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Cognitive Behavioral Therapy for Mental Health and Stigma Among PLWH in Low and Middle-Income Countries: A Systematic Review

Hasanudin^{1*}, Sri Winarni², Elizabeth Risha Murlina Lema³, Achmad Tirmidzi⁴, Sunari⁵

^{1,2,5} Poltekkes Kemenkes Malang, East Java, Indonesian

³Christian University of Indonesia, Jakarta, Indonesian.

⁴Dr. Mohammad Moenir Air Force Hospital, Abdulrachmad Shaleh Air Force Base, Malang, East Java, Indonesia

Corresponding Author: hasanudin@poltekkes-malang.ac.id

ABSTRACT

People living with HIV (PLWH) in low- and middle-income countries (LMICs) face a disproportionately high burden of mental health disorders and HIV-related stigma, which critically hinders adherence to antiretroviral therapy (ART). Cognitive Behavioral Therapy (CBT) has emerged as a promising evidence-based psychological intervention. However, its effectiveness across diverse populations and delivery formats in LMICs has not been adequately synthesized. This systematic review aimed to evaluate the effectiveness of CBT on mental health and stigma reduction among PLWH in LMICs. A systematic review was conducted in accordance with the PRISMA guidelines for RCT articles published in Scopus, Science Direct, and PubMed databases between January 1, 2021, to April 9, 2026. The keywords used were “Cognitive Behavioral Therapy” AND “Mental Health OR Stigma” AND “People Living with HIV” OR “Randomized Controlled Trial.” Risk of bias was assessed using the Cochrane Risk of Bias Tool version 2 (RoB 2). Seven RCTs involving 1.786 participants from six LMICs in Africa and one in South Asia were included. All studies consistently reported clinically significant reductions in depressive symptoms and internalized stigma following CBT interventions, regardless of group, individual, or self-administered delivery format, and regardless of whether the intervention was delivered by a mental health specialist or a trained non-specialist. The risk of bias assessment indicated that one study had a low risk of bias, and six studies had some concerns. CBT is an effective, flexible, and scalable intervention for improving mental health and reducing stigma among PLWH in LMICs.

Keywords: Cognitive Behavioral Therapy; HIV; Mental Health; Stigma; Low- And Middle-Income Countries.

Background

Human Immunodeficiency Virus (HIV) not only affects the body's immunity but also imposes a significant psychological burden, particularly for women in low- and middle-income countries (LMICs) (1). A systematic review and meta-analysis covering 238,570 cases reported that 15.5% PLWH experienced anxiety disorders, with a higher prevalence in women (20.8%) (2). The stigma experienced by PLWH, whether in the form of perceived, anticipated, or internalized stigma, results in psychological stress that hinders their involvement in HIV care (3). HIV stigma is consistently associated with depression, anxiety, mental distress, Post-Traumatic Stress Disorder (PTSD), and suicidal ideation in PLWH across LMICs (4).

By the end of 2024, 40.8 million people were living with HIV worldwide, with 77% accessing antiretroviral therapy (ART), while funding for the Acquired Immune Deficiency Syndrome (AIDS) response in LMICs remained 17% below annual needs (5). More than two-thirds of global cases are concentrated in sub-Saharan Africa, with the prevalence of depressive symptoms among people living with HIV in the region ranging from 20% to 40%; yet, the majority have never received adequate mental health screening or treatment (6).

HIV stigma develops through three mutually reinforcing layers: socially accepted (enacted) stigma, anticipated stigma from the environment (anticipated), and finally, internalized by the individual as the truth about themselves (7). A systematic review covering 40 studies with 171,627 participants identified that low education level, lack of social support, low socioeconomic status, and non-voluntary disclosure of HIV status were the main predictors of severe stigma among PLWH (7). The relationship between depression and ART adherence is bidirectional; women living with HIV with depression have a 1.78 times higher risk of non-adherence to ART, which in turn worsens clinical conditions and deepens depressive symptoms (8). HIV stigma is also consistently associated with decreased quality of life, increased risky sexual behavior, reduced use of health services, and the emergence of anxiety symptoms and negative self-images in PLWH (9).

