



Risk Factors for Depression in HIV Patients: A Cross-Sectional Study

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Abstract. Multiple studies have examined the relationship between HIV knowledge, family support, and social support in influencing antiretroviral therapy (ART) adherence. This study assessed the long-term impact of ART use on depression among people living with HIV in Jakarta, Indonesia, focusing on demographic characteristics, HIV knowledge, family support, social support, and duration of ART. A quantitative cross-sectional design was employed, recruiting 74 HIV/AIDS patients via purposive sampling from the Kramat Jati Health Center. Data were analyzed using chi-square tests. Significant associations were observed between depression and employment status, marital status, and age ($p < 0.05$). While HIV knowledge showed no significant link to depression ($p = 0.071$), family support was strongly correlated with depression ($p = 0.043$), with patients receiving low family support being 1.17 times more likely to experience depression. Social support also demonstrated a significant association ($p = 0.037$), as patients with inadequate social support were 1.30 times more likely to report depressive symptoms. Longer ART duration (over one year) was significantly associated with depression ($p = 0.010$), increasing the likelihood by 1.19 times. These findings emphasize the critical role of tailored psychosocial interventions and enhanced community support systems in mitigating depression among HIV patients.

Keywords: Antiretroviral therapy, Depression, Family support, Social support,

1 Introduction

In the United States, approximately 63% of the estimated 1.1 million individuals living with HIV have initiated treatment, yet only 49% remain retained in HIV care, and 51% achieve viral suppression [1]. In Indonesia, UNAIDS reports 46,000 annual new HIV infections. National data from the Directorate General of P2P, Ministry of Health of Indonesia (May 29, 2020) documented 388,724 cumulative HIV cases by the first quarter of 2020. During the same period, DKI Jakarta reported the highest national burden, with 67,137 recorded HIV cases between 1987 and March 2020. East Jakarta reported 397 new HIV cases among 33,162 individuals tested in early 2020. According to local authorities, Kramat Jati District exhibits the highest HIV/AIDS prevalence in East Jakarta, attributed to elevated community mobility and pronounced socioeconomic and cultural disparities [2].

The degree of awareness on HIV/AIDS in people with HIV (ODHIV) is one of the factors that cause ODHIV self-stigma, self-stigma or negative understanding and negative assumptions about ODHIV will affect ODHIV such as: physical pressure, psychology, social life and even depression [3]. Various reactions arise when a person is diagnosed with HIV/AIDS such as feelings of fear, regret, trying to deny, depression, confusion and not knowing what to do. Having HIV/AIDS is still considered a disgrace, so it can cause psychological pressure, especially on the patient as well as on the patient's family and surrounding environment [4].

PLHIV lacking social support, particularly from family, face heightened psychological challenges. Nonacceptance by family members, coupled with unresolved socioeconomic anxieties regarding disease prognosis and medical costs, often exacerbates stress and negatively impacts mental health. Social support encompasses perceived value, care, affection, and motivation from individuals, families, groups, communities, or institutions, fostering inclusion and reducing discrimination. This support is critical for enhancing quality of life among PLHIV. Conversely, inadequate social support correlates strongly with depression, underscoring its role as a protective psychosocial determinant.

Depression affects up to 30% of individuals with human immunodeficiency virus (HIV) [5]. It is associated with reduced natural killer cell activity and elevated CD8 T lymphocyte activation and viral load, mechanisms contributing to increased mortality [6-9]. Systematic research demonstrates that higher HIV and antiretroviral therapy (ART) knowledge correlates with lower depression rates among patients. Improved understanding of the disease and treatment enhances self-management capacity, thereby reducing depression risk [10].

Family support plays a critical role in mitigating depression among individuals living with HIV. A study in Thailand highlighted that emotional and practical assistance from families positively influences psychological well-being. Such support alleviates stress and social isolation commonly experienced by HIV patients, thereby lowering depression risk [11].

Beyond family support, social support from peers and community networks significantly contributes to lowering depression rates in HIV patients. A Chinese study focusing on men who have sex with men demonstrated that greater social support correlated with reduced depression levels. Such support fosters feelings of acceptance, understanding, and connection, empowering patients to better cope with HIV-related challenges [12].

Research examining the direct association between antiretroviral (ARV) treatment duration and depression remains limited. However, existing studies indicate that medication adherence significantly influences mental health outcomes in HIV patients. A meta-analysis comparing adherence assessment methods found that interview-based

measurements revealed stronger associations than self-reported questionnaires, with better ARV adherence correlating with lower depression rates. These findings underscore the importance of sustained medication adherence as a component of comprehensive HIV care [13].

