



Digital and AI-Enabled Psychological Interventions for Depression and Anxiety in Sub-Saharan Africa: A Systematic Review

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ABSTRACT

Background: Depression and anxiety are leading causes of disability in sub-Saharan Africa, where specialist care is scarce. Digital and artificial intelligence (AI)-enabled psychological interventions are proposed to widen access, but the regional evidence has not been synthesised.

Objective: To review the effectiveness, engagement and safety of digital and AI-enabled psychological interventions for depression and anxiety in sub-Saharan Africa.

Methods: Twenty-eight targeted web searches were ran (last run 20 October 2026; no bibliographic databases were searched directly) and screened candidate reports against pre-set criteria. One reviewer screened studies, extracted data and made provisional risk-of-bias judgements without independent verification. The review was not registered. Results were synthesised narratively (SWiM), because too few trials had comparable data to pool.

Results: Ten studies from six countries (about 3,157 participants) were included: six randomised and four non-randomised. Delivery modes were smartphone apps (3), web or computer programmes (2), chatbots (2), chat-based therapy (1), live online groups (2 arms in 2 studies) and phone-based counselling (1). Only one study used an AI-enabled component, and a second chatbot was scripted. Among randomised trials, three showed benefit for depression (Kenya, Malawi, South Africa), one pilot showed none (South Africa), one reported benefit with no numbers (Nigeria), and one preprint reported benefit but contained internal inconsistencies (Uganda). Anxiety effects were mostly non-significant. Attrition was high in self-guided tools: only 5% of users in one app study stayed to 12 weeks, and retention was 29–40% in a chatbot trial. Phone counselling by lay counsellors retained 76–83% of participants. Risk of bias was high or serious in most studies, and certainty of evidence was very low.

Conclusions: Evidence on digital interventions for depression and anxiety in sub-Saharan Africa is small, uneven and mostly of low quality, and evidence on AI-enabled tools is almost absent. Human-supported delivery appears to retain users better, but this is not tested directly. Larger preregistered African trials with safety reporting are needed.

Keywords: digital mental health; artificial intelligence; depression; anxiety; sub-Saharan Africa; systematic review

1. INTRODUCTION

Depression and anxiety disorders are among the most common mental health conditions worldwide. In sub-Saharan Africa the treatment gap is wide. The World Health Organization (WHO) Mental Health Atlas 2024 reports a global median of 13 mental health workers per 100,000 people (WHO, 2025), against about 2 per



100,000 in Africa (Statista, 2025, charting Atlas data). Mental health accounts for only about 2% of health budgets worldwide, a share unchanged since 2017 (WHO, 2025).

Task-sharing shows that care can be delivered outside specialist settings. In Zimbabwe, lay health workers delivering problem-solving therapy reduced common mental disorder symptoms (Chibanda et al., 2016). Scaling such models is hard because of supervision demands, stigma and distance.

Digital delivery is a complementary route. In 2023, only 27% of the sub-Saharan African population used mobile internet, with a 13% coverage gap and a 60% “usage gap” among people living within mobile coverage (GSMA, 2024). Psychological content can be delivered through smartphone apps, SMS and WhatsApp, web programmes, telepsychology and conversational agents. Some tools add AI, such as natural language processing or adaptive content. These tools promise low cost and anonymity, but raise questions about language, cultural fit, data protection, digital exclusion and crisis safety.

Prior syntheses leave gaps. A meta-analysis of digital interventions in low- and middle-income countries found large effects but identified no eligible study from Africa (Karyotaki et al., 2023). A rapid scoping review of digital interventions for depression and anxiety in low- and middle-income countries mapped African studies but did not appraise their quality or pool results (Chau et al., 2025). A protocol for a review of digital mental health interventions for adolescents and young people (aged 10–24 years) in Africa has been published (Mokaya et al., 2025), and a preprint systematic review of 52 studies of AI-powered mental health chatbots in Africa has reported limited African-specific adaptation (Lebesse & Tsibolane, 2026). This review looks at all ages, all digital modalities and both conditions, and treats AI as a subgroup.

Objectives: (1) to describe digital and AI-enabled interventions for depression and anxiety tested in sub-Saharan Africa; (2) to summarise their effects on symptoms; (3) to summarise engagement, attrition and safety reporting; and (4) to judge the certainty of the evidence and identify research gaps.

