Developing a Community-led Music Intervention to Support Antenatal Mental Health in The Gambia

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Doctorate of Philosophy in Psychology

Supervised by Prof Lauren Stewart and Prof Vivette Glover

Dedicated to Mom and Dad

Declaration

Declaration of Authorship:

I, Katie Rose Sanfilippo, hereby declare that this thesis, and the work presented in it, is my own. Where I have consulted the work of others, this is always clearly stated.

All work was carried out myself except for the cases presented below:

- All data collection was carried out by two local research assistants (RAs): Hajara B. Huma (HH) and Malick Gaye (MG). This included:
  - Running the various focus group discussions and interviews
  - Collecting participants' demographic data, EPDS scores and SRQ-20 scores
- Local translators hired by the National Centre for Arts and Culture (NCAC) carried out the transcriptions and translations of all focus group discussions and interviews.
- Rita Castro, as part of another project, collected the demographic and EPDS scores for the UK sample used in Chapter 5.

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Related Publications and Presentations

The methods of the feasibility trial reported in Chapter 6 are published in:

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List of Abbreviations

AHRC	Arts and Humanities Research Council
CBC	Community Birth Companion
CHIME	Community Health Intervention through Musical Engagement
CHN	Community Health Nurse
CMD	Common Mental Disorder
CMHT	Community Mental Health Team
CRF	Case Report Form
EFA	Exploratory Factor Analysis
EPDS	Edinburgh Postnatal Depression Scale
FGC	Female Genital Cutting
FGD	Focus Group Discussion
GA	Gestational Age
HIC	High-Income Country
IPV	Intimate Partner Violence
LMIC	Low- and Middle-Income Country
MoHSW	Ministry of Health and Social Welfare
MRC	Medical Research Council
NCAC	National Centre for Arts and Culture
NSHW	Non-Specialist Health Workers
PTSD	Post-Traumatic Stress Disorder
RA	Research Assistant
SRQ-20	Self-Reporting Questionnaire
TC	Traditional Communicator
UK	United Kingdom

UN	United Nations
WHO	World Health Organization

Statistical Abbreviations

CI	Confidence Interval
f^2	Cohen's f^2
GAMLASSO	Generalised Additive Model LASSO
GVIF	Generalized Variance-Inflation Factors
IQR	Interquartile Range
LASSO	Least Absolute Shrinkage and Selection Operator
M	Mean
n	Total number in sample
p	Calculated probability
SD	Standard Deviation
S.E	Standard Error
r_s	Spearman's Rho
t	t-statistic
VIF	Variance-Inflation Factors
χ^2	Chi-square

Researcher Initials Used Within Text

BD	Buba Darboe
BM	Dr Bonnie McConnell
HH	Hajara B. Huma
MG	Malick Gaye
VC	Dr Victoria Cornelius

Abstract

Stress, anxiety and depression in pregnancy affect not only the mother but can also have long-term adverse effects on her child. Mental health problems in the perinatal period are a particular challenge in low- and middle-income countries (LMICs) where they can be at least twice as frequent as in higher-income countries (HICs). It is thus of high priority to develop new low-cost, low-resource, non-stigmatising and culturally appropriate approaches to reduce symptoms of anxiety and depression in pregnancy. Using a mixed-methods approach, this thesis aims to investigate how a community-led music intervention can be developed and implemented within The Gambia to help reduce symptoms of antenatal common mental disorders (CMDs). The first study summarises findings from 14 focus group discussions with a variety of stakeholders (health workers, musicians and pregnant women). A pictorial representation presents the three main contributing factors to mental distress symptoms: economic, social, and spiritual. The next study finds that two existing self-report tools, the Edinburgh Postnatal Depression Scale (EPDS) and the Self-Reporting Questionnaire (SRQ-20), can be used in The Gambia to measure antenatal CMD symptoms. A different distribution of scores is found, with the SRQ-20, which has more somatic items, giving higher scores. Differences in factor structures of the EPDS in a Gambian versus UK context shows potential differences in the expression of CMD symptoms between the two cultures. The final study demonstrates that a community health intervention through musical engagement (CHIME) can be co-developed and is feasible to administer within a Gambian context. Results also suggest a beneficial effect of CHIME compared to standard care and a potential greater reduction in symptoms in participants with higher levels of CMD symptoms. This thesis is the first to highlight the potential of music interventions to support women's perinatal mental health care in a LMIC context.

Chapter 1. Short Introduction, General Aim, and Thesis Outline

At the beginning of the millennium, the United Nations (UN) set out eight Millennium Development Goals to combat poverty, improve education and health, and reduce hunger (UN General Assembly, 2000). Two of these eight goals focused explicitly on maternal and child health (UN General Assembly, 2000). Following this, in 2005, the World Health Organization (WHO) developed a report calling for a greater focus on mental health care within public health initiatives adopting the slogan "No Health Without Mental Health" (World Health Organization, 2004). In response, several publications called for an emphasis on maternal mental health care arguing its importance in supporting women's and children's health (Atif, Lovell, & Rahman, 2015; Howard, Piot, & Stein, 2014; Prince et al., 2007; Rahman, Surkan, Cayetano, Rwagatare, & Dickson, 2013). These publications cited the heavy disease burden that poor mental health care is imposing upon women around the world. Globally, mental and neurological disorders account for about 14% of the global burden of disease. In women of child-bearing age, this burden is even greater with depression accounting for the largest proportion associated with mental or neurological disorders (Burns, 2011; Prince et al., 2007; Vos et al., 2012).

Women from low- and middle- income countries (LMICs) are more likely to develop mental disorders, partially due to the specific hardships most women in these societies face, such as lack of empowerment and agency in health and financial decisions (Wachs, Black, & Engle, 2009). Rates of maternal suicide are also higher in LMICs compared to high-income countries (HICs), at 1 in 2800 in LMICs compared with 1

in 6100 in HICs (Lindahl, Pearson, & Colpe, 2005). In 2015, the new Sustainable Development Goals were created to extend the progress already started by the Millennium Development Goals by focusing on a broad range of economic, social and environmental objectives (World Health Organization, 2015). These goals now specifically call for the improvement of maternal health with the inclusion of better mental health care.

Researchers, health professionals and global health organisations have worked to provide health care to women and mothers around the world. However, there is still a large treatment gap with 76% – 85% of patients with mental health problems in LMICs not receiving any intervention (Demyttenaere et al., 2004). In addition, only half of LMICs globally have essential community-based mental health care (Burns, 2011). Specific challenges, such as lack of financial resources, make the implementation of services difficult, especially in LMICs. Health systems in LMICs are strained to provide a balance of care for both the high rates of communicable disease, such as HIV and malaria, and non-communicable disease, such as depression, with high comorbidity between the two (Burns, 2011; Collins, Insel, Chockalingam, Daar, & Maddox, 2013). There is also scarcity in trained mental health workers, including psychiatrists, social workers and mental health nurses (Saxena, Thornicroft, Knapp, & Whiteford, 2007; Saxena, 2016). Inequities in mental health care distribution, inefficiencies in their use and high levels of stigma prevent people from seeking help (Saxena, 2016). These challenges, and the high burden of maternal mental health, lead to a specific need to develop low-cost, sustainable, culturally-embedded and non-stigmatising maternal mental health interventions in LMICs. Research in this area has focused on using embedded community groups and

members to help deliver mental health interventions (Rahman, Fisher, et al., 2013). While much research on these community embedded approaches has focused on talking type therapies (e.g. Chibanda et al., 2016), an unexplored community-based approach concerns the possible utility of music-based approaches.

Participating in musical activities can be a powerful modulator of mood and emotion, reducing symptoms of anxiety and depression and increasing well-being, social affiliation and group bonding (Williams, Dingle, & Clift, 2018). There is also growing evidence that suggests music engagement can support women's mental health during and after pregnancy (Terry & Terry, 2012; Wulff, Hepp, Fehm, & Schaal, 2017). The specific geographical context for this work is The Gambia in West Africa. Exploring the utility of music-based approaches may be particularly fruitful in The Gambia as there are already many different existing music practices that involve pregnant women and new mothers (McConnell, 2016, 2017). These pre-existing cultural and creative practices may provide a promising conduit through which to explore, co-design and ultimately evaluate the feasibility of a culturally-embedded, community-led, music-based intervention that aims to reduce common mental disorder (CMD) symptoms in pregnancy.

1.1. General Aims

Within this thesis, I will present foundational work aimed at understanding and investigating the potential for a community-led music-based group intervention to support maternal mental health in The Gambia. Throughout three research studies, using a mixed-methods approach, I will answer three main research questions:

1) What are the common linguistic terms and contributing factors associated with perinatal mental distress and how might music play a role in supporting women's perinatal mental health? [Chapter 4]

2) Can two pre-existing tools be used to measure antenatal CMD symptoms in The Gambia and how do they compare? Additionally, how does the performance of the EPDS compare in a Gambian sample versus UK sample? [Chapter 5]

3) What should an intervention comprise of in order to be effective and acceptable in the local context? Once the intervention is co-designed, how feasible is it to run this intervention to reduce CMD symptoms in pregnancy? [Chapter 6]

1.2. Thesis Outline

While not intended to be exhaustive, the literature review in Chapter 2 aims to highlight relevant research. Literature relating to global maternal mental health, mental health interventions in LMICs, music interventions for general and perinatal mental health, as well as specific information about The Gambia, including its health systems and existing musical practices, will be summarised. Chapter 3 describes the methodology used throughout the thesis, highlighting its mixed-method and interdisciplinary approach, how the measurement tools were translated, important ethical considerations as well as a description of the specific studies' settings. Chapter 4 analyses focus group discussions held with a variety of stakeholders. This chapter summarises the results of this qualitative study that investigates the factors found to contribute to perinatal mental distress, relevant mental health terms, and potentially helpful musical practices. Chapter 5 presents findings from a quantitative study investigating the performance of the two selected measurement tools within the target

Gambian population as well as compared to a UK sample. Chapter 6 describes findings from a feasibility trial testing a co-developed community-led music-based intervention aimed at reducing antenatal CMD symptoms across four antenatal clinics. Chapter 7 is the final chapter that summarises the findings and discusses the potential limitations and future directions of this work.

Chapter 2. Literature Review

Common mental disorders (CMDs) are described by the World Health Organization (WHO) International Classification of Disease (ICD-10) as 'mood disorders' and 'neurotic, stress-related and somato-form disorders' which include depressive, anxiety and post-traumatic stress disorders (World Health Organization, 2010). The term 'common' is used to distinguish these disorders from more severe mental health problems such as bipolar disorder, schizo-affective disorder and psychosis (Nakku et al., 2016). Within the perinatal period, the time during pregnancy until a year after birth, CMDs are common. They include conditions such as depression and anxiety, which vary across the perinatal period and in severity (O'Hara & Wisner, 2014). For example, a recent study by Dikmen-Yildiz, Ayers and Phillips, (2017), showed that anxiety was highest in pregnancy while depression was highest 4 – 6 weeks postpartum.

Each of these disorders has a variety of associated symptoms, some of which are common across many disorders (American Psychiatric Association, 2013). Some studies define and measure CMDs symptomatically, as exceeding a threshold on a screening measure. More rigorous assessment occurs after a clinical interview with a mental health clinician such as a psychiatrist or psychologist where a diagnosis can be provided (O'Hara & Wisner, 2014). Within this thesis, the focus will be on CMD symptoms rather than diagnosed CMDs. Measuring CMD symptoms as an indicator of overall mental health allows for an assessment that does not rely on the expertise of a clinician.

Anxiety and depression symptoms and disorders are highly co-morbid during the perinatal period (Dikmen-Yildiz et al., 2017; Hirschfeld, 2001). For instance, a large United States screening study found that 66% of women with postpartum major depression had a co-morbid anxiety disorder (O'Hara & Wisner, 2014; Wisner, Gracious, Piontek, Peindl, & Perel, 2003). Along with the comorbidity of symptoms and diagnosis, perinatal CMDs frequently co-occur with other physical diseases such as heart disease, cancer, metabolic disease (Burns, 2011) and other perinatal conditions (Collins et al., 2013).

Even though there is frequent co-morbidity between perinatal CMD symptoms, the majority of research has focused on perinatal depression and its symptoms. Less commonly researched are perinatal anxiety and stress (Stein et al., 2014). These three perinatal CMDs and their symptoms are the most commonly experienced. However, there is a lack of research examining the full range of possible perinatal CMD symptoms in both HICs and LMICs.

2.1. Prevalence of Perinatal CMDs and CMD symptoms

Prevalence rates of perinatal CMDs and their symptoms vary due to differences in the definition of terms, measurement tools used and diagnosis method. Better estimations of prevalence help to quantify the potential impact poor maternal mental health has on health outcomes and costs. Therefore, reviews have been conducted to help consolidate research on prevalence rates globally and regionally. Most reviews specifically focus on one disorder, region or time during the perinatal period making it difficult to identify the prevalence of perinatal CMDs and CMD symptoms globally.

Two reviews aimed to estimate the global prevalence of perinatal depression while also citing differences in prevalence between HICs and LMICs. Woody et al., (2017), estimated that the global prevalence of perinatal depression, as measured by clinical interview, is about 12% with a higher prevalence in LMICs (13%) compared to HICs (11%). A previous review by Halbreich and Karkun (2006) found similar results with higher rates of postnatal depression and depression symptoms in LMICs compared to HICs. They predicted that LMICs prevalence was around 15% but could be as high as 60% due to a majority of cases not being reported (Halbreich & Karkun, 2006).

2.1.1. Perinatal CMD and CMD symptom prevalence in HICs.

Generally, in HICs, about 10% – 20% of women will develop a mental illness during pregnancy or within the first year after birth (Bauer, Parsonage, Knapp, Lemmi, & Adelaja, 2014). A review of 59 studies conducted in HICs found the prevalence of postnatal depression to be 13% (O'Hara & Swain, 1996). The type of measurement method used produced differences in reported prevalence rates. Self-report measures provided a higher reported prevalence rate (14%) compared to diagnostic interviews (12%). A review of 28 articles found differences in prevalence depending on diagnosis with the rate of women who experienced a depressive episode being higher (19%) than the rate of women diagnosed with perinatal major and minor depression (7% – 13%) (Gavin et al., 2005).

Reported prevalence levels of perinatal anxiety disorders show more variance. One review estimated 4% – 8% of women experience a diagnosed anxiety disorder postpartum (Ross & McLean, 2006) while another review found 3% – 37% of women experience any anxiety disorder or anxiety symptoms during pregnancy and 4% – 20% during the postpartum period (Leach, Poyser, & Fairweather-Schmidt, 2017).

One study completed in the United Kingdom (UK) identified high rates of psychosocial stress during pregnancy. They defined psychosocial stress as "the imbalance that a pregnant woman feels when she cannot cope with demands, which is expressed both behaviourally and physiologically" (Woods, Melville, Guo, Fan, & Gavin, 2010). In this study, they found that 78% of pregnant women experience low to moderate psychosocial stress, and 6% experience high psychosocial stress (Woods et al., 2010). In summary, these studies demonstrate wide variance in the prevalence estimates of CMDs and CMD symptoms across the perinatal period in HICs. This variance can be attributed to differences in the diagnosis and measurement methods applied.

2.1.2. Perinatal CMD and CMD symptom prevalence in LMICs.

Fewer studies have been conducted in LMICs with majority of work from countries in Asia. Most studies investigating prevalence identify CMDs by using validated thresholds from various self-report measurement tools. One review (Parsons, Young, Rochat, Kringelbach, & Stein, 2012) found that 22 out of the 28 LMICs included showed postnatal depression rates above the estimated rate of 13% (the average rate found in HICs by O'Hara & Swain, 1996). Ten of the countries discussed were in Africa. Rates ranged from 7% in Uganda to 33% in Zimbabwe. Another review investigated depression rates across the entire perinatal period, with only six out of the 22 countries represented within Sub-Saharan Africa. They found that the prevalence of depressive symptoms was higher in the antenatal period (26%) compared to the postnatal period (20%) (Gelaye, Rondon, Araya, & Williams, 2016). In contrast, two reviews of perinatal CMD symptom prevalence in LMICs found lower prevalence rates of depression symptoms in the antenatal compared to the postpartum period (Baron et al., 2016; Fisher et al., 2012).

Additional reviews have focused on the broad range of CMD symptoms present in the perinatal period. A study investigating five LMICs, Ethiopia, India, Nepal, South Africa and Uganda, found large variation in the reported prevalence of CMDs with rates ranging from 3% – 36% in pregnancy and 12% – 49% in the postpartum period (Baron et al., 2016). Fisher et al. (2012) reviewed papers from 17 different LMICs, including eight in Africa. This well-cited review estimated a CMD prevalence rate of 16% in pregnancy and 20% after birth.

Only one review (Sawyer, Ayers, & Smith, 2010) specifically focused on perinatal CMD prevalence in Africa. This study reviewed 35 studies covering eight countries in Africa, including one study from The Gambia. This paper similarly found wide variation in the reported prevalence rates, potentially due to differences in measurement. The review found that 13% – 30% of women experienced CMDs or high levels of CMD symptoms (as assessed by clinical interview or threshold) during pregnancy, while 6% – 33% experienced them postpartum. More women experienced anxiety or anxiety symptoms during pregnancy (15%) than depression or depression symptoms (11%). Taken together, perinatal CMDs and CMD symptoms are common and can be up to twice as common in women from LMICs. However, differences in methods and detection produce differences in the reported prevalence rates.

2.2. Detecting CMD Symptoms in LMICs

In HICs, a mental health professional, such as a psychiatrist or clinical psychologist, usually detects CMDs through a clinical interview. In these settings, psychological, as opposed to somatic symptoms, are usually discussed (Mitchell, Vaze, & Rao, 2009). This type of detection can be difficult in LMICs where the majority of health

professionals do not have the time or training to complete clinical interviews (Ali, Ryan, & De Silva, 2016). Self-report measurement tools can, therefore, be used to quantify the level of symptoms and screen for potential CMD diagnosis. While not without its challenges, the use of screening instruments for detecting CMDs is favourable in LMICs because they are low-cost (Harpham et al., 2003) and can be administered by non-mental health specialists (Ali et al., 2016; Tennyson, Kemp, & Rao, 2016).

Screening tools in a LMIC can be translated from a previously developed tool or can be assembled for a specific region and purpose (Abubakar, 2015). While assembling and validating a new tool can create a potentially more sensitive tool, a large amount of research has shown that translated tools are valid and reliable in detecting CMD symptoms in LMICs (E. P. Green et al., 2018). However, there are various challenges to translating and utilising a previously developed tool, usually from a HIC, to be used in a LMIC. Different cultures and settings have different clinical presentations of CMDs (Kortmann, 1987). For example, somatization of mental health disorders is common in many African populations (Hanlon, Medhin, Alem, Araya, Abdulahi, Hughes, et al., 2008; Patel, 1998; Senturk et al., 2012). Therefore, it is essential to consider local terms and phrases when conducting translations and perform a cultural validation of the tool (Abubakar, 2015; Cork, Kaiser, & White, 2019).

In addition, identifying optimum cut-off scores or thresholds that accurately identify a person with symptoms of clinical concern can be difficult. Thresholds can also vary between countries, regions and populations (Sawyer et al., 2010). To identify a valid and sensitive threshold, the tool needs to be measured against a ‘gold-standard’ such

as a clinical interview performed by a mental health professional. A study by Sweetland, Belkin and Verdeli, (2014), reviewed 65 studies from 16 countries that used a variety of tools used to measure CMDs in Africa. The most common was the Self-Reporting Questionnaire (SRQ-20) (Beusenberg & Orley, 1994), followed by the Edinburgh Postnatal Depression Scale (EPDS) (Cox, Holden, & Sagovsky, 1987) and the General Health Questionnaire (GHQ) (Goldberg & Hillier, 1979). They found large variance in the identified optimal cut-off scores used across these different settings. For example, the SRQ-20 cut-off scores used ranged from 3–9.

2.2.1. Detecting perinatal CMD symptoms in LMICs.

Screening tools have also been used in LMICs to detect perinatal CMD symptoms. Chorwe-Sungani and Chipps, (2017), reviewed 11 studies from nine LMICs, five from Sub-Saharan Africa. They found that the EPDS was the most common tool used to measure perinatal depressive symptoms. The EPDS also had the highest level of accuracy and sensitivity in being able to identify antenatal depression. Another review by Tsai et al. (2013) reviewed 22 studies that used measurement tools to identify women with perinatal depression in Africa. The authors found that only 12% of the studies had created their own tool, and similar to Chorew-Sungani and Chipps, (2017), found the EPDS to be the most utilized. Lastly, an extensive review of 153 articles from LMICs, with 20 from Africa, suggested that tools aiming to measure CMDs should be selected based on their intended purpose (Ali et al., 2016). These authors suggested using the SRQ-20 when measuring for CMDs generally and the EPDS for perinatal depression.

Overall, challenges arise when deciding how to measure and detect perinatal CMDs in LMICs with a need to consider the construct and cultural validity as well as the target

population and administration method (Tennyson et al., 2016). Even with the differences in the tools used, prevalence rates of perinatal CMDs in women from LMICs are high. The previously discussed differences in prevalence rates of perinatal CMDs and CMD symptoms between HICs and LMICs highlight how different factors and contexts might impact women's mental health during the perinatal period.

2.3. Risk Factors for Developing Perinatal CMDs and CMD Symptoms

Largely, the risk factors for developing perinatal CMD symptoms are biological, experiential, psychological, social and cultural (Almond, 2009). In HICs and LMICs, various biological risk factors have been identified. These include a previous history of mental illness, chronic mental illness, or a history of a perinatal mental disorder (Biaggi, Conroy, Pawlby, & Pariante, 2016; Norhayati, Nik Hazlina, Asrenee, & Wan Emilin, 2015; O'Hara & Wisner, 2014; Wachs et al., 2009). A woman's experience during pregnancy and childbirth, both current and previous, can also impact her perinatal mental health. For example, an unwanted or unplanned pregnancy, a previous loss of a pregnancy or a current or past medical complication have all been found to increase a woman's risk of developing perinatal CMD symptoms (Biaggi et al., 2016). While these have been identified as important risk factors in HICs, they are less strongly associated with perinatal CMD symptoms in LMICs (Sawyer et al., 2011).

Psychological risk factors include heightened perceived stress or various stressful life events. These have been identified as risk factors in HICs and LMICs (Atif et al., 2015; Biaggi et al., 2016; Norhayati et al., 2015; Wittkowski, Gardner, Bunton, & Edge, 2014). While both are important risk factors globally, women from LMICs face potentially more stress due to the effects of poverty and violence in the areas they

live. Poverty and high economic stress can increase a woman's risk of developing high levels of perinatal CMD symptoms (Atif et al., 2015; Fisher et al., 2012; Wachs et al., 2009). Lund et al., (2010), found that poverty increased general CMD symptoms, the severity of the symptoms, and caused a longer course of the disorder. Women in LMICs are also exposed to more violence through war or intimate partner violence (IPV) (Flach et al., 2011; Glover, O'Donnell, O'Connor, & Fisher, 2018; Halim et al., 2018). Exposure to these types of violence can increase women's stress levels and perinatal CMD symptoms (Halim et al., 2018; Wittkowski et al., 2014).

Social risk factors, such as a lack of social support from partners or family members, have been identified as significant risk factors across all settings and contexts (Atif et al., 2015; Fisher et al., 2012; O'Hara & Wisner, 2014; Parsons et al., 2012; Sawyer et al., 2010; Wachs et al., 2009; Wittkowski et al., 2014). Specific cultural values in various LMICs present additional risk factors. Wittkowski et al. (2014) examined risk factors for developing postnatal depression symptoms in Sub-Saharan Africa. Reviewing both qualitative and quantitative studies, they found that in addition to the common risk factors identified in HICs (e.g. stressful life events and lack of partner support), the cultural values and expectations around the perinatal period and the African extended family structure were additional risk factors. Polygamy is common in many African countries, including The Gambia (The Gambia Bureau of Statistics (GBOS) and ICF International, 2014). It is also common for women to live with their in-laws. Poor relationships or conflict with a woman's co-wives and in-laws could be a potential additional risk factor associated with elevated CMD symptoms (Wittkowski et al., 2014). Additionally, having a child out of wedlock is highly stigmatised in various cultures around Africa, creating additional stress (Wittkowski

et al., 2014). It is also common in many African countries, including The Gambia, to desire a male over a female child, so much so that having a female versus a male child can create additional conflict and stress for the mother (Wittkowski et al., 2014). Finally, many women endure a lack of agency in their health and financial decisions, experience stigma around CMD symptoms and live in areas where health workers lack experience in identifying these symptoms (Wachs et al., 2009; Wittkowski et al., 2014). All these factors create a culture in which women face various additional pressures and stress around the perinatal period, increasing their risk for developing perinatal mental health problems.

Along with the identified risk factors present in LMICs, Fisher et al., (2012), identified various protective factors against developing perinatal CMD symptoms in LMICs. Overall, the authors suggested that higher levels of education, a permanent job, being in the ethnic majority and having a kind and trustworthy partner were protective factors against developing perinatal CMDs and CMD symptoms (Fisher et al., 2012). Overall, women in LMICs have a higher prevalence of perinatal CMD symptoms, more present risk factors and fewer opportunities to ensure preventative ones. These factors not only affect the mother and her mental state but also impact her developing infant and their relationship with one another.

2.4. Impact of Perinatal CMDs and their Symptoms

The mental state of a mother throughout the perinatal period has been shown to have a direct impact on the developing foetus and infant (Glover, 2014; Glover et al., 2018) with potential effects lasting into adolescence (Gelaye et al., 2016; Hay, Pawlby, Waters, Perra, & Sharp, 2010; Stein et al., 2014). Perinatal mental health problems can also impact a mother's relationship with and her ability to care for her child

(Albright & Tamis-LeMonda, 2002; Coyl, Roggman, & Newland, 2002; Martins & Gaffan, 2000). Less research has been conducted on the impact of perinatal CMDs on infant and child outcomes in LMICs. However, recent research suggests that these potentially detrimental effects are similar in HICs and LMICs.

2.4.1. Impact on the mother.

Research has shown that women who experience anxiety or depression during pregnancy have an increased risk of developing postnatal depression (Milgrom et al., 2008; Robertson, Grace, Wallington, & Stewart, 2004). Women who experience perinatal depression are also at risk of developing further depressive episodes throughout their lifetime (Halligan, Herbert, Goodyer, & Murray, 2007). Perinatal CMD symptoms have also been linked to unhealthy behaviours such as increased smoking and alcohol consumption, poor self-care and not seeking prenatal care (Zuckerman, Amaro, Bauchner, & Cabral, 1989). Women with perinatal CMDs and symptoms have also been shown to have an increased risk of maternal mortality and morbidity and a higher risk of suicide (Vos et al., 2012). In LMICs women who experience perinatal CMDs and CMD symptoms have been found to have higher rates of suicide (5% – 14%) compared to women in HICs (Lindahl et al., 2005), especially if they have been exposed to gender-based violence (Fisher, Astbury, de Mello, & Saxena, 2009).

2.4.2. Impact on the infant and child.

There has been extensive research done in HICs and LMICs investigating the potential impact poor maternal mental health has on various physical, psychological, behavioural and cognitive infant and child outcomes.

2.4.2.1 Physical infant outcomes.

A meta-analysis of 17 studies found that globally children with mothers with depression or depression symptoms are more likely to be underweight or stunted (Surkan, Kennedy, Hurley, & Black, 2011). The relationship between perinatal CMD symptoms and poor growth outcomes in Sub-Saharan Africa has shown mixed results (Parsons et al., 2012). Some studies found an association with postnatal depression symptoms (Adewuya, Ola, Aloba, Mapayi, & Okeniyi, 2008) while others, like a study conducted in The Gambia (Nabwera et al., 2018), found no association between infant growth and depression symptoms. Along with the potential adverse effects on infant growth outcomes, various studies have shown that CMDs and CMD symptoms during pregnancy are associated with an increased risk of preterm birth and low birth weight (Glover, 2015; Stein et al., 2014). This association is higher in LMICs compared to HICs (Stein et al., 2014), potentially due to the chronic strain of poverty (Dunkel Schetter & Tanner, 2012).

In LMICs, a mother's depressive symptoms have been linked to a risk of sub-optimal care for the infant (Ola et al., 2011). For example, depressive symptoms include poor concentration, sleep disturbance, low mood and lethargy, all of which can impact a mother's capacity to care for her infant postpartum (Parsons et al., 2012). The negative effect depressive symptoms have on a mother's capacity to care is associated with higher rates of infant illness such as diarrhoea (Parsons et al., 2012; Wachs et al., 2009). Premature cessation of breastfeeding has also been linked to postnatal CMDs and CMD symptoms in HICs and LMICs impacting the potential nutrition and health of the infant, especially in LMICs (Parsons et al., 2012)

2.4.2.2. Infant psychological, behavioural and cognitive development.

There are different areas of infant psychological, behavioural and cognitive development that can be impacted by perinatal CMDs and their symptoms. Recent reviews have shown that poor antenatal mental health can increase the risk of sleep problems and difficult temperament in infancy (Glover, 2015). Poor antenatal and postnatal mental health can also increase the risk of the infant and child developing emotional problems, such as anxiety or depression, as well as similar emotional problems in adolescence (Glover, 2015; Stein et al., 2014; Wachs et al., 2009). Children with mothers who have experienced antenatal CMD symptoms also have a higher risk of developing ADHD, an association found in HICs and LMICs (Glover, 2015; Stein et al., 2014). Finally, research in LMICs and HICs suggests that there is also an elevated risk of cognitive delay (e.g. lower academic achievement and motor delay) in children with mothers who experienced perinatal CMD symptoms (Wachs et al., 2009).

2.4.2.3. Potential mechanisms.

Various mechanisms may contribute to the reported association between perinatal CMD symptoms and an infant's physical outcomes. One potential mechanism is the environment itself, especially in LMICs, where mothers face substantial hardship. Overcrowding, a lack of running water or electricity, poor sanitation, lack of food, under nutrition and tropical diseases are important contributing environmental factors affecting the mother and her child throughout the perinatal period (Ola et al., 2011).

Biological markers, such as cytokines, have been investigated as a potential mechanism involved in the association between CMD symptoms and birth and infant outcomes (Blackmore et al., 2011; Coussons-Read, Okun, & Nettles, 2007; Karlsson et al., 2016). Studies investigating cytokines have found that depressive symptoms in pregnancy are associated with higher levels of maternal serum inflammatory markers which may in turn contribute to negative perinatal outcomes, such as preterm delivery via inflammatory pathways (Boufidou et al., 2009; Christian, Franco, Glaser, & Iams, 2009; Monk, Lugo-Candelas, & Trumpff, 2019; Van den Bergh et al., 2017).

Other biological mechanisms have been suggested to help explain the association between a mother's mental state during pregnancy and infant psychological, behavioural and cognitive development. The foetal programming hypothesis states that the environment in utero can alter the development of the foetus (Bergman, Sarkar, Glover, & O'Connor, 2010). The level of cortisol in the amniotic fluid, the fluid which surrounds the baby within the womb, has been shown to be inversely correlated with infant cognitive development (Bergman et al., 2010). Glover (2015) suggests that the transfer of maternal cortisol across the placenta to the foetus might help explain this association. These biological studies highlight how mental health interventions in pregnancy have the potential to biologically affect the infant directly.

2.4.3 Impact on the mother-infant relationship.

Perinatal CMDs not only affect the infant and her mother but also can affect their relationship. Maternal depression and anxiety and their symptoms, in addition to low levels of social support, have been found to negatively impact maternal antenatal attachment (Condon & Corkindale, 1997a; Coyl et al., 2002; Martins & Gaffan, 2000). These effects have been found in HICs and LMICs. One study demonstrated

that maternal depressive symptoms were linked to parenting difficulty in mothers resulting in less sensitivity, engagement, affection and enjoyment during their mother-infant interactions (Albright & Tamis-LeMonda, 2002). Conversely, good parenting and secure infant attachment are potential modifiable pathways that can help reduce the risk of perinatal CMD symptoms negatively impacting infant development (Bergman et al., 2010; Stein et al., 2014).

In summary, previous research points to the importance of creating effective and appropriate interventions to reduce perinatal CMDs for the benefit of the mother and her child. Interventions that start in pregnancy have the added ability to affect the mother, her developing foetus as well as give the mother appropriate tools to help with parenting once the infant is born. However, various discussed barriers to care, such as low resources, high stigma, and co-occurring medical conditions, make it difficult to create sustainable and culturally appropriate interventions in LMICs and Sub-Saharan Africa. As the geographical context for this thesis is The Gambia, the next section presents a brief overview of the country and its health system.

2.5. Overview of The Gambia and its Health System

(Statistics are from *The Gambia Bureau of Statistics (GBOS) and ICF International 2014 Report* unless otherwise stated)

The Gambia is a small country on the West African coast. The river Gambia runs though the country dividing the North Bank and South Bank areas. The Gambia is split into five administrative regions and two municipalities: West Coast region, Lower River region, North Bank region, Middle River region, Upper River region, Banjul City Council and Kanifing Municipal Council (Figure 2.1). The Gambia is

surrounded by Senegal in the north, south and west creating the Senegalese area. The Gambia was a UK colony until it gained its independence in 1965. With a population of about two million, The Gambia is the most densely populated country in West Africa, with 57% of the population centred around urban areas (World Bank, 2019). A large majority of households (91%) have access to an improved source of drinking water, and 45% of households have access to electricity, however, there is a large disparity between urban and rural areas (66% and 13%, respectively). Only 37% of households use improved toilet facilities that hygienically separate human excreta from human contact and are not shared with other households. The Gambia's small economy, with a real gross domestic product (GDP) growth of 6.6% in 2018, relies primarily on tourism, rain-dependent agriculture, and remittances (World Bank, 2019). The Gambia temperate is tropical, characterized by a cooler dry season between November and May, and a hot rainy season between June and October. The rainy season has been found to impact food availability and transportation (Fardi, 2017; S. E. Moore et al., 1997).

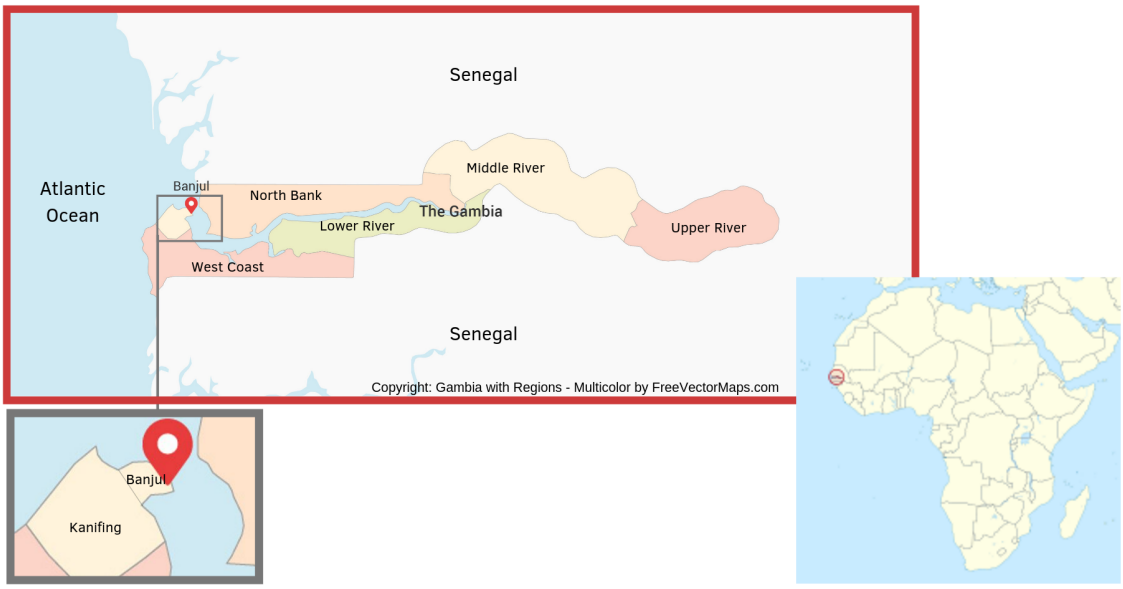

Figure 2.1. Map of The Gambia and its regions.

There are five major ethnic groups in The Gambia, each with their own language and culture. Mandinka is the most common (42%) followed by Fula (18%), Wolof (16%), Jola (10%), Serahuli (9%) and smaller ethnic groups and foreigners comprising the remainder (McConnell, 2019a). There are many multi-ethnic groups and communities in The Gambia due to the long history of close interaction among the different ethnic groups (McConnell, 2020). The majority of people in The Gambia practice Islam (96%), which supports the high rate of women in polygamous marriages (39%). Even though the majority are Muslim, traditional beliefs still make up an essential part of their spiritual and daily lives (Nabwera et al., 2018). About 52% of women have no education. Forty-five per cent of women are literate with fewer in rural versus urban areas. About 58% of women believe that wife-beating is justified. The overall prevalence of female genital cutting (FGC) among women age 15 – 49 in The Gambia is 75% with the practice being more prevalent in Mandinka versus Wolof communities (Coleman, Morison, Paine, Powell, & Walraven, 2006).

