Analysis of the Effect of Family Support and Knowledge of Arv Therapy in Patients With HIV on Quality of Life With Adherence to Taking Arv Drugs as an Intervening Factor in the Outpatient Unit of RSUD Kabupaten Tangerang

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Abstract *Human Immunodeficiency Virus (HIV) remains one of the most serious health challenges in the world. Until now, people with HIV/AIDS have not been cured, but HIV infection and replication can still be prevented with medication. The treatment is known as antiretroviral therapy (ARV). Quality of life in HIV/AIDS patients is very important to note, because this infectious disease is chronic and progressive, so that it has an impact on various aspects of life, both physical, psychological, social, and spiritual. This study aims to identify factors that can affect the quality of life of HIV/AIDS patients through family support, knowledge of ARV therapy, and adherence to taking medication as intervening. Quantitative research method with cross sectional design. The sample technique in this study was purposive sampling. The minimum sample size was determined through Hair's formula and 140 samples were obtained. Data collection techniques with questionnaires and data analysis techniques using bivariate and multivariate analysis. The results showed that there was a significant positive influence between family support and knowledge of ARV therapy on quality of life through adherence to taking ARV drugs as an intervening variable. There is a significant positive influence between family support on quality of life. There is a significant positive influence between ARV therapy knowledge on quality of life. There is a significant positive influence between family support on adherence to taking ARV drugs. There is a significant positive influence between knowledge of ARV therapy on adherence to taking ARV drugs. There is a significant positive influence between adherence to taking ARV drugs on quality of life.*

Keywords: *Family Support, ARV Therapy Knowledge, Quality of Life, Adherence*

1. BACKGOUND

Human Immunodeficiency Virus (HIV) remains one of the world's most serious health challenges (www.who.int HIV/AIDS: Key Facts 2023 accessed October 19, 2023). HIV is a virus that infects cells of the immune system by attacking CD4 cells, which are responsible for fighting infection. If antiretroviral (ARV) treatment is not timely and effective, HIV infection can progress to the infectious and deadly disease AIDS (Keller, 2016 & www.who.int HIV/AIDS: Q&A 2022 accessed October 19, 2023).

HIV remains a major global public health problem, having claimed 40.4 million lives by the end of 2022 with transmission continuing in all countries globally. Some countries are reporting an increasing trend in new infections, whereas previously there was a decline. An estimated 39.0 million people will be living with HIV by the end of 2022, two-thirds (25.6 million) of whom will be in the WHO African Region. In 2022, 630,000 people will die from HIV-related causes and 1.3 million people will contract HIV (www.who.int HIV/AIDS: Key Facts 2023 accessed on October 19, 2023). Most HIV cases are particularly prevalent on the African continent, with more than two-thirds of infected people residing in this part of the

world (Stulens, Boeck & Vandaele, 2021).

HIV/AIDS is an epidemic in all countries in the world, and Indonesia is no exception. Based on data from the Ministry of Health, the transmission of cases is dominated by housewives with the number of HIV infected reaching 35%. This figure is higher than HIV cases in other groups such as husbands of sex workers and MSM (man sex with man) groups (sehatnegeri.kemkes.go.id 2023 accessed on October 19, 2023). This number will continue to increase due to the rapid spread of HIV/AIDS through heterosexual sex, homosexual sex, use of non-sterile syringes, blood transfusions, and perinatal transmission (siha.kemkes.go.id 2022 accessed on October 19, 2023).

Until now, people with HIV/AIDS have not been cured, but HIV infection and replication can still be prevented with medication. The treatment is known as antiretroviral therapy (ARV). Antiretroviral therapy is a therapy carried out by people with HIV/AIDS (PLWHA) by taking drugs for life (Safitri, Fadraersada, & Rusli, 2019). The compliance of people with HIV AIDS (PLWHA) in taking ARVs will keep the virus in the body under control, so that their quality of life can also be maintained like the community in general (fk.ui.ac.id 2022 accessed on October 19, 2023). However, there is an increasing number of HIV cases that develop into the AIDS phase. This is when the immune system is weakened, characterized by CD4 counts of less than 200 cells/L. The cause may be due to patient non-adherence to antiretroviral (ARV) therapy (Waymack & Sundareshan, 2023).

Patient non-adherence to ARV therapy may be due to the side effects of therapy. The existence of these side effects can affect patient compliance in taking drugs for life, so it is necessary to anticipate and educate patients. Patients who are not adherent to ARV therapy will affect treatment outcomes which have an impact on quality of life (Belay, Ali, Sander, & Gebretekle, 2021). Therefore, comfort and minimization of side effects are highly sought after to maintain the patient's quality of life (Puspasari, Wisaksana, & Ruslami, 2018).

Quality of life in HIV/AIDS patients is very important to note, because this infectious disease is chronic and progressive, so that it has an impact on various aspects of life, including physical, psychological, social, and spiritual. Patients also experience discrimination and bad stigma from society, which affects the quality of life (Septiyani & Ardani, 2021).

