

Beyond Stigma: How Family Support Relates to Antiretroviral Therapy Adherence in Pariaman City

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ABSTRACT

Background: HIV is still a national and international health concern, with an annual increase in cases, but treatment adherence is still poor. Strong family support is essential for people living with HIV who are receiving antiretroviral therapy (ART), but stigma frequently prevents them from getting it. The purpose of this study is to examine the connection between patient adherence to antiretroviral therapy (ART) and family support (emotional, informational, instrumental, and appraisal)

Method: 84 HIV patients who were chosen by chance were included in a cross-sectional quantitative study design. Relationships between variables were evaluated using the Chi-Square test.

Result: The majority of patients who did not follow their treatment plan received inadequate emotional support (59.1%) and inadequate informational support (60.0%). Inadequate instrumental support (42.5%) and insufficient appraisal support (43.5%) were also experienced by nearly half of the non-adherent patients. Significant associations were found between ART adherence and living with family ($p=0.046$), emotional support ($p=0.001$), informational support ($p=0.000$), instrumental support ($p=0.028$), and appraisal support ($p=0.005$). **Conclusion:** Overall, family support is crucial in strengthening patients' motivation and treatment adherence. Feeling valued and supported encourages patients to remain committed to their therapy.

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INTRODUCTION

Human Immunodeficiency Virus (HIV) remains a global health concern, with 40.8 million people living with HIV in 2024, consisting of 39.4 million individuals aged over 15 years and 1.4 million under 15 years. However, only 31.6 million were receiving antiretroviral therapy (ART), still below the global target of 34 million. Women and girls in sub-Saharan Africa account for 63% of new infections, while in other regions 73% of new cases occur among men and boys.(1) In Indonesia, 515,455 HIV cases were reported in 2023, including 16,410 new AIDS cases across almost all provinces. East Java, West Java, and Jakarta recorded the highest numbers. West Sumatra also showed a rise in cases from 364 in 2021 to 579 in 2023.(2) This situation indicates an increasingly heightened risk of HIV transmission.

HIV weakens the body's defenses against illness by attacking the immune system and causing infections, which may result in long-term problems and eventually lead to Acquired Immunodeficiency Syndrome (AIDS).(3) By 2030, 95% of individuals living with HIV will be aware of their status, 95% will receive antiretroviral therapy (ART),

and 95% will achieve viral suppression, according to the global "three zero" strategy adopted by the Indonesian government.(4)

The success of therapy depends on ART adherence. It includes taking prescription drugs regularly, on schedule, and at the recommended dosage. High adherence lowers the risk of transmission and enhances clinical conditions.(5) Delays in starting therapy, forgetting to take medication, or purposefully not taking the prescribed dosage are examples of non-adherence. Delaying treatment increases the risk of drug resistance (7) as well as the risk of HIV transmission and disease progression.(6) Optimal viral suppression requires at least 95% adherence,(8) so it is crucial to educate people about the risks of side effects and the significance of adherence.

Patient motivation to continue therapy may be impacted by delaying the start of ART. Patients who put off treatment from the start are more likely to develop drug resistance because they have lower long-term adherence.(9) Additionally, social support is crucial for ART adherence. Research indicates that low social support is linked to poor

adherence.(10) Support from family members can increase a patient's desire to receive therapy.(11)

Some patients experience stigma and social anxiety. HIV patients avoided their families because they felt rejected (28.1%), and 20.7% of patients feared being abandoned by their families.(12) Treatment results, patient quality of life, and care quality can all be impacted by this stigma and social anxiety. Individuals who tell their families they have HIV are 2.4 times more likely to stick with their treatment than those who do not.(11)

HIV patients with inadequate family support were 3.317 times more likely to be non-adherent to treatment compared to those with adequate support.(13) In a similar vein, Jiang et al. (2019) verified that treatment adherence is directly impacted by social support, particularly from family.(14) Additionally, Afolabi et al. (2013) demonstrated the importance of family support and attention in sustaining HAART adherence.(15) This discrepancy implies that the impact of family support on adherence might vary depending on the kind of support that is looked at. While Anakwa et al.,(16) who found no significant effect, did not break down support into specific dimensions or take into consideration whether patients lived with their family, studies that reported a positive association (13–15) typically measured family support as a single composite score. This implies that living arrangement may be a confounding variable that has been mainly disregarded in previous research, and that combining various forms of support into a single measure may mask their unique effects.

