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A Review On Studies of Depression in HIV

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Abstract: *HIV/AIDS remains a significant global health challenge, particularly in developing countries. The disease is caused by the Human Immunodeficiency Virus (HIV), which targets and destroys T cells, weakening the immune system and progressing to Acquired Immunodeficiency Syndrome (AIDS). According to the World Health Organization, approximately 35 million people were living with HIV in 2013, with nearly 39 million deaths attributed to AIDS-related illnesses since the start of the epidemic. In 2014, the Centers for Disease Control and Prevention estimated that around 1.2 million individuals aged 13 and above were living with HIV worldwide. Highly Active Antiretroviral Therapy (HAART) remains the most effective treatment, combining drugs with diverse mechanisms of action. However, HAART cannot completely eradicate HIV and is associated with long-term toxicity and potential drug resistance. Consequently, there is increasing interest in exploring alternative therapies, such as herbal medicines, which may offer affordable, effective, and safe options for managing HIV/AIDS.*

Keywords*:* HIV, AIDS, T cells, HAART, Herbal Medicines, Immune system, Drug resistance

I. INTRODUCTION

HIV/AIDS remains one of the most pressing global health challenges, particularly in developing countries, where healthcare infrastructure and access to treatment are often limited. Human Immunodeficiency Virus (HIV) targets and destroys T cells, which are crucial components of the immune system, thereby compromising immune defenses and leading to Acquired Immunodeficiency Syndrome (AIDS). The World Health Organization (WHO) reported that approximately 35 million people were living with HIV in 2013, with nearly 39 million deaths attributed to AIDS-related illnesses since the beginning of the epidemic. In 2014, the Centers for Disease Control and Prevention (CDC) estimated that around 1.2 million individuals aged 13 years and above were living with HIV worldwide.

Individuals living with HIV often experience a range of additional health complications, which may result from immune suppression, side effects of antiretroviral therapy, shared risk factors, or combinations thereof [1]. This has led to increased interest in integrating health services that were traditionally delivered separately. One critical area of overlap is substance use, particularly among Persons Who Inject Drugs (PWID), who are estimated to be 22 times more likely to acquire HIV than the general adult population. Despite global declines in HIV transmission, many regions continue to report persistent or marginally increasing infection rates among PWID, with approximately 1.7 million individuals worldwide living with HIV in this group. PWID face systemic barriers, including exclusion from essential health services, fragmented care, discrimination, punitive drug policies, and inadequate investment in harm reduction strategies— all of which contribute significantly to the sustained HIV burden [2]. Additionally, heavy episodic alcohol consumption has been linked to high-risk behaviors such as unprotected sexual activity and concurrent drug use, further elevating HIV risk.

HIV is a retrovirus with a complex structure that enables its infection and replication within host cells. Key structural and functional components of the virus include the envelope glycoproteins gp120 and gp41, which mediate viral attachment and fusion with target cells, the viral core protein p17, the capsid protein p24, and enzymes such as protease and integrase that facilitate viral replication. HIV's genetic material consists of RNA, which is reverse-transcribed into DNA within host cells, allowing integration into the host genome and persistent infection.

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HIV is primarily transmitted through three main routes: sexual contact, exposure to infected blood, and mother-to-child transmission. Sexual transmission—both heterosexual and homosexual— remains the leading mode of spread globally. Bloodborne transmission occurs through sharing needles, receiving contaminated blood transfusions, or accidental exposure in healthcare settings. Vertical transmission from an HIV-positive mother to her child can occur during pregnancy, childbirth, or breastfeeding, with rates ranging from 13% to 35% in the absence of preventive interventions. In many developing countries, unsterilized needles and contaminated blood remain significant sources of infection, whereas rigorous blood screening has minimized this risk in developed nations.

