RESEARCH

Addressing the challenges of integrating care for perinatal depression in primary care in Nigeria

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Abstract

Purpose This report provides the results of a task-shared approach for integrating care for perinatal depression (PND) within primary maternal and child healthcare (PMCH), including the factors that may facilitate or impede the process.

Methods This hybrid implementation-effectiveness study guided by the Replicating Effective Programmes framework was conducted in 27 PMCH clinics in Ibadan, Nigeria. The primary implementation outcome was change in the identification rates of PND by primary health care workers (PHCW) while the primary effectiveness outcome was the difference in symptom remission (EPDS score ≤ 5) 6 months postpartum. Outcome measures were compared between two cohorts of pregnant women, one recruited before and the other after training PHCW to identify and treat PND. Barriers and facilitators were explored in qualitative interviews.

Results Identification of PND improved from 1.4% before to 17.4% after training; post-training rate was significantly higher in clinics where PHCW routinely screened using the 2-item patient health questionnaire (24.8%) compared to non-screening clinics (5.6%). At 6-months postpartum, 60% of cohort one experienced remission from depression, compared to 56.5% cohort two [OR-0.9 (95%CI-0.6, 1.3) $p = 0.58$]. Identified facilitators for successful integration included existence of policy specifying mental health as a component of PHC, use of screening to aid identification and supportive supervision, while barriers included language and cultural attitudes towards mental health and human resource constraints. PHCW were able to make adaptations to address these barriers.

Conclusions Successful implementation of task-shared care for perinatal depression requires addressing staff shortages and adopting strategies that can improve identification by non-specialist providers.

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Abbreviations

PND	Perinatal depression
PMCH	Primary maternal and child healthcare
REP	Replicating effective programmes
LMIC	Low- and middle-income countries
HIC	High income countries
mhGAP-IG	World Health Organization mental health gap intervention guide
PHC	Primary healthcare
SPECTRA	Scaling-up care for perinatal depression for improved maternal and infant health project
LGA	Local Government Areas
PHCC	Primary health care centres
PHCW	Primary health care worker
CHO	Community health officer

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CHEW	Community health extension worker
EPDS	Edinburgh Postnatal Depression Scale
WHODAS	World Health Organization Disability Assessment Scale
HOME-IT	Infant Toddler version of the Home Inventory for Measurement of the Environment
ENACT	18-Item enhancing assessment of common therapeutic factors (ENACT) tool18-item enhancing assessment of common therapeutic factors (ENACT) tool
PHQ-2	2-Item Patient Health Questionnaire
SNO	Senior nursing officer
CNO	Chief nursing officer
PNO	Principal nursing officer
S-CHEW	Senior community health extension worker
C-CHEW	Chief community health extension worker
P-CHEW	Principal community health extension worker

Introduction

Worldwide, the gap between population mental health needs and available services is well documented. This gap is especially pronounced in low- and middle-income countries (LMIC) where less than 20% of people in need of mental health care receive any form of care [1, 2]. The impact of this gap can be particularly detrimental for some special population groups such as women in the perinatal period. The evidence for the harmful effect of perinatal mental health problems on women and their children abound in the literature [3]. With improvements in obstetric services, the importance of mental disorders as a cause of excess morbidity and mortality in the perinatal period became more pronounced [4]. For example, recent evidence from developed countries reveals that maternal suicide is the most common cause of maternal deaths [5]. This has prompted a call for the inclusion of mental health into maternal and child healthcare and the introduction of guidelines for providing mental health services for perinatal women, including universal screening, provision of interventions by clinicians who commonly encounter women during the perinatal period and linkages with specialist services [6–9].

Systematic reviews have consistently reported that the prevalence of perinatal depression is significantly higher in women from LMIC compared to women from high income countries (HIC) [10, 11]. Despite this higher burden in LMIC, service development has not progressed adequately to address this important public health problem. A major barrier to service provision in these countries is that their health systems are often characterized by inadequate human resources and financial constraints, problems which are commonly more pronounced for mental health care [12]. Hence,

service expansion through a process of task-sharing (where tasks ordinarily performed by specialists are transferred to non-specialist providers) has been used across several resource limited settings to improve coverage for perinatal mental health care [13–15]. Available evidence supports the viability and effectiveness of such task-sharing approaches for the integration of mental healthcare into existing services for women in the perinatal period in LMICs [16, 17]. However, this is yet to translate to policy and expansion of services across LMICs.

The World Health Organization mental health gap intervention guide (mhGAP-IG), an evidence-based tool developed for the assessment and treatment of priority mental, neurologic and substance use (MNS) disorders for non-specialists has proven to be an invaluable resource for integrating care for mental disorders in primary healthcare (PHC) and community settings [18, 19]. The mhGAP-IG includes specifications for the diagnosis and evidence-based interventions for depression, including perinatal depression. The treatment guidelines for depression in women in the perinatal period specify the use of psychosocial interventions as the first-line treatment and use of the lowest minimum effective dose of antidepressants when there is no response to psychosocial interventions [19]. Psychosocial interventions in mhGAP-IG include psychoeducation, addressing current psychosocial stressors, reactivation of social networks, structured physical activity and regular follow-up [19]. Whilst the mhGAP-IG is currently being used in more than 100 countries in different regions of the world to scale up mental health care [20] there is at present limited research evidence for its utility for scaling-up care for perinatal depression.

