Maternal Mental Health in Sub-Saharan Africa: A Systematic Review of Interventions for Common Perinatal Mental Health Disorders

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Abstract

Introduction

Common Perinatal Mental Disorders affect women and children across the world. Rates are high in sub-Saharan Africa, however studies on interventions are limited. Highlighting existing and upcoming practice to support maternal mental health services is imperative.

Method

We conducted a systematic review, yielding a large array of papers covering 32 low- and lower-middle income countries across sub-Saharan Africa. No time limit was placed on publication and study protocols and results papers were included.

Results

Twelve articles from 8 different countries were included in our review; Gambia, Ghana, Kenya, Malawi, Nigeria, Tanzania, Uganda and Zimbabwe. Most interventions took a psychotherapeutic approach, two included a pharmaceutical component. Half the studies detailed adapted approaches to ensure cultural acceptance. Effectiveness was limited; 3 studies showed a significant impact, only one of which had a large effect size.

Conclusion

Evidence remains limited and efforts should be made to support the implementation and generation of evidence in a wide variety of countries and contexts. Task-shifting was a common approach, though services were delivered at health facility level rather than in communities. Scaling-up effective holistic approaches to maternal mental health and child wellbeing remains an area of need.

Introduction

Common Perinatal Mental Disorders (CPMD) during and after pregnancy have been thoroughly investigated in high-income countries (Fisher, Mello, Patel, Rahman, Tran, Holton et al., 2012). More recently, however, low- and lower-middle-income countries have become the focus of research, with this associated with preventing pregnancy-related deaths (Howard, 1993) and increased awareness of the mental health gap in LMIC (Patel, Saxena, Lund, Thornicroft, Baingana, Bolton, et al., 2018). As such, the 2014 Lancet Commission on Perinatal Mental Health called for the inclusion of CPMD in mental health programs (Howard, Piot & Stein, 2014). The focus on CPMD has been further elevated by the WHO in recent global health guidelines, highlighting this as a priority area (World Health Organization, 2016, 2018).

It is broadly recognised that, to reduce the mental health gap in LMICs, services need to be adapted to be accessible at scale (Davies et al., 2019). Given the limited human resources and expertise in mental health in many LMICs, task-shifting of services from specialist personnel to non-specialist health workers is a common approach (Davies et al., 2019; Rahman, Surkan, Cayetano, Rwagatare, & Dickson, 2013). In task shifting to community health workers, there is an increased need to ensure that services are adapted to contextual understandings of mental health and include a local understanding of risk factors associated with maternal mental health (Davies et al., 2019). When interventions are adapted to their context, they tend to achieve higher levels of acceptability and utilisation (Kumpfer et al., 2002), as well as effectiveness (Barrera et al., 2013).

In 2015, the WHO released guidance— the Thinking Healthy manual—on how to deliver this adapted approach (World Health Organization, 2015). The guidance, tailored to women in the perinatal period, suggests interventions delivered by community health workers to enhance the mother-child dyad as a means to both improve child outcomes and maternal mental health (World Health Organization, 2015). Subsequent systematic reviews have gone on to confirm this position (Chowdhary et al., 2014; Clarke et al., 2013; Dixon & Dantas, 2017; Gajaria & Ravindran, 2018; Rahman, et al., 2013). However, a significant criticism of the existing literature focusing on LMIC, both in terms of reviews and global guidance, is the lack of focus on sub-Saharan Africa (SSA). Reviews tend to group LMIC countries together, meaning that resource limited countries in sub-Saharan Africa (SSA) are largely hidden from focus. Furthermore, the Thinking Healthy manual, whilst highly pertinent and widely accepted, was largely developed based on experience and research in Pakistan (World Health Organization, 2015). As is the case in several countries across South Asia, Pakistan benefits from a mature and integrated community health worker network, named the Lady Health Workers Programme (Hafeez et al., 2011). This platform covers up to 60% of the rural population with essential child and maternal health services, linking the primary health system at the community level (Hafeez et al., 2011). This mature system may not be representative of many low resource African countries. It is therefore essential to focus on resource limited countries is SSA given the paucity of knowledge and understanding to date.
The need to focus on Sub-Saharan Africa for Maternal Mental Health

According to meta-analysis of prevalence data, rates of depression in the perinatal period in SSA countries are almost double average rates in high income countries (Sawyer et al., 2010). This is compounded by limited social safety nets meaning that the majority of the most vulnerable populations may not be being reached by social protection services (Beegle et al., 2018). When these prevalence rates are considered in the context of high maternal and child morbidity (Sawyer et al., 2010), focusing on maternal mental health is even more of a priority.

