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EFFECT OF COGNITIVE BEHAVIORAL THERAPY ON REDUCING ANXIETY, STRESS AND DEPRESSION IN HIV-AIDS PATIENTS : A SYSTEMATIC REVIEW

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Abstrak

Introduction: HIV/AIDS remains a major public health issue, impacting patients' physical, social, and psychological well-being. Psychological effects like anxiety, stress, and depression are prevalent due to stigma, uncertain prognosis, and treatment complexity. Persistent stress weakens the immune system, accelerates disease progression, and reduces quality of life. Psychotherapy, such as Cognitive Behavioral Therapy (CBT), has been widely developed and proven effective in managing these issues. Objective: This study aims to examine the effect of CBT on reducing anxiety, stress, and depression in HIV/AIDS patients. Methods: Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) methods was used to select articles. Critical Appraisal Skills Programme was used for quality assessment. Discussion: This study reviewed ten articles on CBT's impact. Seven articles discussed CBT, two covered yoga therapy, and one explored mindfulness therapy. Results and Conclusions: CBT effectively reduces anxiety, stress, and depression in HIV/AIDS patients. Combining CBT with other therapies, such as Motivational Enhancement Therapy (MET), Medication Management Algorithm (MMA), and Enhanced Usual Depression Care (EUDC) plus the Healthy Options program, can provide additional benefits. CBT also improves patients' quality of life and has been shown to reduce HIV viral load.

Keywords*: Cognitive Behavioral Therapy , Anxiety, Stress, Depression, HIV/AIDS Patients*

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INTRODUCTION

Human Immunodeficiency Virus (HIV) is a disease caused by a virus Which to infect cells immunity body . Advanced stages of HIV infection will result in various infections. opportunistic related to immune deficiency. These opportunistic symptoms indicates that person the is at on stage Which called with *Acquired Immuno Deficiency Syndrome* (AIDS) (WHO, 2023).

HIV continues to be a major global public health problem . HIV/AIDS is a chronic health condition that has a significant impact on the physical, social, and psychological lives of sufferers. One aspect that is often of concern is the psychological impact, which includes anxiety, stress, and depression. The prevalence of these mental disorders is quite high in HIV/AIDS patients, considering that this disease is often accompanied by social stigma, uncertainty of prognosis, and complex treatment demands. Research shows that around 30-60% of patients with HIV/AIDS experience symptoms of depression or anxiety, which in turn can worsen their quality of life and hinder adherence to antiretroviral treatment (Mugavero et al., 2010).

Anxiety or stress in HIV/AIDS patients can be triggered by fear of disease progression, concern about transmission, and shame due to social stigma (Tucker et al., 2013). For example, research shows that this anxiety is often related to the inability of patients to disclose their HIV status to others, which can worsen social isolation and disrupt interpersonal relationships (Earnshaw et al., 2014). In some cases, ongoing psychological distress can lead to chronic stress, which contributes to a decrease in the patient's immune system, accelerates disease progression, and reduces overall quality of life (Leserman, 2008).

Depression in HIV/AIDS patients is often comorbid with anxiety and stress. This depression not only causes decreased motivation to adhere to treatment but also worsens the patient's clinical condition. A study by Olatunji et al. (2015) found that HIV patients with depression are more susceptible to CD4 decline, increasing the risk of medical complications. Therefore, comprehensive interventions to address anxiety, stress, and depression are urgently needed to improve the well-being and adherence to treatment in HIV/AIDS patients.

To overcome the negative impact of psychological disorders, psychotherapy-based interventions such as *Cognitive Behavioral Therapy* (CBT) have been widely developed. CBT is widely known for its effectiveness in treating symptoms of anxiety, stress, and depression. According to Yi et al. (2024), CBT can help individuals understand and change negative thought patterns that trigger symptoms of mental disorders. By supporting cognitive restructuring and building stress management skills, CBT has a positive impact on reducing symptoms of these disorders. In addition, Abbas et al. (2023) showed that CBT provides rapid and long-lasting results through an approach that focuses on modifying maladaptive behaviors and thought patterns.

As a structured approach, CBT also allows for personalization of interventions according to patient needs. Safren et al. (2021) highlighted that the flexibility of CBT makes it an effective option for varying degrees of severity of mental disorders. In addition, CBT offers long-term benefits, where patients undergoing this therapy tend to experience a decrease in relapse of mental disorders because they are trained in sustainable coping skills (Pachankis et al., 2022).

Other benefits of CBT include improving patients' quality of life, as stated by Nguyen et al. (2022). Brown et al. (2022) added that by reducing cognitive distortions, CBT strengthens self-confidence and helps patients develop more positive self-perceptions. Furthermore, the holistic approach of CBT involving changes in cognitive and behavioral aspects has been shown to be effective in various populations. Kaaya et al. (2022) emphasized the importance of CBT in increasing individual resilience to psychological stress. With a combination of evidence-based interventions and an emphasis on individual empowerment, CBT is one of the main approaches in treating anxiety, stress, and depression.

