

The Relationship between Knowledge, Stigma, and Social Support with the Behavior of People with HIV in Preventing HIV-AIDS Transmission

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ABSTRACT

Introduction: The increasing number of HIV/AIDS cases in Palangka Raya City requires an understanding of behavioral factors in people living with HIV (PLWHA), particularly the role of knowledge, stigma, and social support in preventing transmission. This study aims to analyze the relationship between these three factors and HIV/AIDS prevention behaviors in PLWHA.

Method: An analytical observational study with a cross-sectional design was conducted on 130 PLWHA (People Living with HIV) who were purposively selected from a population of 179 people. Data were collected through directed interviews using a structured questionnaire at the VCT Clinic of Dr. Doris Sylvanus Regional Hospital, Palangka Raya (December 2024–June 2025). Univariate, bivariate, and multivariate analyses were performed using SEM-PLS at a significance level of 0.05.

Results: A total of 53.1% of respondents had poor knowledge, 84.6% received good social support, and 96.9% demonstrated good preventive behavior. Structural analysis showed that knowledge was significantly associated with preventive behavior ($\beta=0.259$; $p=0.007$) and social support was the strongest determinant ($\beta=0.387$; $p<0.001$), while stigma had no significant association ($p=0.638$).

Conclusion: HIV/AIDS prevention behaviors among people living with HIV are primarily related to social support and knowledge, while stigma is not directly related in this model. Comprehensive interventions based on ongoing education, strengthening social networks, and mental health services are needed to maintain protective behaviors.

Keywords: HIV-AIDS; PLWHA; knowledge; stigma; social support; preventive behavior.

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INTRODUCTION

HIV/AIDS cases in Indonesia have shown an increasing trend year after year, reflecting ongoing gaps in prevention, control, and support efforts for people living with HIV (PLWHA). This situation demands a more comprehensive approach, focusing not only on medical therapy through antiretroviral therapy (ART) but also on behavioral determinants that influence the risk of transmission. Sustainable HIV/AIDS prevention efforts depend on individuals' ability to understand risks, manage their health conditions, and implement safe behaviors in their daily lives.

Therefore, the behavior of PLWHA in preventing transmission to others is a key component of the national HIV/AIDS control strategy.^[1,2]

Epidemiological data shows that Central Kalimantan Province is experiencing a consistent increase in cases, with Palangka Raya City as the region with the highest proportion. This situation illustrates that case detection, access to treatment, and strengthening prevention efforts still face structural and individual challenges. The high number of cases not only indicates active transmission in the community but also

indicates the possibility of low adherence to prevention behaviors among people living with HIV. Suboptimal achievement of national targets for detection and treatment also increases the risk of further transmission, reinforcing the urgency of examining factors associated with prevention behaviors in the diagnosed group.^[3]

HIV/AIDS prevention behaviors among people living with HIV include adherence to ART to maintain low viral load, consistent condom use, avoiding needle sharing, and regular participation in health services. Field reports and preliminary studies in Palangka Raya indicate that some people living with HIV have not been able to consistently maintain these behaviors, thus opening up opportunities for further transmission. These findings emphasize that clinical factors alone are not sufficient to explain individual behavior; rather, psychosocial factors significantly influence daily decisions.^[4,5]

One important determinant is HIV/AIDS knowledge, which includes an understanding of transmission mechanisms, prevention methods, the benefits of ART, and the health consequences of inadequate treatment. Several studies have reported that good knowledge is associated with adherence to treatment and safer sexual practices. However, some studies have found a gap between knowledge and practice, where individuals who understand the risks continue to engage in risky behaviors due to psychological pressures, social norms, or structural limitations. This situation suggests that knowledge is a necessary, but not necessarily sufficient, prerequisite for producing sustainable behavior change without the support of other factors.^[6]

Stigma against people living with HIV is also a major barrier to preventing HIV/AIDS transmission. Stigma can manifest as discrimination, negative stereotypes, social rejection, and unfair treatment from family and community. The experience of stigma often leads to feelings of shame, fear, low self-esteem, and social isolation, which can lead to reluctance to access health services, limitations in disclosing health status, and withdrawal from support communities. The low participation of people living with HIV in local support activities reflects the persistent strong social pressures they experience, potentially hindering educational and counseling interventions that would strengthen preventive behaviors.^[7,8]