Emotional, informational, instrumental, and appraisal aspects are all included in family support.(17)(18) Each has a distinct impact on psychological health and adherence motivation.(11) In 2024, Pariaman City reported 148 HIV cases and 33 fatalities. With an incidence rate of 0.3%, which is higher than the target of 0.18%, the city is ranked fourth in terms of HIV prevalence.

The steady increase in local cases indicates that HIV transmission in non-priority areas like Pariaman City may be underappreciated and understudied, even though West Sumatra is not one of the 11 provinces nationally prioritized for HIV control, which together account for 76% of Indonesia's estimated 564,000 people living with HIV.(19)

Differentiating between these dimensions is crucial because each may function through a different mechanism. For instance, instrumental support may directly facilitate medication access and routine, whereas emotional support may primarily affect psychological well-being, which is ultimately related to treatment maintenance.(11)

Therefore, failing to distinguish between them could conceal the particular type of support that has the greatest impact in a particular situation. Nevertheless, there is still little data on how particular types of family support impact adherence in this particular local setting. Thus, the purpose of this study is to examine how patient characteristics and family support including emotional, informational, instrumental, and appraisal support relate to ART adherence among HIV-positive individuals in Pariaman City in 2025.

METHOD

The quantitative study employed a cross-sectional design to determine the association between family support and HIV treatment adherence and characteristics (age, sex, occupation, education, and living status with family). There were 115 people in the study population, and 84 of them were chosen by accidental sampling. Accidental sampling was used for the following reasons: 1) There were only 115 people in the population; 2) Only those who regularly visited the hospital were interviewed; 3) Not all respondents agreed to be interviewed; and 4) HIV cases involve a degree of sensitivity for patients and are linked to stigma.

The research instrument was a questionnaire comprising respondent identities and question items. The independent variables were respondent characteristics and family support (emotional, informational, instrumental, appraisal), each consisting of nine statements with a five-point response scale: always (5), often (4), sometimes (3), rarely (2), never (1). The dependent variable was HIV treatment adherence with eight statements and two response options: Yes (0) and No (1). Age was divided into two categories: under 40 and over 40 (20). Education was divided into two categories: low (no schooling, primary, junior secondary) and high (senior secondary/tertiary).(21) Living status was classified as either living with family or not, and occupation was divided into two categories: employed and unemployed. While treatment adherence was divided into two categories: adherent (score ≥ 7) and non-adherent (score < 7), family support was categorized as good (score ≥ 36) and poor (score < 36).(22)

A reliability test using Cronbach's Alpha and a validity test using Pearson Product Moment were carried out prior to data processing. Every item was deemed trustworthy and legitimate. The ethical approval number for this study is 321/UN.16.2/KEP-FK/2025. Frequency distributions were examined using univariate analysis, and relationships between variables were evaluated using bivariate analysis using the Chi-Square test. Multiple logistic regression was also used for multivariate analysis.

