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Living positive with HIV in Botswana: a self-help intervention for people living with HIV and depressive symptoms

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Chapter 6

Optimizing implementation of an evidence-based self-help intervention program for people living with HIV (PLWH) with depressive symptoms in Botswana.



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Optimizing implementation of an evidence-based self-help intervention program for people living with HIV (PLWH) with depressive symptoms in Botswana

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ABSTRACT

An evidence-based self-help program in booklet format has been developed to reduce depressive symptoms among people living with HIV (PLWH) in Botswana. Its effectiveness was evaluated in a Randomized Controlled Trial (RCT), with a sample of 72 PLWH. The program was shown to be effective in reducing depressive symptoms ($d = 0.76$). Good implementation is an important step. This paper aims to present an evidence-based implementation strategy for the booklet self-help intervention. A reflexive methodology was adopted. An implementation model based on the stepwise approach of Versluis et al. ([2020]. SERIES: eHealth in primary care. Part 4: Addressing the challenges of implementation. *European Journal of General Practice*, 26(1), 140–145.) was applied to the present study. Barriers were identified and deductively coded based on the Consolidated Framework for Implementation Research (CFIR) categories. The Expert Recommendations for Implementing Change (ERIC) framework was used to develop implementation strategies to address the identified barriers. Barriers encountered during implementation included costs, lack of screening, lack of trained professionals, etc., with the most important and changeable barrier being the lack of screening and referral into the self-help program. The most important implementation strategies include good collaboration with stakeholders and training of staff and coaches. Standard screening for depressive symptoms is critical to accessing the intervention. A coordinated strategy including stakeholder engagement and ongoing training and support, and structural support is necessary.

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Introduction

People living with HIV (PLWH) in Botswana, like those in many developing countries, are highly affected by depressive symptoms (Vavani et al., 2025a). Studies in Botswana are limited, but existing research shows that between 24% and 48% of individuals living with HIV experience depressive symptoms (Brooks et al., 2023; Lawler et al., 2011; Lewis et al., 2012; Vavani et al., 2020). Despite the high rates of depressive symptoms, access to integrated mental health services for PLWH remains limited in Botswana. For instance, Botswana faces a significant shortage of mental health care facilities and human resources to help treat depressive symptoms in individuals living with HIV (Maphisa, 2019). Previous research in Botswana also highlighted some challenges including the lack of on-site HIV care in psychiatric settings and fragmented services, and inadequate integration of patient data between psychiatric and HIV care facilities (Qamabayot & Naidoo, 2023).

Routine screening for depressive symptoms is recommended, especially for patients with chronic conditions such as HIV, as this would allow for timely diagnosis and treatment (Siu et al., 2016). There is no routine screening and diagnosis of depressive symptoms in Botswana and many other developing countries resulting in a treatment gap (Fekadu et al., 2022). A study conducted in Botswana by Molebatsi et al. (2022) reported that clinicians identified several barriers in implementing routine screening of

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depressive symptoms and these include lack of space (interfering with privacy), time constraints, and poor staffing. This significant treatment gap certainly leaves many individuals living with HIV unable to access the necessary care. Therefore, the integration of mental health services into HIV care is crucial based on the consequences of depressive symptoms on overall health outcomes of PLWH (Brooks et al., 2023). Addressing these issues requires increased investment, improved integration of services, and prioritizing mental health care.

Self-help interventions offer a promising solution to address the high prevalence of depressive symptoms among PLWH in Botswana, where mental health services are limited. In a study involving 291 PLWH in Botswana, it was found that 43.4% reported clinically significant depressive symptoms, with many expressing a need for getting psychological help via self-help programs in booklet format (Vavani et al., 2020). The advantages of self-help interventions include accessibility, cost-effectiveness, and the potential to empower individuals to manage their mental health independently (Bower et al., 2001; Matcham et al., 2014; Pandya et al., 2020; Vavani et al., 2025b).

Building on this background, first, a baseline study to investigate the prevalence, risk factors, needs assessment and feasibility of a self-help program to treat depressive symptoms was conducted to give context to the design of an evidence-based self-help program for depressive symptoms among PLWH in Botswana (Vavani et al., 2020). Secondly, based on the findings of the baseline research findings, an evidence-based booklet intervention program to reduce depressive symptoms among PLWH in Botswana was designed (Vavani et al., 2019). Lastly, a randomized controlled trial (RCT) evaluated the cognitive-behavioral based self-help program, “Living Positive with HIV,” delivered through a booklet with coaching (Vavani et al., 2025a).