Social support from family, partners, peers, health workers, and the community plays a significant protective role. Emotional, informational, instrumental, and reward support can increase an individual's motivation to adhere to treatment, maintain safe sexual behaviors, and manage the psychological distress caused by stigma. Several studies have shown that people living with HIV with strong social support tend to have a better quality of life and higher engagement in preventive behaviors. However, other findings suggest that social support does not always guarantee behavior change if individuals still face barriers to accessing services, lack of information, or strong internalized stigma. This variation in results underscores the need for contextual research tailored to local sociocultural characteristics.^[9,10]

Theoretical frameworks for health behavior, such as the Health Belief Model, the Theory of Planned Behavior, and Lawrence Green's approach, explain that individual behavior is the result of the interaction of predisposing, enabling, and reinforcing factors. In the context of HIV/AIDS, knowledge serves as a predisposing factor, stigma influences perceptions of risk and barriers, and social support acts as a reinforcing factor in maintaining healthy behaviors. Integrating these three factors is crucial for a comprehensive understanding of the behavior of people living with HIV, as transmission prevention behaviors are shaped through interconnected cognitive, emotional, social, and structural processes.^[11]

The inconsistency of research findings regarding the relationship between knowledge, stigma, and social support and preventive behaviors indicates a scientific gap that needs to be bridged, particularly in a local context like Palangka Raya City. Differences in sociocultural characteristics, healthcare systems, and community dynamics mean that research findings from other regions cannot always be generalized. Empirical studies that simultaneously examine the relationship between these three variables are crucial as a basis for formulating more targeted public health policies and interventions.^[12]

This relationship analysis is expected to identify key factors that need to be prioritized in prevention programs. Strengthening education is crucial if knowledge is dominant, while community-based interventions are needed if

stigma is significant. Family involvement and social networks should be strengthened if social support plays a significant role in shaping the behavior of people living with HIV.^[7]

The overall picture confirms that the high number of HIV-AIDS cases in Palangka Raya City is closely related to the complexity of behavioral and psychosocial factors affecting people living with HIV. The relationship between knowledge, stigma, and social support with preventive behaviors still requires in-depth study to generate strong empirical evidence. This research is crucial for analyzing the partial and simultaneous relationships between these variables as a basis for developing a comprehensive, contextual, and sustainable intervention model.

METHOD

This research is an analytical observational study with a cross-sectional approach that aims to analyze the relationship between knowledge, stigma, and social support with HIV-AIDS prevention behavior among people living with HIV (PLHIV) in Palangka Raya City. This approach was chosen because it allows researchers to observe independent and dependent variables simultaneously within a single time period, thus enabling an empirical description of the relationship between variables.

The population in this study was all 179 people living with HIV (PLWHA) registered in Palangka Raya City in 2024. The sample was selected using a purposive sampling technique, taking into account the inclusion criteria set by the researcher, resulting in 130 respondents who met the requirements as research subjects.

This study was conducted at the Voluntary Counseling and Testing (VCT) Clinic of Dr. Doris Sylvanus Regional General Hospital, Palangka Raya, from December 2024 to June 2025. Data collection was carried out by researchers assisted by three enumerators, who were health workers at the VCT clinic and had received prior training. Enumerator training included establishing a shared understanding of the research instrument, structured interview procedures, research ethics, and ensuring the confidentiality of respondent information. Each respondent was interviewed in a closed room to maintain privacy, and participation was carried out after obtaining written consent.

Primary data were collected using a structured questionnaire containing items on

HIV/AIDS knowledge levels, perceived stigma, received social support, and HIV/AIDS prevention behaviors. The questionnaire was administered directly by researchers and enumerators through directed interviews to minimize errors and ensure respondents understood each question.

The collected data then underwent a processing phase, which included editing to assess the completeness and consistency of responses, scoring each question, coding the data, and tabulating it. The data was then processed using statistical analysis software and cleaned to identify potential duplicates or incomplete data before further analysis.