This study aims to identify factors that can affect the quality of life of HIV/AIDS patients. According to Kusuma (2016), the quality of life of HIV/AIDS patients is influenced by several factors including gender, age, education level, marital status, employment, economic conditions, disease stage, psychosocial problems (depression), and family support. In this

study, the factors identified were family support and knowledge. Self-stigma of patients living with HIV is influenced by perceptions of stigma in the community, observations of stigma in health services, and previous experiences with existing stigma. This triggers PLHIV patients to isolate themselves from their environment because they feel rejected and unsupported by the people around them (Hutahaean, Stutterheim, & Jonas, 2023).

The positive impact felt by patients living with HIV due to family support includes reduced psychological pressure, fostering resilience, stress can be resolved, and patient health is maintained. On the other hand, if PLHIV patients do not receive family support, there is a decrease in the quality of life that can be seen from the inability to carry out daily activities (Sapeni, Paat, Iswari, & Juwita, 2023). Based on the results of previous studies including Sapeni et al. (2023), Khairunniza & Saputra (2020), Novrianda, Nurdin, & Ananda (2018), and Xu, Ming, Zhang, Wang, Jing, & Cheng (2017), PLHIV patients with poor quality of life will predominantly experience anxiety and feel they have no hope for life or the future. Family support is one of the factors associated with the quality of life of PLWHA patients and is needed as a support system, so that PLWHA patients are able to improve adherence to ARV therapy, to be able to develop effective responses in improving their quality of life. In the future, strategies need to be implemented to improve and strengthen family support and care for PLWHA patients. Therefore, family support is very important for the survival of PLWHA patients (Xu et al., 2017).

In addition to family support, patient knowledge about ARV therapy is also needed to improve the quality of life of PLWHA patients. Good knowledge of PLHIV patients is the basis for motivating themselves to prioritize adherence to the treatment they are undergoing (Wulandari & Rukmi, 2021). Patient knowledge of HIV/AIDS treatment methods can provide hope for longevity for these patients, and also have an impact on the patient's higher quality of life (Oguntibeju, 2012). This is in line with Anggraini, Wahyono, Rahmawati, & Gunawan's (2017) research on HIV patient education can affect knowledge.

ARV therapy adherence or taking medication is an intervening variable in this study. With high ARV therapy compliance, it will give patients hope for their survival. This statement is in accordance with the results of research by Aresta & Jumaiyah (2019) and Khairunnisa, Saraswati, Adi, & Udiyono (2017), who found that patients had good knowledge, but most were not compliant in undergoing ARV treatment. This can be caused by the patient feeling that there is no difference between before and after taking ARV therapy, so the patient will consider that the treatment is futile. However, research conducted by Ferreira, Lima, Rodrigues, Nascimento, Bezerra, & Patrício (2020) and Anasari (2017) found that patient

Analysis of the Effect of Family Support and Knowledge of Arv Therapy in Patients With
HIV on Quality of Life With Adherence to Taking Arv Drugs as an Intervening
Factor in the Outpatient Unit of RSUD Kabupaten Tangerang

knowledge about HIV/AIDS treatment affects ARV therapy adherence.

The researcher conducted a preliminary study at Tangerang District Hospital where it was found that 30% of patients infected with HIV/AIDS in the last 1 (one) year had an increase in LFU (lost to follow up) cases. This can be caused by 30% having poor knowledge about ARV therapy knowledge, 40% of PLWHA do not live with family members where it makes respondents do not get support from family members, and 60% of PLWHA do not comply with the rules of taking medication. The increase in lost to follow up cases of PLWHA treatment regimens has led to non-compliance with routine drug consumption that should be consumed every day. As a result of this non-compliance, 40% of PLWHA have a poor quality of life.

Based on the background presented, it can be seen the importance of family support and knowledge of ARV therapy, so that patients have a commitment to adhere to ARV therapy to improve the quality of life of PLWHA patients. This study is expected to be a material for evaluation, collaboration and application in providing support and care services for PLWHA patients between hospitals and communities and families, as well as input for Tangerang Regency Hospital in knowing the relationship between family support and knowledge of ARV therapy on the quality of life of people with adherence to taking ARV drugs as intervening.

2. THEORETICAL REVIEW

Quality of Life for HIV/AIDS Patients

Theory of Quality of life WHO (2012), is the perception of each individual about life in the context of culture and life value systems and in relation to goals, expectations, standards, and concerns. The definition of quality of life is still a problem, until now the definition of quality of life has not been universally accepted to determine the state of a person's quality of life. Maslow (1962) asserts that in order to have an "ideal life" or a "good life" (in other words, to have a quality of life), it is necessary to fulfill eight needs that form the "Hierarchy of Needs", namely physiological needs, the need for security and peace of mind, the need for a sense of belonging and love, the need for self-esteem, the cognitive need to know and understand, aesthetic needs, the need for self-actualization and the need for transcendence in the world. Cutter (1985) states that quality of life is a person's happiness or satisfaction with life and the environment. Vantegodt (1970) states that quality of life is a condition of complete physical, mental, and social well-being. Feinstein (1987) states that quality of life is a general term that includes various concepts such as ability to function, health status, perception, living conditions, behavior, happiness, and lifestyle.