The “Living positive with HIV” program is an evidence-based program grounded on research that was focused on finding the right targets for intervention (Kraaij et al., 2008; Kraaij et al., 2008; van der Veek et al., 2007; Vavani et al., 2020) and its effectiveness was examined in a Randomized Controlled Trial (Kraaij et al., 2010). This program that focuses on coping skills, goal adjustment, and relaxation techniques and is designed to improve depressed mood has shown effectiveness in reducing depressive symptoms among PLWH in Botswana (Vavani et al. 2025a). We found a large effect size for the difference between the intervention and control group, both in the short and long term. The effect size (Cohen’s d) for the first post-test was $d = 0.76$ for the Patient Health Questionnaire-9 (PHQ-9). At the second post-test, the effect size was: $d = 1.38$ for the PHQ-9.

Initial screening of patients to assess elevated depression scores was conducted by either nursing consultants or researchers when the patients arrived for their regular visits to the HIV treatment centers. A screening form was developed by researchers based on the PHQ-2 (Kroenke et al., 2003) for the initial screening. Patients had to score at least 1 to be eligible for further screening by researchers. The program is offered with the addition of a coach to help enhance motivation and lower drop-out, as well as to monitor depressive symptoms’ severity. Its development marks a significant step forward in addressing the mental health treatment gap for people with HIV in low-resource settings like Botswana. Integrating such interventions into HIV care could improve treatment adherence and overall well-being, addressing both the psychological and physical health needs of PLWH in Botswana.

The next crucial step is the implementation of the self-help depression intervention for PLWH in Botswana, with a strong focus on ensuring optimized uptake and long-term sustainability. To achieve this, it is essential to develop and build an evidence-based implementation strategy that considers the Botswana context, the health-care system capacity, and the needs of both patients and service providers. This implementation strategy should take into account key factors such as integration into existing HIV care structures, training of lay facilitators or coaches (based on low human resources), mechanisms for monitoring and evaluation and many others. This way we can enhance the scalability and long-term effectiveness of the intervention, ultimately improving mental health outcomes for people living with HIV in Botswana and other developing countries.

To develop an evidence-based implementation strategy for self-help depression interventions among people living with HIV in Botswana and perhaps other developing countries, Versluis et al. (2020) provide a stepwise approach to find implementation strategies for self-help programs (originally for eHealth programs). The aim of this study is to use this stepwise approach to develop an implementation strategy for our self-help program to reduce depressive symptoms in Botswana.

Methods

Study design

This paper adopts a reflexive methodology (Olmos-Vega et al., 2023) to examine barriers encountered during the RCT that evaluated the CBT-based self-help program aimed at reducing depressive symptoms among people living with HIV in Botswana. We engaged in critical reflection throughout the project both on the intervention and on the roles of researchers and practitioners within it. Through this reflexive approach, we also reflect on potential implementation barriers that may be encountered. To guide the development of an implementation plan, we applied the five-step approach proposed by Versluis et al. (2020). Table 1 presents the steps outlined by Versluis et al. (2020).

Identification of barriers using CFIR

To explore the contextual and structural factors that influenced implementation, we employed the CFIR (Damschroder et al., 2022) in step 2 of the Versluis approach. Sources of information included the research team's notes, informal conversations with site representatives (nurses, doctors, hospital superintendent, DHMT representatives), and field notes of the coaches and researchers. The site partners included staff from the Princess Marina Hospital, Nyangabgwe Referral Hospital, Selibe-Phikwe Government Hospital, and three health posts at Selibe Phikwe. The information from discussions and notes was deductively coded using CFIR's five domains (intervention characteristics, outer setting, inner setting, characteristics of individuals involved in the intervention, and implementation process). Domains were assessed qualitatively using observations, project notes, and team reflections, guided by Versluis et al. (2020). These observations were guided by the definitions provided by Versluis et al. (2020) in Appendix 1 and grouped accordingly.

Selection of implementation strategies using ERIC

Building on the CFIR-deduced barriers, we selected implementation strategies using the ERIC framework (Powell et al., 2015). We aligned the identified barriers with corresponding ERIC strategies. Strategies were chosen based on theoretical fit, perceived feasibility and appropriateness within the context of HIV care delivery in Botswana.

This paper is based on experiences from the RCT study to evaluate the effectiveness of the CBT-based self-help program for depressive symptoms in people living with HIV in Botswana. The RCT was approved

Table 1. Stepwise approach to implementation (adapted from Versluis et al., 2020).