Compounding these context specific risk factors are fragile social services, namely health systems. Generally, access to quality health services remains a challenge in countries across SSA, where primary health care services are only available to a limited proportion of the population, particularly in rural areas (Sanders et al., 2005). Whilst effort has been made to scale-up community-based health services in SSA countries, access remains low and platforms underdeveloped (Hanlon et al., 2010), limiting the potential for task shifting to community health workers. When considering mental health services within these fragile health systems, the treatment gap becomes even wider (World Health Organization, 2017). On average in SSA countries there tends to be one psychiatrist per 100,000 people (Rathod et al., 2017). However this figure varies widely, with a reported one psychiatrist per 1,000,000 people in Zimbabwe (Chibanda et al., 2014).

Low income, minimal social safety nets, and fragile health systems all contribute to an extreme vulnerability of pregnant women and young families to mental health issues in the perinatal period in countries across SSA.

Study aims

Our aim with the review is to collate the latest evidence and approaches to maternal mental health, and subsequent child outcomes, across low- and low-middle income countries in SSA, and to identify trends in practice to support practitioners and policy makers in programmatic design and delivery.

Specifically, we will consider the characteristics of interventions to gain an understanding of what is being implemented, and where. Further, we will thematically analyse the adaptation process of interventions, looking at the dimensions of services and the form of service delivery (Castro et al., 2004) to better understand how they are implemented and to what extent this reflects the global guidance on management of CPMDs in low resource contexts. Given the focus on implementation approaches, we will consider both study results and study protocols, enabling a wider inclusion of papers, compensating for the limited literature available from this region (Gajaria & Ravindran, 2018).

Methods

Inclusion criteria

Published peer reviewed literature and study protocols were considered for this review. Only empirical studies were considered for inclusion, including randomised and non-randomised trials. The date of the publication was not limited. English, French and Spanish articles were eligible for inclusion. Inclusion was limited to countries considered low- and lower-middle income countries in SSA (n = 37) as per the World Bank 2019 Database (World Bank Group, 2019).

Studies that targeted the perinatal period, with a focus on improving mental health outcomes, were included. Inclusion was not limited to specific measurement scales or detection tools. Interventions across the continuum of perinatal mental health were considered, ranging from specialised treatment to universal prevention interventions. All types of interventions were included provided that an outcome on maternal mental health was clearly included in the study design. All contexts were included for this review, including community-based interventions and all types of service providers.

Search Strategy

A broad search strategy was used to yield a large range of articles. The search terms were: “prenatal depression” OR “antenatal depression” OR “postnatal depression” OR “maternal mental health” OR “perinatal depression” OR “common perinatal mental disorder” OR “CPMDs” OR “perinatal mental health” OR “maternal psychosocial” OR “Puerperal blues” OR “maternity blues” OR “maternal depression” OR “post-partum depression” OR “postpartum depression”. These terms were combined with the names of 37 countries categorised as low-and lower-middle income countries in SSA. The search terms were also translated into French to capture any francophone articles not captured via an English language search.
The search string was applied to the two databases, ProQuest, and PubMed. A manual search using filters and the same inclusion criteria was used for the ISRCTN registry, screening by countries. The search was conducted in May 2021.

**Data Extraction and Analysis**

Given the heterogeneity of studies, quantitative analysis was not possible; instead, data was summarised and tabulated to identify trends based on guidance and tools from the Cochrane Developmental Psychosocial and Learning Problems Review Group (Cochrane, 2020). Information was extracted on study location, affiliation, type of intervention, and targeting criteria. A thematic analysis was conducted to identify similarities and differences across the design and adaptation process of the interventions included. The thematic analysis was based on the approach by Castro el al. (2004) which splits cultural adaptation into dimensions and forms. Dimensions refer to cognitive understanding such as language, affective characteristics—such as values and traditions within a society—and environmental characteristics of the community. Forms of adaptation refer to how services are delivered, including platforms of delivery (Castro et al., 2004). Methodological quality of the studies was considered, based on the Scottish Intercollegiate Guidelines Network’s Handbook (2011), and the approach of Marley and Mauki (2019).