This report is the result of the hybrid implementation trial which forms the main component of the Scaling-up care for perinatal depression for improved maternal and infant health (SPECTRA) project [21]. The planning and implementation of the SPECTRA project was guided by the replicating effective programmes (REP) framework. The REP framework was initially developed by the U.S. Centers for Disease Control and Prevention (CDC) to package and disseminate HIV behavioral and treatment interventions for implementation in community-based service settings [22]. In line with this framework, the present study was implemented in four overlapping phases: (1) *Precondition*: The main goal of this phase is to assess the need, identify effective interventions as well as the barriers to their implementation and to design an appropriate intervention package; (2) *Pre-implementation*: During this phase, with the help of a community working group, the package was further developed, the training and technical assistance needs were identified, the package was pilot tested and a final version prepared; (3) *Implementation*: This phase involves the training of selected staff from the participating organizations, provision of services for perinatal depression, and the implementation of the technical

assistance components (including supportive supervision, consultation and referral support) and the evaluation of outcomes; (4) *Maintenance and evolution:* This phase involves making the necessary organizational changes to sustain the intervention.

This paper provides the findings of both the implementation and effectiveness components of the SPECTRA study. The overall goal of the study was to examine the impact of training, use of a screening tool, and provision of clinical supervision in enhancing the performance of frontline primary healthcare workers in their ability to identify and care for persons with perinatal depression using the mhGAP-IG. The results are evaluated and presented using the RE-AIM framework [23]. The RE-AIM framework was developed to guide the planning and evaluation of programs according to 5 key outcomes: Reach, Effectiveness, Adoption, Implementation, and Maintenance [23, 24]. Specifically, we report on reach, effectiveness, implementation and adoption. We also report on the exploration of contextual factors that may impede or facilitate the routine integration of mental health services in to primary maternal care in a resource limited setting.

Methods

This Type II hybrid implementation study used a pre- and post-design (data collected before and after training primary healthcare workers). Outcome evaluation was conducted with a mix of quantitative and qualitative methods. The details of the methodology have been published in the protocol paper and only a summary will be provided here [21].

Study setting

The study was conducted in 27 primary maternal and child healthcare clinics selected from across 11 local government areas located within and around the city of Ibadan, the capital of Oyo State, Nigeria between 12 Aug 2015 and 11 Feb 2020. Oyo State is one of the 6 states in southwest geopolitical zone of Nigeria with an estimated population of about 7.8 million as at 2016 [25]. It is divided administratively into 33 Local Government Areas (LGA), with 11 of these local governments situated within and around the state capital- Ibadan. Each local government area has 10–14 primary health care centres (PHCC) on the average. Health care in these PHCCs is delivered mostly by non-physician primary health care workers (PHCW) [26]. These frontline primary health care providers include nurses/midwives, community health officers (CHO) and community health extension workers (CHEW). Each of these categories of providers has a minimum of three years post-secondary education in clinical care and are certified by their respective

boards. Healthcare services in each PHCC is provided by 3–10 of these frontline primary health care providers supported by other categories of support staff such as records officers, laboratory technicians, and health attendants. The oversight for health care delivery including the supervision and support of the frontline PHCW in each LGA is provided by one general practitioner employed by the government and designated as the Primary Health Care Coordinator for the Local Government.

Study procedure

In line with the pre-post design, a cohort of patients (Cohort 1) was recruited before PHCWs were trained to use the mhGAP-IG to identify and provide care for perinatal depression and a second cohort (Cohort 2) was recruited after the training.

Participant recruitment

Cohort 1

Consecutively registered women presenting for ante-natal care were screened using the Edinburgh Postnatal Depression Scale (EPDS) [27, 28] by research staff after the woman had been attended to by the PHCWs. All those who screened positive for depression, irrespective of whether they were identified clinically as having depression by the PHCW, and who provided informed consent were recruited.

Cohort 2

The procedure for recruiting participants was similar to that of Cohort 1; consecutively registered women presenting for ante-natal care were screened with the EPDS after consultation with the PHCW and those who screened positive were recruited. However, these participants were recruited after the PHCW had been trained.

For both cohorts, outcome assessments were conducted at baseline (within 72 h of recruitment), at birth and at 3- and 6-months postpartum by a different research staff. Outcome assessments were carried out in the patient's homes or at other places outside of the clinic that were convenient for the participants.

Outcome measures Included (1) a short questionnaire to enquire about whether they had been asked questions about their psychological health by the midwives and their experience of care in the clinic; (2) symptoms of depression using the EPDS [27]; (3) the World Health Organization Disability Assessment Scale (WHO-DAS) [29] to determine their level of functional impairment; (4) infant outcomes including mode of delivery, birthweight, weight at 6 months,

infant development (social smile, neck control) and (5) parenting skills as assessed with the Infant Toddler version of the Home Inventory for Measurement of the Environment (HOME-IT) [30].

Training of the providers

The training of PHCW was conducted using a train-the-trainer approach. Specialist trainers (psychiatrists) trained senior level primary health care workers (physicians and senior nurse/midwives or community health officers) to identify and treat perinatal depression using the depression module of the mhGAP-IG and also provided them with skills needed to step this training down to other frontline providers. Using this approach, all of the 198 providers in the 27 selected clinics were trained in a series of 3-day workshops with 20–25 participants per class by the trained senior PHCWs. Refresher training was conducted by the same trainers about 7 months after the initial training Details of the training procedure and outcomes are documented in an earlier report [31].

The selected PHCCs were then randomly assigned to two groups. In one arm (the PHQ-2 arm), all front line PHCWs were trained to routinely administer the 2-item Patient Health Questionnaire (PHQ-2) [32] to women during their initial clinical examination and to follow this up in those women who reported any of the symptoms by conducting a more comprehensive diagnostic assessment of depression using the mhGAP-IG. In the second arm (non-PHQ-2 arm), participants were not routinely screened with the PHQ-2 but were nevertheless evaluated for depression using the mhGAP-IG if the PHCW considered that necessary. This was to assess the effect of incorporating a short screening tool into routine clinical assessment as an aid for PHCWs to detect perinatal depression. In both arms, participants whose depression was detected received treatment delivered by the PHCW following the specifications of the mhGAP-IG.