Step	Description	Frameworks
1. Specify the Intervention	Clearly define the self-help depression intervention, detailing its components, delivery methods, and intended outcomes.	Versluis et al., (2020)
2. Define the Problem	Identify challenges and gaps in current HIV mental health care in Botswana. Prioritize important and changeable problems. Barriers and facilitators are categorized into CFIR domains: <ol style="list-style-type: none"> i Intervention characteristics (e.g., costs, complexity); ii Outer setting (e.g., policies); iii Inner setting (e.g., training, support); iv Individual factors (e.g., attitudes, privacy concerns); v Implementation process (e.g., other players). 	CFIR (Damschroder et al., 2022)
3. Specify Desired Implementation Behavior	Define the specific actions stakeholders (healthcare providers, patients, community workers) must take for successful implementation. The AACTT framework (Action, Actor, Context, Target, Time) is used to clarify roles, settings, targets, and timeframes. This increases accountability and facilitates monitoring.	AACTT (Presseau et al., 2019)
4. Choose Implementation Strategy	Select strategies from the ERIC framework to address barriers and promote desired behaviors. The ERIC framework organizes 73 + strategies to support adoption, uptake, and sustainability of interventions.	ERIC (Powell et al., 2015)
5. Evaluate the Implementation Strategy	Assess the effectiveness of strategies through monitoring and evaluation to ensure short- and long-term outcomes are achieved.	Powell et al., (2015)

by the Health Research and Development Committee of the Ministry of Health in Botswana (Ref: HPDME 13/18/1). The clinical Trial was registered with the Netherlands Trial registry, number NTR5407 on August 23, 2018.

Results

This section presents findings from a reflexive analysis of barriers that were encountered during the RCT that evaluated the CBT-based self-help program for depressive symptoms in people living with HIV in Botswana as well as the barriers likely to be encountered in the implementation of the program. This section also presents implementation strategies to help address the identified barriers. The section is structured according to the steps of the Versluis et al. (2020) implementation process model.

Step 1: Specify the intervention

The intervention refers to our CBT-based self-help intervention “Living positive with HIV” in booklet format, provided with minimal coaching (5–15 min per week), which was proven effective in reducing depressive symptoms among people living with HIV in Botswana (Vavani et al., 2025a). The goal of the intervention is to reduce depressive symptoms among people living with HIV. Screening is an important part of the program. Patients were initially screened for depressive symptoms using the PHQ-2 (Kroenke et al., 2003) by either nursing consultants or the researchers when the patients arrived for their regular visits to the HIV treatment center. Patients had to score at least 1 on the PHQ-2 and to be eligible for further screening by the researchers. Patients who volunteered and consented to participate were screened further by the coaches over the telephone, using the PHQ-9 (Kroenke et al., 2001). Additional inclusion criteria were: being at least 18 years old, having an HIV diagnosis longer than half a year, having access to a telephone, ability to read and understand Setswana or English, no severe cognitive limitations (such as severe forgetfulness or mental confusion) and no current treatment by a psychologist or psychiatrist. Seventy-two (72) participants completed the pre-test and were randomly assigned to the intervention group ($n = 37$) or the control group ($n = 35$). Females made up 67.0% of the sample and the mean age of the respondents was 48.1 years ($SD = 9.6$).

The content of the self-help program contains: activation, relaxation, changing maladaptive cognitions, and the attainment of new personal goals. This content is covered over six lessons to be completed in maximum eight weeks and uses a combination of psychoeducation, assignments, and exercises. The participants worked on the program for 1–2 hours every week for six weeks. The following lessons are included in the booklet: Lesson 1, providing an introduction to the program and an exercise on activation; Lesson 2, focusing on physical relaxation; Lesson 3, focusing on changing negative thoughts; Lesson 4: teaching strategies to stop unpleasant thoughts; Lesson 5, helping to find new, meaningful, concrete and time-bound life goals; Lesson 6: helps to get self-confidence to achieve valuable goals. Each participant was paired with a coach. Coaches had a bachelor’s degree in psychology, had taken and completed a clinical course during their education program, and had been taught communication skills, interview techniques, and treatment strategies. This was to ensure that coaches could better coach, monitor participants and advise those who needed attention or referral. The coaching took 5–15 mins on average per week, and the focus was on motivating the participant. A licensed psychologist supervised the coaches, initially through weekly meetings in the first month of the study, thereafter on a biweekly basis.