1.1 Theoretical framework

No single theory accounts for how digital psychological interventions might work in sub-Saharan Africa. This review therefore draws on four complementary perspectives, each addressing a different link between an intervention and its outcomes, and combines them in a working conceptual framework (Figure 1).

Clinical mechanism. Most digital interventions for depression and anxiety adapt cognitive behavioural therapy and related approaches. In the cognitive model, symptoms are maintained by unhelpful patterns of thinking (Beck, 1976). In the behavioural model, depression is maintained by a loss of response-contingent positive reinforcement, which behavioural activation addresses by scheduling rewarding activity (Lewinsohn, 1974). Problem-solving therapy, the basis of the Friendship Bench trial in Zimbabwe (Chibanda et al., 2016), works through a related route by training people to tackle practical difficulties. Digital delivery changes how these techniques reach people, not the mechanism they assume: skills are learned and practised, and symptoms fall. A tool that people do not use cannot act through this mechanism, however sound its content.

Engagement and human support. Eysenbach (2005) described a “law of attrition”: in many eHealth trials a large share of participants stop using the intervention before completing it. Perski et al. (2017) define engagement as both the amount of use and the user’s subjective experience, including attention, interest and affect. The Supportive Accountability Model proposes that human support raises adherence because users feel accountable to a supporter they see as trustworthy, benevolent and expert (Mohr et al., 2011). In sub-Saharan Africa the supporter need not be a clinician: the task-sharing approaches described above suggest that lay workers and peers can fill this role (Chibanda et al., 2016; Patel et al., 2018). Conversational agents can be read as an attempt to reproduce some functions of that supporter at scale, and whether they can is an empirical question.

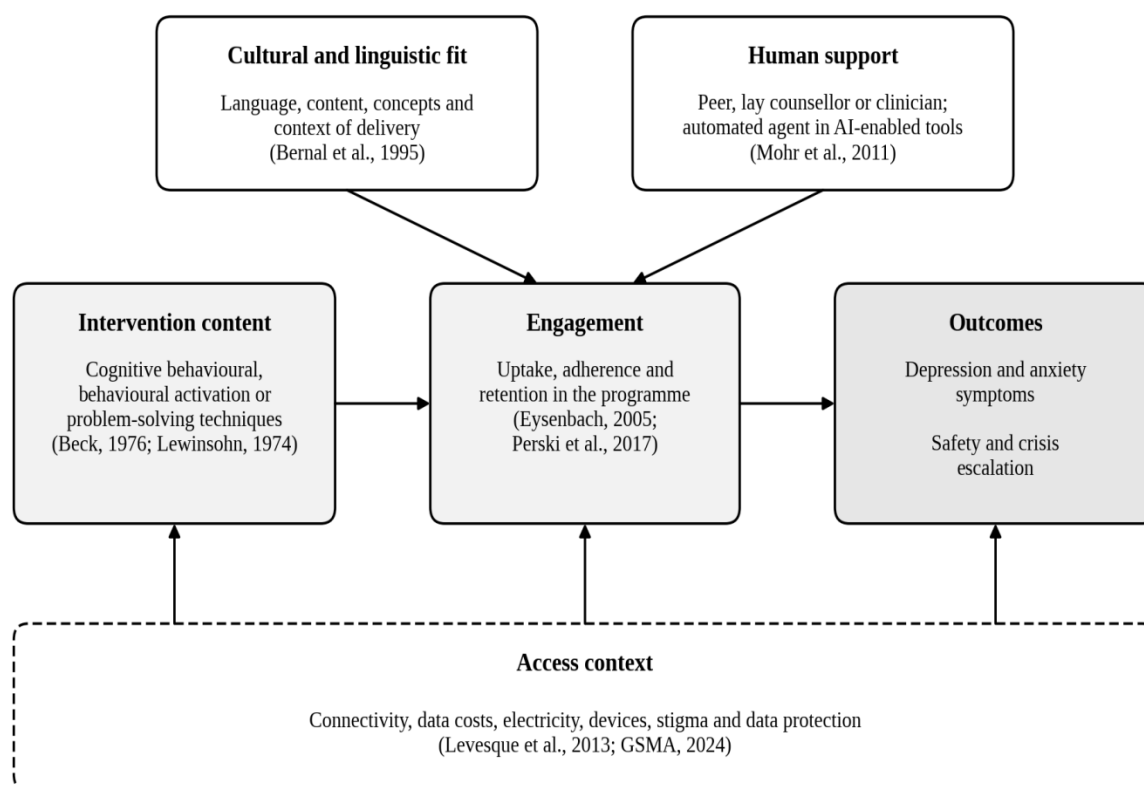
Cultural and linguistic fit. The Ecological Validity Model identifies eight dimensions along which a psychosocial treatment can be adapted to the people it serves: language, persons, metaphors, content, concepts, goals, methods and context (Bernal et al., 1995). In digital tools, language is the most visible of these, for