Data analysis was conducted in stages. Univariate analysis was used to describe the frequency distribution and percentage of each research variable. Next, bivariate analysis was conducted to examine the relationship between knowledge, stigma, and social support with HIV-AIDS prevention behavior. To assess the influence of the three independent variables simultaneously on prevention behavior, multivariate analysis based on Structural Equation Modeling–Partial Least Squares (SEM-PLS) was used with a significance level of 0.05. This method was chosen because it can simultaneously examine the relationship between latent variables and provide an overview of the strength of each factor's influence in shaping prevention behavior in PLWHA.

RESULTS

Subjective Characteristics

Table 1. Subjective Characteristics

Characteristics	Frequency	Percentage (%)
Gender		
Man	85	65.38%
Woman	45	34.62%
Age Category		
< 31 Years	80	61.5%
31 – 44 Years	50	38.5%
last education		
There is no school	2	1.5%
Elementary school	7	5.4%
Junior high school	13	10%
High school or equivalent.	84	64.6%

S1	24	18.5%
Work		
Work	105	80.8%
Not successful	25	19.2%

The majority of the 130 respondents were male (65.38%) and under 31 years of age (61.5%). Most had a high school education or equivalent (64.6%) and were employed (80.8%), indicating adequate levels of basic to secondary literacy. These sociodemographic characteristics served as the basis for the researchers' considerations in interpreting the analysis results and the relationships between variables.

Univariate Analysis

Table 2. Knowledge about PLHIV in Palangka Raya City

No	Knowledge	Amount	Percentage (%)
1	Good	61	46.9
2	Not good	69	53.1
	Amount	130	100

Table 2 shows that the majority of PLWHA (53.1%) in Palangka Raya City had poor knowledge of HIV/AIDS, while the remainder (46.9%) had good knowledge of HIV/AIDS. This indicates that most respondents still do not fully understand HIV/AIDS prevention, transmission, and treatment.

Table 3. Stigma of PLHIV in Palangka Raya City

No	Stigma	Amount	Percentage (%)
1	Good	69	53.1
2	Not good	61	46.9
	Amount	130	100

Table 3 shows that more than half of respondents (53.1%) had positive stigma, meaning they had a more positive view of themselves and others living with HIV. However, 46.9% of respondents still had negative stigma.

Table 4. Social Support for PLHIV in Palangka Raya City

No	Social Support	Amount	Percentage (%)
1	Good	110	84.6
2	Not good	20	15.4
	Amount	130	100

Table 4.4 shows that the majority of PLHIV in Palangka Raya City receive good social support (84.6%), both from family, friends and health workers.

Table 5. HIV-AIDS Transmission Prevention Behavior in Palangka Raya City

No	HIV-AIDS Prevention Behavior	Amount	Percentage (%)
1	Good	126	96.9
2	Not good	4	3.1
	Amount	130	100

Table 4.5 shows that almost all respondents (96.9%) demonstrated good HIV-AIDS prevention behaviors, such as regular self-examination, use of personal protective equipment during sexual intercourse, and adherence to ARV therapy. Only 3.1% of respondents demonstrated poor HIV-AIDS prevention behaviors.

Bivariate Analysis

Table 6. Cross-Table of Knowledge and Behavior to Prevent HIV-AIDS Transmission

N o	Knowl edge	HIV-AIDS Prevention Behavior				Tot al (%)
		Good		Not good		
		Amo unt	%	Amo unt	%	
1	Good	61	100	0	0	100
2	Not good	65	94.2	4	5.8	100

Table 6 shows that all respondents with good knowledge (100%) had good HIV-AIDS prevention behaviors. Meanwhile, among respondents with poor knowledge, the majority (94.2%) also had good prevention behaviors, with only a small proportion (5.8%) classified as poor.

Table 7. Cross-Table of Stigma with HIV-AIDS Prevention Behavior

N o	Stig ma	HIV-AIDS Prevention Behavior				Tot al (%)
		Good		Not good		
		Amo unt	%	Amo unt	%	
1	Goo d	68	98. 6	1	1. 4	100
2	Not good	58	95. 1	3	4. 9	100

Table 7 shows that the majority of respondents with low stigma demonstrated good transmission prevention behaviors (95.1%), while almost all respondents with good stigma

demonstrated good transmission prevention behaviors (98.6%). This suggests that the more positive the view or the lower the stigma toward HIV/AIDS, the higher the likelihood of engaging in good transmission prevention behaviors.