Conclusion step 1: The intervention package consists of the intervention itself, but also the screening package to refer people to the program and the coaching provided. We have a culturally sensitive package that has been proven to be effective.

Step 2: define the problems encountered and anticipated

In step 2, we first reflect on the problems/barriers that we encountered during our study and subsequently other implementation problems/barriers that we anticipate. We will describe this per domain.

Domain 1: intervention characteristics

Costs. The overall costs for the implementation of the program were low, however, we still identify costs as a potential problem/barrier to implementation. During the implementation, we needed money to print the booklets and screening forms, for transportation of the intervention materials, phone calls for coaching and to pay coaches for their service [if not volunteers or students]. Additionally, training coaches requires a significant investment of time which carries associated financial implications. During the study (RCT) phase, the University of Botswana covered these expenses, however, funding from the University will not be available during the implementation phase.

Domain 2: outer setting:

External policies and incentives. We identified governmental and organizational policies as barriers to implementation; specifically, we observed incoherence in multidisciplinary team's care and management of patients which was partly influenced by a lack of support and referral mechanisms/ structures for mental health issues within the hospitals and treatment centers or awareness thereof. While we have the Mental Health Act of 2023 (Government of Botswana, 2023) and the National Policy on Mental Health (Ministry of Health, 2003) in Botswana, which both guide the care, treatment and provision of services for persons with mental health conditions, these policies are not fully implemented at treatment sites.

Domain 3: inner setting

Fit in organization and work progress. Barriers at this domain included: lack of staff to facilitate screening and referral, high staff mobility (nursing staff moved to other departments or different hospitals), lack of space to conduct screening, time constraints for hospital staff and patients (competing priorities), lack of integration between HIV and mental health, and difficulty reaching participants due to poor and/or inconsistent mobile network (contributing to some participants not joining the intervention or dropping out).

Training and support. Lack of training of hospital staff in screening and identifying patients with mental health issues was also identified as a barrier to implementation.

Domain 4: characteristics of the individuals involved in the intervention

Attitudes and beliefs. We identified stigma around mental illness which could have led to some potential participants not joining the intervention.

Concerns about privacy. Because there was a lack of space, screening took place in triage rooms, resulting in lack of privacy as there were usually other patients and nursing staff in the room. In addition, some patients shared a phone (e.g., with a spouse or family member) also resulting in lack of privacy.

Lack of knowledge and skills. Low mental health literacy among both patients and providers was identified as a barrier to implementation, as it can lead to a lack of recognition of symptoms, potentially reducing referral into the program and engagement with the intervention as well as limited confidence when screening by providers or seeking mental health support for patients.

Domain 5: implementation process

Involvement of key stakeholders. Barriers include lack of engagement of stakeholders in the implementation (i.e., we received little help with the screening of patients), and lack of engagement of "higher-level" stakeholders (e.g., at some sites, we experienced some delays and/or rejection due to delayed communication from management regarding our research or lack of engagement of the higher-level stakeholders despite having obtained official research approval from the relevant Ministry).

Conclusion step 2 (domain 1–5): most important and changeable problem

We identified proper and private screening for depressive symptoms and referral to the self-help program in the hospitals as the most important and changeable problem. In step 3, we will use the AACTT to clearly define the components of screening and referral behaviors by breaking it down into five elements.

Step 3: specify desired implementation behavior (AACTT)

To support effective implementation, it is important to involve important stakeholders and train staff and coaches (Action); the research group (Actor) will lead efforts to involve key stakeholders and provide the necessary training for medical staff; these activities will take place at HIV treatment centers and in collaboration with governmental and non-governmental organizations (Context); the primary targets of these efforts are both PLWH who experience depressive symptoms and the medical staff responsible for their care, as well as the coaches (Target); ideally, stakeholder engagement and staff training will occur prior to the launch of the intervention and be repeated every six months, depending on available funding (Time).

Conclusion step 3

Good collaboration with all stakeholders and training of patients, staff and coaches is essential to facilitation of screening for depressive symptoms and referral into the program.

Step 4: choose implementation strategy

Based on the list of Powell et al. (2015), Table 2 presents a list of implementation strategies for screening depressive symptoms at HIV treatment sites that have been identified as feasible.

Conclusion step 4: to support successful implementation of the screening process, we selected the four (4) most critical strategies that we believe will maximize feasibility while encircling elements of the intervention and include all other strategies identified. These top four strategies include accessing funding, building a coalition, conducting ongoing educational meetings, and conducting ongoing training (every six months).