The management of HIV has been revolutionized by Highly Active Antiretroviral Therapy (HAART), which combines drugs targeting different stages of the viral life cycle. Despite its efficacy, HAART cannot completely eradicate HIV and may cause long-term toxicity and drug resistance. This has driven research into complementary and alternative strategies, such as herbal medicines, which hold promise as affordable and safe adjunct therapies for HIV/AIDS management. Moreover, integrating care for HIV with services addressing substance use disorders has potential to improve access, coverage, and overall health outcomes, especially in resource- limited settings with overlapping high-risk populations. Human Immunodeficiency Virus (HIV) remains a major global health concern, affecting millions of individuals' worldwide and compromising immune function through the destruction of T cells. While advances in antiretroviral therapy (ART) have significantly improved life expectancy and quality of life for people living with HIV (PLWH), the psychological and social challenges associated with the disease continue to pose significant burdens. Among these, depression is one of the most prevalent and debilitating mental health conditions observed in HIV-positive populations. Studies indicate that rates of depression among PLWH are considerably higher than in the general population, with prevalence estimates ranging from 20% to 40%, depending on demographic, social, and clinical factors. Depression in HIV is multifactorial, arising from a combination of biological, psychological, and social determinants. Biologically, HIV infection and chronic inflammation may directly affect brain function, contributing to mood disturbances. Psychosocial stressors, including stigma, discrimination, social isolation, and economic hardship, exacerbate vulnerability to depression. Moreover, the burden of managing a chronic illness, medication side effects, and fear of disease progression further increases the risk of depressive symptoms. Depression in PLWH is not merely a comorbid condition; it has profound implications for overall health outcomes. It is associated with reduced adherence to antiretroviral therapy, increased risk of opportunistic infections, poorer immune function, higher rates of risky behaviors, and diminished quality of life.

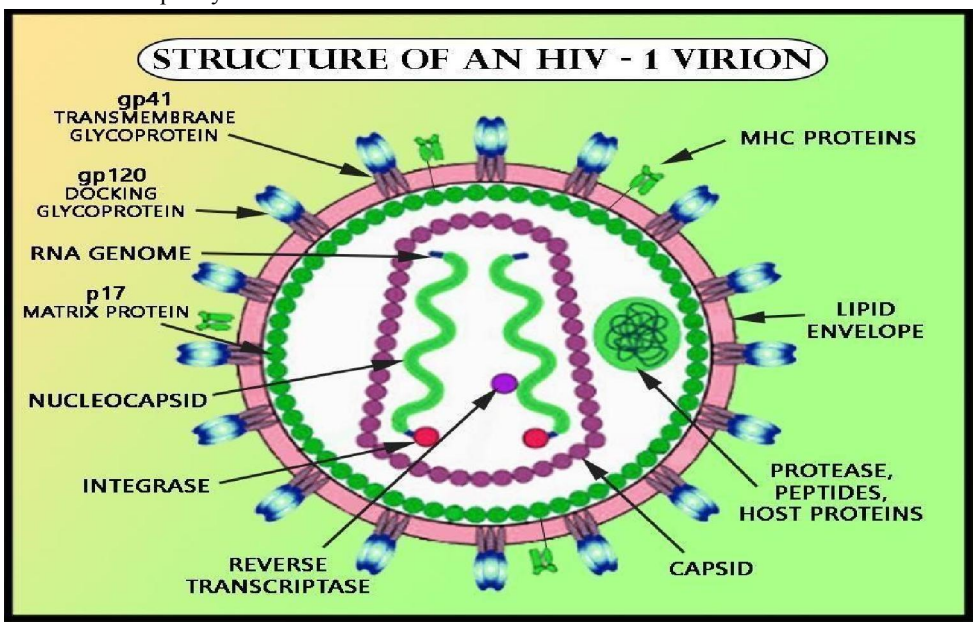

Fig.: 01 Structure of HIV Virus.