Depression is highly prevalent among people living with HIV, with a 2014 meta-analysis reporting a 39% (95% CI: 33–45) depression rate in this population [14]. Characterized by persistent sadness, emotional distress, and impaired daily functioning, depression significantly disrupts social and cognitive abilities and may lead to severe disability or suicide. Despite the availability of affordable antidepressant treatments, most cases remain undiagnosed [15]. This study contributes novel insights by examining the understudied relationship between long-term antiretroviral therapy use and depression in HIV patients. The research specifically analyzes depression in relation to patient characteristics, HIV knowledge, family support, social support, and duration of antiretroviral treatment.

2 Method

This study utilized a quantitative cross-sectional design. The research population comprised HIV/AIDS patients under the jurisdiction of the Kramat Jati Health Center, with purposive sampling yielding a final sample of 74 participants. Inclusion criteria required participants to be HIV/AIDS patients attending the Poly HIV clinic, free from severe mental disorders (e.g., schizophrenia, bipolar disorder) that could confound depression assessment, and willing to provide informed consent. Exclusion criteria included: (a) HIV/AIDS patients with impaired consciousness, (b) those diagnosed with mental illness, (c) individuals using psychotropic medications, (d) patients with a psychiatric history, and (e) unwilling participants. Independent variables included HIV knowledge, family support, social support, and duration of antiretroviral therapy (ART), while the dependent variable was depression. Confounding variables encompassed age, gender, education, occupation, and marital status. Data were collected via Google Forms between August and November 2022. HIV knowledge was assessed using a 16-item Guttman scale questionnaire, with scores ranging from 1 (incorrect) to 2 (correct). Family support was measured through a 20-item questionnaire evaluating information, assessment, instrumental, and emotional support. Social support was analyzed via a 38-item instrument [17]. Depression was evaluated using the 20-item Zung Self-Rating Depression Scale, with scores categorized as normal (25–49) or depressive (50–59). Univariate analysis described variable distributions and respondent characteristics, while bivariate analysis employed chi-square tests to examine associations between variables.

Ethical approval for this study was granted by the Research Ethics Committee of the Faculty of Nursing and Midwifery, Binawan University (Approval No. 055/PE/FKK-KEPK/VII/2022). Eligible participants diagnosed with HIV and attending the polyclinic were invited to join the research. Written informed consent was ob-

tained prior to data collection, with interviews conducted in a private setting to minimize external pressure. Participants retained the right to withdraw from the study at any stage. During interviews, subjects received detailed information on depression, social support, family support, and antiretroviral therapy (ART) duration. Each session lasted approximately 60 to 90 minutes.

3 Results

Table 1 shows that the majority of HIV patients aged 17-25 years (40.55%), female (52.70%), high school graduate education (47.30%), working as self-employed (79.73%), married (64.86%), having family support for ARV drug consumption duration above 1 year (55.4%) and experiencing depression (66.7%).

Table 1 Variable frequency distribution

Variable	n	%
Age		
Late adolescence 17-25 years	30	40,55
Early Adults 26-35 years	28	37.84
Late Adults 36-45 years	10	13.51
Seniors 46-55 years	6	8.10
Gender		
Female	39	52.70
Male	35	47.30
Education		
Graduated from elementary school/junior high school	28	37.84
Graduated from high school	35	47,30
Graduated from University	11	14.86
Work		
Employed	59	79.73
Unemployed / Housewife	15	20.27
Marital Status		
Married/ever married	48	64.86
Unmarried	26	35.14
Knowledge		
Low	34	45,9
Moderate	19	25.7
High	21	28,4
Family support		
Supportive	39	52,7
Non-Supportive	35	47,3
Social Support		
Supportive	55	74.3
Non-Supportive	19	25.7
Duration of Consumption		
Under 1 year old	33	44.6
Above 1 year	41	55.4

Depression	24	66.7
Present	50	32.4
Absent		
Total	74	100

Table 2 presents the characteristics of the respondents. It shows that there is a significant relationship between age and depression ($p = 0.044$). However, no significant relationship was found between sex and depression among HIV patients ($p = 0.326$). There is a significant relationship between marital status and depression ($p = 0.001$), as well as between work status and depression ($p = 0.000$). Lastly, no significant relationship was found between education level and depression among HIV patients ($p = 0.197$).

