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RESEARCH ARTICLE

Adapting brief problem-solving therapy for pregnant women experiencing depressive symptoms and intimate partner violence in rural Ethiopia

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ABSTRACT

Objective To adapt an evidence-based psychological intervention for pregnant women experiencing depressive symptoms and intimate partner violence (IPV) in rural Ethiopia.

Method We conducted a desk review of contextual factors in Sodo, Ethiopia, followed by qualitative interviews with 16 pregnant women and 12 antenatal care (ANC) providers. We engaged stakeholders through participatory theory of change (ToC) workshops, to select the intervention and articulate a programme theory. We used "ADAPT" guidance to adapt the intervention to the context, before mapping potential harms in a "dark logic model".

Results Brief problem-solving therapy developed for South Africa was the most contextually relevant model. We adapted the delivery format (participants prioritised confidentiality and brevity) and training and supervision (addressing IPV). Consensus long-term outcomes in our ToC were ANC providers skilled in detecting and responding to emotional difficulties and IPV, women receiving appropriate support, and emotional difficulties improving. Our dark logic model highlighted the risk of more severe IPV and mental health symptoms not being referred appropriately.

Conclusion Although intervention adaptation is recommended, the process is rarely reported in depth. We comprehensively describe how contextual considerations, stakeholder engagement, programme theory, and adaptation can tailor psychological interventions for the target population in a low-income, rural setting.

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Keywords: intimate partner violence; perinatal mental health; Ethiopia; low and middle-income countries; women's mental health; intervention adaptation; complex interventions; problem-solving therapy; theory of change

Clinical or methodological significance of this article

Despite substantial literature on task-shared interventions in low and middle-income countries, few studies report the adaptation of treatments for the mental health of pregnant women experiencing intimate partner violence (IPV) in depth. In this article, we systematically report the process of implementing the latest guidance on contextual consideration, adaptation, and theoretical explication of a complex intervention in rural Ethiopia, with piloting and a future randomised controlled trial in mind.

Introduction

Ethiopia

Ethiopia is the second most populous country in the African region, with a population over 120 million (The World Bank, 2022). With a gross national income less than \$1,085 per capita, it is classified as a low-income economy (The World Bank, 2023). Domestic general government health expenditure is correspondingly low, at \$6 per capita, compared to \$3,437 in the United Kingdom (UK) and \$5,553 in the United States (The World Bank, 2019). In the south-western Southern Nations, Nationalities and People's Region (SNNPR) of Ethiopia, 69% of women having a live birth receive skilled antenatal care (ANC), 50% of births are delivered by a skilled provider, and 48% take place in a health facility (Ethiopian Public Health Institute & ICF, 2019).

The prevalence of common mental disorders (depression, anxiety, and psychological distress) in Ethiopia is estimated to be 22-28% (p. 14; Ministry of Health, 2021b). The national mental health strategy for 2020-2025 acknowledges that the workforce is below World Health Organization (WHO) recommendations (p. 17; Ministry of Health, 2021b), with 0.11 psychiatrists and 0.58 nurses per 100,000 population, where 0.90 and 8.34 per 100,000, respectively, are recommended. Redistribution of tasks to trained, supervised non-specialists (task sharing) is therefore central to scaling up mental healthcare. Primary care workers have been trained to assess and treat mental health conditions using the WHO mental health gap action programme intervention guide (mhGAP-IG; WHO, 2016b), so that 26% of health services provide some form of mental healthcare. The primary healthcare clinical guidelines

(PHCG; Feyissa et al., 2019), adapted for Ethiopia from a South African model, further integrate mental health and risk assessment into maternal primary care.

Perinatal Mental Health and Intimate Partner Violence

Perinatal mental health conditions are common and associated with maternal, foetal, and neonatal morbidity and mortality (Howard & Khalifeh, 2020). A meta-analysis across 10 African countries found that antenatal depression had a pooled prevalence of 26.3% and was associated with marital conflict (odds ratio (OR) = 4.17; Dadi et al., 2020b). An umbrella review found that gender-based violence (73 studies) and lack of partner support or social support (47 studies) were risk factors for antenatal depression (Dadi et al., 2020a).

Intimate partner violence (IPV) is behaviour by an intimate partner or ex-partner, causing physical, sexual, or psychological harm (WHO, 2013). Both IPV and antenatal depression are prevalent in Ethiopia. A meta-analysis of eight studies conducted across Ethiopia (n = 2,691 women) found a pooled prevalence of IPV during pregnancy of 26% (95% confidence interval (CI) = 20-32; Alebel et al., 2018). In the rural district of Sodo, where we conducted our study, clinically relevant depressive symptoms have been defined as scoring five or more on the locally-validated (Gelaye et al., 2013) PHQ-9 patient health questionnaire (Kroenke et al., 2001) and endorsing the functional impact of symptoms on a tenth item (Girma, 2013; Hanlon et al., 2015). Depressive symptoms were identified among 29% of pregnant women screened in Sodo, using these criteria (Bitew et al., 2019). Antenatal IPV was associated with incident depression.