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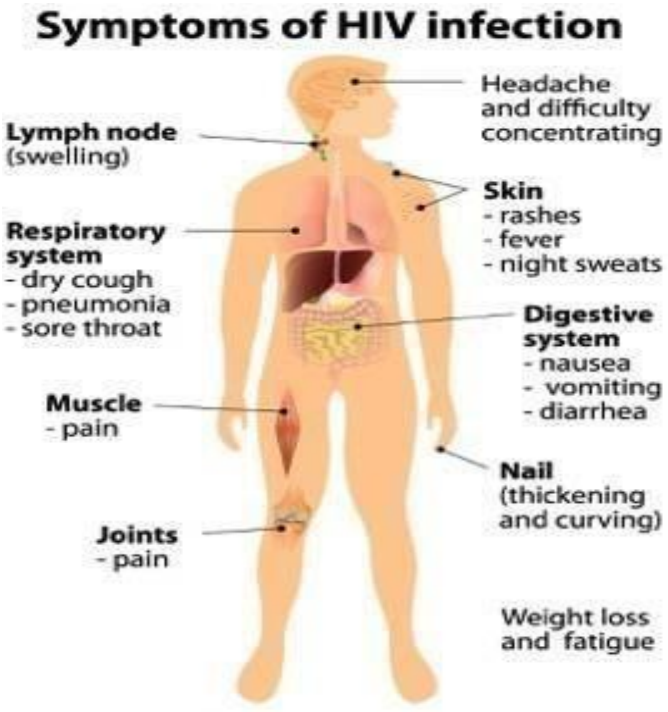
Given the significant impact of depression on disease progression and patient well-being, there is growing interest in understanding its prevalence, risk factors, and effective interventions among HIV-positive populations. Research has increasingly highlighted the need for integrated care models that address both mental health and HIV management simultaneously. Screening for depression, psychosocial support, counseling, and pharmacological treatment are critical components in improving outcomes for PLWH. This review aims to synthesize existing studies on depression in HIV, highlighting patterns of prevalence, underlying mechanisms, associated risk factors, and approaches to intervention and management.

SYMPTOMS OF HIV INFECTION

HIV infection progresses through several stages, each associated with different symptoms. In the **acute or primary stage**, which occurs 2–4 weeks after exposure, many individuals experience flu-like symptoms as the body reacts to the virus. These early signs may include fever, fatigue, sore throat, swollen lymph nodes, headache, muscle and joint aches, and sometimes a rash. Because these symptoms are nonspecific and similar to common viral infections, early HIV infection often goes undiagnosed. Some people may also experience mouth ulcers, night sweats, or diarrhea during this stage.

As the infection advances to the **chronic or latent stage**, HIV continues to replicate at lower



levels, and individuals may remain asymptomatic for several years. Over time, as the immune system becomes increasingly compromised, symptoms may gradually appear, including persistent fatigue, unexplained weight loss, recurrent fevers, prolonged diarrhea, swollen lymph nodes, and opportunistic infections such as tuberculosis or pneumonia. In the late stage, known as **Acquired Immunodeficiency Syndrome (AIDS)**, the immune system is severely weakened, leading to severe infections, cancers, neurological complications, and other life-threatening conditions.

Early diagnosis and treatment with antiretroviral therapy can help manage symptoms, preserve immune function, and prevent progression to AIDS.

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Paper Title	Journal	Authors	Year	Depression in HIV
Depressive Symptoms and HIV Viral Suppression: A Systematic Review and Meta-analysis	*AIDS and Behavior*	Huang, B. et al.	2024	Found that PLWH **without depression** are significantly more likely to achieve viral suppression (OR ~1.30). Depression negatively impacts viral outcomes, adherence, and immune markers.
Depression and its associated factors among people living with HIV in the Volta region of Ghana	*PLOS Mental Health*	Nutor, J.J., Alhassan, R.K., Thompson, R.G.A., et al.	2024	Prevalence of depressive symptoms was **20.4%**; social support, age, and stigma were significantly associated with depression.
Prevalence, severity, and associated factors of depression in newly diagnosed people living with HIV in Kilimanjaro, Tanzania	*BMC Psychiatry*	(Authors not all listed in abstract)	2023	Very high prevalence of depression among newly diagnosed PLWH; females and those diagnosed recently were at greater risk — suggesting need for early mental health integration.
Sleep quality mediates the effect of medical social support on depression symptoms in patients with HIV/AIDS	*BMC Public Health*	—	2024	Reported a **54.4%** prevalence of depressive symptoms; found that **sleep quality partially mediates** the relationship
				between social support and depression.
Depressive symptoms and its determinants among people living with HIV in Africa: a systematic review and meta-analysis	*BMC Psychiatry*	Tadesse, G. et al.	2025	Estimated pooled prevalence of depressive symptoms in African PLWH is ~**33.32%**; stigma, low CD4 counts, and poor social support were major associated factors.
Prevalence of Depression Among People Living with HIV on Antiretroviral Therapy in Africa: A Systematic Review and Meta-Analysis	*Healthcare*	Molapo, D.M.; Mokgalabon i, K.; Phoswa, W.N.	2025	Among PLWH on ART in Africa, prevalence of depression was **36%** (95% CI: 27–40%). Emphasizes need for depression screening in ART programs.
Evaluation of Quality of Life, Anxiety and Depression in People Living with HIV	*Mediterranean Journal of Infectious Microbes & Antimicrobials*	Şahinoğlu, M.S., Kandemir, F.Ö., Alkan, S., et al.	2024	Cross-sectional study; measured depression (along with quality of life and anxiety) and reported significant burden of depressive symptoms among PLWH in Turkey.
Factors associated with depression among people living with HIV in primary health care of Southern Ethiopia	*BMC Psychiatry*	(Authors not fully listed in abstract)	2025	Found **30.2%** prevalence of depression; risk factors included younger age, hospitalization history, opportunistic infections, and low