Mental health interventions in HIV care in Africa found that of the 16 studies that met the inclusion criteria, depression was the most commonly treated condition (80%), and the majority of interventions were non-pharmacological; however, the geographic coverage was still very narrow (10). The results of a meta-analysis of 67 Randomized Controlled Trials (RCTs) of psychosocial interventions in high-income countries confirmed a significant positive effect on reducing depression, anxiety, and stress in PLWH, but these findings cannot be directly generalized to the LMICs context (11). A systematic review evaluating RCTs of HIV stigma reduction interventions found that CBT components were present in four of the seven ART-based studies, but its combination with other modalities made it difficult to isolate the specific effects of CBT, necessitating a systematic review specifically for CBT in LMICs (12).

CBT has been shown to effectively reduce depression and stigma and improve ART adherence, quality of life, and social support for PLWH in Pakistan, which tested eight individual brief-CBT sessions (13). A group-based RCT in Nigeria demonstrated the feasibility of a community health worker-facilitated CBT model and improvements in internalized stigma and mental health in key populations living with HIV (14). Group CBT in adolescents living with HIV in Uganda significantly reduced internalized stigma and depressive symptoms at three months post-intervention, demonstrating the potential of CBT for young people in LMICs (15). However, evidence on the effectiveness of CBT in LMICs still requires systematic RCT-based synthesis to generate recommendations that can be implemented in HIV health policy and clinical practice (16). This research aims to determine the Effectiveness of Cognitive Behavioral Therapy for Mental Health and Stigma Among People Living with HIV in Low and Middle-Income Countries.

Methods

Study Design

This is a Systematic Review of Randomized Controlled Trials

Search Strategy

A systematic search was conducted in Scopus, PubMed, and Science Direct databases by taking randomized controlled trial (RCT) article designs with the aim of evaluating the effectiveness of cognitive behavioral therapy for mental health and stigma among people living with HIV in low- and middle-income countries, with a search deadline of January 1, 2021 - March 26, 2026. In conducting the search for articles, researchers used a combination of subject and free text terms, including “Cognitive Behavioral Therapy OR CBT OR Cognitive Therapy,” “Mental Health OR Psychological OR Well-being” AND “Stigma,” AND “HIV OR Human Immunodeficiency Virus OR People Living with HIV OR PLWH” AND “RCT OR Randomized Controlled Trial.” The complete search strategy is presented in Table 1. Researchers also included relevant and recent references in compiling this systematic review.

Table 1. PICOS search terms.

Population	HIV OR Human Immunodeficiency Virus OR People Living with HIV OR PLWH
Intervention	Cognitive Behavioral Therapy OR CBT OR Cognitive Therapy
Comparison	Control group and group receiving other interventions
Outcomes	Mental Health OR Psychological OR Well-being OR Stigma

