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Preference of mHealth versus in-person treatment for depression and post-traumatic stress disorder in Kenya: demographic and clinical characteristics

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ABSTRACT

Objectives We conducted an implementation science mental health treatment study in western Kenya, testing strategies for scale up of evidence-based mental health services for common adult disorders using a non-specialist workforce, integrated with existing primary care (Sequential Multiple, Assignment Randomized Trial of non-specialist-delivered psychotherapy (Interpersonal Psychotherapy) and/or medication (fluoxetine) for major depression and post-traumatic stress disorder (PTSD) (SMART DAPPER)). Because study launch coincided with the COVID-19 pandemic, participants were allowed to attend treatment visits via mHealth (audio-only mobile phone) or in-person. We conducted a secondary data analysis of the parent study to evaluate preference for mHealth or in-person treatment among our study participants, including rationale for choosing in-person or mHealth treatment modality, and comparison of baseline demographic and clinical characteristics.

Design, setting, participants and interventions Participants were public sector primary care patients at Kisumu County Hospital in western Kenya with major depression and/or PTSD and were individually randomised to non-specialist delivery of evidence-based psychotherapy or medication (n=2162).

Outcomes Treatment modality preference and rationale were ascertained before randomised assignment to treatment arm (psychotherapy or medication). The parent SMART DAPPER study baseline assessment included core demographic (age, gender, relationship status, income, clinic transport time and cost) and clinical data (eg, depression and PTSD symptoms, trauma exposures, medical comorbidities and history of mental healthcare). Given that this evaluation of mHealth treatment preference sought to identify the demographic and clinical characteristics of participants who chose in-person or mHealth treatment modality, we included most SMART DAPPER core measurement domains (not all subcategories).

Results 649 (30.3%) SMART DAPPER participants preferred treatment via mHealth, rather than in person. The most cited rationales for choosing mHealth were affordability (18.5%) (eg, no transportation cost) and convenience (12.9%). On multivariate analysis, compared with those who preferred in-person treatment, participants who chose mHealth were younger and had higher constraints on receiving in-person treatment, including transport time 1.004 (1.00, 1.007) and finances 0.757 (0.612, 0.936). Higher PTSD symptoms 0.527 (0.395, 0.702) and higher disability 0.741 (0.559, 0.982) were associated with preference for in-person treatment.

Conclusions To our knowledge, this is the first study of public sector mental healthcare delivered by non-specialists via mHealth for major depression and/or PTSD in Sub-Saharan Africa. Our finding that mHealth treatment is preferred by approximately one-third of participants, particularly younger individuals with barriers to in-person care, may inform future mHealth research to (1) address

STRENGTHS AND LIMITATIONS OF THIS STUDY

⇒ A strength of this study is its large sample size: the parent project (Sequential Multiple, Assignment Randomized Trial of non-specialist-delivered psychotherapy (Interpersonal Psychotherapy) and/or medication (fluoxetine) for major depression and post-traumatic stress disorder) was a randomised mental health treatment trial in western Kenya, testing strategies for scale up of evidence-based mental health services with over 2000 participants.

⇒ A limitation of this study is that treatment modality (audio-only mobile phone (mHealth) or in-person) was not randomised, given public health and ethical considerations during the COVID-19 pandemic.

⇒ A limitation was that treatment modality preference was ascertained at baseline, prior to treatment assignment and therefore does reflect the effect of treatment type (psychotherapy or medication) on mHealth preference, nor potential changes in modality preference across the course of treatment.

knowledge gaps in mental health service implementation and (2) improve mental healthcare access to evidence-based treatment.
Trial registration number NCT03466346.