**Results**

Three hundred and forty-seven studies were identified through the databases and reference list searching. After following the PRISMA process (Figure I), twelve studies were included for full review.

**Study Characteristics**

The articles covered 8 LMIC across SSA including; Gambia (Sanfilippo et al., 2019), Ghana (Okronipa et al., 2018), Kenya (Green et al., 2019), Malawi (Stewart et al., 2017), Nigeria (Gureje, 2019; Gureje et al., 2019, 2020), Tanzania (Kaaya et al., 2013), Uganda (Atukunda et al., 2019; Singla et al., 2015; Wagner et al., 2019), Zimbabwe (Chibanda et al., 2014). No articles were found from Francophone countries, despite a search being conducted in French. The countries are geographically distributed across West, East, and Southern Africa, no Central African countries are represented in this analysis.

The articles were published between 2013 and 2020. Four were conducted in a rural context (Atukunda et al., 2019; Sanfilippo et al., 2019; Singla et al., 2015; Stewart et al., 2017), three in an urban context (Chibanda et al., 2014; Gureje, 2019; Kaaya et al., 2013), and 2 in peri-urban context (Green et al., 2019; Okronipa et al., 2018). In 2 studies (Gureje et al., 2019, 2020), interventions were trialled in both settings simultaneously. One study did not specify the context of the intervention (Wagner et al., 2019). All 12 studies were or will be implemented in stable contexts, meaning areas that are not affected by humanitarian crises, mass displacement or open conflict. The study characteristics are outlined in Table I below.

**Table I: Study Characteristics including location, design, and intervention**
<table>
<thead>
<tr>
<th>Authors</th>
<th>Country</th>
<th>Year</th>
<th>Setting</th>
<th>Type of Intervention</th>
<th>Delivery Platform</th>
<th>Service Provider</th>
<th>Target</th>
</tr>
</thead>
<tbody>
<tr>
<td>Atukunda et al.</td>
<td>Uganda</td>
<td>2019</td>
<td>Rural</td>
<td>Psychoeducation</td>
<td>Community team</td>
<td>All women postpartum</td>
<td></td>
</tr>
<tr>
<td>Chibanda et al.</td>
<td>Zimbabwe</td>
<td>2014</td>
<td>Urban</td>
<td>Problem solving therapy vs pharmaceutical</td>
<td>Facility</td>
<td>Peer counsellors vs. clinic nurse</td>
<td>Postpartum women with major depression</td>
</tr>
<tr>
<td>Green et al.</td>
<td>Kenya</td>
<td>2019</td>
<td>Peri-urban</td>
<td>Cognitive Behaviour Therapy</td>
<td>Virtual Automated Messaging Service</td>
<td>All women in ante and post-natal period</td>
<td></td>
</tr>
<tr>
<td>Gureje</td>
<td>Nigeria</td>
<td>2019</td>
<td>Urban</td>
<td>Problem solving therapy</td>
<td>Facility</td>
<td>Primary health worker</td>
<td>Pregnant women with major depression</td>
</tr>
<tr>
<td>Gureje et al.</td>
<td>Nigeria</td>
<td>2019</td>
<td>Urban and Rural</td>
<td>Psychoeducation, problem solving therapy and parenting skills</td>
<td>Facility</td>
<td>Primary health worker</td>
<td>Pregnant women with major depression</td>
</tr>
<tr>
<td>Gureje et al.</td>
<td>Nigeria</td>
<td>2020</td>
<td>Urban and Rural</td>
<td>Behavioural activation, problem solving therapy and parenting skills</td>
<td>Facility with a community-based support mechanism</td>
<td>Community health workers and &quot;neighbourhood mothers&quot;</td>
<td>Pregnant adolescent women with major depression</td>
</tr>
<tr>
<td>Kaaya et al.</td>
<td>Tanzania</td>
<td>2013</td>
<td>Urban</td>
<td>Problem solving therapy</td>
<td>Facility</td>
<td>Psychiatric nurse</td>
<td>HIV Positive pregnant women</td>
</tr>
<tr>
<td>Okronipa et al.</td>
<td>Ghana</td>
<td>2017</td>
<td>Peri-urban</td>
<td>Nutritional Supplementation</td>
<td>Facility</td>
<td>Primary health staff</td>
<td>All pregnant women</td>
</tr>
<tr>
<td>Sanfilippo et al.</td>
<td>Gambia</td>
<td>2019</td>
<td>Rural</td>
<td>Group Singing</td>
<td>Community</td>
<td>Local singing groups</td>
<td>All pregnant women</td>
</tr>
<tr>
<td>Singla et al.</td>
<td>Uganda</td>
<td>2015</td>
<td>Rural</td>
<td>Parenting skills education</td>
<td>Community</td>
<td>Community volunteers</td>
<td>All women postpartum</td>
</tr>
<tr>
<td>Stewart et al.</td>
<td>Malawi</td>
<td>2017</td>
<td>Rural</td>
<td>Nutritional Supplementation</td>
<td>Facility</td>
<td>Primary health staff</td>
<td>All pregnant women</td>
</tr>
<tr>
<td>Wagner et al.</td>
<td>Uganda</td>
<td>2019</td>
<td>No Information</td>
<td>Individual therapy and pharmaceutical intervention</td>
<td>Facility</td>
<td>Peer mothers and midwives</td>
<td>HIV Positive pregnant women with minor depression</td>
</tr>
</tbody>
</table>