Study design	Randomized Controlled Trial OR RCT
Time	2021-2026
Language	English

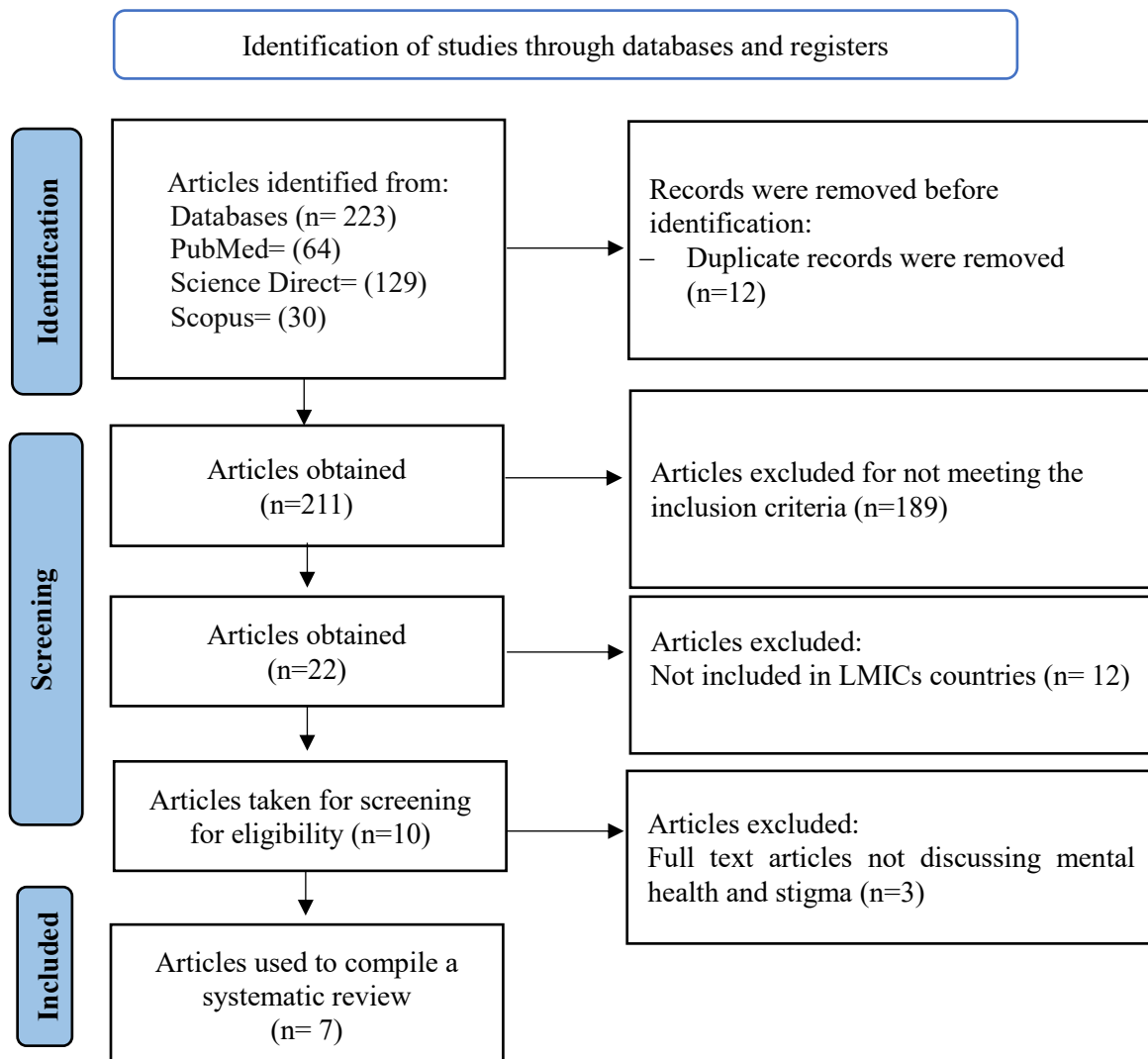
Study Selection

The inclusion criteria for this systematic review were as follows: (1) respondents included in the study were people living with HIV; (2) the intervention provided was Cognitive Behavioral Therapy as a standalone intervention or in combination with other interventions; (3) the outcome in this study was mental health or stigma; (4) full-text articles were published; (5) the study design was a randomized controlled trial (RCT); and (6) the article was published in English. The exclusion criteria were: (1) respondents were not people living with HIV, (2) the intervention provided was not Cognitive Behavioral Therapy, (3) the outcome was not mental health or stigma, (4) articles were abstract-only, not full-text articles, or duplicate articles, (5) the study design was not an RCT, and (6) Language other than English.

