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RELATIONSHIP BETWEEN KNOWLEDGE LEVELS AND ATTITUDES WITH ADHERENCE TO ANTIRETROVIRAL (ARV) THERAPY OF HIV/AIDS PATIENTS IN RSUP Dr. KARIADI, SEMARANG

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ABSTRACT

Background: Antiretrovirals (ARV) are drugs that People Living with HIV/AIDS (PLWHA) take to enhance quality of life. Therapy adherence (>95%) is required to attain virologic suppression, prevent resistance, therapy failure, and death. Factors affecting adherence are the level of knowledge and attitude. **Objective:** This study aims to identify the relationship between knowledge level and attitude with adherence to ARV therapy of HIV/AIDS patients at RSUP Dr. Kariadi, Semarang. **Methods:** Analytical observational research with cross-sectional design using questionnaires, sampling method using purposive sampling. Adherence questionnaire using MARS-5, knowledge and attitude questionnaires were developed by the researcher, and validity and reliability tests were carried out. Univariate analysis using frequency distribution table, and bivariate analysis using Chi-Square test. **Results:** The level of knowledge of respondents was good at 88.30%, and poor at 11.70%. The attitude was good at 96.81%, and poor at 3.19%. The compliance was high at 65.96%, and low at 34.04%. A significant association was observed between the level of knowledge ($p = 0.028$) and attitude ($p = 0.014$) with adherence to ARV therapy. **Conclusion:** The majority of HIV/AIDS patients at RSUP Dr. Kariadi, Semarang, who received ARVs, the knowledge level was good, the attitude was good, and the adherence was high. There is a relationship between the level of knowledge and attitude with adherence to ARV therapy of HIV/AIDS patients at RSUP Dr. Kariadi, Semarang.

INTRODUCTION

HIV is a virus that destroys CD4 white blood cells that reduce the human body's immunity. In Indonesia, approximately 540,000 individuals are currently living with HIV, with 27,000 new infection, and 26,000 HIV-related deaths. The HIV mortality rate increased by 90% compared to 2010, while ARV therapy coverage has only reached 28%.[1] Semarang City as the area with the highest transmission rate in Central Java has 6,306 HIV positives and 564 AIDS positives in 2021.[1,2]

ARVs are drugs taken for life by PLWHA that aim to reduce morbidity and mortality, reduce HIV replication, increase CD4 count, and improve the quality of life of patient.[3] Adherence to ARV therapy is an important component to achieve optimal therapeutic success. High adherence, at least 95% of doses should not be missed in ARV therapy to achieve virologic suppression.[4]

Based on Lawrence Green's theory, predisposing factors that influence the tendency of individuals to change compliance behavior include knowledge, attitudes, beliefs, and adopted values.[5] Knowledge is a cognitive domain that is a consideration for patient action in making decisions in treatment, while attitude is a response to a stimulus in the form of a positive or negative reaction.[6]

Research on the relationship between knowledge level and attitude with adherence to ARV therapy for HIV patients in Semarang City is still limited, there are differences in questionnaire methods, and differences in research results in different regions There is a

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relationship between knowledge and patient adherence to ARV treatment in several previous studies, but the attitude variable has not been studied.[7–9]

METHODS

Analytic observational study with cross-sectional research design was conducted at Dr. Kariadi General Hospital, Semarang. The population in this study were HIV / AIDS patients at the hospital. Dr. Kariadi, Semarang Outpatient Clinic of Infection and Tropical Diseases. The sampling method used purposive sampling with a minimum sample size of 81 samples. Inclusion criteria were HIV/AIDS patients who received ARV therapy for at least 3 months, aged 18-65 years, and willing to become respondents. Exclusion criteria were patients with incomplete questionnaires and data, patients with psychiatric diagnoses, and health workers.

The adherence questionnaire using MARS-5, knowledge questionnaire and patient attitude were prepared by the researcher, then validity test was carried out with Pearson Product Moment Correlation (valid if R count> R table), and reliability test by comparing Cronbach's alpha value with the significant level used (reliable if Cronbach's alpha> 0.600). Primary data were questionnaire results, and secondary data were gathered from patients' medical record. Univariate analysis used frequency distribution tables, and bivariate analysis used the Chi-Square test (significant relationship if $p < 0.05$).