Quality of life is a subjective and multidimensional experience of well-being that is culturally constructed as individuals seek safety and security, a sense of integrity and meaning in life, and a sense of belonging in one's social network (Kagawa, 2010).

The notion of health-related quality of life (QOL) is not the absence of disease or suffering but is largely a response to a series of life events that affect the quality and quantity of life. Quality of life can be measured by dimensions: physical health, psychological health, social relationships, level of independence, environment and spiritual/religious/belief.

Family Support

Theory of family support (Friedman, 1998), family support is the attitude, action and acceptance of the family towards patients who are sick to their members, in the form of informational support, assessment support, instrumental support and emotional support. Bowen (1970), family support theory assumes that a family can be well understood by looking at the family as a whole system. McCubbin (1983), family support is defined as assisting families in obtaining a variety of support and assistance, including formal support and informal support and supportive community service systems.

Family support is support from families who have a member with a disability, which can include children, adults, or even parents in the family (Cohen, 1985). Gonzlez states that family support is parental support for children such as the availability of parents to provide what children need (Gonzlez, 2010).

Family support is a source of motivation, assistance, and support received by individuals from parents and family members in the form of emotional, instrumental, financial, and other assistance that is able to make individuals feel comfortable, valued, and loved when the individual is experiencing difficulties, thus providing emotional benefits or effects on the individual's behavior. (Sarafino, 1994) Family support is needed by HIV/AIDS patients to help as a basic emotional support so that they can succeed or adapt to adjust well in managing the stress faced related to the disease, both physical, emotional, mental and social (Perkins, 2001).

This is summarized in dimensions and indicators including emotional support, appreciation support, instrumental support and informational support.

Adherance of ARV Theraphy

The WHO (2003) theory of adherence of medicine is the extent to which a person's behavior in taking treatment follows the recommended recommendations, and according to the advice of the health care provider. Adherence is characterized as consistency to continue treatment to the next stage of treatment. Milgram (1963), in compliance theory, describes a condition in which a person obeys the orders or rules that have been set.

Analysis of the Effect of Family Support and Knowledge of Arv Therapy in Patients With
HIV on Quality of Life With Adherence to Taking Arv Drugs as an Intervening
Factor in the Outpatient Unit of RSUD Kabupaten Tangerang

Adherence is the extent to which individuals choose behaviors that coincide with clinical prescriptions; the regimen should be consensual, i.e. achieved through negotiation between health workers and patients (Dracu, 1982). Adherence is the extent to which the patient (in terms of taking bat, following a diet, or undertaking other lifestyle changes) conforms exactly to the clinical prescription. (Balkrishnan, 1996). Adherence is defined as 'the extent to which the patient's behavior conforms to the agreed recommendations of the prescriber' (Meleis, 1983).

Based on the Decree of the Minister of Health of the Republic of Indonesia No. 821 of 2022 concerning National Guidelines for Medical Services for HIV Management, the selection of ARV therapy mixtures plays an important role in fostering therapeutic adherence. The use of ARV therapy in the form of fixed-dose combinations given once a day can reduce resistance and loss to follow up.

ARV Therapy Knowledge

Knowledge is valuable experience, background information, expert insight, and basic intuition that provides the environment and framework for evaluating new experiences and combining them with information (Davenport, 1988). Knowledge is information that is given meaning and integrated with a certain content of understanding. (Bates, 2005). Knowledge can be defined as everything that is known, intelligence, and everything that is known about something (O'Dell and Grayson, 1998).

Theory knowledge of Bates (2005) that knowledge can be interpreted as everything that is known, intelligence, and everything that is known regarding a matter. According to the Regulation of the Minister of Health of the Republic of Indonesia Number 21 of 2013, the dimensions and indicators of ARV Therapy knowledge include: Dosage / Rules for Taking ARV Drugs, the benefits of ARV Therapy, and the risk of Side Effects.

3. RESEARCH METHODS

Research Design

The method used in this study is qualitative data which is quantified. In terms of time, this research includes cross-sectional research because data collection is carried out at one time. When viewed in terms of analysis, this research includes analytical research.

In this study there are 4 types of variables, namely independent variables, intervening variables and dependent variables. The variables in this study include two independent variables (X), namely family support (X1), knowledge of the benefits of therapy (X2) and

intervening variables, namely adherence to taking ARV drugs (Z). While the dependent variable is quality of life (Y). The constellation of research in this model is shown in the figure below:
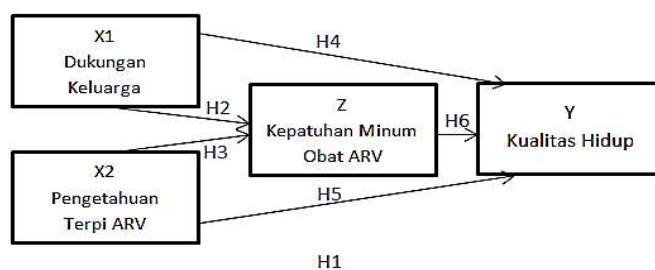
Figure 1. Constellation of Research

Based on the dynamics of the relationship between these variables, the hypotheses in this study can be summarized as follows:

H1: There is a positive and significant influence between family support of PLWHA patients and knowledge of the benefits of therapy on quality of life with adherence to taking ARV drugs as an intervening variable in the outpatient unit of Tangerang District Hospital.

