



Wulan Rahmadhani, Dyah Puji Astuti, Eka Novyriana
Universitas Muhammadiyah Gombong, Central Java, Indonesia

Factors Influencing the Implementation of Antiretroviral Therapy Adherence in HIV/AIDS Patients

Provision of antiretroviral therapy dramatically decreases the mortality and morbidity of people with HIV/AIDS. Antiretroviral therapy is reduced the rate of HIV transmission in the community, morbidity and mortality associated with HIV. Patients with HIV need antiretroviral therapy (ARV) to reduce the amount of virus in the body so that it does not enter the AIDS stage. However, individuals with AIDS need ARV to prevent opportunistic infections. ARVs need to be taken for life so it requires patient adherence in taking ARVs. ARV therapy adherence is an important key in preventing resistance and improving the quality of life for individuals with HIV/AIDS. It can improve the quality of life, restore and maintain the immune function by suppressing viral replication maximally and continuously. This study used a literature review method to search for articles related to antiretroviral therapy adherence in HIV/AIDS patients. Articles were obtained from databases such as ProQuest, PubMed, and Google Scholar. Some studies revealed that antiretroviral therapy adherence in HIV/AIDS patients is influenced by some factors that are different for each patient. Based on the articles that have been reviewed, it can be concluded that factors influencing antiretroviral therapy adherence in HIV/AIDS patients are education, knowledge, age, gender, occupation, and income, length of time in the ARV program, side effects, psychological factors, and the availability of health facilities.

Keywords

Adherence, patients with HIV/AIDS, antiretroviral therapy.

Human Immunodeficiency Virus/Acquired Immune Deficiency Syndrome (HIV/AIDS) is a quite worrying health problem worldwide including in Indonesia [24]. HIV is a virus causing AIDS, while AIDS is a condition in which a person's immune system decreases and is susceptible to opportunistic diseases [22]. HIV is a global health problem [47]. UNAIDS data show 1.5 million new cases of HIV infection in 2020 [45]. Ministry of Health data for the third quarter of 2021 show that from July to September 2021, there was a total of 6,117 people with HIV/AIDS in Indonesia and 5,558 people had taken ARV treatment [21]. Most people living with HIV (PLHIV) cases were found in Central Java Province with 131,245 people [31]. The latest Ministry of Health data indicate that the number of PLHIV found in January – March 2022

reached 10,525 people out of 941,973 people who were tested for HIV, and a total of 8,784 people (83.4 %) received antiretroviral (ARV) treatment [20]. The third highest HIV case finding in Central Java in 2021 is Kebumen District with 130 cases [10]. Meanwhile, for the case finding of AIDS cases, Kebumen District also has the highest number of cases with 47 cases [10]. The high cases of HIV/AIDS in Kebumen District are due to sexual deviance [9]. Anwar et al (2018) revealed that HIV/AIDS patients were dominated by men (74.19 %) aged 30–39 years (40.32 %) with an adherence rate of 75 % [43].

The management of HIV infection is with ARV therapy to reduce the rate of HIV transmission, reduce mortality, morbidity, improve the quality of life of HIV/AIDS patients, restore and maintain immunity, and optimally and continuously suppress

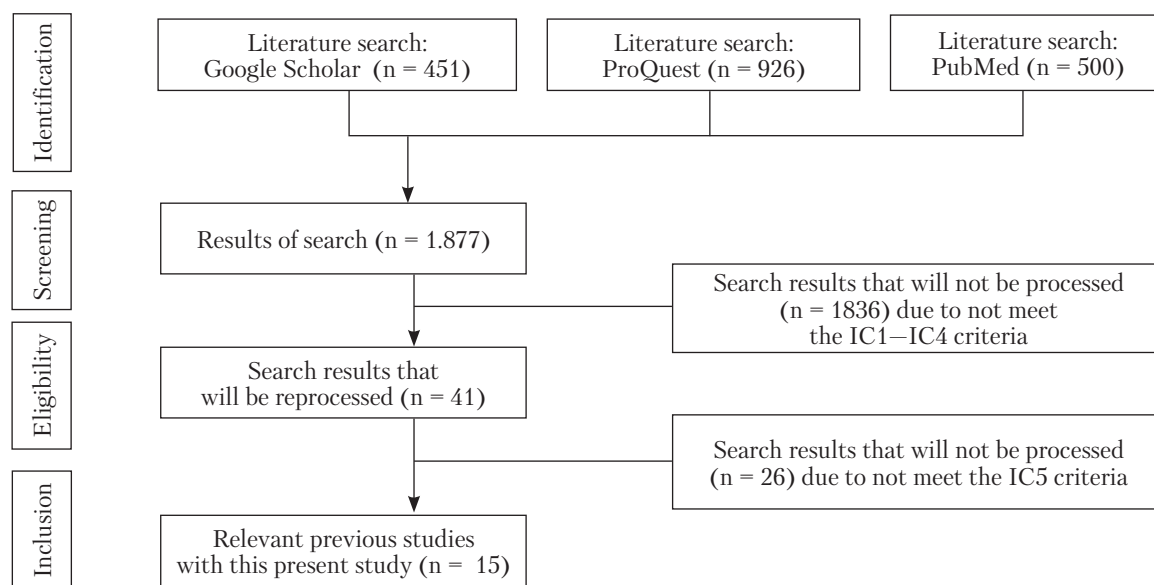


Figure. Prisma Diagram

the multiplication of the virus [41]. Individuals infected with HIV need ARVs to reduce the total amount of virus in the body so they don't enter the AIDS stage, while individuals with AIDS need ARVs to prevent opportunistic infections [34]. ARVs need to be taken for life so ARV therapy adherence is needed [34].

ARV adherence levels are an important key in preventing resistance and improving the quality of life for people with HIV/AIDS [15]. ARV adherence of 90–95 % can reduce the amount of virus in the blood by 85 % [41]. The ARV drugs must be taken 60 times in 1 month [15]. Thus, HIV/AIDS should not forget to take medication more than 3 times [38]. The medication adherence can be seen from the timeliness of taking the medication and taking the drug [8]. Non-adherence in ARV therapy causes drug resistance effects so that the drugs do not work or fail [36]. Factors influencing the non-adherence of HIV/AIDS patients in taking ARV drugs are age, gender, education, fear of side effects, economic problems, access to services, lack of knowledge about the disease, family support, and medical personnel [33]. Other factors are the patient feeling that the disease will not be cured, the presence of anxiety or depression, communication between health workers and patients not going well, alcohol consumption, drug abuse, and others [48].