It is increasingly recognised that mental health services should be integrated into maternal care (WHO, 2022) and tailored for women experiencing IPV in low and middle-income countries (LMICs; Oram et al., 2022). The Ethiopian PHCG (Feyissa et al., 2019) recommends considering violence exposure in primary care and the national mental health strategy prioritises improving detection and responses to IPV (Ministry of Health, 2021b) but no national interventions have yet been implemented. Given the high prevalence of both IPV and depression and their established association in our setting, we sought to adapt a brief psychological intervention for perinatal depressive symptoms in women experiencing IPV in Sodo.

Brief Psychological Intervention Adaptation

Brief psychological interventions are condensed, simplified versions of talking therapies, which were often originally developed to be delivered over several months. Task shared brief psychological interventions have been shown to be effective for depressive symptoms in LMICs (Barbui et al., 2020; van Ginneken et al., 2021).

To address the high burden of mental health conditions in settings with limited resources, WHO has focused attention on potentially scalable brief psychological interventions, which can be delivered by trained non-specialists and readily adapted to new contexts (Heim et al., 2019).

Meta-analyses from high income countries (HICs) show that cultural adaptation enhances psychological intervention efficacy (Hall et al., 2016). While cultural adaptation of psychological interventions was not associated with efficacy in a meta-analysis of LMIC studies, descriptions were often extremely brief (Cuijpers et al., 2018). A framework devised by Heim and Kohrt (2019) proposed that an intervention's foundational concepts of distress, its treatment components, and treatment delivery all require cultural adaptation. UK Medical Research Council (MRC)-affiliated "ADAPT" guidance (Moore et al., 2021) outlines the process by which complex interventions should be adapted. ADAPT recommends first forming an adaptation team of diverse stakeholders, before (step 1) assessing the rationale for intervention and the context fit of existing interventions, (step 2) planning and undertaking adaptation, (step 3) piloting and evaluation, and finally (step 4) implementing and maintaining the adapted intervention at scale.

The latest UK MRC/National Institute of Health and Care Research (NIHR) complex interventions framework (Skivington et al., 2021) recommends that articulating programme theory should be a core element of intervention research. The theory of change (ToC) approach describes prospectively how a complex intervention is envisaged to achieve its goals, by articulating the steps of a theory-informed, hypothesised causal pathway, towards a vision. ToC has been used successfully in LMICs, including Ethiopia (Abayneh et al., 2020). Pathways to potential unintended consequences, including harms (the so-called "dark logic model"), also require consideration (Bonell et al., 2015).

Objectives

(1) To explore pregnant women and antenatal care providers' perspectives on features of a brief psychological intervention for perinatal

- depressive symptoms in women experiencing intimate partner violence, and stakeholders' theory of change.
- (2) To adapt a brief psychological intervention for this context, following the latest guidance and informed by the best available evidence.

Method

Setting

Sodo district is located in the SNNPR. Ethiopian primary care, including ANC, is delivered through satellite 'health posts' staffed by health extension workers (HEWs), health centres staffed by nurses, midwives, and health officers, and primary hospitals. HEWs are high school graduates with one year's undergraduate-level training. They provide women's first antenatal appointment, make referrals to health centres and hospitals, and maintain contact during pregnancy.

Overall Design

We designed this study in three parts, following ADAPT guidance (Moore et al., 2021). Table 1 summarises each part and indicates which tasks correspond to steps 1 and 2 of ADAPT.

We followed Step 3 of ADAPT (piloting and evaluation) in our subsequent randomised feasibility trial (Keynejad et al., 2020a). Step 4 (implementing and maintaining at scale) was beyond the scope of this study.

Part 1: Understanding the Study Context

"Desk reviews' can inform contextual adaptation of mental health interventions (Greene et al., 2017) by pragmatically collating literature without applying systematic review methods. To understand our setting, RK (a UK clinical academic psychiatrist) conducted a desk review of verified information about Ethiopia and the SNNPR, considering each domain recommended by NIHR guidance on contextual considerations for intervention research (Craig et al., 2018).

Our qualitative methods are described in detail elsewhere (Keynejad et al., 2023). In brief, we conducted in-depth qualitative interviews with a purposive sample of ANC providers and pregnant women, recruited at health centres and health posts in Sodo and neighbouring Butajira. Amhariclanguage interviews by trained, supervised research assistants (RAs) explored stakeholder perspectives on interventions for women experiencing perinatal emotional difficulties and IPV. Study documents including topic guides and the standard operating

Stage	Task	Key references	How
Preparation and planning	Form an adaptation team of diverse stakeholders.	ADAPT guidance (Moore et al., 2021)	 Adaptation team selected for expertise on interventions (KS and BM), perinatal mental health (SH), IPV (ND), and the context (AM, MD). Team comprised British, Ethiopian, and South African clinicians and mental health researchers. Membership was iteratively reviewed and updated.
Part 1	Understand the study context.	• ADAPT • NIHR context guidance (Craig et al., 2018)	 Desk review of each domain of context (Craig et al., 2018). Qualitative interviews with pregnant women and ANC providers.
Part 2	Assess rationale for intervention and consider context fit of existing interventions	ADAPT (Step 1)Craig et al. (2018)	 Candidate interventions identified through stakeholder consultation. Each candidate intervention's evidence base reviewed. Context in which candidate interventions were effective examined in relation to our own. Most appropriate intervention for our context selected, informed by stakeholder priorities.
	Plan for and undertake adaptations	• ADAPT (Step 2)	 Stakeholder workshop delivered by original intervention developers. Constraints and facilitators on the intervention, requiring contextual adaptation, identified through stakeholder consultation. Model and materials collaboratively adapted for women in rural Ethiopia. Adapted intervention model demonstrated to stakeholders for feedback. Model adapted further, for women experiencing IPV.
Part 3	Articulate the programme theory	 ADAPT MRC/NIHR complex interventions framework (Skivington et al., 2021) ToC (De Silva et al., 2014) 	Theory of change (ToC) map iteratively developed through stakeholder engagement and ToC workshop.
	Articulate the "dark logic model"	• Bonell et al. (2015)	 Evidence base and local experts consulteed. Dark logic model of potential unintended harms articulated.