RESULT AND DISCUSSION

Table 1. Profile of HIV patients' characteristics in Pariaman City in 2025

Substansi	f	%
Age		
≤40 years old	58	69
> 40 years old	26	31
Sex		
Man	63	75
Woman	21	25
Job		
Employed	63	75
Unemployed	21	25
Education		
High Level	76	90
Low Level	8	10
Living with family		
Yes	72	86
No	12	14

Table 2. Profile of HIV patients' family support in Pariaman City in 2025

Substansi	f	%
Emotional support		
Good	62	74
Poor	22	26
Informational support		
Good	59	70
Poor	25	30
Instrumental support		
Good	44	52
Poor	40	48
Appreciation support		
Good	38	45
Poor	46	55
Compliance therapy		
Adhere	59	70.2
Non-Adhere	25	29.8
Total	84	100

Table 1 shows that the majority of HIV/AIDS patients are under 40 years old (69%), male (75%), have a high level of education (90%), are typically employed (75%), and live with their families (86%). Table 2 show that the majority of respondents report receiving good family support, including instrumental support (52%), emotional support (74%), and informational support (70%). However, a higher percentage of respondents have poor instrumental support (48%) and poor appreciation support (55%). The majority of HIV-positive individuals adhere to ARV treatment (70.2%), though some patients do not (29.8%).

Table 3 shows that while some patients continued to forget to take their medication (23.8%), the majority of patients did not forget to take their medication (76.2%) and

did not intentionally skip their medication in the past two weeks (95.2%). 97.6% of patients did not purposefully cut back on or stop taking their medication. While some patients still forget to bring their medication when traveling (20.2%), the majority of patients (79.8%) never do. 97.6% of patients did not forget to take their medication the day before. A tiny percentage of patients stopped taking their medication when they felt well (4.8%), but the majority (95.2%) never stopped. Over one-third (40.5%) said they had ever been bored. The majority did not experience difficulty remembering the medication schedule recommended by the doctor (81%), although some still experienced difficulties (19%).

Table 3. Overview of Antiretroviral Therapy (ART) medication adherence among people living with HIV/AIDS in Pariaman City

Level of ARV Therapy Adherence	Yes		No	
	f	%	f	%
The patient forgets to take the medication	20	23.8	64	76.2
In the past two weeks, the patient has intentionally skipped taking the medication	4	4.8	80	95.2
The patient has intentionally reduced or stopped taking the medication.	2	2.4	82	97.6
The patient has forgotten to bring the medication while traveling.	17	20.2	67	79.8
Yesterday, the patient forgot to take the medication.	2	2.4	82	97.6
The patient has stopped taking the medication when feeling healthy.	4	4.8	80	95.2
The patient has felt bored of taking ARV medication.	34	40.5	50	59.5
The patient has difficulty remembering the medication schedule recommended by the doctor.	16	19.0	68	81.0

Table 4 shows that the majority of patients have strong emotional support from their relatives. This support includes asking about the patient's condition (71.4%), offering consolation when the patient is depressed (81%), and showing affection and care during illness (84.5%). Families also remind patients to take their medication (81%), create a comfortable environment at home (83.3%), listen to complaints about the illness (76.2%), offer encouragement and reassurance (79.8%), offer strength when patients feel anxious or stressed (72.6%), and make time to talk with the patient (72.6%). Nonetheless, some families still fail to schedule a conversation (27.4%) or inquire about the patient's condition (28.6%).

The majority of respondents also receive sufficient support in terms of information. Encouraging patients to seek treatment (92.9%), ensuring daily ARV consumption (79.8%), reminding them to abstain from harmful behaviors (86.9%), assuring them that medication improves their condition (85.7%), and promoting continued adherence despite side effects (81%) are all examples of this. Additionally, families give patients information about the advantages of ARVs (56%), the repercussions of non-adherence (67.9%), and explanations regarding ARV treatment (56%). They also assist patients in maintaining their confidence and following their medication regimens (75%).

Instrumental support is also generally good, including financial assistance for treatment (86.9%), managing health insurance (84.5%), providing nutritious food (81%), accompanying patients to seek care (57.1%), fulfilling needs during illness (82.1%), accompanying during treatment visits (52.4%), and assisting with daily activities (78.6%). However, support is considered

insufficient regarding helping prepare medications (59.5%) and collecting medications from the health center (60.7%).