H2 : There is a positive and significant influence between family support of patients living with HIV on adherence to taking ARV drugs in the outpatient unit of Tangerang District Hospital.

H3 : There is a positive and significant influence between knowledge of the benefits of ARV therapy on adherence to taking ARV drugs in the outpatient unit of Tangerang District Hospital.

H4 : There is a positive and significant influence between family support of PLWHA patients on quality of life in the outpatient unit of Tangerang District Hospital.

H5 : There is a positive and significant relationship between knowledge of the benefits of ARV therapy and quality of life in the outpatient unit of Tangerang District Hospital.

H6 : There is a positive and significant influence between adherence to taking ARV drugs on quality of life in the outpatient unit of Tangerang District Hospital.

Population and Sample

The population in this study were all HIV/AIDS patients who had undergone at least 3 months of treatment at the Bougenvile Outpatient Service Unit of Tangerang District Hospital in June 2023, totaling 1311 patients. This study uses criteria that have been determined by the researcher. Purposive sampling is the determination of samples with predetermined criteria that have been submitted as research samples.

The minimum sample size was determined through the Hair formula The population size in this study, namely 1311 PLWHA who were following the ARV treatment regimen at the Tangerang District Hospital (Banten Province). Then the minimum sample calculation

Analysis of the Effect of Family Support and Knowledge of Arv Therapy in Patients With
HIV on Quality of Life With Adherence to Taking Arv Drugs as an Intervening
Factor in the Outpatient Unit of RSUD Kabupaten Tangerang

based on the formula above is:

N = (5 to 10 X 14) = 50 to 140 samples. The researcher took the middle of this amount, so the subjects included in this study were 100 respondents.

Data and Instrument Methods

The data to be collected in this study are primary data and secondary data. Data collection using a closed questionnaire, namely each statement item is provided with an answer choice in the form of a rating scale using a Likert scale with the lowest value being one and the highest value being four. The questionnaire that will be distributed can be in physical or electronic form with google form.

Data Analysis Technique

The analysis technique is based on descriptive and inferential statistical analysis. Descriptive statistics using the Three Box Method and Inferential statistics using path analysis.

4. RESULTS

Characteristics of Respondents

Based on the distribution of data, the characteristics of respondents from 100 respondents are tabulated as follows:

Table 1. Demographic Data of Respondents

Age Group	Number of Respondents	Percentage (%)
16-25	7	7
26-35	23	23
36-45	40	40
46-55	24	24
56-65	6	6
Total	100	100%
Gender	Number of Respondents	Percentage (%)
Male	68	68
Woman	32	32
Total	100	100%
Education	Jumlah Responden	Percentage (%)
SD	1	1
SMP	10	10
SMA	32	32
Diploma	15	15
Sarjana	42	42

Total	100	100%
Time of HIV Diagnosis	Number of Respondents	Percentage (%)
> 1 year	41	41
3 – 12 month	59	59
Total	100	100%
Type of Drug Taken	Number of Respondents	Percentage (%)
TLD	52	52
TLE	48	48
Total	100	100%
Marital Status	Number of Respondents	Percentage (%)
Not married yet	13	13
Married	74	74
Divorced or spouse dies	13	13
Total	100	100%
Place of Residence	Number of Respondents	Percentage (%)
Alone	8	8
Family	90	90
Kost	2	2
Total	100	100%

Respondent's Answer Index Analysis

The respondent's Answer Index was analyzed using the three-box method. The use of the three-box method based on the number of 100 samples is divided into categories, namely low (25-49.99), medium (50-74.99) and high (75-100). The results of the Three-box Method analysis are as follows.

Table 2. Average Matrix of Three Box Method Analysis

No.	Variabel	Posisi Tanggapan			
		Rendah	Sedang	Tinggi	Perilaku
1	Kualitas Hidup			*	Kualitas hidup berkaitan dengan kesehatan yang dinilai dari responden
2	Dukungan Keluarga			*	Dukungan keluarga pasien yang dinilai dari aspek dukungan emosional, informasi, instrumental, dan penghargaan
3	Tingkat Pengetahuan Terapi ARV		*		Tingkat pengetahuan mengenai terapi ARV yang dinilai menjadi rendah, sedang, atau tinggi dari responden
4	Kepatuhan Terapi ARV			*	Kepatuhan terapi ARV dari responden yang dinilai menjadi patuh dan tidak patuh

Based on the average value matrix, it shows the results of respondents related to quality of life, family support, adherence to taking ARV drugs, and knowledge of ARV therapy at Tangerang Regency Hospital. The results showed that all variables had a high response

value. The lowest response index for quality of life on the statement item in the physical health dimension was the statement "I am not bothered by my sick condition which prevents me from doing my daily activities" which obtained a three box score index of 74.75 in the moderate category. The reason respondents who feel disturbed by their sick condition is that patients have psychological or mental changes experienced at this time compared to before being diagnosed HIV positive, so that patients feel disturbed which affects physical health indicators.