ANC: antenatal care, IPV: intimate partner violence, MRC: UK medical research council, NIHR: UK national institute for health and care research, ToC: theory of change.

procedure (SOP) are available, open access (Keynejad, 2021). RAs gave participating women written contact details for local sources of support, only after discussing the risks of abusive partners finding these. Participants were compensated for their time.

Interviews were audio-recorded before being professionally transcribed. English-translated transcripts were then uploaded to NVIVO (QSR International, 2020). We conducted six-phase thematic analysis, taking a post-positivist "small q" approach, which has been described as "scientifically descriptive," in contrast to the "artfully interpretive" "big Q" approach (Braun & Clarke, 2019). That is, our post-positivist approach to thematic analysis focused on capturing over-arching themes about an

intervention adapted for perinatal emotional difficulties and IPV, through stakeholder consensus across interviews, rather than the more interpretive approach of "reflexive thematic analysis" (Braun & Clarke, 2019).

First, RK familiarised herself with transcripts and field notes, noting initial ideas, before systematically coding the dataset, creating initial codes and gathering exemplar quotations. RK selected two particularly rich transcripts (one health worker and one pregnant woman's interview), which were independently coded by TB (a male Ethiopian academic psychologist) and two female Ethiopian RAs (AM and EF). To attain triangulation through multiple analysis, we independently coded transcripts before discussing our interpretations at a coding meeting with CH (a senior UK academic psychiatrist living permanently in Ethiopia), for cross-cultural, collaborative "sense-making" (Easterby-Smith & Malina, 1999). RK then reviewed all initial codes, consolidated them into themes, and reviewed themes in relation to constituent quotations. Through discussion with the adaptation team, RK refined themes, clarifying names and definitions through abstraction and interpretation. In the final phase of thematic analysis, we referred back to our research questions while writing up our findings.

We reflexively considered our biases, influenced by intersectional aspects of our personal circumstances (Patton, 1999). For example, RK used self-reflexivity of her position as an English-speaking, female researcher working in a high-income country where gender equality is advocated but not always achieved, to strive for "empathic neutrality" in interpretations (Ormston et al., 2014).

Part 2: Intervention Identification and Adaptation

We first identified candidate interventions by consulting 14 local mental health clinicians and researchers, who had been involved with PRIME, a study focused on integrating mental health into primary care (Fekadu et al., 2016), at a consensus meeting. We reviewed published peer-reviewed evidence for each candidate intervention proposed by these stakeholders and the robustness of effectiveness claims, comparing the original context to our setting.

After identifying the most suitable intervention model, nine Ethiopian mental health professionals (four psychiatrists, five psychologists) and seven researchers attended a three day course delivered by an experienced counsellor from the original developers' team. TB and CH then facilitated a stakeholder workshop with a sub-group of eight course attendees (three psychiatrists, three psychologists, and two researchers), where contextual adaptations were discussed and recorded. To inform the IPV-adapted version, we gathered local stakeholder perspectives through qualitative interviews (Part 1) and a ToC workshop (Part 3).

For ADAPT Step 2 (plan and undertake adaptations), we identified constraints and facilitators of the intervention raised by qualitative interviews (Part 1), stakeholder engagement activities, and published evidence. We then adapted intervention materials, considering the potential for unintended adverse consequences. We incorporated adaptations to implementation strategies into the SOP of our subsequent trial of the intervention, to optimise feasibility.

RK co-led the adaptation of the intervention model and materials with TB, first jointly adapting the intervention for pregnant women experiencing depressive symptoms in rural Ethiopia (Bitew et al., 2022), informed by stakeholder input and previous qualitative interviews (Bitew et al., 2020). RK then led further adaptation of this version, to address the additional needs of women experiencing IPV. RK consulted international guidance on best practice in supporting women experiencing IPV and considered ANC providers' IPV training needs and the potential for unintended harms to women in abusive relationships.

We used role play to demonstrate the format of the four adapted intervention sessions to an audience of local mental health professionals, pregnant and postnatal women. To determine the acceptability of the intervention and comprehensibility of content, we sought stakeholders' feedback through focus group discussions after each demonstration.

