years from the start of diagnosis. One of the factors that has caused the lifespan of patients with HIV and AIDS to be longer is the existence of a government program for treatment with ART so that HIV patients can get ARV drugs for free at the health facility closest to their domicile area. The implementation of the ART program has shown significant results. This is what caused the government to develop an ART program by holding a Strategic Use for ARV (SUFA) program (Unzila, Nadhiroh, & Triyono, 2017).

This SUFA program is considered effective because it can increase the survival period of patients with HIV/AIDS by 4–12 years. Without the SUFA program, the change from HIV infection to AIDS occurs in around 9–10 years; after HIV turns into AIDS, patients will only last about 2 – 9 months (Baker et al., 2016; Hoenigl, Chaillon, & Little, 2016; Minister of Health RI, 2014; The Insight Start Study Group, 2015).

Functional Status

The effectiveness of ARVs also appears in the functional status of HIV and AIDS patients. The respondents in this current study all had a normal functional status. This was due to the second inclusion criterion in this study that patients taken as respondents had to come to the hospital themselves and allow interviews, so it is natural that all respondents had a normal functional status. This good functional status was not in line with the patients' BMI condition and CD4 cell count. The majority of BMI respondents in this current study were in the normal BMI category, and there was level-one obesity. The results of the observations at the hospital showed that most patients with HIV and AIDS had normal and low BMIs. This followed the respondents' CD4 counts, which showed <200 µ/l in as much as 40%; even the patients' minimum CD4 count was very low, at 3 µ/l (Sidibé et al., 2018).

Quality of life

The WHO still determines HIV and AIDS as one of the diseases that is the target of SDGs because many patients with HIV still have social problems such as stigma, poverty, or dropping out of work so that it affects their income, social

security, partner status, or even depression (WHO, 2015). These problems affect the activity and enthusiasm of the patients' lives. Another case with a health-related QoL, which better reflects changes in patients with HIV and AIDS, evaluated the patients' economy and care services and detected problems that might affect the development of the disease (Zhibin & Jiping, 2015).

The QoL of the respondents was generally included in the good category, at 68.89%. This was supported by the respondents' answers about their satisfaction with their health, as 60% of respondents stated that their current health was satisfying. These results were consistent with other studies that stated that low QoL occurs in patients with HIV and AIDS who have not yet received ART. The studies also mentioned that the level of QoL of patients who had taken ARVs was better than those who had not received ARV therapy (The Insight Start Study Group, 2015; Unzila, Nadhiroh, & Triyono, 2017). The results of the current study had the same conclusions as other studies that stated that the QoL of patients with HIV and AIDS who have received ART is included in the good and very good categories, but 43.33% of them had experienced depression. The patients with a low QoL had the characteristics of being under 44 years of age, women, not working (so they had a low income), and having a low clinical status. The low clinic status included problems with their lungs, fever, pain, depression, and CD4 counts <500 µ/l (Ferreira, Teixeira, Silveira, & Carneiro, 2018).

Tabel 3
QoL of Respondents

Variable	n	%
Quality of Life in General		
Very bad	0	0,00
Bad	0	0,00
Mediocre	8	17,78
Good	31	68,89
Very good	6	13,33
General Health Satisfaction		
Very unsatisfactory	0	0,00
Not satisfactory	0	0,00
Mediocre	7	15,56
Satisfactory	27	60,00
Very satisfactory	11	24,44
Physical quality		
Bad	0	0,00
Enough	38	84,44
Good	7	15,6
Psychological Quality		
Bad	0	0,00
Enough	16	35,56
Good	29	64,44
Quality of Social Relations		
Bad	0	0,00
Enough	22	48,89
Good	23	51,11
Quality of Environment		
Bad	0	0,00
Enough	28	62,22
Good	17	37,78
Quality of Life		
Bad	0	0,00
Enough	28	62,22
Good	17	37,78
Total	45	100,00

Tabel 4
Relationship of Smoking Status, Length of ART, CD4 Counts, and BMI with QoL of Respondents with HIV and AIDS in RSUD Dr. Soetomo

	Enough		Good		Total		*p*
	n	%	n	%	n	%	
Smoke							
Smoke	6	13.33	5	11.11	11	24.44	0.56
Do not smoke	22	48.89	12	26.67	34	75.56	
Duration of ART (months)							
0–6	0	0.00	1	2.22	1	2.22	0.28
7–12	1	2.22	2	4.44	3	6.67	
13–120	23	51.11	12	26.67	35	77.78	
121–240	4	8.89	2	4.44	6	13.33	
CD4 cell count (µ/l)							
<199	6	13.33	12	26.67	18	40.00	0.01
200-349	12	26.67	2	4.44	14	31.11	
>350	10	22.22	3	6.67	13	28.89	
***Body Mass Index* (BMI) (kg/m^2)**							
<18.50	3	6.67	9	20.00	12	26.67	0.01
18.60–24.90	20	44.44	7	15.56	27	60.00	
25–29.90	3	6.67	1	2.22	4	8.89	
30–34.90	2	4.44	0	0.00	2	4.44	
Total	28	62.22	17	37.78	45	100.00	

Uji Kendall Tau-b (α=0,05)

Other studies have also shown the same thing, namely that the majority of patients with HIV and AIDS have a good QoL. The physical and social aspects are related to the type of pain the patients have. The variable of not working is related to the physical and psychological aspects, while that related to the social aspects is a young age. Low income is related to the environmental aspects (Dasgupta, Mukhopadhyay, & Saha, 2018).