BACKGROUND

Beginning more than a decade ago, studies in high-income countries (HICs) established the efficacy of telephone psychotherapy, compared with in-person care for major depression and post-traumatic stress disorder (PTSD).[1–6] Telepsychiatry management of common outpatient medications also has a solid evidence base in HICs.[4–7] With the COVID-19 pandemic, the infection risk of meeting in-person, and massive mental healthcare needs, digital strategies in HICs developed rapidly and individual treatment became more commonly delivered using video technology via internet-connected smartphone or computer (eg, 'Zoom').

However, the majority of the global population in need of mental health services reside in low-income and middle-income countries (LMICs), often in locations where 'flip' mobile phones without cameras are widely available, but smartphones or computers with internet and video capabilities are not. Delivery of mental health treatment via mobile phone (audio) is understudied in most LMICs. The research gap is compelling in Sub-Saharan Africa (SSA) where mobile phone prevalence is high.[8–17] Given the scarcity of mental health providers in the public sector, largely rural patient populations,[18] expense of transport and the high burden of disorders which respond well to audio-only phone treatment (eg, depression, anxiety), testing delivery of mental health treatment by mobile phone is a key implementation research gap in SSA.

Accelerated by the COVID-19 pandemic, digital mental health services are gaining traction in Kenya. National programmes currently provide psychosocial advice to the public, and a call centre to support psychosocial needs among healthcare workers.[19] The Kenyan Ministry of Health also developed tele-mental health guidelines delineating standardised best practices for remote mental health services, such as mental health apps, testing and assessment, legislative and regulatory framework and ethical issues, capacity building and supervision, emergency planning and handling of suicidal patients.[20] Yet, knowledge is lacking on the preference for evidence-based, digital mental health treatments for common disorders among Kenyan public sector primary care patients, who make up the majority of those in need of care.

The Sequential Multiple, Assignment Randomized Trial (SMART) of non-specialist-delivered psychotherapy (Interpersonal Psychotherapy (IPT)) and/or medication (fluoxetine) for major depression and PTSD (DAPPER) (SMART DAPPER) project evaluates randomised, non-specialist delivery of evidence-based mental health treatments (psychotherapy and medication) for depression and PTSD among public sector primary care patients, including optional mHealth delivery.[21] We conducted a secondary analysis of SMART DAPPER data to examine rationale and characteristics of participants choosing mHealth. The specific aim of this study was to use baseline data from SMART DAPPER to quantify preferences and identify demographic and clinical characteristics of those who prefer mHealth versus in-person treatment. To our knowledge, these are the first data to examine preferences for audio-only mobile phones compared with in-person mental healthcare delivered by non-specialists for major depression and/or PTSD in SSA.

METHODS

Study design and population

As detailed in our published protocol,[21] SMART DAPPER participants were public sector primary care outpatients at a large referral hospital in western Kenya (Kisumu County Referral Hospital) who met study screening criteria for Major Depression, PTSD or both using the Mini International Neuropsychiatric Interview. Using a SMART design, participants were randomised to non-specialist treatment with IPT or fluoxetine (non-specialist prescriber), and those who were not in remission after first-line treatment were rerandomised to the second line—switch of treatment or combination (IPT+fluoxetine). Participants who were in remission after first-line treatment remain in the study for clinical assessment and do not undergo second-line treatment.

Given public health safety concerns in the context of the COVID-19 pandemic, we delayed study initiation to incorporate a mHealth treatment delivery option (audio-only mobile phone). We allowed participants to choose whether they preferred to attend treatment visits in-person or via mHealth. Treatment modality preference and rationale were ascertained a baseline, before randomised assignment to treatment arm (psychotherapy or medication) and participants were allowed to alternate between treatment modalities, as needed. This study is a secondary data analysis using baseline assessments from SMART DAPPER.