example whether an app or chatbot works in a local language or assumes English literacy. A poorly fitting tool may be less acceptable and so less used, and may also help those who do use it less.

Access. Levesque et al. (2013) conceptualise access as a fit between services and the abilities of people to perceive, seek, reach, pay for and engage with care. These abilities match five service dimensions: approachability, acceptability, availability and accommodation, affordability and appropriateness. For digital tools, the ability to reach and pay for care depends on coverage, devices, data costs and electricity. A large usage gap persists among people who live within mobile coverage (GSMA, 2024), so a tool can be effective in principle and still be out of reach in practice.

Figure 1 combines these perspectives. Intervention content is assumed to act on symptoms through engagement. Human support and cultural and linguistic fit are expected to influence engagement, and the access context shapes every step, from whether a person can reach the tool to whether they can keep using it. Safety, including adverse events and crisis escalation, is treated as an outcome alongside symptom change. Four expectations follow, which the review examines: (E1) interventions built on established cognitive behavioural principles should reduce depression and anxiety symptoms among those who use them; (E2) human-supported delivery should retain more users than self-guided delivery; (E3) tools adapted to local language and context should be better accepted and used more; and (E4) barriers of connectivity, cost and power should limit reach and retention irrespective of content.

Figure 1. Conceptual framework for digital and AI-enabled psychological interventions



Note. Solid arrows show the assumed pathway from intervention content to outcomes through engagement; the other boxes are expected to influence that pathway. In AI-enabled tools, an automated agent takes over some or all of the human support function.

The framework is used here as an interpretive lens, not as a formal test, because the evidence is too sparse to test the expectations statistically. It maps onto the three outcome domains of the review (symptoms, engagement and safety) and onto the three themes in Section 4.2 (human support, cultural and linguistic fit, and access). AI-enabled tools are discussed in Section 4.3 as a change to the human-support component.



2. METHODS

The review is reported against PRISMA 2020 (Page et al., 2021) as far as a rapid, web-based design allows. It was not registered. No protocol was published, so the criteria below, which were set before screening, cannot be checked against a time-stamped record. Departures from a full systematic review are listed in Section 5.

2.1 Eligibility criteria

Table 1. Eligibility criteria

Element	Included	Excluded
Population	People of any age in sub-Saharan Africa with depression or anxiety, or elevated symptoms	Non-African samples; other conditions only
Intervention	Psychological interventions delivered digitally: apps, SMS or WhatsApp, web or computer programmes, chatbots, video or phone telepsychology, tools with an AI component	In-person delivery; tools for provider use, screening or administration only
Comparator	Any, including none (non-randomised designs described narratively)	None
Outcomes	Depression or anxiety symptoms on a validated scale; secondary: engagement, attrition, safety	No symptom outcome
Design	Randomised, quasi-experimental, single-arm, pilot or feasibility studies with results	Protocols, reviews, usability-only studies
Other	English; peer-reviewed or preprint; no date limit	Duplicate reports

2.2 Search

Between 19 and 20 October 2026, 28 targeted web searches were ran, combining terms for digital delivery (app, SMS, WhatsApp, web-based, chatbot, telepsychology, AI), depression or anxiety, and named African countries or “sub-Saharan Africa”. The searches were run with the web search tool of Claude (Anthropic) (see Declarations), and no date limit was applied (Table 1). The study lists of three reviews were read (Chau et al., 2025; Karyotaki et al., 2023; Njoroge et al., 2026) and followed leads to preprints and protocols. PubMed, PsycINFO, Embase, Scopus, Web of Science, CINAHL and Cochrane CENTRAL were not searched directly. The term blocks, the other sources used and the search log are in the Appendix. Because web search results change over time and may differ between users, the search cannot be reproduced exactly.