Overall, the importance of treating psychological disorders in HIV/AIDS patients using interventions such as *Cognitive Behavioral Therapy* (CBT) cannot be underestimated. In this context, structured and evidence-based psychotherapy, such as *Cognitive Behavioral Therapy* (CBT) , provides hope for patients to live a better quality of life and more stable mental well-being. Implementation of this therapy in mental health programs for HIV/AIDS patients can increase emotional resilience and support the achievement of better health holistically.

METHODS

In this systematic review, the author conducted a search for articles from 5 main databases, namely PubMed, Scopus , Springer Link, ScienceDirect and Cochrane published between 2019 and 2024. From these databases, the author found a total of 4411 available articles . Keywords used in *the database search* PubMed is: (((((((Cognitive Behavioral Therapy[Title/Abstract]) OR (Cognitive Behavioral Therapies[Title/Abstract])) OR (Cognition Therapy[Title/Abstract])) OR (Cognition Therapies[Title/Abstract])) OR (Cognitive Psychotherapy[Title/Abstract])) OR (Cognitive Psychotherapies[Title/Abstract])) AND ((((psychological disorders[Title/Abstract]) OR (Anxiety[Title/Abstract])) OR (Stress[Title/Abstract])) OR (Depression[Title/Abstract]))) AND (HIV[Title/Abstract]). Meanwhile, searches in the Scopus , Spingerlink , ScienceDirect and Cochrane databases are " HIV AIDS AND "Cognitive Behavioral Therapy" OR "Cognition Therapy" OR "Cognitive Psychotherapy" AND "psychological disorder" OR "anxiety" OR "stress" OR depression".

After conducting the article selection, the author identified several exclusion criteria divided into 3 stages. First, excluding articles that are not available in *full text* , articles that are not in English and articles that are not research. As well as removing articles that are not published within the specified year range, the author also removed articles that do not focus on HIV patient subjects, and are not the results of RCT (*Randomized Controlled Trial*). Duplicate articles, articles that are RCT protocols that are still in the making stage, and RCT meta-analysis articles are also excluded from the analysis.

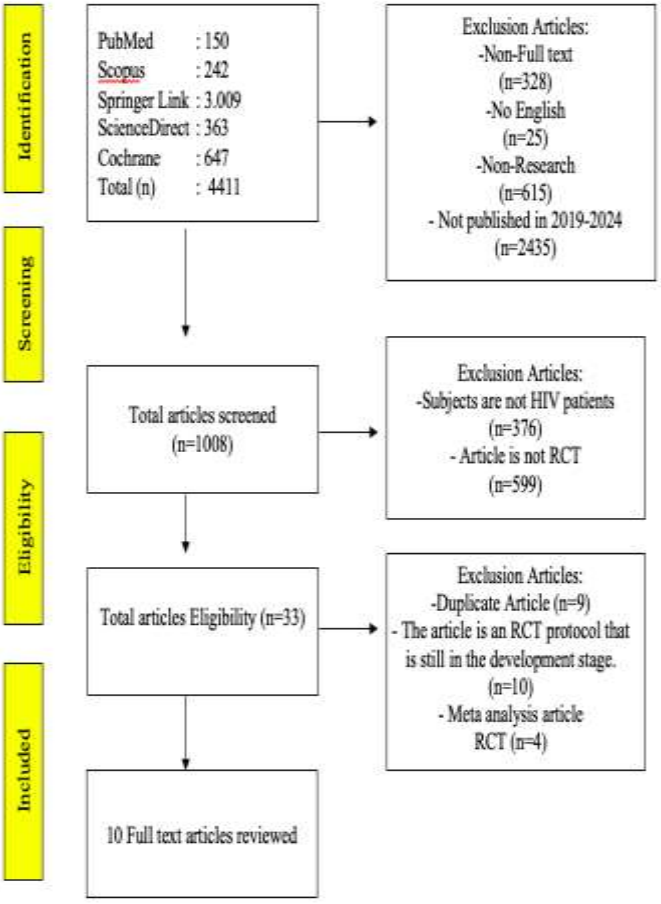

Figure 1. Selection process adapted literature study from PRISMA (2009)