**Intervention Design**

The characteristics of interventions to prevent or treat CPMDs varied across the studies, ranging from highly specialised and targeted interventions for women demonstrating moderate or severe depressive symptoms to universal community-led interventions available to all pregnant women or mothers. The design process varied from standardised treatment approaches to contextually modified interventions.

**Intervention Type**

Two studies (Chibanda et al., 2014; Wagner et al., 2019) explored the effectiveness of pharmaceutical interventions for the treatment of perinatal depression. One of the interventions was a dual approach to treatment, combining a pharmaceutical intervention and a behavioural group-based intervention (Wagner et al., 2019), whereas the second compared a pharmaceutical intervention to a group-based therapy intervention (Chibanda et al., 2014).

Two linked studies (Okronipa et al., 2018; Stewart et al., 2017)—the iLiNS trials—adopted a nutritional approach, providing three different supplements (Iron Folic Acid Supplementation (IFA) vs. Multiple Micronutrient Supplement (MMN) vs. a lipid base nutrient supplement (LNS)) to pregnant women during the pre and post-natal period.
Seven interventions (Atukunda et al., 2019; Green et al., 2019; Gureje, 2019; Gureje et al., 2019, 2020; Kaaya et al., 2013; Singla et al., 2015) focused on psychotherapeutic interventions, normally with a combination of problem solving therapy and psychoeducation. Two (Atukunda et al., 2019; Singla et al., 2015) focused on maternal wellbeing as a protective factor for healthy child development and prevention of CMPDs. The five other behavioural interventions focused on women demonstrating major depression using a problem solving approach (Green et al., 2019; Gureje, 2019; Gureje et al., 2019, 2020; Kaaya et al., 2013).

The final study, entitled the CHIME project from The Gambia (Sanfilippo et al., 2019) focused on mood and emotional modulation through group singing sessions, building on existing cultural practices to prevent and alleviate perinatal mental distress.

**Target**

Eight of the interventions (Gureje, 2019; Gureje et al., 2019, 2020; Kaaya et al., 2013; Okronipa et al., 2018; Sanfilippo et al., 2019; Stewart et al., 2017; Wagner et al., 2019) targeted women in the ante-natal period, whilst 3 studies (Atukunda et al., 2019; Chibanda et al., 2014; Singla et al., 2015) intervened in the postnatal period only. One intervention targeted mothers in both the ante or post-natal period (Green et al., 2019).

Six (Atukunda et al., 2019; Green et al., 2019; Okronipa et al., 2018; Sanfilippo et al., 2019; Singla et al., 2015; Stewart et al., 2017) of the studies took a universal approach targeting all pregnant women or new mothers. These interventions tended to be broad preventative interventions designed to avert maternal depression incidence and prevalence. Apart from the nutritional interventions (Okronipa et al., 2018; Stewart et al., 2017), the universal interventions were all designed to be available at community level. Of these preventative interventions, three did not discuss referral mechanism across the continuum of care (Atukunda et al., 2019; Okronipa et al., 2018; Singla et al., 2015). Of the remaining three, two (Green et al., 2019; Stewart et al., 2017) cited the possibility to refer women to psychiatric services delivered at regional hospital level and the third (Sanfilippo et al., 2019) proposed a referral in the first instance to a community mental health team prior to hospital based care.