2.3 Selection, extraction and appraisal

One reviewer assessed each candidate report and extracted design, sample, intervention, comparator, follow-up, outcomes, engagement and safety data from the source page. Each candidate report was assessed once against the criteria in Table 1, and reasons for exclusion were recorded (Table 2). Reports that could not be retrieved are listed in Section 3.1. No second reviewer checked study selection, extracted data or risk-of-bias judgements, so errors or misjudgements would not have been detected. Where a source gave inconsistent figures, the figure in the Results text was used and the conflict was noted. Two included reports could be read only at abstract level (Moffett et al., 2025; Ofoegbu et al., 2020). Risk of bias was judged coarsely, using domains from RoB 2 (Sterne et al., 2019) for randomised studies and ROBINS-I (Sterne et al., 2016) for others. These judgements are provisional. Certainty of evidence was judged narratively, informed by GRADE (Guyatt et al., 2008).

2.4 Synthesis

Studies differed in designs, comparators and scales, and few reported means and standard deviations, so we did not pool results. We synthesised narratively following SWiM guidance (Campbell et al., 2020). Findings were then interpreted against the conceptual framework in Section 1.1.

3. RESULTS

3.1 Study selection

Of the candidate reports, 16 were assessed for eligibility. Ten were included and six were excluded (Table 2). Three further reports could not be retrieved (a clinician-facing WHO app trial in JAMA Network Open, an Ethiopian app usability study and a Nigerian primary-care process evaluation); their titles indicate they would not meet the criteria.

Table 2. Reports excluded after assessment

Excluded report	Reason
Lakis et al., 2026 (Palestine)	Not sub-Saharan Africa
Nakimuli-Mpungu et al., 2025 (Frontiers)	Protocol, no results
Barkley et al., 2025 (six African countries)	No depression or anxiety outcome
Venturo-Conerly et al., 2022 (Kenya)	Interventions delivered in person
Ezegbe et al., 2019 (Nigeria)	Not described as digitally delivered
Pozuelo et al. app-development study (South Africa, Uganda)	Usability testing only

3.2 Characteristics of included studies

Ten studies were included, from South Africa (4), Kenya (2), Malawi, Zimbabwe, Nigeria and Uganda (1 each). They enrolled about 3,157 people. Six were randomised and four were not. Most targeted young people, and several recruited university or school students (Table 3). Populations, outcomes, attrition, safety reporting and principal findings are summarised study by study in Table 4.

Table 3. Characteristics of included studies

Study	Country	Design (N)	Intervention	AI?	Human support	Comparator	Follow-up
Osborn et al., 2020	Kenya	RCT (103)	Single-session web programme (Shamiri-Digital), students 13–18	No	None	Digital study-skills	2 weeks
Kleinau et al., 2024	Malawi	RCT (1,493)	Vitalk CBT chatbot, health workers	No (scripted, no language understanding)	None; risk module with referral contacts	Waitlist with web links	~9 weeks
Bantjes et al., 2024	South Africa	3-arm RCT (371)	SuperBetter gamified app; live online group CBT skills training	No	Peers (app); psychologists (group)	MoodFlow mood-tracking app	3 and 6 months



Moffett et al., 2025	South Africa	Pilot RCT (195)	Kuamsha behavioural activation game app, ages 15–19	No	Peer mentors by phone	Control app	11 and 24 weeks
Ofoegbu et al., 2020	Nigeria	Group RCT (192)	Guided internet-assisted intervention, university students	Not reported	Guided (details not given)	Usual care	Follow-up (timing not given)
Nakimuli-Mpungu et al., 2025 (preprint)	Uganda	Pilot RCT, secondary analysis (300)	Phone tele-support psychotherapy, youth 15–30	No	Lay counsellors	Standard services	6 and 12 months
Dambi et al., 2022	Zimbabwe	Quasi-experimental (173)	Inuka chat-based problem-solving therapy	No	Supervised lay counsellors	WhatsApp Friendship Bench	One follow-up
Steyn & Slabbert, 2025	South Africa	Single-arm (114)	Vimbo self-guided CBT app	Not reported	Technical help only	None	12 weeks
Bantjes et al., 2021	South Africa	Single-arm (175)	Live online group CBT, university students	No	Counsellors and trainees	None	~1 week post
Green et al., 2020	Kenya	Single-case design (41)	Zuri chatbot delivering a perinatal CBT programme by SMS and Messenger	Yes	Live staff took over flagged chats	Within-person baseline	Mood every 3 days

Note. CBT = cognitive behavioural therapy; RCT = randomised controlled trial.

