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Acceptability and implementation feasibility of a mobile application powered by generative artificial intelligence for mental health screening and referral in Uganda

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Abstract

Background

Uganda faces a significant mental health burden, with depression and anxiety disorders affecting an estimated 14 million people. However, severe specialist shortages and high stigma create a significant care gap. Artificial Intelligence (AI) and mobile tools could offer scalable solutions to extend the reach of mental health services. Although AI-powered mental health applications are expanding globally, there is little evidence on their acceptability and implementation feasibility in low-income African settings.

Objective

This proof-of-concept study evaluated the acceptability and feasibility of a generative AI-powered mobile application designed for mental health screening, self-care, and referral in Uganda.

Methods

We conducted a mixed-methods proof-of-concept study between January and May 2026 in Kampala, Uganda, involving 50 participants (25 members of the general public and 25 healthcare workers). Participants evaluated a generative AI-powered mobile application integrating a large language model with validated mental health screening tools (PHQ-4, PHQ-9 and GAD-7) for screening, self-care and referral. Quantitative and qualitative data were collected through baseline and endline assessments. Acceptability was evaluated using the Technology Acceptance Model (TAM), while implementation feasibility was assessed using Bowen's feasibility framework.

Results

The application demonstrated high acceptability and implementation feasibility. More than 90% of participants reported being willing to continue using and recommend the application, while 95.6% found the information relevant to their needs. Healthcare workers viewed it as a valuable decision-support and task-sharing tool that could reduce workload and improve access to mental health services. The principal implementation barriers were internet dependence, mobile data costs, limited multilingual functionality, and smartphone access.

Conclusion

This proof-of-concept study demonstrates that a generative AI-powered mobile application is feasible and highly acceptable for mental health screening, self-care, and referral in Uganda. The application shows promise for supporting task-sharing, improving access to mental health services, and

strengthening non-specialist care. However, successful scale-up will require addressing barriers related to internet connectivity, data costs, language accessibility, and smartphone access. Larger studies are needed to evaluate its effectiveness, cost-effectiveness, and integration into routine health systems in Uganda and similar low-resource settings.

Background

Mental disorders are among the largest and fastest-growing contributors to the global burden of disease, with depressive and anxiety disorders consistently ranking as the leading causes of years lived with disability.[2,3] The COVID-19 pandemic accelerated these trends, adding an estimated 53.2 million cases of major depressive disorder and 76.2 million cases of anxiety disorders globally in 2020 alone.[4] In Uganda, an estimated one in four adults experiences a mental disorder, most commonly depression or anxiety.[5] Yet the capacity to deliver mental health care in Africa, and Uganda in particular, remains critically constrained. The World Health Organization estimates that 75–85% of people with mental disorders in low- and middle-income countries (LMICs) receive no treatment at all, with Africa having only about 1.4 mental health workers per 100,000 population compared with a global average of 9 per 100,000.[6] Uganda exemplifies this scarcity: there are an estimated 53 psychiatrists nationwide, approximately one psychiatrist per million people.[7] Mental health receives only about 1% of the national health budget, leaving primary and community-level services severely under-resourced.[8] These supply-side constraints are compounded by widespread stigma, low mental health literacy, and geographic and financial barriers to care.[6] Together, these gaps create a structural mismatch between need and capacity that conventional, specialist-led models of care cannot realistically close.

Artificial intelligence (AI) offers a promising route to extend the reach of mental health services in such resource-constrained settings. Mobile, online and text-messaging interventions are feasible, acceptable and clinically effective for common mental disorders in LMICs,[9,10] and AI-driven conversational agents have shown significant reductions in depressive and distress symptoms in randomised controlled trials.[11,12] Most existing digital mental health tools, including earlier chatbots, are rule-based, following scripted dialogue trees with predetermined responses. Generative AI, built on large language models (LLMs), is qualitatively different in that it produces flexible, context-sensitive natural-language conversation tailored to the individual user, a capability with promise for screening, psychoeducation and self-help support. In sub-Saharan Africa, the Vitalk randomised controlled trial in Malawi showed that an AI chatbot significantly improved anxiety, depression and burnout among health workers compared with passive online resources.[13] By integrating standardised screening tools, automated triage and referral logic, and culturally adapted self-care content, generative AI-powered mobile applications could enable earlier detection, task-share routine screening with non-specialist providers, reduce stigma through anonymity, and decrease travel time and out-of-pocket costs.[9,10] The rapid expansion of mobile connectivity in Uganda, where more than 80% of the population is covered by mobile broadband, provides a platform for delivering such interventions.[14]