Table 1 Summary of Included Journals

Writer	Design	Sample and Respondent Characteristics	Measurement/Tool	Intervention	Results
(Yi et al., 2024)	RCT	Sample: 120 Respondents Respondent Characteristics: • Age: 16–30 years • Gender: Self-identifies as male • Location: Lives in Hunan Province, China • Sexual orientation: 91.7% identified as *gay* and 8.3% as bisexual.	• Patient Health Questionnaire-9 (PHQ-9). • the Generalized Anxiety Disorder-7 (GAD-7) scale. • the Alcohol Use Disorders Identification Test (AUDIT) • the Lesbian, Gay, and Bisexual Identity Scale (LGBIS)	Participants in the intervention group underwent 10 sessions of culturally adapted affirmative *Internet-based Cognitive-Behavioral Therapy (ICBT)* delivered asynchronously (Online Learning Materials) from a counselor. The modules address stress, emotion regulation, and other psychosocial challenges faced by sexual minority men.	ICBT (*Internet-based* Cognitive *Behavioral Therapy) results* showed greater improvements in reducing levels of depression, anxiety, and alcohol use compared to a control group that did not show significantly greater decreases in HIV risk behaviors.
(Abbas et al., 2023)	RCT	Sample 186 participants Participant Characteristics • Age Range: 20 to 55 years • All participants received antiretroviral therapy (ART) and were screened using *the Patient Health Questionnaire-9* for depression.	• *the Patient Health Questionnaire-9 (PHQ-9).* • *the HIV Stigma Scale (HSS).* • *the General Medication Adherence Scale (GMAS).* • *the Multidimensional Perceived Social Support Scale (MPSS).* • *the WHO Quality of Life Scale-Brief (WHQOL-B)*	The intervention involved 8 sessions of B-CBT aimed at reducing depressive symptoms, stigma, and increasing adherence and social support. The therapy includes psychoeducation, cognitive restructuring, skills training, stress management, and relapse prevention.	B-CBT (*Brief-Cognitive Behavior Therapy)* significantly reduced depression and stigma while increasing treatment adherence, social support, and quality of life compared to a control group. Statistically significant improvements were seen in all outcomes measured in the experimental group.
(Safren et al., 2021)	RCT	Sample 161 participants Participant Characteristics • Gender: 48 men (29.8%), 114 women (69.6%), and 1 transgender man. • Age: Not specified in detail. • Race: Dominated by	• *the Hamilton Depression Rating Scale (HAM-D) and the Center for Epidemiologic Studies Depression Scale (CES-D).* • Biomedical Outcome Measures:	The first group received (*CBT for adherence / CBT-AD*)provided by trained nurses using a structured approach and division of tasks. Includes modules on adherence counseling, behavioral	Significant improvement in depression levels (HAM-D and CES-D scores) and adherence in the CBT-AD (*CBT for adherence) group* compared to ETAU *(Enhanced Treatment as Usual)* . After 12 months, participants in the CBT-AD group were 2.51 times more likely to have undetectable

		Black Africans (99.4%). • Socioeconomics: Median monthly income before taxes: $133.09. • Health status: All participants had clinical depression and HIV with viral load >400 copies/ml on first-line ART. • Education: Varies from Grade 6 or below to university level.	Viral load and CD4 count were taken from medical records.	activation, problem solving, relaxation training, and relapse prevention over eight sessions, plus optional booster sessions. The second group received *(Enhanced Treatment as Usual/ETAU)* which is enhanced treatment such as feedback to participants and their health care providers, adherence counseling, and standard care.	viral levels. There was no significant difference in CD4 cell count between groups. CBT-AD was effective in increasing the reduction of clinical depression levels, adherence to ARVs, and reducing HIV viral levels in PLHIV whose viral load was not yet controlled. This strategy suggests that reducing depression can help patients be more adherent to their treatment.
(Pachankis et al., 2022)	RCT	Sample *minority* men (SMM), between the ages of 18 and 35, from New York City and Miami. Participant Characteristics • Sexual Orientation: All participants identified themselves as gay, bisexual, or queer. • HIV status: HIV-negative, confirmed by testing. • Mental Health: Diagnosed with depression , anxiety, or trauma/stress-related disorder.	• *Timeline Follow-back [TLFB]).* • *Hamilton Depression Rating Scale, Beck Anxiety Inventory)*	ESTEEM (*Effective Skills to Empower Effective Men*) : A 10-session CBT intervention specifically designed to address minority stress in young SMM (*Sexual Minority Men's*) . LGBQ affirmative counseling: Up to 10 sessions of non-standard affirmative counseling. HIV Testing and Counseling: Single session counseling with testing.	CBT is able to reduce risky behaviors for HIV transmission compared to controls. CBT demonstrated larger (but not statistically significant) effect sizes in reducing comorbid mental health outcomes compared to LGBQ affirmative counseling. There were no major differences in baseline health risks across groups.
(Nguyen et al., 2022)	RCT	Sample 440 participants Participant Characteristics • Mean age: 39.6 years (SD = 5.8) • Gender: The majority are male (96.8%). • Marital status: 69.3% are married. • Alcohol dependence: 21.1% had alcohol dependence. • Symptoms of	Measurement Depression: with Questionnaire *(PHQ-9).* Measurement Anxiety Disorders with *(GAD-7).* Measurement Alcohol consumption: Test (AUDIT-C), Timeline Follow-Back (TLFB), and MINI questionnaire.	Combined Intervention: • The program consists of six individual face-to-face sessions, each lasting 45 to 60 minutes, along with three optional group meetings. • The sessions emphasize techniques from Motivational Enhancement	Universal reductions in depressive and anxiety symptoms were observed across all groups at 3, 6, and 12 months. There was a decrease in depression and anxiety in the intervention group, although it was not very significant between the intervention group and the SOC (Standard of Care) observed.