Table 8. Cross-Table of Social Support with HIV-AIDS Prevention Behavior

N o.	Socia l Supp ort	HIV-AIDS Prevention Behavior				Tot al (%)
		Good		Not good		
		Amo unt	%	Amo unt	%	
1	Good	110	100	0	0	100
2	Not good	16	80	4	20	100

Table 8 shows that all respondents with good social support (100%) demonstrated good infection prevention behaviors. Meanwhile, among respondents with poor social support, the majority (80%) maintained good infection prevention behaviors, although 20% still demonstrated poor infection prevention behaviors. This demonstrates the important role of social support in encouraging positive infection prevention behaviors.

Multivariate Analysis

Table 9. Relationship between variables

Relationship between variables	Direct Effect (β)	Indirect Effects (β)	T Statistics (O/STD EV)	p-value
HIV-AIDS Prevention Behavior (Y)	0.259	0.190	2,703	0.007
Stigma (X2) -> HIV-AIDS Prevention Behavior (Y)	0.012	0.006	0.470	0.638
Social Support (X3) -> HIV-AIDS Prevention Behavior (Y)	0.387	0.150	3,985	0.000

Prevention Behavior (Y)

Based on the results of the structural model analysis, the knowledge variable (X1) shows a positive and significant direct relationship to HIV/AIDS prevention behavior (Y), with a coefficient of $\beta = 0.259$, a T statistic value of 2.703, and a p value of 0.007 ($p < 0.05$). This indicates that the higher the level of knowledge of respondents about HIV/AIDS, the better the prevention behavior shown. In addition, knowledge also has an indirect relationship of $\beta = 0.190$, which strengthens the role of this variable in shaping HIV-AIDS prevention behavior.

The stigma variable (X2) has a very small direct relationship to HIV-AIDS transmission prevention behavior ($\beta = 0.012$) with a T statistic value of 0.470 and a p value of 0.638 ($p > 0.05$), so it can be concluded that stigma does not have a significant relationship to HIV/AIDS transmission prevention behavior in this model. The indirect relationship shown is also low ($\beta = 0.006$), indicating that stigma is not the main determinant in changes in transmission prevention behavior in this study population.

Social support (X3) was shown to have the strongest and most significant direct relationship to HIV/AIDS prevention behavior, with a β value of 0.387, a T statistic of 3.985, and a p value of 0.000 ($p < 0.05$). This indicates that the higher the social support a person receives—whether from family, friends, or the environment—the greater their tendency to adopt healthy infection prevention behavior. Social support also has an indirect effect of $\beta = 0.150$, indicating an additional contribution to increasing HIV-AIDS prevention behavior.

DISCUSSION

This study aims to develop and test the Behavioral Model of PLWHA in preventing HIV-AIDS transmission in Palangka Raya City involving 130 respondents. This model includes factors of knowledge, stigma, social support, self-esteem, and preventive behavior, which were analyzed using SEM-PLS. The results showed that knowledge and social support have a significant relationship with preventive behavior, while stigma has no direct relationship. Self-esteem acts as a mediator that strengthens the relationship between social support and

preventive behavior. This study emphasizes the importance of a comprehensive approach based on education, health services, and community empowerment that emphasizes empathy, participation, and respect for the dignity of PLWHA to suppress HIV-AIDS transmission prevention behavior.

1. Knowledge (X1)

The results of the study indicate that the most dominant knowledge aspect in preventing HIV-AIDS transmission is an understanding of etiology and risk factors, followed by clinical manifestations, treatment, complications, prevention, definition of HIV-AIDS, and finally, methods of transmission. The high contribution of etiology and risk factors confirms that understanding the causes and risky situations makes individuals more alert and able to avoid behaviors that increase the chance of contracting HIV, such as unprotected sex or the use of unsterile needles.^[13,14]

This knowledge plays a crucial role in shaping attitudes and behaviors related to HIV/AIDS prevention, as supported by previous research findings showing that individuals with a high understanding of risk factors tend to be more positive about condom use and HIV testing. Although information about transmission modes is relatively widely known, the depth of understanding of risk factors is a key determinant of overall knowledge levels. Within the WHO theoretical framework, knowledge is related to perceived susceptibility and disease severity, thus serving as a key link between cognitive understanding and the emergence of HIV prevention behaviors.^[15]