RESULTS

Characteristics of Respondents

Table I shows that there were 52 (55.32%) male and 42 (44.68%) female respondents. The late adult age group of 42 (44.68%) respondents with an age range of 36-45 years dominated the age group. Respondents with low education levels were 68 (72.34%) respondents, 26 (27.66%) other respondents reached high education levels. Most respondents worked as a private employee as many as 32 (34.04%) respondents, followed by housewives 20 (21.28%) respondents, and self-employed 14 (14.89%) respondents. Most respondents were patients who have had HIV for >5-10 years as many as 31 (32.98%) respondents. A total of 70 (74.47%) respondents received ARVs in the form of FDC (fixed dose combination), 24 (25.53%) other respondents received ARVs combipacks.

Table 1. Characteristics of respondents

Characteristics of Respondents	Frequency	%
Gender		
Male	52	55,32
Female	42	44,68
Age		
Late adolescence (18-25 years)	6	6,38
Early adult (26-35 years)	24	25,53
Late adult (36-45 years)	42	44,68
Early elderly (46-55 years)	10	10,64
Late elderly (56-65 years)	12	12,77
Education level		
Low	68	72,34
High	26	27,66
Occupation		
Private employee	32	34,04
Self-employed	14	14,89
Housewife	20	21,28
Student	2	2,13
Teaching staff	7	7,45
Agriculture/farming	2	2,13
Retired	2	2,13
Not employed	3	3,19
Others	12	12,77
Duration of HIV diagnosis		
3-6 months	4	4,26
>6-12 months	9	9,57
>1-3 years	14	14,89
>3-5 years	17	18,09
>5-10 years	31	32,98
>10 years	19	20,21
ARV drug type (based on complexity of drug quantity)		
FDC	70	74,47
TLD (Tenofovir, Lamivudine, Dolutegravir)	56	80
TLE (Tenofovir, Lamivudine, Efavirenz)	10	14,29
TLN (Tenofovir, Lamivudine, Nevirapine)	3	4,29
Lopivia	1	1,43
Combi pack	24	25,53
Duviral + Neviral	13	54,17
Duviral + Efavirenz	4	16,67
Emtrivir + Dolutegravir	3	12,5
Lopivia + Duviral	2	8,33
Emtrivir + Nevirapine	1	4,17
Lopivia + Emtrivir	1	4,17

The Knowledge Level of HIV/AIDS patients receiving ARV therapy

The frequency distribution of respondents' knowledge level is listed in Table 2. There were 83 (88.30%) respondents who had a good level of knowledge, and 11 (11.70%) other respondents had a poor level of knowledge.

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Table 2. Frequency distribution of knowledge level

Knowledge level	Frequency (%)
Good	83 (88,30%)
Poor	11 (11,70%)
Total	94 (100%)

Attitude of HIV/AIDS patients who receive ARV therapy

The frequency distribution of respondents' attitudes is listed in Table 3. The good attitude of respondents was 91 (96.81%) respondents, and the poor category was 3 (3.19%) respondents.

Table 3. Frequency distribution of attitude

Attitude	Frequency (%)
Good	91 (96,81%)
Poor	3 (3,19%)
Total	94 (100%)

Adherence of HIV/AIDS patients receiving ARV therapy

The frequency distribution of respondents' compliance is listed in Table 4 as follows. Most of the respondents demonstrated high adherence, accounting for 62 (65.96%) respondents, while 32 (34.04%) respondents exhibited low adherence.

Table 4. Frequency distribution of respondents' adherence

Adherence	Frequency (%)
High	62 (65,96%)
Low	32 (34,04%)
Total	94 (100%)

Relationship between knowledge level and adherence of HIV/AIDS patients receiving ARV therapy

The relationship between knowledge level and adherence is listed in Table 5 as follows. There is a significant relationship between knowledge level and compliance (p = 0.028).

Table 5. Relationship between knowledge level and adherence

		Adherence		Total	p value
		Low	High		
Knowledge Level	Poor	7	4	11	
	Good	25	58	83	0,028
	Total	32	62	94	

Relationship between attitude and adherence of HIV/AIDS patients receiving ARV therapy

The relationship between attitude and adherence is listed in Table 6 as follows. Attitude was found to be significantly associated with adherence (p = 0.014).

Table 6. Relationship between attitude and adherence

		Adherence		Total	p value
		Low	High		
Attitude	Poor	3	0	3	
	Good	29	62	91	0,014
Total		32	62	94	

DISCUSSION

This study was conducted at Dr. Kariadi Hospital, Semarang in November 2023 - January 2024. The sample analyzed according to inclusion and exclusion was 94 respondents. Respondents' characteristics were categorized based on gender, age, latest education, occupation, duration of HIV diagnosis, and type of ARV drugs (based on the complexity of the number of drugs) in Table I.