Part 3: Articulating Programme Theory

Following new MRC/NIHR complex interventions guidance (Skivington et al., 2021), we iteratively articulated the intervention's programme theory throughout adaptation. While conducting our relevant systematic review (Keynejad et al., 2020b), we reviewed the mechanisms, mid-range theories, barriers, facilitators, and theories of change of brief psychological interventions delivered to women experiencing IPV in LMICs. This theory review informed the ToC map developed with stakeholders at a ToC workshop, which took place in a private research building in Butajira, neighbouring Sodo. The workshop was attended by a purposive sample Amharic-speaking healthcare professionals working in Sodo, with interest, experience, or expertise in maternal and child health, mental healthcare, or supporting women experiencing IPV. RAs invited male and female staff, verbally and by telephone. Participants provided written, informed consent and were compensated for their time.

After explaining the purpose of the workshop in Amharic, TB and MD (a female Ethiopian PhD student) asked participants about their priority outcomes of an adapted intervention, and how success should be determined. TB and MD facilitated discussions identifying intermediate outcomes, necessary actions at each step, assumptions on which steps to change were based, and questions requiring research. RA and facilitator notes taken during the workshop were later translated from Amharic into English.

RK triangulated workshop attendees' ToC with the perspectives of pregnant women and ANC providers (Part 1), in a draft ToC map. We iteratively adapted the ToC to reflect insights from our desk review (Part 1), the adaptation workshop, intervention training course and session demonstration (Part 2), and our review of relevant theory. RK then shared a draft ToC map with the adaptation team, who proposed further, iterative adaptations, and completed a ToC reporting checklist (Breuer et al., 2015).

Following Bonell et al. (2015), we examined assumptions made by our ToC and potential harms of the adapted intervention's inputs, processes, mechanisms, and contextual interactions. RK considered unintended interactions between individual actions and social structures in response to the intervention, and compared our ToC map with logic models, descriptions, and process evaluations of similar interventions. RK also consulted local experts, to construct a dark logic model.

Results

Part 1: Understanding the Study Context

Desk Review. Supplementary Table 1 summarises our desk review of each contextual domain. The epidemiological context confirmed the high prevalence of IPV (Devessa et al., 2010) and antenatal depression in SNNPR (Bitew et al., 2019), with a social and economic context marked by high levels of poverty and restricted education of women (Ethiopian Public Health Institute & ICF, 2019). The cultural context summarised what is known about pregnant women's perspectives on mental health in rural Ethiopia (Dadi et al., 2021), while the environmental context highlighted geographical challenges facing the predominantly agrarian population (UNICEF, 2019). The service and organisational context synthesised evidence on ANC delivery and interventions piloted in this setting (Leight et al., 2020, 2021; Selamu et al., 2015; Sharma et al., 2020). The ethical context weighed potential benefits and harms of intervention (Bitew et al., 2020), while the policy context highlighted Ministry of Health prioritisation of perinatal mental health and IPV (Ministry of Health, 2021b). The legal and financial context clarified practicalities around adapting and piloting an intervention during the coronavirus pandemic (Ethio-Public Health Institute, 2020), considerations for future implementation (Hailemichael et al., 2019; Tsegaye & Ayalew, 2020). The political and historical context situated our study within the ANC service, building on prior research integrating mental health into primary care (Fekadu

et al., 2016). Finally, external shocks and "catalytic" events summarised unforeseen contextual challenges to implementing the adapted intervention (BBC News, 2021; United Nations Ethiopia, 2020).

Qualitative Interviews. Sixteen pregnant women (identified by "Px"; median age: 26.5 years) and 12 health workers (identified by "HWx"; median age: 25 years) participated in qualitative interviews. Pregnant women's education ranged from no formal education (n = 3) to secondary schooling (n = 3). They identified as Orthodox Christian, Protestant, and Muslim. ANC providers comprised six community-based HEWs and six midwives, with a median of 6.5 years' experience.

The two overarching themes were current responses to emotional difficulties and psychological intervention.

Current Responses to Emotional Difficulties

Participants reported currently responding to emotional difficulties with spiritual coping, traditional practices, talking to others, and accessing healthcare. Religious or spiritual remedies such as holy water were sometimes combined with physical health medication:

I pour the holy water over my head and I sprinkle the house with it, and I take the tablets ... Though it is not very helpful, I use holy water to treat my anxiety (P13).

One woman described her distress when, after being physically assaulted by her husband, his family brought a traditional practitioner (wogesha) to address obstetric complications, rather than taking her to a health centre or hospital.

Some women expressed a tension between their readiness to confide about emotional difficulties and their concerns about confidentiality:

If people ... ask me about my feelings and my problems, I will tell them ... [but] I fear that they will gossip about my pregnancy if I share my secrets with them (P9).

Some women sought traditional birth attendants, practitioners, and remedies to treat persistent physical symptoms. Others managed emotional difficulties by regularly buying over-the-counter analgesia or repeatedly accessing healthcare:

I come here very often... I was normal before I became pregnant. I don't feel healthy now... I go to the health facility every day. I also visit private clinics (P16).

ANC providers who had received WHO mental health training (mhGAP-IG; WHO, 2016b) reported that they sometimes referred women for specialist mental healthcare.

Psychological Intervention

Participants considered a brief psychological intervention for pregnant women experiencing IPV to be acceptable. ANC providers and some women said that sharing thoughts and problems normalises difficulties, reduces stressors, offers hope, and provides symptomatic relief:

A woman whose husband is abusive will suffer a lot if she doesn't share her problems with other people. She will be relieved of her stress ... like getting treatment (P10).