The Gambia is a medically pluralistic society where people utilize a variety of therapeutic options, including biomedicine, indigenous herbal medicines, and spiritual treatments (McConnell, 2015a). The World Bank estimates a $31 per capita health expenditure per annum, one of the lowest in the world (World Bank, 2015). The majority of funding comes from foreign aid which dictates the priorities and accomplish low sustainability (McConnell, 2016). While there has been a big push by the government and the Gambian Ministry of Health and Social Welfare (MoHSW) to prioritise maternal and infant health (A. Green, 2017), rates of maternal and infant death are still relatively high. A total of 433 out of 100,000 live births resulted in maternal death and 63 out of 1,000 births resulted in infant death in the first five years

of life in 2018 (Unicef, 2018). The majority of women receive perinatal care coverage with 78% receiving at least four antenatal visits and 76% receiving postnatal care within two days after birth. A professional midwife or doctor attends about 57% of births. Even though hospital births are encouraged and on the rise, intrapartum care, and more specifically emergency obstetric care, varies drastically between rural and urban areas with fewer resources and poorer outcomes in rural areas (Sambou, 2012). Seasonality also can affect births where season floods impede access to health care facilities resulting in unattended and unsafe births (Baber Wallis & Sanyang, 2017).

Mental health care is lacking with only two psychiatrists practising throughout the entire country. While there is one psychiatric hospital in The Gambia, it is grossly underfunded and houses only those with very severe mental illnesses. There are practising psychiatric nurses, usually trained in talking therapies, who work within the communities. However, there are still very few practitioners and the majority work in urban areas. In a study by Coleman et al., (2006), they identified, using the EPDS and clinical interview, that 10% of their Gambian sample of about 565 women had a depression diagnosis. All of the women identified as having depression within the study were not identified as having a mental health problem and did not receive any mental health care from their local health centre.

2.6. Measuring CMD Symptoms in The Gambia

The Medical Research Council (MRC) Unit in The Gambia has conducted a great deal of global health research, including research on malaria and nutrition, in The Gambia. Studies conducted with women and infants have primarily focused on physical health rather than mental health. Only four studies were identified that investigated maternal mental health. An additional six studies were identified that

measured CMD symptoms in different populations, including adults with HIV, sex workers and refugees. This lack of research investigating CMDs emphasises the stark difference in the proportion of research on mental health compared to physical health taking place within The Gambia.

Two studies conducted in the West Coast region of The Gambia investigated levels of depression and post-traumatic stress disorder (PTSD) among adults living with HIV (Klis, Velding, Gidron, & Peterson, 2011; K. Peterson, Togun, Klis, Menten, & Colebunders, 2012). Mandinka and Wolof versions of the Centre for Epidemiological Study Depression Scale (CES-D) and the Impact of Events Scale Revised (IES-R) were used to measure depression and PTSD symptoms. Both tools had been validated in other Sub-Saharan African countries, but neither study mentioned whether these tools were validated in Mandinka or Wolof.

Two additional studies measured CMD symptoms in specific populations within The Gambia. One investigated depression in female sex workers (Sherwood et al., 2015) and another in transgender women and cisgender men who have sex with men (Poteat et al., 2017). Both were conducted near the capital city Banjul in the West Coast region. In both of these studies, no screening tools were used but rather one or two items asking about mood (e.g. "Have you ever felt sad or depressed in the last two weeks?").

Finally, two studies measured CMD symptoms in Casamance and Sierra Leonean refugee populations living in The Gambia (S. H. Fox & Tang, 2000; Tang & Fox, 2001). Researchers investigated anxiety, depression and PTSD symptoms using the

Harvard Trauma Questionnaire (HTQ) and the Hopkins Symptom Checklist-25 (HSCL-25). Both were administered orally through interpreters in the language of the participant. As there were no validated thresholds for The Gambia, the researchers opted to look at these scales as an indication of symptom prevalence as opposed to a screening tool to identify a probable mental disorder.

2.6.1. Detecting prevalence, risk factors and impact of perinatal CMD symptoms in The Gambia.

Very little research has been done to measure the prevalence, risk factors, or impact of perinatal CMDs and CMD symptoms in The Gambia. Four studies where identified, three of which measured maternal symptoms of depression as opposed to other common perinatal mental health problems (Bartram, 2018; Coleman et al., 2006; Nabwera et al., 2018). The three studies used the EPDS as their screening tool and were conducted in the rural regions of The Gambia. Two took place in the Lower River region in West Kiang (Bartram, 2018; Nabwera et al., 2018) and one in the North Bank region in Farafenni (Coleman et al., 2006). Two used a cut-off score of 10 or above to identify women with probable depression (Bartram, 2018; Coleman et al., 2006) with only Coleman et al., (2006) validating the measure for use in Mandinka, Wolof and Fula against a clinical interview. Nabwera et al. (2018) used a cut-off score of 12 or above.

Coleman et al., (2006) did not specifically focus on perinatal women but rather women of childbearing age. The researchers interviewed 565 women between the ages of 15 and 45 and investigated associations between reproductive health and depression. Researchers found that being widowed or divorced, having problems with infertility and severe menstrual pain were the factors most associated with depression

symptoms. Women within six months of giving birth were not more likely to have higher levels of depression symptoms. There were no apparent differences between the different ethnic groups. They concluded that about 10% of the women in their sample had a diagnosis of depression.

Nabwera et al. (2018), found 13% of their sample had concerning levels of depression symptoms when using the EPDS with a cut-off score of 12 or above. In this study, the researchers investigated the influence of maternal psychosocial circumstances, one of which was the presence of maternal depression, on child wasting. Following women from pregnancy until after birth, they found no association between maternal depression and severe wasting in infancy. However, in a qualitative analysis, maternal psychosocial stressors were found to be associated with women's feeding and child-rearing capacity.

Maternal depression and its effect on infant behavioural and cognitive outcomes was investigated in a recent thesis by Bartram (2018). She found that antenatal depression was related to poor infant social behaviour at two weeks and five months when using the Neonatal Behavioural Assessment Scale (NBAS). Using the EPDS with a threshold of 10 or above, she identified an 8% prevalence rate of antenatal depression and a 20% prevalence rate of postnatal depression.

A study by Sawyer et al., (2011) investigated women's experiences of pregnancy, childbirth and the postnatal period through qualitative interviews and focus groups. This study took place in Kanifing, an urban area in the West Coast region. The researchers interviewed fifty-five women who had given birth within the previous

year. Women felt that pregnancy and the time after birth represented a period of transition to adulthood and came with many physical difficulties. Women reported feeling fearful of going through the childbirth alone and described children as social currency as well as a source of strain. Some aspects of their experiences were similar to those found in other research from HICs and LMICs (e.g. physical difficulties of birth). In contrast, others represented more unique aspects to The Gambian experience (e.g. children as social currency).

There is still little known about the prevalence of perinatal CMD symptoms, their impact and potential risk factors in The Gambia. However, these reviewed studies indicate that women throughout The Gambia experience perinatal mental health problems and are susceptible to similar risk factors identified in previous research (e.g. low social support) (Sawyer et al., 2011). Perinatal CMD symptoms impact infant behavioural development (Bartram, 2018) and women's parenting capacity (Nabwera et al., 2018). Finding a way to better address, discuss and research perinatal CMDs in The Gambia is vital and an area which is greatly under-researched. Furthermore, there is a need to create feasible, culturally-embedded, and low-cost interventions to combat the various barriers women face in seeking and receiving mental health support during pregnancy and after birth.

2.7. Mental Health Interventions in LMICs

In response to the call from "No Health without Mental Health" (Prince et al., 2007), the WHO devised the mental health gap action program (mhGap) (Saxena, 2016) followed by an intervention guide (World Health Organization, 2008). Within this guide, the WHO developed a framework to help deliver evidence-based interventions in which general practitioners and nurses could be trained to identify and treat CMDs.

This guide is now being used to help shape interventions in 90 countries around the world (Saxena, 2016).

Additional publications have discussed ways of implementing interventions into the general health care system using non-specialist health workers (NSHW) and community health workers to deliver task-sharing interventions (Padmanathan & De Silva, 2013; van Ginneken et al., 2013). NSHW have general medical training but have no specific mental health training (van Ginneken et al., 2013) while community workers include trained lay counsellors and peer workers (Kohrt et al., 2018). Task-sharing interventions involve delegating the delivery of the intervention to community workers or NSHWs. These types of interventions use human and financial resources more efficiently while also increasing capacity (Padmanathan & De Silva, 2013).

A recent Cochrane review (van Ginneken et al., 2013) found that task-sharing psychological interventions delivered by NSHW are effective in LMICs. These types of psychotherapies are also more cost-effective as they require lower salaried staff while also addressing the severe shortage in trained mental health professionals (Chisholm, Sanderson, Ayuso-Mateos, & Saxena, 2004). Task-sharing interventions are reasonably acceptable and feasible in LMICs (Padmanathan & De Silva, 2013). However, careful consideration of cross-cultural acceptability is needed. If not, the delivery of these interventions might lead to participants being dissatisfied and feeling as though the intervention did not meet their needs (Padmanathan & De Silva, 2013).

One way to increase acceptability is to integrate the interventions into the communities. A recent review by Kohrt et al., (2018) found that community-based

mental health interventions in LMICs, compared to primary care interventions, increased the acceptability, accessibility, affordability and scalability of the intervention and led to higher adherence and better outcomes. Some advantages of community-based interventions are that they are administered by trusted local providers which promotes social inclusion and enhances reach (Kohrt et al., 2018). Most of the interventions identified were led by lay counsellors, peer workers, teachers, religious leaders or community health workers (Kohrt et al., 2018). They were held in a variety of places such as people's homes or community centres and aimed to raise awareness, educate, give skills training or administer psychological treatments (Kohrt et al., 2018).

An example of a successful community-based, NSHW administered psychological intervention is The Friendship Bench from Zimbabwe (Chibanda et al., 2016). In this trial, researchers aimed to reduce CMD symptoms in men and women by delivering six sessions of individual problem-solving therapy on private benches outside the walls of health centres (Chibanda et al., 2016). Participants in the intervention group had fewer symptoms after six weeks than those in the control group (Chibanda et al., 2016). The Friendship Bench is an example of how a task-sharing community-based intervention can be integrated into general mental health care in Africa.

2.7.1. Interventions for perinatal mental health in LMICs.

Psychosocial and psychological interventions, such as peer support or cognitive behavioural therapy, have been found to be effective in reducing symptoms of postpartum depression globally (Dennis & Hodnett, 2007). They have also been found to be effective when delivered by NSHWs in LMICs (Chowdhary et al., 2014). Delivering such interventions does not come without its challenges including lack of

private space, stigma and poor adherence (Chowdhary et al., 2014). Various recommendations have been made to help combat these challenges. Using culturally appropriate terms, including the child and family, taking into consideration time and season, and accounting for transportation issues have all been suggested (Chowdhary et al., 2014; Gelaye et al., 2016). Two reviews have examined the few perinatal depression intervention studies that have taken place in LMICs (Gelaye et al., 2016; Wachs et al., 2009). These reviews concluded that interventions that are psychosocial and delivered by lay health workers are more successful compared to other primary health interventions. They also found that support from the existing maternal and child health system was beneficial to the reach, adherence and feasibility of the intervention. Additionally, group type therapies encouraged the formation of social support systems (Gelaye et al., 2016; Wachs et al., 2009). A recent systematic review and meta-analysis found that the utilization of existing women's groups as facilitators of participatory learning and action interventions was an effective and cost-effective strategy to improve maternal and neonatal survival in LMICs (Prost et al., 2013).

Rahman et al. (2013) reviewed 13 trials from LMICs, with only two trials conducted in Sub-Saharan Africa, that were investigating interventions to reduce perinatal CMD symptoms. All the reviewed trials used NSHWs and community workers and most measured only perinatal depressive symptoms. The three intervention methods used were: 1) psychotherapeutic, where participants were given constructive ways of thinking and behaviour strategies; 2) psychoeducational, where participants were taught problem-solving and ways to manage interpersonal relationships and 3) other, which didn't focus on mental health but rather mother-infant interactions or morbidity. Overall, the interventions were found to be more effective than routine care for treating maternal CMD symptoms.

Overall, the research previously discussed point to the strategies and challenges faced when implanting maternal mental health interventions in LMICs. A community-based intervention that utilises NSHWs, community members, and women's groups can help to create an acceptable, sustainable and effective way to reduce perinatal CMDs in LMICs. However, the previously summarised interventions have been almost exclusively verbal and informational. One under-explored approach that could provide a promising vehicle through which to support perinatal mental health, via NSHWs or women's groups, is a music-based one.

2.8. Music and health

Music is multifaceted. It is ubiquitous, emotional, social and communicative (MacDonald, Kreutz, & Mitchell, 2012) and present in every known culture (Wallin, Merker, & Brown, 2000). Music's medical value has been discussed and documented from as early as 4000 BC (Spintge & Dorh, 1992) showing a long history of music and its effect on health. MacDonald (2013) developed a conceptual model (Figure 2.2), which explores the current uses of music for health and well-being across a range of contexts. The model highlights current research investigating the potential beneficial effects different types of musical engagement can have across a variety of health areas and settings. While the model builds upon current research primarily conducted in HICs, much can still be learned and applied from this growing body of work.

Figure 2.2. A conceptual model for music, health and well-being. Image taken from MacDonald (2013).

MacDonald's (2013) model displays five overlapping types of music health interventions: music therapy, music medicine, community music, music education and everyday uses of music. Music therapy is distinct in its emphasis on the therapeutic relationship between a trained music therapist and the client who together work towards achieving a specific therapeutic goal. A somewhat detached but related music and health practice is music medicine depicted as the small overlapping circle on the right. Music medicine, like a lot of music therapy, usually takes place within health settings such as hospitals. Although still aimed at achieving a therapeutic or health goal, music medicine does not necessarily require a trained music therapist to deliver the intervention. While prominent in HICs, trained music therapists are not typical in the majority of LMICs, though some work has been done in South Africa (Pavlicevic, 1994). Therefore, music therapy is potentially impractical in LMICs where there are no trained music therapists.

The next circle depicts community music, which focuses on providing the opportunity for musical engagement and its benefits within people's local communities (e.g.

community choirs and percussion classes). While music skills are taught in some community music settings, it is not the primary purpose of community music interventions. Music education, however, focuses on the explicit development of conventional music skills and is usually embedded in school settings. Everyday uses of music involve the passive and active ways people engage with music. This includes listening to music on personal devices that can take place in public and private settings.

Overall, this model gives a helpful overview of the types of music interventions used for health within current research and practice. While some have very distinct characteristics, there is overlap between these five types of music and health practices. These practices share similarities in the type of musical engagement used (e.g. singing or listening to music), the contexts in which they happen (e.g. hospital or within the community) and in their primary aims (e.g. educational or therapeutic). They all also provide similar beneficial effects for those that engage in them.

2.8.1. The beneficial effects of music engagement.

Engaging with music, either through listening or participating, has been shown to have a variety of beneficial health effects. Music or music-making within a health intervention is usually investigated holistically as an embodied interactive process (Clayton, Sager, & Will, 2005). Understanding music in this way takes into account the action of participating in different types of musical engagement (e.g. singing, dancing, and playing musical instruments) while simultaneously communicating and interacting with others. This view of music as interactive and encompassing various types of music related activities is often described as ‘musicking’ (Small, 1999; Stige, 2012).

Engaging in music through ‘musicking’ has been shown to positively affect people living with mental illness. A recent Cochrane review (Aalbers et al., 2017) found that engaging in music therapy (involving listening to and making music) reduced participants’ depression and anxiety symptoms as measured by clinical interview and self-report measures. Another review found similar results and concluded that music therapy was helpful for people with a mental disorder since it allowed them to participate successfully, manage their symptoms and express their feelings (Edwards, 2006). While these reviews focus primarily on music therapy sessions involving a music therapist, research has also found that community group drumming sessions (Fancourt, Perkins, Ascenso, Carvalho, et al., 2016) and song-writing (O’Callaghan, 1997) also improve people’s mental health.

A frequently studied group music intervention is group singing (Clift, 2012). Group singing has been identified as a potential untapped public health resource, arguing that engaging the community in group singing has beneficial effects for the individual and the wider society (Clift et al., 2015). The identified beneficial effects were summarized in a recent systematic review that found that group singing increased participants' mental health and well-being, enjoyment, emotional state, sense of belonging and self-confidence (Williams et al., 2018).

2.8.1.1. Group singing and social bonding

The relationship between group singing and social bonding has been the focus of many studies in this area. The social bonding hypothesis argues that one of the key functions of music is its ability to create social bonds through the establishment of mutual understanding and trust (Freeman, 2000). It has been argued that group music-

making has evolved as a mechanism for social bonding as groups began to grow larger (Dunbar, 2012). For example, a recent study found that singing in small and large groups were both able to increase people's feelings of social cohesion (Weinstein, Launay, Pearce, Dunbar, & Stewart, 2016). Engaging in singing groups has also been found to have a social bonding 'ice-breaker effect' whereby people bonded faster in singing groups compared to creative writing groups (Pearce, Launay, & Dunbar, 2015). Group music-making, either singing or dancing, involves synchronization where participants move together in time, creating a 'collective convergence' (Cross, 2014). The synchronization of movement by entraining to the beat and one another has been suggested as one potential mechanism explaining why group singing and music-making increase people's feelings of social cohesion (Dunbar, 2012; Tarr, Launay, Cohen, & Dunbar, 2015).

2.8.1.2. Potential biological mechanisms.

The endogenous opioid system (EOS) is discussed as a potential biological mechanism involved in the ability of group music-making to increase participants' feelings of social cohesion (Tarr, Launay, & Dunbar, 2014). The EOS is comprised of opioid receptors which distribute associated peptides throughout the central nervous system and peripheral tissues (Fields, 2007). These main peptides β-endorphins, enkephalins and dynorphins are known to foster and maintain non-sexual, non-kinship social bonds (Machin & Dunbar, 2011). The β-endorphins also activate the pain modulatory pathway to help inhibit pain transmission at the spinal cord level (Fields, 2007). Therefore, pain tolerance acts as a function of opioid receptor availability. Consequently, pain threshold tests have been established as a proxy measure for the release of endorphins and as a measure of any recent change in social bond strength as

a result of participating in music. Recent studies have explored this potential relationship by finding that pain thresholds became elevated after engaging in group singing (Pearce et al., 2015; Tarr et al., 2015, 2014; Weinstein et al., 2016).

The psychoneuroimmunological effects of music have also been examined as a possible mechanism involved in the beneficial effect music engagement has on mood (Fancourt, Ockelford, & Belai, 2014). These psychoneuroimmunological effects were tested in an intervention for patients using mental health services in the UK. Patients participated in 70-minute group drumming sessions once a week for six weeks (Fancourt, Perkins, Ascenso, Atkins, et al., 2016). Cortisol levels reduced in patients in the drumming group compared to those in the treatment as usual group. In addition, participants in the drumming group shifted away from a pro-inflammatory towards an anti-inflammatory immune profile when measured by different cytokines (Fancourt, Perkins, Ascenso, Atkins, et al., 2016; Fancourt, Perkins, Ascenso, Carvalho, et al., 2016). Similar effects were found in another study investigating the effect of group singing on cancer patients. Cortisol levels decreased while pro-inflammatory cytokines increased (Fancourt, Williamon, et al., 2016). These types of biological effects give some explanation of why group music-making might be beneficial in reducing cortisol in pregnancy, where high cortisol levels in utero have been shown to increase the risk of negative effects on infant cognitive outcomes (Bergman et al., 2010). However, these results should be regarded with caution. While these studies point to potential biological mechanisms between music, mood and social cohesion, various researchers have cautioned against these findings citing the complex relationship between biomarkers, mood and feelings of social cohesion (Dingle et al., 2019).

Previous studies have shown the benefits of music engagement, especially group singing, for participants generally and for those from specific populations such as older adults (Clift et al., 2015) or cancer patients (Fancourt, Williamon, et al., 2016). Alongside this work, there has been a growing volume of research explicitly studying the beneficial effects of music engagement for women and their infants during the perinatal period.

2.9. Benefits of Music During the Perinatal Period

Musical engagement has been used to support maternal and infant wellbeing in several areas. Some studies have focused on fostering parent-infant bonds, reducing pain and supporting the well-being and health of the infants in the neonatal intensive care unit (Shoemark, Hanson-Abromeit, & Stewart, 2015; Standley, 2002). Listening to relaxing music has been investigated as a way to reduce labour pain during birth (S.-C. Chang & Chen, 2005; Li & Dong, 2012; Liu, Chang, & Chen, 2010), anxiety during caesarean delivery (Wulff et al., 2017) and blood pressure in women diagnosed or at risk of hypertension in pregnancy (Cao et al., 2016; Meenakshi, Vibha, & Kappoor, 2016).

Music engagement has also been used to support maternal mental health throughout the perinatal period. Research has found that music engagement is an effective intervention to reduce symptoms of postnatal depression and anxiety (Fancourt & Perkins, 2018; Terry & Terry, 2012). Within this literature, there is a focus on the use of lullabies for the dual purpose of comforting the mother and the infant (Friedman, Kaplan, Rosenthal, & Console, 2010). Singing acts as a key channel through which meaningful, sensitive and contingent interactions happen between the mother and

infant. These musical interactions have been shown to enrich the bond between the mother and her child (Milligan, Atkinson, Trehub, Benoit, & Poulton, 2003).

Lullabies and play songs are found in all known cultures (Trehub & Trainor, 1998), making them an important musical source for interventions around the perinatal period. A recent randomised control trial reported that women with postnatal depression who participated in a singing group for ten weeks, where lullabies and play songs were used, had a greater reduction in postnatal depression symptoms compared to a playgroup (Fancourt & Perkins, 2018). An accompanying qualitative study reported that participating in these singing groups provided mothers with a creative experience, the ability to calm babies, immersive 'me time', a sense of achievement and identity and enhanced their bond with their infant (Perkins, Yorke, & Fancourt, 2018).

2.9.1. Music interventions during pregnancy.

While most studies have focused on postnatal interventions, a growing number of studies have focused on antenatal music interventions to support infant and maternal outcomes. A recent cohort study by Perscio et al. (2017) investigated the impact mothers singing lullabies had on mother-infant bonding, newborn behaviour and maternal stress in a non-clinical group of pregnant women. They recruited 167 women at 24 weeks. Half participated in a singing class while the other a general antenatal class. They found there was a significant increase in postnatal bonding in those within the singing group. Infant behaviour, measured by neonatal crying and infantile colic in the first month, was significantly lower for those in the singing group compared to the control group. In addition, maternal stress levels reduced in women

who participated in the singing group compared with those who participated in the control group.

Other studies using music during pregnancy have found similar results. One study found that antenatal music listening significantly lowered maternal psychosocial stress in pregnant women after two weeks of daily music listening (H.-C. Chang, Yu, Chen, & Chen, 2015). However, no changes in perceived stress and maternal-foetal attachment were found when compared to treatment as usual (H.-C. Chang et al., 2015). Another study found that after two weeks, women who received music therapy had reduced levels of stress, anxiety and depression compared to a control group (M.-Y. Chang, Chen, & Huang, 2008). While studies are limited and show mixed results, the current research indicates the potential of using music as an antenatal intervention for improving maternal mental health and reducing antenatal CMD symptoms. There is even an added possibility of subsequent beneficial effects on infant behaviour and mother-infant attachment.

While research on the beneficial effects of group singing and music-making in the general population and the perinatal period have been studied in HICs, there is very little research investigating how these effects might be different or the same in LMICs. Dingle et al. (2019), in a recent agenda for best practice in music and health research, highlighted this gap within the literature and specifically called for more research on the potential effects of group singing in LMICs.

2.10. Music as Health Communication in LMICs

While there is a lack of research investigating the potential psychological health benefits of music engagement in LMICs, there has been a growing amount of research

investigating how music can be and is currently used for health and health communication. This is evident with the emergence of the field of medical ethnomusicology, a field that uses ethnographic-based studies to investigate the roles of music in health and healing-related activities (Koen, Lloyd, Barz, & Brummel-Smith, 2008). Various medical ethnomusicology studies have been completed in Africa which focus specifically on music performance and song and its role in health communication around HIV/AIDS prevention (Barz, 2006) and antenatal and infant physical health (Silver, 2001).

Using songs as health communication tools is an example of the entertainment-education strategy (Singhal & Rogers, 2001). This strategy aims to design and implement a media message, which is both entertaining and educational to increase people's knowledge about the subject. A medical ethnomusicology study in Tanzania cited the use of this strategy within an HIV prevention music campaign aimed at reducing stigma (Bastien, 2009). Bastien (2009) argued that oral traditions, such as song, are an untapped potential in health communication. Songs can take on culturally embedded and pervasive metaphors around health issues and use them as educational tools within helpful narratives (Bastien, 2009). The effectiveness of health communication is contingent on the nuanced understanding of the local perceptions of the health issues and songs are embedded practices that inherently embrace them.

The majority of musical health communication involves messaging around HIV. However, perinatal health is also a common area of interest. One study in Uganda talked about the specific advantages of using oral traditions, such as songs and storytelling, for messaging around perinatal health (Silver, 2001). Silver (2001)

explained explicitly how songs and storytelling offer an advantage in their ability to involve the listeners through participation and entertainment. Songs and stories have the advantage of being perceived as credible because they are embedded within local practices and ideas. They also involve local community musicians, which empower them to become leaders and informers in their communities. Additionally, songs and stories are simple and repeatable, adding to the sustainability of the messaging and health solution (Silver, 2001). For all of these reasons, embedded oral traditions such as songs, show particular advantage when working in an African context, especially one where illiteracy and mistrust of 'outside' messaging are prevalent.

A study conducted in Sierra Leone explores the features involved in music which make it advantageous in spreading information about maternal health (Bingley, 2011). West African music is assumed to have a message (Bingley, 2011). Therefore, a song as a communication tool, especially around a specific subject, is not unusual. In addition, the music used usually involves a high level of repetition, brevity in the lyrical phrases and a call-and-response format (Bingley, 2011). These structural features of the songs make the messages (lyrics) catchy and easy to memorize. This helps people remember the message and spread them to other people in their community. The call-and-response structure also invites participation in promoting a social connection for those involved. These specific musical features speak to the appropriateness of song as a form of health communication and community involvement in West Africa, an important consideration made in the development of our current intervention. This thesis specifically concerns a music-based intervention in The Gambia and therefore, the following sections explain in more detail the musical culture and traditions of this country in particular.

2.11. Music in The Gambia

The Gambia is home to rich and diverse musical practices with the techniques, rhythms and other musical features varying by region and ethnicity (McConnell, 2019a). The most studied and widely known is that of the griots/griottes - hereditary musicians known throughout West Africa (McConnell, 2019a). These griots, *jali* in Mandinka and *géwël* in Wolof, have passed down knowledge and expertise from generation to generation. Because of this, they have specialized knowledge in history, genealogy, medication, praise-singing, and instrumental performance (McConnell, 2015a, 2019a). The *jali* use instruments such as the *kora* (12-sting bridge harp), *balo* (gourd-resonated xylophone) and *kontingol ngoni* (5 string lute). The *géwël* are known for their drumming, which they perform in groups using the *sabar* drums (McConnell, 2019a). While percussion and drum ensembles are performed by *géwël,* non-griot musicians usually perform in these groups. The Mandinka use the *kutiro* drums and Wolof use the *sabar* drums which are both played with a stick and one bare hand (McConnell, 2019a). While the instrumental music of the *jali* is primarily for listening, the drum ensembles are usually accompanied by dancing. Male performers, who are known for their instrumental performances, have been the primary focus in ethnographic research. However, it is women musicians, both griottes and non-griottes, who dominate as signers and dancers and perform at many of the music events around the country. A prominent example of female musicians is the *Kanyeleng*, who are particularly relevant to the work presented in this thesis.

2.11.1. Kanyeleng groups.

Kanyeleng groups, which include women from any ethnic group, have historically been comprised of women who are dealing with or have dealt with infertility or child mortality (McConnell, 2015b; Saho, 2012). Kanyeleng women perform rituals of

prayer where they demonstrate to God their desperation for a child. Infertility and infant mortality are believed to result from the presence of a spirit husband or *kuntofengo* whose jealousy prevents a woman from having a child (Hough, 2006; Skramstad, 2008). To evade the *kuntefengo*, Kanyeleng groups participate in prayer, disguise, trickery, music performance, and rituals aimed to prevent infertility and infant mortality (Saho, 2012; Skramstad, 2008). The music performances of the Kanyeleng are highly entertaining and participatory. They usually involve humour, singing, dancing, hand-clapping, and percussion (McConnell, 2019a). The instruments used by the Kanyeleng include the *jiikijo* or "water drum" (a calabash bowl overturned in a tub of water), the *bidong* (20-litre plastic jerry can), whistles, metal bowls and megaphones (Figure 2.3).

In contemporary Gambia, Kanyeleng groups have started to attract women who have not experienced reproductive challenges. While many Kanyeleng groups still practice their traditional beliefs and rituals, Kanyeleng groups have recently taken on prominent roles as health communicators (McConnell, 2020). Their contemporary identity as traditional communicators allows its members the opportunity to perform and potentially make an income. It also situates them as valuable and respected leaders within society.

Source: Bonnie B. McConnell (2013; Used with permission)

Figure 2.3. Kanyeleng group performance and instruments. An image of the Association for Promoting Girls' and Women's Advancement (APGWA) Kanyeleng group performing and playing the *bidong* and *jiikijo*.

Musical performances by the Kanyeleng and griots take place at life cycle events such as naming ceremonies, weddings and circumcisions (McConnell, 2019b). These events take place in a variety of areas including family compounds, village meeting places and neighbourhood intersections. The music and performances by Kanyeleng and griots are essential aspects of people's everyday lives. Music and music performance in The Gambia act as a means of managing and mediating the emotional, social and supernatural aspects of life (McConnell, 2015a, 2020). Therefore, Kanyeleng and griot performances are ideal mediums to discuss health and healing.

2.11.2 Music and health in The Gambia.

Griots have played an important role in health as community leaders, emotional transformers, and conflict mediators (McConnell, 2015b). Both the music of the griots and Kanyeleng promote *baadinyaa*, a Mandinka term that translates to oneness or a

loving or caring relationship (McConnell, 2015a). The ability of music to promote *baadinyaa* for those that listen or participate in it makes it a useful resource for addressing negative feelings while also entertaining and giving information (McConnell, 2015a; McConnell & Darboe, 2017). The skills and potential of the Kanyeleng as health communicators was recognised by the Ministry of Health and Social Welfare (MoHSW) in The Gambia. In the 1990s the World Bank funded 'Women in Development Project' was started in The Gambia. As part of this project, the MoHSW commissioned groups of traditional communicators (TCs), built on pre-existing Kanyeleng groups, to help disseminate health related information (McConnell, 2016). Since then, Kanyeleng groups have performed in their local communities and travelled around the country disseminating important health information around HIV/AIDS (McConnell, 2015b), polio (McConnell, 2017), diarrhoea, female genital cutting (FGC), breastfeeding (McConnell, 2016), and Ebola (McConnell & Darboe, 2017). Their reputation as 'joking mothers' gives them the ability to communicate about potentially taboo subjects without any inhibition (McConnell, 2016). In addition, their ability to intersect biomedical information with local knowledge while disseminating messages in a non-threatening, entertaining and participatory manner, makes them specifically successful as health communicators in The Gambia (McConnell, 2016). The Kanyeleng's existing health communication expertise, their historical and present focus on women's reproductive health, as well as their expertise as musicians, makes them well situated and appropriate facilitators of a potential community-led music-based intervention to support women's antenatal mental health in The Gambia.

2.12. Conclusion

Perinatal mental health issues are a particular challenge in LMICs where they can be at least twice as frequent as in HICs. The lack of available perinatal mental health care is a serious health concern as poor maternal mental health can impact infants' physical, cognitive and behavioural outcomes. Intervening during pregnancy is advantageous because antenatal CMD symptoms are associated with an increased risk of postnatal CMD symptoms and adverse birth and infant outcomes. Implementing interventions in LMICs is challenging due to a lack of financial resources and trained mental health professionals. Therefore, it is crucial to develop task-sharing interventions where NSHW or community groups can be trained to deliver antenatal psychological support. Group interventions that take place in the community increase the reach as well as the acceptability of a psychological intervention. The Gambia, with high levels of unmet need around women's perinatal mental health support, needs a low-cost, non-stigmatising, wide-reaching and culturally-appropriate antenatal mental health intervention. Group music-making has been used to decrease CMD symptoms, increase social support and mood, and support maternal mental health in various studies in HICs. The existing musical practices in The Gambia, especially those of Kanyeleng groups, are an untapped resource helpful in developing an antenatal mental health intervention. Therefore, the main focus of this thesis is to investigate the potential of a Kanyeleng-led community music-based intervention to reduce antenatal CMD symptoms in The Gambia.

Chapter 3. Methodology

The variety of knowledge, skills and approaches of an interdisciplinary team was essential for the development and testing of a community-led music intervention to reduce antenatal common mental disorder (CMD) symptoms across The Gambia. While the work presented here is primarily my own, the project, which was funded by a Medical Research Council (MRC) and the Arts and Humanities Research Council (AHRC) partnership grant, could not have been completed without the support and input of the entire research team. The team consisted of experts from the UK and Australia in music cognition (Professor Lauren Stewart), perinatal biology (Professor Vivette Glover), music science (Professor Ian Cross), psychiatry and education (Professor Paul Ramchandani), trial methods and statistics (Dr Victoria Cornelius) and Gambian music and culture (Dr Bonnie McConnell). To ensure a balanced input from local Gambians and international partners, various experts in The Gambia acted as key members of the research team. They included Buba Darboe, the director of health communication at the Ministry of Health and Social Welfare (MoHSW), Hassoum Ceesay, the director of the National Centre for Arts and Culture (NCAC), and two research assistants (RAs) Hajara B. Huma (HH) and Malick Gaye (MG). Both RAs completed a master's degree in psychiatric nursing and have research and clinical experience. MG is also a qualified midwife. The collaborative expertise from the entire team helped to create research that is balanced in its aims and methodological approach.

3.1. Methodological Approach

The overall methodological approach for the thesis is mixed-methods. Bringing together qualitative and quantitative methods holds an advantage in health psychology research because it can be adaptive to the practical and ethical issues present (Bishop, 2015). Also, it has been suggested that mixed-method approaches and designs are favourable when researching in a country other than your own (Karasz & Singelis, 2009). Mixed-methods help to unpack the cultural processes and their potential influence surrounding the effect you are investigating. It also helps discover the transferability of the findings and specific theories, question past assumptions and inform which measurement methods should be used (Karasz & Singelis, 2009). This bridging of qualitative and quantitative approaches in a mixed-methodology has specific advantages for studying the effects of an antenatal mental health music intervention in The Gambia where concepts, tools, the intervention and its potential effect are heavily influenced by culture.

3.2. Multiphase Sequential Mixed-Method Design

This thesis uses a multiphase sequential mixed-methods design (Figure 3.1). This sequential design uses multiple studies sequentially to work towards the overall programme objective (Bishop, 2015). Within this design, the qualitative and quantitative approaches are given equal emphasis in understanding and testing the objective. Within this thesis, the overall programme objective is to understand and investigate the potential of a community-lead music group intervention to support antenatal mental health in The Gambia. Three different sequential studies, with their own specific aims, approaches and analysis, work together toward this aim.

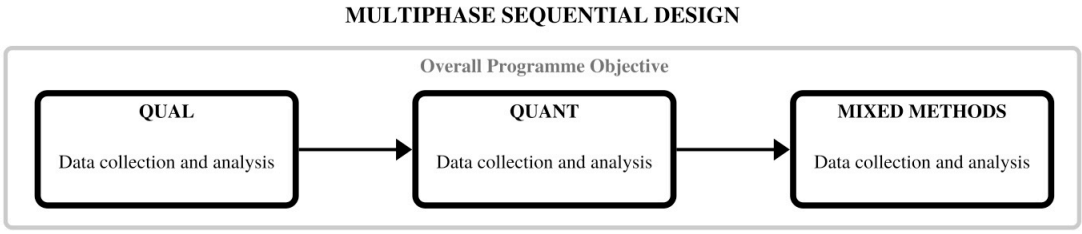

Figure 3.1. Multiphase sequential design schematic. Image and description based on Bishop, 2015; Creswell & Plano Clark, 2011. From left the right the boxes represent chapters 4, 5 and 6.

Chapter 4 uses a qualitative approach to understand women's experiences of perinatal mental distress and its symptoms, relevant terms, and ways music may play a role in perinatal health and mental health. Based on the different terms and symptoms identified in Chapter 4, Chapter 5 uses a quantitative approach to test the performance of two translated measurement tools used to measure perinatal CMD symptoms in a Gambian sample. Chapter 6 builds on the knowledge from Chapter 4 and 5 and uses mixed-methods to test the feasibility of a community health intervention through musical engagement to reduce CMD symptoms in pregnancy.

3.3. Study Settings

While The Gambia, its health system and music were summarised in Chapter 2 Section 2.5, the specific settings of the three studies summarised in Chapter 4, 5, and 6 are synthesised here. The current research aimed to include areas that represented the country as a whole. Cities and villages usually have a predominate language that is used that corresponds with the ethnicity of the majority of people that live in that area. Mandinka and Wolof areas are the most common. Therefore, Mandinka and Wolof speaking areas were included in all three studies. Each study also represents participants from rural and urban areas. The research team and I were based in The

National Centre for Arts and Culture (NCAC) research and documentation unit in Serekunda in Kanifing (Figure 3.2). Therefore, all the villages and cities included were easily accessible from the West Coast region. The regions represented in all three studies span the West Coast region, North Bank region and Kanifing (for a reference of these regions see Figure 2.1).