Objective – to determine what factors influence the implementation of compliance with ARVs.

Methods

This study used a literature review method to collect data related to HIV/AIDS patient adher-

ence factors from some journals and other literature. Data sources are in the form of articles or papers related to HIV/AIDS patient adherence taken from both national and international databases such as PubMed, ProQuest, and Google Scholar. The search used keywords such as «adherence factors», «HIV/AIDS patients OR People Living with HIV/AIDS», and «antiretroviral therapy OR ARV». The writing of the keywords was based on an advanced search with the addition of AND/OR notation. The article search was carried out according to keywords and found a total of 1,877 articles consisting of 451 articles from Google scholar, 926 articles from ProQuest, and 500 articles from PubMed. The articles found were then specified according to the inclusion criteria and exclusion criteria, namely IC1: published on journals, IC2: published around 2018–2023, IC3: quantitative research method, and IC4: non-duplicate journals and published showed on Google Scholar, PubMed and Pro-Quest. After matching IC1–IC4, the researcher obtained 41 articles. Then IC5 was selected based on the compatibility of the article titles and abstracts with the aim of this present study namely containing «adherence factor», «HIV/AIDS patients», and «antiretroviral therapy» and only 15 journals were selected for further analysis. The article identification process can be seen in Figure.

Results

This study included 15 articles for further review. A summary of the result of articles reviewed is presented in Table.

Table. Results of Analysis

No.	Author	Title	Method	Sample	Results
1.	Wiwit Fitria Rahmadani, Giat Purwoatmodjo, Tanjung Anitaari Indah Kusumaningrum	Factors influencing antiretroviral therapy adherence in HIV/AIDS patients at Puskesmas Manahan Surakarta	An analytic observational study with a cross-sectional design	The sample is 64 people	The results showed that education ($p = 0.574$) and knowledge ($p = 0.387$) did not have significant effects on ARV therapy adherence. However, family support ($p = 0.022$) and support from health workers have effects on ARV therapy adherence ($p = 0.000$)
2.	Yeni Kartika Sari, Thatit Nurmawati, Aprilia Putri Hidayat	Analysis of factors affecting antiretroviral therapy (ARV) adherence in HIV/AIDS patients	An analytic observational study with a cross-sectional design	It involved 30 people	The results showed that family support, age, education level, income, and duration of following the ARV program have a relationship with ARV therapy adherence. However, gender has no relationship with ARV therapy adherence
3.	Dalfian Adnan TH, Ahmad Kheru, Dede Marwan Maulana	Relationship between family support and patient education level on antiretroviral therapy adherence in HIV/AIDS patients at Dr. Drajat Prawiranegara Hospital, Serang Banten	An analytic quantitative study with a cross-sectional design	It involved 75 respondents	A total of 7 people (17.9 %) living with HIV/AIDS who received family support do not comply with the ARV therapy, but 18 people (50.0 %) living with HIV/AIDS who do not receive family support do not comply with ARV therapy. 32 people living with HIV/AIDS who received family support comply with the ARV therapy (82.1 %) and 18 people (50.0 %) living with HIV/AIDS who do not receive family support do not comply with ARV therapy. 21 people (44.7 %) people with HIV/AIDS with low education do not comply with ARV therapy. 4 people living with HIV/AIDS with higher education do not comply with ARV therapy. 26 people living with HIV/AIDS with low education comply with ARV therapy (55.3 %) and 24 people (85.7 %) living with HIV/AIDS with higher education comply with ARV therapy
4.	Konstantina Pariaribo, et al.	Risk factors influencing antiretroviral therapy (ARV) adherence in HIV/AIDS patients at Abepura Jayapura Hospital	An analytic observational study with a cross-sectional design	It involved 86 respondents consisting of 43 respondents were cases and 43 respondents were control	The results showed three risk factors affecting ARV therapy adherence in HIV/AIDS patients are employment ($p = 0.005$; OR = 4.472; 95 % CI 1.633–12.245), unable to access central health services ($p = 0.008$; OR = 3.675; 95 % CI 1.476–9.146), and lack of family support ($p = 0.013$; OR = 3.606; 95 % CI 1.398–9.146)
5.	Valentina Meta Srikartika, Difa Intannia, Restu Aulia	Factors influencing outpatient adherence of HIV/AIDS patients in antiretroviral therapy (ARV) at Dr. H. Moch. Ansari Saleh Hospital, Banjarmasin	An observational study with across-sectional design	It involved 62 HIV/AIDS outpatients	The results showed that respondents who have a high compliance score access to services were 32 (51.6 %). Besides, 34 respondents (54.8 %) have high confidence; 45 (72.6 %) participants have high social support; and 33 (53.2 %) participants do not experience side effects. The highest reason for patients forgetting to take their medication is that feeling their condition is fine, namely 14 (46.6 %) respondents. There is a significant correlation between adherence and drug side effects ($p = 0.002$, $r = -0.326$)
6.	Yuyun Haryadi, Sumarni, Moh Projo Angkasa	Type of occupation and level of education affecting antiretroviral therapy (ARV) adherence in HIV/AIDS patients	An analytic correlational study with a cross-sectional design	It involved 55 respondents	The Fisher's Exact Test test showed that the level of education obtained a p-value of $0.041 < \alpha = 0.05$ and the type of work obtained a p-value of $0.014 < \alpha = 0.05$. Thus, it indicates that there is a significant relationship between the type of work and level of education in ARV medication therapy adherence at the VCT clinic at Batang Hospital. The respondents were dominated by junior high school graduates (43.6 %), private employees (56.4 %), comply with ARV therapy (60 %)
7.	Aregash Hassen, Yasmin Muhammad	Antiretroviral therapy (ARV) adherence level and associated factors among HIV/AIDS patients in Jimma Zone Government Health Facilities, ART Clinics, South-west Ethiopia	A cross-sectional study	It involved 352 people living with HIV/AIDS (190 women and 162 men) aged 15–62 years	259 (73.6 %) participants comply with the ARV therapy (≥ 95 %) and 93 (26.4 %) patients do not comply with the ARV therapy (< 95 %) during the last seven days before the interview. The main causes for missing prescribed ARV drugs are busy (78.5 %), too many pills (71 %), feeling depressed (68.8 %), reminding of being infected with HIV (66.7 %), not wanting to see other people (62.4 %), and feel asleep (60.2 %). The final models showed that knowledge of HIV/AIDS, and access to a trusted pharmacy, educational status, use of additional drugs, are significantly associated with ARV therapy adherence

