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THE EDU-FAMILY HIV MODEL: IMPACT ON STIGMA AND ARV ADHERENCE AT HIV PDP COMMUNITY HEALTH CENTERS

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ABSTRACT
Stigma against People Living with HIV (PLHIV) and low adherence to antiretroviral (ARV) therapy remain obstacles to the successful control of HIV/AIDS. Educational approaches focused solely on the individual have not been optimal in engaging families as sources of therapeutic support. This study aimed to analyze the effectiveness of the HIV Edu-Family Model in reducing stigma and improving ARV therapy adherence among PLHIV at HIV Care, Support, and Treatment (CST) centers in Ambon City Community Health Centers. A quasi-experimental study using a non-equivalent control group design was conducted with 60 PLHIV and their family caregivers, selected via purposive sampling. Respondents were divided into treatment and control groups (n=30 each). The treatment group received education, family discussions, mentoring, and monitoring over four weeks, while the control group received standard care. Data were collected using stigma and ARV adherence questionnaires before and after the intervention. The research instruments consisted of an HIV stigma questionnaire and an ARV therapy adherence questionnaire. Both instruments underwent validity and reliability testing, achieving Cronbach's Alpha values of $\geqslant$0.70, thereby demonstrating adequate internal consistency. Analysis was performed using Paired Samples t-tests and Independent Samples t-tests (α=0.05). Stigma scores in the treatment group decreased from 30.67±4.14 to 24.97±4.05 ($p<0.001$), while ARV adherence increased from 28.30±5.57 to 32.07±5.12 ($p<0.001$). The changes in stigma and adherence differed significantly from the control group ($p<0.001$), with effect sizes of 2.042 and 1.054, respectively. The HIV Edu-Family Model is effective in reducing stigma and improving ARV therapy adherence.

Keywords: ARV adherence; family support; HIV edu-family model; HIV stigma; PLHIV

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INTRODUCTION

HIV/AIDS remains a public health issue requiring sustained attention, as its impact extends beyond physical health to encompass psychological and social aspects, as well as the continuity of treatment (Huda, 2021). Advances in antiretroviral (ARV) therapy have enabled people living with HIV (PLHIV) to lead more productive lives and have increased life expectancy (Kemenkes RI, 2020). However, the success of therapy depends not only on the availability of ARVs and access to healthcare services but also on the adherence of PLHIV to consistent treatment. Non-adherence to therapy can lead to treatment failure, increase the risk of drug resistance, worsen health conditions, and potentially heighten the risk of HIV transmission (Rahayu et al., 2022a). Therefore, improving ARV adherence is a crucial component in successfully controlling HIV.

Beyond the issue of treatment adherence, stigma against people living with HIV (PLHIV) remains a serious obstacle in the response to HIV/AIDS. This stigma can manifest as negative labeling, stereotyping, discrimination, or differential treatment. Such conditions can cause PLHIV to feel afraid, ashamed, and isolated, and reluctant to disclose their HIV status to others, including their families (Setiarto et al., 2021). Ultimately, stigma can hinder the utilization of health services, reduce social support, and affect the motivation and consistency of people living with HIV (PLHIV) in adhering to antiretroviral (ARV) therapy (Kemkes RI, 2022). Thus, HIV control cannot rely

solely on a medical approach; it requires interventions capable of addressing psychosocial barriers while simultaneously strengthening support for treatment continuity.

Families hold a strategic position in supporting people living with HIV (PLHIV), as they constitute the immediate social environment with which individuals interact in their daily lives (Kemkes RI, 2022). Family support can take various forms, including emotional and informational support, medication reminders, assistance in accessing healthcare services, and acceptance of the individual's condition. However, family involvement in HIV care services is often not implemented systematically. HIV education is generally directed primarily at PLHIV as individuals, while the capacity of families to understand HIV, reduce stigma, provide psychosocial support, and help maintain antiretroviral (ARV) adherence has not been fully optimized. This situation highlights a gap between the need of PLHIV for sustained support and service models that remain largely individual-oriented (Pralambang et al., 2021).