Data Analysis

Classical Assumption Test Results

Normality Test Results

Table 3. Normality Test Results Per Variable

Variable	Test Normality			
	Kolmogorov-Smirnov Z			
	N	Asymp. Sig (2-tailed)	Kriteria	Keputusan
Quality of Life	100	0,065	> 0,05	Normal
Family Support	100	0,075	> 0,05	Normal
ARV Therapy Knowledge	100	0,063	> 0,05	Normal

The significance value of these variables is > 0.05, so each variable is normally distributed. Accordingly, based on the test results above, it can be concluded that the normality assumption is met in this study.

Multicollinearity Test Results

Table 4. Muticollinearity Test Results

Model	Collinearity Statistics		Decision
	Tolerance	VIF	
(Constant)			
Quality of Life	0,773	1,294	There is No multicollinearity
Family Support	0,798	1,253	There is No multicollinearity

ARV Therapy Knowledge	0,676	1,479	There is No multicollinearity

Results of the Test of Inelasticity

Table 5. Heteroscedasticity Test Results

	Quality of Life	Family Support	Adherance	Decision
Sig. (2-tailed)	0,056	0,084	0,066	There is no heteroscedasticity

Autocorrelation Test Results

Table 6. Autocorrelation Test Results

dL	4-dL	dU	4-dU	DW	Decision
1,6337	2,3663	1,7152	2,2848	1,806	There is no autocorrelation

Hypothesis Test Results

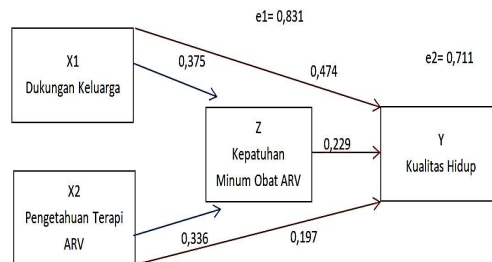## Path Analysis Model 1

Figure 2. Path Model 1

The path diagram of model 2, it can be seen that the beta value of family support on quality of life is 0.375 with a positive direction. Furthermore, the beta value of ARV therapy knowledge on quality of life is 0.336 with a positive direction. The value of e1 can be found by the formula el = $\sqrt{(1-0.31)}$ = 0.831.

Model 2 Path Analysis

Based on the model that has been described, the following results are obtained:

1. Analysis of the effect of family support (X1) on adherence to taking ARV drugs (Z), based on the analysis above, the significance value of family support is 0.000 <0.05. So it can be concluded that directly there is a significant influence of family support on adherence to taking ARV drugs.

2. Analysis of the effect of the effect of knowledge of ARV therapy (X2) on adherence to taking ARV drugs (Z), based on the analysis above, the significance value of the effect of knowledge of ARV therapy is 0.000 < 0.05. So it can be concluded that directly there is a significant effect of the influence of ARV therapy knowledge on adherence to taking ARV drugs.

3. Analysis of the effect of family support (X1) on quality of life (Y), based on the analysis above, the significance value of X1 is 0.000 < 0.05. So it can be concluded that there is a significant direct effect of family support on quality of life.

4. Analysis of the effect of ARV therapy knowledge (X2) on quality of life (Y), based on the analysis above, the significance value of ARV therapy knowledge is 0.016 <0.05. So it can be concluded that there is a significant direct effect of ARV therapy knowledge on quality of life.

5. Analisis Analysis of the effect of adherence to taking ARV drugs (Z) on quality of life (Y), based on the analysis above, it is obtained that the significance value of adherence to taking ARV drugs is 0.010 <0.05. So it can be concluded that there is a significant direct effect of adherence to taking ARV drugs on quality of life.

6. Analysis of the effect of family support (X1) through adherence to taking ARV drugs (Z) on quality of life (Y):
   a. It is known that the direct effect of family support on quality of life is 0.474
   b. While the indirect effect of family support through adherence to taking ARV drugs on quality of life is the multiplication of the beta value of family support on adherence to taking ARV drugs with the beta value of adherence to taking ARV drugs on quality of life, namely 0.375 x 0.229 = 0.086. Then the total effect given by family support on quality of life is the direct effect plus the indirect effect, namely 0.474 + 0.086 = 0.559.
   c. Based on the results of the above calculations, it is known that the direct effect value is 0.474 and the indirect effect is 0.089, which means that the direct effect value is greater than the indirect effect value, this result indicates that indirectly family support through adherence to taking ARV drugs has a significant effect on quality of life.