The majority of patients receive sufficient appreciation for appraisal support, including participation in social activities and decision-making (77.4%), recognition that ARV therapy is a crucial routine (83.3%), encouragement to continue treatment (85.7%), decreased anxiety (78.6%), and increased self-confidence (73.8%). However, there are still some gaps in appraisal support, especially when it comes to praising treatment progress (52.4%), medication adherence (58.3%), and side effect management (51.2%).

Table 5 shows that respondents' age, sex, employment status, and educational attainment do not significantly correlate with HIV treatment adherence ($p > 0.05$). However, there is a significant correlation ($p = 0.046$) between living status and family, with an Odds Ratio of 4.200. This result means that patients who live with their families are 4.2 times more likely to be adherent, as seen from the majority of patients living with family who are adherent (75%).

Emotional support was significantly associated with adherence ($p = 0.001$; $OR = 6.019$), indicating that patients with good emotional support had approximately six times higher odds of adherence, consistent with the high adherence rate observed (80.6%). Informational support showed the strongest association ($p = 0.000$; $OR = 7.350$), with patients receiving good informational support having approximately 7.3 times higher odds of adherence, supported by the high adherence percentage (83.1%). Instrumental support was also significantly associated with adherence ($p = 0.028$; $OR = 3.326$), with good instrumental support corresponding to approximately 3.3 times higher odds of adherence (81.8%).

Table 4. Overview of family support for people living with HIV/AIDS in Pariaman City

Type of Support	Good		Poor	
	f	%	f	%
Emotional support				
The family loves and cares for the patient during illness	71	84.5	13	15.5
The family comforts the patient when feeling gloomy or sad	68	81.0	16	19.0
The family asks about the patient's condition and well-being	60	71.4	24	28.6
The family provides support and reassures the patient	67	79.8	17	20.2
The family strengthens the patient when feeling anxious or stressed	61	72.6	23	27.4
The family reminds the patient not to forget taking medication	68	81.0	16	19.0
The family provides comfort for the patient at home	70	83.3	14	16.7
The family listens to complaints about the illness and its treatment	64	76.2	20	23.8
The family takes time to talk and accompany the patient	61	72.6	23	27.4
Informational support				
The family advises the patient to seek treatment or follow-up care	78	92.9	6	7.1
The family ensures that I take ARV medication every day	67	79.8	17	20.2
The family reminds me to avoid unhealthy behaviors	73	86.9	11	13.1
The family reassures me that taking medication will make me feel better	72	85.7	12	14.3
The family encourages me to keep taking medication despite side effects	68	81.0	16	19.0
The family reassures me to stay confident and take medication regularly	63	75.0	21	25.0
The family provides information about the benefits of ARV treatment	47	56.0	37	44.0
The family provides information about the consequences of irregular medication	57	67.9	27	32.1
The family provides information about the side effects of ARV treatment	47	56.0	37	44.0
Instrumental support				
The family is willing to finance medical treatment and care.	73	86.9	11	13.1
The family is willing to manage health insurance matters	71	84.5	13	15.5
The family provides nutritious food	68	81.0	16	19.0
The family makes time to accompany me to medical appointments	48	57.1	36	42.9
The family makes time to meet my needs during illness	69	82.1	15	17.9
The family makes time to accompany me during treatment	44	52.4	40	47.6
The family helps with my daily activities	66	78.6	18	21.4
The family helps me prepare my medication	34	40.5	50	59.5
The family helps me collect ARV medication from healthcare facilities	33	39.3	51	60.7
Appreciation support				
The family involves me in decision-making	65	77.4	19	22.6
The family involves me in social activities	65	77.4	19	22.6
The family acknowledges that ARV treatment is a routine that must be maintained	70	83.3	14	16.7
The family gives me motivation to stay enthusiastic about treatment	72	85.7	12	14.3
The family motivates me not to worry excessively	66	78.6	18	21.4
The family motivates me to stay confident and strong during treatment	62	73.8	22	26.2
The family praises me when I manage to overcome medication side effects	41	48.8	43	51.2
The family praises me for taking medication regularly	35	41.7	49	58.3
The family praises me for the progress I make in treatment	40	47.6	44	52.4