No.	Author	Title	Method	Sample	Results
8.	Ririen Hardani, et al.	Analysis of factors influencing antiretroviral therapy adherence in HIV/AIDS patients	An analytic study with cross-sectional design	It involved 92 respondents	This study involved 92 patients and the result showed that 20 patients have low adherence levels; 15 participants have moderate adherence levels; and 57 participants have high adherence levels. The factors influencing ARV therapy adherence are knowledge with a significant value of ($p = 0.001$), counseling with a significant value of ($p = 0.000$), and the availability of health facilities and facilities with a significant value of ($p = 0.002$)
9.	Jusriana, Fatmah Afrianty Gobel, Arman	Factors associated with antiretroviral therapy adherence in people with HIV at Peduli Kelompok Dukungan Sebaya Foundations in Makassar City	A quantitative study with a cross-sectional design	It involved 43 respondents	The result of the study showed that there was a relationship between the level of knowledge and ARV therapy adherence with a p-value of = 0.031 (< 0.05). There is a relationship between family support and ARV therapy adherence with a p-value of = 0.024 (< 0.05). There is a relationship between peer group support and ARV therapy adherence with a p-value of = 0.03 (< 0.05). There is a relationship between drug side effects and ARV therapy adherence with a p-value of = 0.003 (< 0.05)
10.	Satriya Pandu Prabowo	Factors influencing antiretroviral therapy adherence in HIV/AIDS patients at UPT Puskesmas Manahan Surakarta in 2020	A non-experimental study with a cross-sectional design	It involved 70 patients	The results of the study showed that 82.9 % of the patients were adherent and 17.1 % of the patients were non-adherent. Factors influencing the level of patient adherence to antiretroviral treatment are individual factors (smoking habits, and marital status) and social factors (the support of other people). The factors that do not affect the level of adherence are age, gender, education level, drinking habits, length of therapy, occupation, income, health service factors (distance, access, and sources of cost) and side effects factors
11.	Emmanuel Kumah	Assessing the rate of antiretroviral therapy (ARV) adherence among people living with HIV/AIDS in the Atwima Nwabiagya Municipal – Ashanti Region	A cross-sectional study	It involved 450 people living with HIV/AIDS (n = 323 women (71.8 %) and 127 men (28.2))	Out of 450 respondents, 215 (47.8 %) reported 95 % adherence. The average adherence level is 91.3 %. Besides, those taking a single dose of ARVs (137; 30.4 %) are more comfortable than those taking multiple doses (313; 69.6 %). Discomfort with ARV regimens, social stigma, financial restrictions, forgetting to take medication, lack of family support, and side effects of antiretroviral therapy become the main barriers to adherence to taking this therapy. The adherence is low. Non-adherence is associated with medical and behavioral factors, such as stopping ARVs or experiencing ARV discomfort. Atwima Nwabiagya Municipal's adherence to antiretroviral therapy is low
12.	Nirmala Aryal, et al.	Factors associated with adherence to antiretroviral therapy (ARV) among people living with HIV & AIDS	A cross-sectional study	A total of 195 PLWHA aged over 18 years and undergoing ARV therapy were selected with a purposive sampling technique	The results showed that 91.28 % of participants stated perfect compliance (95 %) and 8.71 % of participants stated non-compliance. Age (OR = 4.28; 95 % CI 1.00–18.26), marital status (OR = 4.96; 95 % CI 1.67–14.75) were sociodemographic factors associated with adherence to ARV therapy. The number of tablets per day (OR = 10.72; 95 % CI 1.21–94.4) and the use of reminders (OR = 11.14; 95 % CI 2.35–52.75) were factors that were significantly associated with patient ARV therapy adherence. Likewise, experience of no discrimination (OR = 3.90; 95 % CI 1.11–13.69) and assistance to take medication from family members (OR = 2.95; 95 % CI 1.95–9.19) are psychosocial factors that are significantly related with adherence to ARV therapy. Adherence counseling (OR = 13.38; 95 % CI 2.99–59.75) and lower travel costs (OR = 3.99; 95 % CI 1.40–11.34) were service factors that were significantly related to adherence to ARV therapy

No.	Author	Title	Method	Sample	Results
13.	Fariha Hossain, Raushanara Akter	Treatment monitoring of antiretroviral drug: on the basis of the adherence to the current antiretroviral therapy available in Bangladesh	A cross-sectional study	It involved 159 eligible HIV-infected adults who had been receiving ARVs for at least one year	Factors that influence the level of patient compliance. 22.01 % of patients have reported that they simply forgot to take their medication and it was found in a similar study. Forgetting to take medication has been identified as the first major barrier to adherence. Then, 18.24 % of patients reported busyness as a barrier to compliance and this was found to be the second main reason for non-adherence. Away from home and forgetting to travel with medication was the third leading reason for non-adherence. Depression has been identified as the main reason behind non-adherence, as patients experience social stigma and discrimination. This psychological status causes neglect to get medication on time. Unconsciousness (3.77) and illness (0.63) were found to be minor reasons for non-compliance
14.	Rujuta S. Hadaye, et al.	Assessment of adherence and factors contributing to non adherence among patients on antiretroviral therapy (ARV) in a tertiary care hospital: A cross sectional study	A cross-sectional study	It involved 320 patients (60.3 % male, 34.1 % female, and 5.6 % transgender). The mean age of the participants was 37.26 ± 8.3 years. Systematic random sampling technique	High adherence was found in 87.2 % with selfreport and 72.5 % with multi-method approach. History of opportunistic infections and depression were found to be the best predictors of adherence. Reasons for short term non-adherence were found to be simply forgetting to take medication, being away from home, busy with other things, and running out of pills. Reasons for long-term non-adherence are financial difficulties, side effects, and switching to alternative therapies
15.	Chijioke-Nwauche I.N., Akani Y.	Influencing factors of adherence to antiretroviral drugs among people living with HIV in South-South Nigeria	A cross-sectional study	It involved 109 (31.8 % men and 231 (67.3 % women (mean age 37.3 ± 8.9 years)	The study showed a poor adherence rate (58 %) among respondents. Respondents factors (personal travel, forgetfulness, and work schedules), were the main reasons given for missing their medication. Others are economic factors (poverty and lack of transportation,) and sociocultural (spiritual, stigma.). Social support in the form of treatment support is a significant positive influence factor ($p < 0.05$) on adherence patients and disclosure of status to partners