		depression: 25.1% had mild or worse depression. • Anxiety symptoms: 16.1% experienced mild or more severe anxiety.		Therapy (MET) and Cognitive Behavioral Therapy (CBT). Brief Intervention: • Involves two one-on-one face-to-face sessions (30 to 45 minutes each) and two follow-up phone sessions (10 to 15 minutes each). • Covers key components of MET and CBT, but in a more condensed format. Standard of Care (SOC): • Participants receive general guidance on reducing alcohol consumption and are referred for alcohol abuse treatment if necessary.	
(Brown et al., 2022)	RCT	Sample 156 participants Participant Characteristics • Age: 12–24 years (Mean: 21.4 years; 21.8% aged ≤18 years). • Gender: 44.7% male. • Ethnicity: 60.7% black. • HIV transmission: 52.9% perinatal transmission. • Depression Severity: 47.7% had severe depressive symptoms *(Quick Inventory of Depressive Symptomatology-Clinician [QIDS-C] ≥ 16).* • Viral Load: 57.5% had viral suppression at baseline.	Measurement of Depressive Symptoms with: Quick Inventory of Depressive Symptomatology-Self-Report (QIDS-SR; score range 0–27, higher scores indicate greater severity). HIV Metric Measurement: by looking at Viral load (copies/mL). CD4 T cell count. Response to Treatment: ≥50% decrease in QIDS-SR score from baseline. Remission Measurement with QIDS-SR Score ≤5.	COMB-R: A combination of CBT and MMA tailored for adolescents with HIV. CBT stages include psychoeducation, mood monitoring, behavioral activation, and long-term health strategies. MMA determines antidepressant treatment and dosage guided by symptom measurements. ESC: An enhancement of standard care involving psychotherapy and medication	COMB-R demonstrated a significantly greater proportion of treatment response at Week 36 (52.0% vs. 18.8%, p = 0.015) and Week 48 (58.7% vs. 33.4%, p = 0.047). Depression remission was greater on COMB-R at Week 36 (37.9% vs. 19.4%, p = 0.051) but was not statistically significant at Week 48. HIV-related metrics (viral suppression and CD4 T cell count) showed no significant differences between groups. These results suggest that the COMB-R approach is more effective in reducing depressive symptoms, improving treatment response, and helping adolescents achieve

		• Medications: 24.5% were prescribed psychiatric medications.		management, but less structured than the COMB-R.	remission compared to enhanced standard care (ESC).
(Kaaya et al., 2022)	RCT	Sample: The study involved 742 women from May 25, 2015 to April 29, 2016. Participant characteristics: • The average age at the beginning of the study was 30 years, with the majority (86.7%) having at least a primary school education. • Women assigned to the intervention group were more frequently married and had a lower likelihood of completing high school; however, these variations were not statistically significant.	-the Patient Health Questionnaire-9 (PHQ-9	Control group: Received enhanced usual care for depression *(EUDC).* Intervention group: Received *EUDC* plus the *Healthy Options program*, which included group problem - *solving therapy (PST) sessions* during pregnancy and cognitive-behavioral therapy *(CBT) sessions* for individuals who still showed symptoms of depression 6 weeks after delivery.	At 6 weeks postpartum, women who participated in *Healthy Options* were 67% less likely to experience depressive symptoms than the control group, equating to an absolute risk reduction of 25.7%. At 9 months after giving birth, women in the *Healthy Options group* were 26% less likely to have depressive symptoms than the control group.
(Kuloor et al., 2019)	RCT	60 participants	The WHOQOL-HIV BREF was administered to both groups before and after the 2-month intervention.	The intervention consisted of 2 months of yoga practice, including relaxation exercises, Suryanamaskara, breathing exercises, Asana, Pranayama, meditation, and relaxation techniques, performed daily for 1 hour, 5 days a week.	Analysis showed that the yoga group experienced significantly greater reductions in anxiety, depression, and fatigue compared to the control group. In addition, the yoga group showed significant improvements in psychological well-being and all aspects of quality of life compared to the control group. This study suggests that yoga interventions can improve psychological health and quality of life in HIV-positive individuals. Based on these findings, yoga can be recommended as a complementary therapy to support conventional HIV care.
(Sibinga et al., 2022)	RCT	A total of 355 patients were assessed for study eligibility, with 163 patients potentially eligible for enrollment. Ultimately, 74 adolescents and young	• Participants completed self-reported survey assessments at four different time points:	Mindfulness-Based Stress Reduction (MBSR/ *Mindfulness-Based Stress Reduction*) and a control group receiving usual	Participants in the MBSR group reported higher levels of *mindfulness at baseline. The average age of participants was 20.5 years, with 92% being non-Hispanic black, 51% male,*