Source: Author (May 2018)

Figure 3.2. The National Centre for Arts and Culture (NCAC) research and documentation unit in Serekunda.

3.3.1. Focus group discussion locations and representation.

Chapter 4 summarises findings from focus group discussions (FGDs) that were held with a variety of stakeholders, including midwives, community birth companions, musicians, Kanyeleng groups and pregnant women. They were held in multiple settings across the western areas of The Gambia. The majority of the FGDs with the musicians and Kanyeleng groups were held at the NCAC research and documentation unit in Serekunda (Figure 3.2). The FGDs with the midwives, community birth

companions and pregnant women were held at their local health centre or a health centre within their region. The people included in the FGDs represented people from a variety of villages and cities (n = 14) across the West Coast, Kanifing, and North Bank regions. Table 3.1 displays the cities and villages where each FGD group was from. Figure 3.3 presents a map of the locations, exhibiting the range across the western part of the country.

Table 3.1.

FGD Group Cities and Villages

City/Village	Region	Area Type	Language
Brikama	West Coast Region	Urban	Mandinka
Fajkunda	Kanifing	Urban	Mandinka
Farato	West Coast Region	Rural	Mandinka
Fass Njaga	North Bank Region	Rural	Wolof
Gunjur	West Coast Region	Rural	Mandinka
Jambangjelly	West Coast Region	Rural	Mandinka
Kafuta	West Coast Region	Rural	Mandinka
Kerr Omar Saine	North Bank Region	Rural	Wolof
Kissimajaw	North Bank Region	Rural	Wolof
Ndungu Kebbeh	North Bank Region	Rural	Wolof
Sanyang	West Coast Region	Rural	Mandinka
Serekunda	Kanifing	Urban	Mandinka
Sinchu Baliya	West Coast Region	Urban	Wolof
Sukuta	West Coast Region	Urban	Mandinka

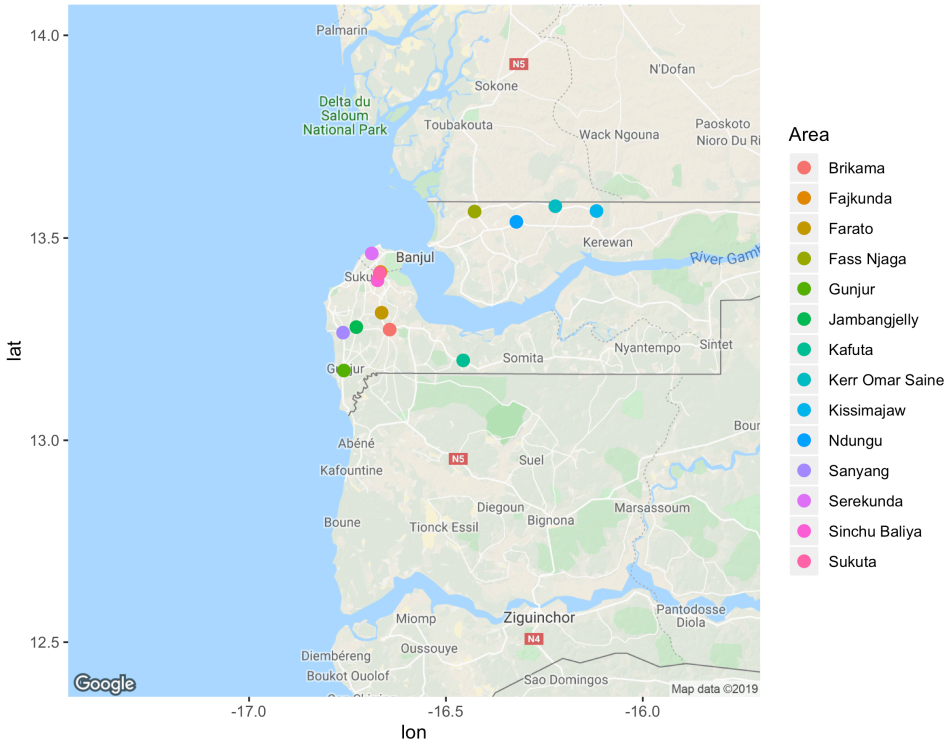

Figure 3.3. A map of the city and village locations described in Table 3.1.

3.3.2. Recruitment and data collection settings.

In Chapters 5 and 6, women were recruited from their local antenatal clinic. Their data was also collected at these clinics. The participating clinics were in the West Coast, North Bank and Kanifing regions. The MoHSW categorises clinics into four categories: district hospitals, major health centres, minor health centres, and community clinics. Generally speaking, the categorisations indicate how big the clinic is. For example, a district hospital serves a larger group of women than a community clinic. The MoHSW also categorises each area as either a large city or town (urban) or outside a town or city and far from a major road (rural). Within an urban area, there can be different types of clinics, including community clinics or minor health centres that help serve the larger population. Table 3.2 describes the ten clinics used in Chapter 5 with the four clinics used in Chapter 6 indicated with an asterisk. The

clinics represent a range in type, area and language increasing potential to generalise any findings across The Gambia. Figure 3.4 displays the location of these ten clinics.

Table 3.2.

Clinic Names, Type, Area and Language

Antenatal Clinic	Clinic Type	Area Type	Language
Banjuliding Health Centre	Minor Health Clinic	Urban	Mandinka
Essau Distract Hospital	District hospital	Urban	Wolof
Fajikunda Health Centre	Major Health Clinic	Urban	Wolof
Gunjur Health Centre*	Minor Health Clinic	Rural	Mandinka
Kafuta Health Centre	Minor Health Clinic	Rural	Mandinka
Kuntair Health Centre*	Minor Health Clinic	Rural	Wolof
Pirang Health Centre*	Minor Health Clinic	Rural	Mandinka
Serekunda Health Centre	Major Health Clinic	Urban	Wolof
Sinchu Baliya Health Post	Community Clinic/Health Post	Urban	Wolof
Sukuta Health Centre*	Minor Health Clinic	Urban	Mandinka

Note. *All clinics were used in Chapter 5. * indicates clinics used in Chapter 6.*

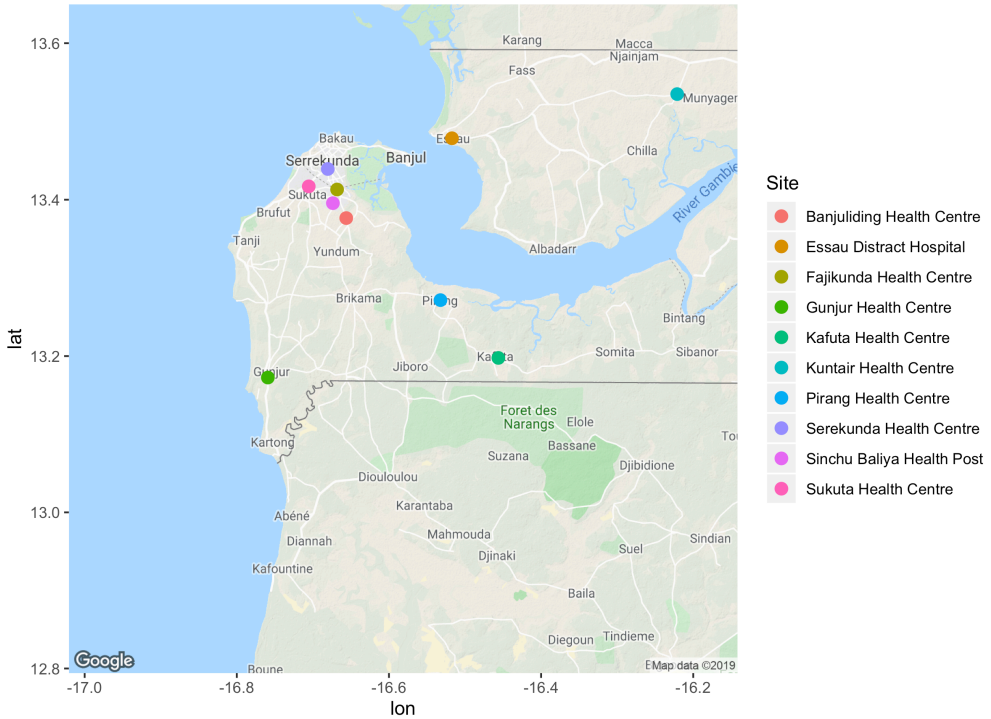

Figure 3.4. A map of the participating antenatal clinics described in Table 3.2.

The antenatal clinics are usually crowded and vary in how often they are open. Some clinics are open a couple of times a week, while others are only open once a month. Women usually arrive in the morning and plan to spend all day waiting. At some clinics, a midwife gives a health talk in the morning to all the women before they get called in one-by-one to see the midwives. Participants were recruited from these waiting rooms and data were collected in an individual room or in a separate part of the waiting area if no room was available. Figure 3.5 depicts a typical waiting room and data collection room.

Source: Author (February 2019)

Figure 3.5. Clinic waiting and data collection rooms. Left: Picture of the waiting room at Sukuta Health Centre; Right: HH in the interview room in Pirang Health Centre.

3.3.3 Music intervention settings.

The community music intervention sessions were held at four different antenatal clinics: Gunjur Health Centre, Baliya Mandinka Health Post (part of the Kuntair Health Centre), Pirang Health Centre and Sukuta Health Centre (Table 3.2 and Figure 3.4). Three of the clinics were in rural areas with one in an urban area. The Wolof communities are usually in the North Bank region. Therefore, one clinic was chosen to be within this region and was primarily Wolof speaking. The three other clinics

were in the West Coast region and within Mandinka speaking areas. The intervention sessions were held on non-clinic days at the health centres allowing for full use of the space. Figure 3.6 shows the specific spaces where each group was held.

Source: Author (February 2019)

Figure 3.6. Images of the areas where the intervention sessions were held. Top Left: Baliya Mandinka Health Post part of Kuntair Health Centre; Top Right: Gunjur Health Centre under a Mango tree; Bottom Left: Pirang Health Centre in the main clinic waiting area; Bottom Right: Sukuta Health Centre outside and next to the antenatal clinic.

These areas were chosen because they were places that were convenient to most women, free to use and safe spaces for pregnant women to gather. Although it is not true for all women, some women in The Gambia try to hide their pregnancy from others within their community because it is believed that being pregnant can make a woman susceptible to curses from jealous witches or the *kuntefengo* (spirit husband) (personal correspondence with MG and HH and findings from Chapter 4). As some

women want to keep their pregnancy a secret, holding the intervention sessions within the clinics allowed the women to gather in a space outside of their immediate compound or community. These crucial and culturally sensitive elements were necessary to consider throughout the development of the intervention.

3.4. Etic and Emic Approach

Previous research has emphasised performing a qualitative study as the fundamental first step when conducting health research in a culture other than your own (Abubakar, 2015; Verduin, Scholte, Rutayisire, & Richters, 2010). In Chapter 4, a qualitative study was conducted to understand women' experiences of perinatal mental distress and the current role of music in health during the perinatal period. The analysis of the FGDs conducted within this study used both an etic (deductive or top-down) and emic (inductive or bottom-up) approach (B. L. Peterson, 2017). The use of both etic and emic analysis methods allows for the experiences, meanings and realities of the participants to be understood, while also relating their experiences with pre-existing theories (Braun & Clarke, 2006; B. L. Peterson, 2017). Furthermore, an inductive and deductive approach was also used to inform the development of an appropriate intervention (Chapter 6) and the specific CMD symptom measurement method used (Chapter 5).

3.5. Measurement Tool Selection and Translation

In Chapters 5 and 6, antenatal CMD symptoms were measured. While assembling a new tool might create a more sensitive measure, this practice is costly and time-consuming (Abubakar, 2015). Therefore, the majority of mental health research translates a pre-existing measurement tool to be used within the target population (Abubakar, 2015; Ali et al., 2016). Based on previous literature reviewed in Chapter 2

Section 2.2, the Edinburgh Postnatal Depression Scale (EPDS; Cox, Holden, & Sagovsky, 1987) and Self-Reporting Questionnaire (SRQ-20; Beusenberg & Orley, 1994) were chosen as the measurement tools. The EPDS was chosen as it is the most widely used tool to measure perinatal CMDs globally (Ali et al., 2016; Tsai et al., 2013). It has also previously been used in The Gambia, although no validated version was available for use (Bartram, 2018; Coleman et al., 2006; Nabwera et al., 2018). The SRQ-20 was chosen because it has been widely used to measure CMD and perinatal CMD symptoms in Africa (Sawyer et al., 2010; Sweetland et al., 2014). An additional reason the SRQ-20 was chosen is that it includes somatic symptom items, which have been found to be important indicators of mental illness within African perinatal populations (Hanlon, Medhin, Alem, Araya, Abdulahi, Hughes, et al., 2008; Patel, 1998; Senturk et al., 2012).

3.5.1. Description of measurement tools.

The EPDS is a ten-item scale that was initially developed to screen for postnatal depression but has since been validated for use in pregnancy (Kozinszky & Dudas, 2015). As many of the somatic symptoms associated with anxiety or depression are also symptoms of pregnancy (e.g. stomach pains), questions assessing these types of symptoms were purposefully excluded (Cox et al., 1987). Participants answer on a four-point Likert-scale (3 – 0) how often they have felt or experienced a specific symptom within the last week. The wording on this four-point scale is different for each item to complement the statement (see the English version of the EPDS in Appendix A). The scale, although generally measuring depression symptoms, includes three anxiety and seven depression items. The three anxiety items have been shown to form a valid anxiety subscale, EPDS-3 (Matthey, Fisher, & Rowe, 2013; Mitchell, 2009). For each item, a participant can score up to 3. Three items, items 1,

2, and 4 are reverse coded. A higher total score out of a total of 30 indicates the participant is experiencing more anxiety and depression symptoms.

The SRQ-20 is a 20-item scale developed by the World Health Organization (WHO) to screen for CMDs in a variety of cultural contexts. It was primarily developed to be used in primary care settings but has also been used in the perinatal period (Hanlon, Medhin, Alem, Araya, Abdulahi, Hughes, et al., 2008; Sawyer et al., 2011; Stewart et al., 2009). The SRQ-20 includes items measuring common somatic symptoms associated with CMDs (headaches, low appetite, poor digestion and sleep), anxiety and depression symptoms, and psychological and physical symptoms (feeling frightened, unhappy, worthless and low-energy) (Beusenberg & Orley, 1994; Stewart et al., 2009). Participants are given a question such as *"Do your hands shake?"* for which they need to answer if this symptom has bothered them within the last 30 days. They answer with either yes or no, where yes = 1 and no = 0 (see the English version of the SRQ-20 in Appendix A). The scores range from 0 – 20 with a higher score indicating higher levels of symptoms.

3.5.2. Translation of the EPDS and SRQ-20.

Both tools were translated into Mandinka and Wolof. First, culturally salient expressions of mental distress were identified (Fabian et al., 2018). These expressions are also considered 'idioms of distress' (Nichter, 2010) or 'cultural concepts of distress' (Cork et al., 2019). These 'idioms of distress' were identified through an extensive qualitative study described in Chapter 4.

Next, using some of the terms identified in Chapter 4, the measurement tools were translated. The translation method used was based on suggestions by the WHO

(World Health Organization, 2014), Hanlon et al. (2008) and Cox, Holden and Henshaw (2014). First, the tools were translated into Mandinka and Wolof by bilingual experts. BM and BD initially did this for Mandinka and HH and MG for Wolof. An expert panel discussion then refined the translation. The panel included all these members in addition to language experts from the NCAC and Pa Sonko, the MoHSW's program manager for mental health. Both tools were then back-translated into English by independent expert translators employed by the NCAC. Based on these back-translations, the expert panel met once again and developed the final version. The back translations of the tools along with the comments made by the panel that inform the final version can be found in Appendix B. The final translated scales, in Mandinka and Wolof, can be found in Appendix C.

Once the translated versions were finalised, they needed to be pre-tested and piloted. The tools were administered orally due to the high illiteracy rate in The Gambia (55%; The Gambia Bureau of Statistics (GBOS) and ICF International, 2014). Therefore, the RAs needed to be trained to administer these tools. The tools needed to be read out verbatim by the RAs to be as consistent as possible. Both RAs speak Wolof as their first language and are proficient in Mandinka and English. Using role-play the RAs then practised delivering the measurement tools to other members of the team fluent in either Wolof or Mandinka. Both RAs then took part in a one-day field test at a local antenatal clinic where they were recorded and observed. Another member of the research team also attended each meeting with a participant (n = 10). After the RAs spoke with the participants about their experience of answering the questions, a debriefing session was held where changes to the translations or the elocution of the tools were discussed. No changes to the tools' translations were

made. However, the Likert-scale format of the EPDS was somewhat confusing for the participants. Consequently, the RAs decided to let the women answer either yes or no to each item first and then follow up by asking for more detail about how much or how little corresponding to the different levels on the Likert-scale responses.

Due to a lack of local mental health professionals, time, and money, a validation of the measurement tools, compared to a gold-standard clinical interview, was not possible. However, other descriptive and exploratory analyses were conducted. Chapter 5 describes in more detail the specific methods of our evaluation and its outcome.

3.6. Reflexivity

Reflexivity means turning back on oneself (Davies, 2008). It involves the practice of participating in continual internal dialogue, active acknowledgement, and recognition of your positionality as a researcher and its effect on the research outcome and process (Berger, 2015). While this practice is used extensively in anthropology research, I felt that my positionality as a white, American, young female that does not have children was vital to recognise and reflect upon. When working in the field, it was almost impossible to ignore the effect of my presence on locals, as they regularly called out '*toubob*' (meaning outsider or white person) when seeing me walk or drive by. While my presence during data collection and the music intervention was limited, I was continually assessing the effect my presence might have. I aimed to be reflexive throughout the entire research process to help inform my analysis and interpretation.

3.7. Ethical Considerations

Critical reflexivity has also been discussed as an important practice essential to ethical research, especially when conducting research within a culture you are personally unfamiliar with (Chiumento, Khan, Rahman, & Frith, 2016). Reflexivity can help you be non-exploitative, compassionate and allow you to explicitly address the potential effects of power-relationships (Berger, 2015; Chiumento et al., 2016). Ethics in itself can be considered a form of local knowledge because what is ethical can vary depending on peoples' culture and beliefs (Christakis, 1992). Therefore, in addition to ethical approval from the Goldsmiths University ethics committee and the Australian National University ethics committee, local ethical approval was gained from the Gambia Government/MRC Gambia joint ethics committee.

In a recent paper by Chiumento et al., (2016), the researchers set out multiple ethical challenges to consider when doing mental health research in LMICs. One challenge they presented involved how decisions are made about who conducts the research, a decision that can impact the acceptability and accountability of the research. Within this current research, local RAs were hired to be responsible for carrying out the data collection and the majority of correspondence with participants, Kanyeleng groups and health centres. This helped reduce potentially troublesome interactions where my presence could impact the research process and integrity of the data.

The researchers also found that the project funders can impact participants perceptions of the research (Chiumento et al., 2016). The current project is co-funded by the AHRC and MRC. The MRC is a well-known research body that conducts much research in The Gambia. The MRC pays potentially large incentives to its research participants and allows them access to a specialised hospital. Therefore, it

was necessary to consider and manage participant's expectations around payment during the consenting process.

Potential perceptions of mistrust can also present an ethical challenge in mental health research in LMICs. For example, women within our intervention group may have experienced an adverse effect such as a miscarriage, difficult birth, stillbirth, a sudden drastic change in physical or mental health, infant health problems or even a serious adverse effect such as death during the intervention. It is also possible that a participant experiencing such an adverse event may attribute a causal link between the adverse event and their involvement in the study. To mitigate this association, the nature of the intervention and any possible risks to the women were clearly explained when women were recruited into the study. If, despite this, an association of this nature was still made, information would be disseminated to the women and the community concerning the incidence of such events occurring in the general population. The MoHSW recommended this as an appropriate way to reassure those concerned that such adverse events should not be attributed to involvement in the study. Though this did not happen, this was placed within the research protocol (Sanfilippo et al., 2019).

The nature of the research, which involves the sharing of personal information surrounding mental health and pregnancy, also leads to some specific issues that were addressed within the research protocol. For example, it was possible that some of the themes involved in the questionnaires or FGDs could lead women to reveal episodes or thoughts of self-harm or intimate partner violence (IPV). If this was the case, the woman received immediate counselling with the RAs, both of which are trained

psychiatric nurses. If needed, women who revealed episodes or thoughts of self-harm were referred on to the Community Mental Health Team (CMHT) for further management. If the CMHT deemed it appropriate, they could refer the woman on to the psychiatric team. For emergencies and cases of IPV that required immediate intervention, the RAs contacted the local Gender Based Violence focal person. For other cases, the RAs referred the woman to the One Stop Centre at Serekunda General Hospital or the Edward Francis Small Teaching Hospital. Moreover, the RAs monitored the women's mental state throughout the research. If at any point a woman's score indicated a high level of symptoms or the women revealed that they were particularly struggling, the RAs could refer the woman onto the CMHT for further management.

3.8. Conclusion

Conducting mental health research within an unfamiliar culture comes with several challenges and considerations. Throughout each of the three subsequent studies, I aim to integrate my knowledge as a researcher and the support of an interdisciplinary team with the specific experiences and perspectives of Gambian women. Any potential ethical issues that may impact the participants have been considered and a locally appropriate protocol to mitigate these potential issues has been devised. The methodological approach is mixed-methods with integrated qualitative and quantitative approaches. This thesis follows a multiphase sequential mixed-methods design where three studies build on one another to understand women's experiences of perinatal mental distress and the potential of a community-led music-based group intervention to decrease antenatal CMD symptoms across The Gambia.

Chapter 4. Understanding Perinatal Mental Health in The Gambia and Music's Potential Supporting Role

Abstract

The qualitative research study presented in this chapter highlights the salient idioms of distress and identifies contributing factors to perinatal mental distress in The Gambia. It also discusses the common symptoms and treatments for mental distress and determines how musical engagement might be useful in supporting women's perinatal mental health in The Gambia. Based on 14 focus group discussions (FGDs) held with pregnant women, health professionals and musicians, *Sondomoo tenkung baliyaa* (Mandinka) and *hel bu dalut* (Wolof) are identified as the most appropriate idioms of distress. Using thematic analysis, a pictorial representation of contributing factors to a woman's perinatal mental health is created. This pictorial representation depicts the interaction of economic, social, spiritual and individual factors that sit within the broader influences of poverty, a shifting culture and music engagement. The most common symptoms discussed are somatic, and treatments include a mixture of biomedical, traditional, and social methods. Various existing musical practices are recognised as valuable tools helpful in creating a peaceful mind. Music engagement is discussed as a potentially applicable intervention for perinatal women. The findings presented in this chapter have implications for the subsequent studies by providing detailed insights into Gambian women's experiences during the perinatal period and how music might play a role in supporting their mental health.

4.1. Background

Until the early part of the 20th century, psychology and psychiatry research and practice was deprived of input from non-European cultures (Fernando, 2010). The development of disciplines such as cultural or transcultural psychiatry aimed to incorporate anthropological viewpoints into psychoanalytic understanding, enriching the previously ethnocentric practice (Fernando, 2010; Kortmann, 1987). Transcultural psychiatry acknowledges that mental illness symptoms are expressed differently depending on culture and setting (Kortmann, 1987). For instance, perinatal common

mental disorder (CMD) symptoms are usually described behaviourally rather than cognitively in African contexts and the terms used are generally more somatic (Senturk et al., 2012; Sweetland et al., 2014). These terms are usually referred to as 'idioms of distress' and should be identified when undertaking mental health research within another culture (Cork et al., 2019; Nichter, 2010). Factors that contribute to developing CMD symptoms are also affected by culture. This is illustrated by the differences in the significant risk factors identified in high-income countries (HICs) compared to low- and middle-income countries (LMICs) (reviewed in Chapter 2 Section 2.3).

While anxiety and depression are terms used to describe specific disorders, a broader term, such as mental distress, is more appropriate when discussing the range of symptoms involved in people's experiences of unpleasant mental or emotional states. As the focus throughout this thesis is on CMD symptoms, not the disorders themselves, the term mental distress is used to encompass the variety of perinatal CMD symptoms women might experience including, stress, fear, anxiety and depression.

4.1.1 Review of relevant qualitative studies.

A study by Wittkowski et al. (2014) reviewed 29 qualitative and quantitative studies conducted in Sub-Saharan Africa. The review identified four main factors that contribute to postnatal depression symptoms: lack of social support (especially from the husband), relationship problems, an unwanted pregnancy and cultural factors (a more detailed review of this study can be found in Chapter 2 Section 2.3). Two relevant qualitative studies have been conducted in The Gambia. One explored women's experiences of pregnancy, childbirth, and the postnatal period (Sawyer et

al., 2011) while another explored the factors that influence infant feeding and rearing capacity (Nabwera et al., 2018).

Sawyer et al. (2011) completed a thematic analysis of 55 semi-structured interviews with women living in the Kanifing area. All the participants had given birth within the last year. The researchers identified five major themes that encapsulated these women's experiences. First, women felt that the perinatal period represented a transition to adulthood. In The Gambia, a large part of a woman's status is connected to her ability to give birth. The majority of women within Sawyer et al.'s (2011) study viewed the newfound responsibility of having a child as positive. The second theme discussed the various physical difficulties women faced during pregnancy. These included sickness, stomach-aches, and dizziness. Participants also discussed the serious physical threat of giving birth, to them and their child, as a cause of anxiety during pregnancy. The third theme explained that having a child, especially a male one, was viewed as socially and culturally favourable. The fourth theme discussed the financial strain of having children, while the final theme emphasised that women felt unsupported by their husbands and 'on their own' during the perinatal period.

Nabwera et al.'s (2018) mixed-methods study primarily focused on the influence of maternal psychosocial circumstances and physical environments on the risk of severe wasting in infants from the Lower River region of The Gambia. The qualitative portion of the analysis identified three main contributing factors to poor feeding and rearing behaviours. Similar to Sawyer et al. (2011), a woman's social support network, especially her husband's support, was identified as an important factor.

Difficulties with infant feeding and other maternal psychosocial stressors, such as an ill infant or close birth spacing, were the additional influential factors discussed.

Together, these studies give a description of Gambian women's experiences of maternal distress. However, both recruit from only one region of The Gambia and do not specifically focus on women's experiences of perinatal mental distress or what causes them. Therefore, this study explicitly focuses on experiences of perinatal mental distress and includes participants from several regions across The Gambia.

4.1.2 Living in The Gambia.

Girls in The Gambia are taught to respect others, endure, and be discrete or secretive (Skramstad, 2008). Once married, which happens on average around 18 years old, women are responsible for the domestic chores and labour including cooking and gardening (Nabwera et al., 2018; The Gambia Bureau of Statistics (GBOS) and ICF International, 2014). In the late '80s, women made up about 30% – 70% of the labour force (Webb, 1989). This number has increased with more women participating in labour outside the home due to the drop in income from male cash crops and waged labour (McConnell, 2020). Women now partake in supplementary income-generating activities such as vegetable gardening or selling goods at the market (McConnell, 2020; Schroeder, 1999). Women are also the primary caretakers of the children and ageing parents (Nabwera et al., 2018). Women usually live with their husband's family, sometimes moving away from the village where they were raised (Nabwera et al., 2018; Skramstad, 2008). Polygamous marriages are common (39%; The Gambia Bureau of Statistics (GBOS) and ICF International, 2014). Within this type of family structure, women can live in a household with up to three other co-wives (Skramstad, 2008). Women are usually in charge of their child's health decisions. However, the

finances for her and her child's health care, transportation, and medication are usually controlled by her husband (Nabwera et al., 2018; Skramstad, 2008).

One main expectation of a married woman in The Gambia is to conceive a child, and preferably a male one (Skramstad, 2008). This expectation leads to the stigmatisation of infertility which is usually believed to be caused by the woman rather than the man (Greil, Slauson-Blevins, & McQuillan, 2010; Skramstad, 2008). To ensure women have a child to care for, fostering, where a woman is gifted a child by a friend or neighbour to raise as her own, is common in The Gambia (Skramstad, 2008). When women can conceive, they usually have very little autonomy in regards to child spacing. Only 9% of currently married women in The Gambia use any method of contraception (The Gambia Bureau of Statistics (GBOS) and ICF International, 2014). Having many children close together can cause some women physical, psychological and financial strain (Nabwera et al., 2018; Skramstad, 2008).

4.1.3. Pluralistic health care.

The Gambia is a medically pluralistic society. People use a variety of health care options, including biomedicine, indigenous herbal medicines, and spiritual treatments; usually using what is most affordable and available to them (McConnell, 2020). Health professionals are scarce in The Gambia, with only 1.1 physicians and 16.2 nurses and midwives per 10,000 people (McConnell, 2020). This rate is extremely low compared to the UK where there are 2.8 practising doctors per 1,000 people (World Health Organization's Global Health Workforce Statistics (OECD), 2018).

The maternal health care system's aims and policies have shifted throughout the last two decades focusing more on primary health care and maternal and infant health (A.

Green, 2017; Sundby, 2014). Started in the 1980s, the Ministry of Health and Social Welfare (MoHSW) trains individuals to work as Community Health Nurses, and Traditional Birth Attendants (now called Community Birth Companions) in all rural villages with a population over 400 (Nyanzi, Manneh, & Walraven, 2010; Sundby, 2014; Telfer, Rowley, & Walraven, 2002). This initiative aims to ensure equity in healthcare between the rural and urban areas (McConnell, 2020; Sundby, 2014). Community Health Nurses (CHNs) are responsible for managing and running the health centres and ensuring they are adequately supplied. They are also responsible for providing supervision and training for the Community Birth Companions (CBCs) (Nyanzi et al., 2010).

The CBCs have a multiplicity of roles important in perinatal health. They are responsible for antenatal, postnatal and sexual healthcare (Nyanzi et al., 2010). While psychiatric nurses help support people's mental health primarily in urban areas, in rural areas, the majority of mental health complaints, especially those around the perinatal period, may first be noticed by CBCs. CBCs are viewed as the mothers of the village; important in the overall welfare and social cohesion of the village (Nyanzi et al., 2010). Many Kanyeleng women are also CBCs highlighting the overlap of Kanyeleng groups and perinatal health care in The Gambia. Similar to the Kanyeleng, CBCs are specialists in religion, traditional medicine and socio-cultural rites (Nyanzi et al., 2010).

4.1.3.1. Spirituality in The Gambia.

The most sought-after practitioners for spiritual treatments are *marabouts*, who are Islamic scholars and teachers (McConnell, 2015a). All *marabouts* share a belief in

Allah and use prayer as a form of healing. *Marabouts*, and the majority of people in The Gambia, believe in spirits and witches (Ames, 1959; Skramstad, 2008). Spirits and witches are believed to either guide, haunt, or curse (McConnell, 2020; Skramstad, 2008). Along with *marabouts*, other cultural leaders such as village elders, CBCs and Kanyeleng groups perform rituals or use traditional medicines that aim to drive away evil spirits (McConnell, 2020; Skramstad, 2008).

4.1.4. Music and health in The Gambia.

Traditional music practices in The Gambia are inherently communicative, healing and affective (McConnell, 2015a, 2019a). As community leaders, griots play an important cultural role as emotional transformers and conflict mediators (McConnell, 2015b). The music of the griots and Kanyeleng aim to promote *baadinyaa*, a Mandinka term describing a loving or caring relationship (McConnell, 2015a). In the 1990s, the World Bank funded 'Women in Development Project' was started in The Gambia. As part of this project, the MoHSW commissioned groups of traditional communicators (TCs), built on pre-existing Kanyeleng groups, to help disseminate health related information (McConnell, 2016). The musical performances and health communication practices of the Kanyeleng/TC groups represent an inherent nexus whereby biomedical and traditional models of perinatal health care meet (McConnell, 2017). These all-female music groups are reproductive health and ritual experts in their communities while simultaneously working as health communicators (McConnell, 2015b).

The general aim of this thesis is to understand how musical engagement can be used to support women's mental health during pregnancy. To achieve this aim, foundational work needed to be completed to understand women's experiences and

existing attitudes around perinatal mental distress and how current musical practices can be utilised to support mental health.

4.2. Aims and Research Questions

This study aims to answer: 1) What are the common linguistic terms and contributing factors associated with perinatal mental distress and 2) How might music play a role in supporting women's perinatal mental health?

By running focus group discussions (FGDs) with various key stakeholders, including pregnant women, CBCs, midwives, griots and Kanyeleng/TC groups, this study specifically aims to:

1) Highlight the salient idioms of mental distress in the perinatal period

2) Summarise the factors that contribute, either positivity or negatively, to women's perinatal mental health

3) Identify the signs and symptoms associated with mental distress

4) Discover the existing treatments and help-seeking behaviours utilised for alleviating mental distress

5) Ascertain participants' initial perceptions of using a group music-based intervention to support women's antenatal mental health.

4.3. Methods

4.3.1. Setting and participants.

A total of 14 FGDs were conducted across the West Coast, North Bank and Kanifing regions of The Gambia (Summarised in Chapter 3 Table 3.1). Five key informant groups were identified and at least two different FGDs were held with each group type (Table 4.1). Since the aim was to understand the nature of mental distress in the

perinatal period, a FGD with pregnant women was essential. Additional FGDs with CBCs, midwives, griots and Kanyeleng/TC groups were added to contribute different perspectives on the issue. CBCs were chosen because they have extensive knowledge and experience of the local health system and how traditional and biomedical treatments are used simultaneously. Midwives were chosen to represent the trained and practising relevant clinicians within the government health system. Griots were chosen for their insight into the indigenous philosophies of what music is and the role it plays in health. Kanyeleng/TC groups were chosen as the experts in health communication and reproductive health. Kanyeleng women have usually had a negative experience during pregnancy, birth, or postpartum, so could also discuss their personal challenges.

Table 4.1.

FGD Dates, Group Type, Represented Area, Number of Participants and Language

Date	**Group Type**	**Area**	***n***	**Language**
31-May-18	CBCs	Kerr Omar Saine	8	Wolof
31-May-18	CBCs	Kissimajaw	8	Wolof
5-Jun-18	CBCs	Farato	6	Mandinka
5-May-18	Kanyeleng/TC	Sanyang	10	Mandinka
7-May-18	Kanyeleng/TC	Ndungu Kebbeh	10	Wolof
30-May-18	Kanyeleng/TC	Jambangjelly	10	Mandinka
4-Jun-18	Kanyeleng/TC	Fass Njaga	4	Wolof
13-Sep-18	Midwives	Brikama/Gunjur/Kafuta	5	English
14-Sep-18	Midwives	Serekunda/Sukuta/Fajikunda	6	English
15-May-18	Musicians/Griots	Serekunda	10	Wolof
15-May-18	Musicians/Griots	Serekunda	10	Mandinka
23-May-18	Pregnant Women	Sinchu Baliya	8	Wolof
06-Jun-18	Pregnant Women	Brikama	10	Mandinka
7-Sep-18	Pregnant Women	Fajkunda	8	Wolof

Note. n = total number of participants present at the FGD. Group affiliations are not exclusive. For example, some participants within the CBC or musician/griot FGDs are also members of Kanyeleng or TC groups.

A total of 114 participants were involved in the FGDs. Three FGDs were held with pregnant women (*n* = 26 women in total), two in Wolof and one in Mandinka. Women were recruited from the waiting rooms of their local antenatal clinics (setting described in Chapter 3 Section 3.3.2). Three FGDs were held with groups of CBCs (*n* = 22 women in total); one conducted in Mandinka and two in Wolof. CBCs were recruited through the MoHSW, and the FGDs were completed in the village health centres. Two FGDs were held with midwives (*n* = 11 men and women in total). The MoHSW recruited the midwives and the FGDs were held in English at two local antenatal clinics in Serekunda and Brikama. Four FGDs were held with Kanyeleng/TC groups (*n* = 34 women in total), who were recruited by the MoHSW. Two were held in Wolof and two in Mandinka. All were held in local health centres. Finally, two FGDs were held with musicians/griots (*n* = 20 men and women), one in Wolof and one in Mandinka. The National Centre for Arts and Culture (NCAC) recruited all griots and the FGDs were held at the NCAC research and documentation unit (Figure 3.2).

4.3.2. Procedure and materials.

All FGDs were conducted between May and September 2018. Dr Bonnie McConnell (BM), an ethnomusicologist, has extensive expertise running focus groups in The Gambia. She trained both research assistants (RAs) (HH and MG) on how to successfully facilitate a FGD. At least two members of the research team were present at each FGD. The majority were facilitated by BM, HH and MG. All participants were given general information about the project and provided informed consent (see Appendix D for information sheet and consent form). Each FGD lasted approximately an hour and was audio recorded. The questions followed a semi-structured format, giving the facilitators the ability to ask follow-up questions when needed. All

questions covered topics including, challenges encountered in pregnancy, experiences of perinatal distress, the support offered or sought out by women facing difficulties during pregnancy, existing musical practices around the perinatal period, and the role of music in supporting women's perinatal mental health. The questions used were altered for the different discussions depending on the expertise of the informant group. Appendix D includes the questions used in the FGDs by informant group type. Each FGD's audio recording was transcribed and translated by professionals hired by the NCAC. All files were securely saved on an encrypted hard drive only accessible to the members of the research team.