Recruitment, inclusion/exclusion criteria and baseline measures

Participants were locally recruited and screened onsite or by phone. Eligible participants were 18 years or above, met criteria for major depression and/or PTSD and were able to attend study treatment visits. Participants were excluded from the study and referred for higher level care as needed if they were currently taking fluoxetine medication, undergoing outside mental health treatment, were pregnant, breastfeeding, or screened positive for alcohol or drug use disorder, acute suicidality, current/past mania/hypomania or cognitive dysfunction compromising the ability to participate. See table 1 for listing of the study's inclusion/exclusion criteria and baseline measures. Given the number of psychometric and clinical studies with cross validation between measures that have been conducted in SSA, East Africa and Kenya using

Table 1 Study measures

Inclusion	
Major depressive episode[38]	
Post-traumatic stress disorder (PTSD)[38]	
Exclusion—referral	
Alcohol use disorder	Alcohol Use Disorders Identification Test,[39] score of 8 or more
Drug use disorder	Drug Abuse Screening Test,[40] score of 3 or more
Mania/hypomania	Mood Disorders Questionnaire,[41] positive score
Suicidality	Ask Suicide Screening Questions,[42] positive score
Pregnancy or breastfeeding	Self-report
Baseline demographic measures	
Age, gender, education, relationship status, income and school-aged dependents*, transport (to clinic) time and cost	
Baseline clinical measures	
Depression symptoms (primary outcome)	Beck Depression Inventory[43]
PTSD symptoms (primary outcome)	Posttraumatic Stress Checklist[44]
Intimate partner violence	Revised Conflict Tactics Scale[45]
Trauma history	Trauma History Questionnaire[46]
Mental health treatment history (Y/N)	NA
Medical comorbidities	Mental health relevant and/or high-prevalence local comorbidities assessed: HIV, tuberculosis, syphilis, diabetes, high blood pressure, hypothyroidism, hyperthyroidism

Not Applicable (NA)

*Non-payment of school fees is an indicator of economic strain in this population.

these tools, including previous studies by our team,[22–24] additional psychometric validation studies for Kisumu primary care populations were not conducted as part of the SMART DAPPER project. All measures were translated into local languages (Luo and Kiswahili) as part of our previous studies in the region, using a standardised process of measure adaptation and translation.[24–28]

Sample size and data collection

As a secondary data analysis, this study does not have a sample size calculation distinct from that of the main trial.[21] Data for questionnaires were collected by study personnel using the REDCap mobile app installed on tablets and synced to the REDCap online secure server at the end of each day. At baseline, the following demographic data were obtained (table 1): age, gender, education, relationship status, income and transport time/cost. Baseline clinical measures (table 1) included depression symptoms (BDI), PTSD symptoms (Posttraumatic Stress Checklist (PCL)), medical comorbidities, intimate partner violence (IPV), lifetime trauma history and history of mental health treatment. During the baseline clinical evaluation, participants are asked if they would prefer that study treatments be conducted by phone or on-site at the health facility. After indicating a preference, participants were asked for their rationale, using a list of possible reasons and asked to select all that apply and/or provide other reasons.

Data analysis

The SMART DAPPER project collected demographic and clinical data that can be readily obtained in a busy Kenyan public sector primary care setting and is relevant to the prediction of treatment response. Given that this secondary analysis sought to identify baseline demographic and clinical characteristics associated with treatment modality preference, we included most SMART DAPPER study measures. For demographic and clinical variables, we included all core domains collected by the study but not all subcategories (eg, overall income, but not income type—farming, wages; overall presence of IPV but not type—physical, sexual, emotional). Note that payment of school fees was included as a separate economic measure because it is a marker of high economic strain in the region.[29]

We categorised participant responses in separate tables, according to their stated preference of telephone (table 2) or in-person at the study site (table 2). We summarised baseline demographic characteristics (table 3) and clinical characteristics (table 4) by treatment site preference and compared groups using χ^2 or Mann-Whitney tests. Variables significantly associated with preference of telephone or in-person treatment ($p<0.05$ in a univariate model) were entered into a multiple logistic regression. We then used backward elimination (removing variables with $p>0.05$) to arrive at a final model. We used this final model to report ORs and 95% CIs.