Interventions

The Interventions were based on treatment specifications of the mhGAP-IG as previously adapted for the health system of Nigeria [33, 34]. The mhGAP-IG depression module guidelines for pregnant or breastfeeding women emphasize the use of psychosocial interventions with a provision for the use of the lowest effective dose of an antidepressant only when there is no response to psychosocial treatments. In line with this, PHCWs in this study were trained to deliver psychosocial intervention sessions comprising psychoeducation, addressing current psychosocial stressors and reactivating social networks.

Psychoeducation, involving the provision of an explanation of the diagnosis to the patient in simple language using local expressions while avoiding the use of 'mental illness/disorder' label, was offered to every participant identified by the PHCWs. Addressing current psychosocial stressors entails offering the patient an opportunity to talk about their current psychosocial problems with the health worker, to the extent possible, addressing pertinent social issues and assisting the patient to work out a solution drawing on available community resources. In reactivating social networks, the patient is encouraged to re-initiate prior social activities that have been neglected on account of the illness.

The PHCW was expected to follow up the patient regularly, however, the choice of the number and frequency of the visits was at the discretion of the health care provider attending to the patient. Low dose medications for patients who did not improve with psychosocial treatments could only be offered after consultation with the primary care physician.

Monthly supportive supervision visits were provided to each of the clinics implementing the mhGAP interventions by the senior primary healthcare providers who delivered the step-down mhGAP training. These visits were to observe the fidelity of the PHCWs to agreed procedures for service integration (inclusion of mental health in routine health talks, the use of the mhGAP-IG for diagnosis and treatment planning and fidelity to mhGAP interventions), and to provide clinical support and supervision, following which a checklist was completed. The checklist comprised the mhGAP Clinical Support and Supervision Form and the Nigerian Government Supportive Supervision Checklist for Primary Care. De-briefing sessions were held following each visit and a copy of the checklist was made available for the PHCWs in the clinic.

Study outcomes and instruments

We used relevant domains of the RE-AIM framework to assess outcomes: reach, effectiveness, adoption, and implementation. (Maintenance (that is sustenance over time) was not included as it is beyond the scope of the current programme of work). The pre-specified primary implementation outcome for this study was change in the identification of perinatal depression between cohort one and two; the primary effectiveness outcome was the difference in the rate of remission of depression symptoms (defined as a score of 5 or less on the EPDS) between the two cohorts at 6 months postpartum. In addition, we report on the contextual factors that could facilitate or impede integration as well as the adaptations needed for successful integration.

Reach

We defined reach in terms of proportion of women in need of services who received the service. We assessed the proportion of women whose depression was identified and who

received at least one session of psychosocial interventions as described in the mhGAP intervention guidelines.

Effectiveness

The primary effectiveness outcome was the difference in the rate of remission of depression symptoms between the two cohorts at 6 months postpartum (remission was defined as EPDS score of 5 or less). Secondary effectiveness outcomes which were assessed at birth, 3- and 6-months postpartum included the mean score on the EPDS, mode of delivery, WHO Disability Assessment Schedule (WHODAS) [29] and HOME-IT scores [30]. We also compared the median time to remission between cohorts 1 and 2.

Adoption

For this domain we used the proportion of clinics where mental health was included in the routine health talks for pregnant women and the proportion of clinics where services for perinatal depression were provided.

Implementation outcomes

The primary implementation outcome for this study was change in the overall identification rate of perinatal depression between cohort one and two. Secondary implementation outcomes included the quality of psychosocial interventions delivered by the PHCW assessed using the 18-item enhancing assessment of common therapeutic factors (ENACT) tool [35] and the contextual adaptations to integrated care (see below). For the ENACT tool ratings, independent assessors (members of the research team) with previous experience with the use of the tool sat in during intervention sessions. Rating of intervention sessions using the ENACT tool was not done on the first intervention sessions. The ENACT tool has a three-tiered competency rating: Tier 1- needs improvement, Tier 2- done partially and Tier 3- well done. In this paper, we report on the proportion of providers achieving the different levels of competence on the different items on the ENACT tool.

Contextual factors

As well as the adaptations required for integrating perinatal depression care into routine maternal healthcare services were explored during qualitative interviews with the maternal care providers and also during the de-briefing sessions after each of the top-up training sessions. Key informant interviews were conducted on a purposive sample of 20 PHCWs across different categories (nurse/midwives, CHOs and CHEWs who participated in delivering the interventions for perinatal depression.

Data analysis

Descriptive statistics were used to assess the balance between Cohorts 1 and 2 at baseline for both PHCC and individual participant characteristics. In order to take appropriate account of the hierarchical nature of the data, we used multivariate mixed effects logistic regression to estimate remission of depression symptoms at three and six months for Cohort 1 compared with Cohort 2, adjusting for baseline depression severity. Similar analyses were carried out to compare depression symptoms, disability and the growth profiles of the infants.

The recorded key informant interviews were transcribed and explored using thematic analysis. A mix of inductive (themes derived from the data) and theoretical (themes influenced by the literature) approaches were used. The initial themes based on the interview guide were derived by BDO. The transcripts were read to understanding and familiarity by BDO and OA and independently coded to generate additional themes and the sub-themes as well as identify texts relevant to each theme.

Results

Cohort 1

A total of 2988 women who registered for ante-natal care in the 25 primary health care centres involved in the study were screened with the EPDS by trained research staff after they had been seen by the primary health care workers. Of these, 218 (7.3%) screened positive (score of 10 or more on the EPDS) and were enrolled into the study, 205 (94%) had a baseline assessment and 155 (75.6%) completed the 6 months postpartum follow up. See Fig. 1

Cohort 2

In this Cohort, 7177 women registered for ante-natal care in the 27 clinics over the study period (11 clinics were assigned to the PHQ-2 arm and 16 clinics in the non-PHQ-2 arm); one woman declined screening with EPDS. Out of the 7176 pregnant women screened for recruitment into this cohort 517 (7.2%) were positive (317 in the PHQ-2 arm and 200 in the non-PHQ-2 arm). Baseline assessment was completed for a total of 439 (84.9%) who provided informed consent and six months postpartum follow up on 338 (65.3%). See Fig. 1.