4.3.3. Analysis.

A thematic analysis (Braun & Clarke, 2006) was performed to identify categories and themes that could be used to represent the data. Thematic analysis allows for both inductive and deductive approaches of data interpretation (B. L. Peterson, 2017). The flexibility afforded by this type of analysis allows for a systematic synthesis of the data concerning a specific research question. It also allows for descriptions of the data to be presented in rich detail to reflect the reality of the participants' experiences (Braun & Clarke, 2006).

First, specific patterns within the data were identified and written down as a set of codes in English with specific terms or phrases kept in Mandinka or Wolof. Both RAs completed this step using the audio recordings. This allowed for patterns to be identified in the original language used in the FGDs. This helped ensure that potential nuances, terms and expressions within the original language were not lost. Following the steps outlined by Braun and Clarke (Braun & Clarke, 2006), I first reviewed the transcriptions and English translations of all the FGDs together. After this initial

review, I identified patterns and broader categories within the data and created a set of initial codes. The analysis was completed within Dedoose (Dedoose, 2018), a web-based qualitative analysis tool. These codes were then merged with the previously identified codes identified by the RAs to ensure the local terms and expressions were not lost. BM, using Dedoose, reviewed all the identified codes and any incongruities were discussed to ensure all the significant patterns and categories were represented. Once the codes were finalised, they were synthesised into broader themes. These themes were incorporated into the pictorial representation (Figure 4.1). All quotes used in this chapter are from the English translations. As the FGDs with the midwives were held in English, quotes cited by any midwife are direct transcriptions of what was said. Minor spelling and grammar corrections were made when needed.

4.4. Results

Overall, a mixture of terms, phrases and concepts were used to describe experiences of perinatal mental distress. The problems women face during the perinatal period that affect their mental state are understood as external to them, involving relationships with human and non-human entities and the material challenges of survival. A woman's mental state during the perinatal period is positively or negatively influenced by various individual, economic, social and spiritual factors, all of which interact with one another. These identified factors sit within the broader context of women's everyday realities, such as their experience of poverty and shifting cultural values and beliefs. Music sits within this broader context, existing inside and around all the identified factors of influence. The interaction of all of these factors is presented in a pictorial representation (Figure 4.1). This pictorial representation underscores the way these different factors interact with one another and the broader

contextual and musical factors. It also presents a novel understanding of maternal mental distress within a LMIC.

Participants within the FGDs also discussed the various ways perinatal mental distress is recognised in The Gambia, either through a woman's bodily symptoms or behaviour. A mix of biomedical and traditional medicines and treatments were explained as helpful. Social activities, including engagement with music or dance, were also suggested to help relieve mental distress. Music was revealed to play an integral role in people's mental health. For instance, musical practices around the perinatal period, such as naming ceremonies, were described to help build positive relationships, mediate potential conflict, and fend off evil spirits. Participants felt that a group music intervention designed to support women's mental health during pregnancy could be beneficial. To help inform the design and development of the intervention discussed in the subsequent chapters, the musical and informational content and potential sustainability of this type of intervention were discussed.

4.4.1. Identified idioms of distress.

Mental illness can be translated as *sondomoo kuurango* (Mandinka) or *feebar hel* (Wolof). These terms are usually associated with a more severe form of mental illness and therefore have higher levels of stigma attached to them. Two umbrella terms, *sondomoo tenkung baliyaa* (Mandinka) and *hel bu dalut* (Wolof) were found to be the most appropriate terms to use when talking about mental distress related to common perinatal mental disorders. *Sondomoo tenkung baliyaa* translates to "lack of a steady/calm mind/heart" and *Hel bu dalut* translates to "lack of a peaceful mind". Different terms were used to describe more specific types of experiences or feelings.

For example, one Kanyeleng woman explained how feeling nervous and overthinking can contribute to someone experiencing *hel bu dalut* or *sondomoo tenkung baliyaa.*

> *"Anxiety/nervousness (kijafaro) can cause mental distress (sondomoo tenkung baliyaa). If you are nervous or panicky that can cause your thoughts to be many (miraalisiyaa)."* – Mandinka Kanyeleng women from Sanyang

The anxiety/nervousness described can also cause a confused or worried mind as reported by a Mandinka CBC from Farato.

> *"Here I am by myself without anybody, I will keep on thinking. I won't have a stopping point. That can become a mental thinking illness (mirrakuurgo). Anxiety/nervousness (kijafaroo) is part of it."* – Mandinka CBC from Farato

Similar terms that describe overthinking, nervousness and anxiety were also found in Wolof.

> *"After the naming ceremony, the woman also must endeavour to come out to the people outside to chat with them. Because solitude causes many thoughts/worries (xalat bu bari)"* – Wolof TC from Kissimajaw

> *"I don't experience any anxiety/fearfulness (tiitangeh) or any problem. I thank God."* – Wolof pregnant woman from Faajakunda.

While panicking and worry were discussed as causes of mental distress during the perinatal period so were feelings of sadness, sorrow or misery in both Mandinka and Wolof.

> *"A problem starts in the compound. That is sadness (niikuyaa) and distress/misery (niitooroo). […] You are sitting and the husband should give you happiness/a peaceful soul (niidiyaa) but you don't get happiness from him"* – Mandinka Kanyeleng from Sanyang

> *"Being in a matrimonial house and yet the husband squanders his wealth away somewhere is enough reason to have sorrow (Naxarr)."* – Wolof CBC from Kissamajaw

These quotes give a variety of helpful terms to describe several different relevant emotions such as, sadness (*niikuyaa* in Mandinka or *Naxarr* in Wolof), misery (*niitooroo*), and happiness (*niidiyaa or niilaa*).

Overall, a constellation of terms and phrases were used to describe some of the emotional states a woman can experience in pregnancy and after birth. These terms include feelings of nervousness, worry, sadness and sorrow that can all be encompassed by the terms *sondomoo tenkung baliyaa* and *hel bu dalut.*

4.4.2. Pictorial representation of important contributing factors.

Based on the thematic analysis, a pictorial representation (Figure 4.1) was created. This representation displays the different factors that were discussed as either positively or negatively impacting Gambian women's emotional state during the perinatal period. However, the majority of examples speak about a negative influence. The pictorial representation displays an inner Venn diagram of three factors (economic, social and spiritual) coming together to affect the individual (a pregnant woman or new mother). Individual factors were also discussed as impacting a woman's perinatal mental health. Surrounding this Venn diagram is a larger circle that represents three external factors. These factors represent relevant elements that influence women's everyday reality (poverty, cultural shifts and music) and therefore, the inner factors.

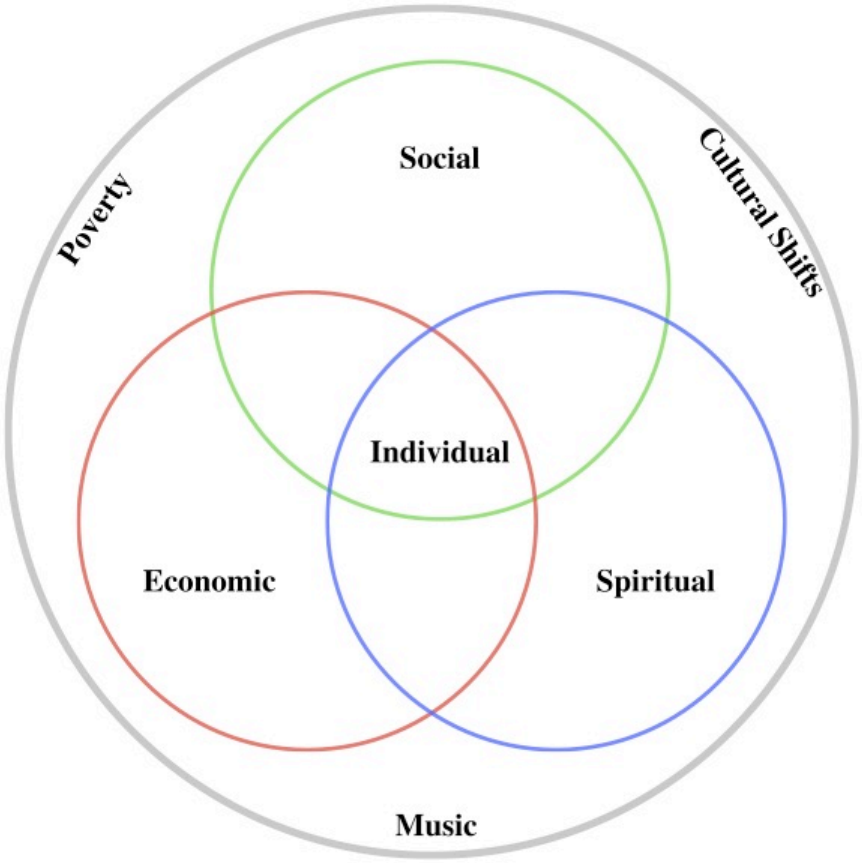

Figure 4.1. A pictorial representation of the factors found to contribute to perinatal mental health The Gambia.

4.4.2.1. Economic factors.

Within all FGDs, participants described the material challenges of survival. Participants described the availability and accessibility of resources as influencing a woman's emotional state during the perinatal period. Participants especially discussed the lack of resources as having a detrimental effect.

> *"Misery/distress affects a pregnant woman because when the day starts and what you need to survive, you don't have it. That sadness can become a problem for you. A pregnant woman should be clean all the time. But when you give birth and you don't even have soap for cleaning yourself, that also will give you sadness and it will harm you." – Mandinka musician/griot*

Participants went on to describe how many women also cannot afford the necessary food and medicine important for their physical health, resulting in poor perinatal physical and mental health.

> *"A woman delivered and has to eat and as well buy medicine and neither she nor the husband has it; what will she do? She would sit and whenever she sees the fishmongers in their bicycles, [she] would just get a fish for ten or twenty Dalasi. You know even if she eats that, she wont have the health she needs." – Wolof TC from Ndungu Kebbeh*

Women are the primary providers for their children, creating additional financial stress for some women. Women described worrying about not being able to provide adequate food and care for their children on top of their own needs.

> *"You are thinking of feeding those children. You are thinking of your clothing. Try being the mother [who] lacks sufficient food to your satisfaction. You know you cannot have a healthy condition. That thinking alone can cause illness to the newly delivered" – Mandinka Kanyeleng from Jambanjelly*

Overall, all informant groups highlighted the hard reality that many women face in The Gambia. Women often lack the necessary financial means to be able to provide for their own basic needs in the perinatal period. Not being able to provide for their children and new baby also caused many women additional stress.

Midwives spoke especially about the impact a woman's economic situation had on her ability to receive health care. A woman's inability to travel to the antenatal and postnatal clinics was a factor that could lead to stress for the women and the midwives. A midwife from the Serekunda FGD talked about how she had personally tried to help a woman who did not have the money to travel to the clinic.

"Another thing is they should be supported financially especially at home. If they come to the facility you tell them to buy [a] pad and they don't have fare to come, sometimes is very stressful. When I ask you to come and I know that [you] cannot come because [you have] no fare. […] So that is why some people will tell you "I don't have fare to come" and if you have something you can give them something to use that as the fare. But how many people can you do it for? […] Even if the husband is working, how sustainable is it to take care of the antenatal or postnatal mother and the whole family." – Midwife from Serekunda FGD

Various economic factors interact with one another and impact a woman's perinatal mental health. The lack of money to travel to clinics and the inability to buy food and medicine are problems faced by a large majority of women in The Gambia. Economic factors were usually one of the first problems discussed in the FGDs. The lack of financial resources was described as a prevalent factor that can cause an unsteady mind in pregnant and postnatal women.

4.4.2.2. The experience of poverty.

Poverty, while related to the economic factors previously described, sits as a separate more permeating factor. In fact, on an individual level, sometimes poverty and sorrow were said to be the same as if these experiences were not distinct from one another.

"Sorrow is nothing other than poverty. When a woman is in great need and she knows that when she demand it from her husband he may not be able to help her; that is a great concern for her." – Wolof CBC from Kerr Omar Saine

About 50% of women in The Gambia fall below the poverty line (McConnell, 2020). However, the poverty of the country's health system and the lack of accessibility to

health resources affect all women in The Gambia. While not discussed within other FGDs, the midwives discussed at length how a lack of resources was affecting the clinics and consequently women's antenatal and postnatal care. Midwives explained how the overcrowding of the clinics led them to rush their appointments with women, not giving them enough time to discuss some of the women's needs beyond their immediate physical ones.

> *"[A pregnant woman] will have stress at home and if they come maybe you will not have that time to discuss for a lengthen period with the midwife. Because the midwife don't have that time you have over a hundred patients waiting for you and they are saying be quick I am in a hurry. The woman […] at the end of the day, she will develop stress and will come to [have poor] mental health." – Midwife from Serekunda FGD*

Midwives also discussed the poor structure and organisation of the clinics themselves. They described the clinics as understaffed and under-resourced, leading to long wait times in usually very hot and ill-ventilated rooms.

> *"When you come to the clinic, is very chaotic the organization is poor, we have a lot of people coming to the clinic at the same time. Maybe you have 50 antenatal [women] being booked the same day, fifty new antenatal [women] different from the old ones. […] Like if you go to Fajikunda where the place is very hot, the ventilation is very poor, it creates a lot of problems. When you come and find them there, some will sit down on the benches and then end up sitting on the floor because they are exhausted. […] Because you see a lot people coming [and] you don't want them to stay you have to fast track things and fast tracking things is not the best thing." – Midwife from Serekunda FGD*

The FGDs with the midwives highlighted the effect that poverty has on individuals as well as the entire health system. Therefore, poverty, on the individual and system level, affects women's perinatal healthcare and mental health.

4.4.2.3. Social factors.

While poverty and economic factors were primarily discussed as negatively impacting a woman's perinatal mental health, social factors were discussed as having both a protective and negative impact. Social support from the immediate family, as well as from the wider community, was discussed as an important factor that affects a women's mental health during pregnancy and after birth. A woman's relationship or conflict with her family was explained as a common cause of mental distress.

> *"The rate of stress among women nowadays is rampant. It can sometimes be caused by one's husband, family or even from your very self. So if you engage in excessive thinking, it gives you a problem, which is not good. So whenever you are pregnant, you should be very careful so as to take care of the unborn baby." – Wolof pregnant woman from Sinchu Baliya*

Within the family unit, the husband was found to be the most important relationship that influences a mother's mental health. Two pregnant women talked about the effect of either a supportive or unsupportive husband on their current mental state.

> *"A woman can help herself but when she receives help from her husband that will be greater than hers. It depends on men, even though a man is never pregnant, but should have mercy for the woman. I don't have much to say because this is my second pregnancy. When my husband comes and finds me in sadness, he asks me my problem. He entertains me and makes me happy and buys me some food to eat. He*

is helping me, but helping his child too. I never have sadness during my pregnancy." – Mandinka pregnant woman from Brikama

"I suffer from sadness. When I am pregnant I don't have peace of mind, I always have sadness. Sometimes it gives me a lot of problems. I am pregnant at the moment, but since the beginning I always have conflict with my husband. That sadness [i.e. connected to conflict with husband] has bothered me a lot. […] When I am pregnant I suffer from sadness, I don't have peace of mind." – Mandinka pregnant woman from Brikama

Both of these women were part of the FGD at Brikama health centre. Their experiences of pregnancy seem vastly different. Nevertheless, both attribute their current mental state to their relationship with their husband. The first woman recognises the importance of this relationship and explains how having a supportive husband has positively affected her mental health and child. However, another pregnant woman talks frankly about how conflict with her husband has caused her a great deal of sadness and a lack of a peaceful mind, a problem she is still struggling with currently. One Wolof griot succinctly explained the critical role husbands play on a women's mental state during pregnancy and after birth:

"The situation depends upon the kind of relatives you have-and the most important one is the husband. There are some husbands that aren't good in keeping company. As soon as he comes from [his] job and puts off his shoes; he goes out again. When he comes again, he won't care about you, he won't even give you a glance and doesn't eat your food. Indeed the husband is the most important element in the whole thing because he [is] the person who you are married to. If he shows you patience, you wouldn't care about the torments of others. If he helps you accordingly, cares for you and even sometimes dances for you or even tries to imitate the manner in which you look appearance wise or the way you walk; you would feel at ease and laugh over it." – Wolof musician/griot

While the relationship with the husband was discussed as the most influential, other relationships in the home were also addressed. Many women live with one or more co-wife and their in-laws. These relationships can cause mental distress or help create social support networks. The potential protective role relatives play was acknowledged in many of the FGDs.

> *"Whatever the magnitude of the sorrow is, may the victim be blessed with good relatives." – Wolof musician/griot*

Some participants talked about the beneficial effect of a positive relationship with their child as protective.

> *"A child can also help. When he comes around you and asks you about your problems, that can help to cool the heart. My children do it for me and it makes me happy." – Mandinka pregnant woman from Brikama.*

While the potential positive influence of family was discussed, the majority of participants talked about the potential stress a woman's relationships with her family could cause.

> *"Sometimes also they have stress at home, the environment, the people you are staying with sometimes your husband, mother in-laws, sisters to the husband and the brother are always a problem." – Midwife from Brikama FGD*

This stress, caused by conflict with the family, was also explained to produce a potentially harmful effect on the unborn baby.

> *"[Conflict with] your husband, co-wife or even your family. You know that causes stress to an individual as well as her unborn baby. And that is not good in pregnancy." – Wolof pregnant woman from Sinchu Baliya*

Polygamy was regarded as an accepted practice for many women. Men, with little input from the existing wife or wives, usually decide the choice of a co-wife. One co-wife also might get more attention from the husband. This uneven distribution of not only social support but also resources was explained to cause some women mental distress during the perinatal period.

> *"When a woman is married, you find a co-wife with your husband. Some come and meet you there, or you find another one there. Men are not honest. You marry a second wife and place her above your first wife. […] When [he is] in the room with one of them [he tells] her sweet words or convincing words. If God blessed you with pregnancy during that period of time, you will be miserable. You will be left without being able to eat well. That's when illness takes you" – Mandinka Kanyeleng from Jambanjelly*

Feeling jealous of other women in the community was also presented as a factor that can cause mental distress.

> *"When you go out with her, and she puts on [an] expensive dress that you cannot afford, you will not have peace of mind, because women are jealous of each other." – Mandinka musician/griot*

Relationships with friends or others in the community were also discussed as helping to create supportive networks for women who may be struggling. Many participants talked about the importance of having someone to talk to from the community, especially when a woman was feeling distressed or isolated.

> *"Now if you are in that condition and you decided to seclude [yourself] in your house and no one gives you help […] comforts you so that you can regain your health, [tells] you [to] eat well and help yourself and your unborn child. If you don't have that, it would become a big problem. Yes, that is among the first problem of the*

pregnant woman. And nowadays such a situation is too much." – Wolof TC from Ndungu Kebbeh

Women's social relationships were frequently considered as influencing their mental health during pregnancy and after birth. However, these relationships not only affected the individual woman's emotional state but could also affect her accessibility to care. Like the economic factors previously presented, midwives discussed how social factors could influence a woman's antenatal and postnatal care. Some women depend on the support and permission from others in the family to be able to receive antenatal care, impacting their access to care and increasing their stress.

"Most women before they come to [the] facility, in some cultures, [say they] have to inform [their] husband first or in-law before going to the facility. That makes them not to go the facility to book early [in their pregnancy to see the midwife]." – Midwife from Brikama FGD

Many midwives talked about the importance of involving husbands by informing them of what is needed and why.

"*When the woman talks to the husband alone, he will not take it seriously he will say "[it] is expensive I cannot do that". […] Sometimes we do call the husband and we talk to them and they say yes I can do it. [...] So the support we are giving right now is health education, inviting husbands to come so that we can talk to them at an earlier stage so that we will not end up with a problem. I think this too is very important." – Midwife from Serekunda FGD*

The social relationships a perinatal woman has with those around her were identified as significant factors impacting her perinatal mental health and access to care. The dynamic elements of the family structure, involving shared living with co-wives and in-laws, creates an environment that can either support or hinder a woman's mental

health. A woman's relationship with her husband was found to be the most important social influencing factor. These social relationships, and the women's role within them, are shaped by broader cultural values. However, the culture and its values are shifting, and women's roles are changing with it.

4.4.2.4. Cultural shifts.

Various cultural norms helped explain the expectations placed on women in The Gambia today. Participants explained how certain shifts or changes in these values impacted women's mental health during the perinatal period. All the various informant groups explained the many roles women hold within society. These helped give context to the experience of Gambian women generally and during the perinatal period. It was explained that women are traditionally viewed as incomplete and in need of support. One pregnant woman from Sinchu Baliya explained how this belief dictated why women need to move from their parents' home. It also gives some insight into the power relationships between a woman, her in-laws and husband.

> *"You know if women were complete, they would be in their parents' homes. No man vacates his house to go to a woman's house in order to get married. That is, therefore, an indication that women are incomplete. You men are stationed at your homes waiting for us so you can complete us. So if you complete our weakness and give us support, it will be good. But imagine being pregnant coupled with stress and all kinds of sorrow; if that persists for long, it can even bring you some other problems as well" – Wolof pregnant woman from Sinchu Baliya*

Other participants use women's weakness as a way to advocate for support, not only from her family but also from others within the community. This belief also helps explain why there is a desire to have male children. Having a son is similar to having

a 'pension', as it is a male child's responsibility to care for his parents in their old age. If a male child has yet to be born, it is usually the woman who is blamed. A midwife from Serekunda explains how she believes this blame and preference is a result of a 'male dominated society'.

> *"Imagine a woman whose husband has [married] a particular woman for several years and in a male dominated society, many men will want their wives to give birth to a male offspring but there is [a] misunderstanding of what [determines] sex and the men will always blame the women. […] Even the family of the husband will also." – Midwife from Serekunda FGD*

Another cultural norm that can impact a woman's mental health is child marriage. One Kanyeleng woman describes her experience of marrying young as having a detrimental effect on her mental health.

> *"As for me I had my first-born child when I was fifteen years of age. I got married at a very young age. When I still think of that I cry, because I should have attained eighteen, or twenty years, or more than twenty years before being married and conceiving. Then it would have been much better in many cases." – Mandinka Kanyeleng from Jambanjelly*

Culture and its embedded expectations, especially around the family, were also viewed as a way to ensure a successful society. However, if people act against these cultural norms, it was described as detrimental to their mental health.

> *"The culture, the family and the society is very important [to] our lives. When we do [a] thing and we know that [it] is culturally unaccepted, you can be an outcast and this can be detrimental on the psychology of a woman." – Midwife from Serekunda FGD*

As explained, if a woman were to act outside of these expectations, like giving birth out of wedlock, this could have a detrimental effect on her mental health, especially as it may result in a loss of her family's support.

> *"Single mothers, most of them have these stresses. They have no family support especially [when it was an] unplanned pregnancy." – Midwife from Serekunda FGD*

While some of the cultural beliefs, values and traditions have continued, many participants talked about how the current shift in culture affects women during the perinatal period. One cultural shift was explained as a reaction to the reduction in income from male cash crops. This has led to more women taking on additional work to help make money for their families. This additional responsibility was discussed as adding more financial and physical stress, especially during pregnancy.

> *"The world has now changed. What was happening at that time, now is not happening. My granny used to tell me, when they were young, their husbands used to give them cloth every year in the ground-nut trade season. Now women keep on struggling to have money. You see them in garages selling to have money for the family." – Mandinka CBC from Farato*

It was also revealed how westernisation and urbanisation have shifted women's roles and values. Gambian families used to primarily work in the field to grow and make their own food. The high level of rural-to-urban migration has shifted many families away from an agricultural livelihood. This migration from rural to urban areas has also influenced an increase in western values. Some participants, mostly from the informant groups embedded in traditional beliefs and practices (e.g. CBCs and griots), talked about how Western values have influenced the desires and values of the recent generation, with more women wanting to be more like *toubabs* (outsiders or

Westerners). Participants described these shifts in values to include matters such as what clothing people wear, what they eat as well as what education they want for themselves and their children. While some viewed this change as positive, other women viewed this as causing more financial and mental strain on mothers.

> *"The present generation is different from the past generation. In the past generation people lived on their sweat, but now people live off a bag of rice. When it finishes you buy another one. Now you are thinking of feeding the family, clothing, and education. Now on the side of education things were not like as it is today. In those days education was not compulsory, people just attended the local Q'uranic school just to learn how to pray. Now everybody wants to be toubabs (Westerners) [and] that brings problems." – Mandinka CBC from Farato*

The influence of *toubabs* was also discussed in relation to how women interact with their husbands.

> *"But in the past and today are not the same. In those days when a woman is going to her husband, nobody will see her going and nobody will see her coming. [All her movements were done in secret]. But these days, don't you see we behave like toubabs (Westerners). Now if you go and come, they say, "hurry up, you haven't gone to your husband?" […] In the past, a woman would get pregnant and you wouldn't know about her pregnancy. She would give birth and you wouldn't know that she had been pregnant. But nowadays things are different. That is how it is. The way generations change, everything changes in the same way." – Mandinka musician/griot*

These examples illustrate an interesting dynamic. It is often assumed that changes to traditional gender roles would produce greater wellbeing and empowerment for women. However, it seems, in some ways, changes were discussed as producing more stress.

The quote above also mentions how women used to keep their pregnancies a secret. Keeping a pregnancy secret is one way women feel they can keep their child safe from evil spirits. There have been many recent interventions and programs in The Gambia that have directly worked to encourage women not to hide their pregnancy, aiming to ensure women go to the antenatal clinic to see a midwife early on in their pregnancy. The midwives and CBCs discussed this shift in behaviour as having a beneficial impact on women's mental and physical health during the perinatal period. However, this behavioural shift seems to be primarily observed in urban areas.

> *"Another thing is if you are pregnant, coming to the clinic is another challenge because people don't want their pregnancy to be known very early. […]Most of the times it is associated with cultural [beliefs] that we don't want the pregnancy to be known. A lot of interventions are being done to avert that but still like when you go to the provinces […] where we don't have any intervention taking place, then we are seeing that [hiding the pregnancy happens] too much even if you talk to them" – Midwife from Serekunda FGD*

Overall, shifts in cultural values, traditions and beliefs were discussed as significant factors influencing women's experiences during the perinatal period. These values are embedded contextual realities that influence all other factors. They dictate women's roles, expectations, behaviours, and relationships. Westernisation and urbanisation were found to create cultural shifts that either contribute to or prevent women from experiencing mental distress during the perinatal period.

4.4.2.5. Spiritual factors.

Spirituality plays an essential role in Gambian culture. Like the pluralistic nature of health care, involving traditional and biomedical treatments, spirituality is also pluralistic involving a combination of religion (most commonly Islam) and traditional beliefs. The majority of people place their faith in God, believing that their fate is in His hands.

> *"You begin to ask certain question such as, what shall we do when I delivered?. You know all that is a divine destiny but due to your anxiousness you begin to say this. You are just being optimistic in your desires. However, the ultimate decision rest with God for final determination of his decree as no one knows the future." – Wolof musician/griot*

Participants talked about using their faith as a form of acceptance rather than fatalism. Faith is used to accept that some things are out of a person's control.

> *"When God caused you to finish your childbearing altogether and willed that you not bear a child, you will not have any." – Mandinka Kanyeleng from Jambanjelly*

A majority of participants also talked about the effect various spirits or non-human entities had on women's mental health during the perinatal period. Sometimes they were discussed as a cause of mental illness or distress or an explanation for one. Witches were usually described in relation to lost pregnancies or infant deaths. Participants explained that a curse from a witch or being a witch was a possible cause of infertility, miscarriage, infant death or congenital disability. Fear of witches or being called a witch was also considered as causing some women mental distress.

> *"She might be pregnant up to nine times but have no living child. Many of them have miscarriages, foetal death and [if] this woman is pregnant again she will have that stress. Again most of the times the*

society will label the woman as a witch and when she is pregnant her fellow witches eat the child. So these are issues that can affect the woman. The same thing for a woman who has a baby that has a birth defect." – Midwife from Serekunda FGD

Participants also discussed being fearful of spirits or of having a spiritual attack. They explained that being attacked by an evil spirit could change a woman's behaviour by making her angry or irritable and cause her distress.

"[If I am being attacked by a spirit], even if you just speak to me, I will get angry. You would say, "I don't know what I did to Kadijatou. I just spoke to her and she got angry." [An evil spirit] appears to some during the labour period, and if God does not help you, the child can die. It appears to some people when they are in a crowd. Some [spirits] like crowds, others don't like crowds. It can make them fall down, and sometimes they can have a very serious injury. […] She can be aware that "today an evil spirit knocked me down." But during the time it was inside her, even if you cut her arm, she would not be aware." – Mandinka musician/griot

Some participants expressed how specific symptoms, such as hallucinations, were being associated with a spiritual attack rather than another physical disease (e.g. malaria) affecting the care they seek.

"Because malaria can cause hallucination, people would then begin to associate it with spirituality. People would speculate by associating it with every kind of myth possible when it is nothing but malaria. As a result, instead of taking the victim to the doctor, she is instead taken to the witch doctor." – Wolof CBC from Kissimajaw

The spirit husband (*kuntofengo*) was described by many participants, especially griots and Kanyeleng whose traditional practices commonly involve fending off this spirit.

It was explained that during pregnancy and labour is usually when the spirit husband disturbs women.

> *"The spirit husband she is talking about are different in kind because God made us different. Every human being has a sprit husband. It is just that some are fiercer than others. For some, it causes epilepsy. For others, it only disturbs them at the beginning of the pregnancy, and it stops at the latter part of the pregnancy, and it will come back again during the labour period." – Mandinka musician/griot*

Spirit husbands are believed to cause infertility, miscarriage and infant mortality. The fear of the spirit husband, or believing that he has already affected previous children, caused some participants to stress during their pregnancy. One Kanyeleng woman talked about how the spirit husband caused her to experience both psychological and physical symptoms.

> *"The spirit husband can cause [a] lack of peace of mind. I involved myself in the Kanyeleng because of the spirit husband. My children are burned by the evil sprit. I sometimes dream of having sexual affairs with him. When I am pregnant and I have that dream, that alone causes my stomach to hurt. When this happens, I stay nervous/panic. I still have that problem." – Mandinka Kanyeleng from Sanyang*

Another Kanyeleng woman spoke about how the spirit husband would take the form of a *kankurang* and haunt her. A *kankurang*, pictured in Figure 4.2, is a Mandinka masked figure connected to male power and spirits. They are usually present at various ceremonies, especially circumcisions (Saine, 2012). There are several types of *kankurang,* each serving a different social role. *Mam* is the Wolof equivalent of *kankurang* (Saine, 2012). One Kanyeleng woman described seeking help from the Kanyeleng when biomedicine did not fend off the spirit.

> *"Sometimes I dream of a crowd of people dancing, the kankurang (Mandinka masquerade) will follow me up to that crowd and ask me to*

dance by force. He will say, "If you don't dance today, I will beat you." I will dance and dance. When this happens my child will get seven different kinds of sickness. When the other is cured, another one comes. This will continue until my child dies. Lastly the doctors asked me to bring the placenta immediately after giving birth and the blood of the child [to see] whether they are born with sickness. But with all tests, they have not seen anything. My last child has been tested and nothing has been seen, and he got a chest problem. I took him to the Kanyelengs and they changed my name, and I was called Sire Njie. That child with [the] help of God he survived. My problem is the evil sprit, not illness." – Mandinka Kanyeleng from Sanyang

Source: Author (February 2019)

Figure 4.2. Small boy dressed as a *kankurang.*

Spiritual factors were believed to explain mental distress symptoms, such as irritability, as well as be the cause. A woman's faith in God affords her the ability to accept the difficulties she may face during the perinatal period. Religion and spirits

were usually discussed together. For example, when a spirit afflicts someone, prayer, along with other traditional practices, were described as one method used to help chase a spirit away.

> *"It [traditional Kanyeleng practices] chases it [the spirit] away. When you inform us that you give birth and your children die, when you are pregnant, we take you to take a bath and we apply porridge all over your body. We pray so that God can make the evil sprit affecting you go away." – Mandinka Kanyeleng*

The traditional practices of the Kanyeleng and griots are treatments, which involve music, that women seek when they are experiencing perinatal distress or illnesses caused by spirits. Making music, dancing, and interacting with others, is an embedded aspect of Gambian culture with specific musical practices that happen around the perinatal period.

4.4.2.6. Existing musical practices around the perinatal period.

> *"It is found all over, the Kanyeleng, the jaloolu (griots), even on their mobile [phone], [music] is there" – Mandinka musician/griot*

Music is embedded within women's experiences during the perinatal period and impacts all other factors discussed within the pictorial representation (Figure 4.1). Within the FGDs with the Kanyeleng/TCs and griots it was explained how music is necessary for women during the perinatal period. Singing or listening to music allows women to feel energised while also relaxing their mind. It was explained how singing benefits the pregnant woman and has a direct influence on her growing foetus as well.

> *"It is said that songs are necessary for a pregnant woman. Songs are part of things that rejuvenate her. This is because songs are very important. If there [is] any genre of music that she enjoys; she can listen to it. Any music that she feels can entertain her and that shall relieve her or that can make her happy; such a song is good for her.*

She can keep on listening to such a song always. […] No one knows what is in the mind of another. That is the reason why whatever she feels is good for her mind, she can be listening to it so as to achieve tranquillity in her state of mind [and] in her body as well as in her unborn child." – Wolof musician/griot

Musical engagement was usually described within the context of a ceremony or social event. In fact, social ceremonies were described as flavourless without the inclusion of music, pointing to its crucial role in these types of gatherings.

"So if you have ceremonies and you do not see such griots or your relatives, then you must assess yourself once again. The absence of griots in our functions are like food (specifically benachin, a traditional rice dish) without salt. The food will be tasteless. That is why getting together softens the hearts. It causes happiness." Wolof TC from Ndungu Kebbeh

One of the most important ceremonies that take place during the perinatal period is the naming ceremony. A naming ceremony typically takes place a week after the infant is born. They incorporate a lot of music and dancing, which griots and Kanyeleng groups usually lead. This ceremony is a proud and joyful moment for many mothers. However, many participants talked about the stress and potential sadness that some women might feel when they are not able to afford a suitable naming ceremony.

"[Naming] ceremonies are moments of joy; because there is no amount of joy greater than the successful delivery of an infant after months of pregnancy. So if she fails to be given a befitting ceremony, that's another problem. But whenever you have a ceremony and the griots, your relatives, and all other people come over to drum and dance; no other happiness is greater than that. […] Well-wishers would come to give you gifts that you would use to add to your own

money. In that way, happiness has come to her." – Wolof TC from Ndungu Kebbeh

Many other traditional musical practices of Kanyeleng groups take place during the perinatal period. The Kanyeleng, their rituals and performances, are situated around challenges (e.g. infertility, miscarriage or infant death) usually encountered during the perinatal period.

"The […] lack of children is what made us [Kanyeleng] come together and pray to God. […] Yes, that is the role of [Kanyeleng]. You know there are some who never have a baby at all. We recruit her and perform with her and sometimes during these periods when we pray to God it becomes easier. God may bless her with a child." – Mandinka Kanyeleng from Jambanjelly

Kanyeleng performances usually give advice to other women who may be pregnant or have just had a child. Therefore, Kanyeleng groups form an existing support network for women during the perinatal period.

"Some songs […]are advice songs for the mother. When you sing those advice songs for the pregnant women and new mothers, you will see [that] those that don't have understanding will get it. If [I think] my child should stop going to the nurse after three months, when Kanyeleng go to the naming ceremony and sing the song there, it will make that person aware that a child should go to the nurse until they are five years old. But if I didn't know that, I stopped at just three months, my child's vaccinations will be left behind." – Mandinka Kanyeleng from Sanyang

Traditional songs used during the perinatal period, such as lullabies, were described as useful caretaking tools for many women. These types of songs were described in many FGDs as having a positive effect on the mother's and infant's well-being.

> *"Well as for me, I sing for my own babies whenever I have one. […] The baby's mothers, they are the ones responsible for singing for the babies. If you have it, then you can sing for him/her a nice song. If that is done, your mind can be stable while the child would be staring at you happily." - Wolof TC from Fass Njaga Choi*

Lullabies were explained to serve numerous functions. They can help the infant stay quiet or fall asleep so the mother can focus on other tasks or be used as a way for the mother and her child to bond with one another.

> *"[A lullaby] is meant for the child to become quiet and allow the mother to do work. […] If you keep singing for them and swing them to and fro, they would be quiet and the mother will continue her work." – Wolof TC from Ndungu Kebbeh .*

> *"[Singing lullabies] just creates harmony. You feel that someone somewhere cares about my baby and is not left to cry. […] A lot of nonverbal communication is attached to it." – Midwife from Serekunda FGD*

While lullabies were discussed as helpful musical practices used during the perinatal period, many participants talked about them as forgotten by current generations. It was explained how mostly older women knew these types of songs.

> *"[Lullabies] are remembered by the old women. They are the ones who sing these songs to children. Children don't know anything about babysitting now. During our time, these songs were sung by our grandmothers." – Mandinka Kanyeleng from Sanyang*

Overall, there are various important musical practices that happen around the perinatal period. Music is present in women's everyday lives and during special moments such as naming ceremonies. Music engagement influences women's relationships with their community, through ceremonies, and with their infant,

through lullabies. Music impacts women's mental health during pregnancy, through individual listening and singing or through the social support networks it fosters.

4.4.2.7. Individual factors.

While the previous factors discussed affect the individual, other individual factors were also described as affecting a woman's mental health during the perinatal period. One individual factor discussed was a woman's physical health. Many participants described that being sick, especially during the perinatal period, could cause an unstable mind.