7. Analysis of the effect of ARV therapy knowledge (X2) through adherence to taking ARV drugs (Z) on quality of life (Y):

   a. It is known that the direct effect of ARV therapy knowledge on quality of life is 0.197

   b. While the indirect effect of ARV therapy knowledge through adherence to taking ARV drugs on quality of life is the multiplication of the beta value of ARV therapy knowledge on adherence to taking ARV drugs with the beta value of adherence to taking ARV drugs on quality of life, namely 0.336 x 0.229 = 0.077. Then the total effect of ARV therapy knowledge on quality of life is the direct effect plus the indirect effect, namely 0.197 + 0.077 = 0.274.

   c. Based on the results of the above calculations, it is known that the direct effect value is 0.197 and the indirect effect is 0.077, which means that the direct effect value is greater than the indirect effect value, this result indicates that indirectly ARV therapy knowledge through adherence to taking ARV drugs has a significant effect on quality of life.

5. DISCUSSION

Quality of Life Variables

Based on the results of the study, from the Three-Box table results presented, there were several dimensions of quality of life that were found to be in the "High" category, indicating a good level of satisfaction, while there was one dimension that was in the "Medium" category. All questions on this dimension showed high scores, with an overall category of "High". This indicates that respondents are satisfied with their physical energy, can concentrate, enjoy life, accept their body appearance, and do not feel anxious about their illness. The results of the "High" category in the social relationship dimension indicate that respondents feel that the relationship with their spouse/family is good, accepted by the people around them, and are satisfied with their sexual wholeness.

On the independence dimension, respondents felt independent to carry out daily activities, satisfied with their ability to perform activities of daily living, did not feel dependent on medication, and satisfied with their current job. All aspects of the environment, such as physical safety, security, housing conditions, finances, health services, opportunities to acquire new information and skills, opportunities for leisure/recreational activities, and feeling safe in the physical environment, were all in the "High" category. Furthermore, respondents felt close to God, obeyed religious orders, could forgive and accept current conditions, felt they had good hopes for the future, and did not worry about death.

Physical health showed mixed scores. Some questions, such as not being bothered by illness in daily activities, and being able to cope with physical discomfort, were in the "Moderate" category. This could indicate that there are some physical health challenges that may require more attention. From the results of the physical health dimension, it appears that there is variation in respondents' perceptions of their physical health. Most respondents felt able to cope with physical discomforts and were satisfied with their sleep rest, which are positive indicators for their physical health. However, the "Moderate" category in the first question indicates that there is a group of respondents who are bothered by illness in their daily activities. This could be a focus area for further interventions or attention, such as pain management planning or physical recovery programs.

Family Support and ARV Therapy

The results highlight the crucial role of family support for individuals living with HIV/AIDS. Findings on the emotional support dimension illustrate variations in the level of family understanding of the difficulties or illness felt by individuals. Although there is still room to improve this understanding, high emotional support in the fighting spirit and determination of the family can provide a significant emotional boost for individuals facing complex health conditions.

The instrumental support dimension showed a very high level of support from the family. The family's availability to provide physical assistance, support daily activities, and provide time and facilities for treatment purposes indicates significant physical and material protection. This support provides a strong foundation for individuals to cope with the daily challenges they may face related to their health condition.

Family informational support was also rated highly. Providing information, reminders to take medication and rest, and seeking information about treatment reflected the family's good understanding of the individual's information needs. This support not only improves understanding of the condition and treatment but also has the potential to increase the level of adherence to care.

Furthermore, appreciation support from the family received a positive assessment, with the family giving appreciation for achievements and appreciating every activity that individuals do. This appreciation can act as a strong motivator in helping individuals achieve their goals and live their daily lives more positively.

Overall, the "High" category on the average family support score of 83.79 reflects the positive role of families in supporting individuals living with HIV/AIDS. The implications of

these findings involve expanding the space for increased family understanding, strengthening emotional support, further health education, as well as improved communication between families and individuals.

ARV Therapy Knowledge Variable

The results showed that respondents' knowledge of antiretroviral (ARV) therapy was overall quite good. The majority of respondents showed a solid understanding of several key aspects of ARV therapy, such as daily dosage, lifelong treatment duration, and regular schedule of drug taking. The 100% result on the treatment duration question indicates a strong understanding that ARV therapy is a lifelong regimen.

However, a small number of respondents gave incorrect answers, especially regarding the side effects of ARV drugs and the benefits of the therapy. This suggests the need for a more in-depth educational approach to improve respondents' understanding of the positive impact of ARV therapy and how to manage possible side effects. In addition, it is important to provide additional emphasis on the serious consequences of stopping ARVs, ensuring that the information is clearly conveyed to individuals living with HIV/AIDS.

Recommendations include the development of a comprehensive education program, including detailed information on the benefits of ARV therapy, management of side effects, and the importance of adherence to treatment schedules. This approach is expected to improve respondents' knowledge and understanding of ARV therapy management, ensuring that they can undergo treatment successfully and improve their quality of life in the long run.

Adherence Variable

The results showed that the level of antiretroviral (ARV) medication adherence among respondents was generally positive, with 66% of respondents declaring themselves as adherent to the prescribed ARV medication schedule. However, 34% of respondents stated that they were not adherent to the prescribed treatment.

The 66% adherence rate indicates a strong understanding and commitment from most respondents to undergo ARV therapy according to the doctor's instructions. This is positive as adherence to ARV treatment schedules is crucial to achieving therapeutic success and maintaining HIV viral suppression levels..