This gap is particularly significant in the context of HIV services at Community Health Centers (Puskesmas). As primary healthcare facilities, these centers are strategically positioned to provide continuous HIV care, support, and treatment (CST) services. However, the success of these services depends on more than just the interaction between healthcare workers and people living with HIV (PLHIV). Family involvement needs to be integrated into support strategies specifically to help PLHIV cope with stigma and maintain treatment adherence in their daily lives. Therefore, an intervention model is required that goes beyond mere information provision, instead combining education, family communication, support, and monitoring into a structured approach.

In light of these conditions, this study develops the "Edu-Family HIV Model," an integrated, family-based educational approach combining HIV education, family discussions, mentoring, and monitoring of antiretroviral (ARV) therapy adherence (dinkes.acehprov.go.id, 2023). The study's novelty lies in the structured and sustained integration of the family's role into HIV interventions, targeting two simultaneous outcomes: the reduction of stigma and the improvement of ARV adherence. This model positions the family not merely as recipients of information but as active partners in the support process for people living with HIV (PLHIV). The approach aims to bridge knowledge, social acceptance, family support, and treatment adherence behavior within a single intervention (Farhat et al., 2019).

This novelty is significant because interventions focused solely on increasing knowledge do not necessarily yield sustainable changes in behavior or the social environment. Conversely, a family-based approach has the potential to create a supportive environment closely aligned with the daily lives of PLHIV. Integrating education and mentoring enables families to identify adherence barriers, provide positive reinforcement, and assist PLHIV in coping with stigma. Thus, the Edu-Family HIV Model holds potential not only as an educational intervention but also as a strategy for family empowerment within primary HIV care services (Diniarti et al., 2025).

The need for such a model is increasingly urgent, as successful HIV treatment is a long-term process requiring consistent support. Interventions that are easily implemented in primary care, involve the family, and address both psychosocial aspects and treatment behaviors are essential to strengthening the continuity of HIV treatment. However, empirical evidence regarding the effectiveness of a model that simultaneously integrates education, family involvement, mentoring, and monitoring to reduce stigma and improve ARV adherence particularly within the context of HIV care and treatment services in Ambon City remains limited.

Based on this background, this study aims to analyze the effectiveness of the Edu-Family HIV Model in reducing stigma and improving ARV therapy adherence among PLHIV receiving care at primary health centers (Puskesmas) providing HIV services in Ambon City. The research findings

are expected to contribute to the development of family-based nursing interventions and HIV services, and to serve as a foundation for strengthening a comprehensive, sustainable, and needs-oriented HIV care and treatment (PDP) service model.

METHOD

This study employs a quasi-experimental design specifically a non-equivalent control group design with pretest and posttest measurements and was conducted in 2026 at the HIV Care and Support (PDP) Community Health Center in Ambon City. The design aims to evaluate the effectiveness of the "Edu-Family HIV Model" on changes in stigma levels and antiretroviral (ARV) therapy adherence among People Living with HIV (PLHIV) by comparing pre- and post-intervention score changes between the treatment and control groups. The study population consisted of all PLHIV undergoing ARV therapy at the Ambon City HIV PDP Community Health Center. Participants were selected using purposive sampling based on inclusion criteria: currently undergoing ARV therapy, having a family companion, and willingness to participate as a respondent. The total sample size was 60 respondents, comprising 30 in the treatment group and 30 in the control group.

The treatment group received the Edu-Family HIV Model intervention over a four-week period. This model is designed as a family-based intervention integrating four key stages: Education, Family Discussion, Mentoring, and Monitoring. Each session lasted 60–90 minutes and involved both the PLHIV and their family companion. The education stage provided information on HIV, ARV therapy, the importance of adherence, and HIV-related stigma. The family discussion stage aimed to enhance communication, acceptance, and family support for the PLHIV. The mentoring stage assisted PLHIV in overcoming obstacles during therapy, while the monitoring stage tracked the continuity of family support and adherence to ARV therapy. The control group received standard education and care in accordance with the facility's established health service procedures.