Table 2 relationship of characteristics with depression of HIV patients

Variable	Depression				<i>p-value</i>
	Mild depression		Normal		
	f	%	f	%	
Age					
Late Teens	23	46	7	29,2	0,044
Early Adulthood	16	32	12	50	
Late Adulthood	6	12	4	16,7	
Old age	5	10	1	4,2	
Gender					
Female	28	56	11	45,8	0,326
Male	22	44	13	54,2	
Marital Status					
Marry	33	66	15	62,5	0,001
Unmarried	17	34	9	37,5	
Working status					
Employed	40	80	19	79,2	0,000
Unemployed	10	20	5	20,8	
Education					
Junior High School	13	26	8	33,3	0,197
High School	27	54	15	62,5	
College	10	20	1	4,2	

Table 3 presents the relationships between knowledge, family support, social support, ARV duration and depression among HIV patients. No significant association was found between HIV knowledge and depression ($p=0.071$). However, family support showed a significant relationship with depression ($p=0.043$), where patients lacking family support had 1.17 times higher odds of depression compared to those with support. Social support also demonstrated a significant association ($p=0.037$). Most notably, duration of antiretroviral therapy showed a strong relationship with depression ($p=0.010$). Patients taking ARVs for more than one year had 1.19 times greater likelihood of depression compared to those on treatment for less than one year.

Table 3. Relationship Between Psychosocial Factors and Depression in HIV Patients

Variabel	Depression				Total		P-value
	Mild depression		Normal				
	f	%	f	%	f	%	
Knowledge							
Low	15	62,5	19	38	34	45,9	0,071
Moderate	6	25	13	26	19	25,7	
High	3	12,5	18	36	21	28,4	
Family Support							
Supportive	12	50	27	54	39	52,7	0,043
Non-Supportive	23	46	12	50	35	47,3	
Sosial Support							
Supportive	38	76	17	70,8	55	74,3	0,037
Non-Supportive	12	24	7	29,2	19	25,7	
Duration of Consumption							
< 1 year	10	41,7	23	46	33	44,9	0,010
>1 year	14	58,3	27	54	41	55,4	

4 Discussion

4.1 Association Between Demographic Factors and Depression in HIV Patients

Current findings demonstrate a significant relationship between age and depression among HIV-positive individuals. Younger patients appear particularly vulnerable, potentially due to HIV-related stigma and uncertainty about their future. This aligns with Kenyan coastal data showing higher mental health burdens in HIV-positive youth compared to their non-infected peers [18]. However, contrasting evidence from Jepara Regency, Indonesia found no significant age or gender associations with depression ($p>0.05$). Older patients may experience depression due to compounding factors like declining health, reduced social support, and financial strain.

Educational attainment showed mixed associations with depression. While this study found significant relationships, South African research reported no connection between education level and depression in PLHIV [19]. Employment status consistently correlated with depression risk, supported by Ugandan data linking unemployment and lower earnings to major depression diagnoses [22]. Some studies suggest biological mechanisms, including HIV's neurological effects or ART neurotoxicity, may contribute to depression [20]. Notably, many cases remain undetected, as shown in Nigerian hospital data where most patients had unidentified psychiatric morbidity [21].

4.2 Knowledge and Depression in HIV Patients: Mixed Findings

This study found no significant association between HIV/AIDS knowledge and depression levels among patients, contrasting with research from Tara Psychiatric Hospital in Johannesburg which identified relationships between HIV knowledge and various psychosocial factors including psychiatric diagnoses, substance use, and socioeconomic status [23]. The discrepancy may stem from differing sample characteristics or measurement approaches.

While knowledge acquisition occurs through multiple channels (education, media, personal experiences) and theoretically influences health behaviors [25], its direct impact on depression remains unclear in this population. Some evidence suggests that inadequate HIV understanding contributes to disease transmission [24] and may foster misconceptions that exacerbate stress responses [26]. However, patients with accurate HIV knowledge may experience reduced stigma and social isolation, potentially mitigating depression risk. These mixed findings highlight the complex relationship between health literacy and mental health outcomes in HIV care. While knowledge alone may not directly prevent depression, it likely interacts with other psychosocial factors to influence patients' mental wellbeing. Further research should explore these interactions while considering cultural contexts and healthcare systems that may modify knowledge's protective effects.

4.3 Family Support and Depression in HIV Patients

This study identified a significant relationship between family support and depression among HIV patients, consistent with findings from Jambi, Indonesia, where family support strongly correlated with mental health status [27]. Research in Banyumas Hospital further emphasizes this association, highlighting the necessity of strengthening family support to mitigate depression risk in HIV-positive individuals [29]. Cross-cultural evidence from Nepal demonstrates that lower perceived family support correlates with higher depression rates among people living with HIV/AIDS (PLHIV), underscoring its protective role [30].