Discussion

Education Level

The first article showed that the relationship between education and ARV therapy adherence is very low [33]. This implies that the level of education does not ARV therapy adherence as the average respondent already has a higher level of education where education plays a role in shaping one's experience and knowledge [46]. Meanwhile, the higher a person's education level, the higher the knowledge, so it will underlie a person in acting, thinking, and realizing that health is important [16]. Thus, they are motivated to comply with carrying out treatment programs. This study [28] provides that respondents with a higher education level have a high adherence level. This is in line with a previous study that people living with HIV/AIDS with higher education have a high adherence level,

namely 67.4 % greater than those with low education (43.8 %) [27].

A study reveals that out of 28 respondents with higher education (Academy/Bachelor degree), 24 respondents (85.7 %) adhere to ARV-therapy and 4 respondents (14.3 %) do not adhere to ARV therapy [44]. Meanwhile, out of 47 respondents with low education (junior high school/high school), 26 respondents (55.3 %) adhere to ARV therapy, and 21 respondents (44.7 %) do not adhere to this therapy [44]. This means that respondents with higher education (academy/graduate) are 4.85 times more, likely to adhere to taking antiretroviral drugs than those with low education [8]. Other data suggest that the educational level highly influences ARV therapy adherence in which respondents with a high level of education are more compliant with treatment than those with low education [23]. In another study, 12 respondents with a high school

level of education have a high adherence level (80 %) and 2 respondents have a low adherence level (20 %) [1]. All respondents with tertiary educational levels (2 people) adhered to taking ARVs as many as 2 people [13]. The higher a person's education level, the higher the knowledge a person has to comply with taking ARVs. Respondents with higher education are 20 times more obedient to treatment than those with lower education (Anasari, 2017) [19]. Besides, there is no significant effect between the education level and the antiretroviral therapy adherence in HIV/AIDS patients at the UPT Puskesmas Manahan Surakarta in 2020 [18].

Knowledge

The first journal shows that there is no significant effect between knowledge and ARV therapy adherence in HIV/AIDS patients at Puskesmas Manahan Surakarta (p -value = 0.387) [30]. The r -value obtained 0.130 which means that the relationship between the patient's knowledge and medication adherence is weak [33]. Patients with good knowledge ($n = 54$) have high adherence. Respondents understand the benefits and functions of drugs that are consumed every day for the rest of their lives [14]. HIV/AIDS Patient's knowledge related to ARV can indirectly affect patient adherence to ARV therapy more than the behavior of patients who do not have the knowledge [7].

HIV/AIDS patients who have good knowledge do not necessarily have high adherence [32]. This is in line with the results of the research by Khairunnisa, et al. that most respondents who have good knowledge do not adhere to ARV treatment [18]. Based on the level of knowledge, respondents' compliance is quite similar. Respondents with lower knowledge levels (85.7 %) are more obedient. Respondents with sufficient knowledge level (51.7 %) are obedient and 48.3 % are non-compliant. Knowledge is not the main factor influencing the adherence level. Knowledge will not affect adherence but experience plays an important role in the knowledge obtained [48].

Family support

The first article showed a strong significant relationship family support and ARV therapy adherence in HIV/AIDS patients at Puskesmas Manahan Surakarta [33]. A total of 59 respondents comply with the ARV therapy and 33 respondents receive good family support. This result is in line with a previous study that there is an influence between adherence level and family support with a p -value of 0.004 (< 0.05) [26]. Therefore, it can be concluded that the higher the support given by the patient's family, the more the patient adheres to the ARV therapy.

The results of this study indicate that most participants with family support have a high level of adherence [3]. In general, the family has played its roles and functions in family support. This can be seen from empathy to understand and listen to psychological complaints that result from side effects during treatment. Families also provide support in the form of accompanying during treatment and reminding respondents to take medication on time regularly [35]. However, in this study, many respondents with low family support have low adherence level. Respondents do not receive maximum support from their families because they are not always accompanied by their families during treatment. Besides, the family never remind them about behavior that worsen the disease. It is possible that low support is because respondents live with non-nuclear family [8]. Relatives feel that they are not so responsible for the condition of the respondent in terms of motivation and assistance during treatment. Article discusses social support with the ARV therapy adherence in people living with HIV/AIDS in which people living with HIV/AIDS with sufficient social support have high adherence (61.4 %) which is slightly higher than those with lower social support (60 %). Article [48] reveals that out of 39 respondents who received family support, 32 (82.1 %) respondents adhere to taking medication and 7 (17.9 %) respondents do not adhere to taking antiretroviral medication. Meanwhile, out of the 36 respondents who do not receive family support, 18 (50.0 %) respondents adhere to taking antiretroviral medication and 18 (50.0 %) respondents do not adhere to taking antiretroviral medication. This means that respondents who get family support are 4.57 times more likely to adhere to taking antiretroviral drugs than those without family support.

Support from health care worker

In terms of ARV therapy adherence at Puskesmas Manahan Surakarta, out of 10 respondents who receive less support from health workers, 5 patients are disobedient in undergoing ARV therapy (7.8 %) [33]. 54 patients (84.0 %) have good support from health workers and they all adhere to ARV therapy. The Puskesmas has provided support for people living with HIV/AIDS in the form of KIE about HIV/AIDS which is conducted monthly in the form of counseling [37]. This affects successful patient adherence in undergoing ARV therapy [34]. Patients with good counseling, namely 51 patients have a high adherence level. Counseling has a strong relationship with medication adherence because of the explanation of the dangers of stopping therapy or not taking the therapy monthly. Therefore,

respondents will better understand the importance of controlling the HIV virus with ARV therapy so that they feel afraid if they do not take it [5].