2. Stigma (X2)

Stigma is the most dominant psychosocial factor associated with HIV-AIDS prevention behavior, surpassing structural, perceptual, and public stigma. Internalized stigma causes people living with HIV to be reluctant to access health services, delay testing, and be non-adherent to treatment, while also increasing the risk of depression, social withdrawal, and therapy discontinuation. Consistent with the WHO perspective and the findings of Rao et al. (2019), stigma reduction efforts cannot solely target communities but must focus on strengthening individual psychological well-being through counseling, peer support, and empowerment. Therefore, integrating mental health services into

HIV care is crucial to fostering sustainable HIV-AIDS prevention behavior.^[16,17]

3. Social Support (X3)

Social support is an important protective factor in encouraging HIV-AIDS prevention behavior, with informational support as the most dominant component, followed by emotional support, social networks, instrumental support, and self-esteem. Accurate information improves understanding, confidence, and adherence to ART, and encourages disclosure of HIV status, leading to increased support. Emotional support helps reduce anxiety, stigma, and enhance resilience, while instrumental support and self-esteem strengthen patients' access to services and motivation. Based on Snehandu B. Kar's theory, social support acts as a reinforcing factor that is theoretically and practically positively related to HIV-AIDS prevention behavior.^[17,18]

4. HIV-AIDS Prevention Behavior (Y)

Adherence to ART is the most important factor in preventing HIV/AIDS transmission, as it suppresses viral load to undetectable levels and significantly reduces the risk of transmission, as demonstrated in the HPTN 052 study and the U=U concept. Condom use remains essential for preventing HIV and other STIs, while abstinence serves as an additional strategy, albeit more difficult to implement. Overall, HIV prevention must be holistic, considering individual, social, and structural factors to ensure consistent adoption of protective behaviors.^[19,20]

5. The Relationship between Knowledge and Behavior of PLWHA in Preventing HIV-AIDS Transmission

The analysis results showed that knowledge was positively and significantly related to HIV-AIDS prevention behavior ($t = 2.703$; $p = 0.007$), indicating that the better the understanding of PLWHA, the higher their tendency to implement transmission prevention behaviors such as condom use, adherence to ART, and safe sex practices. The majority of respondents were men of productive age <31 years, employed, and had secondary to higher education, indicating potential access to health information. However, more than half still had inadequate knowledge, thus confirming the gap between formal education and specific understanding of HIV-AIDS.

The high proportion of positive transmission prevention behaviors indicates that behaviors are related not only to knowledge but

also to psychosocial factors, support from health workers, and the social environment. This finding aligns with research by Wulandari et al. (2020), which reported that health education improves prevention behaviors in people living with HIV, and a study by Yaya et al. (2019), which found that health literacy is positively associated with HIV transmission prevention practices in developing countries.^[17,21]

The researchers assumed that the significant relationship between knowledge and behavior in this study was influenced by the intensity of routine counseling, adherence to health services, and social support received by respondents. Furthermore, the continued high levels of infection prevention behavior despite low knowledge among some respondents were thought to be related to the influence of community norms, control from health workers, and fear of disease complications. Therefore, ongoing, contextual, and community-based HIV education remains necessary to strengthen understanding and maintain consistent HIV-AIDS prevention behavior.

6. The Relationship between Stigma and the Behavior of PLWHA in Preventing HIV-AIDS Transmission

Field findings indicate that some people living with HIV (PLWHA) in Palangka Raya City still experience social stigma, particularly negative labeling from the community. However, many respondents also reported support from health workers, family, and peer groups, which helped them maintain adherence to treatment and adopt preventive behaviors. This suggests that while stigma persists, a more humane approach to care and strong social support have played a role in mitigating the impact of stigma on health behaviors.^[22]

Stigma was not statistically significantly associated with HIV-AIDS prevention behavior, either directly or through self-esteem ($t = 0.470$; $p = 0.638$). This finding differs from several previous studies, such as Earnshaw and Chaudoir (2009) who explained that internalization of stigma can reduce motivation to take preventive action, and Turan et al. (2017) who reported that stigma contributes to delays in ART and decreased prevention behavior.^[17]