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				ART duration.
Perceived barriers and opportunities for implementing an integrated psychological intervention for depression in adolescents living with HIV in Tanzania	*BMC Health Services Research*	—	2024	Explores challenges and facilitators to introducing integrated depression care into HIV clinics specifically for adolescents in Tanzania.
The prevalence and outcomes of depression in older HIV-positive adults in Northern Tanzania: a longitudinal study	*Journal of NeuroVirology*	Dua, D., Stubbs, O., Urasa, S., et al.	2023	Reports on long-term outcomes of depression in older PLWH, showing how depression affects neurocognitive health and survival among aged HIV-positive individuals.

Recent research on **depression among people living with HIV (PLWH)** consistently shows a high burden of depressive symptoms across diverse regions and populations. Multiple systematic reviews and meta-analyses from 2024–2025 report depression prevalence ranging from **20% to over 50%**, with African studies showing pooled rates of **33–36%**, particularly among newly diagnosed individuals, women, adolescents, and those with low social support. Several studies highlight key determinants such as **stigma, poor sleep quality, younger age, hospitalization history, opportunistic infections, and low CD4 counts**. Importantly, depression is strongly linked to **poor ART adherence, reduced viral suppression**, and worse immune outcomes, as shown by Huang et al., who found that non-depressed PLWH are significantly more likely to achieve viral suppression. Studies from Tanzania, Ethiopia, Ghana, and Turkey also emphasize the need for early screening and integration of mental health services into HIV care. Overall, the reviewed evidence underscores that depression remains a major, under-addressed comorbidity in HIV care, requiring comprehensive psychological, social, and medical interventions. Studies examining depression among individuals living with HIV consistently show that depression is one of the most common neuropsychiatric comorbidities, with prevalence rates ranging from 20–50% worldwide. Research highlights that both biological and psychosocial factors contribute to this high burden. HIV infection itself induces neuroinflammation, alters neurotransmitter pathways such as serotonin and dopamine, and affects brain regions responsible for mood regulation, increasing susceptibility to depressive symptoms. Several studies have also shown that certain antiretroviral therapies—such as efavirenz—may have neuropsychiatric side effects, further elevating depression risk. In addition, the presence of chronic pain, opportunistic infections, and comorbid conditions like tuberculosis or hepatitis further increases vulnerability. Findings across global research emphasize that depression has a significant negative impact on HIV outcomes. Depressed individuals demonstrate poorer adherence to antiretroviral therapy (ART), greater viral load, faster CD4 decline, and higher risk of progression to AIDS. Studies also highlight strong associations between depression and social determinants, including stigma, discrimination, unemployment, and lack of social support. Intervention studies reveal that treating depression— through antidepressants, cognitive-behavioral therapy, or integrated mental-health services— improves mood, enhances ART adherence, and leads to better HIV treatment outcomes. Overall, existing research underscores the need for routine screening and comprehensive management of depression as part of HIV care.