The research instruments consisted of an HIV stigma questionnaire and an ARV therapy adherence questionnaire. Both instruments underwent validity and reliability testing, achieving Cronbach's Alpha values of ≥ 0.70, thereby demonstrating adequate internal consistency. Measurements were taken twice before the intervention (pretest) and after the intervention (posttest) to assess changes in stigma scores and ARV adherence. Data analysis was conducted in stages. Baseline characteristic comparability between the treatment and control groups was analyzed using the Chi-Square test. Data normality was assessed using the Shapiro-Wilk test, while the homogeneity of variance was tested using Levene's test. Changes in stigma scores and ARV adherence within each group were analyzed using the Paired Samples t-test. Intervention effectiveness was compared based on score changes (delta) between the treatment and control groups using the Independent Samples t-test or Welch's t-test, depending on the homogeneity test results. The magnitude of the intervention effect was calculated using Cohen's d. All statistical tests were conducted at a significance level of $\alpha = 0.05$. The study received ethical approval from the Pattimura University Ethics Committee (reference number 134/FK-KOM.ETIK/VII/2026). All respondents were informed about the study's objectives, procedures, benefits, and their rights prior to the study's commencement. Participation was voluntary and based on informed consent. The confidentiality of respondents' identities and data was maintained throughout the data collection, processing, and reporting stages.

RESULT

Table 1, the majority of people living with HIV (PLHIV) in both groups fell within the 46–55 age range, accounting for 36.7% in each group. The respondents were predominantly male, comprising 60.0% of the control group and 56.7% of the treatment group. The most common level of education was high school (SMA), at 63.3% for the control group and 36.7% for the treatment group. The majority of respondents had been undergoing ART for less than 12 months: 70.0% in the control group and 66.7% in the treatment group. The history of receiving HIV/AIDS education was relatively balanced between the two groups, as was the frequency of ART follow-up visits, with the

majority falling into the "sometimes" category. Equivalence test results showed that all variables had p-values > 0.05: age (p=0.484), gender (p=0.793), education (p=0.218), duration of ART (p=0.781), history of HIV/AIDS education (p=0.796), and frequency of ART follow-up (p=0.549). Thus, it can be concluded that the baseline characteristics of PLHIV in the control and treatment groups were homogeneous or equivalent, making the two groups suitable for comparison in the analysis of the HIV Edu-Family Model's effectiveness.

Table 1.
Characteristics of ODHIV Respondents and Test of Equivalence Between Treatment and Control Groups (n=60)

Characteristic	Control f (%)	Intervention f (%)	p-value
Age			0,484
19–25 years	4 (13,3)	2 (6,7)	
26–35 years	5 (16,7)	2 (6,7)	
36–45 years	8 (26,7)	10 (33,3)	
46–55 years	11 (36,7)	11 (36,7)	
56–65 years	2 (6,7)	5 (16,7)	
Gender			0,793
Male	18 (60,0)	17 (56,7)	
Female	12 (40,0)	13 (43,3)	
Education			0,218
Elementary School	1 (3,3)	1 (3,3)	
Junior High School	8 (26,7)	14 (46,7)	
Senior High School	19 (63,3)	11 (36,7)	
College	2 (6,7)	4 (13,3)	
Duration of ARV Therapy			0,781
<12 month	21 (70,0)	20 (66,7)	
≥12 month	9 (30,0)	10 (33,3)	
Has Received HIV/AIDS Education			0,796
Never	15 (50,0)	14 (46,7)	
Ever	15 (50,0)	16 (53,3)	
Frequency of ARV monitoring			0,549
Not routine	6 (20,0)	4 (13,3)	
Occasionally	18 (60,0)	22 (73,3)	
Routine	6 (20,0)	4 (13,3)	

Table 2, the majority of family caregivers in the control group fell within the 46–55 age range (40.0%), whereas in the treatment group, the most common age range was 26–35 years (36.7%). Most caregivers were female: 66.7% in the control group and 60.0% in the treatment group. A large proportion of caregivers were siblings of the person living with HIV (PLHIV)—53.3% in the control group and 36.7% in the treatment group. The majority had been providing care to the PLHIV for more than three years, particularly in the treatment group (70.0%). Most had also previously received education regarding HIV/AIDS. Furthermore, the majority of families exhibited positive stigma, high family support, and family roles ranging from moderate to high.