Of the targeted interventions, two “risk” profiles were targeted; HIV positive women (Kaaya et al., 2013; Wagner et al., 2019) and adolescent mothers (Gureje et al., 2020). Of the 2 studies targeting HIV positive mothers, one targeted women demonstrating minor depressive symptoms (Wagner et al., 2019) whilst the second targeted all HIV positive pregnant women (Kaaya et al., 2013). Both interventions were delivered at facility level, integrated with PMTCT services. The intervention targeting adolescent mothers demonstrating major depressive symptoms at health facility level was linked to community-based support mechanism called “neighbourhood mothers” (Gureje et al., 2020). At facility level, adolescents receive a series of problem-solving and behavioural activation sessions from trained practitioners. At community level, adolescents are paired with “neighbourhood mothers” to provide social support and additional parenting support (Gureje et al., 2020) given they may have been ostracised as a result of the pregnancy.

The final three studies (Chibanda et al., 2014; Gureje, 2019; Gureje et al., 2019) targeted women demonstrating symptoms of major depression delivered at health facility level through psychotherapeutic approaches.

**Adaptation of Interventions**

The first adaptation, common across 4 of the studies, involved engagement with local stakeholders during intervention design (Gureje et al., 2019, 2020; Sanfilippo et al., 2019; Singla et al., 2015). Gureje et al (2020) consulted service providers regarding their opinions on challenges to service delivery as well as potential service users on care seeking practices. The 2019 study by Gureje et al. explored mothers’ experiences during their perinatal period as well as their health-seeking behaviour via workshops with caregivers. The study by Sanfilippo et al. (2019) conducted focus group discussions with local midwives and musician groups to co-develop the intervention design. One of the two parenting interventions (Singla et al., 2015) conducted qualitative formative research to identify parenting practices and goals through discussions around child care and maternal wellbeing, resulting in the inclusion of fathers as a key target of the intervention, as well as mothers and their children.

A second common adaptation was the modification of the curriculum or the content of the intervention. Four of the studies explicitly discuss the adaptation of the content of the intervention to respond to cultural understandings of maternal mental health (Green et al., 2019; Gureje et al., 2019, 2020; Kaaya et al., 2013). The automated service piloted in Kenya was adapted to account for the cultural context, though details of the specific adaptations are not provided in the study protocol (Green et al., 2019). The group counselling intervention in Tanzania used an iterative process to build the content of the intervention whereby observations from the initial sessions informed subsequent content (Kaaya et al., 2013). The EXPONATE study used simplified language and local idioms to deliver the content of the intervention (Gureje et al., 2019). Seven of the studies (Chibanda et al., 2014; Gureje et al., 2019, 2020; Kaaya et al., 2013; Sanfilippo et al., 2019; Singla et al., 2015; Wagner et al., 2019) refer to the translation of tools and training into the local language to facilitate...
understanding. The CHIME study builds upon existing community-based singing groups—the Kanyeleng—to provide group singing classes to all mothers in the perinatal period (Sanlippo et al., 2019). This study was the only one to link with an existing cultural practice to provide services to enhance maternal wellbeing.

Forms of adaptation also covered who delivered the service and where these services were delivered (Castro et al., 2004). Of the twelve intervention models, three (Atukunda et al., 2019; Sanfilippo et al., 2019; Singla et al., 2015) were available within the local area in which the mother is living, and delivered by a variety of actors. In Uganda, both interventions were delivered by trained education teams or volunteers bringing together mothers and families in group sessions (Atukunda et al., 2019; Singla et al., 2015). In the CHIME project, community-based musical groups delivered the intervention, in consultation with local midwives (Sanfilippo et al., 2019).