Data collection and analysis

This systematic review was compiled according to the 2020 PRISMA guidelines (17). This involved searching for articles in electronic databases using previously developed PICOS framework keywords. After identifying relevant research articles, the researchers screened them based on their titles, abstracts, and full texts. Duplicate articles were excluded. Five researchers (HSN, SW, ERML, AT, and SI) independently screened the electronic search results for eligibility by reviewing the titles and abstracts. In cases of disagreement, the HSN acted as an arbitrator.

Figure 1. PRISMA 2020 flowchart for a new systematic review that includes searches of databases, registers, and other sources.



Data Extraction and Management

Five researchers (HSN, SW, ERML, AT, and SI) independently extracted the following data from the articles: (1) author and year, (2) country, (3) design, (4) sample, (5) CBT Intervention, (7) Intervention Duration, (8) Main Outcome, and (9) Main Findings. The extracted data are listed in Table 2.

Five researchers (HSN, SW, ERML, AT, and SI) independently assessed the risk of bias of each retrieved article using the Cochrane RoB 2 tool. Any disagreements were discussed and resolved by HSN.

Synthesis

The results of the synthesis of the retrieved articles are presented in tabular form. To achieve complete and transparent reporting and facilitate interpretation, eligible trials are summarized in tables that describe the general characteristics of each study design and the results obtained by outcome domain. In addition, the characteristics of the intervention and experimental control and the outcome measures used in each study design are detailed.

Table 2. Data Extraction of Psychosocial Intervention Research on HIV/AIDS Patients

No	Author Name and Year	Country	Design	Total Sample (I/K)	Intervention	CBT Session	Outcome	Results
1.	(Vavani et al., 2025)	Botswana	Randomized Controlled Trial (RCT)	72 (I:37, K: 35)	"Living positive with HIV": A CBT-based self-help program (booklet) accompanied by telephone coaching.	6 modules completed in 6-8 weeks; 1-2 hours of independent work per week	1. Depressive symptoms (Patient Health Questionnaire-2 (PHQ-2)) 2. Anxiety symptoms (Generalized Anxiety Disorder-7 (GAD-7))	Significant reduction in symptoms of depression and anxiety in PLWH
2.	(Nabunya et al., 2024)	Uganda	Pilot randomized clinical trial	89 (I:26, K: 63)	Group CBT (G-CBT) and family strengthening through multi-family groups (MFG-FS).	10 sessions, approximately 1 hour per session, conducted every two weeks	1. HIV Stigma: (Berger Stigma Scale) 2. Depressive symptoms (Child Depression Inventory)	MFG-FS reduced internalized stigma and depressive symptoms; G-CBT reduced anticipatory stigma and improved self-concept.
3.	(Pulerwitz et al., 2024)	Nigeria	Delayed intervention group randomized controlled trial	240 (Immediate: 117, Pending: 123)	Intervention drawing on CBT strategies for men who have sex with men (MSM) and transgender women (TGW)	4 weekly face-to-face sessions, 2.5 - 3 hours per session	1. Internalized stigma (Adapted Internalized AIDS-Related Stigma Scale) 2. Depression (Patient Health Questionnaire-8) 3. Coping (Brief Coping Scale)	Group-based CBT has been shown to reduce stigma and support mental health.
4.	(Abbas et al., 2023)	Pakistan	Prospective, Randomized Control Trial (RCT)	126 (I: 63, K:63)	Brief Cognitive Behavior Therapy (B-CBT): Brief CBT focused on cognitive restructuring and psychoeducation.	8 therapeutic sessions conducted individually	1. Depression (Patient Health Questionnaire (PHQ-9)) 2. HIV Stigma (HIV Stigma Scale) 3. Adherence (General Medication Adherence Scale (GMAS)) 4. Quality of Life (WHO Quality of Life Scale-Brief (WHQOL-B)) 5. Social Support System Multidimensional Perceived Social Support Scale (MPSS)	Significant reduction in depression and stigma, increased medication adherence, social support, and quality of life.