Step 5: evaluate implementation strategy

To support the effective implementation of the intervention, a structured monitoring and evaluation plan must be applied across selected ERIC strategies. We recommend evaluating the implementation strategy annually to ensure proper implementation and desired outcomes. This paper does not describe a comprehensive monitoring and evaluation strategy. However, several monitoring and evaluation approaches can be used. These include periodic progress reviews, stakeholder feedback instruments, pre/post-training assessments, participant satisfaction surveys, meeting documentation, technical assistance logs, budget tracking, partnership effectiveness reviews, patient adherence data, champion activity reports, and supervision logs.

Discussion

This study aimed to reflect on the implementation process of a CBT-based self-help intervention for depressive symptoms in people living with HIV in Botswana, with a particular focus on identifying barriers and relevant implementation strategies. Guided by the Versluis et al. (2020) model, our findings highlight the critical role of effective screening and referral procedures (Step 2) in ensuring that individuals with depressive symptoms are identified early and linked to appropriate care. Our observations highlighted large gaps, particularly in screening across treatment sites resulting in most treatment centers having failed to assist with screening. This finding is consistent with previous research by Molebatsi et al. (2022) who found that screening of depressive symptoms was a barrier in terms of access to treatment as well as Fekadu et al. (2022) who concluded that there was no routine screening of depressive symptoms in Botswana's clinics. Routine screening for depressive symptoms is identified as a critical step in ensuring timely diagnosis and access to the intervention (Siu et al., 2016). These findings indicate the need for well-trained staff, and consistent engagement with health facilities, hospital management, governmental and non-governmental agencies to support ongoing efforts to screen and strengthen early identification and linkage to care, which would also ensure alignment and implementation of Botswana's mental health act and national policy on mental health.

Despite the overall feasibility and effectiveness of the intervention, several other potential challenges remain that could impact broader implementation. While our intervention is low-cost, funding constraints

Table 2. ERIC implementation strategies.

ERIC strategy number	Eric strategy	Description and application of the strategy
1	Access new funding	Access new or existing money to facilitate the screening of depressive symptoms; printing of screening forms, transportation of the forms to clinics, phone calls for screening over the phone, wages for coaches for their service, and training costs.
4	Assess for readiness and identify barriers and facilitators	Assess various aspects of participating organizations (treatment centers / clinics) to determine the degree of readiness to implement, barriers that may impede implementation, and strengths that can be used in the implementation effort (e.g., availability of space, trained staff etc.)
6	Build a coalition	Recruit and cultivate relationships with partners in the implementation effort (e.g., hospital management, medical staff, Ministry of Health)
11	Change physical structure and equipment	Evaluate current configurations and adapt, as needed, the physical structure and/or equipment (e.g., changing the layout of rooms to give more privacy) to best accommodate the screening of depressive symptoms.
15	Conduct educational meetings	Hold meetings targeted toward different stakeholder groups (e.g., providers, administrators, other organizational stakeholders, and community, patient/consumer, and family stakeholders) to teach them about the screening and intervention. Meetings to be held pre-launch and ongoing to cater for staff mobility and new patients.
19	Conduct ongoing training	Plan for and conduct training of the intervention, screening, referral and coaching in an ongoing way.
23	Develop a formal implementation blueprint	Develop a formal implementation blueprint that includes all goals and strategies. The blueprint should include the following: (1) aim/purpose of the implementation; (2) scope of the change (e.g., what organizational units are affected); (3) timeframe and milestones; and (4) appropriate performance/progress measures. Use and update this plan to guide the implementation effort over time.
29	Develop educational materials	Develop and format manuals, toolkits, and other supporting materials in ways that make it easier for stakeholders to learn about the innovation and for clinicians to learn how to deliver the screening and referral (e.g., a training kit for staff, coaches and patients).
30	Develop resource sharing agreements	Develop partnerships with organizations that have resources needed to implement the intervention (e.g HIV agencies and NGOs).
35	Identify and prepare champions	Identify and prepare individuals who dedicate themselves to supporting, marketing, and driving through the implementation, overcoming indifference or resistance that the intervention may provoke in an organization.
48	Organize clinician implementation team meetings	Develop and support teams of clinicians who will implement the screening and give them protected time to train, screen and reflect on the implementation effort, share lessons learned, and support one another's learning.
53	Provide clinical supervision	Provide clinicians with ongoing supervision focusing on the screening and referral processes. Provide training for clinical supervisors who will supervise clinicians who provide conduct the screening.
71	Use train-the-trainer strategies	Train designated clinicians or organizations to train others to screen for depressive symptoms and on referral procedures.