Respondent's age

Based on the results of the study, the highest level of adherence can be found in respondents with the age range of 34–46 years [33]. The results of the analysis of this study also show that at a young age (20–33 years), more respondents have a low level of adherence. Besides, adults tend to be more responsible, more orderly, and more conscientious than younger respondents. Another study showed that people living with HIV/AIDS aged > 25 years have a high adherence level of 61.7 % which is higher than those aged 25 years (58.3 %) [2]. In line with the previous study, age affects adherence to taking ARVs. Those over 30 years of age are more compliant than those at younger ages, which can be seen from the amount of undetectable viral load [39]. Older patients will experience an increase in CD4 count compared to the younger ones. Adult HIV/AIDS patients tend to be more responsible, more orderly, and more conscientious than the younger ones. Age is an influential factor in adherence status. This is closely related to the level of concern for patients with AIDS that they are currently experiencing. Many people think that the older the weaker a person's body is which may cause older people to be more concerned about their health. Concerning individual factors influencing the antiretroviral therapy adherence at UPT Puskesmas Manahan Surakarta in 2020, there are more patients in the adult group aged 26–45 years old (60.0 %) than the adolescent group aged 18–25 years (27.1 %) [33].

Gender

High medication adherence is mostly showed by female patients [4]. Based on the researchers' assumptions, women have proven to be more responsive to their cases because during HIV treatment they tend to seek support simply to express their psychological burden during treatment and to gain empathy. Besides, the results of an analysis between gender and adherence to ARV use showed that the percentage of women and men who had high adherence reaches 46.2 and 65.2 % respectively. The results of the Chi-square test obtained a p-value of = 0.389. Therefore, it can be concluded that there is no significant effect between gender and ARV therapy adherence [36].

During treatment, women have increased levels of immunity [42]. The possibility of this increase is because they are more obedient in treatment. Women have higher motivation to attend therapy

because their children still need them and are related to activities to fulfill life's needs such as working. Another study reveals that gender factor does not affect the adherence level in taking anti-retroviral treatment in HIV/AIDS patients at the UPT Puskesmas Manahan Surakarta in 2020 [33].

Occupation and income level

The highest adherence level is found in respondents with an income of 1 million [6]. Even though the respondents' income is still low, they are still obedient in carrying out HIV/AIDS treatment, assisted by their closest family. Meanwhile, another study [10] reveals that HIV/AIDS patients with working status are 4.318 times more likely to be non-adherent to undergoing ARV therapy than those who are not working [37].

All respondents who do not work do not adhere (100 %). Meanwhile, respondents who worked as civil servants adhere to taking ARVs (3 respondents or 75 %) and 1 respondent does not comply (25 %). Only 1 respondent who worked as a national soldier/police adhere (50 %) and 1 respondent does not adhere to the treatment (50 %). A total of 17 respondents working in the private sector adhere (54.8 %) and 14 respondents do not adhere (42.5 %). A total of 12 respondents are housewives and 10 of them adhere to taking ARVs (85.7 %) and the rest do not (14.3 %). Besides, Rahmawati (2018) reveals that occupation affects adherence to taking ARVs. Work influences the economic function of the family to meet family needs economically and develop individual abilities to increase income to meet family needs [18]. Patients try to find money for medical expenses because all patients want to recover and live healthy lives [11]. Respondents could not take antiretrovirals when they were busy at work, so they sometimes forgot to take them. The amount of income each month also has no significant effect on the level of adherence of patients undergoing antiretroviral therapy [46].

Length of taking ARV program

A study [8] shows that the highest respondent compliance can be found in respondents who had run the ARV program for less than 2 years. Another study reveals that the length of taking medication with adherence to ARV use is greater in people living with HIV/AIDS who took ARVs for less than a year with a percentage of 76.5 %. Moreover, the length of time does not affect the level of adherence of patients undergoing antiretroviral therapy [49].

Side Effects

The percentage of people living with HIV/AIDS with low drug side effects have high adherence,

namely 68.8 % greater than those with high drug side effects (51.9 %) [16]. The high adherence of people living with HIV/AIDS with low side effects drugs is greater than those with high side effects. Based on the results of FGDs with people living with HIV/AIDS, 4 out of 6 PLHIV experience side effects such as blackish skin, severe anemia, dizziness, hallucinations, and some even Stevens–Johnson syndrome [29].

Another indicates that the more patients feel many side effects, the lower the adherence level in undergoing the recommended therapy, and vice versa. ARV side effects are a factor that causes people living with HIV/AIDS to become non-adherent when taking medication [44]. No side effects increased adherence to antiretroviral therapy by 1.02 times compared to the presence of side effects [12].

Psychological factor

The psychology of people living with HIV/AIDS with good psychological conditions have a high adherence level in taking ARVs 74.2 % higher than those with poor psychological conditions, namely 46.4 % [40].

No conflict of interest.

Author contributions: WR conceived the original Idea, analyzed sequence data, interpretation data, created figured and drafted manuscript. DPA performed data analysis, theoretical and literature search. EN conceived the original Idea, development of study objectives.