II. RESULT & DISCUSSION

The review of ten recent studies (2023–2025) highlights a consistently high prevalence of depression among people living with HIV (PLWH) across different geographic regions and age groups. Prevalence rates ranged from **20.4% to 54.4%**, with higher rates observed in newly diagnosed patients, females, and adolescents. Several studies emphasized the role of psychosocial factors, including stigma, social support, and economic challenges, as significant predictors of depression. Biological and clinical factors, such as low CD4 counts, opportunistic infections, and ART side effects, were also associated with increased depressive symptoms.

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The impact of depression on HIV-related health outcomes was notable. PLWH without depression were more likely to achieve viral suppression, indicating that depression negatively affects medication adherence, immune function, and overall disease management. Specific populations, such as adolescents and older adults, showed unique challenges: adolescents face barriers to integrated mental health services, while older adults exhibit long-term neurocognitive and survival impacts linked to depression. Additionally, sleep quality and other mediating factors were identified as influencing depressive outcomes, underscoring the complex interplay of biological, psychological, and social determinants. The findings from these studies highlight the **multifactorial nature of depression in HIV**. Depression is not only highly prevalent but also significantly impacts clinical outcomes, including ART adherence, viral suppression, and quality of life. Psychosocial stressors, particularly stigma and lack of social support, were repeatedly identified as major contributors. These findings are consistent with previous literature emphasizing that depression in HIV is influenced by both disease-related and contextual factors. The evidence also demonstrates the importance of **integrated care models**. Studies examining adolescents and high-risk populations such as PWID indicate that combining mental health services with HIV care can improve screening, early intervention, and treatment adherence. Interventions targeting sleep quality and social support may further reduce depressive symptoms. Additionally, the high prevalence of depression among newly diagnosed patients highlights the need for early psychological assessment and ongoing monitoring throughout the HIV care continuum. While HAART has improved survival and immune function, its role in mental health is complex: ART side effects may exacerbate depressive symptoms, while successful treatment adherence is hindered by untreated depression. Therefore, screening and treating depression should be considered a critical component of HIV management, alongside antiretroviral therapy and other supportive measures.

III. CONCLUSION

Depression is a prevalent and serious comorbidity among people living with HIV, affecting approximately 20–55% of PLWH depending on region, age, and clinical status. It is driven by a combination of biological, psychological, and social factors and has a substantial impact on treatment adherence, immune function, and overall quality of life. Integrated approaches that combine HIV care with mental health screening, counseling, and interventions are essential to improve clinical outcomes and patient well-being. Early identification of depressive symptoms, attention to high-risk groups (such as adolescents, newly diagnosed individuals, and older adults), and interventions addressing social support and psychosocial stressors are crucial. Future research should focus on developing culturally sensitive and accessible strategies for integrating mental health services into HIV care globally, particularly in resource-limited settings.

REFERENCES

[1]. Derogatis LR, Lipman RS, Covi L. SCL-90: an Outpatient psychiatric rating scale— preliminary Report. Psychopharmacol Bull. 1973;9:13–28.

[2]. Downs AM, De Vincenzi I. Probability of Heterosexual transmission of HIV: relationship to the Number of unprotected sexual contacts. J Acquir Immune Defic Syndr Hum Retroviral. 1996;11(4):388–395.

[3]. Amborzia J, Levy JA. Epidemiology, natural history, and pathogenesis of HIV infection. In: Holmes KK, Sparling PF, Mardh PA, Lemon SM, Stamm WE, Piot P, Wasserheit JN, eds. *Sexually Transmitted Diseases*, 3rd ed. 1998;251–258.

[4]. Zisook S, Peterkin J, Goggin KJ, Sledge P, Atkinson JH, Grant I. Treatment of major depression in HIV-seropositive men. HIV Neurobehavioral Research Center Group. J Clin Psychiatry. 1998;59:217–224.