Unburdening and being listened to were often characterised as intrinsically therapeutic: "like a medication" (HW9). Therapists' communication skills were considered crucial. Women affirmed that they would be comfortable sharing feelings and experiences with health workers, only if trust and rapport had been built, and they were asked empathetically in a private setting. Participants advocated integrating an intervention into ANC but said women's readiness to trust staff was influenced by previous ANC experiences. One woman highlighted power dynamics between less-educated women and health workers:

These women are illiterate, and they could be scared to talk to older or educated people (P14).

ANC providers suggested linking intervention sessions to monthly women's group "conferences" for disseminating health information but women expressed concerns about confidentiality: a key barrier to engagement. Despite acknowledging advantages to group interventions, such as offering mutual support and costing less, women preferred individual sessions, due to confidentiality.

Participants regularly characterised suitable psychological interventions in terms of problemsolving:

The change comes only when the people talk about the problem and take the solutions (P2).

Women believing that their problems cannot be solved was considered a barrier to engagement.

Some participants proposed teaching women skills to promote dialogue with their partner and/or manage safety in abusive relationships. Some suggestions implied that women's behaviour should change to accommodate abusive dynamics, potentially dismissing women's suffering and minimising men's culpability:

[Health workers] can tell her ways she can correct her behaviour (P1).

ANC providers emphasised the need for training, supervision, and onward referral pathways. Some health workers anticipated personal and professional satisfaction from training:

After she tells me her problems and discusses them, there [will be] a satisfaction for myself... It would help me know what problems mothers are facing out there (HW12).

Some participants preferred female therapists (P11: "I will tell her [my problems] if she is a woman") but the need for strong communication skills was emphasised more than the need for female therapists. Health workers proposed that intervention sessions be aligned to women's routine ANC appointments, for convenience.

Two midwives thought that community-based HEWs were best-suited to delivering interventions, given their regular home visits. HEWs said delivering sessions would "affect our productivity" (HW2) and that short-notice allocation of other tasks could deprioritise intervention sessions. Midwives were considered more able than HEWs to accommodate sessions by adjusting their schedules and planning ahead.

Participants raised advantages and disadvantages of delivering sessions in both clinical and domestic settings. Satellite "health posts" within communities were unsuitable due to insufficient space, while women's homes afforded insufficient privacy.

Women raised cognitive benefits of intervention, such as thinking through their difficulties and planning for the future. Some participants suggested that sessions would enable women to disclose IPV to ANC staff, which could improve emotional difficulties after clinicians mediated between partners. Obstetric, neonatal, and child benefits were raised, and the potential to empower women to "make themselves stronger" (P2). One woman drew links between talking about traumatic experiences and improved mental health:

If [a woman] is hopeless ... it could help her have a stable and better life if she learns from her past ... if I had someone to share my problem, I wouldn't have suffered this much. (P14).

Barriers to accessing intervention sessions included lack of knowledge of the benefits, expecting to have to pay for treatment, and men obstructing attendance. Competing demands on women's time, lack of transport, transport costs, and distance from home were barriers to attendance. Some participants considered transport an "excuse" (P1): that attitudinal factors impacted engagement more:

She might complain, "they are just calling to nag us, not give a solution." [She] might accept the education if she saw the result ... in her life, through time. So ... people need time to understand it, it is not easy for them to grasp it all at once (P2).

Sensitising the wider community to IPV was also advocated:

The awareness [should be] raised ... in the community and we can repeat it when they come to us ... there might be those who kept silent (HW9).

Part 2: Intervention Identification and Adaptation

Intervention Rationale and Selection. After reviewing interventions with an evidence base in LMICs, 14 local mental health experts attending a 2017 consensus meeting highlighted interpersonal psychotherapy (IPT; Bolton et al., 2003; Verdeli et al., 2003; WHO, 2020), the common elements treatment approach (CETA; Murray et al., 2020a), and problem-solving therapy (PST; Malouff et al., 2007) as most promising for this context.

Despite an evidence base for group IPT in Ethiopia (Asrat et al., 2020, 2021; Negash et al., 2021; Ravitz et al., 2014), qualitative interviews in Part 1 raised concerns about the feasibility of delivering eight sessions, and the acceptability of group delivery. As well as improved depressive and anxiety symptoms, a randomised controlled trial (RCT) of lay counsellor-delivered CETA in Zambia reported reduced IPV at one year's follow-up (Murray et al., 2020b). However, in Part 1, stakeholders conceptualised emotional difficulties in terms of concrete life problems and prioritised interventions with a problem-solving focus. In our linked qualitative study, a problem-focused intervention was anticipated to ameliorate women's powerlessness, instil hope, and reduce feelings of entrapment and shame (Keynejad et al., 2023).

PST teaches problem-solving skills to enhance coping. A meta-analysis of 31 RCTs, all from HICs, found that PST was significantly more effective than no treatment, treatment as usual, and "attention placebo" (Malouff et al., 2007). RCTs

of different versions of PST have effectively treated depression, anxiety, and psychological distress in Zimbabwe ("Friendship Bench"; Chibanda et al., 2016), Kenya (PM+; Bryant et al., 2017), and South Africa (Myers et al., 2022). Informed by stakeholder priorities, we reviewed brief models of PST implemented in LMICs.