> *"A sickness sometimes takes you to a certain limit, you can't have a stable mind. […] Moreover, you [can't care for your small children [and therefore], you can't experience a stable mind." – Wolof pregnant woman from Faaijikunda*

Many women have lost a previous child or seen other women in their community lose a child. Many women have also seen other women in their community die during childbirth. This reality was a salient worry discussed by many FGD participants.

> *"Your mind is always focused on whether or not you will die. When you give birth, you live but your child doesn't live, that causes a person to suffer. You can give birth as well, your child lives but you die. Those are all difficulties of pregnancy." – Mandinka Kanyeleng from Sanyang*

Having an unwanted pregnancy and having children too close together were also identified as potential contributing factors to an unstable mind.

> *"One of [the things that can influence the mental state of the mother] would be unwanted pregnancy. We see a lot of those not only in teenagers but when a husband travelled and she get pregnant before the arrival of the husband. We do see a number of those cases and these things create a lot of stress at home because the woman is*

[isolated, but] as a human being we are very social." – Midwife Serekunda FGD

"To become pregnant whilst breastfeeding can cause too much thinking. When breastfeeding a child who hasn't got [to] one year and then you become pregnant, it can cause too much thought. It would cause some form of anxiety because she would not know how she would take care of her children." – Wolof CBC from Kissimajaw

Additionally, a women's behaviour was identified as a contributing factor to perinatal mental distress. For example, some argued that being lazy was a cause rather than a symptom of mental distress, placing the responsibility on the woman herself.

"On the other hand if you have [a] problem and the only thing you do is to lay down upon lay down; that can give both you and your child a problem" – Wolof pregnant woman from Sinchu Baliyaa

Many midwives discussed a woman's education level as a contributing factor. Many women do not go to secondary school due to the social expectation of taking on more domestic duties once they reach puberty.

"A lot of problems women face are because they don't know. [It] is ignorance and illiteracy [that] are very important reasons [why] women have complications. The most important job for a midwife in relation to women who are pregnant and those who have delivered is education. We assume that they know but they don't know and when people do not know, they are anxious especially when they have an underlying anxiety problem you make it worse." – Midwife from Serekunda FGD

The factors presented in the pictorial representation are continually interacting with one another and the individual. The individual factors, such as physical health, previous experience, and education were discussed as contributing factors.

4.4.2.8. Examples of interacting factors.

While all the factors within the pictorial representation interact with one another and with the individual, specific ways they interact were described in the FGDs. For instance, many women depend on their husband's income and are required to ask permission to use any funds. Not feeling in control of one's income and finances was discussed as negatively impacting women's mental heath and their relationships with their husbands.

> *"She would resort to asking the husband for some money. And if the husband doesn't have money, you won't become happy. These are part of the problems for a pregnant woman." – Wolof TC from Ndungu Kebbeh*

This lack of control was also shown to affect the social occasions women value, such as the naming ceremony.

> *"When she gets a poor husband with low income, she would be troubled by the fact that he may not be able to perform a befitting naming ceremony for the child. […] As long as she is not certain of what the husband is going to do, she will not be at ease. That can cause too much thinking in her for she needs new clothes yet she can't afford it. That alone can cause stress in a woman." – Wolof CBC from Kerr Omer Saine*

In these examples, social factors (e.g. the relationship with the husband) interact with economic factors and cultural expectations. While these examples show the negative effect of this intersection, money-sharing societies were described as having a positive effect.

Money-sharing societies include women from the community gathering together to support each other financially. Each woman contributes a little at each meeting. On a rotating basis the sum of all the contributions goes to one member of that group.

> *"The neighbours can form these clubs. You may tell the people in the neighbourhood that you want to establish a club that you will be contributing hundred dalasi or fifty dalasi. And from time to time, you can meet in someone's home and you can collect the entire contribution for an individual." – Wolof musician/griot*

These societies were described as creating a network of social and financial support for women in general and especially during the perinatal period. Furthermore, other social gatherings, such as naming ceremonies, were also explained as a way to support women and their families financially.

Social and economic factors interact in helpful and detrimental ways. The financial situation of a woman is contingent on her husband's income, leaving many women feeling financially dependent and without any spending agency. However, various social practices involve the reciprocity of money that create supportive social and financial networks for women during the perinatal period.

4.4.2.9. Pictorial representation summary.

The pictorial representation presented in this section gives examples of the varying economic, social and spiritual factors identified as contributing to a woman's perinatal mental health. These sit within a broader context, including the reality of widespread poverty, shifting cultural beliefs and values, and embedded musical engagement. This pictorial representation helps to synthesise the complex integration of factors that were identified in the FGDs that impact a woman and her mental health during the perinatal period.

4.4.3. Signs and symptoms of an unsteady mind/heart.

Participants were also asked to discuss the common symptoms related to an unsteady mind in pregnancy and after birth. The majority of identified symptoms or signs were either behavioural or bodily. The behavioural signs included women displaying irritability, secluding themselves, having poor hygiene, or withdrawing from their infant. Some examples of responses are below.

> *"Some women can give birth while they are not well mentally, but people can't realize it. They just think she is an aggressive person, while she has lack of peace of mind that makes her unable to look after her child. If you see this kind of person, you can explain to people so that they can help." – Mandinka Kanyeleng from Sanyang*

> *"The women who are afflicted with an unstable mind, whenever they give birth, they don't usually suckle their babies. They are often forced to do so. She would only [stay in] bed and wouldn't care for anyone. When she is called, she wouldn't respond. And all this is as result of the mental condition she suffered from."– Wolof CBC from Kissimajaw*

Bodily symptoms were commonly addressed within the FGDs. As one CBC explains:

> *"When she encounters difficulties and begins to think too much, it shall be known from her bodily signs. The body changes miserably in spite of the fact that she eats good food." – Wolof CBC from Kissimajaw*

The different bodily symptoms identified included bodily shakes, dizziness, headaches, weight loss and loss of appetite. Example responses are given below.

> *"When I have sadness, my body shakes and I feel dizziness. These are the things that disturb me when I have sadness." – Mandinka pregnant woman from Brikama*

> *"When a pregnant woman is in a state of sadness, her weight is reduced and that can cause another problem when giving birth,*

because she does not have enough energy" – Mandinka pregnant woman from Brikama

"She looks like someone who is angry or someone who suffers from headache. In that case you shall know that a certain difficult circumstance has overcome her." – Wolof CBC from Kissimajaw

"If food is given to her, she can't eat. People around her would then keep on commenting about her attitude of refusing to eat, not realizing that all [that] is caused by too much thinking" – Wolof CBC from Kissimajaw

The few psychological symptoms discussed included thinking too much (excessive worry) or feeling sadness. These were discussed more often throughout the FGDs as components related to an unstable mind rather than a symptom of mental distress. Overall, the identified signs of mental distress in pregnancy were largely behavioural and somatic.

4.4.4. Common treatments and help-seeking behaviours for an unsteady mind.

Because the aim of the current research is to develop an effective intervention to support women's mental state in pregnancy, it was essential to understand the approaches that are typically used to help reduce symptoms of an unsteady mind. Therefore, within all FGDs, participants were asked to speak about what treatments were most commonly used and what behaviours were believed to help reduce maternal mental distress. Participants talked about using a combination of methods. One pregnant woman described how she uses both the biomedical and traditional treatments together.

"When there is a sickness that cannot be cured in a health centre, you can go for the local treatment. […] You go first to the health centre. When you know the problem, if [a] local treatment [can be used] you

can go ahead. If you don't go to the health centre, you cannot know." – Mandinka pregnant woman from Brikama

Midwives discussed the mental health care they aim to provide perinatal women at the clinics. They discussed how they try to identify women who might have a mental health problem during their routine visits, give these women the opportunity to talk about their struggles, provide minimal counselling and, if needed, refer on those with more serious problems to community mental health experts. However, while it was explained that this was the ideal care every women should receive, the reality is very different as time constraints and lack of training hinder many midwives' ability to give the ideal standard of care.

"The support that the midwives should probably [give] we are not doing everything but what is expected of a midwife in relation to a pregnant woman who has given birth. It just comes back to the definition of a midwife. Which means with woman, someone with the woman and in relation to this it implies that the midwife should be the central part of the woman who is pregnant. Therefore the pregnant woman has no better support than the midwife. In addition to the clinical service that you offer, I think there are very important elements of support that the midwife can and should render to the pregnant woman or who has given birth. I have just summarize the advocacy, partnership, guidance, counselling, education, information this is what the midwife should be doing for the woman. A lot of problems that women face can be taken care of or can be abated, if these functions of a midwife can be at hand. Unfortunately as my colleagues have already hinted at, it is often difficult because we don't have man power, the training also can be deficient, we don't have the space, we don't have the resources." – Midwife from Serekunda FGD

While the midwives usually provide care based on the biomedical model, the CBCs talked about also using a mix of local and biomedical methods. They discussed using herbs (*jambakatango*) and hot baths as well as performing or suggesting rituals if the cause was thought to be spiritual. In addition to the variety of traditional methods, all participants described the various social help-seeking behaviours that can relieve women's mental distress.

One behaviour discussed as helpful within all the informant groups was talking to someone within the community, either a CBC, elder, or friend.

> *"Then you must go to your friends and other acquaintances as you know people have different opinions and can help you." – Wolof pregnant woman from Faajikunda*

In addition to taking advice from others, many participants discussed religious ceremonies and prayer as effective in reducing distress.

> *"In religious festivals, the name of God is mentioned and he is the creator of everyone. Whoever gets stress, when you go to the religious festivals and hear the name of God being chanted, you will feel relief."– Wolof TC from Fass Njaga Choi*

Many participants also considered attending programs and social events as a helpful way to distract women from worrying.

> *"There are a lot of treatments. You can join your fellow women and they give you the advice. If you see a tulungo (Kanyeleng performance) happening somewhere, you can go there, that will reduce your worries. When you have those kinds of thoughts/worries, you should mingle with the people. Don't stay alone." – Mandinka CBC from Farato*

4.4.4.1. Music engagement as helpful.

The social events described typically included an element of musical engagement; whether it be dancing, singing or listening to music. Music engagement was emphasized on its own as being a helpful activity women could engage in during the perinatal period. One CBC talked about the positive effect that dancing, especially with others, has for people experiencing mental distress.

> *"Everyone would dance to their satisfaction. Even the woman who newly gave birth would dance if she is healthy. You know once that is done especially in the midst of her friends, that would eliminate all her mental instabilities." – Wolof CBC from Kissimajaw*

Listening to music and singing along was also identified as a useful tool to help reduce any negative feelings. Music was described as an embedded and significant cultural practice assumed to be helpful for those who are struggling with mental distress or worry.

> *"When a pregnant woman reaches the apex of her pregnant period, or just at the start of her pregnancy period; that is when she begins to suffer from anxiety and stress. Her relatives also become worried. But one of the things that serves as a remedy for her is to have something that she listens to. Songs assist her as she herself sings along. It is a long-standing tradition that descends from our ancestors through the ages to our generation. […] These songs (traditional music) are something very important to the life of a person. In addition, […] if a person sings, it penetrates deep into the hearts and makes a positive effect therein. One must try to sing something that is beneficial to the people and at the same time feel the effect yourself. In fact, sometimes, as one listens to the songs it appears as if the song is specially composed for you" – Wolof musician/griot*

Using music as a way to moderate emotions and solve conflict, by bringing people together, was also described as a central role of music. This was explained as especially true of the music performed by griots at various ceremonies.

> *"It is said that music satisfies the soul. Quite often as one goes to certain events (referring to traditional ceremonies), they find a lot of enmity such as, malaise, family issues and so on. [Griots] get into their midst and compose beautiful songs that would melt down all the enmity among them. Those who were angry get calm and those who had bad mood feel at ease. This is so because the kind of songs that [are] sung for them [are] soothing so much that as they disperse, they have become united again." – Wolof musician/griot*

Music, and the artists who share it, was described as synonymous with encouraging mental well-being. To show this one griot explained the historical meaning of the words artist and *xalam* (a traditional Wolof lute).

> *"People are a bit ignorant of the word artist. Artist means Aarr tiiss (preventing sorrow). That's the proper name of artist. Xalam's (a traditional form of music played on a lute) proper name is xelam (advise). It comes from the mind into another. That is what helps someone who has a problem." – Wolof musician/griot*

While there was a variety of suggested treatments and activities for women with perinatal mental distress, including going to the health centres, receiving traditional medicines, and engaging in social events, music was presented as an embedded way to support those with an unsteady mind.

> *"Yes, you ask if music has the ability to help someone with a problem, such as an unstable mind or a sick person? Yes, in fact that's the reason for the existence of music." – Wolof musician/griot*

4.4.5. Potential feasibility of a music intervention for perinatal mental health.

Following these general discussions about the role of music and mental health, we used the FGDs to gather more specific feedback about the potential benefits of a music-based intervention during pregnancy. Overall, participants felt that a music group intervention, led by local musicians to support pregnant women's mental health, was a feasible idea. Participants talked about how this type of intervention would allow for simple health messages to be conveyed within the community by the community, removing potential stigma.

> *Singing is the very medium of communication. I think it could work because you have [your] own people not the health workers. You have a lay person talking to them in a form of a song where nobody feels that someone […] suspects that they have a problem. You make them understand that there is an avenue [towards help] for them. If you give out the message in a very simple manner many women will be visiting there and they will accept it and they will understand it." – Midwife from Serekunda FGD*

The Kanyeleng and TC groups were discussed as appropriate groups to help with the delivery of the intervention. Their music and use of humour were explained as key to lifting women's mood, leading to a peaceful mind.

> *"The Kanyeleng can also help. When she sings a song and does a funny thing, that can give you a peace of mind." – Mandinka pregnant woman from Brikama*

Their ability to entertain while also communicating an important message was also highlighted as a skill that would make them appropriate facilitators of the intervention.

> *"To entertain the pregnant woman is a good thing to do. It is part of our strategies to entertain people prior to giving out any piece of information whenever we visit" – Wolof TC from Ndungu Kebbeh*

When asked about the potential to include lullabies, many participants felt this would also be helpful. It would allow women to learn them and use them once their infant was born.

> *"Yes, [lullabies] are beneficial so that when [women] deliver, they shall be able to sing for their babies. That is very beneficial." – Wolof TC from Fass Njaga Choi*

While a majority of participants felt a music intervention for pregnant women was potentially feasible and beneficial, some participants discussed essential considerations that needed to be made before proceeding. The majority of suggestions came from FGDs with midwives. They emphasized how careful consideration had to be made in regards to the messages of the songs and the type of music used. They stressed that the messages should be simple and designed in collaboration with the research team and the musicians. Traditional music was suggested as the most widely accepted form of music.

> *"In a community when you have important information you talk to these [Kanyeleng and TC] groups. […]You tell them the information to be given and you allow them to develop a song and [then] listen and see whether the song needs to be trimmed. You check the information to be given is really captured in the song. The song should not be provocative, it should be simple and should be a simple traditional song. People will accept it because [it] is indigenous and does not come from outside. If you bring Western music, many people will not accept it. Whatever your religious persuasion most people in The Gambia, Muslim or Christian, they will like to listen to folk music" – Midwife from Serekunda FGD*

Some midwives talked about the potential challenges research like this could face when working within the disorganised antenatal services.

> *"Our health care system, especially the antenatal services, are not well structured. Unfortunately mental health is not an important pillar in the concept of health for women who are pregnant and those in labour and those delivered. […] In many ways it is chaotic, unstructured, and there is no documentation, no way for evaluation. So you cannot assess the impact of your intervention. […] There is no system for referral you don't have a focal person at the clinic who is responsible for mental health issues." – Midwife from Serekunda FGD*

The lack of an obvious partner at the clinic was revealed as a challenge, making it difficult to follow the women and assess the effectiveness of the intervention. One midwife spoke strongly about how the sustainability of the intervention should be ensured. The midwife explained that if only one person is trained in a particular skill and then leaves the service, the intervention cannot continue.

> *"You may train someone today after training they begin to improve they learn on the job and they have to learn on their own to improve on their skills gradually. Imagine you train someone and a year down that individual leaves and go for a PhD programme or a master programme. The attrition rate should be taken into consideration." – Midwife from Serekunda FGD*

Overall, participants felt that a music group intervention, led by local Kanyeleng/TC groups to support pregnant women's mental health, was a worthwhile endeavour. However, considerations regarding the proposed music and messages and the challenges of working within an under-resourced health system, needed to be anticipated. It was also crucial for the participants that the sustainability of an intervention be taken into account.

4.5. Discussion

This extensive qualitative study was able to present a rich understanding of the common terms and contributing factors associated with perinatal mental distress in The Gambia. It was also able to explore how music might play a role in supporting women during pregnancy and after birth. Conducting FGDs with a variety of stakeholders, including pregnant women, health professionals and musicians across a variety of settings, allowed for different perspectives and experiences to be taken into account. Various idioms of distress were identified, with the most appropriate terms being *sondomoo tenkung baliyaa* in Mandinka and *hel bu dalut* in Wolof. Using thematic analysis, a pictorial representation was presented. This pictorial representation and the given examples exhibited the various factors thought to contribute to a women's mental health during the perinatal period. The pictorial representation visualised the way these factors (economic, social, and spiritual) interact with one another and within the broader context (poverty, cultural shifts, and music). The visualisation of the factors within the pictorial representation highlights the interconnected effect of these factors, a point usually underrepresented in the literature. Different musical practices around the perinatal period were also described, including naming ceremonies and lullabies. The integration of music within the pictorial representation helps to answer a new research question never before examined in The Gambia.

To help with the design of the subsequent studies within this research (Chapter 5 and 6), specific questions regarding common symptoms, treatment and the potential feasibility of music engagement to support antenatal mental health were investigated. Similar to previous research in Africa, the most common symptoms found to be associated with perinatal mental distress were bodily. Behavioural symptoms, such as

disengaging with the infant and others, were also discussed. Midwives described what they believed should be the standard of care in The Gambia, including identification, counselling and referral of women with mental health problems to community mental health specialists. However, they explained that the reality is that while some women are offered these services, the majority are being missed and not given any mental health care due to lack of time, resources and training. Various other treatments and help-seeking behaviours were suggested to relieve an unsteady mind. A combination of biomedical and traditional treatments were presented along with community engagement. Music was identified as a powerful tool that is already used to support women's emotional health during the perinatal period. Asking pregnant women to engage in a group music intervention to support their mental health was viewed as potentially feasible and beneficial. Overall, this study helps to build a foundation of understanding on which the subsequent studies can build upon.

4.5.1. Idioms of distress.

While there were a variety of idioms used to describe the different aspects of mental distress, *sondomoo tenkung baliyaa* (lack of a peaceful mind/heart) in Mandinka and *hel bu dalut* (lack of a steady mind) in Wolof were found to be the most representative. Various other studies within different countries in Africa have found similar phrases, usually involving reference to the heart or mind. For example, one study conducted in South Africa identified three phrases in Zulu, “the spirit is down” (*umoya uphansi*), “the body is down” (*umzimba uphansi*) and ”the heart is sore” (*inhliziyo ibuhlungu*). These terms helped with the translation of the present state examination (PSE) and the structured clinical interview for the Diagnostic and Statistical Manual of Mental Disorders (SCID) (Buntting & Wessels, 1991).

Within the identified Mandinka and Wolof umbrella phrases, other terms were identified. Thinking too much or having many worries (*miraalisyaa* in Mandinka and *xalat bu bari* in Wolof) were commonly used. Phrases which represent excessive thinking have also been identified as idioms of distress in Eritrea (Almedom et al., 2003) and Uganda (Nakku et al., 2016), indicating overthinking as a behaviour associated with mental distress in other African contexts.

While *sondomoo tenkung baliyaa* and *hel bu dalut* have not been explicitly described in other mental health research studies in The Gambia, the Mandinka word *sondomoo* has been used to describe emotional responses to music (McConnell, 2017). *Sondomoo* roughly translates to mind or heart. However, in McConnell's (2015a, 2017) work, she describes how this term more closely translates to the emotional heart or whole being. The *sondomoo* is a site of memories and represents an individual's deeper level of understanding and has the potential to transform in response to music (McConnell & Darboe, 2017). The identified relevant phrase for mental distress in Mandinka speaks to the lack of having a steady *sondomoo*, which can then be directly affected by music. Therefore, the connection between an unsteady *sondomoo* and music exemplifies the essential relationship between music and mental well-being within The Gambia.

4.5.2. A representation of contributing factors.

The pictorial representation presented in this chapter (Figure 4.1) visualised the economic, social, and spiritual factors that influence a woman's mental health during pregnancy. Dissimilar to previous work, the potentially negative and positive impact of these factors on women's perinatal mental health was presented. One research study, based on data from Ethiopia, India, Nepal, South Africa and Uganda, found

that social and economic diversity, poverty, marital status and interpersonal difficulties contributed to perinatal CMD symptoms in these countries (Baron et al., 2016). In a review by Wittkowski et al. (2014), they identified four main factors that contribute to postnatal depression symptoms: lack of social support, relationship problems, unwanted pregnancy and cultural factors. This current study has identified similar contributing factors. However, the current pictorial representation is unique in how it visually emphasises the interaction between these factors within a broader cultural and societal context.

Comparable to previous research, economic strain, lack of spending autonomy, and poverty were identified as significant contributing factors (Baron et al., 2016; Coleman et al., 2006; Lund et al., 2010; Nabwera et al., 2018; Sawyer et al., 2011; Scorza, Owusu-Agyei, Asampong, & Wainberg, 2015; Wachs et al., 2009). A broad review of 115 studies in various LMICs found that various indicators of poverty, such as low education level, income and food security, were associated with higher levels of CMD symptoms in LMICs (Lund et al., 2010). While poverty is discussed in some previous research as a contributing factor of perinatal CMD symptoms or mental distress, the current pictorial representation situates poverty around the inner Venn diagram, providing it as a lens through which to view all women's experiences during the perinatal period.

Poverty was seen to affect the resources available to health centres and antenatal clinics. The midwives explained that appointments were usually rushed and the clinics were crowded, understaffed and the systems were largely unstructured. A recent qualitative study completed in Uganda investigated the potential barriers

women faced when receiving perinatal mental health care (Nakku et al., 2016). This study found similar barriers to care as those identified within the current study. Nakku et al. (2016) found that household factors (e.g. the inability to pay for transportation), health system factors (e.g. low staffing, rushed visits and lack of trained professionals), and community level factors (e.g. lack of a referral system), all acted as barriers to perinatal care. The current study found these same challenges as impeding women's ability to receive perinatal mental health care in The Gambia.

Previous qualitative studies identified social factors as contributing to perinatal mental distress in LMICs, with specific mention of the importance of husband support (Baron et al., 2016; Hanlon, Whitley, Wondimagegn, Alem, & Prince, 2009; Nakku et al., 2016). Whether it is an overall lack of support or a specific conflict with the husband, studies from Uganda, Ethiopia, Nigeria, South Africa, Ghana and other LMICs have all identified the relationship with the husband as one of the most important influencing factors contributing to poor perinatal mental health (Adewuya, Fatoye, Ola, Ijaodola, & Ibigbami, 2005; Baron et al., 2016; Hanlon et al., 2009; Nakku et al., 2016; Scorza et al., 2015; Wachs et al., 2009; Wittkowski et al., 2014). The importance of husband support was also indicated in previous studies conducted in The Gambia (Coleman et al., 2006; Nabwera et al., 2018; Sawyer et al., 2011). Within the current research, we also find husband support as one of the most salient factors discussed. The current research, as well as previous research, speaks to the immense need for perinatal mental health services and interventions in LMICs to consider involving fathers or at least help women navigate this important relationship.

In line with Wittkowski et al.'s (2014) review, cultural values, beliefs and expectations were found to impact women's mental state during pregnancy and after birth. Cultural factors such as family structures (Wittkowski et al., 2014), polygamy (Adewuya et al., 2005; Hanlon et al., 2015), the stigmatisation of being single (Adewuya et al., 2005) and the preference for a male child (Adewuya et al., 2005; Hanlon et al., 2009) have also been found as contributing factors to perinatal mental distress within other qualitative studies conducted in African countries. The effect of various cultural changes, such as women participating in additional work and hiding pregnancies, were also discussed in Nabwera et al.'s (2018) study in The Gambia. While the effect of culture has been discussed, the way in which it interacts with other factors and the emphasis on a shifting culture is hardly mentioned in previous work. The potentially contradictory finding that westernisation had a negative impact on women's mental health was exhibited within this study, a new understanding not previously discussed. The effect of westernisation in LMICs on perinatal mental health warrants further investigation

The impact of spirits on women's perinatal mental state is infrequently mentioned within previous work. Only two studies were identified that specifically discuss the impact of spirituality on perinatal mental health in Africa (Hanlon et al., 2009; Nakku et al., 2016). The importance of traditional beliefs and spirituality may be a gap in people's understanding of the causes of perinatal distress, especially in West Africa, which is displayed within this current work.

Various individual factors were also identified. These included the physical health of the mother and her children, previous birthing experience, fear of death, birth spacing

and laziness. These factors have been found to be relevant contributing factors in other studies conducted in Africa (Hanlon et al., 2009; Sawyer et al., 2010; Wittkowski et al., 2014) as well as in The Gambia (Nabwera et al., 2018).

While some of the specific factors identified within this current study have been found in studies conducted in other African countries, LMICs and HICs (reviewed Chapter 2 Section 2.3 and above), the current study synthesizes these factors using a visual representation. This pictorial representation features the interacting and intersecting nature of these factors. Musical practices were included within the outer circle of the illustration to represent the way music is integrated into women's everyday experiences and is an embedded tool utilized by women to support their emotional health. Music can affect the heart (*sondomoo*) and create oneness (*baadinyaa*) (McConnell, 2015a; McConnell & Darboe, 2017), demonstrating its ubiquitous nature in supporting mental health. Lullabies were used in a way similar to how they are used in other cultures; as a way to foster a bond with the infant and calm the child to allow for work to be completed (Trehub & Trainor, 1998). Specific musical practices such as naming ceremonies and singing lullabies represent key moments within a woman's journey through the perinatal period that connect her to her community and infant.

4.5.3. Symptoms and treatments.

The majority of symptoms identified were somatic, such as headaches, dizziness, or shaking. This is in line with previous research that has found that somatization of symptoms of mental health disorders and perinatal CMDs is common in African populations (Hanlon, Medhin, Alem, Araya, Abdulahi, Hughes, et al., 2008; Patel,

1998; Senturk et al., 2012). Suggested treatments included a range of biomedical and traditional medicines as well as social help-seeking behaviours.

A qualitative study completed in Ghana interviewed new mothers, fathers and grandmothers about what help-seeking behaviours and coping strategies they or their loved ones used to help reduce perinatal CMD symptoms (Scorza et al., 2015). Researchers found that participants primarily sought help from traditional medical practitioners or religious leaders rather than clinicians at their local health centres (Scorza et al., 2015). While in the current study, participants talked about using both types of medical practitioners, the pluralistic nature of perinatal health care in The Gambia was evident. Many of the suggested treatments or behaviours also involved musical engagement, such as going to a local ceremony with others or listening to and singing a favourite song. This study confirms the roles of CBCs and Kanyeleng as sitting between the different medical traditions in The Gambia (McConnell, 2020; Nyanzi et al., 2010; Telfer et al., 2002) where they provide a vital link between them.

4.5.4. Acceptability of a music intervention for perinatal mental health.

The majority of literature and guidance about successful perinatal mental health interventions in LMICs state non-specialist health workers (NSHWs) should lead them (Chowdhary et al., 2014; Rahman, Fisher, et al., 2013) within the community (Chowdhary et al., 2014; Kohrt et al., 2018) and take into account specific logistical and cultural factors (Chowdhary et al., 2014; Rahman, Fisher, et al., 2013) (reviewed in Chapter 2 Section 2.7). A qualitative study conducted in Uganda asked groups of pregnant and postpartum women and village health teams about their thoughts on the potential feasibility of implementing perinatal mental health care within primary care. Participants highlighted various key considerations (e.g. more training) which needed

to be addressed before they began implementing this service (Nakku et al., 2016). By directly asking people's perceptions of the feasibility and acceptability at this beginning stage of intervention development, specific challenges and desires could be anticipated. Overall, participants believed that a group music intervention to support pregnant women's mental health could be beneficial. However, the content of the music and sessions, working within an under-resourced and under-staffed clinical service, and sustainability were all identified as pressing challenges to consider.

4.5.5. Limitations.

Various areas of potential bias were identified. Firstly, most FGDs were held at health centres and all pregnant participants were recruited from antenatal clinics. This may have led to some participants discussing treatments and concepts believed to be valued within the biomedical model of medicine. In addition, the sample of pregnant women was using the clinics. Therefore, we were not able to sample perceptions from women who were not seeking or could not seek care from the antenatal clinics in the first place. Future research could directly target women who do not use the clinics to better understand how their experiences might be similar or different to those discussed within this current work.

Some participants might have feared disclosing their own experiences of mental health within a focus group environment, especially as mental health problems are stigmatised in The Gambia. To help reassure participants, confidentiality between those within the group was ensured during the consenting process. Participants were also invited to talk about experiences they have heard from others rather than their own personal experiences.

I was present for three out of the 14 FGDs, two with the musicians held at NCAC and one with a pregnant group of women from Brikama. I attended these FGDs as a way to understand the research process and environment. To ensure critical reflexivity, it was necessary to note how my presence as a *toubab,* who does not speak the language, could affect these discussions. The FGD facilitators made sure to introduce me and explain my role as an observer of the research process. Even with this, my presence may have influenced women's responses.

Additionally, the findings presented in the pictorial representation focus only on the potential contributing factors of perinatal mental distress discussed by those who took part in the FGDs. Future research might attempt to build an explanatory model to help further explore the relationships between these factors and their relative contributions. An explanatory model would be able to describe not only the causes of perinatal mental distress in The Gambia but also beliefs around ways to prevent it and appropriate responses and treatment (Kleinman, 1978). This type of explanatory model could be developed through a mixture of open-ended and direct questions, aimed at quantifying the results to investigate potential relationships and associations. For example, these methods could include using the Explanatory Model Interview Catalogue (EMIC) or the Short Explanatory Interview Model (SEMI) (Bhui & Bhugra, 2002).

Finally, all the findings from this qualitative study focused on the detailed experiences and perceptions of the participants involved. Therefore, caution should be taken when applying these current findings to all Gambian women or women from other West African or LMICs.

4.6. Conclusion

Overall, this qualitative study was able to present a rich understanding of women's experiences of perinatal mental distress in The Gambia. Using both an inductive and deductive analysis method allowed for the experiences, meanings and realities of the participants to be understood while also relating their experiences to pre-existing theories (Braun & Clarke, 2006; B. L. Peterson, 2017). Relevant terms and commonly associated symptoms were identified, helping with the translation of the measurement tools used within the next two studies (Chapter 5 and 6). For example, the identified terms *niitooroo* (misery) and *niikuyaa* (sadness) in Mandinka and *naxarr* (sorrow) in Wolof were used in the translation of item 8 on the EPDS (Appendix C). In addition, various symptoms of mental distress identified within the focus groups are included in the SRQ-20. These include headaches (item 1), loss of appetite (item 2), hand shaking (item 5) and stomach aches (item 19). Music was found to be an embedded and essential practice, surrounding the perinatal period and utilized as a helpful behaviour in supporting mental health. Participants felt that a group music intervention, led by local Kanyeleng groups, was an acceptable option for supporting pregnant women's mental health. Overall this first study presents rich context important for measuring antenatal CMD symptoms (Chapter 5) and for testing the feasibility of a community-led music intervention to support antenatal mental health (Chapter 6).

Chapter 5. Measuring Antenatal Common Mental Disorder Symptoms in The Gambia

Abstract

This chapter presents results from a quantitative study that examines if two measurement tools, the EPDS and SRQ-20, can measure CMD symptoms in a Gambian sample of pregnant women. The EPDS and SRQ-20 are used to describe the reported antenatal CMD symptoms from 221 pregnant Gambian women across 10 antenatal clinics. Using translated versions of the tools, CMD symptoms are measured and differences between the two tools are investigated. The SRQ-20 shows a more symmetric distribution and gives higher overall scores. The anxiety symptoms items on the EPDS and the somatic items on the SRQ-20 are the most endorsed. Different cut-off scores are used to explore the potential prevalence of participants with high levels of symptoms. 10% of the participants have an overall score of 10 or above on the EPDS and 52% have a score of 7 or above on the SRQ-20. A low overall agreement (54%) between the two tools is identified. Moreover, no measured demographic factors are found to predict score level on either instrument. This study also aims to compare EPDS scores collected from a pregnant Gambian sample to scores collected from a pregnant UK sample. Differences in distribution and item endorsement are presented. Exploratory factor analyses are used to identify variations in the factor structures of the EPDS. Results point to differences in the expression of CMD symptoms between the two cultures. Finally, the findings are discussed in relation to previous work and implications for the next chapter are presented.

5.1. Background

In high-income countries (HICs), a mental health professional, such as a psychiatrist or clinical psychologist, usually detects perinatal common mental disorders (CMDs) through a clinical interview. This type of detection can be difficult in low- and middle-income countries (LMICs), where the majority of health professionals do not have the time or training to complete clinical interviews (Ali et al., 2016). Self-report

measurement tools can be used to quantify the level of perinatal CMD symptoms within a specific population. The severity of symptoms can act as an indicator of a woman's overall perinatal mental health. The use of these tools to detect perinatal CMD symptoms is helpful in LMICs because it is low-cost and the tools can be administered by non-mental health specialists (Ali et al., 2016; Harpham et al., 2003; Tennyson et al., 2016). A large amount of research has shown that appropriately translated tools are valid and reliable in detecting CMD symptoms in the perinatal period (Tsai et al., 2013). Therefore, within this current research, translated versions of the Edinburgh Postnatal Depression Scale (EPDS; Cox, Holden, & Sagovsky, 1987) and Self-Reporting Questionnaire (SRQ-20; Beusenberg & Orley, 1994) were used. Reasons why these measurement tools were chosen are summarised in Chapter 3 Section 3.5.

5.1.1. Assessing measurement tool validity.

There are different ways researchers can help ensure the validity and reliability of a translated tool. Flaherty et al. (1988) laid out five different types of validity a researcher can attempt to measure when using a translated tool in a new cultural context. These included semantic, technical, content, criterion and conceptual validity. Within this current work, it was not possible to assess all the suggested types of validity, such as criterion validity, due to constraints in the availability of trained professionals to administer clinical interviews. However, some areas of validity could be assessed. For instance, local idioms of mental distress were used when translating both tools. Furthermore, a rigorous translation and back-translation procedure were used. These practices (described in Chapter 4 and Chapter 3 Section 3.5) helped to ensure the semantic validity of the tools' translations (Abubakar, 2015; Cork et al., 2019).

Technical validity was also addressed. Due to the high illiteracy rate of Gambian women, getting written responses was not possible. The EPDS was originally developed as a self-report written questionnaire but has since been successfully orally administered to detect perinatal CMD symptoms within other studies in Africa (Adewuya, Ola, Dada, & Fasoto, 2006; Tesfaye, Hanlon, Wondimagegn, & Alem, 2010; van der Westhuizen et al., 2018). The SRQ-20 was originally designed to be administered orally and in written format (Beusenberg & Orley, 1994). Oral administration of the SRQ-20 has been widely used and validated for detection of perinatal CMD symptoms in other African contexts (Hanlon, Medhin, Alem, Araya, Abdulahi, Hughes, et al., 2008; Hanlon et al., 2015; Scholte, Verduin, Van Lammeren, Rutayisire, & Kamperman, 2011; Stewart et al., 2009). Therefore, oral administration of these two tools could be achieved. To ensure consistency in the delivery of the tools, both research assistants (RAs) took part in a one-day field test at a local antenatal clinic where they were recorded and observed (for a detailed summary see Chapter 3 Section 3.5). The validity of the oral administration of the instruments was assessed through conversations with participants after the field test where any items or processes that were confusing were discussed. Based on these discussions, changes were made in the elocution of the EPDS response format. More specifically, the Likert-scale format of the EPDS was identified as somewhat confusing for many participants. Therefore, the RAs decided to let women answer yes or no first before asking for more detail in correspondence with the Likert-scale response items. Furthermore, the integration of the qualitative results helped increase the tools' content validity. The results from the qualitative study described in Chapter

4 helped to draw connections between the translated items used and local concepts of perinatal mental distress.

5.1.1.1. Cut-off scores, sensitivity and specificity.

The EPDS and SRQ-20 can also be used as screening tools. Screening tools help to identify women who may have a mental disorder. Typically, those who present with high levels of symptoms are referred on to a mental health professional and assessed further (O'Hara & Wisner, 2014). To be able to screen for a CMD an optimum cut-off score or threshold needs to be determined. Participants who are found to reach this threshold are identified as 'cases' indicating the participant most likely has a CMD diagnosis (Public Health England, 2019). The optimum cut-off score is determined through statistical tests of sensitivity and specificity. Sensitivity is the proportion of true positives correctly identified, while specificity is the proportion of true negatives (Altman & Bland, 1994). To assess this, a diagnosis using a 'gold-standard method', such as a clinical interview, is required. While this was not possible in the current study, an exploratory analysis using different previously identified cut-off scores was conducted to examine how the two tools might help describe the potential prevalence of high antenatal CMD symptoms within the current context.