		adults were enrolled in the study.	baseline, three months (post-program), and follow-ups at six and 12 months. These validated surveys evaluated medication adherence and awareness. • The instruments utilized included the Mindful Attention and Awareness Scale (MAAS; MacKillop & Anderson, 2007) and the Five Facet Mindfulness Questionnaire (FFMQ; Baer et al., 2006).	care.	*46% female, and 3% transgender.* After the program was completed, MBSR participants showed increased medication adherence and greater reductions in anxiety and HIV viral load compared to the control group.
(Wimberly, 2019)	This study uses qualitative descriptive methodology.	Sample: The sample consisted of 28 returning citizens who participated in a yoga intervention. Participant characteristics: Most participants were African-American males.	This study used semi-structured interviews to collect qualitative data about participants' experiences with yoga and its impact on their substance use.	The intervention involved a 90-minute Hatha yoga session, conducted once per week over a 12-week period.	Fourteen participants indicated that practicing yoga either helped reduce their substance use or supported them in maintaining abstinence. In contrast, eleven participants stated that yoga had no noticeable effect on their substance use.

RESULT AND DISCUSSION

Result

In this study, the articles obtained were original articles and obtained from reputable journals. From the search results, ten journals were selected for further criticism consisting of 9 quantitative journals. by using RCT (*Randomized Controlled Trial*) research design and 1 journal using qualitative design. To assess the methodological quality of journal articles selected quantitative , researchers used the *Joanna Briggs Institute* (JBI) instrument. JBI *Critical Appraisal Tools* is a critical appraisal tool that is approved to assess the quality of research methodology by answering 13 questions based on internal validity and risk of bias in cases, *confounding factors* , selection, information bias and the presence of clear reporting (Munn et al., 2019). After analyzing the nine journals that were criticized, 0 journals were found to show a high risk of bias (≤49%) and 3 journals showed a moderate risk of bias, while 6 journals showed a low risk of bias (above 70%), in accordance with the criteria proposed by Rhodes et al (2023). This indicates that most of the journals reviewed have a strong methodological basis and are reliable in providing evidence regarding the effects of CBT *(Cognitive Behavioral Therapy) therapy.* in reducing anxiety, stress and depression in HIV patients. Meanwhile, to assess the methodological quality of journal articles qualitative research, researchers used the COREQ or *Consolidated Criteria for Reporting Qualitative Research instrument.*

Discussion

Of the nine journals reviewed, most met the methodological criteria appropriate to the *Randomized Controlled Trial* (RCT) research design . Nine journals used randomization methods for sample selection in research . Of the nine journals, three journals

explained their randomization methods, namely the first journal article (Yi, et al, 2024) which used envelopes and two other journals, namely the third journal article (Safren, et al, 2021) and the fourth journal article (Pachankis et al, 2022) which uses computers in randomizing sample selection in research, and six other journals do not explain it explicitly and only researchers know.

Of the nine RCT (*Randomized Controlled Trial*) journals reviewed , all participant characteristics were homogeneous. Where in all the journal articles reviewed stated that the characteristics between the intervention and control groups did not differ. In the first journal article (Yi, et al, 2024) the demographic characteristics used were age, education and sexual orientation. In the second journal article (Abbas, et al, 2023) the demographic characteristics used were age, gender, marital status and ARV drug use status. Then in the third journal article, (Safren, et al, 2021) used demographic characteristics such as age, gender, race, monthly income or earnings, depression levels and viral load values of more than 400. Then in the fourth journal article (Pachankis et al,2022) The demographic characteristics used were sexual orientation, HIV status, depression/anxiety status, risk behavior status, education and minority men (MSM). The fifth journal article (Nguyen, et al, 2022) using demographic characteristics such as age, gender, education, marital status, employment and level of depression or anxiety. In the sixth journal article (Brown, et al, 2022) , the demographic characteristics used were age, gender ethnicity, HIV transmission status, level of depression, Viral Load Results and use of psychiatric drugs. Then in the seventh journal article (Kaaya, et al, 2022) , the demographic data used were age, gender and marital status. The eighth journal article (Kuloor, et al, 2019) used demographic data of age, gender, HIV status and CD 4 results of more than 300. And finally, the ninth journal article (Sibinga, et al, 2023) used demographic data of age, race, gender, education, sexual orientation and Viral load results.

Interventions in the nine RCT (*Randomized Controlled Trial*) journal articles reviewed, have the same goal, namely reducing anxiety, stress and depression in HIV patients. The first to seventh journal articles discuss CBT *(Cognitive Behavioral Therapy) therapy interventions,* the article the eighth journal discusses yoga therapy and the ninth journal article discusses *mindfulness therapy* . In the first journal article (Yi, et al, 2024) the author explains that participants in the intervention group underwent 10 sessions of affirmative *Internet-based Cognitive-Behavioral Therapy (I-CBT)* conducted asynchronously (online learning materials) from a counselor. The results of I-CBT (*Internet-based Cognitive-Behavioral Therapy*) showed a significant reduction in levels of depression, anxiety, and alcohol use in the intervention group compared to the control group in HIV transmission risk behavior.