The primary implementation outcome and the effectiveness are based on the comparison of Cohort 1 to Cohort 2 while other outcomes are reported for Cohort 2.
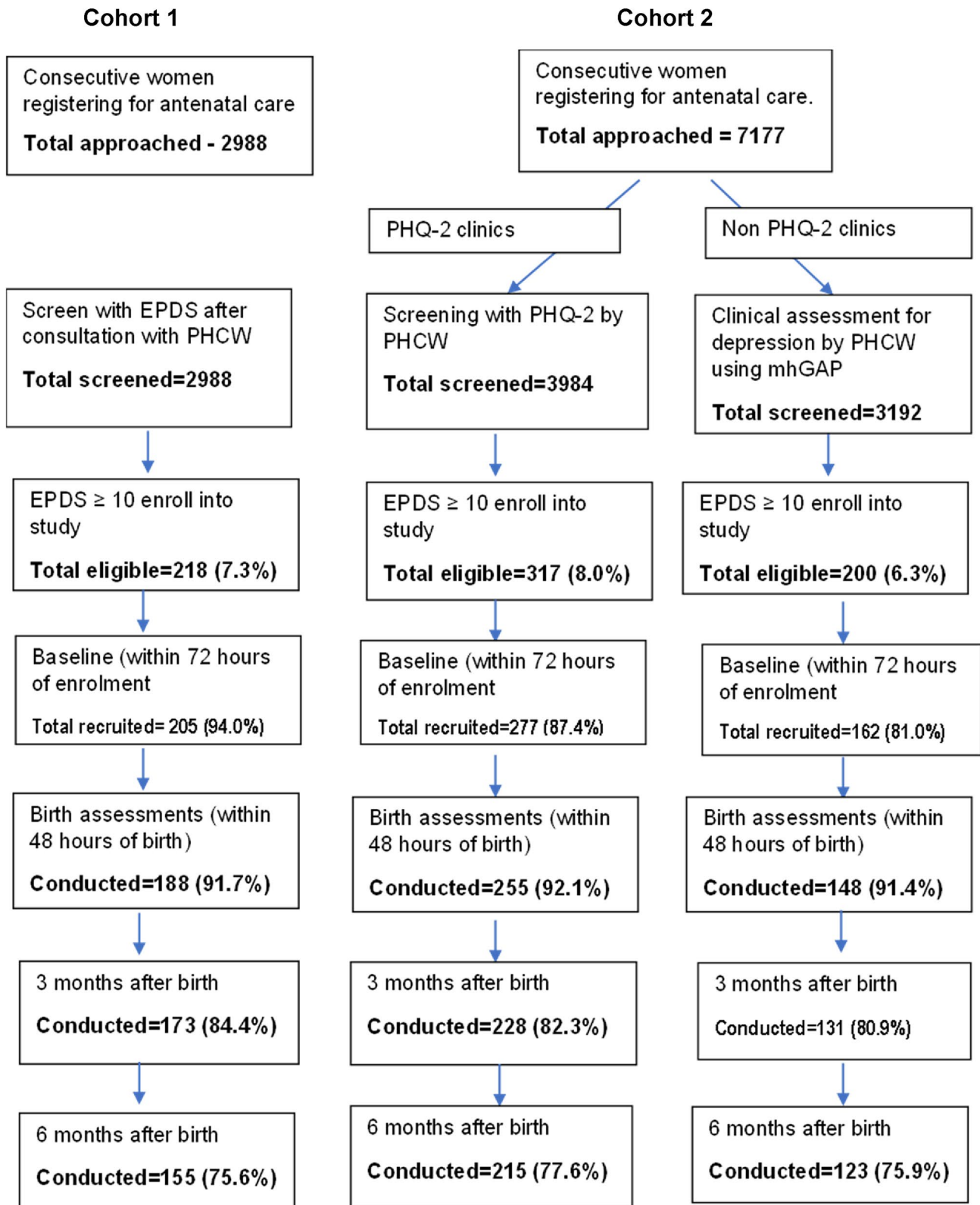
Cohort 1

Consecutive women registering for antenatal care

Total approached - 2988

Screen with EPDS after consultation with PHCW

Total screened=2988

↓

EPDS ≥ 10 enroll into study

Total eligible=218 (7.3%)

↓

Baseline (within 72 hours of enrolment

Total recruited= 205 (94.0%)

↓

Birth assessments (within 48 hours of birth)

Conducted=188 (91.7%)

↓

3 months after birth

Conducted=173 (84.4%)

↓

6 months after birth

Conducted=155 (75.6%)

Cohort 2

Consecutive women registering for antenatal care.

Total approached = 7177

PHQ-2 clinics → Non PHQ-2 clinics

Screening with PHQ-2 by PHCW

Total screened=3984

Clinical assessment for depression by PHCW using mhGAP

Total screened=3192

↓

EPDS ≥ 10 enroll into study

Total eligible=317 (8.0%)

EPDS ≥ 10 enroll into study

Total eligible=200 (6.3%)

↓

Baseline (within 72 hours of enrolment

Total recruited=277 (87.4%)

Baseline (within 72 hours of enrolment

Total recruited=162 (81.0%)

↓

Birth assessments (within 48 hours of birth)

Conducted=255 (92.1%)

Birth assessments (within 48 hours of birth)

Conducted=148 (91.4%)

↓

3 months after birth

Conducted=228 (82.3%)

3 months after birth

Conducted=131 (80.9%)

↓

6 months after birth

Conducted=215 (77.6%)

6 months after birth

Conducted=123 (75.9%)

Fig. 1 Assessment and treatment flow chart

Implementation outcomes

Identification of depression

In cohort 1 only 3 (1.4%) of the 218 women who screened positive for depression on the EPDS had a depression diagnosis documented in their records by the PHCW after the initial consultation. In cohort 2, 90 (17.4%) of the 517 women who screened positive were recognized as having depression by the PHCW. The rate of identification was 24.8% in the clinics where the PHCW routinely screened with PHQ-2 and 5.6% in the clinics not using the screening instrument ($x^2 - 31.4$, $p < 0.001$).

