

1 A Scoping Review to Evaluate the Efficacy of Combining Traditional Healing and Modern Psychiatry
2 in Global Mental Health Care

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Abstract

Background: Traditional faith healers (TFHs) are often consulted for serious mental illness (SMIs) in low- and middle-income countries (LMICs). Involvement of TFHs in mental healthcare could provide an opportunity for early identification and intervention to reduce the mental health treatment gap in LMICs. **Aims:** To identify models of collaboration between TFHs and biomedical professionals, determine the outcomes of these collaborative models, and identify any mechanisms (i.e., explanatory processes) or contextual moderators (i.e., barriers and facilitators) of these outcomes. **Method:** A systematic scoping review of five electronic databases from inception to March 2023 guided by consultation with local experts in Nigeria and Bangladesh. Data were extracted using a predefined data charting form and synthesised narratively. **Results:** Six independent studies (eight articles) satisfied inclusion criteria. Study locations included Ghana (n=1), Nigeria (n=1), Nigeria and Ghana (n=1), India (n=1), Hong Kong (n=1), and South Africa (n=1). We identified two main intervention typologies: (1) western-based educational interventions for TFHs; and (2) shared collaborative models between TFHs and biomedical professionals. Converging evidence from both typologies indicated that education for TFHs can help reduce harmful practices. Shared collaborative models led to significant improvements in psychiatric symptoms (in comparison to care as usual) and increases in referrals to biomedical care from TFHs. Proposed mechanisms underpinning outcomes included trust building, and empowering TFHs by increasing awareness and knowledge of mental illness and human rights. Barriers to implementation were observed at individual (e.g., suspicions of TFHs), relationship (e.g., reluctance of biomedical practitioners to equalise their status with TFHs) and service (e.g., lack of formal referral systems) level. **Conclusions:** Research on collaborative models for mental healthcare is in its infancy. Preliminary findings are encouraging. To ensure effective collaboration, future programmes should incorporate active participation from community stakeholders (e.g., patients, caregivers, faith healers) and target barriers to implementation on multiple levels.

Keywords

Traditional faith healers; biomedical care; low-and middle-income countries; collaborative care; mental illness

Impact Statement

This systematic scoping review of collaborative models between biomedical and traditional practitioners highlights a significant gap in mental healthcare delivery, particularly in low- and middle-income countries (LMICs). By demonstrating the effectiveness of integrated approaches, this research contributes to a paradigm shift in mental health treatment, emphasising the importance of culturally sensitive practices. The findings underscore that collaboration between traditional healers and biomedical practitioners not only enhances treatment outcomes but also fosters trust and respect within communities. This research advocates for the adoption of such collaborative models on a broader scale, encouraging policymakers and healthcare systems to recognize and integrate traditional healing practices. Ultimately, this work aims to improve mental health access and reduce stigma, contributing to a more inclusive and holistic healthcare framework that could have far-reaching implications for mental health policy and practice globally.

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64

65 Introduction

66 Twelve percent of the global disease burden is due to mental and behavioural disorders (World
67 Health Organization 2001) and more than 70% of this is experienced in low- and middle-income
68 countries (LMICs) (Tomlinson 2013). The mental health treatment gap (i.e., the difference between
69 the number of people who need care and those who receive it) is between 80% and 93% in some
70 LMICs, (WHO World Mental Health Survey Consortium 2004, National Institute of Mental Health 2019
71) indicating that less than one in ten are able to access appropriate care. In most LMICs, public
72 mental health systems do not receive adequate investment, (Joarder et al., 2019) and of the overall
73 annual health budget, little is designated for mental health (World Health Organization 2020).

74 Help-seeking for serious mental illnesses (SMIs) in LMICs is pluralistic, with traditional and faith-
75 based healers (TFHs) often being the initial, and sometimes only, port of call (Lilford et al., 2020;
76 Farooq et al., 2023, Singh et al., 2023). Traditional or faith-based healing can alleviate mild symptoms
77 in mood and anxiety disorders and provide valued social and spiritual support, but very little evidence
78 exists that traditional practices improve care or outcomes for SMIs (Nortje et al., 2016; Van der Watt
79 et al., 2018). Crucially, reliance on traditional or faith-based systems can lead to harmful treatment
80 practices (i.e., physical restraint, beating, confinement; Esan et al., 2019) longer duration of untreated
81 psychosis (DUP), and poorer outcomes for people with psychotic illnesses (Lilford et al., 2020).

82 Limited availability of biomedical mental healthcare in LMICs coupled with concerns regarding harmful
83 treatment practices delivered by traditional healers indicates the need for collaborative models
84 between faith healers and the modern healthcare system to improve accessibility and reduce
85 fragmentation through models of integrated care (Green and Colucci 2020; Singh et al., 2023).
86 Indeed, there is evidence that a combined approach can be successful in the realm of physical health
87 problems including tuberculosis and HIV (Veling et al., 2019). Further, joining modern and traditional
88 approaches could help provide holistic care incorporating the patient's cultural framework (Saha et al.,
89 2021) including their spiritual and religious beliefs, which is an important element of mental healthcare
90 globally (Winsper et al., 2024).

91 We could not identify any extant reviews on components and/or outcomes of collaborative models for
92 mental healthcare; however, a recent systematic review considered traditional healers' and
93 biomedical practitioners' perceptions of collaborative mental healthcare in LMICs (Green and Colucci
94 2020). The authors identified fourteen studies (13 from Africa) and concluded that whilst TFHs and
95 biomedical practitioners had different conceptualisations of mental illness, they are willing to work
96 together to provide a holistic service. Building on this work, the aim of the current scoping review is to
97 explore the literature to identify intervention studies on collaborative care models between TFHs and
98 biomedical practitioners for mental illness.

99 Specifically, we aim to identify: (1) the types of available evidence; (2) typologies of collaboration
100 developed between TFHs and biomedical doctors; (3) outcomes of these collaborations; and 4)
101 potential mechanisms and contextual moderators underpinning reported outcomes.

102 Methods

103 We conducted a systematic scoping review as the literature on outcomes of collaborative
104 interventions has not been previously reviewed, and our initial exploration indicated a heterogenous
105 body of literature (Peters et al., 2015). The current review is part of our NIHR funded global mental
106 health project (TRANSFORM) to improve outcomes of people with serious mental illness in Nigeria
107 and Bangladesh (Singh et al., 2022), and will help inform an innovative collaborative care model
108 between TFHs and mental health professionals. As recommended by Peters et al. (2015) we
109 developed an *a priori* scoping review protocol in collaboration with local stakeholders from Nigeria and
110 Bangladesh. The protocol included details on objectives, methods, and proposed plans.

111 Eligibility criteria

112 The PICO model Miller and Forrest (2001) was applied as the search strategy tool for this scoping
113 review.

114 Population (P): We included studies that focused on participants from formal and informal settings
115 (e.g., formal: psychiatrists, CHWs, informal: traditional, faith, religious healers, drug sellers). We
116 defined healers as “healers who explicitly appeal to spiritual, magical or religious explanations for
117 disease and distress” (Nortje et al., 2016).