are a concern, particularly for printing of screening and intervention materials, ongoing training, coaching, and the adaptation of physical spaces where privacy for screening is essential. Concerns with physical space were also identified in the study by Molebatsi et al. (2022). Another anticipated challenge is maintaining staff engagement over time due to high staff mobility, as well as time constraints, especially in large clinics where health workers are overwhelmed and already stretched thin. The integration of screening and referral procedures into existing workflows was affected by time limitations, competing priorities, and poor coordination between HIV and mental health services. Furthermore, other challenges such as inconsistent mobile network coverage made it harder to reach participants for follow-up, especially in more remote areas. Stigma surrounding mental illness appeared to discourage some eligible participants from engaging with the intervention. Additionally, low mental health literacy among both patients and some providers may have limited understanding of the intervention's purpose and benefits. Addressing these barriers is critical prior and during the intervention implementation phase. There is a need for continued training, continuing engagement with stakeholders, ongoing provision of educational materials, supervision and motivation for staff to ensure that the efforts towards screening and referral continue.

Nonetheless, several facilitators helped strengthen the feasibility of our approach. During site visits and discussions with hospital staff, we observed high levels of enthusiasm and a clear need for accessible, low-intensity mental health interventions. The intervention itself was perceived as acceptable and feasible by both providers and patients such that results from our RCT (Vavani et al., 2025a) showed significant reductions in depressive symptoms. Coaching was particularly well received both in intervention and

control groups, demonstrating the value of ongoing support and motivation for patients in reducing drop-out. These facilitators provide a solid foundation for scale-up, especially if paired with targeted efforts to address structural issues identified as well as time constraints and high staff mobility.

Future research should prioritize the evaluation of implementation by focusing on outcomes such as sustainability, and cost-effectiveness of the intervention when implemented at large scale. As outlined in Step 4 of the Versluis model, identifying ways to sustain funding will be critical in integrating the intervention into routine care. We recommend that implementation research should also explore the adaptability of the intervention across different facility types and populations. We also recommend building partnerships with local NGOs and HIV service providers who may be willing to share resources and can facilitate delivery of the intervention in communities.

One key limitation of this study is the reflexive methodology applied which is inherently subjective, because the analysis is shaped by the researchers' interpretations and values (Olmos-Vega et al., 2023). Therefore, while reflexivity allows for critical engagement, it also raises questions about the replicability and generalizability of findings. Future research should consider using other methods or a combination of effectiveness-implementation designs (Curran et al., 2012), where implementation can be evaluated at the same time when evaluating the intervention. Perhaps, mixed methods research, that includes both quantitative data and qualitative data from patients, providers, and stakeholders, would provide a deeper understanding of implementation barriers and facilitators as well as user experiences (Palinkas et al., 2011).

In conclusion, this paper highlights both the positives and challenges of implementing psychological interventions in routine HIV care in a developing country. While screening and referral systems are critical to successful implementation, there is need for a coordinated strategy that includes stakeholder engagement and ongoing training and support, as well as structural support. The lessons learned through this process will inform future efforts to deliver accessible, sustainable mental health care to underserved populations like those in Botswana and other developing countries.