The aspects measured in the WHOQOL-BREF include physical aspects, namely the levels of energy, fatigue, pain, and discomfort and the quality of sleep and rest. Psychological aspects include the perception of the image of one's body and appearance, negative feelings, positive feelings, and self-esteem. The aspects of social relations include personal relationships, social support, and sexual activity. The last aspect is the environment, which includes financial capacity, freedom of life, physical security and protection, social security and health, easy access and quality, the environment around the house, opportunities to get new information and skills, ease of recreation and pleasure, physical environments such as exposure (pollution, noise, and climate), and transportation (Muhammad, Shatri, Djoerban, & Abdullah, 2017). Improving one's physical condition can be done by doing physical activities such as 30 minutes of light exercise three times per week, as recommended for people with diabetes mellitus.

The assessment of the results of the psychological aspects and social relations in this study was in the good category because the respondents always felt positive, i.e., they had accepted their illness and believed that they always maintained their health. This was also due to the inclusion criteria of this study, one of which was patients with a duration of ARV treatment of more than six months so that they had accepted the conditions of their illness (The Insight Start Study Group, 2015).

Regarding the results of the assessment on the aspects of social relations, the respondents in this study claimed to have good personal relationships because they had a partner, good social support that was open with those around them, and good sexual activity. The results of other studies also mentioned that psychological and social aspects have high value because they are supported by education, the amount of family financial income, age, marital status, and gender. This makes people with HIV and AIDS feel more loved and appreciated (Mustamu, Nurdin, & Pratiwi, 2019). Good social relations can protect patients with HIV and AIDS from the dangers of social discrimination (Rasoolinajad et al., 2018). Patients with chronic illness who have a partner will tend

to have better life support than unmarried patients (Tedrus, Fonseca, & Pereira, 2015).

One aspect that could not be seen in this measurement was the spiritual aspect. Spiritual aspects also have a significant value in the QoL of patients with HIV and AIDS (Superkertia, Astuti, & Lestari, 2016).

The QoL of the respondents in the physical and environmental aspects was included in the sufficient category. The physical aspects that were often complained about by respondents were tiredness, discomfort, and poor sleep and rest quality. The degree of pain in patients with HIV and AIDS is correlated with the QoL of the patients (da Silva, Bunn, Bertoni, Neves, & Traebert, 2013). The environmental aspects that were often complained about by respondents was health financing and referral system of Indonesia's Social Security Administrator for Health (BPJS). Research by Masyfufah et al (2018) stated that most of the patients made personal expense to get a treatment although they had BPJS. In their opinion, BPJS utilization was considered to be complicated because they had to go to the health facilities of first tier, second tier, then finally the third tier, which is RSUD Dr. Soetomo.

Patients with HIV and AIDS have almost the same QoL as lupus patients, especially in the physical aspects. The QoL of patients with lupus is in the quite good category, except in the aspects of pain, fatigue (physical), and dependence on others. Patients with HIV who are already stable can do their daily activities, whereas patients with lupus need help from others if the condition is already severe (Yanih, 2016).

Relationship of Characteristics and Clinical Status with Quality of Life

The composite results from the physical, psychological, social, and environmental aspects indicated that the QoL of the respondents was included in the sufficient category. This category was different from the respondents' acknowledgment of the question on their general QoL, which was included in the good category. This was due to the tendency of the respondents to say that their QoL was good when asked globally, but if asked in detail, it was found that something was lacking in their QoL.

These differences affected the results of the correlation tests on smoking status, duration of ART, CD4 cell count, and BMI. Common questions asked about the QoL indicated that there were no significant factors. This differed from the QoL variable if it was based on composite results from these four aspects. The correlation test results showed a significant relationship of the CD4 cell count and BMI with the QoL. Other studies have suggested that there is a significant and positive correlation between the CD4 cell count and weight gain so that the QoL of patients is also better. Direct or indirect damage to CD4+ T cells is very influential because CD4+ T cells are needed for the immune system to function properly (Sidibé et al., 2018). If HIV has killed CD4+ T cells so that the number of cells has shrunk to <200 µ/l blood, then immunity will be lost and, as a result, AIDS will occur. Acute HIV infection will progress to clinical latent infection, which is characterized by the onset of symptoms of early HIV infection. The infection becomes more complex, so it becomes AIDS (Minister of Health RI, 2014). Conditions like these cause HIV patients to lose weight, so they also effect a reduction in BMI (Aini, Rita, Indrati, & Wisaksana, 2014).

The CD4 cell count is influenced by the clinical stage of a patient's disease. Patients with clinical stage I have a higher CD4 cell count compared to those with clinical stage IV. This is caused by the increasingly complex opportunistic infections that occur in stage IV. The number of opportunistic infections that occur in stage IV is not related to the levels of antioxidants present in the body of patients with HIV and AIDS (Jali et al., 2017).

Research Limitations

The QoL questionnaire in this study was a WHO standard questionnaire, so no repeat validity testing was performed on the respondents in this study. Using the inclusion criteria, the respondents in this study had received antiretroviral treatment for more than six months and their adherence was good, so the patients' QoL variable was also included in the good category.

CONCLUSION

The QoL of the respondents was generally included in the category of "good" and they were also satisfied with their health. The majority of respondents stated the quality of the aspects of psychological and social relations was good, while the quality was sufficient for the physical and environmental aspects. The composite results from the four aspects were included in the sufficient category, with the lowest value being 55.77 and

the highest being 86.52. The basic clinical status of patients with HIV/AIDS related to the QoL were the CD4 cell count and BMI.

CONFLICT OF INTEREST

The authors declare that no conflict of interest in this study.

AUTHOR CONTRIBUTION

All authors participate actively in this article and are responsible for the content of the article. LM: Conceptualization, Writing- Original draft preparation, Methodology, Writing- Reviewing and Editing. EAT: Data curation, Supervision.

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