Appreciation support demonstrated a significant relationship ($p=0.005$; $OR=5.077$), with good appreciation support corresponding to approximately 5.1 times higher odds of adherence, reflecting the highest adherence level observed (86.8%). Overall, these findings indicate that family support plays a significant role in the odds of ARV therapy adherence. The results of the multivariate analysis's last stage are displayed in the table above, which

demonstrates that the only variable with a significance value of less than 0.05 was informational support. With an Odds Ratio ($Exp \beta$) of 7.350, the β coefficient for informational support was 1.995, suggesting a positive direction of influence. According to this, respondents who received good informational support were 7.350 times more likely than those who received poor informational support to exhibit adherence to ARV consumption.

Table 5. Relationship between respondent characteristics and family support and the level of treatment adherence among individuals with HIV

Independent Variable	Compliance Therapy				Total		OR (95% CI)	P-value
	Adhere		Non-adhere					
	f	%	f	%	f	%		
Respondents' Characteristic								
Age								
≤40 yrs old	38	65.5	20	34.5	58	100	0.452	0.248
> 40 yrs old	21	80.8	5	19.2	26	100	(0.148-1.380)	
Sex								
Man	43	68.3	20	31.7	63	100	0.672	0.679
Woman	16	76.2	5	23.8	21	100	(0.216-2.092)	
Job								
Employed	41	65.1	22	34.9	63	100	0.311	0.130
Unemployed	18	85.7	3	14.3	21	100	(0.082-1.171)	
Education								
High Level	55	72.4	21	27.6	76	100	2.619	0.363
Low Level	4	50.0	4	50.0	8	100	(0.600-11.440)	
Living with family								
Yes	54	75.0	18	25.0	72	100	4.200	0.046
No	5	41.7	7	58.3	12	100	(1.185-14.889)	
Family Support								
Emotional support								
Good	50	80.6	12	19.4	62	100	6.019	0.001
Poor	9	40.9	13	59.1	22	100	(2.089-17.336)	
Informational support								
Good	49	83.1	10	16.9	59	100	7.350	0.000
Poor	10	40.0	15	60.0	25	100	(2.572-21.007)	
Instrumental support								
Good	36	81.8	8	18.2	44	100	3.326	0.028
Poor	23	57.5	17	42.5	40	100	(1.236-8.950)	
Appreciation support								
Good	33	86.8	5	13.2	38	100	5.077	0.005
Poor	26	56.5	20	43.5	46	100	(1.679-15.353)	
Total	59	70.2	25	29.8	84	100		

Table 6. A multivariate logistic regression test was used for the multivariate analysis

Variable	B	Sig.	Exp(B)	95% CI for EXP(B)	
				Lower	Upper
Informational support	1.995	0.000	7.350	2.572	21.007

Overview of HIV treatment adherence levels

In a setting where HIV incidence has surpassed the provincial target and family-based support structures are culturally prevalent, this study, which was carried out among people living with HIV (PLHIV) receiving ART services in Pariaman City, offers context-specific evidence on adherence patterns. According to this study, 70.2% of people living with HIV (PLHIV) in our sample adhered to antiretroviral therapy (ART), while 29.8% did not.

Boredom with taking ARVs (40.5%), forgetfulness (23.8%), forgetting medication while traveling (20.2%), and trouble remembering dosing schedules (19.0%) were persistent barriers to adherence. These results are consistent with earlier research showing that common adherence issues include forgetfulness, stigma, low motivation, and side effects.(23)

In terms of demographics, the majority of participants were male, under 40, educated, working, and

living with family. However, according to WHO, men with HIV frequently receive treatment after the fact and have difficulty achieving viral suppression.(24) However, there was no discernible correlation between treatment adherence and age, sex, employment, or education in this study.