Table 2 Treatment modality preference: rationale

Prefer treatment by audio-only mobile phone (mHealth) (30.3% (n=649/2142))	
Advantages (one or more)	By phone (n=361)
Affordability (no transport cost)	401 (18.5%)
Convenience	279 (12.9%)
No travel time	106 (4.9%)
Privacy and confidentiality	26 (1.2%)
COVID-19 pandemic	20 (0.9%)
Other reasons	7 (0.3%)
Prefer treatment in-person at study site (69.7% (n=1493/2142))	
Advantages (one or more)	
Prefer in-person connection	1108 (51.2%)
Poor network coverage	230 (10.6%)
Confidentiality and privacy concerns	323 (14.9%)
Lack/poor phone access (lack of phone or shared phone)	75 (3.5%)
Convenient location	18 (0.8%)
Cost to charge phone	13 (0.6%)
Other reasons	18 (0.8%)

Patient and public involvement

The Implementation Resource Team (IRT) was a group of key stakeholders who facilitated the implementation of the parent study (SMART DAPPER). The IRT included patients and many members of the public, including local healthcare providers, clinic staff, health policy and community leaders, regional stakeholders and national mental health policy experts. The study team shared findings with the IRT via annual and interim smaller group meetings, seeking IRT feedback and adjusting the study accordingly to optimise its likelihood of sustainability and scale-up, without changing overall scientific goals.

RESULTS

2162 participants were enrolled between 3 September 2020 and 15 October 2021. Prior to treatment randomisation, treatment modality preference was ascertained from 2142 participants (missing data for 20 participants): table 2. Approximately 30% of participants expressed a preference for treatment delivered by audio-only mobile phone, rather than in-person at the study site. The top three reasons for choosing mHealth were affordability (no transport cost), convenience and no travel time. 69.7% expressed a preference for in-person care at the study site, with the top three reasons including a preference for in-person connection, poor network connection at residence and confidentially concerns with mHealth (eg, lack of access to a private space at home).

Study participants (table 3): the majority of study participants were women (90.5%) in their mid-30s, who were married and had primary or secondary education. Slightly over half earned a monthly income and the majority had one or more children in school. Transport time to the study site averaged approximately 40 min and the majority reported a transport cost of less than 300 KSH (US$2.00 at the time of printing).

Comparison of sample characteristics (table 3): there were no differences between those who preferred mHealth versus in-person/onsite treatment with regard to gender, income or cost of transport to the facility. Compared with those who preferred in-person treatment at the study site, mHealth preference was associated with being younger, having higher education, being single, not being parents, not paying school fees on time, and longer time to the facility.

Clinical characteristics (table 4): at baseline, nearly 50% of participants had major depression (no PTSD); approximately 4% had PTSD (no MD). Nearly half had both major depression and PTSD (table 4). Approximately 1% of participants had received any (lifetime) previous mental healthcare. HIV prevalence was nearly 40%, consistent with local data.[30] Two-thirds of participants had experienced two or more types of traumatic life events (eg, physical or sexual assault, crime, general disaster). 60% of partnered participants had ever experienced IPV. Disability averaged in the 'moderate' range.

Comparison of clinical characteristics (table 4): compared with those who preferred in-person treatment at the study site, mHealth preference was associated with having major depression (alone), not having PTSD (alone) and not having comorbid major depression and PTSD. Overall, mHealth was preferred by those with lower depressive and PTSD symptoms, less lifetime trauma and lower disability. There were no differences between those who preferred in-person and mHealth with regard to HIV or other medical comorbidities, IPV or health-related work impairment.

Demographic and clinical multivariate analyses (table 5): we evaluated significant demographic and clinical correlates of mHealth treatment in a multivariate model and found that, compared with in-person treatment preference, it remained associated with younger age, longer time to reach clinic and not paying school fees on time. In-person treatment preference was associated with higher PTSD symptoms and disability.