No	Author Name and Year	Country	Design	Total Sample (I/K)	Intervention	CBT Session	Outcome	Results
5.	(Donenberg et al., 2023)	Rwanda	2-arm Individual Randomized Controlled Trial (RCT)	356 (I: 178, K:178)	Trauma Informed Cognitive Behavioral Therapy enhanced to address HIV (TI-CBT): Trauma Informed CBT enhanced to address ART adherence and adolescent mental health.	6 group sessions (2 hours/session) over 2 months, plus 1 booster session after 12 months.	1. Medication Adherence (Self-report 3 items), 2. Depression/Anxiety (Youth Self-Report / YSR) 3. PTSD symptoms (UCLA-PTSD Reaction Index)	Symptoms of depression and anxiety improve over time, especially in adolescents with lower initial levels of distress.
6.	(Kaaya et al., 2022)	Tanzania	Cluster-Randomized Controlled Trial	742 (I: 395, K: 347)	The Healthy Options intervention included evidence-based components from problem-solving therapy (PST) during pregnancy and CBT during postpartum	PST: 7 sessions (2-3 hours/session). CBT: 8 weekly sessions (1-1.5 hours/session).	1. Depressive symptoms (Patient Health Questionnaire-9 (PHQ-9))	Significant reduction in depressive symptoms at 6 weeks postpartum, but not significant at 9 months postpartum
7.	(Safren et al., 2021)	South Africa	Two-arm Randomized Controlled Effectiveness Trial	161 (I: 80, K:81)	Task-shared cognitive-behavioural therapy for adherence and depression (CBT-AD)	8 sessions	1. Depression (Hamilton Depression Rating Scale) 2. ART Adherence (Wisepill real-time monitoring)	CBT-AD significantly improved depression, weekly adherence, and increased the odds of viral suppression at 12 months.

Results

Study Selection

A total of 223 articles were retrieved from the database search that met the inclusion criteria. After excluding articles based on title screening, abstract and full-text suitability, and removing duplicates, seven articles were deemed potentially relevant and met the inclusion criteria for this systematic review. The results of the search for articles included in this systematic review are presented in the PRISMA flowchart in Figure 1.

Risk of Bias Assessment

The risk of bias assessment in this systematic review using Cochrane RoB 2 of the seven included articles showed variations in methodological quality dominated by the category of some concerns. One study had the strongest validity (low risk) because it successfully implemented a blinded assessor procedure and used objective adherence monitoring through Wisepill technology. Six articles were categorized as having some concerns because of potential detection bias due to unblinded data collectors and technical difficulties in maintaining the integrity of the randomization design. They faced common methodological challenges, such as dropout, potential contamination between participants (cross-talk), and reliance on self-reported data that are vulnerable to bias. The risk of bias for all studies is presented in Table 3.

Risk Of Bias

Table 3. Risk of bias assessment using Cochrane RoB 2

Author & years	D1	D2	D3	D4	D5	Overall Risk
(Vavani et al., 2025)	Low	Some Concerns	Some Concerns	Some Concerns	Low	Some Concerns
(Nabunya et al., 2024)	Low	Some Concerns	Low	Some Concerns	Low	Some Concerns
(Pulerwitz et al., 2024)	Low	Some Concerns	Low	Some Concerns	Low	Some Concerns
(Abbas et al., 2023)	Low	Some Concerns	Some Concerns	Some Concerns	Low	Some Concerns
(Donenberg et al., 2023)	Low	Some Concerns	Low	Low	Low	Some Concerns
(Kaaya et al., 2022)	Low	Some Concerns	Low	Some Concerns	Low	Some Concerns
(Safren et al., 2021)	Low	Some Concerns	Low	Low	Low	Low Risk

Study Characteristics

This systematic review includes 7 articles and consists of various LMICs countries including: Botswana (n=1) (18), Uganda (n=1) Nabunya et al., 2024), Nigeria (n=1) (14), Pakistan (n=1) (13), Rwanda (n=1) Donenberg et al., 2023), Tanzania (n=1) (19), South Africa (n=1) (20). The studies covered very specific populations, ranging from perinatal women, children and adolescents (aged 10–14 and 14–21), to sexual and gender minorities. The total number of respondents in this systematic review was 1.786 people living with HIV.