The application of AI for mental health in Uganda and similar low-resource settings is, however, not without important challenges. Most AI mental health tools have been developed and validated in high-income, English-speaking, predominantly Western populations, raising concerns about algorithmic bias, the cultural appropriateness of conversational content, and limited performance for African languages and idioms of distress.[15] Infrastructural constraints such as unreliable internet connectivity, the high cost of mobile data, limited smartphone ownership, and unstable electricity threaten equitable access and may exacerbate the digital divide.[15] Data protection, confidentiality and clinical safety raise additional ethical concerns, particularly for sensitive content such as suicidality, given that very few African countries have optimal regulatory frameworks for AI in health.[15] Further concerns include clinician trust, the risk of over-reliance on automated tools, and challenges with integration into existing referral and reporting systems.[16] Local feasibility, acceptability and co-design evidence is therefore essential before AI-based mental health tools can be safely scaled in Uganda.

Existing studies on generative AI and mental health applications have largely been conducted in high-income contexts or in other LMICs and rarely involve co-design with end-users at all levels of the health system. From an implementation science perspective, efficacy demonstrated elsewhere is not sufficient to justify adoption: acceptance by users and providers, fit with local workflows and referral pathways, and the capacity to deliver and sustain a technology at scale within existing health systems must be established in the target context before widespread rollout. This study therefore sought to evaluate the perceptions, feasibility and acceptability of a generative AI-powered mobile application for screening, self-care and referral of anxiety and depression in Uganda. The findings are intended to inform the further development, design, ethical deployment and potential scale-up of generative AI-based mental health interventions in Uganda and comparable sub-Saharan African settings.

Materials and methods

Study design and setting

This was a proof-of-concept study conducted as mixed methods research, involving quantitative surveys and exploratory qualitative methods, delivered as pre and post implementation assessments.[17,18] The study was conducted from January 2026 to May 2026, in Kisugu B village, Butabika National referral Mental hospital, Kawala Health center IV and Kisugu Health center III in Kampala, Uganda. The study setting was chosen purposively due to its highest phone coverage in the country.[19] Healthcare facilities were selected purposively following pre-site visits, pre-engagement meetings and availability of study participants.

Participants, procedure and measures

Participants and procedure

The study recruited participants 18 years and above with smart phones drawn from the general public in Kampala capital city authority, Kisugu B village and from the healthcare setting, spanning general healthcare workers and mental health specialists through a purposive sampling approach.[17] The purposive sampling technique was chosen based on the stage of development of the proposed tool and the critical information needs for the design. At all study sites, all individuals 18 years and above, of sound mind, in possession of a smart phone, literate and willing to participate in the study were consecutively included. Psychiatrists were recruited through critical case sampling techniques.

A total of 50 participants were recruited for this study, sampled equally from the general public and healthcare settings. Healthcare workers included 10 non-specialist professionals (clinical officers, medical officers, and nurses), 5 psychiatric clinical officers, 5 psychiatric nurses and 5 psychiatrists. Participants could choose whether to participate or not based on either their will or possession of a smartphone (i.e. Smart phone with Android Operating System version 9 and above). At the end of the first interview round (baseline), participants were helped by the research team to install the application and taken through on how to navigate it using a hypothetic example. The telephone number of a dedicated researcher was left to each participant to be reached in case of any technical challenge for assistance.

Measures

At baseline, we collected data on perception and acceptability of the application using Bowen and colleagues framework and the technology acceptance model.[20,21] Additionally, data on socio-demographic characteristics including age, gender, and level of education attained were also captured. After one month of application supply to the participants, a second interview was conducted to collect data on perception, acceptance and feasibility of the proposed application, using interviewer administered questionnaires to members of the public and interview guides to healthcare workers. In addition, user challenges were evaluated and recommendations collected.

The application

The application is a smartphone-based mental health screening and care tool designed to address anxiety and depression disorders. The content of the app was shaped based on the Patient Health Questionnaire 9 and 4 (PHQ-9 & PHQ-4) and generalized anxiety disorder-7 (GAD-7), approved protocols for depression and anxiety disorder screening in Uganda, through an iterative design approach, using English as the primary language. An intuitive audio-visual interface was embedded to allow access by both visual and hearing dimensions.