Equivalence test results showed that all variables had p-values > 0.05, including age (p=0.410), gender (p=0.592), education (p=0.374), relationship to the PLHIV (p=0.147), duration of caregiving (p=0.184), history of HIV/AIDS education (p=0.184), family stigma category (p=0.791), family support category (p=0.656), and family role category (p=0.834). Thus, the characteristics of family caregivers in the control and treatment groups were equivalent (homogeneous), thereby supporting the validity of comparing the intervention outcomes of the HIV Edu-Family Model during the effectiveness analysis stage.

Table 2.
Characteristics of Family Facilitators and Test of Equivalence Between Treatment and Control Groups (n=60)

Characteristic	Control f (%)	Intervention f (%)	p-value
Age			0,410
19–25 years	2 (6,7)	3 (10,0)	
26–35 years	5 (16,7)	11 (36,7)	
36–45 years	6 (20,0)	5 (16,7)	
46–55 years	12 (40,0)	7 (23,3)	
56–65 years	5 (16,7)	4 (13,3)	
Gender			0,592
Male	10 (33,3)	12 (40,0)	
Female	20 (66,7)	18 (60,0)	
Education			0,374
Tidak sekolah No formal schooling	13 (43,3)	11 (36,7)	
Elementary school	6 (20,0)	11 (36,7)	
Junior high school	8 (26,7)	4 (13,3)	
Senior high school	3 (10,0)	4 (13,3)	
Relationship to Person Living with HIV (PLHIV)			0,147
Spouse	3 (10,0)	7 (23,3)	
Parent	3 (10,0)	8 (26,7)	
Child	6 (20,0)	2 (6,7)	
Sibling	16 (53,3)	11 (36,7)	
Other	2 (6,7)	2 (6,7)	
Duration of Supporting Person Living with HIV (PLHIV)			0,184
≤3 years	14 (46,7)	9 (30,0)	
>3 years	16 (53,3)	21 (70,0)	
Previous HIV/AIDS Education			0,184
No	14 (46,7)	9 (30,0)	
Ever	16 (53,3)	21 (70,0)	
Family Stigma Category			0,791
Positive	19 (63,3)	18 (60,0)	
Negative	11 (36,7)	12 (40,0)	
Family Support Category			0,656
Low	2 (6,7)	1 (3,3)	
Moderate	10 (33,3)	13 (43,3)	
High	18 (60,0)	16 (53,3)	
Family Role Category			0,834
Low	2 (6,7)	1 (3,3)	
Moderate	16 (53,3)	17 (56,7)	
High	12 (40,0)	12 (40,0)	

Table 3 presents the distribution of the Edu-Family HIV recipient group, showing a greater increase in positive stigma and ARV therapy adherence compared to the control group. Positive stigma rose from 16.7% to 53.3%, while high ARV adherence increased from 33.3% to 60.0%. In contrast, changes in the control group were relatively minor. These findings descriptively indicate that Edu-Family HIV has the potential to reduce stigma and improve ARV therapy adherence, although the significance of these changes requires confirmation through inferential analysis.