However, the fact that 34% of respondents were non-adherent suggests that further research is needed to understand the factors that may hinder adherence. Factors such as drug side effects, mental health issues, and social aspects may affect the level of ARV medication adherence. Therefore, recommendations could include more intensive education programs, psychosocial support, and more personalized interventions to improve adherence rates and

minimize the risk of non-adherence in ARV treatment.

The Effect of Family Support and Knowledge of ARV Therapy in PLWHA Patients on Quality of Life with Adherence to Taking ARV Medication as Intervening

The results showed that there was a significant positive influence between family support for patients living with HIV on quality of life through adherence to taking ARV drugs. In addition, there is a positive influence between knowledge of ARV therapy of patients living with HIV on quality of life through adherence to taking ARV drugs.

Based on the above results, in line with the theory of family support proposed by Friedman (1998) that family support is the attitude, action and acceptance of the family towards patients who are sick to their members. By getting family support, it will improve the quality of life of PLWHA patients, because the family is considered capable of providing a sense of security to PLWHA patients who are in the neighborhood by not avoiding, alienating and not rejecting their existence (Xu et al., 2017).

In addition, as stated by Bates (2005), knowledge is important to be the basis for a person to act more effectively with the information they have. The knowledge and understanding of PLWHA patients about their disease and treatment is one of the factors that can encourage patient motivation to comply. The benefits of ARV therapy adherence can slow the worsening of the disease and improve their quality of life, both physically, psychologically, and socially, so that compliance in undergoing ARV therapy is also increasing (Debby, 2019).

Based on the results above, it is known that the variable of adherence to taking ARV drugs, which is the intervening variable in this study, is able to mediate or connect between the influence of family support and knowledge of ARV therapy on quality of life. This shows that patients living with HIV who have adherence to taking ARV drugs, means that they have family support, which continues to motivate the lives of patients living with HIV to be better. PLWHA patients who already have knowledge of ARV therapy also have full awareness to adhere to treatment.

The results of this study support the research of Jun-Fang Xu and Zhong-Qiang Ming (2017), showing that families who provide emotional support, instrumental support, informational support, and appreciation support contribute to the quality of life of HIV-infected people. The overall quality of life of PLWHA patients tends to improve significantly as ARV therapy progresses. Ana Cristina (2014) in her research showed that the quality of life is better in individuals who adhere to ARVs. Supporting people to adhere to ARV treatment should be a persistent task of healthcare workers and others who participate in treatment, such as family

members and friends. In addition, research In addition, research by Maria Jose et al (2020) showed that ART management when PLWHA use illegal drugs can reduce the negative impact of these interactions and improve adherence and quality of life for PLWHA on ART. Research conducted by Tuti Asrianti (2017) also shows that family support increases knowledge about ARVs and increases adherence to taking ARVs.

The Effect of Family Support for PLHIV Patients on Quality of Life

The results showed that family support for PLWHA patients had an effect on quality of life. In line with the theory put forward by Friedman (2010) that family support received by PLWHA patients can have a positive impact and reduce stress due to various physical, psychological and social problems that are often faced. Family support can be in the form of attitudes, actions, and family acceptance of patients who are sick. With support from the family, it will signal that the family cares and is still considered by patients living with HIV as part of the family (Mathivha, 2012). This will give PLHIV patients a sense of confidence and foster motivation to continue living, so that it will affect a better quality of life, because the quality of life in PLHIV patients involves the social support they receive.

The results of this study support the research of Sevina et al (2019), family support is related to the quality of life of HIV patients in Surabaya. Nebiyu's research (2022), A large number of PLWHA in Ethiopia undergoing antiretroviral therapy have poor quality of life. HRQOL is positively associated with a fourfold increase in social support especially family support. In addition, supporting research by Krishna C & David (2015), positive family support in the form of perceived emotional support was associated with higher levels of ARV adherence.

The Effect of ARV Therapy Knowledge on Quality of Life

The results showed that knowledge of the benefits of ARV therapy affects quality of life. In line with the theory put forward by Moraes (2018) that knowledge is a major component in the formation of a person's behavior that can be formed from education. Behavior based on knowledge will be formed better. Potter and Perry (2005) suggest that there are factors that can affect the level of knowledge including age, education level, occupation, and sources of information.

Knowledge of ARV therapy is part of the treatment for PLWHA patients regarding the dosage of medication and its side effects. ARV consumption should not be stopped even though the patient feels healthy (Potchoo et al., 2010). The purpose of ARV therapy knowledge is for patients to reduce the risk of HIV transmission, inhibit the worsening of opportunistic infections, so as to extend the life expectancy of patients who will affect the quality of life of

Analysis of the Effect of Family Support and Knowledge of Arv Therapy in Patients With
HIV on Quality of Life With Adherence to Taking Arv Drugs as an Intervening
Factor in the Outpatient Unit of RSUD Kabupaten Tangerang

PLWHA patients.