118 We excluded the qualitative viewpoint or outcomes from the perspective of the persons with lived
119 experience and their caregivers in order to focus on outcomes of potential interventions. This included
120 the effects of personal religiosity and spirituality, so-called distant healing where the patient is not
121 directly involved in the intervention, and western psychotherapies that incorporate religious elements.

122 Intervention (I): The intervention can include care provided by TFHs (under the definition of TFH as
123 given above). It can include any traditional or faith-based intervention provided by TFHs
124 independently or any evidence-based treatment on which traditional healers were trained by
125 biomedical/ mental health professionals, or any care provided by both traditional and biomedical
126 professionals in collaboration. However, studies were excluded if traditional healers provided any oral
127 or topical or nasal or inhaling herbal/ chemical/ substances for the management of common mental
128 illness.

129 We included interventions where a collaboration between the sectors didn't directly investigate patient
130 outcomes, but the collaboration aimed to improve TFHs knowledge, attitudes, and practices towards
131 mental health.

132 We included studies providing quantitative data on a treatment seeking population for mental
133 disorder, or quantitative data on TFH outcomes based on any collaboration with the biomedical
134 sector.

135 Comparison (C): We included all studies where there was a comparator for sample (population),
136 outcomes, and/or where the comparison was related to a change over time. We included studies
137 whose research questions fulfil the current reviews research questions irrespective of if the study was
138 a control or comparator.

139 Outcomes (O): We want to understand the primary and secondary outcomes of the above
140 interventions, what instruments were used and how this data was collected and for whom. Studies
141 were included if they provided quantitative data pertaining to the outcomes of a collaborative
142 intervention for mental illness. Regarding the third aim: We focused on qualitative studies
143 investigating the subjective opinions of participants (i.e., Informal, and formal staff) about collaborating
144 in the care of people with lived experiences.

145 Pilot studies, Pre-post studies, and randomised controlled trials were eligible for selection. Studies
146 had to be published, and peer reviewed to be included in the review. Studies were excluded however
147 if they reported duplicate data. Unpublished studies including dissertation and conference abstracts
148 were excluded. Review articles, qualitative studies (with no complementary quantitative data) were
149 also excluded from the review. To be included in the review, papers had to be written in English
150 language.

151 **Search strategy**

152 Following advice from the University's information specialist (SAJ), we searched MEDLINE ALL
153 (OVID, 1946 -), Embase (OVID, 1947 -), PsychInfo (OVID, 1806 -), CINAHL (EBSCO, 1981 -), Web
154 of Science (Clarivate, 1900 -) to 2nd March 2023, and subsequently ran an updated search from 2nd
155 March 2023 – 4th December 2024, combining the following three search strings: ("traditional healer"
156 OR "spiritual healer" OR "religious healer" OR diviner OR shaman OR "traditional practitioner") AND
157 ("healthcare professional" OR "healthcare worker" OR doctor OR psychiatrist OR nurse OR
158 psychotherapist) AND ("mental health" OR "mental disorder" OR "mental illness" OR "mental health
159 services" OR "mental healthcare" OR "serious mental disorder" OR "serious mental illness" OR
160 "severe mental illness" OR "severe mental disorder"). Reference lists of all selected articles were
161 searched for additional studies (including those providing additional details on interventions included in
162 the review). Our search strategy can be found in Supplementary Figures 1a and 1b.

163 **Study selection**

164 SJ screened all returned titles and abstracts to select full text articles based on the inclusion and
 165 exclusion criteria. Two researchers (SJ and OR) independently screened the full text articles for
 166 inclusion in the final review. Disagreements were independently discussed with a third researcher
 167 (RW).

168 **Data-charting process**

169 A data charting form was developed *a priori* to record details of the included studies. It included first
 170 author, year of publication, study location, study design, sample, main assessment tools, intervention
 171 description, main findings, potential mechanisms underpinning interventions and contextual
 172 moderators (i.e., implementation facilitators and barriers).

173 **Synthesis of results**

174 Studies were organised according to typology of intervention (i.e., educational approaches versus
 175 collaborative models) and results were presented in tables to assess whether there were any
 176 common outcomes, mechanisms, or moderators across studies to inform future intervention
 177 development.

178 **Results**

179 **Search results**

180 [Insert Fig 1 about here]

181

182 Fig. 1 summarises the search process. We identified 3,266 papers from five databases. After
 183 removing duplicates (n = 433), 2,833 papers were retrieved and screened on their title and abstract.
 184 Twenty-five papers were found to meet criteria at the full text screening stage. Following screening,
 185 seven articles were selected for inclusion in the final review. Agreement between reviewers for final
 186 full text inclusion was 96%. Authors discussed the reasons behind the discrepancy in selected
 187 articles, which related to the qualitative study design of one of the articles (Yaro et al., 2020). As this
 188 study pertained to one of the RCTs (Ofori-Atta et al., 2018) included in the review, the authors agreed
 189 to include the article to elicit additional information on intervention components, mechanisms and
 190 contextual moderators. An additional article (Shields et al., 2016) was identified through citation
 191 scanning of eligible studies. This article provided additional qualitative data on a study identified
 192 through the database search (Saha et al., 2021). Thus, there were 8 articles (6 independent studies)
 193 included in the final review.

194

195 **Study characteristics**

196 Table 1 provides an overview of study characteristics, intervention components and main results.
 197 Studies comprised a range of research designs including pre-post studies (n=2), cluster randomised
 198 controlled trial (n=1), randomised controlled trial (n=1), secondary analysis (n=1), mixed methods
 199 study (n=1), pilot study (n=1), and qualitative evaluation of a RCT (n=1). Some interventions focused
 200 on improving TFHs' mental health knowledge, practice, identification (Adelekan et al., 2001; Lam et
 201 al., 2016) and referral skills (Veling et al., 2019), others focused on the management of psychotic
 202 (Gureje et al., 2020) or schizophrenic/mood disordered (Ofori-Atta et al., 2018; Yaro et al., 2020;
 203 Saha et al., 2021) patients through collaborative models between traditional and biomedical
 204 practitioners. We categorised interventions into two broad typologies: (1) western-based information,
 205 education, and communication (IEC) interventions for TFHs, and (2) shared collaborative models
 206 between TFHs and biomedical professionals. It should be noted there was a degree of overlap
 207 between typologies (e.g., some collaborative models included training for traditional healers).

208 **Terminology**

209 Studies used different terms to describe traditional healers including traditional mental health
 210 practitioners (Adelekan et al., 2001), traditional faith healers (Ofori-Atta et al., 2018; Gureje et al.,
 211 2020), traditional Chinese medicine practitioners (Lam et al., 2016), faith-based healers (Saha et al.,

212 2021), traditional mental health practitioners (Veling et al., 2019), and spiritual healers (Yaro et al.,
213 2020). We retain these terms in our description of the studies below.