In the second journal article (Abbas, et al, 2023) the authors explain the intervention involved 8 sessions of B-CBT (*Brief-Cognitive Behavioral Therapy*) which included psychoeducation, cognitive restructuring, skills training, stress management, and relapse prevention. B-CBT *(Brief-Cognitive Behavioral Therapy*) therapy significantly reduced depression and stigma while increasing adherence to treatment, social support, and quality of life compared to the control group. Then in the third journal article, (Safren, et al, 202) the intervention used CBT/AD *(Cognitive Behavioral Therapy for adherence)* delivered by trained nurses using modules on adherence counseling, behavioral activation, problem solving, relaxation training, and relapse prevention over eight sessions, plus an optional booster session. After 12 months, participants in the CBT-AD *(Cognitive Behavioral Therapy) group for adherence)* had a 2.51 times greater chance of having undetectable viral levels. CBT-AD *(Cognitive Behavioral Therapy for adherence)* was effective in increasing the reduction in clinical depression levels, adherence to ARVs, and reducing HIV viral levels in HIV patients whose viral load was not controlled. This strategy suggests that reducing depression can help patients be more adherent to their treatment.

Then in the fourth journal article (Pachankis et al,2022) using ESTEEM (*Effective Skills to Empower Effective Men*) intervention through CBT (*Cognitive Behavioral Therapy) therapy*) with 10 affirmative counseling sessions specifically designed to address minority stress in (*Sexual Minority Men's*) SMM. The results of the study showed that CBT (*Cognitive Behavioral Therapy)* therapy) able to reduce HIV risk behaviors and showed a larger (but not statistically significant) effect size in reducing anxiety compared to controls. The fifth journal article (Nguyen, et al, 2022) used a combined intervention of CBT (*Cognitive Behavioral Therapy*) with MET (*Motivational Enhancement Therapy*) . The intervention was divided into three parts: first, six individual face-to-face sessions (each 45-60 minutes) focusing on MET (Motivational Enhancement Therapy) and CBT (Cognitive Behavioral Therapy) techniques. Second, there were two individual face-to-face sessions (each 30-45 minutes) and third, two booster telephone sessions (each 10-15 minutes). The

results showed a decrease in symptoms of depression and anxiety observed in the intervention group compared to the control group.

In the sixth journal article (Brown, et al, 2022) the intervention used was a combination of CBT (*Cognitive Behavioral Therapy*) and MMA (*Medication Management Algorithm*) known as *The Combined Treatment (MMA and CBT) Intervention* (COMB-R) . The CBT (*Cognitive Behavioral Therapy)* therapy provided includes psychoeducation, mood monitoring, behavioral activation, and long-term health strategies. And the MMA (*Medication Management Algorithm*) intervention determine antidepressant treatment and dosage guided by symptom measurement. These results indicate that the COMB-R approach is more effective in reducing depressive symptoms, improving treatment response, and helping adolescents achieve remission compared to standard care. Then in the seventh journal article (Kaaya, et al, 2022) The intervention used was *EUDC (Enhanced Usual Depression Care* plus the *Healthy Options program,* which included group problem - *solving therapy (PST) sessions for women during pregnancy and cognitive behavioral therapy (CBT) sessions* for women who were still showing symptoms of depression 6 weeks after delivery. At 6 weeks after delivery, women in the *Healthy Options* group were 67% less likely to have symptoms of depression than the control group. And at 9 months after delivery, women in the *Healthy Options group* were 26% less likely to have symptoms of depression than the control group.

The eighth journal article (Kuloor, et al, 2019) used 2 months of yoga exercise therapy, including relaxation exercises, suryanamaskara, breathing exercises, asanas, pranayama, meditation, and relaxation techniques, which were performed daily for 1 hour for 5 days a week . The results of the analysis showed that the yoga group experienced a significantly greater decrease in anxiety, depression, and fatigue compared to the control group. In addition, the yoga group showed significant improvements in psychological well-being and all aspects of quality of life compared to the control group . This study suggests that yoga interventions can improve psychological health and quality of life in HIV-positive individuals. Based on these findings, yoga can be recommended as a complementary therapy to support conventional HIV care. And finally, the ninth journal article (Sibinga, et al, 2023) used a *Mindfulness-Based Stress Reduction (MBSR)* intervention . Participants in the MBSR (*Mindfulness-Based Stress Reduction*) group showed increased medication adherence and decreased anxiety and greater HIV viral load compared to the control group. This shows that CBT *(Cognitive Behavioral Therapy) therapy* , carried out with or without a combination of other therapies, has been able to reduce anxiety, stress and depression in HIV patients.