References

- Alfian K Ibrahim, Rafiyah I. The Effect of the E-Patuh Application on HIV/Aids Patients' Adherence in Consuming Antiretroviral. *J Keperawatan Padjadjaran*. 2019;7(1):49-57. doi: 10.24198/jkp.v7i1.809.
- Ana Jusriana, et al. Faktor yang Mempengaruhi Kepatuhan Terapi Antiretroviral pada Orang dengan HIV di Yayasan Peduli Kelompok Dukungan Sebaya Kota Makassar. *Window of Public Health Journal*. 2020 Oct;1(3):241-249. <https://www.neliti.com/publications/340517/faktor-yang-mempengaruhi-kepatuhan-terapi-antiretroviral-pada-orang-dengan-hiv-di#cite>.
- Ann-Margaret Dunn Navarra, et al. Feasibility and Acceptability of the Adherence Connection Counseling, Education, and Support (ACCESS) Proof of Concept: A Peer-Led, Mobile Health (mHealth) Cognitive Behavioral Antiretroviral Therapy (ART) Adherence Intervention for HIV-Infected (HIV+) Adolescents and Young Adults (AYA). *AIDS Behav*. 2023 Jun;27(6):1807-1823. doi: 10.1007/s10461-022-03913-0.
- Ari Hayatiningsih, Anggraini Alam, Trully Deti Sitorus. Hubungan Lamanya Terapi ARV dengan Kepatuhan Minum Obat pada Anak HIV di Klinik Teratai Adherence in Children with HIV. *Jurnal Sistem Kesehatan*. 2017;3(2). doi: 10.24198/jsk.v3i2.15007
- Cam Thi Ha Tu, Viet Nguyen Ngoc, Huong Nguyen Thao. Antiretroviral Medication Adherence Among Patients with HIV/AIDS at a Community Medical Center in Vietnam. *Vietnam Medical Journal*. 2023;525(1). doi: 10.51298/vmj.v525i1.5066.
- Chakraborty A, et al. Antiretroviral therapy adherence among treatment-naive HIV-infected patients. *AIDS*. 2020 Jan 1; 34(1):127-137. doi: 10.1097/QAD.0000000000002384.
- Chijioke-Nwauche IN Akani Y. Influencing Factors of Adherence to Antiretroviral Drugs among People Living with HIV in South-South Nigeria. *Saudi J Med Pharm Sci*. 2021;7(2): 145-152. doi: 10.36348/sjimps.2021.v07i02.011.
- Dalfian Adnan TH, Ahmad Kheru, Dede Marwan. Hubungan Dukungan Keluarga Dan Tingkat Pendidikan Pasien Terhadap Kepatuhan Minum Obat Antiretroviral Pasien Hiv Aids Di Poli Rsud Dr. Drajat Prawiranegara Serang Banten. *MAHESA Malahayati Heal. Student J*. 2021;1(2):82-91. doi: 10.33024/mahesa.v1i2.3756.
- Dian. 2021, Angka Kasus AIDS di Kebumen Tertinggi di Jateng, Banyak dari Milenial. 2022. https://www.kebumenkab.go.id/index.php/web/news_detail/2/6712.
- Dinkes K. Profil Kesehatan Kabupaten Kebumen 2018. *J Chem Inf Model*, 2018.
- Fardiana A, Nursalam N, Maulidiyah F. Intervention to Improve Antiretroviral Adherence and Quality of Life on HIV/AIDS: a Systematic Review. *Indonesian Journal of Community Health Nursing*. 2022;7(1):30-42. doi: 10.20473/ijchn.v7i1.39499.
- Fresia S. Efektivitas Pemberian Edukasi Berbasis Audiovisual dan Tutorial Tentang Antiretroviral (ARV) Terhadap Kepatuhan Pengobatan pada Pasien HIV/AIDS di Klinik Teratai Rumah Sakit Hasan Sadikin Bandung Tahun 2016. *The Indonesian Journal of Infectious Diseases*. 2017;3(2):38-45. doi: 10.32667/ijid.v3i2.35.
- Fuge TG, Tsourtos G, Miller ER. Factors affecting optimal adherence to antiretroviral therapy and viral suppression amongst HIV-infected prisoners in South Ethiopia: a comparative cross-sectional study. *AIDS Res Ther*. 2022 Jan 29;19(1):5. doi: 10.1186/s12981-022-00429-4.
- Harison N, Waluyo A, Jumaiyah W. Pemahaman pengobatan antiretroviral dan kendala kepatuhan terhadap terapi antiretroviral pasien HIV/AIDS. *JHes (Journal of Health Studies)*. 2020;4(1):87-95. doi: 10.31101/jhes.1008.

Availability of health facilities and infrastructure

Patients with good health facilities and infrastructure have high adherence levels, namely 52 patients [17]. The availability of health facilities and infrastructure makes it very easy for patients to obtain treatment. Besides, the existence of the Banuata Pura Support Foundation which focuses on HIV/AIDS prevention and assistance for HIV/AIDS sufferers makes it easier for sufferers to consult their illness and treatment to increase treatment adherence [4]. Patients who are > 10 km away from health facilities tend to have higher adherence level, namely 3,286. The distance traveled to health services does not affect the level of patient compliance [25].

Conclusions

This literature review involves 15 articles discussing the adherence level of HIV/AIDS patients. Based on the results of the analysis, it can be concluded that the factors influencing adherence of HIV/AIDS patients in taking antiretroviral therapy are education, knowledge, age, gender, occupation and income, duration of ARV program, side effects, psychological factors, and the availability of health facilities and infrastructure.