214 **Synthesis of results**

215 First, we present the main results of each study including components of interventions and outcomes
216 (Table 1). Next, we present any available data on potential mechanisms and contextual moderators of
217 the interventions (Table 2).

218 [Insert Table 1 about here]

219

220 **1) Western-based information, education, and communication (IEC) interventions for TFHs.**

221 Three studies evaluated interventions designed to train and/or educate traditional mental health
222 practitioners in western mental health principles and practices to increase awareness, knowledge,
223 identification, and referral skills. Two were pre-post designs (Adelekan et al., 2001; Lam et al., 2016),
224 and the third was a pilot study (Veling et al., 2019).

225 In a study from Nigeria, Adelekan and colleagues (Adelekan et al., 2001) assessed changes in
226 traditional mental health practitioners' (TMHPs) mental healthcare knowledge, practice and attitudes
227 after attending training sessions comprising modules on mental illness, treatment, and aftercare. Two
228 months after the training, TMHPs demonstrated significant improvements in the recognition of subtle,
229 yet important symptoms, including undue sadness and withdrawal. Further, they reported significant
230 reductions in beating as a form of treatment and increases in the use of occupational therapy as an
231 adjunct to treatment. The study suffered from considerable attrition with just 27/43 TMHPs completing
232 the follow-up assessments.

233 In a second pre-post study from Hong Kong (Lam et al., 2016), delivered a ten session Western
234 mental health training course to traditional Chinese medicine (TCM) practitioners. Post training,
235 confidence in recognising patients with psychological problems rose from 62.9% to 89.4%; diagnosing
236 common mental health issues rose from 47.7% to 77.5%; and managing mental health problems rose
237 from 31.2% to 64.3%. In qualitative responses, TCM practitioners observed how modern and
238 traditional approaches might work in tandem and their role in this partnership: *Diagnosis of mental*
239 *health problems and the side effects which occur after taking [western medicine] pills. I realise we can*
240 *give herbs or acupuncture to decrease [side effects] and make patients feel better (p.3).*

241 Veling and colleagues (Veling et al., 2019) conducted a pilot study to train 50 (out of a possible 200 in
242 the area) traditional faith healers (TFHs) to identify and refer recent onset psychosis cases as part of
243 a study on the incidence, course, and treatment of psychotic disorders in a rural South African
244 community. In addition to engaging with TFHs to develop a 'mutual understanding' of traditional and
245 biomedical concepts of psychosis, they developed a method for screening and referral for TFHs. Over
246 a 6-month period, TFHs referred 149 clients with suspected recent-onset psychosis to the research
247 team. The positive predictive value (PPV) of the TFHs' "disturbed" rating was 53.8% compared to a
248 PPV of just 17.2% for those rated as "maybe disturbed." The authors concluded that TFHs can
249 recognise recent onset psychosis, though a full evaluation (including specificity and sensitivity of
250 referrals) was not possible in this preliminary study.

251 More recently, Ben Zeev and colleagues (Ben Zeev et al., 2024) used a mobile app to provide brief
252 psychosocial interventions to healers, to encourage them to maintain human rights in their practice,
253 and prompt them to monitor the status of their patients. The psychoeducation provided included
254 guided relaxation techniques, rapport building, verbal de-escalation, challenging dysfunctional beliefs
255 about psychiatric symptoms and protecting the human rights and dignity of patients. The intervention
256 was delivered as brief digital animations or audio recordings with easy access to all psychoeducation
257 contents. Overall, the authors reported a significant and clinically meaningful reduction in psychiatric
258 symptom severity, psychological distress and shame at post treatment. Participants reported
259 significantly reduced internalised stigma regarding their mental health conditions post treatment.
260 Importantly, authors also reported a significant reduction in days chained at post treatment.

261 **2) Shared collaborative models between TFHs and biomedical professionals.**

262 Three studies assessed shared collaborative models of care. In the first of two randomised controlled
 263 trials (COSIMPO study; (Gureje et al., 2020) tested the effectiveness of a manualised collaborative
 264 care model for patients with psychotic disorders in Ghana and Nigeria. The intervention involved
 265 traditional faith healers (TFHs) and primary health care workers (PHCWs) working together to provide
 266 care for people admitted to the facilities of the TFHs. The PHCWs provided clinical support to respond
 267 to the medical (psychotic and physical) needs of the patients, and to improve service through
 268 interactions with the TFH, patient, and caregivers. The control condition comprised enhanced care as
 269 usual provided by the TFH, (e.g., herbs, rituals, prayer). Due to ethical considerations, TFHs in both
 270 the intervention and control groups received training which included information on the dangers of
 271 harmful practices and how to avoid them. Patients in the intervention group experienced significantly
 272 greater improvements in psychosis symptoms and evidenced significantly less disability compared to
 273 the control group. Both intervention and control groups experienced significant reductions in harmful
 274 practices.

275 The second RCT examined the efficacy of combining a psychotropic drug intervention with faith
 276 healing in a prayer camp in Ghana over a 6-week period (Ofori-Atta et al., 2018; Yaro et al., 2020).
 277 Mindful of ethical challenges, the researchers made efforts to reduce human rights abuses through
 278 education of staff and case by case review and comment to ensure that the study provided benefits to
 279 all residents in the sanatorium. At six weeks, patients in the experimental group (psychiatric care plus
 280 prayer camp treatment) reported significantly lower psychiatric symptoms compared to those
 281 receiving prayer camp treatment alone. However, there was no significant difference in number of
 282 days in chains in either group (hours in chains was not measured). In a qualitative evaluation of this
 283 trial (Yaro et al., 2020) traditional healers reported enhanced knowledge about mental health and
 284 illness, human rights, and increased collaboration between formal and informal health care providers:
 285 *The training was very helpful. It increased my knowledge about mental illness and the need to*
 286 *collaborate with hospital (p.4)* (Yaro et al., 2020).

287 In a multi-method study (i.e., secondary analysis of case records; qualitative interviews) from Gujarat,
 288 India, researchers developed a collaborative model of mental health care comprising modern
 289 medicine (“Dava”) and traditional faith healing (prayer: “Dua”) (Shields et al., 2016; Saha et al., 2021).
 290 Faith based healers (FBHs) from the Mira Datar *dargah* (shrine) and allopathic mental health
 291 practitioners (AMHPs) worked together in partnership to deliver mental healthcare to the rural
 292 community. AMHPs started a psychiatric outpatient clinic in the *dargah* where FBHs treated patients
 293 with rituals. FBHs referred patients they suspected to have mental health problems to the psychiatric
 294 clinic for diagnosis, treatment, and counselling. Equally, AMHPs could refer patients back to the
 295 FBHs if they felt problems could be addressed through spiritual rituals.