5.1.2. Validated cut-off scores.

Previous research has validated optimum cut-off scores for identifying perinatal CMD within different populations in Africa. Tsai et al. (2013) reviewed 22 studies that used various measurement tools, predominantly the EPDS, to identify perinatal depression in Africa. They showed that a cut-off score of 9 and above on the EPDS had the pooled sensitivity of 94% and specificity of 77%, identifying 9 as the optimum pooled cut-off score to screen for perinatal depression in Africa. Three studies in The Gambia

have used the EPDS to measure depression symptoms (described in detail in Chapter 2 Section 2.6). Coleman et al. (2006) validated, using clinical interview, a score of 10 and above as able to identify cases of depression in women aged 15-45 in The Gambia. They found a cut-off score of 10 or above to have 79% sensitively and 74% specificity. The non-validated cut-off scores of 10 and above and 12 and above have also been used to screen for potential perinatal depression within two other studies in The Gambia (Bartram, 2018; Nabwera et al., 2018).

The SRQ-20 has not been used in The Gambia. However, various cut-off scores have been validated within other African perinatal populations. In two studies conducted in Ethiopia (Hanlon, Medhin, Alem, Araya, Abdulahi, Tesfaye, et al., 2008; Hanlon et al., 2015), the SRQ-20 was validated to identify perinatal CMDs with a cut-off of 6/7 and above. This score had 68% sensitivity and 62% specificity. Another study conducted in Malawi (Stewart et al., 2009) found a cut-off score of 7/8 and above to be optimal for detecting major/minor perinatal depression with 59% sensitivity and 85% specificity.

Identifying optimum cut-off scores that accurately identify someone with probable mental illness can be difficult as they can vary between countries, regions and populations (Sawyer et al., 2010). For example, LMICs usually have lower optimum cut-off scores compared to HICs (Ali et al., 2016). In addition to exploring different relevant cut-off scores, comparing measurement tool performance between two different cultures can help validate the tool while simultaneously investigating potential differences between two cultures.

5.1.3. Cross-cultural comparisons.

Different cultures and settings have distinctive clinical presentations of CMDs, which can be reflected in how various measurement tools perform within these different cultures (Kortmann, 1987). For example, somatization of mental health disorders and perinatal CMDs is common in African populations. This is reflected in the endorsement of certain somatic items on specific measurement tools (Hanlon, Medhin, Alem, Araya, Abdulahi, Hughes, et al., 2008; Patel, 1998; Senturk et al., 2012). The effect of culture on CMD symptom measurement tools has been considered by many researchers, including one of the creators of the EPDS (Cox, 1999). Various cross-cultural studies have used comparative analyses to investigate the validity of a translated version of a measurement tool within a new cultural context (Bass, Ryder, Lammers, Mukaba, & Bolton, 2008; Clifford, Day, Cox, & Werrett, 1999). In a review by Halbreich and Karkun (2006), they specifically investigated the cross-cultural and social diversity of postpartum depressive symptoms. They reviewed 143 studies from HICs and LMICs. The majority of the studies used the EPDS to measure the level of symptoms within their respective populations. The researchers concluded that the variability in reported postnatal depression symptom prevalence was likely due to cross-cultural variables, differences in perceptions of mental health and its stigma, and differences in socio-economic environments such as poverty (Halbreich & Karkun, 2006). Culture not only impacts how an instrument is able to measure perinatal CMD symptoms but also affects the specific factors that might predict a high or low score.

5.1.4. Contributing factors.

Risk and preventative factors associated with poor perinatal mental health have been discussed at length in Chapter 2 Section 2.3. Chapter 4 revealed the contributing

factors specific to Gambian women. Previous studies have identified specific demographic factors that contribute to poor perinatal mental health. However, there is little consensus on what factors are significantly associated, especially in African contexts (Sawyer et al., 2010). Being in a polygamous marriage increased the risk of having perinatal CMD symptoms in Nigeria (Adewuya et al., 2005). Moreover, having a low social economic status was linked to perinatal depression in Ethiopia (Mersha, Abebe, Sori, & Abegaz, 2018). Another study conducted in Ethiopia found that a woman's education level and being unmarried were not associated with perinatal CMD symptoms (Hanlon, Medhin, Alem, Araya, Abdulahi, Hughes, et al., 2008). While some studies have shown parity to be associated with antenatal anxiety and depression symptoms, the association across multiple studies is unclear (Biaggi et al., 2016). In addition to demographic factors, previous research discussed in Chapter 2 Section 2.8 and results from the FGDs presented in Chapter 4, have shown that engaging in musical activities, such as listening to music or participating in music events, can decrease CMD symptoms. Therefore, understanding the association between level of musical enjoyment and engagement and CMD symptoms might help understand the potential relationship between these factors in The Gambia. Overall, quantitative investigation of potential associations between demographic factors, music engagement, and CMD symptoms can help identify potential risk factors and the potential preventative factors for pregnant women in The Gambia.

Overall, previous research has shown that assessing the performance of a translated measurement tool within a new cultural context is important. Assessing the acceptability of the translation and testing a tool's ability to produce variable responses can evaluate the tools' potential cultural validity. Once cultural validity is

addressed the tools can be used to explore the potential prevalence of symptoms within the population of interest. Differences between distinctive instruments and cultures can illuminate the potential impact cultural beliefs, experiences and perspectives have on how self-report tools measure CMD symptoms. Finally, analysing possible associations between demographic factors and antenatal CMD symptom occurrence can help identify potential risk factors for developing CMDs in pregnancy that can inform the development of antenatal mental health interventions.

5.2. Aims and Research Questions

This chapter aims to answer two main research questions: 1) How do two self-report tools measuring CMD symptoms in pregnant women compare in a Gambian sample and 2) How does the performance of the EPDS compare in a Gambian sample versus UK sample?

To understand how the tools compare in a Gambian sample, we aim to:

1) Describe the reported tools' distributions and means

2) Explore how different cut-off scores (identified by previous literature) identify participants with high levels of CMD symptoms

3) Examine the agreement between the two tools

4) Describe the contribution of each item to the total score

5) Investigate how different demographic factors and amount of musical enjoyment and musical engagement might predict levels of symptoms

To understand how the EPDS performs in an antenatal Gambian sample compared to an antenatal UK sample, we aim to:

1) Compare the distributional and descriptive properties of the EPDS scores

2) Investigate differences between item contributions

3) Explore the potential difference in factor structures

5.3. RQ1: Measuring CMD Symptoms in The Gambia

5.3.1. Materials and methods.

5.3.1.1. Participants.

A convenience sample of two hundred twenty-one pregnant women (145 = Mandinka speaking and 76 = Wolof speaking) were assessed. The data comes from two different cohorts recruited in The Gambia. The first cohort (Cohort 1) included women recruited from ten antenatal clinics to test the administration of the measurement tools (n = 97) (setting summarised in Chapter 3 Section 3.4.2). No changes were made in the administration protocol. Therefore a larger sample size was achieved by including the baseline data of the cohort recruited for the feasibility trial (Cohort 2) (n = 124), which will be described in Chapter 6 (setting summarised in Chapter 3 Section 3.4.3). Only women who were fluent in Mandinka or Wolof and had no current or past psychosis were included. There was no restriction in the gestational age (GA) in the recruitment of Cohort 1. All participants recruited for Cohort 2 were restricted to 14-24 weeks GA. The proportion of approached participants who consented or declined was not collected for Cohort 1 but was collected for Cohort 2. This data from Cohort 2 is presented in Chapter 6. Seven of the 10 clinics were within rural areas (more detail about the clinics can be found in Chapter 3 Section 3.3.2).

All participants were between the ages of 18 and 45 (M = 27.08, SD = 5.73) and between 10 and 30 weeks pregnant (M = 21.69, SD = 4.49). Other demographic information was collected including marital status, education level, participants' occupations and their husband's occupation. Additionally, information about their

medical history, including parity (number of births) and gravida (number of pregnancies) was collected. Table 5.1 displays the average age, GA, gravida and number of primiparious (women who are pregnancy for the first time) women. They are displayed by cohort (Cohort 1 and Cohort 2). This information by administrated language (Mandinka and Wolof), by area type (rural and urban) and by clinic can be found in Appendix E Tables E.1a and E.2a.

Table 5.1.

Demographic Information by Cohort

	Total ***n***	**Age** ***M(SD)***	**GA** ***M(SD)***	**Parity** ***M(SD)***	**Gravida** ***M(SD)***	**Primip** ***n(% of total)***
Total	221	27.08 (5.73)	21.69 (4.49)	2.43 (2.10)	3.61 (2.20)	56 (25%)
Cohort 1	97	27.27 (5.87)	22.91 (5.45)	2.34 (2.15)	3.49 (2.25)	29 (30%)
Cohort 2	124	26.95 (5.72)	20.81 (3.32)	2.48 (2.09)	3.68 (2.19)	27 (22%)

Note. GA = Gestational Age. Primip is short for Primiparious (A woman who is pregnant for the first time).

Participants' occupations were grouped into two major categories: housewife (n = 138) and other (n = 82). The two most common occupations included in 'other' were running a small business (n = 36) and farming/gardening (n = 29). There was a wide variety in the different jobs participants' husbands had. These were again grouped into two major categorises: Skilled work (n = 97) (accountant, army, business, civil servant, doctor, fire service, management, *marabout*, nurse, pharmacist, police, student, teacher and technician) and manual or trade work (n = 122) (carpenter, contractor, designer, driver, electrician, farmer, fisherman, guard, head coach, herdsman, hotel work, mechanic, mason, plumber, tailor, welder). Business was the most common category in skilled work (n = 41), and farmer was the most common in

manual/trade work (n = 30). Husbands with no work (n = 5) were included in the manual or trade work category. All categories were informed by the categorizations used by the Ministry of Health and Social Welfare (MoHSW) in The Gambia. Table 5.2 displays the participant's marital status, education level, occupation and their husband's occupation displayed by cohort (Cohort 1 and Cohort 2). This information by administrated language (Mandinka and Wolof), by area type (rural and urban) and by clinic can be found in Appendix E Tables E.1b and E.2b.

Table 5.2.

Categorical Demographic Information by Cohort

	Total *n (% of 221)*	**Cohort 1** *n (% of 97)*	**Cohort 2** *n (% of 124)*
Marital Status			
Single/Divorced/ Widowed	6 (3%)	1 (1%)	5 (4%)
Married (Monogamous)	160 (72%)	77 (79%)	83 (67%)
Married (Polygamous)	55 (25%)	19 (20%)	36 (29%)
Education Level			
None	13(6%)	8 (8%)	5 (4%)
Informal (Arabic)	101 (46%)	39 (40%)	62 (50%)
Primary	29 (13%)	10 (10%)	19 (15%)
Secondary/Tertiary	78 (35%)	40 (41%)	38 (31%)
Occupation			
Housewife	138 (62%)	66 (68%)	72 (58%)
Other	82 (37%)	30 (31%)	52 (42%)
Husband's Occupation			
Skilled work	97(44%)	50 (52%)	47 (38%)
Manual/Trade Work	122 (55%)	45 (45%)	77 (62%)

Note. Housewife includes women who stated they did not have a job ("None")

There were no differences between the two cohorts in terms of age, parity, gravida, marital status, education, and participants' occupation. However, there was a difference in husband's occupation (X^2 (1) = 4.7, p < 0.05) with more husbands in manual and trade work in those recruited from Cohort 2 than in Cohort 1. Moreover,

Cohort 1 had a higher gestational age (M = 22.91, SD = 5.45) than Cohort 2 (M = 20.81, SD = 3.32) ($t(150) = 3.34$, $p < 0.001$, 95% CIs [.859, 3.34]). This was likely due to the afore-mentioned difference in inclusion criterion. A discussion of the differences between administered language and area type can be found in Appendix E.

Three questions were asked to understand how much participants engaged and enjoyed musical activities. Women responded using a 7-point Likert-scale. The first question was: *I enjoy participating in group music activities* with an answer choice from 1 = completely disagree to 7 = completely agree. The average score for enjoyment was 5.02 (SD = 1.91) showing that on average most participants agreed that they enjoy group music activities. The next two statements asked how often they listen to music (*I listen attentively to music for __ per day*) and how often they attend an event that involves music *(I participate in an event that involves music _____ times per month).* The higher the score on the Likert-scale, the more time they reported spending on listening to and participating in music activities. A mean score was 3.41 (SD = 2.15) for the listening item indicating that, on average, participants listened to music for about an hour a day. A mean score of 1.7 (SD = 1.47) on the last item indicated, on average, participants attend one event that involved music a month. No significant differences between the two cohorts were identified.

5.3.1.2. Measurement tools.

Two different tools were used to measure antenatal CMD symptoms in our sample: the Edinburgh Postnatal Depression Scale (EPDS) and the Self-Reported

Questionnaire (SRQ-20). A full description of both scales is summarised in Chapter 3 Section 3.5.2.

The EPDS (Cox et al., 1987) is a ten-item scale that is able to measure antenatal depression and anxiety symptoms (Kozinszky & Dudas, 2015). Participants answer on a four-point Likert-scale (from 3 - 0) how often they have experienced a specific symptom within the last week (See the English EPDS in Appendix A). The scale, although generally measuring depression, includes three anxiety and seven depression items. The three anxiety items have been shown to form a valid anxiety subscale (EPDS-3; Matthey et al., 2013; Mitchell, 2009). Three items (1, 2, and 4) were reverse coded. Scoring a higher total score, out of a total of 30, meant the participant is experiencing more anxiety and depression symptoms.

The SRQ-20 (Beusenberg & Orley, 1994) is a 20-item scale which measures CMD symptoms in a variety of cultural contexts. It was primarily developed to be used in primary care settings but has also been used in the perinatal period (Hanlon, Medhin, Alem, Araya, Abdulahi, Hughes, et al., 2008; Sawyer et al., 2011; Stewart et al., 2009). The SRQ-20 includes items measuring common somatic symptoms associated with anxiety and depression (headaches, low appetite, poor digestion, and sleep) as well as psychological and physical symptoms (feeling frightened, unhappy, worthless, and low-energy) (Beusenberg & Orley, 1994; Stewart et al., 2009). To each item, participants answer either yes = 1 or no = 0 (see English SRQ-20 in Appendix A). The scores range from 0-20 with a higher score indicating higher levels of CMD symptoms.

Both scales were translated into Mandinka and Wolof. The translation method used was based on suggestions from the WHO (World Health Organization, 2014), Hanlon et al. (2008), and Cox, Holden and Henshaw (2014). First, the scales were translated into Mandinka and Wolof by bilingual experts drawing on terms identified from the previously discussed focus group discussions (FGDs) (Chapter 4). An expert panel discussion then refined the translation. Both were then back-translated into English and reviewed again by the expert panel that developed the final version. For a more detailed description of how the tools were translated, see Chapter 3 Section 3.5.2.2. The final translated scales in both Mandinka and Wolof can be found in Appendix C.

5.3.1.3 Procedure.

Ten clinics were chosen across the western area of The Gambia to represent a range of settings (summarised in Chapter 3 Table 3.2). Half of the clinics were in predominantly Wolof speaking areas and half were in Mandinka speaking areas. The clinics were contacted and given information about the study, and the procedure was explained. A date and time was then agreed where the RAs could come to collect data on a clinic day.

The Gambia has a high illiteracy rate. Therefore, all correspondence with the participants was done orally. The midwives working at each clinic identified participants based on their medical history and GA. They were then sent to the RAs who screened them based on their age and language. If they met the criterion, they were given more information about the study. Informed consent was then obtained via signature or thumbprint. The information sheet and consent form for Cohort 1 can be

found in Appendix F. The information sheet and consent form used for Cohort 2 can be found in Appendix G.

After consent was granted, participants' EPDS and SRQ-20 scores were collected orally. Both RAs are trained in psychiatric nursing and one is also a midwife. Therefore, both had experience working with the target population. Both RAs' first language is Wolof, but both have intermediate to advanced speaking ability in Mandinka. Both were extensively trained to administer both scales and tested for consistency throughout the research process. For more details, see Chapter 3 Section 3.5.2.2. Once all the data was collected, the participants were debriefed (See Appendix I for the debriefing sheet used). If any responses from the participants suggested a need for more support, the RAs were able to give participants immediate counselling and refer her to other services if needed. See Chapter 3 Section 3.7 for more details about how disclosure and other ethical considerations were managed.

5.3.1.4. Statistical analysis.

All data were recorded on paper in the field. The data were then entered and double-checked for entry error by both RAs. All statistical analysis was run using R (R Core Team, 2013) and all visualizations were created using the *ggplot2* package in R (Wickman, 2016).

One RA made a mistake in the pronunciation of EPDS item 3 in Mandinka. This mistake was detected on December 24th, 2018. The word *jalai* meaning blame in Mandinka was being pronounced to sound like *jele* meaning laugh. This changed the items meaning from "Have you blamed yourself unnecessarily when things went

wrong?" to "Have you laughed at yourself unnecessarily when things went wrong?". Therefore, item 3 of any EPDS score collected by this RA in Mandinka before this date was deleted and treated as missing. This resulted in 90 missing values. Using *MICE* package in R (van Buuren & Groothuis-Oudshoorn, 2011) multiple imputation was performed using a predictive mean matching method.

Predictive mean matching calculates the predicted value of the target variable (in this case EPDS item 3) according to the specified imputation model. The model used included all quantitative demographic information collected, including age, GA, parity and gravida. For each missing entry, the method creates a small set of candidate donors from all complete cases. Then, randomly one value from a donor, whose predicted value is closest to the predicted value for the missing entry, is chosen to replace the missing value. This method assumes that the distribution of the missing value is the same as the observed data from the candidate donors (van Buuren & Groothuis-Oudshoorn, 2011). Based on suggestions by van Buuren & Groothuis-Oudshroon (2011), fifty iterations were completed. This created the imputed data set used to fill in the missing EPDS item 3 data. The imputed data set was used for the remainder of the analyses.

Descriptive statistics, including mean, median, and range were calculated to help describe the total EPDS and SRQ-20 scores. Histograms were used to help understand the distributions of the scores and compare the two tools. The overall correlation between the two tools was examined using a Spearman's correlation test.

Three cut-off scores for each tool were chosen based on previous research to help describe the proportion of participants with high levels of symptoms. The percentage of participants at or above each cut-off score was calculated as well as plotted on top of histograms to visualise any differences between the two tools. Proportions of specific agreement and kappa's were calculated based on methods explained by Cicchetti & Feinstein (1990) and Uebersax, (2011). Kappa's were calculated using the *irr* package in R (Gamer, Lemon, Fellows, & Singh, 2019).

Descriptive statistics were calculated to understand which items on both scales were most endorsed. The average score of the EPDS-3 subscale (Mitchell, 2009) was calculated, and its contribution to the total EPDS score was found. To explore the impact of the somatic SRQ-20 items, the average score of the combined somatic items and their contribution to the total score was calculated.

To investigate how different demographic factors and level of musical engagement might predict levels of symptoms on both tools, two Least Absolute Shrinkage and Selection Operator (LASSO) regressions were performed for both instruments. A LASSO regression is a type of penalized logistic regression that imposes a penalty on the logistic model when you have too many predictor variables. This results in shrinking the coefficients that contribute very little to the model to exactly zero leaving only the most significant variables in the model (Tibshirani, 1996). This helps protect from overfitting the model. To help account for any potential non-linear relationships, a Generalised Additive Model LASSO (GAMLASSO) was performed using the *plsmselect* package in R (Ghosal & Kormaksson, 2019).

5.3.2 Results.

5.3.2.1. Summary of EPDS and SRQ-20 scores.

The overall mean EPDS score was 4.36 (*SD* = 3.74) and the mean SRQ-20 score was 7.02 (*SD* = 3.96). Using independent samples t-tests, no significant differences in the EPDS or SRQ-20 scores were found by recruitment cohort (Cohort 1 vs. Cohort 2), language group (Mandinka vs. Wolof), or area type (Rural vs. Urban). An independent samples t-test was also used to investigate any differences between the scores recorded by each RA. No significant differences between administrators (HH vs. MG) were found. Table 5.3 displays the EPDS and SRQ-20 scores overall, by different demographic factors, and by who administered the tools. To view the scores by clinic, marital status, education, participant occupation and husband occupation, see Appendix E Tables E.3a and E.3b.

Table 5.3.

EPDS and SRQ-20 Scores by Cohort, Language, Administrator and Area Type

EPDS Total Score	*n*	***M(SD)***	***Median***	***Range***
Overall	221	4.36 (3.74)	4	0 – 20
Cohort				
Cohort 1	97	4.68 (3.25)	4	0 – 15
Cohort 2	124	4.11 (4.08)	3	0 – 20
Language Group				
Mandinka	145	4.43 (3.82)	4	0 – 20
Wolof	76	4.24 (3.61)	4	0 – 15
Area Type				
Urban	89	4.87 (3.69)	4	0 – 15
Rural	132	4.02 (3.75)	3	0 – 20
Administrator				
HH	105	4.06 (3.68)	4	0 – 19
MG	116	4.64 (3.79)	4	0 – 20

SRQ20 Total Score	*n*	***M(SD)***	***Median***	***Range***
Overall	221	7.02 (3.96)	7	0 – 17
Cohort				
Cohort 1	97	6.72 (3.91)	7	0 – 17
Cohort 2	124	7.26 (4.01	7	0 – 16
Language Group				
Mandinka	145	7.33 (4.01)	7	0 – 16
Wolof	76	6.43 (3.83)	6	0 – 17
Area Type				
Urban	89	6.89 (3.73)	6	0 – 16
Rural	132	7.11 (4.13)	7	0 – 16
Administrator				
HH	105	6.97 (3.96)	7	0 – 17
MG	116	7.07 (3.98)	6.5	0 – 16

The EPDS and SRQ-20 score distributions are displayed in Figure 5.1. The distribution of the EPDS total scores was highly positively skewed (skewness = 1.37) with more participants reporting few antenatal anxiety and depression symptoms. The SRQ-20 scores were approximately symmetric (skewness = 0.31). The overall total scores for both scales are significantly moderately correlated $r_s = 0.59$, $p < 0.001$ (Figure 5.2)

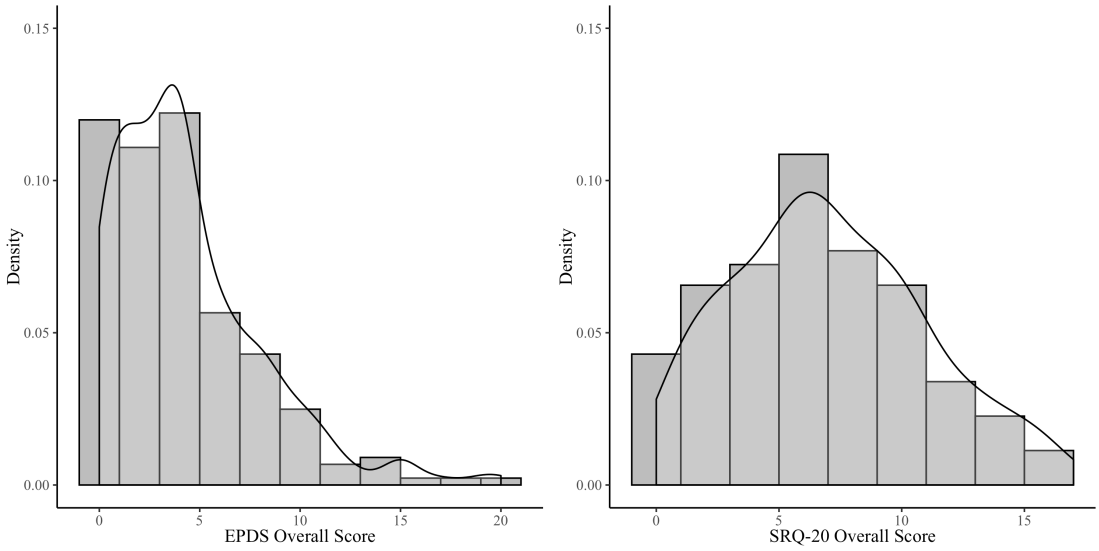

Figure 5.1. Histograms of EPDS and SRQ-20 total scores. (*n* = 221).

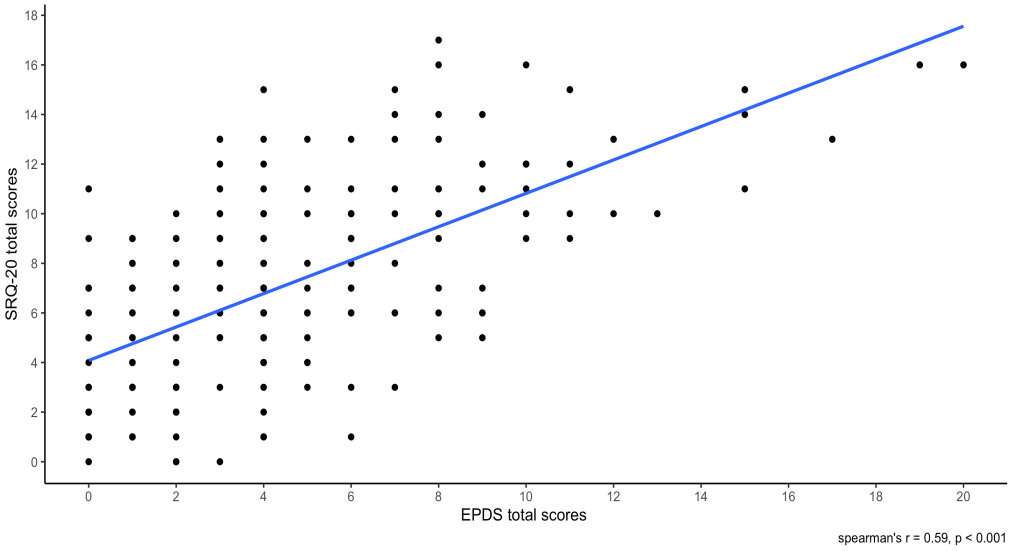

Figure 5.2. Scatterplot of the correlation between EPDS and SRQ-20 total scores.

5.3.2.2. Investigating cut-off scores and agreement.

A descriptive analysis was conducted to investigate how different cut-off scores, chosen based on previous literature, describe the sample and compare between the two tools. Three cut-off scores were chosen for each tool. Nine, 10 and 12 were chosen for the EPDS. Nine was chosen because a previous review article had

determined it to be an optimum cut-off score to detect perinatal depression in African settings (Tsai et al., 2013). Ten and 12 were chosen because they were used in three previous studies measuring depression and perinatal depression in The Gambia (Bartram, 2018; Coleman et al., 2006; Nabwera et al., 2018).

Six, 7 and 8 were chosen for the SRQ-20. These were chosen based on previous research that measured perinatal CMD symptoms in Ethiopia and Malawi (Hanlon, Medhin, Alem, Araya, Abdulahi, Hughes, et al., 2008; Stewart et al., 2009). Figure 5.3 visualises the proportion of participants with a score matching or above the chosen cut-off scores. Table 5.4 presents the total number of participants with a score matching or above the chosen cut-off scores for both tools.

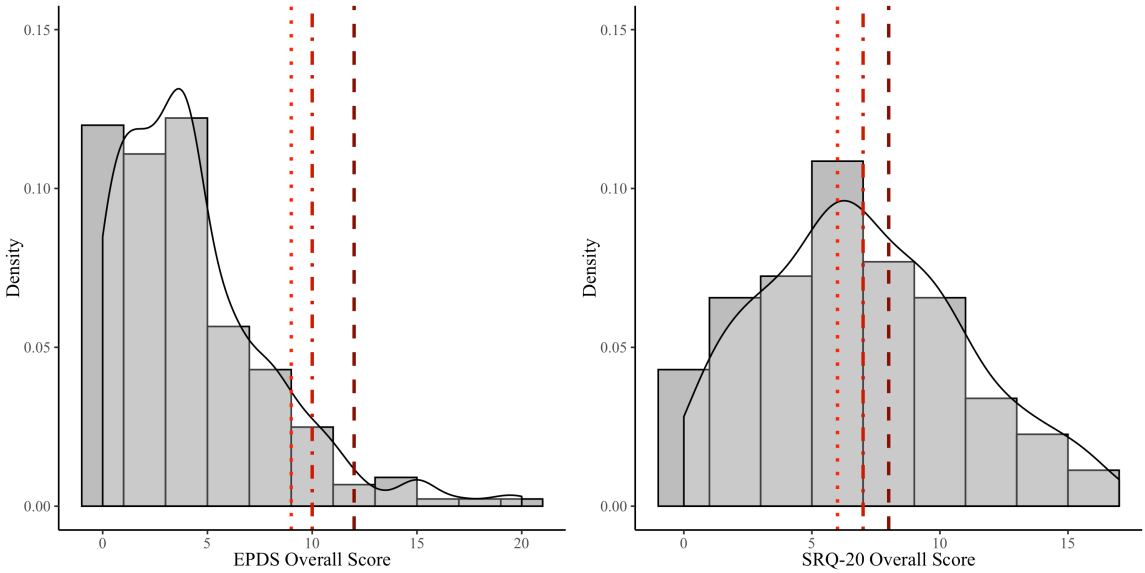

Figure 5.3. Histogram of different cut-off scores for EPDS and SRQ-20. (n = 221)

Table 5.4.

High Symptoms Prevalence Based on Cut-off Scores

Scale	Cut-off	*n* ≥ cut off (%)
EPDS	12	10 (5%)
EPDS	10	21 (10%)
EPDS	9	28 (13%)
SRQ20	8	93 (42%)
SRQ20	7	114 (52%)
SRQ20	6	141 (64%)

Overall, a larger proportion of women were above the cut-offs used for the SRQ-20 (42–64%) compared to the EPDS (5–13%). To assess if a participant whose score was matching or above the cut-off of one tool (identified as a 'case') was also identified as a 'case' on the other tool, proportions of specific agreement and kappa's were calculated (Table 5.5).

Table 5.5.

Proportions of Specific Agreement and Kappa's

Cut-offs compared	Positive Agreement *n* (%)	Negative Agreement *n* (%)	Overall Agreement *n* (%)	Dis-agreement *n* (%)	Cohen's Kappa
EPDS ≥ 12 & SRQ20 ≥ 8	10 (19%)	128 (76%)	138 (60%)	83 (36%)	0.12
EPDS ≥ 12 & SRQ20 ≥ 7	10 (16%)	107 (67%)	117 (51%)	104 (45%)	0.09
EPDS ≥ 12 & SRQ20 ≥ 6	10 (13%)	80 (55%)	90 (39%)	131 (57%)	0.05
EPDS ≥ 10 & SRQ20 ≥ 8	21 (37%)	128 (78%)	149 (65%)	72 (31%)	0.25
EPDS ≥ 10 & SRQ20 ≥ 7	21 (31%)	107 (70%)	128 (56%)	93 (41%)	0.18
EPDS ≥ 10 & SRQ20 ≥ 6	21 (26%)	80 (57%)	101 (44%)	120 (52%)	0.11
EPDS ≥ 9 & SRQ20 ≥ 8	24 (40%)	124 (77%)	148 (65%)	73 (32%)	0.25
EPDS ≥ 9 & SRQ20 ≥ 7	25 (35%)	104 (69%)	129 (56%)	92 (40%)	0.19
EPDS ≥ 9 & SRQ20 ≥ 6	27 (32%)	79 (58%)	106 (46%)	115 (50%)	0.14
Average Agreement	**28%**	**67%**	**54%**	**43%**	

Note. Percent positive agreement = 2(number both ≥ cut off)/2(number both ≥ cut off) + total number of disagreement; Percent negative agreement = 2(number both ≤ cut off)/2(number both ≤ cut off) + total number of disagreement (Cicchetti & Feinstein, 1990)

Overall, there was low agreement between the two tools (kappa's ranging from 0.05-0.25). The average positive agreement, when both scales detected a 'case', was low (28%). Negative agreement, when both did not identify a 'case', was higher (67%). The average overall agreement, positive and negative agreement combined, was 54%. The highest positive agreement (40%) and kappa (0.25) was between the lowest EPDS cut-off of 9 and the highest SRQ-20 cut-off of 8.

5.3.2.3. Item Analysis.

The average score for each EPDS item and the frequency of 'Yes' responses for each SRQ-20 item are displayed in Figure 5.4.

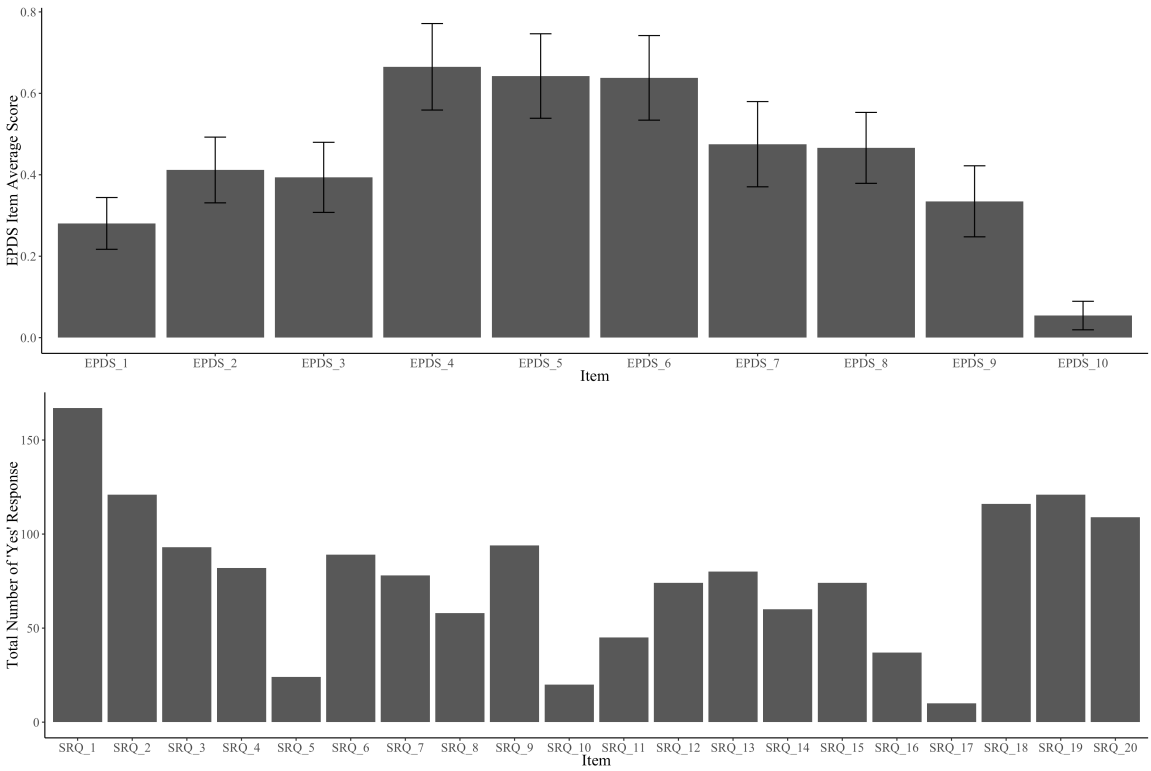

Figure 5.4. Bar graph of EPDS and SRQ-20 scores per item. The top bar graph displays the mean score per item on the EPDS where the error bars indicate the 95%

CIs. The bottom bar graph displays the frequency of "yes" responses to each item on the SRQ-20. The questions for each item are given in Table 5.6.

The bar graph shows that EPDS items 4 (*I have been anxious or worried for no good reason*), 5 (*I have felt scared or panicky for no good reason*) and 6 (*Things have been getting on top of me*) were the most endorsed. SRQ-20 items 1 (*Do you often have headaches?*), 2 (*Is you appetite poor?*), and 19 (*Do you have uncomfortable feelings in your stomach?*) were the most endorsed followed closely by 18 (*Do you feel tired all the time?*) and 20 (*Are you easily tired?*).

A description of the mean score per item on the EPDS and the frequency of 'Yes' responses to each SRQ-20 item can be found in Table 5.6. The EPDS includes an anxiety subscale (EPDS-3) consisting of items 3, 4 and 5 (Mitchell, 2009). While no subscales have been identified within the SRQ-20, it consists of two categories of items; somatic and physiological/cognitive/functional (Stewart et al., 2009). Each subscale or item category average score is displayed in Table 5.6.

Table 5.6.