The app was designed to utilize a generative AI–powered chatbot. This system is designed to interact with users in natural, human-like language and provides responses based on the documents and information provided to it. For this application, the interaction, advice, and guidance offered is based on

PHQ-4, PHQ-9, and GAD-7. Unlike traditional rule-based or decision tree systems, the AI model curates feedback in accordance with pre-fed protocol information to respond dynamically. This enables it to deliver more personalized and relevant answers, even for complex or unstructured inputs. Importantly, the AI does not rely on the internet to generate responses; instead, it uses a document-based knowledge system. The system was designed to have access to a curated set of files (PHQ-4, 9, and GAD-7), which it retrieves and interprets whenever it interacts with a client to construct its responses. This ensures the outputs are context-specific, controlled, and factually grounded.

Therefore, the application works as follows: 1) Interact with the participant/patient/healthcare worker by analyzing the questions/queries fed into it either by writing/typing or through verbal prompting, and 2) Link the queries/questions to the inbuilt guidelines to offer appropriate guidance and referral in cases of severe symptoms. Therefore, the application is not for diagnosis or medication prescriptions. Furthermore, in case of severe symptoms pointing to suicide, dialing a nearby healthcare facility was made automatic.

Data security, confidentiality, and governance

To ensure data security, the mCare+ platform was designed using a privacy-by-design and security-by-design approach to safeguard generated data throughout its lifecycle. All communication between the mobile application and backend servers are encrypted using Transport Layer Security (TLS 1.2 or higher), while data stored on secure cloud infrastructure is encrypted at rest using industry-standard encryption (e.g., AES-256). All data handling procedures follow institutional security policies and applicable data protection regulations.

To ensure confidentiality, participants register using a mobile phone number, which serves as a unique account identifier, while providing their name remains optional. This approach minimizes the collection of personally identifiable information while enabling secure account management and participant follow-up during research and or patient follow-up.

Rural Health Link Inc and Makerere University AI Lab jointly serve as data custodians and are responsible for the operational management of all study data, including AI conversation transcripts and user interaction logs.

Data management and analysis

Quantitative data was analyzed descriptively into frequencies and percentages for grouped data, and median and interquartile range for continuous data. Qualitative data was analyzed thematically using a deductive approach which involved identifying patterns and themes in the data using global themes from literature, with the aid of NVivo 15. This approach was facilitated by pre-existing frameworks on feasibility and acceptability of new technologies.[20,21] Audio recordings were transcribed verbatim by NK who listened to each audio recording and read through all the transcripts to resolve errors in transcripts and familiarize himself with the data. NK and CN reviewed the transcripts and noted potential codes,

followed by grouping the codes into pre-established categories. Both qualitative and quantitative data collection took place at the same time and results triangulated (triangulation design) to support the findings.[22]

The results were interpreted in the context of the broader literature on the topic using technology acceptance model (TAM) and the feasibility assessment framework proposed by Bowen and colleagues using insights from the respondents.[20,21] The technology acceptance model was used to categorize key external and internal factors that influence the user behaviour of the proposed technology, while the Bowen feasibility framework was used to evaluate the possible demand, implementation, practicality, integration and possible expansion of the tool in real world setting.

Ethical considerations.

This study was approved by the Uganda Christian University Research Ethics Committee under approval number UCUREC-2025-1795. The study was also registered with the Uganda National Council for Science and Technology (registration number HS6700ES), and all methods were carried out in accordance with the Uganda National Guidelines for Research Involving Humans as Research Participants. Written informed consent was obtained from all participants prior to enrolment, and all participants were aged 18 years and above. Research assistants underwent training by both the technical and the research teams to understand the application, study protocol, data collection tools and how to pause interview questions.

Results

Participant Characteristics

At baseline, a total of 48 participants were enrolled: 23 healthcare workers (HCWs) who participated in key informant interviews (KIIs) and 25 members of the general public who completed a quantitative survey. Among HCW participants, 65% were female (mean age 35 years). Professional roles spanned psychiatrists (n = 4), psychiatric clinical officers (n = 5), psychiatric nurses (n = 4), medical officers (n = 2), medical clinical officers (n = 4), a nurse (n = 1), and midwives (n = 3). Education ranged from certificate to master's level, with a mean of three years of clinical experience. Among general public participants, 60% were female, with a median age of 24 years (IQR 21–32); 60% had attained secondary-level education. At endline, 11 HCWs participated in follow-up KIIs (73% female; mean age 32 years), along with members of the general public who had used the application for approximately one month. Key participant characteristics are summarised in Table 1.