296
 297 Clients with more severe mental health problems were referred to the government run psychiatric
 298 hospital in the city. A total of 7,149 patients visited the Dava-Dua centre between July 2008 and
 299 March 2018. Over a 5-year period (2008-2013), FBHs referred 57.9% of clients receiving care;
 300 however, referrals from FBHs have declined over time to 37%, whilst referrals from friends and
 301 relatives have increased (Saha et al., 2021). Qualitative interviews indicated an appreciation for a
 302 holistic approach within the Dava-Dua: *I had a perception that... people get cured only by getting*
 303 *medicines. But once I started working here, I realized that it was not only the medicines working, but it*
 304 *is the faith and support of others which is making it work (AMHP, p.382).*

305
 306 Ben Zeev and colleagues included a mobile nurse alongside their mobile app intervention to provide
 307 pharmacotherapy to monitor patients at a prayer camp in Ghana (Ben Zeev et al., 2024). At the initial
 308 visit to the prayer camp, 15 participants consented to receiving pharmacotherapy. The nurse was able
 309 to assess, provide pharmacotherapy to, and monitor patients weekly. Overall, 110 medication follow-
 310 up visits were conducted by the mobile nurse. The intervention proved to be safe and helped to
 311 promote better care in the prayer camp (i.e., some participants were referred to the district hospital as
 312 they were identified as requiring immediate medical attention).

313

314 Potential mechanisms and contextual moderators of intervention outcomes

315 Table 2 outlines proposed mechanisms and contextual barriers and facilitators underpinning
316 intervention outcomes.

317

[Insert Table 2 about here]

318

319 The proposed mechanisms underpinning successful collaboration included building trust, respect and
320 rapport (Shields et al., 2016; Veling et al., 2019); empowering TFHs (Lam et al., 2016; Shields et al.,
321 2016) by increasing awareness and knowledge of mental health problems and human rights
322 (Adelekan et al., 2001; Lam et al., 2016; Ofori-Atta et al., 2018; Ben Zeev et al., 2024); highlighting
323 the complementary aspects of both modern and traditional systems (Shields et al., 2016); and
324 cultivating mutual understanding and unified goals through a collaborative approach (Lam et al., 2016;
325 Shields et al., 2016). For instance, Adelekan supported a group of healers through a comprehensive
326 training program which increased their knowledge, attitudes and practice.

327 Moderators (barriers and facilitators) of outcomes were observed at the individual, relationship, and
328 service level (Yaro et al., 2020). For instance, reductions in psychiatric symptoms and harmful
329 practices were potentially driven by knowledge about mental health and illness & human rights and
330 through an increased collaboration between medical practitioners and healers by creating an
331 atmosphere of mutual understanding through respectful exchange of ideas.

332 With regards to barriers, TFHs were suspicious of biomedical practitioners, and felt that they posed a
333 threat to their livelihood (Adelekan et al., 2001; Saha et al., 2021). Biomedical practitioners, in turn,
334 were apprehensive of working with TFHs due to differences in perceived status, and some were
335 reluctant to equalise their status with TFHs (Shields et al., 2016). Studies noted a gap in the
336 understanding of mental illness and associated terms (i.e., religious versus biomedical understanding)
337 (Lam et al., 2016; Ofori-Atta et al., 2018). In terms of service level barriers, participants highlighted a
338 lack of formal referral systems for TFHs to refer to biomedical practitioners (Lam et al., 2016), limited
339 time available to understand the patient's background (Lam et al., 2016), incomplete integration of
340 medical teams within the traditional setting (Ofori-Atta et al., 2018), and a shortage of psychiatric
341 medications (Yaro et al., 2020).

342 Several contextual facilitators were identified throughout the studies including: (1) the provision of
343 incentives (e.g., health insurance available to all sanatorium residents) (Shields et al., 2016; Yaro et
344 al., 2020; Ben Zeev et al., 2024). In studies where incentives were provided, there also appeared to
345 be improvements in patient mental health symptoms; (2) creating an atmosphere of openness (e.g.,
346 not a western dominant attitude) (Lam et al. 2016; Yaro et al., 2020) led to increased confidence in
347 healers ability to recognise mental health conditions in patients and increased belief in biomedical
348 services; (3) the adaptation of procedures to socio-cultural norms (e.g., pathways to care, treatment
349 options, explanatory models, and idioms of distress) (Veling et al., 2019) leading to increased referral
350 to biomedical services by healers.

351 Moreover, deploying modern mobile methods for collaboration highlights the importance of using
352 technology for prompting (i.e., reminding healers to check the mental health status of their patients),
353 providing daily training/information via an app ensuring that the method of learning is appropriate to
354 modern day life of healers and allows them to access the information where and when they want. As
355 Ben Zeev and colleagues show (Ben Zeev et al., 2024), their dual pronged intervention of providing
356 psychoeducation through an app and supporting pharmacological treatment with a mobile nurse at a
357 prayer camp in Ghana, significantly reduced severity of psychiatric symptoms, psychological distress,
358 feelings of shame and stigma, alongside a reduction in harmful practices (i.e., chaining and forced
359 fasting).

360 Discussion

361 We completed a systematic scoping review of studies investigating the outcomes of collaborative
362 models between biomedical and traditional practitioners. We identified very few studies, and there

363 were only two using randomised controlled methods. Broadly speaking we identified two main
364 approaches: those comprising training or educational programmes for traditional healers, and those
365 combining biomedical and traditional approaches in a collaborative care model.

366 Reflective of methodological approach, we found that shared collaborative models demonstrated the
367 strongest evidence. Two RCT studies reported significantly greater improvements in psychiatric
368 symptoms for patients receiving the intervention (biomedical plus traditional approaches) compared to
369 those receiving the control treatment (traditional approaches alone) (Ofori-Atta et al., 2018; Gureje et
370 al., 2020). What we cannot ascertain from these two studies is how the intervention would have
371 compared to biomedical treatment alone. A non-experimental mixed methods study also indicated
372 that collaboration between modern medicine and faith based treatment can benefit patients,
373 especially those with limited access to mental health care (Saha et al., 2021). Collaborative models
374 shared commonalities including the administration of psychiatric medication and counselling (Shields
375 et al., 2016) within a traditional setting (i.e., TFH facilities, prayer camp, shrine) and the provision of
376 training, education and/or supervision for TFHs. As TFHs are often the first point of contact for people
377 in LMICs (especially rural areas) (Singh et al., 2023) locating collaborative models within traditional
378 settings appears key to the success of these programmes.

379 There were no significant differences in reductions in harmful practice between intervention and
380 control groups in both RCTs. In one of the RCTs, harmful practices were significantly reduced in *both*
381 intervention and control groups (Gureje et al., 2020). Due to ethical concerns, TFHs were trained and
382 closely monitored in both control and intervention groups in this study. This indicates that healers can
383 be trained (and supervised) to reduce the use of harmful practices. This observation is bolstered by
384 the findings of Adelekan et al. (2001) in which an educational program on mental health knowledge
385 and practice for faith healers led to a significant reduction in (self-reported) beating as a form of
386 treatment. It is curious that there was no reduction in chaining in the second RCT following the
387 intervention (Ofori-Atta et al., 2018). Potential reasons included incomplete integration of the medical
388 team into decision making, the need for more intensive training on human rights and the dangers of
389 harmful practice, and lack of sensitivity of outcome measures (i.e., days in chains rather than hours in
390 chains measured) (Ofori-Atta et al., 2018). As harmful practices within faith based approaches are
391 viewed as one of the main barriers to collaboration between biomedical and faith-based services
392 (Shields et al., 2016), more work is needed to understand what might enhance or impede a rights-
393 based approach by TFHs, including collaboration rather than condemnation of FBHs (Shields et al.,
394 2016).