Seven interventions (Chibanda et al., 2014; Gureje, 2019; Gureje et al., 2019; Kaaya et al., 2013; Okronipa et al., 2018; Stewart et al., 2017; Wagner et al., 2019) were delivered exclusively at the health facility level. These facility-based interventions were integrated into existing maternal and child health services and delivered by a variety of actors. Four studies engaged primary health care workers in the provision of psychoeducational services (Gureje, 2019; Gureje et al., 2019; Okronipa et al., 2018; Stewart et al., 2017). Two engaged peer counsellors in the delivery of services (Chibanda et al., 2014; Wagner et al., 2019) and one—the trial from Zimbabwe—engaged peer counsellors living with HIV already engaged in PMTCT services, with ad hoc supervision and support from trained psychiatrists (Chibanda et al., 2014). In Uganda, peer mothers were trained to deliver problem-solving therapy to individuals as part of a package of therapeutic and pharmaceutical intervention for HIV positive women (Wagner et al., 2019). The only study to be delivered by a specialist professional group—psychiatric nurses—was the Tanzanian study targeting HIV positive women (Kaaya et al., 2013).

The RAPiD trial from Nigeria (Gureje et al., 2020) adopted a unique joint community and facility-based design by linking facility-based care to individual support at community level through the engagement of “neighbourhood mothers” to support pregnant adolescent women between facility visits. Another unique approach was used in Kenya, where mobile psychotherapeutic services were delivered to women via an automated sms service during the perinatal period in Nairobi (Green et al., 2019).

One of the studies explicitly discussed inclusion of fathers in the intervention (Singla et al., 2015), holding specific sessions for fathers to engage with their role in child care and their capacity to emotionally regulate themselves and support their partners.

Outcomes

Of the twelve studies, five did not include outcomes of the intervention (Green et al., 2019; Gureje, 2019; Gureje et al., 2020; Sanfilippo et al., 2019; Wagner et al., 2019) and are not included in this section. A quality review was conducted on the remaining studies, outlined in Table II below.

<table>
<thead>
<tr>
<th>Author</th>
<th>Study Design*</th>
<th>Selection Bias*</th>
<th>Sample Size*</th>
<th>Confounding*</th>
<th>Outcome Measures*</th>
<th>Attrition*</th>
<th>Generalizability*</th>
<th>Total (14)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Atukunda et al. (2019)</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>0</td>
<td>11</td>
</tr>
<tr>
<td>Chibanda et al. (2014)</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>12</td>
</tr>
<tr>
<td>Gureje et al. (2019)</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>10</td>
</tr>
<tr>
<td>Kaaya et al. (2013)</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>0</td>
<td>9</td>
</tr>
<tr>
<td>Okronipa et al. (2017)</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>0</td>
<td>10</td>
</tr>
<tr>
<td>Singla et al. (2015)</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>10</td>
</tr>
<tr>
<td>Stewart et al. (2017)</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>0</td>
<td>11</td>
</tr>
</tbody>
</table>

*Well-Covered—2 points; Adequately covered—1 point; Poorly Covered; Not Addressed; Not Reported; Not Applicable—0 point (Marley & Mauki, 2019; Scottish Intercollegiate Guidelines Network, 2011)
Three interventions (Atukunda et al., 2019; Chibanda et al., 2014; Singla et al., 2015) reported a statistically significant reduction in maternal depressive symptoms as a result of the intervention. The study by Singla et al. (2015) had a small effect size (0.28), detailed in Table III below. Atukunda et al. (2019) reported that improved maternal mental health had a strong positive correlation to improved child development outcomes, however effect sizes varied according to the age of the child, ranging from small to medium/large. The third intervention, from Zimbabwe, compared a pharmaceutical intervention against problem solving therapy (PST) for women postpartum suffering from major depression, with results indicating the approach was successful in reducing major depression (Chibanda et al., 2014). The effect size of this intervention was large demonstrating that it could be an effective intervention for scale-up.

### Table III: Effect Sizes of Interventions

<table>
<thead>
<tr>
<th>Author</th>
<th>Overall effect</th>
<th>BDI-II (12-16m)</th>
<th>BDI-II (20-24m)</th>
<th>BDI-II (36m)</th>
<th>CES-D (12-16m)</th>
<th>CES-D (20-24m)</th>
<th>CES-D (12-16m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Atukunda et al.</td>
<td>-</td>
<td>0.12 (v. small)</td>
<td>0.71 (medium/large)</td>
<td>0.54 (medium)</td>
<td>0.20 (small)</td>
<td>0.70 (medium/large)</td>
<td>0.51 (medium)</td>
</tr>
<tr>
<td>Chibanda et al.</td>
<td>0.77 (large)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Singla et al.</td>
<td>0.28 (small)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The study from Tanzania (Kaaya et al., 2013) compared a structured closed group therapy session to standard care for HIV positive women, demonstrating a percentage decrease in the intervention group, however, this was not statistically significant. The iLiNS trials (Okronipa et al., 2018; Stewart et al., 2017) did not report significant impact across the three intervention groups. Similarly, the EXPONATE study did not demonstrate any difference when comparing remission after 6 months in the High Intensity Intervention (HII) when compared to the Low Intensity Intervention (LII) (Gureje et al., 2019).