Adoption and reach

During the supportive supervision visits, mental health was included in the routine health talk delivered in 23 of 27 (85.2%) clinics. Ten clinics did not deliver services for perinatal depression hence adoption of perinatal mental health service integration was 63.0%. All 90 participants identified by the PHCWs had at least one therapy session. Number of

intervention sessions ranged between 1 and 4; the average number of sessions received was 1.5.

Quality of psychosocial interventions delivered

ENACT tool rating was conducted for 24 psychosocial intervention sessions. The proportion of PHCWs scored at different levels of competence on the ENACT tool items is as shown in Table 1. More than 50% of the providers were able to achieve Tier 3 competence (done well) on most of the ENACT items; the item with lowest competence rating where about a third of the providers were scored Tier 1 (needs improvement) was item 11 (appropriate involvement of family members and other caregivers).

Effectiveness of interventions for depression

Table 2 shows the baseline characteristics of participants in Cohorts 1 and 2. Both cohorts had similar baseline characteristics with the participants recruited at similar mean gestational age [23.3 weeks (sd 4.3) for cohort 1 and 22.9 weeks (sd 4.0) for cohort 2] and with similar mean

Table 1 Primary health care workers competence with psychosocial interventions

	ENACT item [35]	Tier 1 Needs improvement n(%)	Tier 2 Done partially n(%)	Tier 3 Done well n(%)
1	Non-verbal communication and active listening: contact, facial expression, body language and gestures	1 (4.2)	5 (20.8)	18 (75.0)
2	Verbal communication skills: open-ended questions, summarizing and clarifying statements	1 (4.2)	10 (41.7)	13 (54.2)
3	Rapport building and self-disclosure	0	8 (33.3)	16 (66.7)
4	Exploration, interpretation and normalization of feelings	1 (4.2)	9 (37.5)	14 (58.3)
5	Demonstration of empathy, warmth and genuineness	2 (8.3)	5 (20.8)	17 (70.8)
6	Assessment of functioning and impact on life	1 (4.2)	5 (20.8)	18 (75.0)
7	Exploration of patient's and social support network's explanation for problem (casual and explanatory models)	2 (8.3)	7 (29.2)	15 (62.5)
8	Incorporation of coping mechanisms and prior solutions	1 (4.2)	12 (50.0)	11 (45.8)
9	Assessment of patient's recent life events and acknowledgement of impact on psychosocial wellbeing	2 (8.3)	14 (58.3)	8 (33.3)
10	Assessment of other mental health problems, alcohol/drug use and physical health problems	1 (4.2)	17 (70.8)	6 (25.0)
11	Appropriate involvement of family members and other caregivers	8 (33.3)	7 (29.2)	9 (37.5)
12	Collaborative goal setting and addressing patient's expectations	2 (8.3)	9 (37.5)	13 (54.2)
13	Promotion of realistic hope for change	0	12 (50.0)	12 (50.0)
14	Psychoeducation incorporating local (ethno-psychological) concepts and terms	2 (8.3)	11 (45.8)	11 (45.8)
15	Use of problem-solving steps: problem formulation, prioritization, solution generation and action planning	2 (8.3)	8 (33.3)	14 (58.3)
16	Elicitation of feedback when providing advice, suggestions and recommendations	1(4.2)	9 (37.5)	14 (58.3)
17	Explanation and promotion of confidentiality	1 (4.2)	4 (16.7)	19 (79.2)
18	Assessment of harm to self, harm to others, harm from others and developing collaborative response plan	2 (8.3)	10 (41.7)	12 (50.0)

Table 2 Baseline characteristics of participating clinics and patients

	Cohort 1	Cohort 2
Cluster level		
Number of clinics	25	27
Number of participating patients per clinics		
Median (IQR)	4 (2, 8)	12 (4, 19)
Clinic location [n (%)]		
Urban	9 (36.0%)	11 (40.7%)
Rural	16 (64.0%)	16 (59.3%)
Individual level		
Number of patients	205	439
Age, years		
Mean (SD)	25.2 (6.2)	26.0 (6.1)
Gestational age, weeks		
Mean (SD)	23.3 (4.3)	22.9 (4.0)
Marital [n (%)]		
Single/divorced/separated/widowed	48 (23.4%)	44 (10.0%)
Married/cohabiting	157 (76.6%)	395 (90.0%)
Parity [n (%)]		
Primiparous	98 (47.8%)	202 (46.0%)
A child/more	107 (52.2%)	237 (54.0%)
Education [n (%)]		
No education	3 (1.5%)	10 (2.3%)
Primary education	25 (12.2%)	44 (10.0%)
Secondary education	159 (77.6%)	303 (69.0%)
Tertiary education	18 (8.8%)	82 (18.7%)
Occupation		
Not employed	59 (28.8%)	54 (12.3%)
Employed	146 (71.2%)	385 (87.7%)
EPDS		
Mean (SD)	12.2 (2.5)	11.9 (2.1)
WHODAS		
Mean (SD)	19.4 (6.1)	18.7 (6.5)

EPDS scores at recruitment [mean EPDS 12.2 (sd 2.5) and 11.9 (sd 2.1) for cohorts 1 and 2 respectively].

There was no significant difference in the rate of remission of depression symptoms at six months postpartum in both cohorts: 60.0% in cohort 1 compared to 56.5% in cohort 2 [OR-0.9 (95%CI 0.6, 1.3) $p = 0.58$]. The median time to symptom remission was 20 weeks in cohort 1 and 18 weeks in cohort 2, this difference was not statistically significant.