395 Our exploration of the potential mechanisms and moderators (i.e., facilitators and barriers) of
396 intervention effects highlighted several important considerations for researchers when developing
397 collaborative approaches. First, when developing collaborative models or educational programmes, it
398 is crucial to invest time in building rapport and establishing trust with communities and their leaders
399 (Veling et al., 2019; Saha et al., 2021). Across studies, it was evident that building trust is a pre-
400 requisite for collaboration, highlighting the importance of cultural sensitivity and mutual respect (Van
401 der Watt et al., 2018) to facilitate integration of modern and traditional approaches rather than a “co-
402 location” of approaches (Ofori-Atta et al., 2018). Previous qualitative work has indicated that
403 traditional healers feel demeaned by clinicians who disregard their mode of treatment, and stereotype
404 them as ‘dirty’ (Musyimi et al., 2016). This highlights the importance of dialogue formation between
405 biomedical and traditional practitioners with a consideration of facilitators (e.g., protection of traditional
406 medicine, compensation of healers, education of both groups, adequate community involvement) to
407 enhance sustainability (Musyimi et al., 2016). Other key barriers included service infrastructure
408 (including lack of formal referral systems) and limited resources (e.g., lack of psychiatric drugs on
409 national health insurance), which impeded joint work within the community (Yaro et al., 2020).
410 Recently the WHO renewed their commitment to incorporate traditional healers in the provision of
411 healthcare (Eurocam 2024), providing impetus for increasing funding for collaborative models in
412 mental healthcare in places such as Africa (Yaro et al., 2020). We highlight the recent work by Ben
413 Zeev and colleagues (Ben Zeev et al., 2024) who navigated these challenges by developing a mobile
414 app which provided psychoeducation (i.e., rapport building, guided relaxation techniques) to healers
415 at a prayer camp in Ghana, in an accessible and contextually appropriate manner. Furthermore, the

416 app allowed healers to monitor and follow up their patients, demonstrating an innovative way of
417 supporting healers in their practice and improving patient wellbeing.

418 **Limitations**

419 Our review has limitations. First, we were only able to identify a very small number of studies, and
420 these were mostly located in Africa. Thus, the generalisability of our results to other countries is
421 unclear. There were some indications that educational models could also be effective (in increasing
422 knowledge and improving practice) in China and India; however, more work is needed in these (and
423 other low-and-middle-income) countries, especially in view of the importance of cultural adaptations in
424 low resource settings (Veling et al., 2019). Second, there were only two RCT studies, which means
425 results should be viewed as preliminary. Further, these studies compared interventions to traditional
426 approaches only (rather than also comparing to modern approaches only). Other study designs
427 included a pilot study, pre-post studies, and qualitative/ descriptive work. These studies had a number
428 of methodological limitations including small sample size (Veling et al., 2019), exacerbated by attrition
429 (Adelekan et al., 2001), potential self-report bias (Adelekan et al., 2001; Lam et al., 2016; Gureje et
430 al., 2020), relatively low percentage recruitment of faith healers (Veling et al., 2019), incomplete
431 evaluation of the programme (Veling et al., 2019) and lack of clarity/systematic evaluation of
432 treatment approach of healers (e.g., lack of clarity on how many patients were seen by healers before
433 referring (Veling et al., 2019), and limited details on treatment modalities of healers (Gureje et al.,
434 2020). This restricts our ability to fully establish effectiveness, potential mediators, and contextual
435 moderators of intervention effects (Breitborde et al., 2010). Third, we only included English language
436 studies in our review, which could have excluded some programmes. Furthermore, future studies
437 should examine the impact of different healthcare systems on typologies of collaboration. In addition,
438 prospective studies should endeavour to provide an in-depth cost analysis to fully understand the
439 feasibility and sustainability of collaboration efforts.

440 **Conclusions**

441 Combining modern and traditional approaches to mental healthcare appears to be a promising
442 approach to help reduce the mental health gap by providing more accessible care to people in low
443 resource settings (Singh et al., 2022; Bhogal et al., 2024). These approaches reflect a patient-centred
444 orientation, offering a more personalised and holistic spectrum of care blending both traditional and
445 biomedical practices (Shields et al., 2016). Moving forward, research programmes should consider
446 including active participation from stakeholders (e.g., patients and their caregivers, healers,
447 community health workers) to explore community understandings of serious mental disorders (SMDs)
448 and help-seeking, and perspectives on faith based healing for SMDs (Singh et al., 2022). Other work
449 should consider how we can enhance the adoption and sustainability of collaborative models at scale
450 (Gureje et al., 2020). For instance, the promising findings from Ben Zeev and colleagues (Ben Zeev et
451 al., 2024) illustrate a creative way of engaging healers by using easily accessible digital tools that
452 have the potential to enhance the adoption of collaborative models and achieve scalability and
453 sustainability. Due to the scarcity of mental health professionals in LMICs, government investment in
454 such technologies can address the significant shortages in LMICs while simultaneously significantly
455 improving patient outcomes on a large scale. Aside from increasing government funding, additional
456 work with policy makers should include increasing formal recognition and regulation of faith healers,
457 developing strategies to reduce deep distrust and feeling of superiority between paradigms (e.g., co-
458 design of collaborative models (Singh et al., 2022), and increasing mutual understanding and shared
459 responsibility for patient well-being (Van der Watt et al., 2018).