### Discussion

Interventions for CPMD remain limited across low and lower-middle income countries in SSA. Only 8 out of a potential 37 countries are represented in this review, suggesting that approximately 80% of countries do not have published literature on CPMD interventions. Efforts should be made to increase evidence across countries and contexts, most notably in francophone African countries and unstable contexts. Mental health can be greatly exacerbated in conflict settings and depression tends to be significantly higher for women in this environment (Charlson et al., 2019). Violent conflict is dynamic across certain sub-regions, such as the Sahel, where rates of local terrorism have rapidly increased in past years, leading to mass displacement, loss of livelihoods, as well as direct exposure to violence (Burke, 2020). Interventions to improve maternal mental health in these contexts are essential to protect and support mothers and children.

The majority studies (85%) adopted a psychotherapeutic approach to preventing and/or treating maternal mental health, in line with general guidance given the unknown impact of medicalised approaches on the foetus or during the breastfeeding period (Davies et al., 2019). The two interventions that included pharmaceutical approaches are in the context of HIV services for PMTCT. Prevalence of depression in this group tends to be significantly higher (Chibanda et al., 2014; Wagner et al., 2019) perhaps requiring enhanced treatment interventions to be able to effectively reduce symptoms. The study from Tanzania demonstrates that a pharmaceutical approach did not show a significant impact on levels of depression among HIV positive women when comparing a group based therapy to standard care for HIV positive women in the prenatal period (Kaaya et al., 2013). However, the study from Zimbabwe demonstrated that group-based psychotherapeutic interventions were more effective than pharmaceutical interventions alone, though this trial included HIV negative women (Chibanda et al., 2014). These heterogenous results demonstrate the need for further study to better understand the most appropriate interventions for this at-risk population.

### Commonalities and trends in adaptations of interventions

Broadly speaking, all the psychotherapeutic approaches were informed by evidence-based interventions, specifically either problem solving therapy or cognitive behavioural approaches. Ensuring that psychosocial interventions are accepted and utilised requires careful consideration of the affective and environmental factors within each specific context (Castro et al., 2004; Kumpfer et al., 2002; Rathod et al., 2019). Given that psychotherapeutic approaches, particularly cognitive behavioural therapy, focus strongly on beliefs and lived experiences, it is important to ensure that local understanding is integrated in to intervention design (Rathod et al., 2019). Only a quarter of
the studies in this review discuss the engagement of local actors in the design phase to ensure local practices and behaviours were considered. This low proportion highlights the need to engage more directly with practitioners on the importance of incorporating local perceptions and beliefs when developing interventions.

Global recommendations point towards the need to integrate maternal mental health services into existing maternal and child health services (Rahman, et al., 2013) and suggest task shifting to community health workers to deliver services (World Health Organization, 2015). As Rahman et al.’s (2013) study on CPMDs in LMICs demonstrates, it is possible to achieve positive maternal mental health outcomes using psychotherapeutic approaches delivered by non-specialist service providers. Task-shifting of maternal mental health services to lay workers or generalist health professionals at the primary level is common across the interventions in this study. Only one intervention engages with specialist psychiatric nurses, whereas the rest engage with a variety of local actors to deliver services.

However, there are a limited number of community-based interventions in this review, demonstrating that task-shifting to community-based actors is not a common approach for maternal mental health services in SSA. This is problematic given that health centres remain limited in their coverage and tend to be inaccessible for the most vulnerable (Hanlon et al., 2010). An equitable approach is important in all health interventions (Chang, 2002) and maternal mental health services must be made available to the most disadvantaged populations. Where community based services were available, these were delivered by a variety of actors, none of whom were community health workers as suggested in global health guidance (World Health Organization, 2015). The fact that community health workers are not being engaged in maternal mental health services may reflect the fragility of this system in the context of LMIC in SSA, which calls for a more creative approach to ensuring service availability at community level.