The mean EPDS scores were not significantly different at six months between Cohorts 1 and 2; Cohort 2 however did significantly better on measures of parenting skills (Table 3) but had poorer disability scores compared to Cohort 1. There was no significant difference between cohorts 1 and 2 on other secondary outcomes including mode of delivery, mean birth weight, infant feeding, and infant development.

Contextual factors

Contextual factors affecting integration of service for perinatal mental health that were explored included the barriers, facilitators and required adaptations. The key themes that emerged in the exploration of facilitators to service integration were (1) existing policy for mental health service integration which specify that mental health is component of primary healthcare; (2) the utility of the PHQ-2 as a tool to aid identification (3) the benefits of providing support and supervision; (4) changes in the attitude and improved competence of PHCWs. The key themes that emerged in the exploration of barriers to service integration included (1) language and cultural barriers in building rapport with the patient and identifying symptoms of perinatal depression, and cultural gender-related issues when male PHCW provide psychosocial interventions and have to involve participant's spouses; (2) resource constraints including insufficient number of personnel and private space for mental healthcare. The needed adaptions identified that enhanced the success of this task-sharing approach for perinatal depression care were (1) clinic-specific re-organization of workflows and allocation of specific space for intervention sessions (2) cultural sensitivity with providers using a more culturally acceptable language in probing for mental health symptoms. More details and quotes are provided on Table 4.

Discussion

While studies have demonstrated the utility of task-sharing for integrating care for perinatal depression into routine maternal care, this study seeks to provide information on implementation strategies that can aid the scaling up and sustainability of such an approach in a low resource setting. Our findings indicate that while the adoption of the provision of services for perinatal depression by the clinics was relatively high, with the primary healthcare workers in most of the implementing clinics willing to provide services, only about a quarter of perinatal women in need of care for depression were identified by the non-physician PHCW following mhGAP training. It is worth noting, however, that the rates of identification following training (17.4%), although still low, were significantly higher compared to the rates observed before the training (1.4%). We also documented the utility and the acceptability of using a short screening tool (the PHQ-2) to aid the identification of depression, with PHCWs in the screening clinics where the PHQ-2 was used achieving significantly higher identification rates compared to those not providing screening. In this study, we did not find a significant difference in the rates of remission of depression between the cohorts of women- one recruited

Table 3 Secondary outcomes at three (3) and six (6) months

	Cohort 1	Cohort 11	Odds ratio (95% CI)		
	Mean(SD)/median	Mean(SD)/median	Adjusted for clustering only[a]	Fully adjusted[b]	p-value*
3 months(N = 532)					
WHODAS	14.60 (3.71)	14.47 (4.25)	− 0.23 (− 1.37, 0.92)	− 0.18 (− 1.31, 0.95)	0.752
EPDS	4.72 (4.03)/4.00	4.88 (4.88)/4.00	0.44 (− 0.72, 1.60)	0.50 (− 0.59, 1.60)	0.368
6 months(N = 493)					
EPDS	4.79 (3.95)/4.00	5.10 (4.58)/5.00	0.40 (− 0.65, 1.44)	0.40 (− 0.65, 1.44)	0.459
WHODAS	14.01 (3.23)	14.90 (4.53)	0.89 (0.10, 1.68)	0.89 (0.11, 1.68)	0.026
HOME-IT					
Responsivity	7.34 (2.27)	9.09 (1.74)	1.75 (1.37, 2.12)	1.75 (1.37, 2.12)	< 0.001
Acceptance	4.29 (2.16)	6.12 (1.52)	1.95 (1.26, 2.64)	1.95 (1.25, 2.64)	< 0.001
Organization	4.40 (1.08)	4.44 (1.05)	0.05 (− 0.30, 0.39)	0.05 (− 0.29, 0.39)	0.772
Learning materials	1.82 (1.94)	2.47 (1.88)	0.67 (0.23, 1.11)	0.68 (0.23, 1.12)	0.003
Involvement	3.05 (1.38)	3.31 (1.02)	0.37 (0.02, 0.72)	0.37 (0.02, 0.71)	0.040
Variety	2.09 (1.48)	1.92 (1.12)	− 0.15 (− 0.52, 0.22)	− 0.15 (− 0.52, 0.23)	0.448
HOME-IT Total score	22.99 (5.30)	27.36 (4.62)	4.70 (3.17, 6.22)	4.69 (3.20, 6.19)	< 0.001

[a]adjusted for local government and clinics where participants were receiving care

[b]adjusted for EPDS at baseline, local government and clinics where participants were receiving care

*Fully adjusted odds ratio

before the PHCWs were trained to provide interventions for perinatal depression and the other recruited after.

A critical barrier that needs to be overcome in the provision of care for perinatal depression is the identification of the condition by providers who attend to women in this period. Even in better resourced settings where women are attended to by physicians or obstetricians, detection rates are similarly low [36]. In a longitudinal study exploring the identification, treatment, and referral of women with common mental disorders by obstetrical providers in the United States of America, only 41% of women who screened positive had any documentation of psychiatric symptoms or diagnoses in their medical records and only 15% had mental health treatment documented [36]. Even where there are guidelines for routine screening and evidence for the feasibility of universal screening [37], evidence suggests that, in practice, only 40% of women are screened for perinatal depression compared to 96% for gestational diabetes [38]. Perhaps, one way of addressing this is to mainstream depression screening within the broader physical health screening that is routinely conducted by maternal care providers.

The other challenge to the identification and treatment of perinatal depression observed in this study was related to language and culture with patients unwilling to discuss their symptoms, cultural sensitivity to ascribing negative pronouncements to oneself and challenges with eliciting some symptoms in the local language. This is not particular only to this setting as other studies have documented the impact of language and culture on the detection and access to care for perinatal mental disorders with ethnic minorities

less likely to be diagnosed and to receive care [39, 40]. However, in our study where the providers and participants had similar cultural backgrounds, the providers were able to navigate this challenge by adopting culturally acceptable and non-stigmatizing language in taking a history and providing psychoeducation.