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477

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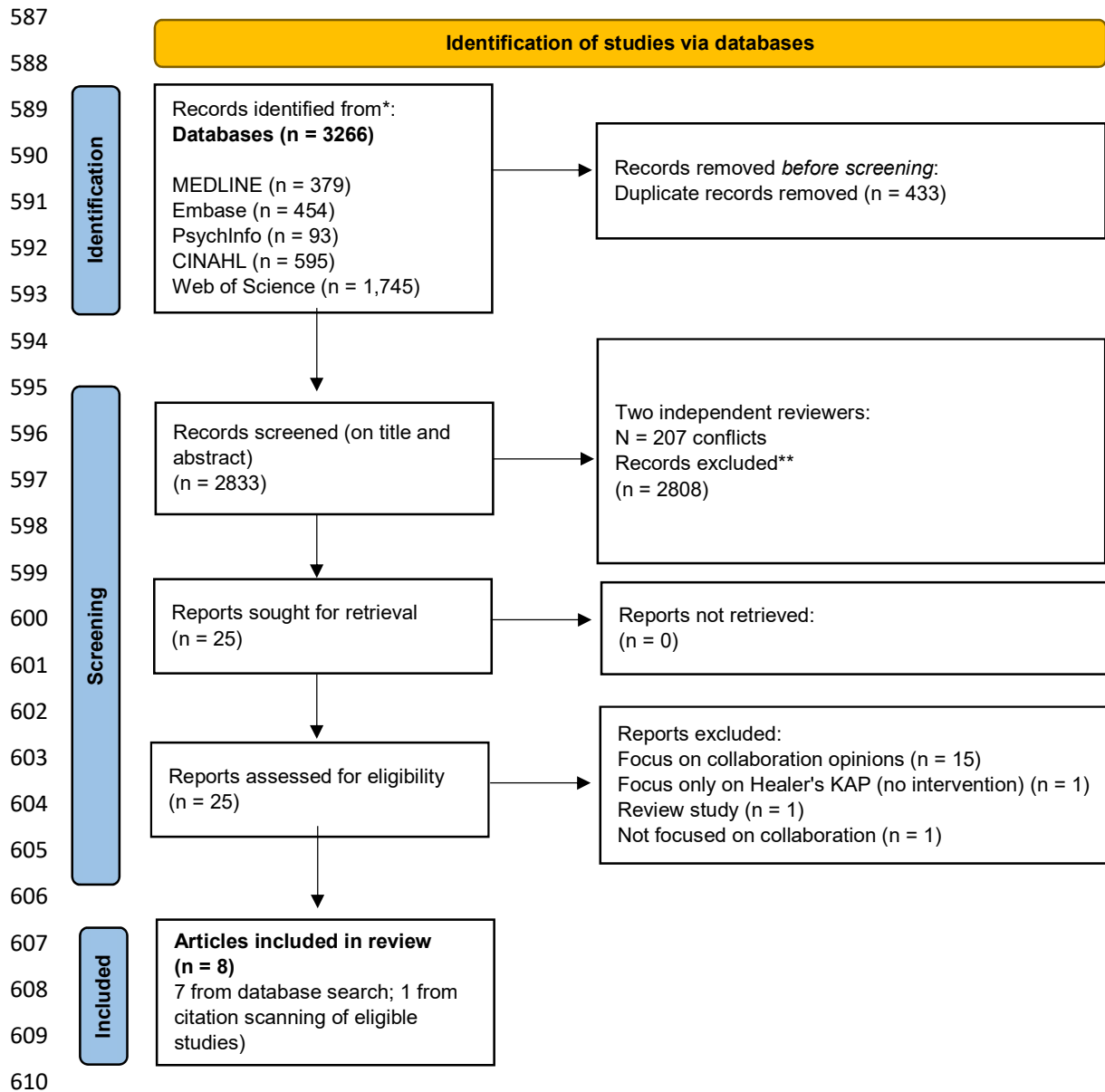
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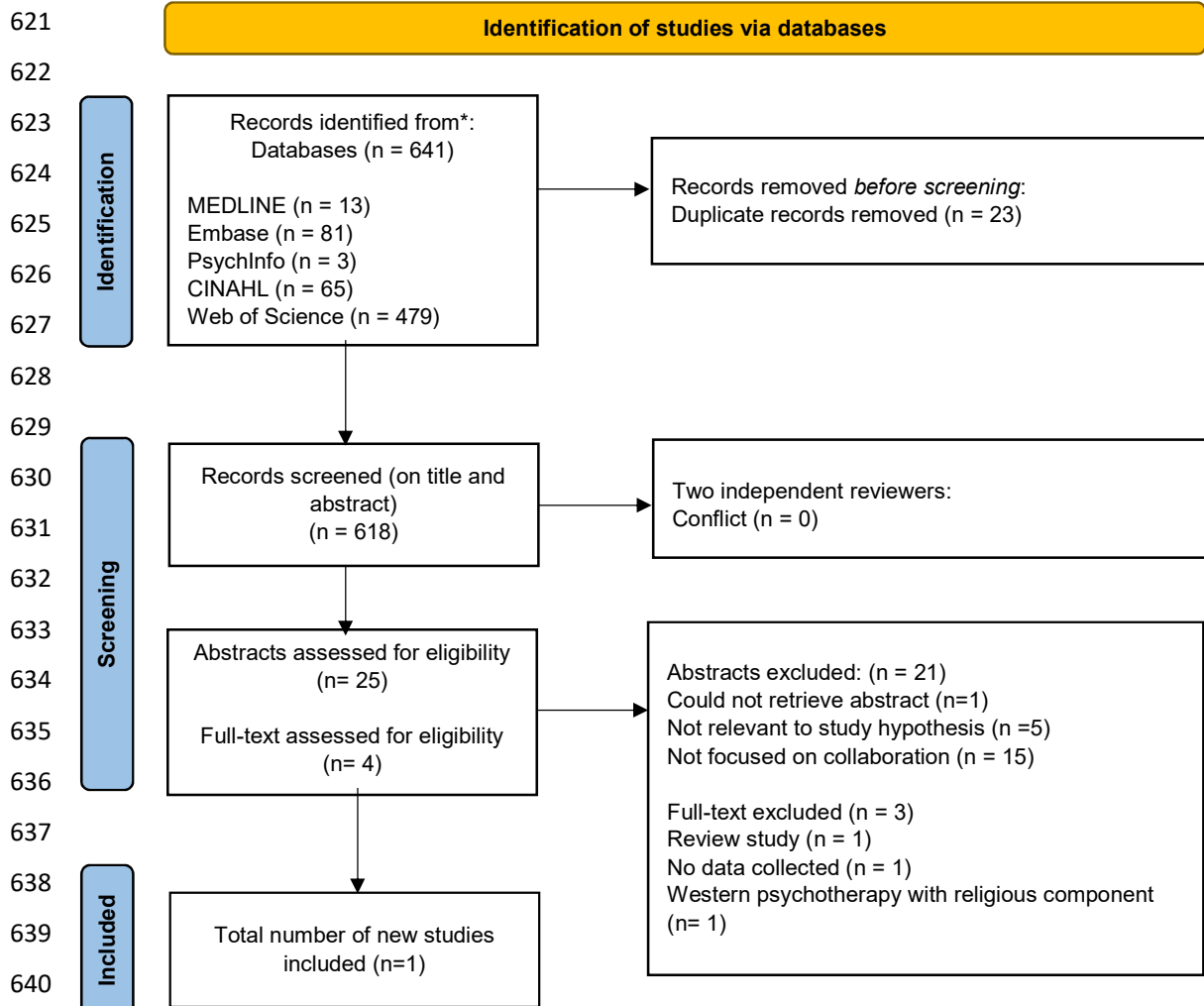
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611 **Figure 1a: PRISMA flowchart showing selection of studies from database inception to March**
 612 **2023.**

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641 **Figure 1b: PRISMA flowchart showing our updated search and selection of studies from March**
642 **2023 to December 2024.**