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Author contributions

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References

- Bower, P., Richards, D., & Lovell, K. (2001). The clinical and cost-effectiveness of self-help treatments for anxiety and depressive disorders in primary care: a systematic review. *The British Journal of General Practice: The Journal of the Royal College of General Practitioners*, 51(471), 838–845.
- Brooks, M., Burmen, B., Olashore, A., Gezmu, A. M., Molebatsi, K., Tshume, O., Phoi, O., Morales, K., Matshaba, M., Benton, T., & Lowenthal, E. D. (2023). Symptoms of depression, anxiety, and thoughts of suicide/self-injury in adolescents and young adults living with HIV in Botswana. *African Journal of AIDS Research*, 22(1), 54–62. <https://doi.org/10.2989/16085906.2023.2186252>
- Curran, G. M., Bauer, M., Mittman, B., Pyne, J. M., & Stetler, C. (2012). Effectiveness-implementation Hybrid Designs. *Medical care*, 50(3), 217–226. <https://doi.org/10.1097/MLR.0b013e3182408812>
- Damschroder, L. J., Reardon, C. M., Widerquist, M. A. O., & Lowery, J. (2022). The updated Consolidated Framework for Implementation Research based on user feedback. *Implementation Science*, 17(1), 75. <https://doi.org/10.1186/s13012-022-01245-0>
- Fekadu, A., Demissie, M., Birhane, R., Medhin, G., Bitew, T., Hailemariam, M., Minaye, A., Habtamu, K., Milkias, B., Petersen, I., Patel, V., Cleare, A. J., Mayston, R., Thornicroft, G., Alem, A., Hanlon, C., & Prince, M. (2022). Under detection of depression in primary care settings in low and middle-income countries: A systematic review and meta-analysis. *Systematic reviews*, 11(1), 21. <https://doi.org/10.1186/s13643-022-01893-9>
- Government of Botswana (2023). Mental Health Act. Retrieved June 30, 2025, from MENTAL HEALTH ACT.
- Kraaij, V., Garnefski, N., Schroevers, M. J., van der Veek, S. M., Witlox, R., & Maes, S. (2008a). Cognitive coping, goal self-efficacy and personal growth in HIV-infected men who have sex with men. *Patient education and counseling*, 72(2), 301–304. <https://doi.org/10.1016/j.pec.2008.04.007>
- Kraaij, V., van der Veek, S. M., Garnefski, N., Schroevers, M., Witlox, R., & Maes, S. (2008b). Coping, goal adjustment, and psychological well-being in HIV-infected men who have sex with men. *AIDS patient care and STDs*, 22(5), 395–402. <https://doi.org/10.1089/apc.2007.0145>
- Kraaij, V., van Emmerik, A., Garnefski, N., Schroevers, M. J., Lo-Fo-Wong, D., van Empelen, P., Dusseldorp, E., Witlox, R., & Maes, S. (2010). Effects of a cognitive behavioral self-help program and a computerized structured writing intervention on depressed mood for HIV-infected people: A pilot randomized controlled trial. *Patient education and counseling*, 80(2), 200–204. <https://doi.org/10.1016/j.pec.2009.08.014>
- Kroenke, K., Spitzer, R. L., & Williams, J. B. (2001). The PHQ-9. *Journal of general internal medicine*, 16(9), 606–613. <https://doi.org/10.1046/j.1525-1497.2001.016009606.x>
- Kroenke, K., Spitzer, R. L., & Williams, J. B. (2003). The patient health questionnaire-2. *Medical care*, 41(11), 1284–1292. <https://doi.org/10.1097/01.MLR.0000093487.78664.3C>
- Lawler, K., Mosepele, M., Seloiwe, E., Ratcliffe, S., Steele, K., Nthobatsang, R., & Steenhoff, A. (2011). Depression among HIV-positive individuals in Botswana: A behavioral surveillance. *AIDS and Behavior*, 15(1), 204–208. <https://doi.org/10.1007/s10461-009-9622-2>
- Lewis, E. L., Mosepele, M., Seloiwe, E., & Lawler, K. (2012). Depression in HIV-positive women in Gaborone, Botswana. *Health Care for Women International*, 33(4), 375–386. <https://doi.org/10.1080/07399332.2011.603871>
- Maphisa, J. M. (2019). Mental health legislation in Botswana. *BJPsych international*, 16(3), 68–70. <https://doi.org/10.1192/bji.2018.24>
- Matcham, F., Rayner, L., Hutton, J., Monk, A., Steel, C., & Hotopf, M. (2014). Self-help interventions for symptoms of depression, anxiety and psychological distress in patients with physical illnesses: a systematic review and meta-analysis. *Clinical Psychology Review*, 34(2), 141–157. <https://doi.org/10.1016/j.cpr.2014.01.005>
- Ministry of Health. (2003). *National policy on mental health*. Retrieved June 30, 2025, from [mental_health_policy.pdf](https://www.moh.gov.bw/mental_health_policy.pdf) on 30 June 2025.
- Molebatsi, K., Ho-Foster, A., Ntsayagae, E., Bikimane, B., Bauer, A. M., Suleiman, K., Acosta, E., Beidas, R., & Schnoll, R. (2022). Implementation planning for integrating depression screening in diabetes mellitus and HIV clinics in Botswana. *Global implementation research and applications*, 2(4), 384–393. <https://doi.org/10.1007/s43477-022-00062-3>
- Olmos-Vega, F. M., Stalmicijer, R. E., Varpio, L., & Kahlke, R. (2023). A practical guide to reflexivity in qualitative research: AMEE Guide No. 149. *Medical Teacher*, 45(3), 241–251. DOI: 10.1080/0142159X.2022.2057287
- Palinkas, L. A., Arons, G. A., Horwitz, S., Chamberlain, P., Hurlburt, M., & Landsverk, J. (2011). Mixed method designs in implementation research. *Administration and Policy in Mental Health and Mental Health Services Research*, 38(1), 44–53. <https://doi.org/10.1007/s10488-010-0314-z>
- Pandya, A., Shah, K., Chauhan, A., & Saha, S. (2020). Innovative mental health initiatives in India: A scope for strengthening primary healthcare services. *Journal of Family Medicine and Primary Care*, 9(2), 502–507. https://doi.org/10.4103/jfmpc.jfmpc_977_19