In the three community-based interventions where local actors were engaged to deliver services (Atukunda et al., 2019; Sanfilippo et al., 2019; Singla et al., 2015), a group-based approach was adopted. Both interventions from Uganda showed significant impact on maternal mental health outcomes, demonstrating an important example for other interventions as well as necessary evidence for the scale-up of these kinds of interventions. Alternative community platforms such as care groups, which are gaining coverage across many countries in SSA (Perry et al., 2015), could be a particularly interesting platform to explore given the role that peer-support can play. It has been demonstrated that short periods of training to lay workers already engaged in community and facility-based support services can help effectively deliver services (Atukunda et al., 2019; Singla et al., 2015) and provide an additional avenue in the absence of a strong community health platform. None of the studies in this review refer to the engagement or collaboration with traditional healers or birth attendants as service providers at community level. There have been repeated calls for the inclusion of traditional healers in the delivery of services to support mental health and well-being (Monteiro, 2015). Despite this, integration of traditional healers or birth attendants into community based maternal mental health services remains largely absent from practice (Hanlon et al., 2010).

When looking at the services for mothers with HIV delivered at health facility-level, particularly in the context of PMTCT services, there is a strong presence of peer support systems. These existing peer-support mechanisms present an important opportunity for promoting maternal mental health and could be built upon more systematically to provide psychotherapeutic interventions to this at-risk population. Where HIV is less prevalent, interventions tend to be delivered by health staff, which is the case for two studies (Gureje, 2019; Gureje et al., 2019). The EXPONATE study (Gureje et al., 2019) demonstrated that high intensity interventions were no more effective than low intensity interventions, suggesting task shifting to health staff to provide low intensity interventions could be an effective approach in this setting.

The use of innovative mobile technology for the delivery of interventions (Green et al., 2019) are an interesting platform to explore given their increased availability and accessibility. However, it will be important to understand how accepted and utilised these services are. Messaging services for health interventions (Ames et al., 2019) show promise in terms of the potential wide coverage, particularly where human resources are limited (Green et al., 2019), however evidence to date on the uptake of these mobile services is mixed (Ames et al., 2019).

**Effectiveness of Interventions**

In the context of SSA, particularly in low-income countries, the two community-based interventions delivered by non-specialist community workers demonstrated positive outcomes (Atukunda et al., 2019; Singla et al., 2015). These are encouraging findings and demonstrate that, even within resource limited settings, achieving tangible results on maternal mental health is possible at this level. Following from this, both successful interventions were based on multi-sectoral approaches to promote child-wellbeing through psychoeducational activities focusing on the mother-child dyad. Parenting interventions which promote a holistic approach to wellbeing are gaining more attention, especially with the publication of the *Nurturing Care Framework* (World Health Organization, 2018), a collaborative effort between key global actors to promote an integrated approach to early childhood development, bringing together health, nutrition, responsive caregiving, and opportunities for early learning (World Health Organisation et al., 2018). It is important to note, however, that...
simply focusing on the parent-child dyad may not be sufficient to effectively improve maternal mental health outcomes alone; specific focus should be paid to risk factors for maternal depression in the given context to ensure both child and maternal outcomes are improved (Dixon & Dantas, 2017). This was noted by Singla et al. (2015) and was the reason specific components focused on improving maternal mental health were added to the intervention (Singla et al., 2015). The growing global tendency to promote more holistic approaches to parenting interventions presents an opportunity for improving maternal mental health, such as the Caring for the Caregiver approach (Rochat et al., 2019) currently being scaled-up by UNICEF across a variety of LMICs. This wave of interventions should be accompanied by specific actions to improve maternal mental health to enable longer term impact on both parental and child outcomes.

**Limitations**

The studies in this report were heterogenous making it difficult to make comparisons across interventions. Whilst every effort was made to include aspects on implementation adaptations based on the content of the protocols or papers, some studies did not detail these components, limiting what was possible to include in our review.

Another limitation is that only published material was included for review, which does not account for ongoing interventions conducted under operational circumstances as opposed to structured research. Often there is much to be learnt from practitioners implementing projects and services, however, these experiences often go undocumented, limiting the capacity for learning.

**Declarations**

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**References**


Figures
Figure 1

PRISMA Flow Chart