Table 4. Summary of evidence from included studies

Study (country)	Design (N)	Population	Intervention	Outcomes	Follow-up	Attrition or retention	Safety reporting	Principal findings
Osborn et al., 2020 (Kenya)	RCT (103)	Students aged 13–18	Single-session web programme	Depression (PHQ-8); anxiety	2 weeks	Retention not reported	No (serious) adverse events stated	Depression reduced ($d = 0.50$ full sample, $p = .028$; $d = 0.83$ with elevated symptoms). Anxiety not significant ($d = 0.29$, $p = .28$).
Kleinau et al., 2024 (Malawi)	RCT (1,493)	Health workers	Scripted CBT chatbot	Depression (PHQ-9); anxiety	~9 weeks	Retention 29% (chatbot) vs 40% (control); technical problems in treatment arm	Adverse events not reported; risk module with referral contacts	Depression -0.68 points vs control (95% CI -1.15 to -0.21). Anxiety borderline (-0.44 , 95% CI -0.88 to 0.01).



Bantjes et al., 2024 (South Africa)	3-arm RCT (371)	College students	Gamified app (SuperBetter) or live online group CBT skills training	Joint remission; combined depression –anxiety score	3 and 6 months	41.5% completed 6-month follow-up; power outages disrupted live groups	Adverse events not reported in sections available	At 6 months, joint remission 42.3% (app) vs 20.1% (mood-tracking comparator); combined score adjusted difference –4.5 (p = .031). Live group slightly better at 3 months; app and group did not differ significantly.
Moffett et al., 2025 (South Africa)	Pilot RCT (195)	Adolescents aged 15–19	Behavioural activation game app with peer mentors	Depression	11 and 24 weeks	80% completed at least 4 of 6 modules	Not reported in sections available (abstract only)	No between-group difference at 11 weeks (–0.37, 95% CI –1.96 to 1.22) or 24 weeks (–0.11, 95% CI –1.70 to 1.48). Authors report benefit with higher baseline symptoms and engagement.
Ofoegbu et al., 2020 (Nigeria)	Group RCT (192)	University students (educational technology)	Guided internet-assisted intervention	Depression	Timing not given	Not extracted (abstract only)	Not reported in sections available	Significant depression reductions reported at 10 weeks and follow-up; abstract gave no numbers.
Nakimuli-Mpungu et al., 2025 (Uganda; preprint)	Pilot RCT, secondary analysis (300)	Youth aged 15–30	Phone tele-support psychotherapy by lay counsellors	Depression	6 and 12 months	Retention 76% (6 months) and 83% (12 months)	No serious adverse events stated	Total effect on depression $\beta = -3.74$ (95% CI –4.27 to –3.20); endline scores 4.03 vs 9.17. Internal inconsistencies, so read cautiously.
Dambi et al., 2022 (Zimbabwe)	Quasi-experimental (173)	Adults	Inuka chat-based problem-solving therapy	Depression (PHQ-9); anxiety (GAD-7)	One follow-up	36% never received the assigned intervention	Adverse events not reported; suicidal ideation referred	PHQ-9 6.9 vs 9.7 (WhatsApp Friendship Bench); GAD-7 7.2 vs 9.1 (p = .06). Baseline imbalance; not powered for effectiveness.

Steyn & Slabbert, 2025 (South Africa)	Single-arm (114)	Adults	Vimbo self-guided CBT app	Depression (recovery criterion)	12 weeks	5% remained at 12 weeks; 31% dropped out before second measurement	No adverse events stated	53% in the depression course met the recovery criterion, with no link to app usage.
Bantjes et al., 2021 (South Africa)	Single-arm (175)	University students	Live online group CBT	Depression (PHQ-9); anxiety (GAD-7)	~1 week post	Not extracted	Not reported in sections available	PHQ-9 fell from 14.0 to 8.5 (students with clinically significant baseline symptoms); GAD-7 from 14.1 to 6.9. No control group.
Green et al., 2020 (Kenya)	Single-case design (41)	Perinatal women	Zuri chatbot (AI-enabled), perinatal CBT by SMS and Messenger	Depression	Mood every 3 days	52% continued past registration	No adverse events stated; live staff took over flagged chats	Small improvement ($d = 0.17$). Only AI-enabled study.