EPDS and SRQ-20 Item, Subscale/Item Category Average/Frequency

EPDS Item		***M (SD)***
1	I have been able to laugh and see the funny side of things	0.28 (0.48)
2	I have looked forward with enjoyment to things	0.41 (0.61)
3	I have blamed myself unnecessarily when things went wrong	0.39 (0.65)
4	I have been anxious or worried for no good reason	0.67 (0.80)
5	I have felt scared or panicky for no good reason	0.64 (0.78)
6	Things have been getting on top of me	0.64 (0.78)
7	I have been so unhappy that I have had difficulty sleeping	0.48 (0.79)
8	I have felt sad or miserable	0.47 (0.66)
9	I have been so unhappy that I have been crying	0.33 (0.66)
10	The thought of harming myself had occurred to me	0.05 (0.26)
Subscales		***M (SD)***
3–5	[#]Anxiety Subscale (EPDS-3)	1.7 (1.67)
1, 2, 6–10	Other Items	2.66 (2.55)

SRQ20 Item		**Yes *n* (%)**
1	Do you often have headaches?	167 (76%)
2	Is your appetite poor?	121 (55%)
3	Do you sleep badly?	93 (42%)
4	Are you easily frightened?	82 (37%)
5	Do your hands shake?	24 (11%)
6	Do you feel nervous, tense or worried?	89 (40%)
7	Is your digestion poor?	78 (35%)
8	Do you have trouble thinking clearly?	58 (26%)
9	Do you feel unhappy?	94 (43%)
10	Do you cry more than usual?	20 (9%)
11	Do you find it difficult to enjoy your daily activities?	45 (20%)
12	Do you find it difficult to make decisions?	74 (33%)
13	Is your daily work suffering?	80 (36%)
14	Are you unable to play a useful part in life?	60 (27%)
15	Have you lost interest in things?	74 (33%)
16	Do you feel that you are a worthless person?	37 (17%)
17	Has the thought of ending your life been on your mind?	10 (5%)
18	Do you feel tired all the time?	116 (52%)
19	Do you have uncomfortable feelings in your stomach?	121 (55%)
20	Are you easily tired?	109 (49%)
Item Category		***M (SD)***
1–3, 5, 7, 18–20	*Somatic Symptoms	4.01 (2.00)
4, 6, 8, 9–17	*Psychological/cognitive/functional Symptoms	3.01 (2.52)

Note. [#] EPDS-3 subscale (Mitchell, 2009) *Categorisation of items based on Stewart et al., 2009

The EPDS item scores were low with a mean range of 0.05 – 0.67. The anxiety subscale had a lower average score (M = 1.7, SD = 1.67) than the rest of the EPDS items (M = 2.66, SD = 2.55). Two of the most endorsed items were within the anxiety subscale (4 and 5). However, the anxiety subscale did not contribute more to the total score than the rest of the EPDS items. The anxiety subscale contributed, on average, to 39% of the total EPDS score, while the other items contributed 61%.

On average, 34% of participants answered "Yes" to each SRQ-20 items. The somatic symptoms items had a higher average score (M = 4.01, SD = 2.00) than psychological/cognitive/functional symptom items (M = 3.01, SD = 2.52). The somatic symptom items contributed more (67%) to the total SRQ-20 score than the psychological/cognitive/functional symptom items (37%).

5.3.2.4. Investigating possible predictors.

To investigate how different demographic factors and level of musical engagement might predict scores on each tool, LASSO regressions were completed. Two different models were fitted, one investigating predictors of participants' EPDS total score and another of SRQ-20 total scores. The 12 predictors included in both models were: Age, GA, Language (Mandinka or Wolof), Parity Category (Primiparous or Multiparous), Pregnancy Loss (calculated by subtracting Parity from Gravida), Marital Status (Single/Divorced/Widowed, Married monogamous or Married polygamous), Education (None, Informal, Primary or Secondary/Tertiary), Area Type (Rural or Urban), Occupation (Housewife or Other), Husband's Occupation (Skilled or Manual/Trade work), Group (Cohort 1 or Cohort 2), and Total Music Score (Sum of

responses to all three music questions with a higher score out of 21 indicating more enjoyment and music engagement).

Variance-inflation factors (VIF) were calculated for the continuous predictors, and generalized variance-inflation factors (GVIF) were calculated for the categorical predictors. Both VIF and GVIF were used to check for multicollinearity between the predictors. A VIF above 4 or GVIF above 2.24 indicates that multicollinearity is present (Dormann et al., 2012; J. Fox & Monette, 1992). A correlation matrix (Appendix E Figure E.1), which included correlation coefficients and bivariate scatterplots, was inspected to ascertain any significant correlations between the predictors and to determine if there was a linear relationship between the continuous variables and the outcome variables. No multicollinearity or significant correlations were detected. However, non-linear relationships were found between Age, GA and Total Music and the two outcome measurements (EPDS and SRQ-20 total scores). Therefore GAMLASSOs were performed to help account for these non-linear relationships. The GAMLASSO regressions showed no significant associations between EPDS or SRQ-20 total scores and a participants overall music engagement score or any of the demographic factors collected.

5.3.2.5. RQ1 results summary.

In summary, the two measurement tools, EPDS and SRQ-20, performed differently within our sample. Firstly, a difference in the tools' distributions was identified. The SRQ-20 scores showed a more normal distribution, while the EPDS scores were positively skewed with the majority of participants having low overall scores (M = 4.36, SD = 3.77). Differences between the instruments were also identified when

using different cut-offs scores. Both tools identified a wide range of participants whose scores matched or were above chosen thresholds. Few women were identified as potential 'cases' using the EPDS (5% – 13%) compared to the SRQ-20 (42% – 64%). An item analysis identified the most endorsed items for each tool and was able to calculate what proportion of the total scores were attributed to the different types of items. The most endorsed items on the EPDS were anxiety items (items 4 and 5) while the most endorsed on the SRQ-20 were somatic items (items 1, 2 and 19). While the anxiety subscale (EPDS-3) contributed less to the overall EPDS score (39%) compared to the other items (61%), the somatic symptom items of the SRQ-20 contributed to 63% of the total score. Finally, the predictive models found that level of musical engagement and different demographic factors, some of which were identified as associated with perinatal CMD symptoms in previous research (e.g. marital status, parity), were not associated or predictive of antenatal CMD symptoms within our sample. Overall, these results show that both the EPDS and SRQ-20 can be used to measure antenatal CMD symptoms within a Gambian setting. However, they perform differently, potentially illuminating differences in the constructs being measured and how CMD symptoms are expressed in Gambian pregnant women.

5.4. RQ2: EPDS Performance in The Gambia Compared to the UK

5.4.1. Materials and methods.

5.4.1.1. Participants.

Three hundred and fourteen women living in the United Kingdom (UK), between the ages of 19 and 46 (M = 33.4, SD = 4.34), were recruited from Queen Charlotte's hospital in London. Another research team recruited these participants between 2013-2014 as part of another study. The average GA was 21.07 (SD = 1.35), and the average number of children participants had was 1.48 (SD = 0.73). Other

demographic information was collected, including participants' marital status, education, occupation and ethnic group. Table 5.7 displays the demographic data for the UK cohort. The Gambia cohort was the same as that used within the previous analysis for RQ1 (Section 5.3, Tables 5.1 and 5.2).

Table 5.7.

Demographic Information for UK Sample

	M(SD)
Age	33.4 (4.34)
GA	21.07 (1.35)
Parity	1.48 (0.73)
Gravida	2.03 (2.03)
	n(% out of 314)
Marital Status	
Married/Civil Partnership	233 (74%)
Living with Partner	64 (20%)
Single	11 (4%)
Other	6 (2%)
Education Level	
Left before GCSE/O-Levels	2 (1%)
GCSE/O-Levels	16 (5%)
A-Levels	23 (7%)
Vocational Training	13 (4%)
University Degree	159 (51%)
Higher Degree	102 (32%)
Occupation	
Professional	197 (63%)
Managerial	46 (15%)
Skilled Non-Manual	16 (5%)
Skilled Manual	13 (4%)
Partly Skilled	10 (3%)
Not Applicable	22 (7%)
Other	10 (3%)
Ethnic Group	
Caucasian	209 (67%)
Indian/Pakistani/Bangladeshi	21 (7%)
Middle Eastern	12 (4%)
Afro/Afro-Caribbean	12 (4%)
South American/Hispanic	4 (1%)
Far Eastern	3 (1%)
Mixed	12 (4%)
Other	41 (13%)

Note. General Certificate of Secondary Education (GCSE)

Not all demographic factors could be compared between the Gambian and UK cohorts due to differences in categorization. However, UK participants were

significantly older ($t(386.44) = 13.737$, $p < 0.001$, 95%CIs [5.40, 7.21]) and had fewer children ($t(257.17) = 6.3316$, $p < 0.001$, 95%CIs [0.64, 1.22]) and pregnancies ($t(326.69) = -9.48$, $p < 0.001$, 95%CIs [2.03, 3.59] than the Gambian participants.

5.4.1.2. Measurement tools.

EPDS scores were collected in both cohorts. The EPDS used for the Gambian group is described in RQ1 Section 5.3. The English version of the EPDS was used for the UK cohort (Appendix A).

5.4.1.3. Procedure.

The procedure followed for the Gambian cohort is the same as described in RQ1 Section 5.3. Ethical approval for the recruitment of the UK sample was granted through the NHS ethics committee and women gave informed consent before taking part in the research. UK participants were recruited for a study that aimed to investigate whether there was an association between antenatal maternal mood and choice of infant feeding method, breastfeeding duration, and coping with breastfeeding problems. EPDS scores were measured online at three times during pregnancy: 20, 28 and 36 weeks gestation. For this current study, only the scores collected at 20 weeks were used.

5.4.1.4. Statistical analysis.

All statistical analysis was run using R (R Core Team, 2013). All visualizations were created using the *ggplot2* package (Wickman, 2016). Differences in the distributional and descriptive properties of the EPDS were examined. Differences in the most endorsed items between the two samples were investigated using independent

samples t-tests. To adjust for multiple comparisons, a Bonferroni correction was applied. The contribution of the EPDS-3 subscale to the total EPDS score was calculated for the UK and Gambian samples and compared. Two exploratory factor analyses (EFA) were performed to investigate the underlying pattern of the relationships between the ten observed items within the EPDS (Baglin, 2014). A principal axis factoring extraction method was used as this method accounts for skewed data and is not bound to any distributional assumptions (Baglin, 2014). Polychoric correlations were used to account for the ordinal nature of the data, and an oblique rotation was chosen as correlations between factors was likely to exist (Baglin, 2014). Two EFAs, one for each sample's EPDS scores, were conducted using the *GPArotation* package in R (Bernaards & Jennrich, 2005). Differences in the potential factor structures were explored

5.4.2. Results.

5.4.2.1. Summary and comparison of EPDS Items and Scores.

The UK average EPDS score (M = 6.51, SD = 4.37) was significantly higher than the Gambian average EPDS score (M = 4.36, SD = 3.74) (t (519.63) = 6.34, $p < 0.001$ 95%CIs [1.54, 2.84]) (Table 5.8). The distributions of the scores were also different. The UK scores were slightly positively skewed (skewness = 0.63), while the Gambian EPDS scores were highly positively skewed (skewness = 1.37) (Figure 5.5).

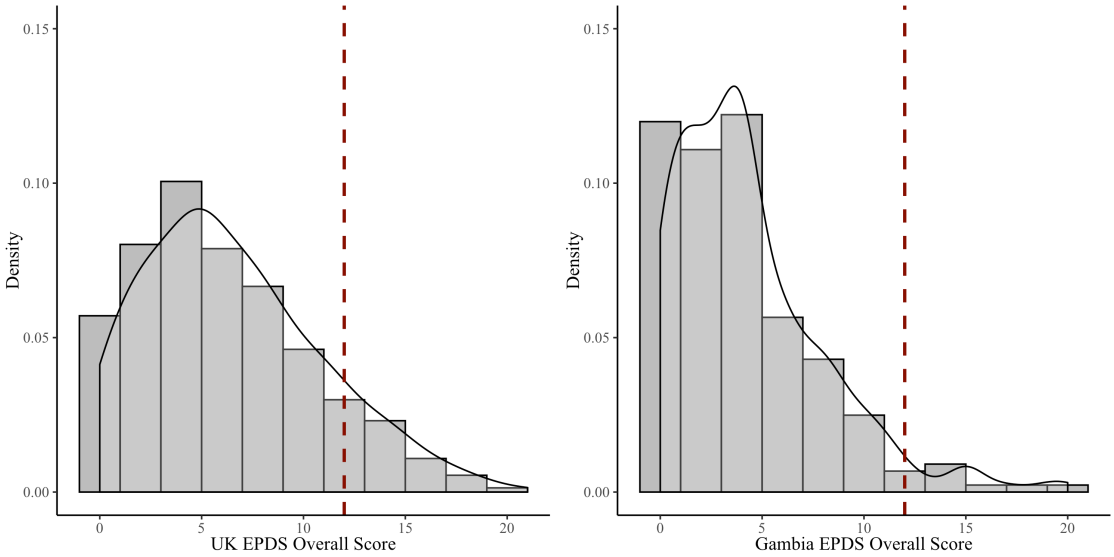

Figure 5.5. EPDS distributions and cut-off score for UK and Gambia samples. The dashed red line represents a cut-off score of 12. 16% of those in the UK sample are above or at this cut-off while only 5% of The Gambia sample are at or above this cut-off.

Significant differences between some of the items were found between the two samples' scores. The Gambia sample had a significantly higher average score on item 2 (M = 0.41, SD = 0.61) compared to the UK sample (M = 0.25, SD = 0.52), (t(405.51) = 3.24, p < 0.004 95%CIs [0.26, 0.06]). For all other significant differences between the items, the UK sample had a higher item average compared to the Gambia sample. Table 5.8 displays all the item averages and also indicates all significant differences. The EPDS-3 anxiety subscale average was significantly higher for the UK sample (M = 3.49, SD = 2.03) compared to the Gambia sample (M = 1.7, SD = 1.67) (t (531.94) = 11.60, p < 0.004, 95%CIs [1.49, 2.09]). The anxiety subscale score also contributed more (60%) to the total EPDS score in the UK sample compared to the Gambia sample (39%).

Table 5.8.

EPDS Item and Subscale Averages for the UK and Gambia Samples

		UK Sample	**Gambia Sample**
Item #		***M*(SD)**	***M*(SD)**
1	I have been able to laugh and see the funny side of things	0.19 (0.45)	0.28 (0.48)
2	I have looked forward with enjoyment to things*	0.25 (0.52)	0.41 (0.61)
3	I have blamed myself unnecessarily when things went wrong*	1.22 (0.78)	0.39 (0.65)
4	I have been anxious or worried for no good reason*	1.35 (0.87)	0.67 (0.80)
5	I have felt scared or panicky for no good reason*	0.92 (0.84)	0.64 (0.78)
6	Things have been getting on top of me*	0.98 (0.79)	0.64 (0.78)
7	I have been so unhappy that I have had difficulty sleeping	0.41 (0.69)	0.48 (0.79)
8	I have felt sad or miserable*	0.64 (0.67)	0.47 (0.66)
9	I have been so unhappy that I have been crying	0.47 (0.61)	0.33 (0.66)
10	The thought of harming myself had occurred to me	0.07 (0.31)	0.05 (0.26)
3–5	Anxiety Subscale (EPDS-3)*	3.49 (2.03)	1.7 (1.67)
1, 2, 6–10	Other Items	3.02 (2.89)	2.66 (2.55)
	Total Score*	**6.51 (4.37)**	**4.36 (3.74)**

Note. Bonferroni adjusted alpha level of .004 was used per test (.05/13). **indicates a significant difference at $p < 0.004$*

5.4.2.2. Comparison of the factor structures of the EPDS.

An EPA was performed to investigate potential differences in the dimensionality of the EPDS between the two samples. A parallel analysis was conducted and plotted on a scree plot to help determine the number of factors present for each sample's data (Baglin, 2014). Inspection of the screen plots (Appendix E Figures E.2a and E.2b) and the parallel analysis indicated the presence of 3 factors for both the UK and Gambia

samples. The item loadings to each factor were different between the two samples (Figure 5.6). The factor loadings can be found in Table 5.9.

UK Sample Factor Structure **The Gambia Factor Structure**

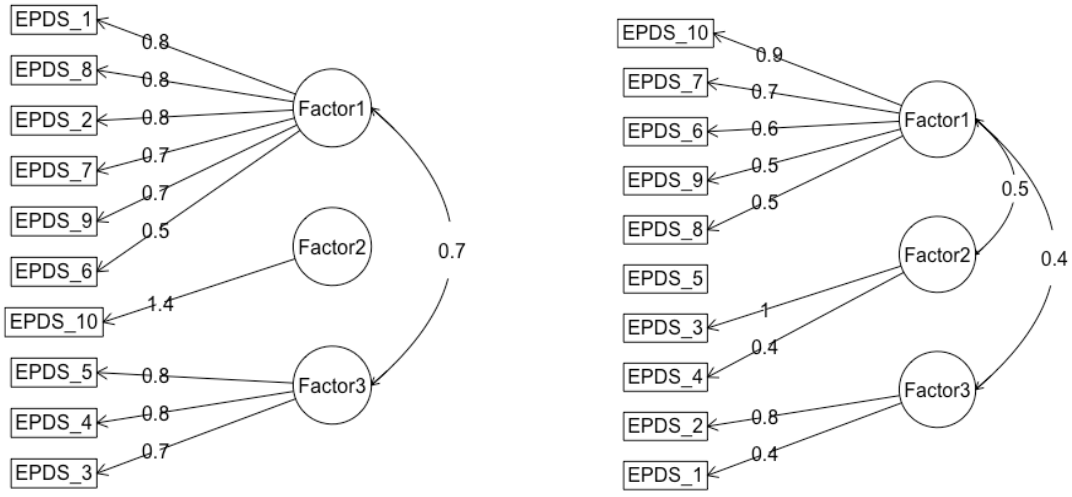

Figure 5.6. UK and Gambia samples' EPDS factor structure. The third factor of the UK sample's EFA includes the same three items found to make up the EPDS-3 anxiety subscale.

Table 5.9.

Factor Loadings for UK and Gambia Samples' EPDS Scores

UK Sample		**Factor 1**	**Factor 2**	**Factor 3**
Item				
1	I have been able to laugh and see the funny side of things	0.82		
2	I have looked forward with enjoyment to things	0.80		
3	I have blamed myself unnecessarily when things went wrong			0.69
4	I have been anxious or worried for no good reason			0.76
5	I have felt scared or panicky for no good reason			0.77
6	Things have been getting on top of me	0.54		
7	I have been so unhappy that I have had difficulty sleeping	0.75		
8	I have felt sad or miserable	0.80		
9	I have been so unhappy that I have been crying	0.71		
10	The thought of harming myself had occurred to me		1.41	
Gambia Sample		**Factor 1**	**Factor 2**	**Factor 3**
Item				
1	I have been able to laugh and see the funny side of things			0.41
2	I have looked forward with enjoyment to things			0.79
3	I have blamed myself unnecessarily when things went wrong		0.99	
4	I have been anxious or worried for no good reason		0.41	
5	I have felt scared or panicky for no good reason			
6	Things have been getting on top of me	0.62		
7	I have been so unhappy that I have had difficulty sleeping	0.69		
8	I have felt sad or miserable	0.52		
9	I have been so unhappy that I have been crying	0.53	0.41	
10	The thought of harming myself had occurred to me	0.85		

Note: Factor loadings < .4 are suppressed as suggested by (Field, 2009).

The UK Factor 1 was comprised of 6 items that explained 33% of the variance, Factor 2 comprised of 1 item and explained 21% of the variance, and Factor 3 (the anxiety subscale) consisted of 3 items and explained 17% of the variance. The total variance explained by all three factors was 72%.

Factor 1 (Depression) included all the depression specific items. Factor 2 (Suicidal Ideation) only included item 10, which asks about suicidal ideation and Factor 3 (Anxiety) including all the anxiety items represented in the anxiety subscale (EPDS-3). Factor 1 and 3, the depression and anxiety items, are correlated while Factor 2 is not correlated to any other factor.

The Gambia Factor 1 was comprised of 5 items and explained 22% of the variance, Factor 2 was comprised of 3 items and explained 15% of the variance, and Factor 3 was comprised of two items and explained 9% of the variance. The total variance explained by all three factors was 47%.

The structure identified in The Gambia EFA is less interpretable, making them challenging to name. Item 5 (feeling scared or panicky) was not found to contribute to any factor, so was eliminated. Factor 1 includes many of the depression items in addition to the suicidal ideation item. The suicidal ideation item (item 10) had the largest loading value (0.85) for this factor. Item nine (crying) loaded onto Factor 1 and 2. Factor 2 included one of the three anxiety items included in the subscale. Only items 1 (laugh) and 2 (enjoyment) loaded onto Factor 3.

5.4.2.3. RQ2 results summary.

There are compelling differences that were identified by comparing how the EPDS performs in a UK versus Gambian sample with significant differences between the average scores and item scores. Overall, pregnant women from the UK endorsed more items and received higher average scores than pregnant women from The Gambia. Differences in score distribution and in the factor structures were identified. These

results highlight potential differences in the expression and measurement of antenatal anxiety and depression symptoms between the UK and The Gambia.

5.5 Discussion

In summary, the results from the two analyses (RQ1 and RQ2) showed differences in how measurement tools perform across cultures and within the same culture. These results also help confirm that these two tools can be used to measure antenatal CMD symptoms within The Gambia. Additionally, identified differences between the tools, and two cultures, give insight into how antenatal CMD symptoms are expressed and how they can be measured in The Gambia.

5.5.1. Differences in the performance of the EPDS and SRQ-20 in a Gambian population.

There were clear differences in the distributions of the EPDS and the SRQ-20 within the Gambian cohort. The EPDS showed little variability in the scores and the majority of women reported very few symptoms overall. Measures of psychopathology commonly depart from normality with the majority of respondents being healthy individuals and few participants having a value reflecting particular disorders (Counsell, Cortina-Borja, Lehtonen, & Stein, 2011). For example, a positive skew in the distribution of the EPDS has also been found in other studies measuring anxiety and depression symptoms in pregnant women from high-income countries (HICs) and from Africa (Condon, 1993; Tesfaye et al., 2010). The observed difference between the EPDS and SRQ-20 scores in the same Gambian sample of pregnant women might be explained by the inclusion of somatic items within the SRQ-20. The somatic items were not only the most endorsed items within the SRQ-20 but accounted for more than half (61%) of the total SRQ-20 score. This finding is in line with previous

research, that has found that somatization of mental health disorders and perinatal CMDs is common in African populations (Hanlon, Medhin, Alem, Araya, Abdulahi, Hughes, et al., 2008; Patel, 1998; Senturk et al., 2012). This finding also supports previous research that used the SRQ-20 in other perinatal African populations and found the somatic items from the SRQ-20 were the most frequently endorsed (Hanlon, Medhin, Alem, Araya, Abdulahi, Hughes, et al., 2008; Stewart et al., 2009).

Some researchers have argued that measuring somatic CMD symptoms in perinatal populations with high levels of physical disease might mistakenly attribute these symptoms to a depressive syndrome (Cox et al., 1987; Stewart et al., 2009). In contrast, it has also been suggested that not including somatic symptoms, especially within an African population, might lead to possible mental disorders symptoms being overlooked (Okulate, Olayinka, & Jones, 2004; Stewart et al., 2009). In a perinatal population this may present an even more difficult problem as somatic symptoms are expected to be experienced and change throughout this time. In fact the EPDS specifically excludes somatic symptoms for this reason (Cox et al., 1987). To help address this underlying problem, especially in African perinatal populations, various studies have been conducted to examine the role of somatic symptoms items in CMD measures like the SRQ-20. One study conducted in Malawi with perinatal women, analysed whether the presence of the somatic items on the SRQ-20 worsened the test characteristics by comparing the total scale performance with the performance of the somatic or psychological items (Stewart et al., 2009). They found that the inclusion of the somatic items did not affect the test performance of the SRQ-20 in their Malawi perinatal population. A validation study of the SRQ-20 for measuring CMD symptoms in a perinatal population in Ethiopia found the somatic items were

the most frequently endorsed and argued that the SRQ-20 performed better than the EPDS in this population (Tesfaye et al., 2010). Additionally, previous research comparing the EPDS and SRQ-20 in other perinatal African populations has found the use of both tools to be advantageous, suggesting that future research consider these tools as measuring distinct important constructs in women's perinatal mental health (Hanlon, Medhin, Alem, Araya, Abdulahi, Hughes, et al., 2008; Senturk et al., 2012). These measures therefore might be seen as representing overlapping yet different elements of perinatal CMDs. Thus, using both the SRQ-20 and the EPDS may give a more comprehensive indication of the CMD symptoms experienced within our population.

The most endorsed item on the EPDS by the Gambian participants was item 4, which asked participants if they have been feeling anxious or worried for no good reason. This finding supports previous research that found that anxiety symptoms were higher than depression symptoms in pregnant women from African countries (Sawyer et al., 2010). Moreover, results from the FGDs found overthinking or excessive worrying to be an important contributing factor and symptom of perinatal mental distress in The Gambia. The most endorsed items on the SRQ-20 measured CMD somatic symptoms; including headaches (item 1), poor appetite (item 2), stomach pains (item 19) and feeling tired (items 18 and 20). Interestingly, these symptoms were also identified as associated symptoms within the FGDs summarised in Chapter 4. This strong association between the results of both the qualitative and quantitative studies underlines the usefulness of these specific items to detect relevant antenatal CMD symptoms in The Gambia.

The SRQ-20's binomial response format, compared to the EPDS Likert-scale response format, may have also influenced the differences observed in the performance of these two tools. The binomial response format of the SRQ-20 is more easily administered and understood by respondents with low literacy (Sweetland et al., 2014). For example, responses like "hardly ever" and "sometimes" might have been difficult to distinguish for the participants and the RAs.

5.5.2. Prevalence and cut-off scores.

There were substantial differences in the number of participants whose scores matched or were above the various selected SRQ-20 and EPDS cut-off scores. There was also low agreement between the two tools (28% positive agreement). Using a cut-off score of 12, the EPDS identified 16% of the UK sample as potential 'cases' compared to 5% of the Gambian participants. Previous studies have found that optimum cut-off scores on the EPDS are lower in African perinatal populations compared to populations from HICs (Adewuya et al., 2006; Tsai et al., 2013). However, even with these lower cut-off scores, fewer women were identified using the EPDS (5–13%) compared to the SRQ-20 (42–64%).

The potential prevalence rates identified with the EPDS were similar to those identified in previous research in The Gambia. Bartram (2018) found 7.5% of their sample of postnatal women met or were above the cut-off of 10, while the current study of pregnant women found 10%. Nabwera et al. (2018) identified 13% of their sample of postnatal women met or were above the cut-off of 12 while only 5% matched or were above this cut-off score in our sample. Differences in sample demographics between the current study and these previous studies, such as region or GA, might explain some of these discrepancies.

The variance in the percentage of women identified as above the cut-off scores and the lack of agreement between the two tools indicates that the binary approach to measuring and understanding perinatal mental health is not helpful within the current research and population. The recent *Lancet Commission on Global Mental Health and Sustainable development* specifically aimed to reframe the global mental health agenda by steering researchers away from focusing on the binary approach (e.g. 'caseness') and towards considering symptoms along a spectrum of severity (Patel et al., 2018). They argued this method more accurately reflects the distribution of symptoms of mental ill health and is more reflective of the actual experience of people with mental disorders (Patel et al., 2018).

5.5.3. Absence of predictive factors.

A participant's level of musical engagement was not found to be significantly associated with EPDS or SRQ-20 scores. However, this may have been due to a lack of sensitivity to detect such a relationship since there was low variation in reported levels of musical engagement. Additionally, none of the demographic factors measured were predictive of high EPDS or SRQ-20 scores. This finding is consistent with previous research, which has found that associations with perinatal CMD symptoms and various demographic factors, such as parity or age, have been inconsistent (Biaggi et al., 2016; Sawyer et al., 2010). For instance, polygamy, which has been identified as a risk factor in previous studies where this practice is common (Adewuya et al., 2005; Wittkowski et al., 2014), was not found as associated with high antenatal CMD symptoms within this current study. One main limitation of the specific analysis used was its inability to address some of the most common risk factors identified in previous literature such as partner support, intimate partner

violence, or previous history of mental health. However, future work in The Gambia could work to include these factors and investigate their potential impact on perinatal CMD symptoms.

5.5.4. Difference in EPDS factor structure between the UK and The Gambia.

The EPDS factor structure identified from the UK sample's EPDS scores was representative of other factor structures identified within other HICs (Matthey et al., 2013). However, the structure identified from the Gambian sample's EPDS scores was less interpretable. Factor 1 included many of the items related to sadness or crying in addition to item 10 about suicidal ideation. These items were some of the least endorsed by the Gambian participants. Factor 2 included one anxiety item that was also the most endorsed item overall (item 4). A similar anxiety item (item 5) did not load onto any factor. Items 1 and 2, which measure participants' ability to laugh and enjoy things, created Factor 3. Both of these items were reverse coded, meaning a higher score indicated feeling less able to laugh or enjoy things. Participants within the focus groups (Chapter 4) explained that social isolation or not feeling enjoyment at social events was a potential sign of mental distress. Item 2, was the only item where the average score of the Gambian sample was significantly higher than the average score of the UK sample. Therefore, it may be the case that, for Gambian women, not finding enjoyment in things may be a more differentiating symptom for those with mental distress and those without. Overall, while there is an overlap in the symptoms indicating antenatal depression and anxiety in the UK and The Gambia, the expression and presentation of these symptoms may be different as exemplified by the observed differences in the factor structures.

5.5.5. Limitations.

As previously mentioned, the study is limited in its ability to validate these tools against a 'gold-standard' diagnosis. The aim of the current work is not to identify 'cases' but rather measure a potential change of symptoms after an intervention. Therefore, within the next study (Chapter 6) the tools will be used to indicate CMD symptoms across a spectrum rather than an indicator of a present mental disorder.

The way in which the tools were administered could lead to various forms of bias within the results. Oral administration of self-report tools involves an interaction between the questionnaire, the respondent and the interviewer which can lead to potential biases (Bowling, 2005). Interviewer bias is present when participants reveal beliefs likely to be endorsed by the interviewer. Interviewers can also vary in their ability to appear or sound neutral, potentially biasing the participants' responses (Bowling, 2005). These areas of potential bias were mitigated through the careful training and monitoring of the data collection method used throughout the study.

The physical space where the data was collected can also affect participants' responses (Bowling, 2005). Participants' scores were collected in a private room within the antenatal clinics or within the clinic waiting room when a room was not available. The presence of other women was sometimes unavoidable and could have impacted participants' feelings of confidentiality. This limitation highlights the specific challenges of researching in a LMIC where resources and space are scarce. While the RAs tried their best to ensure the space where the data was being collected was far away from others, the lack of a private space could have impacted the data collected.

5.6. Conclusion

The aim of this study was to investigate if translated self-report measurement tools are able to measure antenatal CMD symptoms in The Gambia. An added benefit of this analysis was that through the comparisons of two different tools and two different cultures, the salient antenatal CMD symptoms that could be quantitatively measured were found. The identified differences point to potential distinctions in how antenatal CMD symptoms are expressed in The Gambia compared to the UK. They also highlight differences in the underlying constructs the SRQ-20 and EPDS are measuring. Furthermore, the exploration of the different cut-off scores confirmed a binary approach to mental health measurement was not favourable for the purposes of this current research. The results from the current study helped inform the measurement methods used within the next study (Chapter 6) where SRQ-20 and EPDS scores are used as continuous indicators of the change in the quantity of CMD symptoms after participation in an antenatal community-led music intervention.

Chapter 6. The Development and Feasibility of a Community Health Intervention through Musical Engagement (CHIME) to Reduce Antenatal Common Mental Disorder Symptoms in The Gambia

Abstract

This chapter presents results from a mixed-methods study investigating the feasibility of delivering and evaluating a co-developed community-led music intervention to support perinatal mental health in The Gambia. Based on the results from the FGDs (Chapter 4), as well as relevant research on mental health interventions in LMICs (summarised in Chapter 2), a Community Health Intervention through Musical Engagement (CHIME) was developed. Once developed, 124 women, across four antenatal clinics, took part in a trial that tests the feasibility of the intervention. Women in the CHIME group (n = 50) participate in weekly hour-long intervention sessions with their local Kanyeleng group. The Control group (n = 74) receive standard care. Based on the results from Chapter 5, both the EPDS and SRQ-20 are used as the potential outcome measures. The deliverability, perceived cultural appropriateness, and potential efficacy of CHIME are tested using qualitative and quantitative approaches. Audio and video analysis confirms the fidelity of the intervention and a thematic analysis highlights a consistently positive evaluation by participants. Preliminary results suggest a potential beneficial effect of CHIME compared to standard care and a greater reduction in CMD symptoms in those with higher levels of symptoms. Overall, this study finds that a co-developed, culturally embedded, and music-based antenatal mental health intervention can be developed and is feasible to deliver in The Gambia. These results lay the foundations for a larger definitive study in The Gambia as well as highlight the possibility of culturally suitable music interventions to support perinatal mental health in other LMICs.

6.1. Background

Perinatal mental health is a global concern because common mental disorders (CMDs), and their symptoms, have been shown to negatively impact the mother, her

developing infant and their relationship (reviewed in Chapter 2, Section 2.3). Antenatal anxiety and depression strongly predict postnatal depression (Milgrom et al., 2008; Robertson et al., 2004) and can negatively impact foetal and infant development (Glover, 2015; Ramchandani, Richter, Norris, & Stein, 2010). This suggests that antenatal mental health interventions are critical in order to improve outcomes for both the mother and child. In low- and middle-income countries (LMICs), there is often a scarcity of psychologists and psychiatrists able to treat affected women. Therefore, it is crucial to develop effective, low-cost, non-stigmatising and culturally appropriate interventions to support women's mental health during the perinatal period. This study focuses on the development and testing of an antenatal intervention aimed at reducing CMD symptoms in pregnant women in The Gambia.

As summarised in Chapter 2 Section 2.7, various elements that help develop effective mental health interventions in LMICs have been suggested. These include creating task-sharing interventions where non-specialist health workers (NSHW), especially women's groups (Prost et al., 2013), are trained to deliver the interventions (Padmanathan & De Silva, 2013; Rahman, Surkan, et al., 2013). In fact, these types of task-sharing interventions are considered the foundations of mental health systems in LMICs (Patel et al., 2018). A recent commission on global mental health stated that the access to these types of interventions should be a fundamental human right; not only for those with mental disorders but also for those at risk and those within the community (Patel et al., 2018). This commission also highlighted the importance of measuring mental health symptoms on a continuum, supporting the notion of a community based inclusive intervention that can reflect the diversity and complexity

of peoples' mental health care needs (Patel et al., 2018). Integrating these elements, while having a firm understanding of local perspectives and barriers (investigated in Chapter 4), was essential for the development of a culturally appropriate antenatal mental health intervention (Collins et al., 2013; Padmanathan & De Silva, 2013; Semrau et al., 2017).

The majority of previous research in community mental health and perinatal mental health interventions in LMICs focus on educational and psychosocial interventions primarily delivered via conversations and social gatherings. However, the possibility of using music engagement as the vehicle to deliver a perinatal mental health intervention has not been studied within a LMIC context. As summarised in Chapter 2, research in high-income countries (HICs) has shown that singing in groups can be a powerful modulator of mood and emotion, reducing symptoms of anxiety and depression, increasing well-being, social affiliation, and group bonding (Dingle et al., 2019; Williams et al., 2018). There is also growing evidence of the beneficial effect of music for supporting women's mental health during and after pregnancy (Terry & Terry, 2012; Wulff et al., 2017).

Mental health services and specifically services focused on perinatal mental health are minimal and in some areas non-existent in The Gambia (The Gambia and its health system are summarised in Chapter 2, Section 2.5). Applying the understanding of the benefits of a music-centred approach for perinatal mental health to The Gambia is particularly fruitful as there are already many different existing music practices that involve pregnant women and new mothers (as summarised in Chapter 4). Kanyeleng groups sing together and perform ceremonies that support women during pregnancy

and throughout motherhood. More recently, music and performances by Kanyeleng groups have shifted in their purpose from focusing not only on women's health but also to health communication in general (summarised in Chapter 2 Section 2.11). These cultural and creative practices by Kanyeleng groups provide an excellent context from which to explore, co-design and evaluate the feasibility of a culturally-situated, music-centred intervention that aims to reduce CMD symptoms in pregnancy.

6.2. Aims and Research Questions

Overall, this study aims to answer two research questions: 1) What should an antenatal intervention comprise of in order to be acceptable in the local context? and, 2) Once the intervention is designed, how feasible is it to deliver this intervention to reduce CMD symptoms in pregnancy?

Therefore, this study aims to:

1) Co-develop a Community Health Intervention through Musical Engagement (CHIME) with local Kanyeleng groups
2) Obtain demographic information on the eligible population
3) Determine if the intervention is deliverable
4) Test if the trial design is deliverable and obtain information that will inform a future definitive study including recruitment rates, adherence and attrition
5) Determine if this type of intervention is culturally appropriate and well-received by the community and health workers
6) Investigate if the measurement tools, the Edinburgh Postnatal Depression Scale (EPDS) and the Self-Reporting Questionnaire (SRQ-20), are useable for detecting change in antenatal CMD symptoms

7) To obtain initial data on the potential efficacy of the intervention at the community level and for a subgroup of women with higher levels of symptoms

6.3. Developing CHIME

The intervention was developed over two workshops, which integrated knowledge from music and health research, reviews of effective mental health interventions in LMICs (reviewed in Chapter 2), the experience of the Kanyeleng groups and information gained from the FGDs (Chapter 4). Four different Kanyeleng groups from the four clinics asked to be part of the study (described in detail in Chapter 3, Section 3.3.3) were invited to help with the development of the intervention.

First, a workshop was held with each group individually, where the general aim of the research was discussed. Kanyeleng women were told to discuss and present songs that might be appropriate. They were also asked to give suggestions regarding the content and structure of the sessions. The Kanyeleng groups felt including lullabies and traditional songs that would be easy for the women to sing along to should be incorporated. After each group meet individually, workshops were held with the Kanyeleng groups together. One workshop included all Mandinka Kanyeleng groups (n = 3), and another included the Wolof Kanyeleng group (n = 1). At these second workshops, the groups shared with one another the music they had prepared. They also engaged in role-play to practice encouraging pregnant women to participate when they feel hesitant or left out.