Table 1
Participant characteristics across baseline and endline assessments.

Characteristic	Assessment	HCW KIIs (Qualitative)	General Public Survey (Quantitative)
N	Baseline	23	25
	Endline	11	~ 22–25 (variable per item)
Sex (% female)	Baseline	65%	60%
	Endline	73%	–
Mean age (years)	Baseline	35	24 (IQR 21–32)
	Endline	32	–
Education	Baseline	Certificate to Masters	60% secondary; 40% tertiary
	Endline	Certificate to Degree	–
Professional roles (HCWs)	Baseline	Psychiatrists (4), Psychiatric nurses (4), PCOs (5), MOs (2), MCOs (4), Nurses (1), Midwives (3)	–
	Endline	Psychiatric nurses, PCOs, MOs, Midwives, Nurses	–
Mean KII duration	Baseline	30 minutes	–
	Endline	15 minutes	–

PCO = Psychiatric Clinical Officer; MO = Medical Officer; MCO = Medical Clinical Officer; HCW = Healthcare Worker; KII = Key Informant Interview; IQR = Interquartile Range.

Technology Acceptance: Perceived Usefulness and Perceived Ease of Use

The acceptability of the application was guided by the Technology Acceptance Model (TAM)[21], which uses two primary determinants of adoption: Perceived Usefulness (PU) and Perceived Ease of Use (PEOU). These domains were assessed both from the perspectives of the general public and the HCWs.

Perceived usefulness

At baseline, quantitative findings indicated strong prospective endorsement of the application's utility: 87% of general public participants agreed or strongly agreed that mobile health applications had the potential to improve mental health care services, 88% believed the application could increase mental health services awareness, and 92% considered such tools more accessible than hospitals. Three

qualitative utility themes emerged from HCW interviews. First, participants perceived the application as a workload-reduction tool, particularly valuable in a setting characterised by severe specialist shortages:

"It will in fact be a very good innovation, because it is giving an alternative and in fact lowering the workload that a health worker is going through to screen a client, because the client has already screened themselves. (KII 1, Psychiatrist, male)"

Second, HCWs anticipated that the application would bridge structural access gaps by enabling users to engage with mental health support outside of facility settings, thereby reducing travel time, congestion, and waiting. Third, participants highlighted its potential to reduce mental health stigma by offering anonymity and privacy, encouraging disclosure from individuals reluctant to seek face-to-face care.

At endline, post-use experience confirmed and strengthened these baseline perceptions. Among the general public, 95.65% reported that the health information presented was relevant to their needs, and 76.19% were satisfied or very satisfied with the application's screening, counselling, and overall content. 90.9% stated they would recommend the application to others, and 95.5% indicated they would adopt it as a first-line mental health resource. HCWs reported that the application enhanced clinical capacity by providing structured guidance, improving diagnostic accuracy, and reinforcing confidence among non-specialist providers:

"The app helps to give you the right questions, gives you guidance and the system will generate the score… then you initiate an intervention. (KII 4, Psychiatric Nurse, female)"

The application thus functioned as both a clinical aid and a capacity-building resource, with perceived usefulness increasing after direct experience with the tool.

Perceived ease of use

At baseline, 84% of general public participants expressed confidence in using mobile health applications, and 94% trusted the health advice provided by such tools. Qualitative accounts from HCWs anticipated ease of use as a critical determinant of adoption, with emphasis on the need for simple navigation, plain language, and rapid feedback:

"If it requires a lot of jargons, then it will affect the usability… the app should give specific answers… not beating around the bush. (KII 8, Midwife, female)"

Participants also pre-identified potential barriers to ease of engagement, including connectivity requirements, language accessibility, and digital literacy constraints, concerns that framed the evaluation of post-use experience.