The characteristics of respondents based on gender were dominated by 52 (55.32%) male respondents. This is in accordance with the characteristics of HIV patients in Semarang City with a dominant male population of 71% in 2021. The high intensity of male sexual behavior and lack of concern for health compared to women, leads to a greater risk of exposure to HIV infection in men.[2] The dominant number of respondents belonged to the late adult group (44.68%) with an age range of 36-45 years. This is in accordance with the characteristics of HIV patients in Semarang City in 2021, which are dominated by PLWHA with productive ages of 25-49 years as much as 69.7%. Productive age has a greater risk of developing HIV along with the high intensity of risky sexual behavior, this is influenced by physical maturity, hormones, desire to explore, and social pressure.[1,2] The dominant number of respondents fell into the category of low education level, namely not attending school, elementary, junior high, or high school / vocational high school as many as 68 (72.34%) respondents, 26 (27.66%) other respondents reached high education levels, namely undergraduate and diploma. Education has a positive role in the level of knowledge, attitudes, and compliance to contribute positively to oneself.[5]

The dominant respondents worked as private employees (34.04%), followed by housewives (21.28%), and self-employed (14.89%). This is in accordance with the grouping of HIV patients in Indonesia based on occupation, which is dominated by non-professional workers (employees), housewives,

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self-employed, then other farmers and manual laborers.[10] Respondents' occupations categorized as others included freelance, security, ART, drivers, NGOs, and laborers. Work is a factor that affects the level of knowledge, through work a person gains knowledge and experience directly or indirectly.[5]

The dominant respondents were patients who have had HIV for >5-10 years with a total of 31 (32.98%) respondents. PLWHA with a longer duration of HIV diagnosis and treatment generally have more knowledge and attitudes that are accustomed to their condition, but have varied compliance. Previous research stated that there was no relationship between treatment duration and ARV therapy adherence.[11] In another study, loss to follow-up patients who received ARVs after several years, stopped ARV therapy because they were bored with the routine of taking medicine every day, and felt that their health had improved so they assumed they did not need to take ARVs anymore.[4,12] A total of 70 (74.47%) respondents predominantly received ARVs in the form of FDC, which is a fixed dose combination of several drugs in 1 tablet. Another 24 (25.53%) respondents received ARVs in the form of combi packs, which is a combination of 2 or more single drugs in separate tablets. The most widely used ARVs in the form of FDC are TLD as many as 56 (80%) prescriptions. FDC TLD is the firat line of ARV therapy in PLWHA according to WHO recommendations with rare side effects. FDC TLE remains the first line for PLWHA with TB co-infection and during women pregnancy.(13) The most consumed ARV in the form of a combi pack was Duviral + Neviral (54.17%). Duviral is a combination of Lamivudine and Zidovudine. Duviral + Neviral and Duviral + Efavirenz are first-line alternatives if the preferred guide is contraindicated or unavailable.[14] Side effects of drugs that many respondents complained about were itching due to Nevirapine side effects and dizziness due to Efavirenz side effects. Allergies, severe side effects, or resistance to one of the drug ingredients can lead to drug changes, including FDCs to combi packs and line changes, this has the potential to reduce patient medication adherence with a greater burden of taking drugs, so patients need adherence support.[3]

The frequency distribution of respondents' knowledge level is listed in Table II. The majority of respondents' knowledge level was good, totaling 83 (88.30%) respondents, and the level of knowledge was lacking 11 (11.70%) respondents. The average level of knowledge of respondents is good with a value of 67.39. The level of knowledge is influenced by age, education level, occupation, environment, and duration of ARV treatment.[5]

Attitude is a self-response to a stimulus or object, which can be positive (tendency to like or approach) or negative (tendency to avoid or hate).[5] The frequency distribution of respondents' attitudes is listed in Table III. The majority of respondents' attitudes was good, totaling 91 (96.81%) respondents. The average value of respondents' attitudes is 78.42, including in the good category. Respondents' attitudes can be influenced by experience, culture, habits, and environment, people who are considered important, mass media, and educational and religious institutions.[15]

Medication adherence is the patient's adherence to treatment therapy according to the rules given. Adherence to ARVs has a significant impact on virological suppression.[16] The frequency distribution of respondents' compliance is listed in Table IV. Measurement of patient medication compliance was carried out with the MARS-5 compliance questionnaire with a period of 1 month.[17,18] The majority of respondents' compliance was high (65.96%). The mean value of respondents' compliance was 23.74, indicating low compliance of patients at Dr. Kariadi Hospital.