DISCUSSION

Principal findings

Baseline data from the SMART DAPPER study provides insight on proportions, as well as the demographic and clinical characteristics of participants who preferred non-specialist treatment for major depression and/or PTSD via mHealth or in-person services at a public sector primary care clinic.

mHealth non-specialist mental health treatment for public sector primary care patients: at baseline, approximately one-third of study participants expressed a preference for

Table 3 Treatment modality preference: baseline demographics

	In-person on site (n=1493) Mean or no. (SD or %) (range)	mHealth (n=649) Mean or no. (SD or %) (range)	Total (n=2142) Mean or no. (SD or %) (range)	P value
Age				
Age in years (mean±SD (N))	36±10.9 (18–85)	34.8±11.2 (18–75)	35.7±11 (18–85)	0.0039*
Gender				
Male	149 (10.0%)	54 (8.3%)	203 (9.5%)	0.23†
Female	1344 (90.0%)	595 (91.7%)	1939 (90.5%)	
Highest education				
None	24 (1.6%)	10 (1.5%)	34 (1.6%)	0.020†
Primary	798 (53.4%)	306 (47.1%)	1104 (51.5%)	
Secondary	545 (36.5%)	257 (39.6%)	802 (37.4%)	
College/certificate/ diploma/degree/ postgrad	126 (8.4%)	76 (11.7%)	202 (9.4%)	
Relationship status				
Currently married	711 (47.6%)	304 (46.8%)	1015 (47.4%)	0.041†
Separated	334 (22.4%)	134 (20.6%)	468 (21.8%)	
Widowed	240 (16.1%)	89 (13.7%)	329 (15.4%)	
Never married	181 (12.1%)	110 (16.9%)	291 (13.6%)	
Divorced	19 (1.3%)	6 (0.9%)	25 (1.2%)	
Cohabiting	8 (0.5%)	6 (0.9%)	14 (0.7%)	
Income and school-aged dependents				
Participants who earned monthly income	823 (55.1%)	350 (53.9%)	1173 (54.8%)	0.61†
Average monthly income (KSH)	2280±4800 (0–3000)	2070±3850 (0–3000)	2220±4530 (0–3000)	0.40*
Number of participants who are parents of at least one child in school	1019 (68.3%)	414 (63.8%)	1433 (66.9%)	0.044†
Paid school fees on time for one or more child	485 (32.5%)	169 (26.0%)	654 (30.5%)	0.0029†
Transport to facility				
Time to reach health facility (minutes)	37±24.7 (30–45)	39.8±28.4 (30–45)	37.8±25.9 (30–45)	0.027*
Cost to reach health facility				
No cost	94 (6.3%)	40 (6.2%)	134 (6.3%)	0.22†
1–99 KSH	819 (54.9%)	326 (50.2%)	1145 (53.5%)	
100–299 KSH	526 (35.2%)	250 (38.5%)	776 (36.2%)	
300–499 KSH	46 (3.1%)	27 (4.2%)	73 (3.4%)	
500 KSH or more	8 (0.5%)	6 (0.9%)	14 (0.7%)	

*Based on Mann-Whitney test.
† Based on χ^2 test.
KSH, Kenyan Shillings.