Validated measurement *tools* are considered valid and reliable tools to use in research. Of the nine RCT (*Randomized Controlled Trial*) journals , all journal articles use valid measurement *tools* . *In the first journal article* (Yi, et al, 2024) The measurement *tools* used are depression measurement assessed using *the Patient Health Questionnaire-9 (PHQ-9),* anxiety evaluated with *Generalized Anxiety Disorder-7 (GAD-7) , HIV transmission risk* behavior measured through *the Timeline Follow-Back approach , and* other measurements including alcohol use *Alcohol Use Disorders Identification Test (AUDIT),* internal stigma (*Lesbian, Gay, and Bisexual Identity Scale) (LGBIS)* . In the second journal article (Abbas, et al, 2023) The measurement *tool* used is depression measurement assessed using *the Patient Health Questionnaire-9 (PHQ-9)* , stigma was measured using *the HIV Stigma Scale (HSS) , medication* adherence was evaluated using *the General Medication Adherence Scale (GMAS) , social* support was measured using *the Multidimensional Perceived Social Support Scale (MPSS)* , and quality of life was assessed using *the WHO Quality of Life Scale-Brief (WHQOL-B)(CBT 2-Springer Link).* Then in the third journal article, (Safren, et al, 2021) used depression measurement *tools* with *the Hamilton Depression Rating Scale (HAM-D) and the Center for Epidemiologic Studies Depression Scale (CES-D).*

Then in the fourth journal article (Pachankis et al,2022) using measurement *tools , namely* reducing risky behavior for HIV transmission (measured through *Timeline Follow-back [TLFB*] , measuring depression with *(Hamilton Depression Rating Scale, Beck Anxiety Inventory),* and substance use *(Alcohol Use Disorders Identification Test)* . The fifth journal article (Nguyen, et al, 2022) using depression measurement *tools* : with the Questionnaire *(PHQ-9)* , anxiety measurement with *(GAD-7)* , alcohol consumption *measurement* with the AUDIT Test, and Timeline Follow-Back (TLFB) for HIV transmission risk behavior . In the sixth journal article (Brown, et al, 2022) The measurement *tools* used are depression measurement with QIDS-SR (*Quick Inventory for Depression Symptomatology Self-Report*) . Then in the seventh journal article (Kaaya, et al, 2022) using depression measurement *tools* with *the Patient Health Questionnaire-9 (PHQ-9)* . The eighth journal article

(Kuloor, et al, 2019) uses the *WHOQOL-HIV BREF* measurement *tool* to assess quality of life. And finally, the ninth journal article (Sibinga, et al, 2023) uses *the Mindful Attention and Awareness scale* (MAAS) and *Five Facet Mindfulness Questionnaire (FFMQ)* measurement *tools* to measure mental well-being in patients with chronic diseases such as HIV.

Four of the nine journal articles (Yi, et al, 2024), (Abbas, et al, 2023), (Nguyen, et al, 2022), and (Kaaya, et al, 2022)) studied, using the *Patient Health Questionnaire-9* (PHQ-9) questionnaire to measure the level of depression . *Patient Health Questionnaire-9* (PHQ-9) questionnaire is a short instrument with 9 questions that can be completed by patients themselves or interviewed. With an average completion time of 5 minutes, the PHQ-9 is very efficient for use in busy clinical practice . In addition, this questionnaire has demonstrated high internal reliability ($\alpha = 0.71–0.93$) and good validity across a variety of populations, including patients with HIV . Furthermore, Question 9 on the PHQ-9 specifically measures thoughts of death or self-harm, which is important for detecting suicide risk in HIV patients with major depression

In addition to depression, there is also an anxiety variable that is measured using the *Generalized Anxiety Disorder* -7 (GAD-7) questionnaire . Journal articles (Yi, et al, 2024) and (Nguyen, et al, 2022) use this questionnaire because the GAD-7 is a short and easy-to-use tool, with only 7 questions that patients can complete themselves in about 5 minutes. Each question is scored based on the frequency of symptoms in the past two weeks, providing quick results to identify anxiety levels. In addition, the GAD-7 questionnaire shows high reliability (internal consistency) and good validity in detecting generalized anxiety *disorder* or other anxiety disorders such as panic disorder, social anxiety, and PTSD (*post-traumatic stress disorder*). High scores on the GAD-7 are often associated with decreased quality of life, which is relevant for HIV patients. This is in line with the second journal article (Abbas, et al, 2023) and the eighth journal article (Kuloor, et al, 2019) which also used a questionnaire measuring the quality of life of HIV patients with *the WHO Quality of Life Scale-Brief (WHO QOL - B)* . Questionnaire *(WHO QOL - B)* was chosen because this questionnaire measures quality of life in four main dimensions, namely physical health, psychological health, social relationships, and the environment. This approach covers aspects of life that are highly relevant to HIV patients, who often face health challenges, social stigma, and psychological distress . In addition, the questionnaire *(WHO QOL -B)* can be applied widely across cultures and contexts, making it an ideal tool for research involving HIV patients in various geographic locations. WHOQOL-B is also available in many languages, making it easy to implement in a global population . *WHOQOL - B* has been validated in various populations including HIV patients, showing good reliability and sensitivity to detect changes in quality of life. This makes it suitable for use in research and clinical practice . Overall, all articles have followed the RCT design well and demonstrate a high level of adherence to research methodology standards.