15. Haryadi Y, Sumarni S, Angkasa MP. Jenis Pekerjaan Dan Tingkat Pendidikan Mempengaruhi Kepatuhan Minum Obat Antiretroviral (ARV) Pada Pasien HIV/AIDS. *J Lintas Keperawatan*. 2020;1(1). doi: 10.31983/jlk.v1i1.6446.
16. Hassen A, Mohammed Y. Antiretroviral Therapy Adherence Level and Associated Factors Among HIV/AIDS Patients in Jimma Zone Government Health Facilities, ART Clinics, Southwest Ethiopia. *Int J Multicult Multireligious Underst*. 2019;5(5). doi: 10.18415/ijmmu.v5i5.535.
17. Husna C. Analisis dukungan sosial dengan kepatuhan therapy antiretroviral (ARV) pada pasien HIV/AIDS di Poliklinik Khusus RSUD. Dr. Zainoel Abidin Banda Aceh. *Jurnal Ilmu Keperawatan (JIK)*. 2013;1(1). <https://jurnal.usk.ac.id/JIK/article/view/4987>.
18. Isnaini SA, Karyus A, Setiaji B, Pramudho K, Budiati E. Faktor yang Berhubungan dengan Kepatuhan Minum Obat ARV Pasien HIV Rawat Jalan. *PSKM [Internet]*. 2023 Jul. 22 [cited 2024 Nov. 11];13(4):1577-86. <https://journal2.stikeskendal.ac.id/index.php/PSKM/article/view/1390>.
19. Ivana Cristina Vieira de Lima, et al. Information and communication technologies for adherence to antiretroviral treatment in adults with HIV/AIDS. *Int J Med Inform*. 2016 Aug;92:54-61. doi: 10.1016/j.ijmedinf.2016.04.013.
20. Kemenkes Kesehatan RI. Infodatin HIV/AIDS. InfoDATIN: Pusat Data dan Informasi Kementerian Kesehatan RI, 2020.
21. Kementerian Kesehatan RI. General situation of HIV/AIDS and HIV test. Pusat Data dan Informasi Kementerian Kesehatan RI. 2018.
22. Kemetrian Kesehatan RI. Laporan Nasional Riskesdas 2018. <https://repository.badankebijakan.kemkes.go.id/id/eprint/3514/>.
23. Kim MH, et al. The Video intervention to Inspire Treatment Adherence for Life (VITAL Start): Protocol for a multisite randomized controlled trial of a brief video-based intervention to improve antiretroviral adherence and retention among HIV-infected pregnant women in Malawi. *Trials*. 2020 Feb 19;21(1):207. doi: 10.1186/s13063-020-4131-8.
24. Ministry of Health Republic Indonesia. Hari AIDS Sedunia, Momen STOP Penularan HIV: Saya Berani, Saya Sehat! Kementerian Kesehatan. 2018.
25. Moslem Soofi, Atefeh Moradi, Ebrahim Shakiba, Mehdi Moradinazar. Prevalence of behavioral risk factors in people with HIV/AIDS and its' effect on adherence to treatment. *HIV & AIDS Review*. 2022;21(2):99-108. doi: 10.5114/hivar.2022.115863.
26. Mouhamed Abdou Salam Mbengue, Serigne Omar Sarr, Aissatou Diop, Cheikh Tidiane Ndour, Bara Ndiaye, Souleymane Mboup. Prevalence and determinants of adherence to antiretroviral treatment among HIV patients on first-line regimen: A cross-sectional study in Dakar, Senegal. *Pan Afr Med J*. 2019 Jun 10;33:95. doi: 10.11604/pamj.2019.33.95.17248.
27. Namoomba HC, Makukula MK, Masumo MM. Factors Influencing Adherence to Antiretroviral Therapy among HIV Positive Adolescents at Adult Infectious Diseases Center in Lusaka, Zambia. *Open J Nurs*. 2019;9(4). doi: 10.4236/ojn.2019.94040.
28. Nurfalah F, Yona S, Waluyo A. The relationship between HIV stigma and adherence to antiretroviral (ARV) drug therapy among women with HIV in Lampung, Indonesia. *Enferm Clin*. 2019;29. doi: 10.1016/j.enfcli.2019.04.138.
29. Nursalam, Tintin Sukartini, Erna Heny Trisusanti, et al. Stigma and Anxiety Levels With Adherence on the Treatment Schedule Patient With HIV/AIDS in Indonesia. *Malaysian Journal of Medicine and Health Sciences*. 2022;18: 206-212.
30. Prajitno, Azidah Rizkynia Cahyaningati, Niniek Budiarti, Wino Vrieda Vierlia. Hubungan Kepatuhan Terapi ARV dengan Kualitas Hidup pada Pasien HIV/HAIDS. Sarjana thesis, Universitas Brawijaya. 2021. <https://repository.ub.ac.id/id/eprint/189413>.
31. Profil Kesehatan Provinsi Jawa Tengah Tahun 2016. Dinkes Jateng. Dinas Kesehat. Provinsi Jawa Teng. 2016.
32. Rafael da Silva Oliveira, Marcelo Ribeiro Primeira, Wendel Mombahe Dos Santos, Cristiane Cardoso de Paula, Stela Maris de Mello Padoin. Association between social support and adherence to anti-retroviral treatment in people living with HIV. *Rev Gaucha Enferm*. 2020;41:e20190290. doi: 10.1590/1983-1447.2020.20190290.
33. Rahmadani WF, Purwoatmodjo G, and Kusumaningrum TAI. Faktor-Faktor Yang Mempengaruhi Kepatuhan Berobat Pasien HIV/AIDS Dalam Menjalani Terapi Antiretroviral Di Puskesmas Manahan Surakarta. Program Studi Kesehatan Masyarakat Fakultas Ilmu Kesehatan Universitas Muhammadiyah Surakarta, 2018. <https://publikasilmiah.ums.ac.id/handle/11617/11647>.
34. Rahmadhani W, Aprina H. Challenges of implementing the prevention of mother to child transmission (PMTCT) program. *Int J Health Sci. [Internet]*. 2022 Jun. 3 [cited 2024 Oct. 14];6(S5):687-9. doi: 10.53730/ijhs.v6n5.8395.
35. Sarahmona Przybyla, et al. Substance Use and Adherence to Antiretroviral Therapy among People Living with HIV in the United States. *Trop Med Infect Dis*. 2022 Nov 4;7(11):349. doi: 10.3390/tropicalmed7110349.
36. Sari YK, Nurmawati T, Putri Hidayat A. Analisis Faktor Yang Mempengaruhi Kepatuhan Pasien Hiv-Aids Dalam Terapi Antiretroviral (ARV). *J Citra Keperawatan*. 2019;7(2):96-103. doi: 10.31964/jck.v7i2.116.
37. Siti Novy Romlah, Tukimin Bin Sansuwito, Faridah Bin Moh Said. The Relationship between Family and Health Worker Support and the Consumption of ARV by Housewives with HIV. *The Malaysian Journal of Nursing*. 2023;14(3):194-200. doi: 10.31674/mjn.2023.v14i03.023.
38. Srikartika VM, Intannia D, Aulia R. Faktor-Faktor yang Mempengaruhi Kepatuhan Pasien HIV/AIDS Rawat Jalan dalam Pengobatan Terapi Antiretroviral (ART) di Rumah Sakit Dr. H. Moch. Ansari Saleh Banjarmasin. *J Pharmascience*. 2019;6(1):97-105. doi: 10.20527/jps.v6i1.6081.
39. Sucerni, Sudirman, Nur Afni. Corelation of Information ad Motivation with Obedience Oftaking Drug of Arvto HIV/AIDS Patients at Poli PDP of Rsud Undata of Central Sulawesi Province. *J Kolaborasi Sains*. 2019;1(1):578-584. <https://jurnal.unismuhpalu.ac.id/index.php/JKS/article/view/844>.
40. Suryanto Y, Nurjanah U. Kepatuhan Minum Obat Anti Retro Viral (ARV) Pada Pasien HIV/AIDS. *Jurnal Ilmu Keperawatan Indonesia (JIKPI)*. 2021;2(1):14-22. doi: 10.57084/jikpi.v2i1.635.
41. Tadele M, Tesfa M, Tsegaye G, Temesgen H, Mekonnen Alamirew N. Determinants of chronic energy deficiency among adults living with HIV in Shebel Berenta District, East Gojjam, Amhara region, North West Ethiopia, 2017: case control study. *BMC Res Notes*. 2019 Jul 17;12(1):431. doi: 10.1186/s13104-019-4443-5.
42. Tahir MY, Amanda AWD, Darwis. Hubungan dukungan keluarga dengan kepatuhan minum obat antiretroviral (ARV) pada pasien HIV/AIDS di Balai Besar Kesehatan Paru Masyarakat Makassar. *Jurnal STIKES Panakukang Makassar*, 1-24. 2020.
43. Tappuni AR, Sufiawati I. The Bali declaration on oral health in HIV/AIDS. *Oral Dis*. 2020 Sep;26 Suppl 1:172. doi: 10.1111/odi.13404.
44. Umah K, Irawanto D. Motivasi Spiritual Meningkatkan Kepatuhan Minum Obat ARV Pada Pasien HIV/AIDS (Spiritual Motivation to Improve ARV Drug Compliance in HIV/AIDS Patients). *J Ners Community*. 2019;10(2):251-263. <https://scholar.google.com/scholar?q=Umah+K+Irawanto+D+Motivasi+spiritual+meningkatkan+kepatuhan+minum+obat+ARV+pada+pasien+HIV/AIDS+2019+10+251+263>.
45. UNAIDS. Joint United Nations Programme on HIV/AIDS. Youth and HIV. 2018. https://www.unaids.org/sites/default/files/media_asset/youth-and-hiv_en.pdf.
46. Wahome EW, et al. PrEP uptake and adherence in relation to HIV-1 incidence among Kenyan men who have sex with men. *EclinicalMedicine*. 2020 Sep 9;26:100541. doi: 10.1016/j.eclinm.2020.100541.
47. World Health Organization. HIV and Tuberculosis. <https://www.who.int/westernpacific/health-topics/hiv-aids/hiv-and-tuberculosis>.
48. Wulandari EA, Rukmi DK. Hubungan Tingkat Pengetahuan dengan Kepatuhan Terapi ARV pada ODHA di Yogyakarta. *J Keperawatan Klin. dan Komunitas*. 2022;5(3). doi: 10.22146/jkkk.49663.
49. Yelmi Reni Putri, Adriani Adriani. Kepatuhan Pasien Odha Menerima Obat Dengan Keberhasilan Terapi Antiretroviral (ARV). *Jurnal Endurance*. 2022;1(2). doi: 10.22216/jen.v1i2.938.