At endline, quantitative findings confirmed generally high usability: 90.9% agreed that application features were easy to use, 77.3% reported using it without third-party assistance, and 72.7% found the language and instructions clear. The majority of users (69.57%) rated the application as easy or very

easy to use. Qualitatively, ease of navigation and the direct, structured questioning format were widely praised:

"The app is okay… it was easy to use the time I used it… the questions are direct; it could help you to do the diagnosis very fast and accurate. (KII 7, Midwife, female)"

However, three barriers to perceived ease of use emerged. Internet connectivity requirements were the most frequently cited constraint, data costs are prohibitive for many users and institutional Wi-Fi is unreliable, meaning the application's availability was unevenly distributed:

"The data issue. Some people have smartphones but not data will be available every time. Personally, sometimes I don't have data and at my workplace the Wi-Fi sometimes is off. So, it means they cannot easily access it. It's for only those who can afford data. (KII 3, Psychiatric Clinical Officer, male)"

The application's exclusive availability in English also limited independent engagement among users with low English proficiency or literacy, undermining the intended benefits of self-administration and privacy. Technical glitches, including repetitive question sequences and occasional failure to advance between items, further reduced perceived ease of use for some participants.

Feasibility assessment

The feasibility of using the application was assessed across five domains of the Bowen *et al.* (2009) framework. The domains assessed were demand, implementation, practicality, integration, and expansion which were assessed using convergent qualitative and quantitative evidence from both time points. Key indicators are summarised in Table 2.

Demand

Pre-implementation data confirmed substantial latent demand. All 25 general public participants expressed willingness to use a mobile application for mental healthcare, with 68% reporting a previously unmet need for private mental health support and 92% preferring an application that provided quick information and advice. HCWs described the application as a timely innovation addressing critical gaps in a system burdened by specialist scarcity. Post-implementation, 56.7% of general public participants had used the application for screening or self-care during the one-month exposure period. Willingness to continue use remained high at 90.91%, and actual use of the screening feature was universal among endline survey respondents.

Implementation

Baseline data indicated a low threshold for initial uptake: 76% of general public participants anticipated needing no external support to begin using the application. However, the same sample flagged clear implementation-critical conditions: 68% stated they would discontinue use if the application consumed excessive data, and 64% would stop if responses were delayed. Qualitative data from HCWs identified four systemic prerequisites for successful implementation: administrative endorsement from the

Ministry of Health and facility leadership; structured training and regular refresher support for providers; community awareness creation through community health worker (CHW) networks, media, and local leaders; and integration into existing clinical workflows. At endline, the principal implementation challenges were internet dependency, technical glitches, and the absence of multilingual functionality, all consistent with baseline concerns, alongside recommendations for offline access, alternative device pathways, and sustained sensitisation campaigns.

Practicality

The application demonstrated practical feasibility within clinical and community settings. Among endline participants, 45.45% completed a screening session in five to ten minutes, and 22.73% took more than twenty minutes, suggesting an acceptable time investment across user types. At baseline, 94% of general public participants trusted health advice from mobile applications, and 84% expressed confidence in using them. HCWs at endline confirmed the application's practical value in supporting non-specialist providers, reducing cognitive burden through pre-formulated screening questions, and enabling faster assessment in busy outpatient settings. The primary practical constraints were mobile data costs, reported by 40% of endline participants as a barrier, and the smartphone requirement, which excluded users with basic or feature phones, reinforcing existing digital inequities.

Integration

Both assessment time points indicated strong intent for system integration. At baseline, 96% of general public participants preferred the application to be connected to healthcare facilities, and 68% favoured a blended model combining digital and in-person care. HCWs proposed embedding the tool at triage points, in outpatient departments, and within health education sessions. At endline, 36.4% of users reported having followed up on a referral recommended by the application, providing preliminary evidence of functional linkage between digital screening and facility-based care. The majority (95.5%) indicated they would use the application as a first-line resource for mental health care. HCWs continued to emphasise the need for administrative policy integration to legitimise and sustain the tool within formal service delivery pathways.

Expansion

Expansion potential was consistently strong across both assessment phases. At baseline, all 25 general public participants expressed willingness to continue using or recommend the application; 76% identified bilingual functionality as essential for broader reach, and 72% preferred audio recording capabilities to extend inclusivity. At endline, all participants were willing to recommend the application to others, and some HCWs reported using it for personal self-assessment, extending its application beyond clinical contexts:

"I feel I can continue using it. Cause I myself I've liked it. Which I feel some other person can also like it. (KII 3, Psychiatric Clinical Officer, male)"

HCWs expressed confidence in the application's scalability, subject to addressing connectivity, language, and device access barriers, and called for phased expansion to underserved populations through targeted community outreach and mass media campaigns.