- Powell, B. J., Waltz, T. J., Chinman, M. J., Damschroder, L. J., Smith, J. L., Matthieu, M. M., Proctor, E. K., & Kirchner, J. E. (2015). A refined compilation of implementation strategies: results from the expert recommendations for implementing change (ERIC) project. *Implementation Science*, *10*(1), 21. <https://doi.org/10.1186/s13012-015-0209-1>
- Presseau, J., McCleary, N., Lorencatto, F., Patey, A. M., Grimshaw, J. M., & Francis, J. J. (2019). Action, actor, context, target, time (AACTT): A framework for specifying behaviour. *Implementation Science*, *14*(1), 102. <https://doi.org/10.1186/s13012-019-0951-x>
- Qambayot, M., & Naidoo, S. (2023). Provision of HIV services to psychiatric inpatients in Botswana: Challenges and recommendations. *South African Journal of Psychiatry*, *29*, 7. <https://doi.org/10.4102/sajpspsychiatry.v29i0.1990>
- Siu, A. L., US Preventive Services Task Force (USPSTF), Bibbins-Domingo, K., Grossman, D. C., Baumann, L. C., Davidson, K. W., Ebell, M., Garcia, F. A., Gillman, M., Herzstein, J., Kemper, A. R., Krist, A. H., Kurth, A. E., Owens, D. K., Phillips, W. R., Phipps, M. G., & Pignone, M. P. (2016). Screening for depression in adults. *JAMA*, *315*(4), 380–387. <https://doi.org/10.1001/jama.2015.18392>
- van der Veek, S. M., Kraaij, V., Van Koppen, W., Garnefski, N., & Joeke, K. (2007). Goal disturbance, cognitive coping and psychological distress in HIV-infected persons. *Journal of health psychology*, *12*(2), 225–230. <https://doi.org/10.1177/1359105307074249>
- Vavani, B., Garnefski, N., van Luenen, S., Dusseldorp, E., Amone-P'Olak, K., Spinhoven, P., & Kraaij, V. (2025a). A booklet self-help intervention for people living with HIV and depressive symptoms in Botswana: A randomized controlled trial. *AIDS and behavior*, *29*(9), 2855–2868. Advance online publication. <https://doi.org/10.1007/s10461-025-04742-7>
- Vavani, B., Kraaij, V., Spinhoven, P., Amone-P'Olak, K., & Garnefski, N. (2020). Intervention targets for people living with HIV and depressive symptoms in Botswana. *African Journal of AIDS Research*, *19*(1), 80–88. <https://doi.org/10.2989/16085906.2020.1727933>
- Vavani, B., Kraaij, V., Spinhoven, P., & Garnefski, N. (2019). A booklet self-help intervention to reduce depressive symptoms among people living with HIV in Botswana: Study protocol for a randomized controlled trial. *Trials*, *20*(1), 486. <https://doi.org/10.1186/s13063-019-3584-0>
- Vavani, B., van Luenen, S., Garnefski, N., Spinhoven, P., Amone-P'Olak, K., Witlox, M., & Kraaij, V. (2025b). The effectiveness of self-help interventions in the treatment of depressive symptoms in low-and-middle-income countries (LMICs): a meta-analysis. *International Journal of Mental Health*, 1–27. <https://doi.org/10.1080/00207411.2025.2498765>
- Versluis, A., van Luenen, S., Meijer, E., Honkoop, P. J., Pinnock, H., Mohr, D. C., Neves, A. L., Chavannes, N. H., & van der Kleij, R. M. J. J. (2020). SERIES: eHealth in primary care. Part 4: Addressing the challenges of implementation. *European Journal of General Practice*, *26*(1), 140–145. <https://doi.org/10.1080/13814788.2020.1826431>