Table 3.
Distribution of Stigma Categories and ARV Therapy Adherence Before and After Intervention in Control and Treatment Groups (n=60)

Variable	Categories	Control Groups Pretest n (%)	Control Groups Posttest n (%)	Treatment Groups Pretest n (%)	Treatment Groups Posttest n (%)
Stigma	Positive	4 (13,3)	5 (16,7)	5 (16,7)	16 (53,3)
	Negative	26 (86,7)	25 (83,3)	25 (83,3)	14 (46,7)
ARV Therapy Adherence	Low	5 (16,7)	3 (10,0)	6 (20,0)	1 (3,3)
	Moderate	14 (46,7)	15 (50,0)	14 (46,7)	11 (36,7)
	High	11 (36,7)	12 (40,0)	10 (33,3)	18 (60,0)

Results of the test on the effect of the Edu-Family HIV Model a family-based integrated education model on reducing stigma and increasing ARV therapy adherence among people living with HIV (PLHIV).

Table 4.
Results of the test on the effect of the Edu-Family HIV Model (a family-based integrated education model) in the Intervention Group (n=30)

Group	Variable	Pretest (Mean±SD)	Posttest (Mean±SD)	Mean Difference	t	p-value
Control	Score Stigma	31,70±4,83	30,60±4,47	-1,10	-2,860	0,008
	ARV Therapy Adherence	28,63±5,73	28,83±5,33	0,20	0,504	0,618
Treatment	Score Stigma	30,67±4,14	24,97±4,05	-5,70	-17,500	<0,001
	ARV Therapy Adherence	28,30±5,57	32,07±5,12	3,77	4,838	<0,001

Based on the Paired Samples t-test, the control group showed a decrease in stigma scores from 31.70 ± 4.83 to 30.60 ± 4.47. This decrease was statistically significant ($t = -2.860$; $p = 0.008$). Conversely, ARV therapy adherence scores increased only slightly from 28.63 ± 5.73 to 28.83 ± 5.33, but this increase was not statistically significant ($t = 0.504$; $p = 0.618$). In the treatment group, the implementation of the HIV Edu-Family Model resulted in a much larger decrease in stigma scores, specifically from 30.67 ± 4.14 to 24.97 ± 4.05. Test results indicated a significant difference ($t = -17.500$; $p < 0.001$). Additionally, ARV therapy adherence scores increased significantly from 28.30 ± 5.57 to 32.07 ± 5.12 ($t = 4.838$; $p < 0.001$). Overall, these results demonstrate that the HIV Edu-Family Model is effective in reducing stigma and improving ARV therapy adherence among people living with HIV (PLHIV). Compared to the control group, the treatment group exhibited greater changes in both the reduction of stigma scores and the improvement of ARV therapy adherence scores.

Effectiveness test results of the HIV Edu-Family Model—an integrated, family-based education model—in reducing stigma and improving ARV therapy adherence among PLHIV

Table 5.
Effectiveness of the HIV Edu-Family Model (an integrated, family-based education model) regarding stigma and ARV therapy adherence among PLHIV

Variabel	Kelompok Kontrol (Mean ± SD)	Kelompok Perlakuan (Mean ± SD)	Mean Difference	t	p-value	Cohen's d
Δ Skor Stigma	-1,37 ± 2,41	-5,70 ± 1,78	4,33	7,908	<0,001	2,042
Δ Skor Kepatuhan ARV	0,20 ± 2,17	3,77 ± 4,26	-3,57	-4,082	<0,001	1,054

Effectiveness test results indicate that the HIV Edu-Family Model has a significant impact on reducing stigma and increasing ARV therapy adherence among people living with HIV (PLHIV). Regarding the change in stigma scores (Δ stigma), the control group experienced a mean reduction of -1.37 ± 2.41, whereas the treatment group experienced a much larger reduction of -5.70 ± 1.78. Independent Samples t-test results revealed a significant difference in the change between the two groups ($t = 7.908$; $p < 0.001$). A Cohen's d value of 2.042 indicates a large effect size. This

demonstrates that the HIV Edu-Family Model effectively reduces stigma among PLHIV compared to the care provided to the control group. Regarding the change in ARV therapy adherence scores (Δ ARV adherence), the control group showed a mean increase of only 0.20 ± 2.17, while the treatment group showed an increase of 3.77 ± 4.26. Independent t-test results indicated a significant difference in the change between the two groups ($t = -4.082$; $p < 0.001$). A Cohen's d value of 1.054 indicates a large effect size, confirming that the HIV Edu-Family Model is effective in increasing ARV therapy adherence among PLHIV. Overall, the effectiveness analysis shows that respondents receiving the HIV Edu-Family Model experienced a greater reduction in stigma and a higher increase in ARV therapy adherence compared to the control group. The magnitude of the effect sizes for both variables indicates that the intervention not only yields statistically significant differences but also holds strong practical significance in supporting successful therapy management for PLHIV.