Table 2
Summary of key quantitative indicators across TAM and Bowen et al. framework domains, baseline and endline.

Framework Domain	Indicator	Baseline (% agree/strongly agree)	Endline (% agree/strongly agree or reporting)
Perceived Usefulness	App can improve mental health care	87%	95.65% found content relevant to needs
	App can increase MH services awareness	88%	76.19% satisfied/very satisfied with app content
	App more accessible than hospitals	92%	90.9% willing to recommend to others
Perceived Ease of Use	Confidence using mHealth apps	84%	69.57% found app easy/very easy to use
	App features easy to use	-	90.90%
	Can use app without assistance	-	77.30%
Demand	Willingness to use app for MH care	100%	90.91% willing to continue using
	Prior unmet need for private MH support	68%	56.7% used app post-administration
Implementation	No support needed to start using app	76%	40% reported data bundles as a challenge
	Would stop if app uses too much data	68%	-
Practicality	Trust in advice from mHealth apps	94%	45.45% completed session in 5–10 min
Integration	App should link to healthcare facilities	96%	36.4% followed up a recommended referral
	Prefer combined app + in-person care	68%	95.5% would use as first line of MH care
Expansion	Would recommend/continue if found useful	100%	100% willing to recommend to others
	Prefers bilingual (English + local language)	76%	25% cited language as a barrier at endline

TAM = Technology Acceptance Model; MH = Mental Health; PCO = Psychiatric Clinical Officer.

Discussion

To our knowledge, this is the first study to assess the feasibility and acceptability of a generative AI-powered mobile application for screening, self-care and referral for depression and anxiety among the general public and health workers in sub-Saharan Africa. The application was highly acceptable to both groups and its deployment was feasible in community and clinical settings. The application's real-time response to user inquiries enables people to take charge of their mental wellbeing. This extension of care through technology aligns with Uganda's self-care and digital health initiatives[23] and with the World Mental Health Report's recommendation[24] that seeks to harness digital technologies to expand access to mental health care, particularly for underserved populations.

Our findings indicate the application can improve access to mental healthcare by eliminating transport and consultation costs and overcoming the challenge of scarce mental health workers. Thus, generative AI can extend mental health services in settings with severe shortages of specialists by supporting task sharing, self-care, and structured referral. Since most African populations rely on out-of-pocket expenditure for direct and indirect healthcare expenses, low-cost modalities of this kind support progress toward universal health coverage.[25] The application thus supplements initiatives promoting universal access to mental health care.[26]

Since the application is individually owned and operated, participants perceived strong potential to reduce the stigma associated with seeking mental health care in person.[27] Stigma remains a major barrier that existing care structures have not fully addressed,[28] therefore, private mobile platforms offer a means of circumventing this barrier to care.

Furthermore, the counselling and support aspect was widely appreciated by the respondents. By providing counselling and coping strategies, the tool can help prevent symptom deterioration and support early intervention.[29] Existing web-based resources such as WHO mental health platforms often require extended navigation to locate help[30], the application overcomes this challenge by delivering curated support directly through an easily accessible and interactive platform.

Respondents widely appraised the linkage of the application to proximal healthcare facilities and mental health personnel, suggesting that the current referral structure is poorly matched to present day-to-today demands. Hidalgo-Mazzei and colleagues reported similar findings for a smartphone application whose participants welcomed remote monitoring and feedback, although their study involved participants already diagnosed with mental disorders.[31] The present findings extend the use of mobile applications for mental healthcare in otherwise non-diagnosed populations, by showing the potential such tools have in early screening, thereby facilitating early disease detection and care. The high expressed demand indicates substantial unmet need for private mental health support. Although this gap in care has been

documented previously[32], our work moves beyond restating the problem by demonstrating a tool that enables rapid consultation, self-care and referral using mobile phones.

Co-creation of digital solutions with intended users is a known determinant of successful implementation[33]. Our findings suggest that involving primary beneficiaries at all stages helps to identify challenges that could undermine enrolment, use and scale-up, and that earlier feasibility studies have often overlooked.[34] In particular, lack of offline access, limited user involvement and absence of sustained sensitization may render digital innovations less meaningful to the target users.