Intervention Review. In South Africa, a selfdirected booklet intervention with weekly telephone support (Van't Hof et al., 2011) was developed from self-examination therapy (Bowman et al., 1995). It was later reformulated to incorporate motivational interviewing (MI-PST), delivered by lay counsellors and community health workers (Sorsdahl et al., 2015a). An RCT of five individual sessions of MI-PST in emergency departments reported reduced depressive symptoms at three months, compared to MI-only and leaflet groups (Sorsdahl et al., 2015b). A three-session version ("Teachable Moment"; Myers et al., 2019) was acceptable (van der Westhuizen et al., 2021), with sufficient training and supervision (Jacobs et al., 2021). A recent trial in chronic disease services demonstrated significant reductions in depressive symptoms at 12 months' follow up (Myers et al., 2022). A three-session PST-only version adapted for pregnancy was valued by women and ANC staff (Spedding et al., 2020).

Context Comparison. We considered the MI-PST evidence base from South Africa in relation to our own context review (Part 1). Considering the epidemiological context, prevalence estimates for depression and IPV during pregnancy were similar in Cape Town and Sodo. However, social and economic contexts differed: South Africa is an upper middle-income country and Ethiopia is a lowincome country. The percentage of literate female adults is 86% in South Africa and 44% in Ethiopia (The World Bank, 2020). Geographical and environmental contexts differed, with rural Sodo more reliant on agricultural work than peri-urban townships in Cape Town. The ANC service and organisational context in which brief PST was developed was relatively similar to Sodo. However, government health expenditure per capita was \$284 in South Africa and \$6 in Ethiopia (The World Bank, 2022). The ethical, policy, legal, financial, and (healthcare) political contexts of the two settings were broadly similar, although salary costs were lower in Ethiopia. Both settings were sites of the PRIME study, which found that mental health task-sharing was acceptable and feasible, with resources, supervision, training, and compensation (Mendenhall et al., 2014).

Adaptations

Facilitators and Constraints. Following "ADAPT" (Moore et al., 2021), we identified facilitators and constraints on intervention success. Facilitators included women and health workers considering perinatal emotional difficulties, IPV, and their impacts on their pregnancy to be problems requiring intervention (Part 1). Women considered existing responses to IPV to be ineffectual (Keynejad et al., 2023), increasing their likelihood of engaging with a new intervention for perinatal mental health and IPV. Attending at least four routine ANC appointments was already acceptable to women, so intervention sessions could be scheduled alongside ANC. Interviewees supported a brief psychological intervention integrated into ANC and local mental health experts valued PST's problem-solving focus and empowerment potential. Prior sensitisation to integrating mental health into primary care (Mendenhall et al., 2014) was an additional facilitator.

Constraints on PST adapted for women experiencing IPV (PST-IPV) included staff, participant, attendance, intervention, implementation, and IPV-related constraints. Supplementary Table 2 summarises individual constraints in each of these domains, alongside potential impacts on intervention delivery, and specific adaptations we made to overcome each constraint.

Materials

RK adapted the Ethiopian PST manual to meet the needs of women experiencing IPV, informed by internationally-developed IPV resources and our formative research with women and ANC providers (Keynejad et al., 2023). International resources comprised clinical and policy guidelines (WHO, 2013), a clinical curriculum (WHO, 2019) and handbook (WHO, 2014), a gender-based violence research guide (Ellsberg & Heise, 2005) and allied ethical and safety recommendations (WHO, 2016a). We incorporated anonymised testimonies of local women experiencing perinatal mental health conditions and IPV into the manual and training. We instituted safeguards in our subsequent feasibility trial of PST-IPV, informed by these resources.

Safeguards included protocols for responding to IPV-related risks (Ellsberg et al., 2001) and monthly in-person or telephone supervision of ANC providers by the psychiatrist and psychologist who delivered PST-IPV training. RK and TB developed a desktop flip-chart resource for use during sessions, with culturally appropriate illustrations facing the pregnant woman and Amharic prompts facing the ANC provider.

RK developed the five day PST-IPV training course, informed by the World Psychiatric Association IPV and sexual violence curriculum (Stewart & Chandra, 2017) and resources from a UK domestic abuse simulation training course. We also conpublished studies of psychological sulted interventions adapted for women experiencing IPV in LMICs (Greene et al., 2019; Latif & Khanam, 2017; Orang et al., 2018), and a local Ethiopian IPV prevention intervention (Sharma et al., 2020). We carefully considered and mitigated for potential unintended harms to women experiencing IPV during the adaptation process.

To standardise PST-IPV training, RK wrote a facilitator manual and training plan in English, with lecture slides and role play scenarios translated into Amharic. We used locally prepared, culturally appropriate illustrations to emphasise relevance to clinical practice, facilitate engagement, and visually enhance the manual (Supplementary Figure A) and flip-chart (Supplementary Figure B).