CBT (*Cognitive Behavioral Therapy*) interventions have been shown to reduce levels of anxiety, stress and depression in HIV patients (Yi, et al, 2024; Abbas, et al, 2023; Safren, et al, 2021; Pachankis et al, 2022; Nguyen, et al, 2022; Brown, et al, 2022; Kaaya, et al, 2022). These studies indicate that CBT (*Cognitive Behavioral Therapy*) plays an important role in supporting HIV patients to live a better quality of life by reducing anxiety, stress and depression. According to Yi et al. (2024) , CBT (*Cognitive Behavioral Therapy*) significantly reduces symptoms of anxiety and depression because it focuses on negative thought patterns and helps individuals reconstruct these thought patterns. Abbas et al. (2023) confirmed that CBT (*Cognitive Behavioral Therapy*) shows fast and lasting results in reducing stress through changes in patient behavior and thinking. Safren et al. (2021) highlighted that CBT (*Cognitive Behavioral Therapy*) uses structured and evidence-based methods that can be tailored to the specific needs of patients, making it suitable for various levels of anxiety and depression severity.

CBT (*Cognitive Behavioral Therapy*) offers long-term benefits in maintaining decreased anxiety and depression because patients are taught skills that they can use even after therapy is complete (Pachankis et al, 2022). CBT (*Cognitive Behavioral Therapy*) not only focuses on reducing symptoms but also helps patients improve their quality of life through increased coping skills and improved social relationships (Nguyen et al, 2022) . CBT (*Cognitive Behavioral Therapy*) is effective in strengthening self-confidence and reducing cognitive distortions that contribute to anxiety and depression (Brown et al, 2022) . CBT (*Cognitive Behavioral Therapy*) improves self-perception and supports patients to face life's challenges in a healthier and more productive way (Kaaya et al, 2022).

In addition to CBT (*Cognitive Behavioral Therapy*), there are other therapies that can reduce

stress, anxiety, and depression in HIV patients, namely yoga therapy and *mindfulness therapy*. According to Kuloor et al. (2019) , yoga therapy helps reduce anxiety, stress, and depression by integrating breathing techniques, meditation, and body movements that can regulate stress responses and improve emotional and physical well-being. Meanwhile, according to Sibinga et al. (2023) , *mindfulness* therapy offers a holistic and long-lasting approach to reducing anxiety, stress, and depression by practicing full awareness, managing emotions, and increasing positive responses to life's challenges.

In the tenth journal article with a qualitative design, it is explained that yoga has been shown to help reduce anxiety, stress, and depression in patients living with HIV, especially in the context of those facing challenges in reintegrating into society. Some of the benefits of yoga reported by participants in this journal article include, first, stress reduction and increased mindfulness . Yoga helps distract from mental and physical stress, and focuses attention on the present moment through breathing techniques and focused body postures. Participants reported that the practice reduced negative thoughts and increased calmness. Second, social support . Participants felt accepted in a supportive, *non-judgmental environment* . Yoga gave them a space to socialize with people who had similar goals, namely recovery. Third, increased self-confidence . Some participants felt more confident and had higher self-esteem after participating in yoga, which helped them make better decisions regarding recovery. Fourth, physical benefits . Yoga reduces physical tension, such as cramps, lower back pain, and other discomforts, which can be triggers for stress or substance use. Fifth, positive distraction . Yoga serves as an activity that fills free time productively, helping participants not to use illicit substances during and after sessions.

CONCLUSION

Overall, the results of this study indicate that CBT (*Cognitive Behavioral Therapy*) therapy is effective in reducing anxiety, stress, and depression in HIV patients. This therapy must be carried out by trained and certified instructors to ensure optimal results. The various types of CBT used, such as *Internet-based Cognitive-Behavioral Therapy* (I-CBT), *Brief Cognitive Behavioral Therapy* (B-CBT), and Cognitive Behavioral Therapy for adherence (CBT-AD), provide flexibility in the therapeutic approach.

In addition, the positive effects of CBT (*Cognitive Behavioral Therapy*) can be enhanced by combining it with other therapies, such as *Motivational Enhancement Therapy* (MET), *Medication Management Algorithm* (MMA *), Enhanced Usual Depression Care* (EUDC) which is complemented by the *Healthy Options program* , including problem *-solving therapy* (PST) sessions.

CBT (*Cognitive Behavioral Therapy*) therapy not only helps reduce psychological symptoms but also supports improving the quality of life of HIV/AIDS patients by improving self-perception, increasing the ability to face challenges, and reducing cognitive distortions. This therapy also contributes to reducing the number of HIV viruses, so it has a positive impact both physically and mentally. Thus, CBT (*Cognitive-Behavioral Therapy) therapy* is an important and useful approach in the comprehensive care of HIV/AIDS patients.

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