The application's practical value in reducing cognitive burden through pre-formulated screening questions points to the mismatch between healthcare workload and workforce capacity in busy outpatient settings. Virag and colleagues noted that mobile platform-based services relieved pressure on health workers in traditional clinics; our work further suggests that digitalizing screening tools for mental health could save health workers' time, reduce work burden and serve patients better.[35] This directly addresses the chronic mental health workforce shortages in Uganda and similar settings. Collectively, the application's ability to offer self-care while addressing stigma, costs and workforce constraints underpinned its wide acceptance by both health workers and the public.

Implication for policy and practice

These findings carry several implications. For policy, the Ministry of Health and partners should incorporate generative AI-enabled screening and referral tools into the national digital health strategy and mental health policy, and develop regulatory guidance covering data protection, clinical safety and escalation pathways for high-risk presentations such as suicidality. For practice, integration should build on existing task-sharing structures: embedding the application within primary care workflows and village health team outreach, linking its referral function to established facility pathways, and reflecting digital consultations in staffing and reporting arrangements. Health worker training in digital mental health should accompany deployment. Finally, equitable scale-up will require addressing the access barriers identified in this study – data costs, connectivity and language – through measures such as zero-rated access and local-language versions, before national rollout.

Larger studies are needed to evaluate the application's cost-effectiveness, and integration into routine health systems in Uganda and similar low-resource settings. Furthermore, future iterations of the tool should prioritize offline functionality and integrate cultural perspectives to maximize its reach in diverse contexts and underserved rural populations with low bandwidth. Longitudinal designs will also be needed to assess the application's impact on clinical outcomes and long-term health-seeking behaviour.

Study limitations

Despite the promising findings regarding the acceptability and feasibility of the generative AI-powered application, we acknowledge several limitations. First, the study utilized a relatively small sample size of 50 participants recruited from urban centres in Kampala. While appropriate for a proof-of-concept study,

the findings may not be fully generalizable to rural populations in Uganda, where digital literacy, smartphone ownership, and cultural interpretations of mental health may differ significantly. Second, the study was limited by the exclusive use of English as the application's primary language. While English is an official language in Uganda, its use likely excluded a significant portion of the population who are more comfortable with local dialects, potentially introducing selection bias toward more educated and urbanized participants. Third, the requirement for a smartphone with a specific Android version and stable internet connectivity created a barrier to participation. Given that mobile data cost was identified as a major practical hurdle, the tool currently risks exacerbating the digital divide for the most economically vulnerable groups. Fourth, the one-month exposure period was sufficient to assess initial acceptability and navigation but was likely too short to evaluate long term engagement, clinical efficacy or sustainability of the referral pathways. Furthermore, as this was a proof-of-concept study employing a purposive sampling rather than a randomized controlled trial, the results should be interpreted as exploratory.

Conclusion

This proof-of-concept study demonstrates that a generative AI-powered mobile application is feasible and highly acceptable for mental health screening, self-care, and referral in Uganda. The application shows promise for supporting task-sharing, improving access to mental health services, and strengthening non-specialist care. However, successful scale-up will require addressing barriers related to internet connectivity, data costs, language accessibility, and smartphone access. While structural and infrastructural hurdles remain, generative AI represents a transformative opportunity to help close the mental health treatment gap in Uganda and similar settings.

Declarations

Ethics approval and consent to participate

This study was approved by the Uganda Christian University Research Ethics Committee under approval number UCUREC-2025-1795. The study was also registered with the Uganda National Council for Science and Technology (registration number HS6700ES), and all methods were carried out in accordance with the Uganda National Guidelines for Research Involving Humans as Research Participants. Written informed consent was obtained from all participants prior to enrolment, and all participants were aged 18 years and above.

Consent to publish

Not applicable.

Data availability

The datasets generated during and/or analysed during the current study are available from the corresponding author on reasonable request.

Author contributions

P.W. and N.K. conceptualised and designed the study. S.K. and T.B. developed the generative AI–powered mobile application. N.K. and C.N. collected the data, transcribed the interviews and conducted the qualitative analysis. T.M. and N.K. wrote the main manuscript. T.M, P.W., N.K. and T.B. critically reviewed and edited the manuscript. All authors reviewed and approved the final manuscript.

Conflicting interests

Authors declare no conflicting interests.

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