The results of this study support the research of María José (2020) which states that the more people living with HIV / AIDS know the benefits of antiretroviral therapy, the more they know the benefits of adherence to treatment, which can slow the progression of the disease and improve their physical, psychological and social quality of life, so adherence to ARV therapy also continues to increase. Supporting the research of Siska, et al (2021) in their research proves that PLWHA with ARV therapy can improve their quality of life and prevent transmission from mothers with HIV to their children.

The Effect of Family Support on Adherence to Taking ARV Drugs

The results showed that family support for PLWHA patients had an effect on adherence to taking ARV drugs. In line with the theory put forward by Friedman (2010) that family support provided to PLWHA patients is very meaningful to help with the treatment to be carried out, reminding the time to take medicine, doing the necessary care, and helping to reduce negative stigma in the community.

PLHIV patients who receive family support have a greater chance of adhering to taking ARV drugs, because patients feel that they are cared for and protected, thus making patients want to keep living for their families (Bowden & Jones, 2010).

The results of this study support the research of Proscovia, et al (2023), showing the need to strengthen family cohesion and communication within the family to improve adherence self-efficacy among adolescents living with HIV. Christopher Damulira et al, (2019), in his study concluded that there is a positive relationship between caregiver/parental support is essential to overcome ARV adherence challenges among adolescents. In addition, Oliveira, et al (2020), in their study concluded that family support is the strongest factor influencing ARV therapy adherence.

The Effect of Knowledge of ARV Therapy on Adherence to Taking ARV Drugs

The results showed that knowledge of the benefits of ARV therapy affects compliance with taking ARV drugs. In line with the theory presented by Joene (2017) that patient knowledge related to ARV therapy is obtained through health education. The higher the level of knowledge possessed by PLWHA patients, the higher the understanding of the benefits of ARV therapy that can slow the worsening of the disease, so as to increase compliance with taking ARV drugs (Iryawan et al., 2022).

The results of this study support the research of Millena Azevedo (2020), knowledge is a key factor in adherence to therapy. New scientific knowledge about adherence to

antiretroviral therapy in the northeast. The results of Anisa & Wati's research (2019), show that there is a relationship between knowledge and compliance in carrying out ARV treatment. It also supports Putra's research (2021) in his research which states that there is a relationship between the level of HIV / AIDS knowledge in PLWHA and the level of compliance with the use of ARV drugs. However, these results do not support the research of Erica and Rukm (2021), the level of knowledge of HIV patients undergoing ARV therapy and adherence to ARV therapy has no relationship between the two variables.

The Effect of Adherence to Taking ARV Drugs on Quality of Life

The results showed that adherence to taking ARV drugs affects quality of life. In line with the theory of adherence of medicine proposed by WHO (2003) that the extent to which a person's behavior in taking medication follows the recommended recommendations, and according to the advice of health care providers. Chen et al., (2013) that adherence to taking ARV drugs has a positive impact on the health of PLWHA patients.

Therefore, to improve compliance, it is necessary to conduct ongoing counseling and motivation (Hutahaen et al., 2023). These findings support the research of Djumadi, et al (2023), proving the relationship between adherence to ARV therapy in people with HIV / AIDS with the quality of life of people with HIV / AIDS at Bhayangkara Hospital Makassar City in 2022. This is in line with research conducted by Honghong Wang et al (2009), consistent adherence is associated with better outcomes including improved quality of life. In addition, supporting research by Oguntibeju (2012), the quality of life of a PLWHA is strongly associated with good physical conditions which require people with HIV / AIDS to consume routine ARV drugs that have been given by health workers.

6. CONCLUSIONS

The results showed that family support and knowledge of ARV therapy had a positive effect on quality of life both directly and indirectly through adherence to taking ARV drugs.

Theoretically, this study provides implications for supporting the theory of quality of life Theory of Quality of life delivered by WHO (2012), the theory of family support Theory of Family Support (Friedman, 1998), the theory of knowledge Bates (2005) and O'Dell and Grayson (1998), the theory of adherence to taking ARV drugs Theory of Adherence of Medicine WHO (2003).

Managerially, it has implications for the hospital to maintain and continue to improve synergy with the families of PLWHA patients to provide motivation for patients to adhere to ARV therapy. To increase family support for HIV/AIDS patients, hospital management is

*Analysis of the Effect of Family Support and Knowledge of Arv Therapy in Patients With
HIV on Quality of Life With Adherence to Taking Arv Drugs as an Intervening
Factor in the Outpatient Unit of RSUD Kabupaten Tangerang*

advised to conduct seminars for families of PLWHA patients regarding the support needed by patients, this is an effort to increase family support so that it has an impact on the quality of life of PLWHA patients. The hospital also needs to increase the understanding and knowledge of PLWHA patients related to ARV therapy through seminars, counseling from the medical team, so that patients have the awareness to undergo ARV therapy. In addition, hospitals need to take a persuasive approach for patients who are not compliant in taking ARV drugs, by providing counseling and medical assistance, so that regular monitoring of patients who are not compliant is carried out and providing physical training such as sports and others to support the physical performance of PLWHA patients.

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