Note. CBT = cognitive behavioural therapy; RCT = randomised controlled trial; PHQ = Patient Health Questionnaire; GAD-7 = Generalised Anxiety Disorder 7-item scale; d = standardised mean difference. “Not reported in sections available” means that no adverse-event statement was found in the parts of the report that could be read. Crisis arrangements in South African studies (exclusion of participants at suicide risk, with signposting) are described in Section 3.5. Comparators, human support and AI status are in Table 3.

3.3 Effects on depression

Randomised studies. In Kenya, the single-session programme reduced depression (PHQ-8) over two weeks, with $d = 0.50$ in the full sample ($p = .028$) and $d = 0.83$ in students with elevated symptoms (Osborn et al., 2020). In Malawi, the chatbot reduced PHQ-9 scores by 0.68 points relative to control (95% CI -1.15 to -0.21), a small effect (Kleinau et al., 2024). In South Africa, the gamified app produced higher joint remission than the mood-tracking comparator at six months (42.3% vs 20.1%) and a lower combined depression-anxiety score (adjusted difference -4.5 , $p = .031$). Live group training did slightly better at three months, and the two did not differ significantly (Bantjes et al., 2024). The Kuamsha pilot found no between-group difference at 11 weeks (-0.37 , 95% CI -1.96 to 1.22) or 24 weeks (-0.11 , 95% CI -1.70 to 1.48), although the authors report benefit among adolescents with higher baseline symptoms and higher engagement (Moffett et al., 2025, abstract only). A Nigerian trial reported significant depression reductions with guided internet support at 10 weeks and follow-up, but the abstract gave no numbers (Ofoegbu et al., 2020). The Ugandan preprint reported a total effect of phone counselling on depression of $\beta = -3.74$ (95% CI -4.27 to -3.20) and lower endline scores (4.03 vs 9.17), but its text contains a conflicting sign and its tables were unavailable, so it should be read cautiously (Nakimuli-Mpungu et al., 2025).

Non-randomised studies. Zimbabwean adults using Inuka had lower follow-up PHQ-9 scores than those using WhatsApp (6.9 vs 9.7), but groups differed at baseline and the study was not powered for effectiveness (Dambi et al., 2022). Single-arm studies showed improvement without a control: in students with clinically significant baseline symptoms, PHQ-9 fell from 14.0 to 8.5 (Bantjes et al., 2021), and 53% of Vimbo users in

the depression course met the recovery criterion with no link to app usage (Steyn & Slabbert, 2025). Improvement in the Kenyan chatbot pilot was small ($d = 0.17$) (Green et al., 2020).

3.4 Effects on anxiety

Anxiety results were weaker. The Kenyan single-session programme had no significant effect ($d = 0.29$, $p = .28$), and the Malawi chatbot's effect was borderline (-0.44 , 95% CI -0.88 to 0.01). In Zimbabwe, GAD-7 was lower with Inuka (7.2 vs 9.1) but the difference was not significant ($p = .06$). Uncontrolled GAD-7 scores fell from 14.1 to 6.9 in South African online group CBT. Bantjes et al. (2024) reported combined outcomes only. The Kuamsha, Ofoegbu and Ugandan reports did not give extractable anxiety results.

3.5 Engagement, attrition and safety

Engagement varied widely. It was also measured in different ways: as retention at follow-up (Vimbo, the Malawi and Uganda trials and the South African three-arm trial), module completion (Kuamsha), continuation past registration (Zuri) or non-receipt of the assigned intervention (Inuka). Follow-up ranged from about one week to 12 months (Table 3). The percentages below are therefore descriptive and not directly comparable across studies.