Table 1 Overview of study characteristics, intervention components, and main results						
Author/ year	Country	Study design	Main assessments	Sample	Intervention description (educational or shared collaborative model)	Main results
Adelekan 2001	Nigeria	Pre-post intervention design	<ul style="list-style-type: none"> Questionnaires on mental health knowledge, practice and attitudes administered before and after the training (following a two-month free practice period) 	43 TMHPs: $M_{age}=50.2$ (SD=15.5; male=88%; female=12%) 27 completed post intervention assessment: $M_{age}=51$ (SD=14.4; male=85%; female=15%)	Educational programme for TMHPs Training sessions to improve mental health knowledge and practice including: <ul style="list-style-type: none"> Concept of normality and abnormality Types of mental illness Treatment of mental illness Aftercare/relapse prevention Primary preventative measures Introductory talks on sub-specialties 	<ul style="list-style-type: none"> TMHPs showed significant improvements ($p<.05$) in recognition of undue sadness, withdrawal & elation. TMHPs showed non-significant reductions in supernatural illness attributions (i.e. 'curse') Post-intervention, TMHPs reported that they no longer beat their patients as a form of treatment. Significant increase in the number of TMHPs using occupational therapy as an adjunct to treatment ($p<.05$). Significant increase ($p<.05$) in number of TMHPs who claimed to practice regular follow-up.
Gureje 2020	Nigeria Ghana	Cluster randomised controlled trial (RCT)	<ul style="list-style-type: none"> PANNS, ISMI, WHO-DAS assessed at 3- and 6-month follow-up. Harmful treatment practices assessed at 3 and 6 months. 	Patients with active psychotic symptoms (PANNS \geq 60) 166 intervention group: $M_{age}=33.2$ (SD=12.1) 141 control (CAU by TFH) group: $M_{age}=33.4$ (SD=10.2)	Manualised collaborative shared care model for psychosis between TFHs and primary health care providers In addition to training (for both groups) there were two main components of the intervention: <ul style="list-style-type: none"> Clinical support to respond to the medical needs (e.g. psychotic or physical) of patients with psychosis. Clinical support to improve service on a continuous basis through engagement with the TFH, patient and caregivers, focusing on reducing harmful treatment practices 	<ul style="list-style-type: none"> Patients in the intervention group had significantly greater improvements in positive, negative, and general psychopathology. Patients in the intervention group had significantly greater improvements in course of illness and adjustment to work. Both groups experienced significant reductions in harmful practices (intervention: 57% to 9% vs control: 42% to 10%). Intervention group had greater reductions in overall care costs (for total costs).
Lam 2016	Hong Kong	Pre-post intervention design	<ul style="list-style-type: none"> Structured questionnaires designed for immediate pre-course and post-course 	151 TCM practitioners (age not reported; male=42%; female=58%)	Educational programme for TCM practitioners Comprising ten interactive seminars within 3 months (2 hours per session) on topics relating to common psychological problems and psychotherapy including: <ul style="list-style-type: none"> Overview and interview skills. Stress related disorders. Mood disorders including bipolar disorders. Somatoform disorders, panic and phobic disorders, obsessive-compulsive, and related disorders. Psychotherapy. Substance abuse including alcoholism. Psychotic disorders. Sleep disorders. 	Post intervention there was a significant increase in the proportion of TCM practitioners confident in: <ul style="list-style-type: none"> Recognising patients with psychological problems (62.9% vs 89.4%; $p<.001$) Diagnosing common mental health problems (47.7% vs 77.5%; $p<.001$) Managing patients with common mental health problems (31.2% vs 64.3%; $p<.001$) 66.9% perceived that their mental health care management had improved after attending the 10-session training course

Ofori-Atta 2018	Ghana	Randomised controlled trial (RCT)	<ul style="list-style-type: none"> BPRS, GAF, BSI, PHQ 	<p>Patients with schizophrenia, bipolar disorder, and major depressive disorder. 71 Intervention groups (psychiatric care & prayer camp treatment) 61 control group (usual prayer camp treatment)</p>	<p>Collaborative model joining psychiatric care with faith healing in a prayer camp. Comprised:</p> <ul style="list-style-type: none"> Prescription of clinically indicated medications by psychiatrist/senior medical officers. Prayer camp treatment including a combination of prayer and Bible study and fasting for 3-21 days before participation in the study 	<ul style="list-style-type: none"> Psychotic symptoms were significantly lower ($p=.003$) in the experimental group Significantly higher functioning scores in the intervention group ($p<0001$) There were no significant reductions in days in chains in intervention or control groups
Saha 2019/ Shields 2016	India	Mixed methods study (including qualitative interviews and secondary analysis)	<p>Analysis of referral cases Interview guide developed by authors</p>	<p>Saha: 26 patients (9 Dava patients, 8 Dua patients, 9 Dava-dua patients) 6 mental health service providers</p> <p>Shields: 3 AMHPs, 3 FBHs, 3 patients, 7 carers</p>	<p>Collaborative model combining psychiatric medicine (“Dava”) & FBH (“Dua”) Comprised:</p> <ul style="list-style-type: none"> AMHPs delivered an outpatient clinic within the dargah (shrine) including medication and basic counselling. Mujavars delivered rituals and referred to AMHPs if they detected a mental health problem. Programme included training for FBHs on mental illness, referral strategies, and the referral process. 	<ul style="list-style-type: none"> 7,149 patients visited Dava-Dua between 2008-2018. Over a 5-year period (2008-2013) FBHs referred 57.9% of clients receiving care, though referrals from FBHs have declined over time (to 37%). Clients visiting the Dava Dua attributed their improvement to a combination of the rituals they completed with the FBHs and the medication and basic counselling they received from the AMHPs.
Veling 2018	Rural South Africa	Pilot study	CAPE SCAN	50 THPs 149 help-seeking clients referred by THPs	<p>Collaborative model to enhance THPs’ screening and referral of individuals with recent onset psychosis. Programme comprised:</p> <ul style="list-style-type: none"> Engagement with community leadership. Establishment of a Community Research Advisory Board (CRAB). Engagement with THPs to develop mutual understanding of traditional and biomedical concepts of psychosis. Development of a method for screening and referral by THPs. 	<ul style="list-style-type: none"> The positive predictive value of the THP ‘disturbed’ rating was 53.8%.
Yaro 2020*	Ghana	Qualitative evaluation (of an RCT)	In-depth interviews	11 spiritual healers; 21 traditional medical practitioners; 13 patients & their carers & 9 CPNs.	See description above (Ofori-Atta 2018)	<ul style="list-style-type: none"> Training increased THPs’ level of knowledge & understanding about mental conditions. Participants reported increased collaboration between biomedical and traditional healthcare providers.
Ben Zeev 2024	Ghana	Pre-post intervention design	BPRS, BSI, TBDI, OAS, Brief ISMI, PHQ, LQOLI, BMQ-General, WAI Days chained, days of forced fasting	4 TFHs 17 patients $M_{age}=44.3$ ($SD=13.9$) Male = 59% Female = 41%	<p>Collaboration model of Digital Educational programme for TFHs and Pharmacotherapy from visiting nurse Digital Mobile Application for TFHs</p> <ul style="list-style-type: none"> Psychoeducation included: guided relaxation techniques, rapport building, verbal de-escalation, challenging 	<ul style="list-style-type: none"> Significant and clinically meaningful reduction in psychiatric symptom severity, psychological distress, shame, and stigma. Authors reported a significant reduction in days chained and promising trend for reduction in days of forced fasting.