The main intervention given to HIV patients with stigma and mental health problems is CBT with various delivery methods, namely CBT given in groups involving interaction between participants in sessions guided by a facilitator to build peer support (14)(19)(21)(22), CBT is provided individually face-to-face one-on-one between the clinician/nurse and the patient for more personalized treatment (13)(20), and Independent CBT which relies on written material that is completed by the patient themselves with minimal guidance from a trainer via telephone (18).

CBT interventions in various studies were delivered by facilitators with diverse backgrounds, including interventions accompanied by trainers with at least a bachelor's degree in psychology and training in Motivational Interviewing techniques (18), For group CBT (G-CBT) sessions, intervention is provided by trained health paracounselors. For family strengthening sessions (MFG-FS), the material is delivered by trained parent peers (21), The intervention was facilitated by Community Health Education Workers with basic counseling skills and work experience (14), Interventions are provided directly by a professional clinical psychologist or psychotherapist (13), The intervention was led by youth leaders aged 21-25 years who were also people living with HIV and had been trained and

supervised (22), interventions are facilitated by trained Community-Based Health Workers (19), and the intervention was carried out through a task-sharing approach by professional nurses in the clinic with a mental health background (20). The duration and frequency of CBT also varied, ranging from four to eight sessions, each lasting one to three hours, depending on the patient's needs.

Most studies use the PHQ-9 as the gold standard for self-reported measures of depression in developing countries because it has high reliability and is easily adapted to various local languages (13)(18)(19). There are differences in the quality of antiretroviral therapy adherence measurements, with some studies using objective approaches such as Wisepill technology (20), while others still rely on self-reports, which have the potential to cause social desirability bias (13)(22). Recent research suggests that there is an effort to develop an instrument to measure intersectional stigma by combining sexual minority stigma and HIV status, to provide a more comprehensive picture of psychosocial barriers (14). In the adolescent population, the instruments used tend to be tailored to age characteristics, such as the Child Depression Inventory and Youth Self-Report, to capture different mental health dynamics compared to those in the adult population (21)(22).

Discussions

The results of this systematic review indicate that CBT is an effective intervention for improving mental health and reducing stigma among people living with HIV in low- and middle-income countries. These findings are consistent with a global trend toward CBT as an evidence-based intervention for addressing depression, anxiety, and psychosocial burden in populations with chronic illnesses, including HIV (23)(24)

The majority of studies in this review showed that CBT significantly reduced depressive symptoms in people living with HIV, as measured using validated instruments such as the PHQ-9, Child Depression Inventory, and Youth Self-Report. These findings align with meta-analyses reporting that CBT is effective in improving mental health and antiretroviral therapy adherence, particularly in populations in low- and middle-income countries (25). In addition, CBT-based interventions have been shown to provide significant and sustained depression reduction effects up to six months post-therapy (26).

This effectiveness can be explained by the working mechanism of CBT, which focuses on cognitive restructuring and modifying maladaptive behaviors. In people living with HIV, cognitive distortions are often related to feelings of worthlessness, guilt, and fear of social stigma. By intervening in these thought patterns in a structured manner, CBT helps individuals develop adaptive coping strategies and improve emotional regulation (18)(20). These findings are reinforced by studies showing that CBT techniques, such as cognitive restructuring, dysfunctional thought recording, stress management, and relaxation, are consistently effective in reducing depression, anxiety, and stress in PLWH across cultural contexts (23).