Living with family, on the other hand, was substantially linked to better adherence because patients got more attention and reminders. Parental participation promoted medication discipline in younger or single patients. This pattern may reinforce the protective effect of family support found in this study because it is especially pertinent to the local context of Pariaman City, where extended family involvement in daily life is still common. These results are consistent with Damulira et al. (2019), showing that family cohesion, emotional support, and information sharing improve adherence in adolescents with HIV.(25) 90–95% of ARV doses are necessary for the best results, and high adherence is essential for viral suppression, decreased resistance, elevated CD4 counts, and enhanced quality of life.(8)(26) Patients who experience boredom or forget to take their medications run the risk of falling below this cutoff. Because HIV is incurable, some patients also experience treatment fatigue and believe that therapy is pointless. In these situations, family support becomes essential to maintaining therapy persistence.

Strong emotional, informational, and practical support was provided to the majority of patients in this study. Comfort, security, and a feeling of being taken care of were all provided by emotional support. Families helped patients feel more comfortable by providing care, encouragement, and reminders. Informational support, including advice and education about medication benefits and side-effects, reduced anxiety and increased certainty regarding treatment. Instrumental support included financial assistance, provision of nutritious food, and help with daily activities particularly beneficial for patients experiencing ARV side-effects or declining health.

Reward-based support, however, was comparatively minimal. Without realizing the motivational power of praise or positive reinforcement, many families believed that attention and reminders were adequate. Patients' confidence and adherence can be greatly increased by reward-based support.

Our results confirm those of Suwito et al. (2023) and Makualaina (2024), showing that non-adherence is influenced by low family support.(27)(28) ARV success depends on therapy adherence. Strong family support helps patients stick to their medication regimens, minimize irregularities, and get viral suppression faster. This study shows that family support is crucial to the practical and

emotional success of HIV treatment. In addition to medical intervention, increasing family involvement and the larger supportive environment are also necessary for improving adherence.

Therefore, family education, improved patient self-management, psychosocial support, and stigma reduction are essential strategies to increase treatment adherence. Long-term therapy commitment is reinforced by family support, which serves as a protective factor. The results of this study confirm that family support is a crucial factor in determining ARV success and quality of life for individuals living with HIV, not just an add-on

Association between family support and medication adherence among people living with HIV/AIDS

There was a statistically significant correlation between emotional support and ART adherence ($p = 0.001$; $OR = 6.019$), with only 19.4% of participants receiving good emotional support being classified as non-adherent, compared to 59.1% of those receiving poor emotional support. Emotional support boosts self-esteem, stabilizes mental health, and strengthens motivation to adhere to treatment plans. Additionally, it encourages patients to be more candid about their illness and the challenges they face while receiving treatment, which makes it simpler for families to spot barriers that could lower motivation before they result in treatment failure. These results align with the findings of Aini et al. (2024) and Dorothea (2020), who found that emotional support from family members enhances adherence and aids patients in managing the psychological effects of HIV.(29)(30) Since the majority of patients live with and interact with family members on a daily basis, this support has an impact on patients' motivation, sense of security, and belief that they can live longer, healthier lives that cannot be entirely replaced by other forms of social or clinical support. On the other hand, its absence may result in low motivation, unfavorable treatment from family members, hopelessness, and a higher chance of treatment failure.(31)

In addition to emotional support, informational, instrumental, and appreciative support were also strongly linked to adherence, suggesting that patients gain from a full range of support types rather than just one. The only respondent characteristic that was found to be significantly correlated with adherence was living arrangement ($p = 0.046$; $OR = 4.200$). Patients who did not live with family had significantly higher non-adherence rates (58.3%) than those who did (25.0%). This research highlights how crucial daily interaction and closeness are for family members to be able to consistently support one another.