DISCUSSION

The study results indicate a significant difference between the group of people living with HIV (PLHIV) receiving the HIV Edu-Family Model and the group receiving standard care regarding changes in stigma levels and antiretroviral (ARV) therapy adherence. Effectiveness test results show that the change in stigma scores in the intervention group was significantly greater than in the control group ($p<0.001$); similarly, the change in ARV therapy adherence scores was higher in the intervention group compared to the control group ($p<0.001$). These findings demonstrate that the implementation of the HIV Edu-Family Model is effective in reducing stigma while simultaneously improving ARV therapy adherence among PLHIV.

Stigma is a deeply discrediting attribute that causes an individual to lose social acceptance and undergo a transformation of identity (a "spoiled identity") (Gosain et al., 2022). Pada ODHIV, stigma dapat berupa penolakan sosial, diskriminasi, stereotip negatif, hingga munculnya stigma dari dalam diri (*self-stigma*), yang berdampak pada kesehatan psikologis dan perilaku pencarian pengobatan (Sabilla et al., 2022). The framework explains that stigma experienced by people living with HIV (PLHIV) comprises three primary mechanisms: enacted stigma (experiencing discrimination), anticipated stigma (expecting to face discrimination), and internalized stigma (accepting negative stereotypes about oneself). These three mechanisms have been shown to affect physical and psychological health, engagement with healthcare services, and adherence to antiretroviral (ARV) therapy (George, 2019).

The Edu-Family HIV model was developed based on the Health Belief Model (HBM) approach, which emphasizes that behavioral change is influenced by an individual's perceptions regarding the threat of the disease, the benefits of action, barriers, cues to action, and self-efficacy (Setiyaningsih et al., 2016). Through the involvement of the family as primary support figures, education not only enhances knowledge about HIV and ARV therapy but also fosters emotional support, strengthens motivation, and reduces negative perceptions of the disease. Family support plays a crucial role in creating a more accepting environment, thereby helping to alleviate the stigma experienced by people living with HIV (PLHIV) (Rahayu et al., 2022b).

The study results demonstrate that the intervention group experienced a significantly greater reduction in stigma compared to the control group. While a slight reduction in stigma was observed in the control group, the magnitude of change was relatively small compared to the group that received the HIV Edu-Family Model. This indicates that the standard services provided at Community Health Centers (Puskesmas) have not yet fully addressed the psychosocial aspects experienced by people living with HIV (PLHIV). In contrast, the family-based educational intervention provided an opportunity for family members to gain a more comprehensive understanding of HIV, dispel misconceptions, foster empathy, and reduce discriminatory behavior toward the family member living with HIV (Mardalena et al., 2020).

The reduction in stigma has also led to improved adherence to ARV therapy. According to Social Support Theory, social support comprises four primary forms: emotional support, informational support, instrumental support, and appraisal support (Ajzen et al., 2019). Social support plays a crucial role in enhancing physical and psychological health through behavioral, psychological, and physiological mechanisms. Individuals who receive adequate social support tend to possess more effective coping skills, experience lower stress levels, and demonstrate better adherence to treatment. For people living with HIV (PLHIV), the family serves as the closest source of social support, capable of providing motivation, ensuring adherence to medication regimens, helping to overcome treatment-related obstacles, and boosting the patient's confidence in maintaining continuous antiretroviral (ARV) therapy (Nolen et al., 2022).