Another key finding of this systematic review indicates that CBT not only improves mental health but also significantly reduces HIV-related stigma, including internalized and intersectional stigma. Stigma among PLWH is multidimensional, encompassing social, structural, and internalized aspects of stigma. The studies in this review, specifically among men who have sex with men and transgender women in Nigeria, demonstrate that CBT can address this complexity through a structured and reflective approach, encouraging the exploration of intersectional experiences, analysis of structural factors shaping stigma, and the development of identity-affirming resilience strategies (14).

This review identified various CBT delivery methods, including group, face-to-face individual, and self-paced formats. Group CBT, implemented in four of the seven studies, demonstrated superiority in fostering peer support, which is crucial in the context of HIV because it can reduce social isolation and promote cognitive change through shared experiences within a group of like-minded individuals (14). These findings are consistent with studies reporting that group-based psychosocial interventions consistently result in significant improvements in the mental health and quality of life of people living with HIV compared to control groups (11).

One of the critical findings of this review is the successful implementation of CBT through a task-sharing approach, in which the intervention is delivered by non-specialist personnel, such as nurses, community health workers, and fellow PLWH who have received structured training. This finding is particularly relevant in the context of LMICs, which chronically face a shortage of mental

health professionals. Task-shifting and task-sharing approaches have the potential to increase the capacity of healthcare systems to provide mental health and psychosocial support to people living with HIV while simultaneously reducing the burden on already limited system (24). In line with this, CBT interventions delivered by non-specialist personnel have been proven effective in reducing common mental disorders in PLWH in low- and middle-income countries, provided they are supported by structured training, a standardized curriculum, and ongoing supervision (27).

Although the results consistently demonstrate the effectiveness of CBT, most studies in this review were categorized as having some concerns in the risk of bias assessment using the Cochrane RoB 2. The risk of bias primarily stems from the absence of blinding of data collectors (detection bias), potential contamination between participants (cross-talk), study dropout rates, and reliance on self-report instruments that are susceptible to social desirability. This condition is a methodological challenge often encountered in psychosocial intervention research because blinding participants and intervention providers in behavioral studies is practically difficult to do without compromising the ecological validity of the intervention.

The findings of this systematic review have important implications for clinical practice and health policies in LMICs. CBT can be integrated into HIV services as part of a holistic care approach that focuses on biological and psychosocial aspects. Integrating mental health services into HIV care is a crucial strategy for improving patients' quality of life and supporting the achievement of global HIV control targets.

From a nursing perspective, these findings imply the need to develop integrated mental health screening competencies for routine HIV nursing practice. Nurses working in HIV clinics have the potential to provide effective brief CBT interventions, thereby expanding the scope of services without relying on the availability of psychologists or psychiatrists. Furthermore, cultural adaptation and the use of local languages in CBT curricula are key factors for successful implementation in socio-culturally diverse LMICs contexts.

This systematic review has several limitations. First, the number of included seven studies reflects the limited number of high-quality RCTs that have examined the effectiveness of CBT for people living with HIV in LMICs. Second, heterogeneity in intervention designs, population characteristics, and measurement instruments limited the ability to conduct a quantitative synthesis through meta-analysis. Third, the predominance of self-report instruments in outcome measurement increased the potential for bias that could not be fully controlled. Fourth, the limited geographic representation of six African countries and one South Asian country limits the generalizability of the findings to all LMICs contexts globally.

Conclusion and Recommendations

This systematic review concludes that CBT is effective in improving mental health and reducing stigma among people living with HIV in low- and middle-income countries. CBT can be flexibly implemented in a variety of group, individual, and self-directed delivery formats and remains effective even when delivered by trained non-specialists through a task-sharing approach, potentially expanding access to mental health services within HIV care systems in LMICs. However, methodological limitations in most of the included studies indicate the need for further research with more rigorous designs and broader geographic coverage to strengthen evidence generalizability.

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