This study did not find a significant difference in the rates of remission from perinatal depression symptoms between the two cohorts; one recruited before the PHCWs were trained to deliver interventions and the other after even though the quality of the psychosocial interventions delivered by the PHCWs was relatively high. This is probably related to the limitations inherent in our study design (lack of a parallel control group) as well as the low rates of identification with only about 25% of women identified by the providers.

In line with existing evidence on task-sharing, we demonstrated the importance of ongoing support and supervision in addition to training in empowering providers, improving their skills and carrying out assigned tasks with fidelity. This was greatly facilitated by involving and equipping the primary care physicians and more senior PHCWs who routinely provide supervision to the frontline providers in the training and provision of supportive supervision.

Task-sharing initiatives are important in closing the mental health treatment gap especially in low resources settings [32]. However, an important challenge in using these approaches to provide care for women with perinatal depression is overcoming human resource constraints [33]. The success of task-sharing hinges on the availability of

Table 4 Contextual factors that can facilitate or impeded the integration of perinatal mental health care in primary maternal and child healthcare and the adaptions needed

	Key Themes	Sub-Themes	Quotes
Barriers to service integration	Language and cultural barriers to building a rapport with the patient and identifying symptoms of perinatal depression	Initial resistance by patients to divulge symptoms	"…..the problem is with the patients because when you ask them questions they will tell you that nothing, when you know that there is something, until when you probe them many times before they come down, some of them may be crying that I don't know how to tell you that this and that is what is happening to me," **50 yr F, CHO** "….they do not come out with their problems at first. Sometimes, they do prove a bit difficult in answering our questions but they do respond favourably at the end of the day, that is when we must have won their trust" **52 yr F, CNO**
		Challenges with eliciting symptoms in the local language	"the question about low esteem, because many of them did not understand English, if it is someone that understands English, when you say it they will understand, but if it is Yoruba, to put it in Yoruba form is somehow difficult" **50 yr F, CNO** "The question about low esteem…….you have to ask the questions in a way that the patient will not feel offended." **51 yr M, C-CHEW**
		Cultural beliefs related to ascribing "negative" pronouncements and situations to oneself	": It is the question about low esteem, and another one is about suicidal thought. …..because when you say it some of them will say, don't curse me o, God forbid…." **50 yr F, CNO** "…..again that we find very challenging to ask our patients is the one on suicidal attempt or thought. The reason is that culturally, it is seen as a taboo for a person to want to take his or her life." **52 yr M P-CHEW** "You know because of our cultural background here, some of them do not like to say or admit that they have depression or that they are sad. They believe it is negative" **51 yr F CNO** "They believe the question is too negative and so they answer no to it. It is after we press further that we realise that their answers were actually 'yes' to the question and not 'no'." **52 yr M, P-CHEW** We don't ask suicidal questions directly, we have to ask in an indirect way, using a related but different question. We can get the right answer using this approach. **54 yr F, PNO**
		Gender-related difficulties in involving participants husband for male PHCW	"Yes, there was a little complexity, because the first time that I called, the husband was very angry that where did I get his number and why am I calling him and his wife" **51 yr M, C-CHEW** "they are husbands that always patronize our clinic and they know me, so they find it easy to understand, but it might not be easy like that with other male colleagues …. they might have problem because I understand how it is for a man to allow a man to be calling his woman……" **36 yr M CHO**
	Resource constraints	Workforce shortages	"Well another factor was our staff strength; we were so few at work" **51 yr F, CNO** "Because the workload is huge and we don't have much staff to attend to patient's needs. Health workers who are on morning duty sometimes sign out by 6 p.m" **54 yr F, PNO**
		Lack of private space for counseling sessions	"only thing that I think is an hindrance to it is just the time and space" …… "most of these clinics did not have a private place to attend to them, it is always an open place where you see people going out and coming in, even passing by and it gives a whole lot of distraction" **36 yr M, CHO**

Table 4 (continued)

Key Themes	Sub-Themes	Quotes
Facilitators		
Existing policy for mental health service integration	Mental health is a component of the primary healthcare service	At the primary health care, we operate integrated health care services. ….mental health care had always been a part of the primary health care components. **46 yr F CHO**
Utility of diagnostic tool	The acceptability and usefulness of using the PHQ-2 to aid diagnosis	"some who are depressed may have physical signs, and it maybe the physical signs that we will be treating if we did not have those two questions to ask them" **50 yr F, CNO** "Sometimes, their responses might not be accurate or the complaints do resemble that of another medical condition. The questions help us to ask the right questions to get the right answers." **54 yr F, PNO** "Thanks to the PHQ-2 or else they would have been sliding off our fingers and they would not have been cared for." **52 yr M, P-CHEW**
The benefits of providing support and supervision	The involvement and training of senior providers who had oversight for managing the clinics	"The matron in our clinic has interest in this program. Moreover, the PHC coordinator has told us that it is part of our duty" **36 yr F S-CHEW** "……we were allowed to deliver the care in our clinic and the matron is among the people that you trained, so working together really helped us to deliver the intervention very well". **49 yr F, CHO**
	The perceived benefits of supportive supervision to PHCW practice	"because the SPECTRA team use to guide us, whenever we made any mistake they use to correct us, even we use to call them if we see anything that we need them to guide us and they we say this is how you will do it, they do help and guide us to give quality care…." **50 yr F, CHO** "because we gained more knowledge. It was from the feedbacks I got that I knew that I should not be putting words into my patients' mouth. I should only ask leading questions that make the patient speak out all the more and not keep telling them solutions to their problems" **36 yr F, SNO** "the supervision really help us, because it add to my knowledge in treating my patients, and make us to be bold enough in treating patients especially those with depression. Then ……. remember that some people will come and check our work, so we have to do it well and that we should continue in the way we were trained." **51 yr M C-CHEW** "They do check on our booklets and give us a sort of mini training on what they observed especially on things we did not do well …………………it helped us to cultivate the habit of being open to learning" **52 yr F, CNO**
Changes in the attitude and improved competence of PHCW	Provider satisfaction with providing care for perinatal depression	"once we start the talk therapies with them and they keep adhering to what we discuss with them, you start noticing changes in them that their problems are getting reduced. That makes me really very satisfied as a health worker." **52 yr M, P-CHEW**
	Perceived improvement in their practice from the mental health training	"What we learnt on the SPECTRA project helped us to help other patients; offering emotional support" **54 yr F, PNO** "Since we started SPECTRA, I have learnt to be more patient with even all my patients compared to before" **43 yr F, S-CHEW**