Families serve as critical sources of emotional security and resilience, particularly for PLHIV navigating psychosocial stressors [31–32]. A study at RA Hospital Kartini in Jepara Regency reinforced this, showing significant links between social support and depression among HIV patients [33]. Notably, a case at this hospital involving a young man who attempted suicide during COVID-19 isolation due to inadequate family support illustrates the life-saving importance of familial engagement [34].

Empirical evidence suggests that consistent family support reduces feelings of isolation and anxiety, fostering psychological stability. Patients who perceive acceptance and care from families demonstrate lower depression levels, as familial bonds

provide a buffer against stigma and health-related distress [27–30]. These findings collectively advocate for integrating family-centered interventions into HIV care frameworks to address mental health comorbidities.

4.4 Social Support and Depression in HIV Patients

This study identified a significant relationship between social support and depression in HIV patients. Higher levels of perceived social support, particularly through peer networks, correlate with improved mental health outcomes. Peer support enhances treatment adherence by encouraging timely antiretroviral (ARV) medication use and fostering accountability, while also serving as a positive coping strategy during stressful periods [35].

HIV patients often experience stigma, leading to social isolation, a key contributor to depression. Strong social support from friends, community groups, or peers mitigates isolation by fostering meaningful connections. Such support reinforces self-esteem by promoting acceptance and reducing perceived judgment linked to HIV status. These factors counteract feelings of worthlessness, a common trigger for depression in this population.

4.5 Long-Term Association of Antiretroviral Therapy with Depression in HIV Patients

This study identified a significant relationship between prolonged antiretroviral therapy (ART) use and depression in HIV patients. Research by Ickovicks et al. (2001) suggests that improved physical health from ART may reduce depression-related mortality, particularly with modern, simplified treatment regimens [8, 36].

ART adherence is closely tied to mental health outcomes. A U.S. study found persistent and major depression significantly challenges adherence, though the link between depression and non-adherence, while statistically significant, is less pronounced than cognitive depression impacts [37]. Psychosocial factors such as substance use disorders, depression, disrupted routines, mistrust of healthcare providers, and mental health issues contribute to ART forgetfulness [38]. These findings emphasize the need for early depression screening and targeted interventions to optimize both mental health and treatment adherence.

Depression is associated with increased mortality, accelerated AIDS progression, and antiretroviral therapy (ART) nonadherence. The UNAIDS 90-90-90 goals emphasize that addressing comorbid depression is critical for achieving viral suppres-

sion in over 90% of ART-treated individuals [16]. Nonadherence elevates risks of transmission, drug resistance, disease progression, and mortality, underscoring the need for targeted adherence interventions [17].

Extended ART duration poses psychological challenges, as lifelong treatment can lead to emotional exhaustion. Chronic medication use, potential side effects, uncertainty about the future, and diminished motivation contribute to hopelessness and frustration, heightening depression risk. These cumulative physical and psychological burdens highlight the complex interplay between long-term ART and mental health deterioration in HIV patients.

5 Strengths and Limitations

This study has several limitations: 1) the small sample size and single-site recruitment limit generalizability; 2) reliance on self-reported data introduces potential measurement bias; 3) the cross-sectional design precludes causal inferences between variables such as knowledge, social support, family support, ART duration, and depression; and 4) unmeasured confounding variables may influence observed associations. These constraints necessitate cautious interpretation of the findings.

6 Conclusion

This study identified significant correlations between demographic characteristics (age, marital status, employment status), psychosocial factors (knowledge, family support, social support, antiretroviral therapy duration), and depression among HIV patients. To address these findings, it is recommended to prioritize patient-centered educational approaches tailored to individual experiences while establishing dedicated support communities to enhance coping mechanisms and reduce depression risk. Health clinics should integrate routine mental health screenings, particularly for long-term antiretroviral therapy users, to identify individuals requiring psychological support. Interventions combining mental health care with HIV management should emphasize coping skill development to mitigate depression associated with prolonged treatment.

Future research should explore the efficacy of family-oriented interventions, such as family therapy or skills training programs, and evaluate the potential of community-based or web-based support groups in reducing depression rates. Additionally, mixed-methods studies combining quantitative analyses with qualitative investigations are needed to comprehensively understand both statistical associations and patients' subjective experiences. These steps will inform the design of integrated care models that address both physical and emotional well-being in HIV management.

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