In contrast, this study found no statistically significant relationship between adherence and age, sex, occupation, or education ($p > 0.05$ for all). None of these differences reached statistical significance, despite the fact that adherence seemed somewhat higher among patients over 40 (80.8% vs. 65.5%), women (76.2% vs. 68.3%), unemployed patients (85.7% vs. 65.1%), and those with lower education (50.0% vs. 72.4%, though in the opposite direction). This is probably due to the sample's relatively small and unevenly distributed subgroups (e.g., only 8 respondents with low education and 21 with unemployed status), which limits statistical power to identify true associations.

This finding is significant because a number of earlier studies have found that better health literacy and treatment adherence are associated with older age, higher education, and employment status; the lack of these associations in this population suggests that the more immediate, daily influence of family support may outweigh structural and demographic factors. In other words, the existence of a supportive family environment seems to be the more reliable predictor of adherence behavior, independent of a patient's age, sex, level of education, or professional background. This emphasizes the necessity for healthcare interventions for individuals living with HIV to prioritize strengthening family-based support systems as a fundamental element of adherence-promoting strategies, rather than focusing only on demographic targeting.

Multivariate Analysis

The multivariate logistic regression analysis, conducted to determine the most dominant variable influencing ART adherence, revealed that informational support remained the only variable with a statistically significant contribution after adjusting for other variables ($p = 0.000$; $\beta = 1.995$; OR = 7.350; 95% CI: 2.572–21.007). This finding indicates that patients receiving good informational support had approximately 7.3 times higher odds of adhering to ARV treatment compared to those with poor informational support, after controlling for other forms of family support and respondent characteristics. The positive β coefficient further confirms that informational support exerts a favorable influence on adherence behavior.

The bivariate results above, which also found informational support to be the family support dimension most strongly linked to adherence, are supported by this finding. Patients' understanding of their condition and treatment plan appears to be greatly influenced by informational support, which includes teaching them about medication schedules, possible side effects, and the significance of regular ARV consumption. According to

earlier research, patients who are well-informed by their families are more likely to comprehend the repercussions of non-adherence, identify early warning indicators of treatment failure, and feel capable of managing their condition on their own. This is in line with earlier research that suggests health-related knowledge passed down through close family relationships can strengthen patients' capacity for self-management and lessen uncertainty regarding their treatment.(29)(30)

On the other hand, the multivariate model's decreased significance of emotional, instrumental, and appreciation support indicates that, although these types of support are still important, their effects might be partially mediated through the informational dimension; that is, families that offer strong informational support are also likely to offer emotional support and encouragement as part of the same supportive relationship. Given that this aspect of support seems to have the most significant and independent impact on treatment adherence among individuals living with HIV, these results imply that interventions targeted at enhancing ART adherence should place a high priority on providing family members with accurate health information and communication skills.

CONCLUSION

The majority of HIV patients in this study were male, under 40, well-educated, employed, and lived with their families. They also reported having strong family support in general. Living with family, emotional support, informational support, instrumental support, and appreciation support were all found to be significantly associated with ART adherence, while age, gender, employment, and education were not. Informational support demonstrated the strongest correlation with adherence among the four aspects of family support (OR = 7.350), underscoring the significance of sufficient and accurate health information in motivating patients to follow their treatment plans. These results highlight the critical role that family involvement which includes instrumental, emotional, informational, and appreciation-based support plays in enhancing ART adherence and lowering the risk of HIV transmission.

This study offers novel insight by disaggregating family support into four distinct dimensions rather than treating it as a single construct, and by addressing ART adherence a topic that remains sensitive and stigmatized in Eastern cultural contexts such as Indonesia using a structured, replicable questionnaire instrument. However, several limitations should be noted: self-reported adherence may introduce information bias; the cross-sectional design precludes causal inference; accidental sampling raises the

risk of selection bias, challenging generalizability; and the single-city setting restricts generalization to other parts of Indonesia. To support and expand on these findings, future research using longitudinal designs and larger sampling across several regions is advised.

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Conflict of Interest

The authors declare no conflict of interest.

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