sufficient numbers of non-specialist healthcare workers. However, across many low- and middle-income countries, in addition to the well documented scarcity of specialist providers, there are insufficient numbers of frontline non-specialist providers to support service delivery and improve service coverage [34]. Recent surveys of the primary health care workforce in Nigeria showed not just marked shortages in the health workforce required at this level but also maldistribution of the available workers [35, 36]. This was identified as a major contextual barrier for the successful integration of perinatal depression care in our study; the providers available in the clinics were few and saddled with multiple tasks making it difficult to devote the needed time to explore the presence of mental health symptoms in order to make a diagnosis and provide appropriate interventions.

A key strength of our study is in systematically exploring barriers and facilitators to task-sharing for perinatal depression care as well as documenting adaptations to overcome some identified barriers. Our study provides support for the use of task-sharing to scale up treatment and care for perinatal depression by demonstrating that with training, non-physician PHCW can identify and deliver psychosocial interventions for perinatal depression. The key enablers include existing policy and guidelines for integrated care, training and supportive supervision along with the resulting improved competence and attitudes of the frontline healthcare providers. However, as noted in a recent systematic review, notable barriers to task-sharing for implementation of evidence-based mental health interventions in LMIC occur in domains that are challenging to modify or intervene for [41], such as the inadequate manpower and inadequate clinic facilities identified in this study. The main limitations of our study are related to the pre-post design. This implies that changes observed in the clinics in terms of detection and treatment of perinatal depression, post intervention, may not be due to our intervention alone. Other important limitations worth noting are that outcome measures were self-report and participant attrition did occur due to the longitudinal design.

Conclusion

This study contributes to the growing body of knowledge on the factors needed for the successful implementation of task-sharing for addressing the burden of perinatal depression in LMIC. Specifically, there is a need for strategies that can improve identification of perinatal depression by non-specialist providers to ensure that more women in need are reached with the services. This study highlights the pressing need for LMICs including Nigeria to pay attention to

Table 4 (continued)

Key Themes	Sub-Themes	Quotes
Adaptations needed to facilitate service integration	Reorganisation of workflows and re-designation of available space	Creative use of existing space to provide privacy for patients during intervention sessions	*"We created it because we don't have much space in our clinic. Each health worker makes arrangements and creates a private space to attend to such patient."* **54 yr F PNO** *"There is a room, our family planning counselling unit that we improvised for our SPECTRA patients too. If the place is occupied, there is another corridor that we use at the back of our clinic. There is a seat there for us to sit and discuss with them"* **52 yr M, P-CHEW** *"……I use the Matron' office or even the family planning room.."* **36 yr F, CNO** *"whoever needs counselling among them will be taken to my office for confidentiality sake. I do my talk therapies with them in my office."* **52 yr F, CNO**
		Reorganisation of workflow	*"My colleagues will be attending to the other patients till I'm through with her"* **51 yr M C-CHEW** *"…if it is our ante-natal day and my SPECTRA patient is around, I will tell my colleague that is on duty to take over the ante-natal clinic duties."* **43 yr F CHEW**
		Adjustment to use of time	*"very early in the morning when their treatment cards are gathered, which usually take up to 1 h to 1 and half hours, that is done before health talk is given; I usually call on my patients and attend to them instead of them just sitting down doing nothing. I would have informed them to come as early as 8 or 9 am......"* **36 yr F SNO** *"we will talk to them first before attending to other patient, so that we won't take their time"* **50 yr F CHO** *"I do fix appointments with them on a separate day. Like on days when I am on afternoon duty, the patient flow would have reduced compared to morning"* **43 yr F, S-CHEW**

The text in italics are quotes from the providers; while the text in bold is a description of the provider (the age, gender and professional cadre) quoted

meeting staffing needs at the primary care level to improve the chances of service integration and improved coverage for essential services.

Author's contribution BDO drafted the manuscript with input from OG and SS and all authors reviewed, revised and approved of the final version for submission. OG designed the study with inputs from BDO, LK, NF, and PZ. OG, with input from BDO, designed the intervention. BDO, OG, OA and JA, delivered the intervention training and were responsible for the assessment tools; BDO, LK and OA supervised the conduct of the study; TB managed the study database and did the statistical analyses.

Data availability The datasets generated and/or analyzed during the current study are not publicly available yet but are available from the most senior author on reasonable request.

Declarations

Conflict of interes The authors declare that they have no conflict of interest.

Ethical approval The main study-Scaling up care for perinatal depression for improved maternal and childcare (SPECTRA) study was approved by the University of Ibadan/University College Hospital Ethics Committee (UI/UCH EC) Registration Number: UI/EC/16/0003.

Consent to participate Consent to participate was provided by the individual primary healthcare providers and all participants recruited. Additional ethics approval was obtained to use the data emanating from the SPECTRA study for a doctorate degree. The protocol: Integrating care for perinatal depression in primary care: an implementation study (adapted from the SPECTRA study protocol) was approved by the University of Stellenbosch Health Research Ethics Committee HREC Reference No: S21/04/074 (PhD). The procedures used in this study adhere to the tenets of the Declaration of Helsinki.

Consent for publication Not applicable.

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