					<p>dysfunctional beliefs about psychiatric symptoms, and preservation of human rights and dignity in practice.</p> <ul style="list-style-type: none"> ▪ App allows healer to track and monitor progress of individual patients in the camp. The App prompts healers every day to check in with each patient and provide a rating. ▪ Daily psychosocial digital animation training videos for healers. ▪ Visiting community nurse provided pharmacological care directly to patients at the prayer camp. 	<ul style="list-style-type: none"> ▪ The intervention seems to be feasible, acceptable, safe, and clinically promising. Preliminary findings suggest that the digital intervention may have shifted healers' behaviours at the prayer camp and committed fewer human rights abuses.
<p>* Qualitative evaluation of Ofori-Atta study; TMHPs: Traditional mental health practitioners; TFHs: Traditional Faith Healers; TCM: Traditional Chinese Medicine; PHCWs: Primary Health-Care Workers; AMHPs: Adult Mental Health Practitioners; PANNS: Positive and Negative Syndrome Scale; ISMI: Internalised Stigma of Mental Disorders; WHO-DAS: WHO disability assessment schedule; BPRS: Brief Psychotic Rating Scale; BSI: Brief Symptom Inventory; PHQ: Patient Health Questionnaire; CAPE: Community Assessment of Psychic Experiences; SCAN: Schedules for Clinical Assessment in Neuropsychiatry; TBDI: The Talbieh Brief Distress Inventory; OAS: The Other as Shamer Scale; Brief ISMI: Internalized Stigma of Mental Illness; LQOLI: Lehman Quality of Life Inventory; BMQ-General: Beliefs about Medications Questionnaire- General Harm subscale; WAI: Working Alliance Inventory.</p>						

Table 2. An outline of key outcomes in studies, and their potential mechanisms and contextual moderators				
Study	Key outcomes	Proposed mechanisms underpinning outcomes	Contextual barriers	Contextual facilitators
Adelekan 2001	<ul style="list-style-type: none"> ▪ Widening recognition of mental health symptoms ▪ Reduction in the habit of beating patients ▪ Greater adoption of standard practices 	<ul style="list-style-type: none"> ▪ Increased knowledge/awareness ▪ Change in attitudes and beliefs 	<ul style="list-style-type: none"> ▪ Suspicion from some TFHs ▪ Limited funds available for research 	<ul style="list-style-type: none"> ▪ High level of co-operation from TFHs ▪ Mutual understanding of modern and traditional practices
Gureje 2020	<ul style="list-style-type: none"> ▪ Reductions in psychotic symptoms ▪ Reductions in harmful treatment practices, e.g. shackling 			<ul style="list-style-type: none"> ▪ Incentives for providers ▪ Free medications for the trial
Lam 2016	<ul style="list-style-type: none"> ▪ Increased confidence in recognising patients with psychological problems ▪ Increased intention to refer (but not supported by referral rates) 	<ul style="list-style-type: none"> ▪ Increased awareness/better understanding of mental disorders & management ▪ Increased confidence ▪ Collaborative learning approach, e.g., case sharing 	<ul style="list-style-type: none"> ▪ Difficulties in understanding medical terms ▪ Consultation time constraints ▪ Lack of formal referral systems ▪ Patients' negative attitudes 	<ul style="list-style-type: none"> ▪ Open minded attitudes of teachers ▪ Involving TCM practitioners as tutors (suggested facilitator)
Ofori-Atta 2018/ Yaro 2020	<ul style="list-style-type: none"> ▪ Reduction in psychiatric symptoms ▪ Reduction in harmful practices, e.g. days in chains ▪ Increased belief in bio-medical approaches by TFHs 	<ul style="list-style-type: none"> ▪ Enhanced knowledge about mental health and illness & human rights ▪ Increased collaboration between orthodox medical practitioners & traditional/spiritual healers 	<ul style="list-style-type: none"> ▪ Potential incomplete integration of medical team into decision making by prayer camp staff – co-location rather than full integration ▪ Belief in religious not biomedical model of mental illness ▪ Shortage of psychiatric medications 	<ul style="list-style-type: none"> ▪ Provision of incentives, e.g., health insurance available to all sanatorium residents, making the camp a recognised model ▪ Creating an atmosphere of mutual understanding through respectful exchange of ideas
Saha 2019 /Shields 2016	<ul style="list-style-type: none"> ▪ Improvements in patients' awareness of mental illness & belief in benefits of psychiatric medication ▪ Improvement in mental health literacy for FBHs including reconceptualisation of clients' problems 	<ul style="list-style-type: none"> ▪ Building rapport & trust (e.g., continuous & open dialogue to promote mutual understanding, develop unified goals based on common values, supporting rather than condemning FBHs) ▪ Empowerment of FBHs through training and sensitisation activities ▪ Highlighting complementary aspects of both systems ▪ Mutual referral ▪ Redefining the roles of AMHPs and FBHs 	<ul style="list-style-type: none"> ▪ Apprehension of professionals in both systems ▪ Perceived differences in professional and societal status between biomedical and FBHs ▪ Reluctance of AMHPs to equalise their status with FBHs 	<ul style="list-style-type: none"> ▪ Free cost of treatment to alleviate financial burden ▪ Cross-referrals enabling FBHs to maintain their income (suggested reason that FBHs overcame their initial resistance to collaborating with AMHPs)
Veiling 2018	<ul style="list-style-type: none"> ▪ Referral of recent onset psychosis cases by THPs 	<ul style="list-style-type: none"> ▪ Trust building (through long term engagement and mutual respect) ▪ Common understanding of psychiatric concepts 		<ul style="list-style-type: none"> ▪ Recognising & acknowledging local authorities ▪ Taking time to develop relationships ▪ Adaptation of procedures to socio-cultural norms
Ben Zeev et al 2024	<ul style="list-style-type: none"> ▪ Reduction in psychiatric symptom severity, psychological distress and shame ▪ Reduced internalized stigma regarding mental health conditions 	<ul style="list-style-type: none"> ▪ Increased knowledge about mental health (i.e., challenging beliefs about psychiatric symptoms), human rights, and psychosocial interventions (i.e., rapport building) ▪ Increased collaboration between healers and medical practitioners 		<ul style="list-style-type: none"> ▪ Mobile app providing easily accessible psychoeducation in the form of brief digital animations or audio recordings ▪ Mobile app prompting healers to interact with psychoeducation materials ▪ Mobile apps allowed healers to create a list of active patients to support basic

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	<ul style="list-style-type: none">▪ Significant reduction in days chained			<p>tracking and monitoring of individual patient progress.</p> <ul style="list-style-type: none">▪ Both healer and patient participants were compensated for their involvement in the study.
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