Wulan Rahmadhani, Dyah Puji Astuti, Eka Novyriana
Universitas Muhammadiyah Gombong, Центральна Ява, Індонезія

Фактори, що впливають на дотримання антиретровірусної терапії у хворих на ВІЛ/СНІД

Забезпечення антиретровірусною терапією різко знижує смертність і захворюваність людей з ВІЛ/СНІД. Антиретровірусна терапія знижує рівень передачі ВІЛ у суспільстві, захворюваність і смертність, пов'язані з ВІЛ. Пацієнтам з ВІЛ потрібна антиретровірусна терапія (АРВ), щоб зменшити кількість вірусу в організмі та захворювання не перейшло в стадію СНІДу. Однак хворі на СНІД потребують АРВ-препаратів для запобігання опортуністичним інфекціям. Їх необхідно приймати протягом усього життя, тому пацієнт повинен мати прихильність та дотримуватися прийому АРВ-препаратів. Дотримання АРВ-терапії є важливим ключем у запобіганні резистентності та покращенні якості життя людей з ВІЛ/СНІДом. Це може відновити та підтримувати функціонування імунітету шляхом максимального та тривалого пригнічення розмноження вірусу. У цьому дослідженні використовувався метод огляду літератури для пошуку статей, пов'язаних із дотриманням антиретровірусної терапії у пацієнтів з ВІЛ/СНІДом. Статті були отримані з таких баз даних, як ProQuest, PubMed і Google Scholar. Деякі дослідження показали, що на дотримання антиретровірусної терапії хворих на ВІЛ/СНІД впливають фактори, які відрізняються для кожного пацієнта. На підставі розглянутих статей можна зробити висновок, що факторами, які впливають на дотримання антиретровірусної терапії пацієнтів з ВІЛ/СНІДом, є освіта, знання, вік, стать, професія та дохід, тривалість програми АРВ-терапії, побічні ефекти, психологічні фактори та наявність закладів охорони здоров'я.

Ключові слова: прихильність до лікування, пацієнти з ВІЛ/СНІДом, антиретровірусна терапія.

Контактна інформація / Corresponding author

Wulan Rahmadhani, Departemen of Midwifery, Faculty of Science
<https://orcid.org/0000-0001-7290-3768>
Bagal II, RT/RW 001/002 Banjarsari, Gombong, Kebumen, Central Java, Indonesia
E-mail: wulanrahmadhani@unimugo.ac.id

Стаття надійшла до редакції/Received 17.07.2024.
Стаття рекомендована до опублікування/Accepted 26.08.2024.

ДЛЯ ЦИТУВАННЯ

- Wulan Rahmadhani, Dyah Puji Astuti, Eka Novyriana. Factors Influencing the Implementation of Antiretroviral Therapy Adherence In HIV/AIDS Patients. *Туберкульоз, легеневі хвороби, ВІЛ-інфекція*. 2024;4:75-84. doi: 10.30978/TB2024-4-75.
- Wulan Rahmadhani, Dyah Puji Astuti, Eka Novyriana. Factors Influencing the Implementation of Antiretroviral Therapy Adherence In HIV/AIDS Patients. *Tuberculosis, Lung Diseases, HIV Infection (Ukraine)*. 2024;4:75-84. <http://doi.org/10.30978/TB2024-4-75>.