- Self-guided tools had the highest attrition. Only 5% of Vimbo users remained at 12 weeks (31% dropped out before the second measurement), and retention was 29% (chatbot) and 40% (control) in Malawi, where treatment-arm attrition was attributed to technical problems. In Kenya, 52% of women who started with the Zuri chatbot continued past registration.
- Supported delivery retained more users. Retention was 76% at 6 months and 83% at 12 months in the Ugandan phone-counselling trial, and 80% of Kuamsha participants completed at least four of six modules with peer mentoring. Even so, 36% of Inuka participants never received the assigned intervention, and only 41.5% completed six-month follow-up in the South African three-arm trial, where power outages disrupted live groups.
- Safety reporting was thin. Four studies stated that no (serious) adverse events occurred (Osborn et al.; Steyn & Slabbert; Green et al.; Nakimuli-Mpungu et al.). The other six did not report adverse events in the sections available. Crisis arrangements existed in several studies: a risk module with referral contacts (Malawi), live staff takeover of flagged chats (Kenya), exclusion of participants at suicide risk with signposting (South Africa), and referral of those reporting suicidal ideation (Zimbabwe).
- AI. Only the Kenyan chatbot pilot used an AI-driven system. The Malawi chatbot was scripted. None of the studies tested a generative AI tool.

3.6 Risk of bias and certainty of evidence (provisional)

Table 5. Provisional risk-of-bias judgements

Study	Provisional judgement	Main concerns
Osborn et al., 2020	Some concerns	Small sample, 2-week follow-up, retention not reported, self-report
Kleinau et al., 2024	High	Retrospective registration, differential attrition, inconsistent enrolment figures
Bantjes et al., 2024	High	41.5% completed 6-month follow-up, self-report, no blinding
Moffett et al., 2025	Not assessed	Abstract only
Ofoegbu et al., 2020	Not assessed	Abstract only; sample size reported differently across sources (192 in abstract)

Nakimuli-Mpungu et al., 2025	High	Preprint, secondary analysis of a feasibility trial, internal inconsistencies
Dambi et al., 2022	Serious	Non-randomised, baseline imbalance, inconsistent numbers
Steyn & Slabbert, 2025	Critical	Single arm, 5% retention at 12 weeks, sponsor-linked authors
Bantjes et al., 2021	Serious	Single arm, no control
Green et al., 2020	Serious	Tiny sample, incomplete outcome data, English-literate sample

Certainty of evidence was very low for both depression and anxiety. The evidence was downgraded for risk of bias, inconsistent results, imprecision and indirectness from short follow-up and student-heavy samples.

4. DISCUSSION

4.1 Principal findings

Digital psychological interventions tested in sub-Saharan Africa show promising but inconsistent effects on depression, weaker effects on anxiety, and large drop-off in self-guided formats. Only a few tests are randomised, most are small or pilot studies, and AI-enabled tools are barely evaluated: one AI-driven chatbot, in a 41-person pilot without a control group. Comparisons across studies are limited by differences in modality, population, outcome measure and follow-up.

4.2 Interpretation in context

The pattern is broadly consistent with low- and middle-income country evidence elsewhere (Karyotaki et al., 2023), where effects were large but heterogeneous and Africa was absent. The African trials found here appear to show smaller effects. Less selected samples are one possible explanation, but no direct comparison was made, and differences in measures, comparators and follow-up mean that it cannot be tested here. Three themes stand out, each corresponding to a component of the framework in Section 1.1 (Figure 1).

- Human support. Phone counselling by lay workers and peer-supported apps kept more participants than self-guided apps. These comparisons span different populations and designs, so the link is suggestive only. The one trial that compared live therapist-led groups with a self-guided app found no significant difference at six months, but it was underpowered for that test.
- Cultural and linguistic fit. Several tools required English literacy (Vimbo, Zuri) or Android devices (Vimbo, Inuka). Studies that used local-language measures or content (Shona in Zimbabwe, Xitsonga in South Africa, Luganda in Uganda) were mostly feasibility or pilot studies.
- Access. Connectivity, data costs and electricity affected delivery (technical problems in Malawi, power outages in South Africa), consistent with the 60% mobile-internet usage gap in the region (GSMA, 2024).

4.3 AI-enabled interventions: promise and risk

AI chatbots could extend reach where clinicians are scarce, but this review finds almost no outcome evidence for them in the region. The Kenyan pilot kept a human in the loop for crisis chats. Any wider rollout would need explicit crisis escalation, consent and privacy safeguards (for example under the Nigeria Data Protection Act 2023), testing for bias in African languages, and designs that support rather than replace human care. The six studies that did not report adverse events leave the safety record incomplete. With a single small pilot without a control group as the only AI-enabled evidence, no conclusion can be drawn about the effectiveness or safety of AI-enabled interventions in the region.