[5]. Elliott AJ, Uldall KK, Bergam K, Russo J, Claypoole K, Roy-Byrne PP. Randomized, placebo-controlled trial of paroxetine versus imipramine in depressed HIV-positive outpatients. Am J Psychiatry. 1998;155:367–372.

[6]. Fernandez F, Levy JK, Samley HR, et al. Effects of methylphenidate in HIV-related depression: a comparative trial with desipramine. Int J Psychiatry Med. 1995;25:53–67.

[7]. Kelly JA, Murphy DA, Bahr GR, et al. Outcome of cognitive-behavioral and support group brief therapies for depressed, HIV-infected persons. Am J Psychiatry. 1993;150:1679–1686.

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[8]. Mulder CL, Emmelkamp PM, Antoni MH, Mulder JW, Sandfort TG, de Vries MJ. Cognitive-behavioral and experiential group psychotherapy for HIV-infected homosexual men: a comparative study. Psychosom Med. 1994;56:423–431.

[9]. Targ EF, Karasic DH, Diefenbach PN, Anderson DA, Bystritsky A, Fawzy FI. Structured group therapy and fluoxetine to treat depression in HIV-positive persons.

[10]. Psychosomatics. 1994;35:132–137.

[11]. Friedland G, Klein R. Transmission of HIV. N Engl J Med. 1987;317:1125–1135.

[12]. Coffin JM. Molecular biology of HIV. In: Crandall KA, ed. *The Evolution of HIV*. 1999;3–40.

[13]. Kalichman SC, Rompa D, Cage M. Distinguishing between overlapping somatic symptoms of depression and HIV disease in people living with HIV/AIDS. J Nerv Ment Dis. 2000;188:662–670.

[14]. Ciesla JA, Roberts JE. Meta-analysis of the relationship between HIV infection and risk for depressive disorders. Am J Psychiatry. 2001;158:725–730.

[15]. Golub SA, Gamarel KE, Rendina HJ. Loss and growth: identity processes with distinct and complementary impacts on well-being among those living with chronic illness. Psychol Health Med. 2013;19(5):572–579.

[16]. Del Guerra FB, Fonseca JLI, Figueiredo VM, Ziff EB, Konkiewitz EC. Human immunodeficiency virus-associated depression: contributions of immunoinflammatory, monoaminergic, neurodegenerative, and neurotropic pathways. J Neurovirol. 2013;19:314–327.

[17]. Ramirez-Avila L, Regan S, Giddy J, Chetty S, Ross D, Katz JN, et al. Depressive symptoms and their impact on health-seeking behaviors in newly-diagnosed HIVinfected patients in Durban, South Africa. AIDS Behav. 2012;16(8):2226–2235.

[18]. Sherr L, Clucas C, Harding R, Sibley E, Catalan J. HIV and depression—a systematic review of interventions. Psychol Health Med. 2011;16(5):493–527.

[19]. McArthur JC, Steiner J, Sacktor N, Nath A. Human immunodeficiency virus-associated neurocognitive disorders: mind the gap. Ann Neurol. 2010;67(6):699–714.

[20]. Clarke DM, Currie KC. Depression, anxiety and their relationship with chronic diseases: a review of the epidemiology, risk and treatment evidence. Med J Aust. 2009;190:S54–S60.

[21]. Capuron L, Pagnosi G, Demetrashvili MF, Lawson DH, Fornwalt FB, Woolwine B, et al. Basal ganglia hypermetabolism and symptoms of fatigue during interferon-alpha therapy. Neuropsychopharmacology. 2007;32(11):2384–2392.

[22]. Oesterle S, Hill KG, Hawkins JD, Guo J, Catalano RF, Abbott RD. Adolescent heavy episodic drinking trajectories and health in young adulthood. J Stud Alcohol. 2007;65(2):204–212.

[23]. Brady MA, Hooper PJ, Ottesen EA. Projected benefits from integrating NTD programs in sub-Saharan Africa. Trends Parasitol. 2006;22(7):285–291.

[24]. Magodoro IM, Esterhuizen TM, Chivese T. A cross-sectional, facility-based study of comorbid non-communicable diseases among adults living with HIV infection in Zimbabwe. BMC Res Notes. 2016;9:379.