Table 4 Treatment modality preference: baseline clinical characteristics

	In-person on site (n=1493) Mean or no. (SD or %) (range)	mHealth (n=649) Mean or no. (SD or %) (range)	Total (n=2142) Mean or no. (SD or %) (range)	P value
Baseline diagnosis(es) (MINI)				
Major depression (alone)	699 (46.8%)	336 (51.8%)	1035 (48.3%)	0.046‡
PTSD (alone)	70 (4.7%)	20 (3.1%)	90 (4.2%)	
Major depression and PTSD	724 (48.5%)	293 (45.1%)	1017 (47.5%)	
Baseline symptoms				
Depression symptoms (BDI II)	29.5±10.5 (0–60)	27.6±10.1 (1–60)	28.9±10.4 (0–60)	<0.0001†
PTSD symptoms (PCL-5)	44.9±17.6 (0–80)	40.0±16.1 (0–80)	43.4±17.3 (0–80)	<0.0001†
Received any past mental healthcare	18 (1.2%)	5 (0.8%)	23 (1.1%)	0.37‡
Documented comorbidities				
HIV	591 (39.6%)	253 (39.0%)	844 (39.4%)	0.79‡
Other comorbidities*	133 (8.9%)	61 (9.4%)	194 (9.1%)	0.72‡
Lifetime trauma events (THQ) crime, sexual/physical assault, disaster				
0	107 (7.2%)	65 (10.0%)	172 (8.0%)	0.044‡
1	402 (26.9%)	179 (27.6%)	581 (27.1%)	
2	669 (44.8%)	257 (39.6%)	926 (43.2%)	
3 or more	315 (21.1%)	148 (22.8%)	463 (21.6%)	
Intimate partner violence				
Intimate partner violence among partnered participants (ever)	448 (58.1%)	206 (61.3%)	654 (59.1%)	0.32‡
Average Disability Score (WHODAS)	19±17.6 (0–96)	16±14.4 (0–75)	18.1±16.7 (0–96)	0.0084†
Average days in the past month partially or completely unable to work	7.88±10.4 (0–14)	7.81±10.1 (0–14)	7.86±10.3 (0–14)	0.59†

*HIV, tuberculosis, syphilis, diabetes, high blood pressure, hypothyroidism and hyperthyroidism.
†Mann-Whitney test.
‡χ^2 test.
BDI, Beck Depression Inventory; MD, major depression; MINI, Mini International Neuropsychiatric Interview; PCL-5, Posttraumatic Stress Checklist; PTSD, post-traumatic stress disorder; THQ, Trauma History Questionnaire; WHODAS 2.0, World Health Organization Disability Assessment Schedule 2.0.

receiving mental healthcare via mHealth. The proportion of participants who opted for mHealth treatment is particularly impressive given that outpatient mental healthcare for depression and trauma-related disorders, even in a traditional in-person format, is extremely scarce in the region. Thus, participants who selected mHealth treatment typically agreed to medical treatment and delivery methods that were both unknown to them. It is possible that concerns about contracting COVID-19 at the study site, a public sector hospital, motivated participants to express a preference for mHealth beyond what would be seen outside of the pandemic. However, we note

Table 5 Preference for mHealth treatment: multivariate logistic model (n=2142)

	OR (CI)	P value
Demographic variables		
Age (compared with lowest quartile)		
18–27	1.00	
28–34	0.798 (0.619, 1.029)	
35–42	0.667 (0.508, 0.877)	0.004
43–85	0.744 (0.571, 0.968)	0.028
Time to clinic	1.004 (1.000, 1.007)	0.036
School fees paid on time	0.757 (0.612, 0.936)	0.010
Clinical variables		
PTSD symptom score* (compared with lowest quartile)		
0–31	1.00	
32–42	0.944 (0.731, 1.218)	
43–56	0.944 (0.730, 1.221)	
57–80	0.527 (0.395, 0.702)	<0.0001
Health disability—highest quartile compared with lowest	0.741 (0.559, 0.982)	0.037

*PTSD Checklist for DSM-5 (PCL-5).
DSM-5, Diagnostic and Statistical Manual of Mental Disorders Version 5; PCL-5, Posttraumatic Stress Checklist; PTSD, post-traumatic stress disorder.

that only 0.9% of participants cited COVID-19-related concerns as the rationale for their choice of mHealth treatment (table 2).

mHealth/in-person treatment—preference rationale and demographics: participants cited affordability, convenience and travel time as the top three reasons for selecting mHealth. Younger age was associated with a preference for mHealth. This may reflect a generational difference, with younger participants having greater trust in mobile technology communications and/or more 'everyday' reliance on mobile phones for interpersonal contact than older participants.

mHealth/in-person treatment—clinical characteristics: depression and PTSD symptoms were significantly lower among those who selected mHealth versus in-person care.