The researchers assumed that the insignificant relationship between stigma and HIV in this research model was influenced by relatively easy access to health services, the

intensity of routine counseling, and the existence of a social support system in Palangka Raya City. This support is considered a protective factor that reduces the negative impact of stigma on HIV-AIDS prevention behavior. Nevertheless, stigma should still be viewed as a potential risk factor, so community-based interventions, the involvement of community leaders, and strengthening the capacity of health workers through an empathetic approach remain crucial to maintaining the success of HIV-AIDS prevention programs.

7. The Relationship between Social Support and the Behavior of PLWHA in Preventing HIV-AIDS Transmission

The analysis results showed that social support was positively and significantly related to HIV-AIDS transmission prevention behavior ($t = 3.985$; $p = 0.000$), which confirms that the higher the support received by PLWHA, the better the HIV-AIDS transmission prevention behavior carried out, such as condom use, regular HIV testing, and avoiding risky sexual behavior. Social support plays a role through providing emotional resources, information, and practical assistance that increase individual confidence in making health decisions.^[23]

This finding is in line with research Abbas (2023) who reported that social support contributed to increased adherence to treatment and quality of life of HIV patients, as well as Wen et al. (2020) which showed that social support is associated with ART adherence by increasing psychological resilience. Other studies have also shown that high levels of social support are associated with increased condom use and consistent HIV/AIDS prevention behaviors in at-risk populations.^[24,25]

Researchers hypothesized that the strong association between social support and the presence of peer support groups, family openness to HIV issues, and the role of health workers in providing prevention education and resources were influenced by the study. Respondents in supportive environments tended to be more compliant with HIV/AIDS prevention behaviors, while those lacking support were at risk of neglecting preventive measures due to feelings of isolation.

This research aligns with Snehendu B. Kar's theory that social support is an environmental determinant of health behavior by increasing self-efficacy, reducing psychological

barriers, and strengthening motivation. Therefore, HIV-AIDS prevention strategies need to involve the social networks surrounding people living with HIV, including families, peer groups, and communities, to ensure sustainable behavior change.^[25,26]

Key findings indicate that social support is the most dominant determinant of HIV/AIDS prevention behavior, surpassing knowledge. Support from family, peers, health workers, and the community has been shown to play a direct role in improving adherence to ARV therapy, condom use, and individual resilience in the face of social pressures resulting from stigma. This confirms that behavioral change relies not only on cognitive understanding but is also strongly influenced by a supportive social environment.

CONCLUSION

This study concluded that HIV-AIDS prevention behavior among PLWHA in Palangka Raya City is strongly associated with knowledge and, especially, social support, with self-esteem acting as a mediator strengthening the relationship between social support and prevention behavior. Knowledge, particularly regarding etiology and risk factors, promotes awareness and practices of HIV-AIDS prevention, such as adherence to ART and condom use. Social support emerged as the most dominant determinant, as it provides emotional reinforcement, information, and practical assistance that enhance self-efficacy and consistency of protective behavior. In contrast, stigma did not show a significant direct relationship in the model, which is thought to be influenced by access to health services, regular counseling, and a relatively strong support network; however, stigma still needs to be considered as a potential risk factor.

Overall, effective HIV/AIDS transmission prevention requires a comprehensive approach that integrates ongoing education, strengthening social support, mental health services, and community empowerment based on empathy and respect for the dignity of people living with HIV. This strategy is believed to be able to maintain adherence to ART, improve safe sexual practices, and reduce the risk of transmission sustainably.

AUTHOR CONTRIBUTION

Kristiani was responsible for the study design, data collection and analysis, and writing the initial draft. Syamsul Arifin and Rini Sugiarti

contributed to conceptual development and methodological oversight. Husaini, Bahrul Ilmi, Ermina Istiqomah, and Lenie Marlinae supported instrument validation, fieldwork coordination, and interpretation of results. Rusdi Rusli contributed to further analysis, while Ira Jayanti provided final revisions and approval for publication. All authors approved the final version of the manuscript.

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