The results of this study indicate that the improvement in ARV therapy adherence in the intervention group was significantly higher than in the control group. This suggests that the HIV Edu-Family Model influences not only cognitive aspects—specifically, increased knowledge—but also health behaviors through the strengthening of family support. Adherence to antiretroviral therapy is a key component of successful HIV treatment; consistent ARV use enables the achievement and maintenance of viral suppression, promotes immune system recovery (indicated by increased CD4 cell counts), lowers the incidence of opportunistic infections, reduces morbidity and mortality rates, and prevents drug resistance resulting from treatment failure (WHO, 2024).

The results of this study are in line with George, (2019) report that family-based interventions and psychoeducation are effective in reducing stigma among people living with HIV. The study concludes that family involvement yields more sustainable effects than interventions focusing solely on the individual, as the family serves as the primary source of social support in daily life. Besides that Belle et al., (2019) Interventions aimed at reducing HIV-related stigma to improve the uptake of and adherence to antiretroviral therapy have demonstrated that programs integrating education, behavioral change, counseling, and psychosocial support significantly reduce stigma while simultaneously enhancing ARV adherence. The research concludes that successful HIV treatment depends not only on drug availability but also on the intervention's ability to address psychosocial barriers—particularly the stigma still experienced by people living with HIV (PLHIV). These findings align with research conducted at the HIV PDP Community Health Center in Ambon City, where the "Edu-Family HIV" model was shown to simultaneously influence both of these aspects.

In the Indonesian context, these research findings align with a systematic review conducted by Costa et al., (2022) regarding the relationship between family support and ARV therapy adherence among people living with HIV (PLHIV). The review indicates that the majority of studies in Indonesia report a significant association between family support and ARV therapy adherence. Family support—whether emotional, informational, appraisal-based, or practical—has been shown to boost patient motivation to maintain treatment adherence. This reinforces the fundamental concept of the Edu-Family HIV Model, which positions the family as a key partner in the education and support process for PLHIV. Beyond family support, the success of the Edu-Family HIV Model is also driven by an interactive educational approach. Delivering information in stages, using easily understood educational materials, facilitating two-way discussions, and allowing families to ask questions foster better understanding compared to conventional education. These conditions strengthen the process of behavioral change, as participants do not merely receive information but also have the opportunity to discuss the various challenges encountered during therapy.

From a healthcare service perspective, these findings demonstrate that HIV management should not focus solely on ARV therapy administration and clinical monitoring; it must also address psychosocial aspects through family involvement. A family-oriented approach creates a sustainable

support system, enabling behavioral changes to be maintained over the long term. Consequently, implementing the Edu-Family HIV Model offers potential as an innovative strategy that can be integrated into HIV Care, Support, and Treatment (CST) services at Community Health Centers (Puskesmas), particularly to enhance treatment success and the quality of life for PLHIV. The study results confirm that the Edu-Family HIV Model is more effective than standard care in reducing stigma and improving ARV therapy adherence among PLHIV receiving HIV CST services at Community Health Centers in Ambon City. These findings underscore the importance of developing service models that are not only patient-centered but also actively involve families as key partners in supporting the long-term success of HIV therapy.

CONCLUSION

Research on the development and effectiveness of the Edu-Family HIV Model an integrated, family-based educational approach aimed at reducing stigma and improving antiretroviral (ARV) therapy adherence among people living with HIV (PLHIV) at the HIV PDP Community Health Center in Ambon City concluded that the intervention group experienced a significant reduction in stigma levels following the implementation of the model. This reduction in stigma was greater in the intervention group than in the control group. Additionally, the intervention group showed a significant improvement in ARV therapy adherence, whereas the control group demonstrated no significant change in adherence. Effectiveness test results indicated that the changes in stigma levels and ARV therapy adherence in the intervention group differed significantly from those in the control group ($p<0.05$). Thus, the Edu-Family HIV Model is proven effective as an integrated, family-based educational model for reducing stigma and enhancing ARV therapy adherence among PLHIV at the HIV PDP Community Health Center in Ambon City.

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