Multivariate model combining demographics and clinical characteristics: we created a multivariate model to evaluate the independent effect of significant demographic and clinical factors. Younger age, higher obstacles to in-person care and economic challenges remained associated with mHealth, while higher PTSD symptoms and disability were associated with in-person treatment preference. Given that 'in-person connection' was the top rationale for those selecting on-site care, it is possible that those who were more ill opted for onsite treatment based on a perception that in-person care would result in better connection and support from providers compared with mHealth. We note that social support is also a critical factor for recovery from PTSD.[31 32] Prioritising in-person treatment might increase social support and would be an adaptive response for participants with high PTSD symptoms.

Strengths and weakness of the study

A strength of this study is its large sample size. Treatment modality preference was ascertained at baseline, before participants knew their treatment assignment. Related weaknesses include (1) it is possible that treatment type (psychotherapy vs medication) could influence their choice of modality (mHealth or in-person)—these data would not be captured by our study and (2) consistent with studies of HIC populations,[33] it is likely that comfort with mHealth would increase across the course of treatment. This study does not evaluate changes in modality preferences during treatment.

Meaning of the study: possible explanations and implications for clinicians and policy-makers

The convenience and affordability of mHealth, obstacles to in-person care and severity of mental health symptoms and disability may lead participants to a 'cost-benefit' calculation favouring remote over in-person mental health treatment. Our data are consistent with HIC analyses showing that telemedicine appointments are preferred over in-person meetings for those who live further from the clinic and those with non-acute illness.[34] Studies in HICs suggest that patients with chronic illnesses and those seeking mental health treatment were less likely to miss telemedicine compared with in-person appointments.[35–37] While findings from such studies may not be generalisable to an LMIC setting using audio-only mobile phones, they may bolster the rationale for testing mHealth treatment to improve access to evidence-based mental healthcare for LMIC public sector primary care settings—populations with a high global burden of mental disorders.

CONCLUSIONS

In SSA, many populations have access to a 'flip' (audio only) mobile phone without video and live in rural areas that are distant from large health centres. This study examines baseline data from the SMART DAPPER trial of non-specialist treatment for depression and PTSD among adult public sector primary care patients in East Africa. We found that mobile audio-only phone delivered treatment is preferred over in-person meetings for some participants, particularly those of younger age with barriers to in-person care. These data suggest that testing non-specialist of delivery evidence-based mental healthcare by mobile phone may be an avenue of research with potential for addressing geographical, financial and human resource hurdles to improve mental health treatment access for the many young adults who need

mental health treatment in the region. Further research, including randomised controlled studies, are needed to compare the effectiveness of audio-only mobile phones with in-person mental health treatment in this region.

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Competing interests None declared.

Patient and public involvement Patients and/or the public were involved in the design, or conduct, or reporting, or dissemination plans of this research. Refer to the Methods section for further details.

Patient consent for publication Consent obtained directly from patient(s)

Ethics approval This study involves human participants and was approved by University of California San Francisco Institutional Review Board—18-24852 University of Nairobi Ethics and Research Committee—P344/05/2018. Participants gave informed consent to participate in the study before taking part.

Provenance and peer review Not commissioned; externally peer reviewed.

Data availability statement Data are available in a public, open access repository. The dataset's citation and availability is as follows: Meffert SA, Mathai M. Effectiveness Research for Common Mental Disorders in Low and Middle Income Countries: A sequential, multiple assignment randomized trial for non-specialist treatment strategies in Kenya. The National Institute of Mental Health Data Archive (NDA). October 7, 2024. doi:https//doi.org/10.15154/7126-mz58.

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