Reporting. Supplementary Table 3 reports the format, structure and content of the adapted PST-IPV intervention, using the modified (Cotterill et al., 2018) TIDieR (template for intervention description and replication) checklist (Hoffmann et al., 2014). Supplementary Table 4 describes session content and Supplementary Table 5 summarises training, competence assessment, and supervision arrangements.

Part 3: Articulating the Programme Theory

Theory Review. Supplementary Table 6 summarises the findings of our theory review. We identified evidence on other relevant interventions' mechanisms, mid-range theories, barriers and facilitators to implementation success, and contextually relevant theories of change, which informed our ToC.

ToC. Fourteen maternal care providers, HEWs, and other community health workers representing 11 health centres and primary hospitals across Sodo district attended the 2018 ToC workshop. The

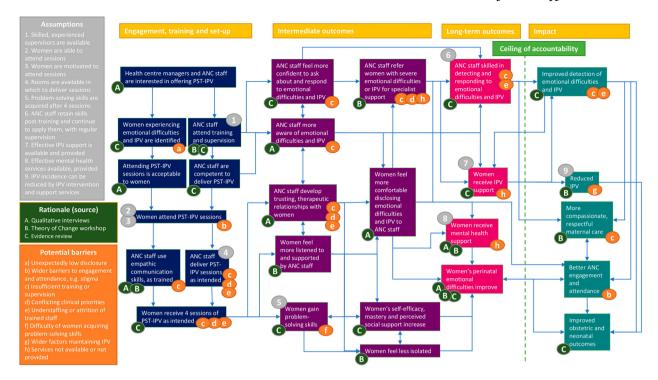


Figure 1. Theory of change map.

ToC map (Figure 1) shows the process by which long-term outcomes were hypothesised to occur. Anticipated long-term outcomes were ANC providers being skilled in detecting and responding to emotional difficulties and IPV, women receiving support, and women's perinatal emotional difficulties improving. Figure 1 outlines key aspects of engagement, training, and set-up to foster intermediate outcomes, and potential impacts beyond the "ceiling of accountability". The map makes assumptions and potential barriers explicit. Supplementary Table 7 presents our ToC reporting checklist (Breuer et al., 2015).

Dark Logic Model. Potential unintended adverse consequences of PST-IPV primarily arose from the vulnerability of pregnant women experiencing emotional difficulties and IPV. Providing a limited amount of training to ANC staff could potentially make them over-confident to manage more complex cases. For example, training ANC staff to deliver mental healthcare could have meant that some women with severe mental health conditions were not referred onward to specialist services. Similarly, training staff to detect and respond to IPV might reduce the number of women experiencing severe abuse who were referred for specialist support. Inappropriate health worker responses to IPV might inadvertently reinforce abuse or disempower women further. If partners learned about disclosures of IPV, abuse could escalate. If sessions were

delivered poorly, women could be deterred from attending routine ANC or accepting hospital delivery, posing obstetric and neonatal risks. Finally, if women experiencing emotional difficulties and IPV were not identified, policy makers might consider these low priorities.

Discussion

We identified a model of brief PST developed in South Africa (Myers et al., 2022) as the most suitable intervention for our context. Its problem-solving focus offered a novel treatment rationale and accorded with local (Azale et al., 2018; Bitew et al., 2020) and regional (Mayston et al., 2020) findings that emotional difficulties are frequently attributed to "thinking too much" about problems and the general stresses of life (Tekola et al., 2020). Although our subsequent randomised feasibility trial (Keynejad et al., 2020a) of PST-IPV recruited participants using the locally validated PHQ-9 score of five plus functional impact (Gelaye et al., 2013; Girma, 2013; Hanlon et al., 2015), the intervention was focused on women's explanatory model of emotional difficulties resulting from problems, rather than a biomedical construct of depression.

Following Heim and Kohrt (2019)'s framework for cultural adaptation, PST-IPV session materials discussed idioms of distress expressed by interviewees in our linked qualitative study (Keynejad et al., 2023); sadness, stress, and problems. Specific elements of PST-IPV were founded in women's explanatory models, while non-specific (engagement) elements accorded with women and health workers' emphasis on trusting, therapeutic relationships in Part 1. In Part 2 we adapted the PST delivery format to address women's prioritisation of confidentiality and their recommendation to align sessions with routine ANC appointments. In line with the evidence base (Chowdhary et al., 2014), we adapted the intervention "surface" via translation, culturally congruent examples, locally relevant illustrations, conceptual simplification (Chu & Leino, 2017), removal of incongruent elements (Verdeli et al., 2003), reducing written tasks, simplifying content, and developing a "job aid" flip-chart resource (Atif et al., 2017). We added relaxation techniques recommended by WHO (2014).

The pervasiveness of patriarchal norms and IPV identified in our linked qualitative study (Keynejad et al., 2023) raised the risk that psychological intervention sessions could inadvertently compound women's sense of powerlessness, reinforce abuse, or "victim blame" (Overholser & Moll, 1990). It was therefore important to prioritise women and children's safety, by training therapists to respond to IPV disclosures (Stewart & Chandra, 2017; WHO, 2019), providing regular, specialist supervision, and establishing protocols for responding to IPV-related risks (Ellsberg et al., 2001). Consistent with previous findings of 15 common factors across effective psychological interventions in LMICs (Pedersen et al., 2020), PST-IPV aimed to promote hope and realistic expectation of change, preserve confidentiality, give praise, and build rapport.