4.4 Implications

- Clinical practice: Digital tools with human support, such as lay-counsellor phone programmes or peer-supported apps, look more promising than fully self-guided tools. They can complement but should not replace in-person care, particularly for people at risk.
- Policy: Funders and regulators should require safety protocols, data protection and local-language testing for digital mental health tools and support connectivity and low-bandwidth options.
- Research: Larger preregistered trials with adverse-event reporting, longer follow-up, cost data and more countries are needed, along with the first adequately powered tests of AI-enabled interventions.

5. STRENGTHS, LIMITATIONS AND FUTURE RESEARCH

Strengths. The review used explicit eligibility criteria, checked each figure against the source page (by the single reviewer, without independent verification), and reported inconsistencies instead of smoothing them over. It covers both conditions, all ages and every digital modality, and separates AI-enabled tools from other digital delivery.

Limitations

- Search. It was web-based and not run in bibliographic databases, so it likely missed studies. Several pages could not be read, and two included studies were read at abstract level only. Web search results are not fixed and may differ between users and dates, so the search cannot be reproduced exactly.
- Process. Screening, extraction and appraisal were done by one reviewer without registration, and risk-of-bias appraisal was coarse and provisional. Single-reviewer screening risks missed or wrongly excluded studies, extraction errors and misclassified risk of bias, and none of these was independently checked. Without a published protocol, the eligibility criteria, outcomes and methods cannot be verified as fixed before the searches, so selective choices cannot be ruled out.
- Evidence base. One included study is a preprint, and sources contained internal inconsistencies, so numerical details may need correction after full-text checks. The studies are heterogeneous and mostly small, so no pooled estimate was possible.
- Comparability. The studies differed in modality, population, comparator, outcome measure and follow-up (about one week to 12 months), and engagement was defined differently across studies. Comparative statements, including those about human-supported and self-guided delivery, are therefore descriptive only.
- AI-enabled tools. Only one AI-enabled study was included, a small pilot without a control group, so conclusions about the effectiveness and safety of AI-enabled interventions are particularly uncertain.
- Scope. English-language only, and positive studies are more likely to be findable (publication bias is likely).

Future research. The priority is a full systematic review with prospective registration, a bibliographic database search, and independent dual screening, data extraction and risk-of-bias assessment. Independent verification of the study selection and extracted data in this review would also strengthen it. Primary research should include larger trials in West and Central Africa and francophone and lusophone countries, head-to-head trials of supported and unsupported delivery, standard reporting of adverse events and crisis escalation, cost-effectiveness analyses, and co-design with young people, women and people with chronic illness.

6. CONCLUSION

Evidence on digital psychological interventions for depression and anxiety in sub-Saharan Africa is small and of low certainty. Depression results are promising in a few randomised trials, anxiety effects are weaker, and self-guided tools lose most users. Human-supported formats seem to retain more people, but this has not been tested directly. AI-enabled interventions are essentially untested in the region, so safety standards, data protection and locally led trials should come before any wider rollout.

Declarations

- Registration: Not registered.
- Corresponding author: Trust-Jah Tuaegwuchukwu Allison.
- Author contributions, funding and conflicts of interest: One author, no funding, and there are no conflict of interest.
- Ethics: This review used published data only, so ethical approval was not required.
- Data availability: Extraction data are in the Section 3 tables (Tables 3–5), and the search terms are in the Appendix.
- Use of AI tools: The web search and data extraction for this manuscript were carried out with Claude (Anthropic).

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Appendix. Search strategy

Twenty-eight web searches were run on 19–20 October 2026 using the web search tool of Claude (Anthropic). Terms were combined from three blocks:

- Delivery: digital, app, smartphone, mHealth, SMS, WhatsApp, web-based, internet-based, telepsychology, teletherapy, chatbot, conversational agent, artificial intelligence, large language model.
- Condition: depression, anxiety, common mental disorders.
- Setting: sub-Saharan Africa, and named countries (Nigeria, Kenya, Uganda, Tanzania, Ghana, Zimbabwe, Malawi, South Africa, Ethiopia, Rwanda, Zambia).

Other sources: the study lists of three reviews (Chau et al., 2025; Karyotaki et al., 2023; Njoroge et al., 2026) and leads to preprints and protocols were also followed. PubMed, PsycINFO, Embase, Scopus, Web of Science, CINAHL and Cochrane CENTRAL were not searched directly.