ARV adherence is key to successful therapy. For pharmacists, adherence counselling is related to two things, fostering the patient's ability to take medication as directed and perform; and ensuring drug preparations are easily accessible to patients and do not drop out. The primary goal of counseling in Voluntary Counseling and Testing (VCT) is to establish a mutual understanding between the patient and the pharmacist, while also providing comprehensive information regarding the therapeutic process and potential challenges that may arise. This approach aims to foster effective collaboration among the physician, patient, and pharmacist to ensure optimal treatment outcomes.[3]

The relationship between knowledge level and adherence was tested using chi-square. The relationship between knowledge level and adherence is listed in Table V. There is a significant relationship between knowledge level and compliance ($p = 0.028$).

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This result is in accordance with previous research which states that the most influential factor with ARV therapy adherence is ARV therapy knowledge.(4,8,9) The level of knowledge of respondents is good with low adherence can be influenced by other factors that influence adherence including treatment factors such as regimen complexity and side effects, as well as health service access factors.[3]

A good level of knowledge forms high patient compliance, there are 58 (61.70%) respondents who have a good level of knowledge with high compliance. A poor level of knowledge affects low patient compliance, there are 7 (7.45%) respondents who have a poor level of knowledge with low compliance. The domain of the knowledge level questionnaire was developed based on the HIV patient therapy counselling material contained in Permenkes RI No. 87 of 2014 concerning Antiretroviral Treatment Guidelines. This questionnaire consists of 6 domains, there were about clinical and laboratory monitoring, drug interactions, side effects and their management, understanding the importance of adherence, knowledge about HIV and ARVs, and how to use ARV drug. The patient's knowledge level can be improved through education and counseling conducted by doctors, pharmacists, counselors, and peer mentors. Counseling materials in the form of basic patient knowledge related to HIV infection and ARV therapy that have been prepared by the Ministry of Health can be given again to support compliance with various media.

The relationship between attitude and adherence was tested using chi-square. The relationship between attitude and adherence is listed in Table VI. There is a significant relationship between attitude and compliance (p = 0.014). Attitude is a predisposing factor for adherence to ARV therapy for HIV / AIDS patients, attitude shows a response to a stimulus that contains an impetus for action.[5]

A good patient attitude forms high patient compliance, there are 62 (65.96%) respondents who have a good attitude with high compliance. Poor patient attitudes affect low patient compliance, there are 3 (3.19%) respondents with poor attitudes with low compliance. The domains on the attitude questionnaire are structured based on the 3 components of attitude consisting of cognitive (beliefs, perceptions), conative (motivation), and affective components (support). The cognitive component includes the domains beliefs and trust in ARVs and Perception of benefits and risks, the conative component includes the domain motivation for adherence, and the affective component includes support and environment.

Most respondents (78.72%) strongly agreed on the statement "I am motivated to be compliant in taking ARV drugs every day". Respondents predominantly (45.74%) agreed on the statement "I get support from pharmacists and medical personnel in the form of knowledge about ARV drugs that is optimal". The negative statement "I feel embarrassed if I am considered sick by others because I take ARV drugs" received the most answers in the disagree (34,04%) and strongly disagree category (13.83%). Most respondents' answers showed a positive attitude towards those three statements. A positive attitude tends to encourage behavior in a positive direction by liking, approaching, or expecting certain objects.

Belief factors, motivation, and patient perceptions can change along with the factors that influence attitudes including experience, environment, and people who are considered important.[19] Support from various parties such as the government by facilitating free ARVs, family support, health workers and counselors, and peer mentors can direct positive attitudes for the formation of positive trends, in this case patient compliance.

CONCLUSION

The majority of HIV/AIDS patients who received ARV therapy at Dr. Kariadi Hospital Semarang had a good level of knowledge, good attitude, and high adherence. There is a relationship between the level of knowledge and attitude with adherence to ARV therapy of HIV/AIDS patients at Dr. Kariadi Hospital Semarang.

ETHICAL APPROVAL

This study was registered and approved by the Ethics Committee of Medicine Faculty of Diponegoro University (No.496/EC/KEPK/FK-UNDIP/X/2023).

CONFLICT OF INTEREST

The authors declare no conflict of interest.

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AUTHOR CONTRIBUTIONS

Conceptualization and methodology, Eva Annisaa'; validation, formal analysis, investigation, data curation, writing—original draft preparation, Arumdipta Ginitri; writing—review and editing, visualization, supervision, Fitri Wulandari.

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