The latest MRC/NIHR framework (Skivington et al., 2021) acknowledges that complex interventions like PST-IPV can be understood as "events" within complex ecological systems like ANC (Hawe et al., 2009). Recognising the self-organising nature of healthcare systems, we sought the perspectives of diverse stakeholders, to understand the systemic context and inform adaptation decisions. For example, some but not all ANC providers had received mhGAP-IG (WHO, 2016b) training and there was growing recognition in Ethiopia of the need for compassionate, respectful ANC (Ministry of Health, 2015, 2021a; Wassihun & Zeleke, 2018). Another aspect of the systemic context was that health extension workers were considered over-burdened with competing priorities (Assefa et al., 2019) in Part 1, and so less available than other staff to attend training and supervision, and deliver sessions. This finding accorded with intervention research with other cadres of health worker in

South Africa (Jacobs et al., 2021; Spedding et al., 2020) and highlighted the need for research exploring the feasibility of mental health task-sharing in this community context.

Skivington et al. (2021) also reframed development, refinement, and (re)testing of programme theory as core elements in all phases of complex intervention research. In Part 3, we followed Moore and Evans (2017)'s recommendations for a broad ToC extending beyond the individual level, which understands the systems within which it operates. Our theory review in Part 2 identified organisation readiness (Esponda et al., 2020), training and supervision quality (Jacobs et al., 2021), shame about IPV, health worker discomfort and workload (Abrahams et al., 2021), intervention complexity (Lund et al., 2020), and IPV itself (Esponda et al., 2020; Lund et al., 2020) as potential barriers. Our dark logic model (Bonell et al., 2015) of unintended harms of PST-IPV included risks of disengagement from ANC and escalation of abuse (Daruwalla et al., 2019), underscoring the importance of safety protocols. Potential barriers to implementation success identified by stakeholders were consistent with literature from LMICs. These included system-level factors (Sorsdahl et al., 2021), such as lack of private space and service user-level factors, such as difficulty attending sessions, transport costs, competing responsibilities (Chowdhary et al., 2014), concerns about confidentiality, and stigma (Atif et al., 2017).

In addition to PST-IPV, our formative work in Part 1 identified the need for interventions at other levels, to directly address IPV and its widespread reinforcement. Complexity theory suggests that numerous episodes of advocacy (for example, activities discouraging IPV) may take place without discernible impact, before a "tipping point", phase transition (a rapid shift from one state to another), and, finally, measurable change (Shiell et al., 2008). Therefore, studies in Sodo which found mixed effects of a gender transformative intervention on IPV perpetration, substance use, and depression (Sharma et al., 2020) could be complemented by future anti-IPV community mobilisation activities (Abramsky et al., 2014).

Strengths

There are inconsistent reports of how in-depth understanding of the context translates into specific adaptations to brief psychological interventions in LMICs. Our study presents the process by which detailed contextual understanding and stakeholder consultation can inform adaptation of an evidence-based brief psychological intervention.

We explored the perspectives of pregnant women affected by IPV and ANC providers practising in this context. We applied the latest guidance to our adaptation, informed by evidence-based frameworks on cultural adaptation (Heim & Kohrt, 2019; Moore et al., 2021), programme theory articulation (De Silva et al., 2014), and contextual understanding (Craig et al., 2018). This ensured that our adaptation process and its outcomes can be readily compared with other studies.

Our diverse adaptation team, including the original intervention developers, meant that PST-IPV benefitted from a range of expertise. Incorporating the lived experiences of local women affected by perinatal emotional difficulties and IPV into training ensured that PST-IPV was tailored to the needs of the target population.

Limitations

Due to concerns about community judgement and confidentiality expressed during Part 1, we did not organise a ToC workshop for pregnant women experiencing IPV. Presenting our ToC map to stakeholders for their validation would have enabled them to be "owners of the final product" (Breuer et al., 2015), but was precluded by the coronavirus pandemic. We will share the map with stakeholders when disseminating the findings of our feasibility trial piloting PST-IPV, and iteratively incorporate them into the developing ToC map.

Intervention training did not address the needs of health workers who might themselves be affected by emotional difficulties and IPV. Future updates to the PST-IPV manual and training course should include resources to support health workers experiencing emotional difficulties, IPV, or both.

Conclusions

Few studies report the adaptation of treatments for pregnant women experiencing IPV in low and middle-income countries in depth. We systematically reported how contextual consideration, adaptation, and theoretical explication of a complex intervention can be implemented in a low-income, rural setting, following the latest consensus guidance.

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Competing Interests

The authors declare no competing interests.

Ethical Approval

Our qualitative interviews (Part 1) and ToC workshop (Part 3) received ethical approval from King's College London's Psychiatry, Nursing and Midwifery Research Ethics Subcommittee (#HR-17/18-6063), and Addis Ababa University (AAU) College of Health Sciences Institutional Review Board (#026/18/Psv).

Informed Consent from Participants

Pregnant women, ANC provider and other stakeholder participants taking part in qualitative interviews and theory of change workshops provided written, informed consent. Provisions were made for non-literate women to provide informed consent by making an independently-witnessed thumbprint.

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