Within these group workshops, a structure and mission statement was presented. The mission statement specified:

> *"These sessions are intended to support women emotionally and psychologically during their pregnancy. During the session, we hope that women will participate by singing songs, clapping hands, and moving to the music. We hope that the women will finish the session in a positive mood, feeling part of a socially-supportive group, and empowered to cope with some of the common physical and psychological challenges of pregnancy and to seek social support when necessary."*

It was determined that an hour-long session across six weeks would be the most appropriate and feasible for the groups and the participants. This was based on the feedback from the Ministry of Health and Social Welfare (MoHSW), the Kanyeleng groups and a review paper of music and health interventions. The latter concluded that weekly group music interventions for mental health patients, which last between 3-10 weeks, showed a small effect size across various trials (Gold, Solli, Krüger, & Lie, 2009).

It was also agreed that each session would begin with a welcome song and end with the closing song. This bookending of a music intervention session is often used in music therapy sessions (Schwartzberg & Silverman, 2014) as well as in Kanyeleng performances. Some of the songs used during the main body of the session would cover topics including, the importance of the group in supporting each other, the importance of other positive relationships in their lives, resilience to challenges, empowerment, and the importance of being open and removing stigma to discuss challenges faced during pregnancy. One lullaby or play song would also be introduced at each session drawing upon the cultural importance of these types of songs during the perinatal period and also giving the women repertoire to draw on postpartum. By using the Kanyeleng groups local to each of the four clinics involved,

the sessions embraced the essential variations in community and culture. At the same time, the workshops helped to ensure that the overarching goals, content and approach to session delivery were broadly standardized.

It was decided that the intervention would be delivered on the community level, meaning that it would include women with a range of anxiety and depression symptoms. The primary aim was to reduce symptoms in those experiencing them (whether these were at a high, medium or low level). By including those with low and high levels of symptoms, rather than screening and including only those with high levels of symptoms, stigma can be avoided and acceptability increased. Also, following suggestions from the recent commission on global mental health, the intervention would then be available to those with current mental distress symptoms and those at risk (Patel et al., 2018). By implementing interventions on the community level and taking into account local metaphors and beliefs, the intervention was designed to be highly relevant to the target population.

6.4. Materials and Methods

6.4.1. Participants.

Four antenatal clinics in western Gambia were approached to participate in the feasibility trial: Pirang Health Centre, Gunjur Health Centre, Sukuta Health Centre and the Baliya Mandinka outpost of the Kuntair Health Centre. A summary of these settings can be found in Chapter 3 Section 3.3.3. Sites spanned a range of locations and ethnic groups, including rural and urban as well as Wolof and Mandinka speaking areas. Each clinic also had an active local Kanyeleng group (the same four groups involved in the development workshops described above). The variation in settings helped ensure the results of this study were generalizable across the country. All

participants were over the age of 18, able to speak either Mandinka or Wolof fluently and between 14 – 24 weeks pregnant. Women were excluded if they had a history of a previous late-term miscarriage or had current or a history of psychosis. If the participant developed any serious medical condition or the participant's mental health significantly deteriorated during the trial (as assessed by the care team), she was referred on to receive extra support. A review of other ethical considerations upheld during this study is reviewed in Chapter 3 Section 3.7.

6.4.2 Design.

This feasibility trial used a mixed-methods approach in which qualitative and quantitative data were collected. A stepped-wedge cluster randomised trial design was used. A stepped-wedge cluster design differs from a parallel arm cluster design in that all clinics involved in the study receive the intervention (Hemming et al., 2018). Advantages over a parallel arm cluster trial include the requirement of a smaller sample size due to the availability of a within-group comparison and prevention of potential disappointment for health clinics who are not randomized into the intervention (Hemming et al., 2018). The stepped-wedge design involved a sequential crossover of clusters whereby each cluster (antenatal clinic) received the control condition followed by the intervention (CHIME) condition. The four clinics were randomized to two sequences of a 12-week phase. The participants were recruited before the first data collection point, and the cohort recruitment was then closed. Separate cohorts of participants were recruited to the Control group and the CHIME group, so each cohort began the study 4-6 months through their pregnancy. The 12-week phase for both the Control and CHIME cohorts included data collection at week 1 ('baseline') and week 7 ('post') after either participating in the music sessions (CHIME) or standard care (Control). Data were also collected at week 11 ('follow

up'), four weeks after the intervention finished. Figure 6.1 displays a schematic of the study design.

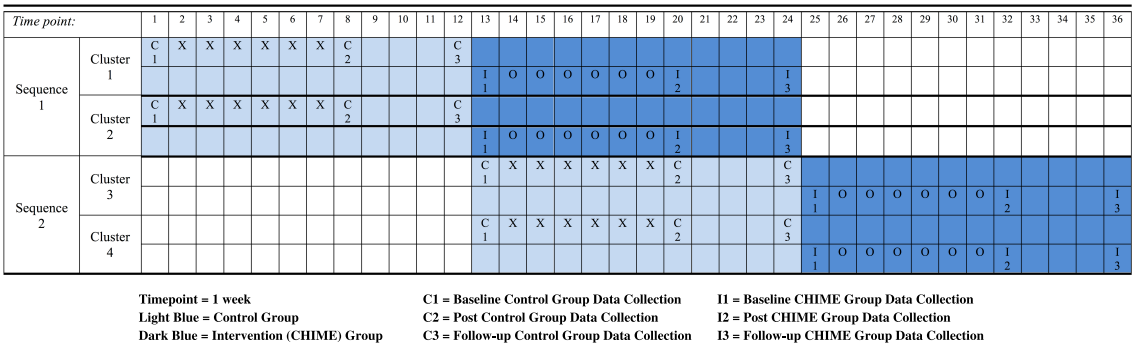

Figure 6.1. A schematic of the stepped-wedge cluster randomised trial.

6.4.3. Recruitment.

Individual participants were recruited during antenatal clinic days. The clinic staff assessed which women present at the clinic were eligible for the study in terms of their gestational age (GA) and medical history. These women were then introduced to the research assistants (RAs), who determined if they were eligible regarding their age and language.

6.4.3.1. Incentive.

Participants in both groups were offered a total of 600 Dalasi (about 12 USD) for their time, 200 Dalasi at each of the three data collection time points (baseline, post, follow-up). All participants were reminded of the data collection and the intervention sessions by a phone call three days before, one day before and on the day of the data collection and intervention sessions. Each member of the Kanyeleng group was paid 200 Dalasi (about 4 USD) for each session they helped facilitate.

6.4.3.2. Sample size.

This study was not primarily powered to detect an effect of the intervention on our intended outcome measures (EPDS; SRQ-20) but was rather designed to assess the feasibility of undertaking a definitive trial. This included gathering information to inform design decisions and estimate the standard deviation of the outcome measures to use in the power calculation for a future definitive trial. Sim and Lewis (2012) suggest that at least 50 participants per arm are needed to estimate the standard deviation. This was achieved with a total of 124 participants included in the study, 50 in the intervention (CHIME) arm and 74 in the Control arm.

6.4.4. Randomization and blinding.

Once the clinics had formally agreed to participate in the trial, they were randomized with two sites starting first (creating the first sequence) and two starting six weeks later (the second sequence). The study statistician, VC, performed the randomization by generating a randomisation list and applying it to the pre-concealed list of clinics. The researchers and participants were not blinded to whether they were in the intervention (CHIME) or Control group.

6.4.5. Intervention.

Participants in the CHIME group received standard care. In addition they were asked to attend six 60-minute group music sessions held at their local antenatal clinic from 9:00 AM to 10:00 AM. Their local Kanyeleng group, a collective of approximately 10 women, led every session. Each session aimed to follow the content and structure that was agreed during the workshops described above. A community health nurse (CHN) at each clinic was present to observe the session, take attendance data, and report any issues of concern to the research team, including any potential adverse effects.

The Control group at each of the four antenatal clinics received standard care without any additional intervention. Seventy-eight percent of women make four or more antenatal care visits during their pregnancy where there physical health is monitored (e.g. blood pressure, scans, malaria care) (The Gambia Bureau of Statistics (GBOS) and ICF International, 2014). Standard care consists of these regular visits to the antenatal clinic with little to no mental health care.

6.4.6. Measurement tools.

The EPDS and SRQ-20, previously described in detail in Chapter 5, were used to measure participants CMD symptoms at each data collection time point. All measures were translated into both Mandinka and Wolof following the methods described in Chapter 3 Section 3.5.

6.4.7. Procedure.

The project partners at the Ministry of Health and Social Welfare (MoHSW) approached the four clinics selected for the study. Clinics were given an information sheet about the project detailing their obligations. The head midwife then gave consent from the centre via a paper consent form. The clinics' information sheet and consent form can be found in Appendix G.

Participants who meet the inclusion criteria were read the information sheet (Appendix G). They then gave consent orally, which was verified via thumbprint or signature on the consent form (Appendix G). Once informed consent was granted, baseline data were collected at the antenatal clinic (see Chapter 3 Section 3.3.2 for a description of the setting). Participants' data were collected at each time-point at the

antenatal clinic. After each participant's data was collected they were given standard recommendations to help with stress, anxiety or depression during pregnancy following a standard debrief form (Appendix I). Data were collected orally and recorded on paper Case Report Forms (CRFs) (Appendix J).

At baseline, demographic information and EPDS and SRQ-20 scores were collected. At post-intervention, EPDS and SRQ-20 scores were collected and a semi-structured interview was held with each participant within the CHIME group. All participants were asked the following questions: 1) Did you feel that the program was beneficial for you? (Please explain); 2) How did you feel at the end of each session?; 3) Did you feel part of the group at the end of the sessions? (Please explain); 4) Did you learn new information from the sessions? If so, what? 5) What could be improved if we do this program again? All interviews were held in either Mandinka or Wolof and were audio-recorded. The audio recordings were then transcribed and translated into English by professional translators from the National Centre for Arts and Culture (NCAC). During follow-up data collection, participants' EPDS and SRQ-20 scores were collected.

During the intervention sessions, the CHN from each clinic was present to take attendance and report any potential issues that might have arisen. Both RAs observed, and video and audio recorded the first and fourth sessions. A checklist (found in Appendix H) was developed and used to rate how well each session adhered to the predetermined goals, structure and content presented at the workshops. HH and MG were present at all the recorded sessions while other members, including BD, BM, and me, attended one of the sessions.

Focus group discussions (FGDs) were conducted with each of the four Kanyeleng groups and one with all of the CHNs. The questions in all FGDs addressed the group's overall thoughts about the intervention, if they thought it was helpful, their comments on the structure, and any suggestions for the future. The questions also mapped onto the overall goals of the session: to create a supportive environment, to contribute to a peaceful mind through participation, and to give useful health information about mental health during pregnancy as well as coping strategies. The FGD with the CHNs were conducted in English and the FGDs with the Kanyeleng groups were held in either Mandinka or Wolof. The questions used in the FGDs can be found in Appendix K. All FGDs were audio-recorded and then transcribed and translated by professional translators from NCAC.

6.4.8. Analysis.

All data were recorded on paper in the field. The data were then entered and double-checked for entry error by both RAs. All statistical analysis was run using R (R Core Team, 2013). All visualizations were created using the *ggplot2* package in R (Wickman, 2016). The thematic analysis was performed using Dedoose (Dedoose version 7.0.23, 2016).

As described within Chapter 5, a pronunciation problem by one RA on EPDS item 3 in Mandinka was detected on December 24th 2018. The mispronunciation affected the baseline EPDS scores collected and resulted in 46 missing values. Using the *MICE* package in R (van Buuren & Groothuis-Oudshoorn, 2011) multiple imputation was performed using a predictive mean matching method with the same parameters as described in Chapter 5. There was no significant difference ($p > 0.05$) between the

total EPDS scores before imputation (M = 4.02, SD = 3.92) and after imputation (M = 4.25, SD = 4.10). The resulting imputed data set was used throughout the subsequent analyses.

Descriptive statistics were summarised to understand the demographic variables relating to the recruited population. To determine if the intervention was deliverable, the number of sessions the Kanyeleng delivered, the duration of each session, and intervention fidelity at the four sites, was recorded. To measure the fidelity of the intervention, both RAs watched the audio-visual recordings of the first and fourth intervention sessions from each clinic. They then completed the checklist (Appendix H) to determine if all the necessary elements, as outlined in the training workshops, had been included in the intervention. Reliability of the fidelity measure was ascertained by measuring inter-rater consistency. The proportion of approached clinics that gave consent was calculated, and any scheduling problems in keeping with the stepped-wedge timeline were recorded. Recruitment and adherence were calculated for both groups.

A thematic analysis (Braun & Clarke, 2006) of the post-intervention interviews and FGDs with the participants, Kanyeleng groups and CHNs was completed to determine if the intervention was enjoyable and culturally appropriate, as well as to identify any suggestions for a future iteration of the intervention. First, the translated responses were reviewed together to investigate the categories that emerged. Based on this initial review, a coding structure was developed and all excerpts were coded into categories that represented higher-order themes. Within some of the categories,

individual codes were also included as they represented different elements of that category.

Descriptive statistics and plots were used to assess the distribution of the measurement tools across all three time-points and by each group. The potential efficacy of the intervention was investigated using multiple linear regressions. Four different regression models were created to estimate the mean between-group difference in EPDS and SRQ-20 score at post-intervention and at follow-up time points. Each model controlled for differences between the four clinics by including the categorical variable Clinic as a fixed factor in the regression models. To account of any differences of EPDS or SRQ-20 score at baseline between the two groups, baseline score (Baseline) was included as a continuous fixed effect in the regression models. The adjusted mean differences between the two groups at post-intervention and at follow-up were then calculated for the EPDS and SRQ-20. The individual treatment effect sizes (Cohen's f^2) between the two groups were calculated by subtracting the proportion of variance due to just the variable of interest (R^2_A: Group) from the proportion of variance accounted for by all the variables together (R^2_{ABC}: Group, Clinic, Baseline) and dividing that by 1 minus R^2_{ABC} (Cohen, 1988; Selya, Rose, Dierker, Hedeker, & Mermelstein, 2012). According to Cohen's (1988) guidelines, $f^2 \geq 0.02$, $f^2 \geq 0.15$, and $f^2 \geq 0.35$ represent small, medium, and large effect sizes, respectively.

To understand how the intervention affected those with higher levels of symptoms, an exploratory analysis was performed to ascertain the potential change in scores for a subgroup of participants whose baseline EPDS or SRQ-20 scores were in the top 35%

of the entire sample. This was also assessed using four multiple linear regressions to estimate the mean between-group difference in EPDS and SRQ-20 score at post-intervention and at follow-up time points for only the participants within this subgroup. The model parameters were the same as described above. Clinic and Baseline were included as fixed effects in all four models. Individual effect sizes were not calculated due to the small sample sizes, imbalance between the groups, and exploratory nature of the analysis.

6.5. Results

6.5.1. Demographic information.

Participants' demographic data were collected at baseline. As per the eligibility requirements, women were between the ages of 18 and 40 (M = 26.95, SD = 5.72) and between 14 and 24 weeks pregnant (M = 20.81, SD = 3.32). Table 6.1 displays the demographic information of the entire sample and by group. The categories used are the same as those explained in Chapter 5. Independent samples t-tests and chi-squared tests showed no significant differences in these distinctive factors between the two groups. Demographic information displayed by clinic can be found in Appendix L Tables L.1a, L.1b, and L.1c.

Table 6.1.

Demographic Data by Group

	All Women (*n* = 124) ***M(SD)***	**CHIME Group (*n*= 50)** ***M(SD)***	**Control Group (*n*= 74)** ***M(SD)***
Age	26.95 (5.72)	26.82 (5.59)	27.04 (5.85)
Gestational Age	20.81 (3.32)	21.14 (3.26)	20.58 (3.36)
Gravida	3.68 (2.19)	3.74 (2.32)	3.65 (2.11)
	n(% of 124)	***n(% of 50)***	***n(% of 74)***
Parity			
Primiparous	27 (22%)	11 (22%)	16 (22%)
Multiparous	97 (78%)	39 (78%)	58 (78%)
Marital Status			
Single/Divorced/Widowed	5 (4%)	1 (2%)	4 (5%)
Married (Monogamous)	83 (67%)	37 (74%)	46 (62%)
Married (Polygamous)	36 (29%)	12 (24%)	24 (33%)
Education Level			
None	5 (4%)	3 (6%)	2 (3%)
Informal (Arabic)	62 (50%)	28 (56%)	34 (46%)
Primary	19 (15%)	7 (14%)	12 (16%)
Secondary/Tertiary	38 (31%)	12 (24%)	26 (35%)
Interview Language			
Mandinka	97 (78%)	40 (80%)	57 (77%)
Wolof	27 (22%)	10 (20%)	17 (23%)
Occupation			
Housewife	72 (58%)	32 (64%)	40 (54%)
Other	52 (42%)	18 (36%)	34 (46%)
Husband's Occupation			
Skilled Work	47 (38%)	22 (44%)	25 (34%)
Manual/Trade Work	77 (62%)	28 (56%)	49 (66%)

Note. Of those in a polygamous marriage 12 were the first wife, 21 were the second wife and 4 were the third wife.

Data were collected relating to how much participants engaged and enjoyed musical activities. Participants responded using a 7-point Likert-scale. The questions were the same as described in Chapter 5. The first question was: *I enjoy participating in group music activities* with an answer choice from 1 = completely disagree to 7 = completely agree. The average score for enjoyment was 5.22 (*SD* = 1.76) showing

that on average participants agreed that they enjoy group music activities. There was a significant difference between the groups on this music engagement question. Those in the CHIME group had a significantly higher rating of their enjoyment (M = 5.6, SD = 1.9) than those in the Control group (M = 4.95, SD = 1.48) (t(119.31) = 2.10, p < 0.05, 95% CIs[0.04, 1.24]).

The next two statements asked how often participants listen to music (*I listen attentively to music for __ per day*), and how often they attend an event that involves music *(I participate in an event that involves music _____ times per month)*. There were no significant differences between the two groups. The mean score across the whole sample was 3.40 (SD = 2.17) for the listening item indicating that on average participants listened to music for about an hour a day. The mean score for the last statement was 1.60 (SD = 1.36) indicating on average participants attend one event that involved music a month.

Participants were also asked how many minutes it took them to walk to the clinic. The average time was 23.02 (SD = 15.29) minutes. The time ranged from 2 to 75 minutes. There were no significant differences between the two groups. Women were also asked if they had a diagnosed serious illness, but only four participants responded that they did. Two participants stated they have hypertension, one from each group, and one participant from the CHIME group had a peptic ulcer disease.

6.5.2. CHIME deliverability

Each site was able to deliver all six sessions across the six weeks. Sessions lasted 60 minutes on average. Table 6.2 details the sessions' duration by site and by session.

Table 6.2.

CHIME Session Duration

	Session Duration						
Site	**Session 1**	**Session 2**	**Session 3**	**Session 4**	**Session 5**	**Session 6**	**Average**
Gunjur	31.00	45.00	48.00	60.00	57.00	50.00	48.50
Kuntair	42.00	75.00	75.00	70.00	66.00	71.00	66.50
Pirang	75.00	50.00	65.00	55.00	50.00	65.00	60.00
Sukuta	55.00	78.00	64.00	61.00	60.00	60.00	63.00
Total	**50.75**	**62.00**	**63.00**	**61.50**	**58.25**	**61.50**	**59.50**

Note. Time is in minutes.

62% of participants attended at least 4 or more sessions, and 72% attended at least half (3 sessions). Only 6 participants (12%) did not attend any session. Those who did not attend any sessions were included in further analyses as an analysis based on intention to treat is standard procedure within feasibility trials (A. W. Chan et al., 2013). Table 6.3 displays details of the number of participants in attendance per session. Table 6.4 details the number of total sessions attended overall and by clinic. Kuntair had the highest attendance with 70% of participants attending all six sessions. Pirang had the second highest attendance with 64% of participants attending all six sessions. Gunjur also had high attendance with 60% of participants attending at least five sessions. Sukuta had the lowest attendance overall with only 23% of participants attending at least five sessions. There was an observable difference in attendance between Sukuta, the only urban setting included in this study, and the other three clinics, all of which are in rural areas. The majority of women in Sukuta attended 2-3 sessions in total compared to 5-6 sessions in total across the other three clinics.

Table 6.3.

Number of participants Present at Each Session

	Session Attendance						
Site	**Total Possible**	**Session 1**	**Session 2**	**Session 3**	**Session 4**	**Session 5**	**Session 6**
Gunjur	11	9	6	7	8	7	8
Kuntair	11	11	10	8	11	11	11
Pirang	16	13	12	11	10	12	11
Sukuta	13	10	5	7	4	4	6

Note. Total Possible is the total amount of women recruited to be in the intervention.

Table 6.4.

Number of Sessions Attended Overall and by Clinic

	Total ***n* (%)**	**Gunjur** ***n* (%)**	**Kuntair** ***n* (%)**	**Pirang** ***n* (%)**	**Sukuta** ***n* (%)**
All 6	21 (44%)	3 (30%)	7 (70%)	10 (64%)	1 (8%)
5 Sessions	8 (16%)	3 (30%)	2 (20%)	1 (6%)	2 (15%)
4 Sessions	3 (6%)	1 (10%)	1 (10%)	1 (6%)	1 (8%)
3 Sessions	5 (10%)	1 (10%)	0 (0%)	1 (6%)	3 (23%)
2 Sessions	3 (6%)	0 (0%)	0 (0%)	1 (6%)	3 (23%)
1 Session	3 (6%)	1 (10%)	0 (0%)	1 (6%)	1 (8%)
None	6 (12%)	1 (10%)	0 (0%)	1 (6%)	2 (15%)

Note. One participant's attendance missing from Gunjur; Total % out of 49

To determine the fidelity of the intervention, the RAs used a checklist to evaluate whether the content, structure and approach of the two recorded sessions reflected the principles agreed upon in the intervention development workshops. The songs should have covered at least one of the following themes: a) the importance of the singing group in supporting each other, b) the importance of other positive relationships in their lives, c) resilience to challenges and empowerment or d) the importance of being open, removing stigma to discuss challenges. Second, the focus of the sessions was intended to be on coping mechanisms and resilience rather than merely the challenges

arising in pregnancy. All sessions needed to include a lullaby, to open with a welcome song and end with a closing song. Finally, the RAs determined if they could identify any moments when participants were encouraged to participate by the Kanyeleng women. Both RAs rated each video on these elements using the checklist found in Appendix H. All recorded sessions were found to include all of these elements. Agreement between the two RAs was 100%, indicating the fidelity of the intervention could be confirmed. However, it was noted by the RAs that the sessions at Sukuta, even though they included all the elements, seemed less exciting and engaging to the RAs.

6.5.3. Retention and timeline adherence.

A total of 152 women were approached to take part in the study across the four sites, 94 women for the Control group and 58 for the CHIME group. Of the 152 women approached, 124 consented and were included in the study and the analysis. 20% declined from the Control group, and 12% declined from the CHIME group. All clinics (100%) approached to take part agreed. Figure 6.2 displays the participant flow chart, indicating the number of participants included at each stage of the study.

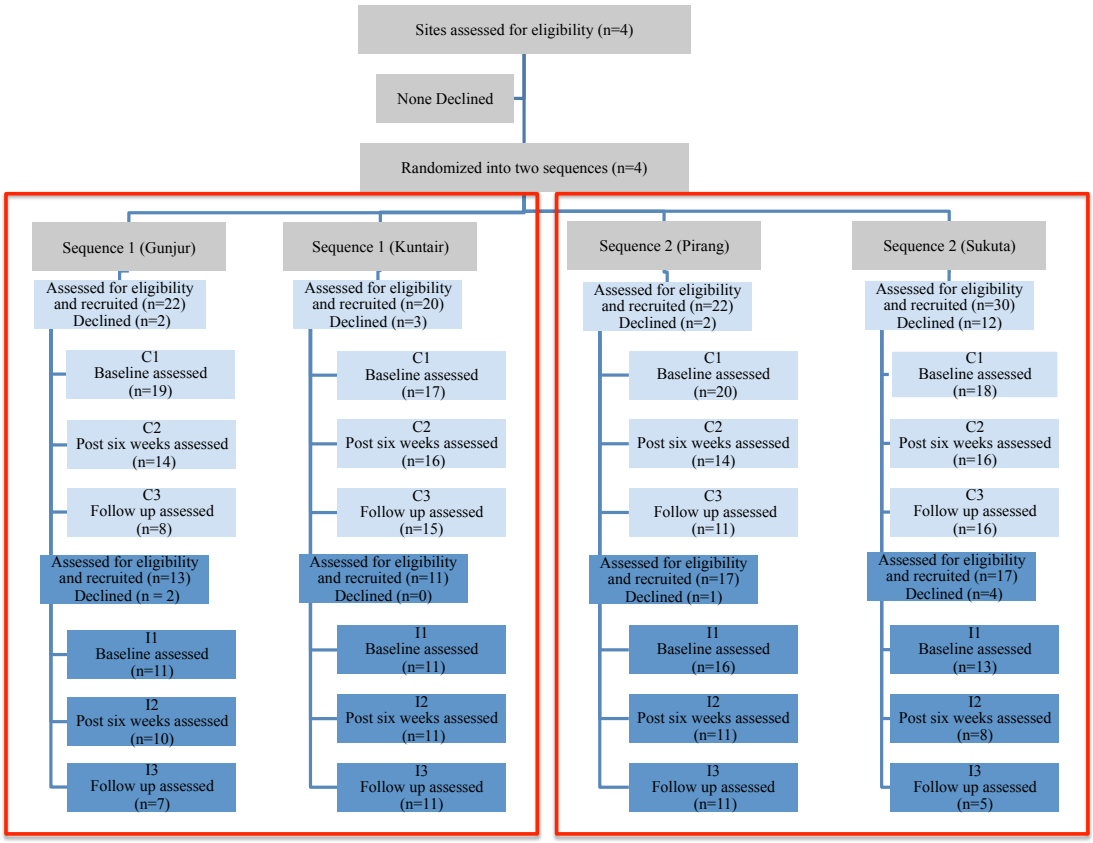

Figure 6.2. Participant flow chart. The light blue indicates the Control group and the dark blue indicates the intervention (CHIME) group. The red boxes outline the two 12-week sequences.

The retention and attrition rates across all three data collection time points and by group are displayed in Table 6.5. Retention and attrition rates by clinic and by group can be found in Appendix L Table L.2. Overall, the CHIME group had a 34% attrition rate across all three time-points, between baseline and follow-up. The Control group had a 32% attrition rate across all three time-points. Between the baseline and post-intervention time-point (week 1 and 7) a 22% attrition rate was observed in the CHIME group and a 19% attrition rate was observed between baseline and post in the Control group. The overall attrition for the whole study was 33% across all three time-points and 20% between baseline and post.

Table 6.5.

Retention and Attrition Rates Overall and by Group

	Retention			Attrition		
	Pre ***n*** **(%)**	**Post** ***n*** **(%)**	**Follow-up** ***n*** **(%)**	**Pre-Post (%)**	**Post-Follow-up (%)**	**Pre-Follow-up (%)**
All	124 (100%)	99 (80%)	83 (67%)	20%	16%	33%
CHIME	50 (100%)	39 (78%)	33 (66%)	22%	15%	34%
Control	74 (100%)	60 (81%)	50 (68%)	19%	17%	32%

The timeline of the stepped wedge schedule could not be strictly adhered to. Figure 6.3 shows the planned versus the actual timeline of the trial. About 96% (The Gambia Bureau of Statistics (GBOS) and ICF International, 2014) of people in The Gambia are Muslim and during Ramadan engaging in musical activities is prohibited. For these reasons, the timeline was shifted forward so that all the data collection would be completed before Ramadan (May 5th 2019). Even though data collection for the two groups overlapped, the risk of contamination was small as the intervention sessions happened on non-clinic days when women in the control group were not present. In addition, all follow-up data collection for the control group was held on a different day to that of the intervention sessions.

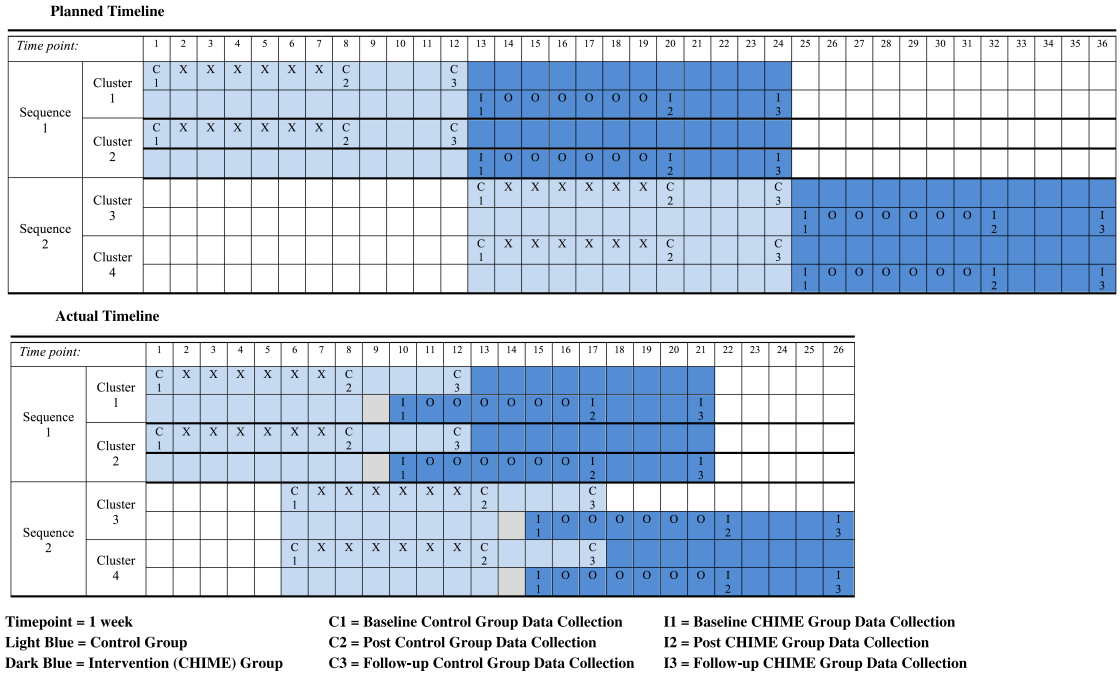

Figure 6.3. The true trial timeline compared to the planned timeline.

6.5.4. Acceptability of CHIME.

In total, 36 participants within the CHIME group were interviewed, 8 from Gunjur, 11 from Pirang, 8 from Sukuta and 9 from Kuntair. Five focus group discussions (FGDs) were held, one with the CHNs and one with each of the four Kanyeleng groups. By speaking with all those involved in the intervention, a fuller understanding and evaluation of the intervention could take place. Using thematic analysis (Braun & Clarke, 2006), all the data were analysed together as the themes discussed in the interviews, and the FGDs covered similar areas. Five higher-level themes were developed: Social Relationships, Peaceful Mind, Learning, Evaluations, and Suggestions for the Future. Within these themes, different categories were created. See Table 6.6 for the coding structure and a definition of each theme, category, and code.

Table 6.6.

Coding Structure

Higher Level Theme	**Category**	**Codes**	**Description:** When a participant discusses…
Learning			… learning something new
	Care for baby		… learning information, which will help once the child is born
	Coping		… learning different ways of coping or seeking social support
	Health Information		… learning new health information, either about physical health or mental health
	Music		… learning new music
Peaceful Mind			… the positive impact the intervention had on a participants' state of mind by giving her a peaceful mind or feelings of happiness
	Continue outside session		… the effect of the group continuing after the session is over
Social Relationships			… how the sessions have impacted social relationships
	Outside Relationships		… how the sessions impacted relationships with people outside the group itself
		Husband	… the intervention having an impact on the relationship with the husband
		Research Team	… the intervention having an impact on the relationship with the research team
		Teaching others	… the intervention having an impact on the relationship with those in the community by teaching and helping others
	Part of the singing group		… feeling a part of the intervention group
Suggestion for future			… a suggestion for the future
	Attendance and Participation		… a suggestion that would help with attendance or participation
		Payment	… a suggestion about the payment for the pregnant participants or the Kanyeleng
		Transportation	… a suggestion about transportation
	Breakfast		… a suggestion about offering food as part of the intervention
	Continuation		… a suggestion to continue the intervention or the length of the intervention
	Timing		… a suggestion about when the sessions start and how long they last
Evaluation			… and evaluates the intervention
	Negative/Neutral Evaluation		… a negative or neutral evaluation of the intervention
	Positive Evaluation		… a positive evaluation of the intervention
		Music and performance	… the music or the Kanyeleng women in a positive way
		Session Structure	… a positive evaluation of the session structure and length

6.5.4.1. Social relationships.

The FGDs emphasised the impact the intervention had on participants' relationships with members of the intervention and the wider community. Participants explained how they grew to feel close to those within the CHIME group. Pregnant participants, Kanyeleng and CHNs all discussed the bonding experienced by those in the group.

> *"I am pleased about the programme, because I isolated myself before, and brought a lot of thinking on my side. But when I took part in this programme, I now go out and mingle with them"* – Pregnant woman from Pirang

> *"What we do is when we see you sitting down lonely we come to you and encourage you to join the group."* – Kanyeleng woman from Gunjur

> *"They make friends, they become used to the Kanyelengs, they were making jokes they were telling them when you deliver we will come and attend your naming ceremony. […] They were used to each other; the last day I felt it. They were even praying for them."* – CHN

Participants also discussed the effect of the intervention on relationships with those outside the CHIME group. Participants, Kanyeleng and CHNs discussed the impact the sessions had on participants' relationships with their husbands. For example, one CHN expressed how it opened up communication about mental health during pregnancy.

> *"Within my area there is a woman even the husband invited me to explain his wife's problem to him"* – CHN

Some participants also described how they got close with some of the people from the research team.

> *"Because you did not forget about us and you are now calling us for an interview. That alone shows that I am a member of the group." – Pregnant woman from Pirang*

Kanyeleng and pregnant participants explained how the sessions gave them agency to help others in their community. CHNs also talked about the broad reach the intervention had.

> *"Right now I am helping someone and I am a teacher on my own*" – Pregnant woman from Pirang

> *"Since from that day up to now we are working to give out this information to the people. You have given us six weeks but we work more than six weeks, we continue with the work even after the six weeks*" – Kanyeleng woman from Pirang

> *"If you look at the register itself, people were selected from different communities, which I think is key. This information is very powerful. You cannot limit it to one area because it is disseminated to everybody"* – CHN

Overall, pregnant participants, Kanyeleng and CHNs all felt that CHIME was acceptable in their communities and allowed them to create relationships with those in the group. The interviews and FGDs highlighted how the intervention's impact spread outside the intervention group and into participants' family relationships and their roles in their communities.

6.5.4.2. Peaceful mind

Overall, pregnant participants felt that the music group had a positive effect on their mental health and emotional state.

> *"It makes me have peace of mind and makes me happy. When I leave here and go home, I don't worry too much. That makes me very happy."* – Pregnant woman from Sukuta

Some pregnant participants revealed how the beneficial effects of the sessions lasted after they had gone home or when they remembered a song from the session.

> *"The songs that are sung here, when I go home I remember them and that makes me happy. That alone is making me happy. I don't have distress anymore."* – Pregnant woman from Gunjur

CHNs and Kanyeleng also described the beneficial effects the intervention had on the pregnant participants and themselves.

> *"What I have seen is that you fellow human beings when [someone] is entertaining you, it gives you good health. When a person becomes happy, it gives him or her good health. When we disperse, and you went home, you will be thinking of my actions, and that will make you happy. You will be free from lack of peace of mind".* – Kanyeleng woman from Gunjur

> *"The antenatal mothers who were coming to Sukuta, some of them come with stress, but as the programme starts, you see them laughing and dancing and be[ing] active. As he said, sometimes the clinics are very tense; you hardly talk to them about this issue because pregnancy is something else. […] With this programme, they were happy to my observation."* – CHN

6.5.4.3. Learning.

Pregnant participants reported learning a variety of information during the intervention sessions. They reported learning about mental and physical health during pregnancy and ways to cope with distress.

> *"What I learnt was as a pregnant woman don't isolate yourself to be free from lack of peace of mind. Mingle with the people and do everything together." – Pregnant participant from Pirang*

One participant described a particular coping mechanism she devised to help when she was feeling stressed.

> *"I record the activities so when I go home I listen to them so that I will not have distress*." – Pregnant woman from Pirang

Pregnant participants and CHNs talked about the benefits of the sessions including other health information as well. These included topics such as the importance of seeing the midwife early during the pregnancy, taking malaria medication, and staying active.

> *"I learnt a new lesson from the programme. The first new lesson is not to isolate oneself thinking. When you are pregnant for six months you should [also] go to the health centres and take Fansidar (Malaria medication) for your good health." – Pregnant woman from Pirang*

This additional information added to women's understanding of health during pregnancy and one CHNs describes how culturally important and impactful this can be.

> *"It is a taboo to discuss these type of things. So if this sort of programme is implemented a lot of doubts will be cleared with regards to pregnancy, delivery and so on. […] If programmes like this are introduced, we can talk to the antenatal mothers and I think it is going to help a lot."* – CHN

Participants were also taught music, such as lullabies, and given information about how to care for their baby. Learning music, like the lullabies, was explained to help women once their child is born.

> *"The reason for the lullabies is because of the tradition. The pregnant women can understand how to take care of their children when they give birth"* – Kanyeleng woman from Sukuta

6.5.4.4. Evaluations.

An overwhelming majority of pregnant participants, Kanyeleng and CHNs gave a positive evaluation of the intervention.

> *"It is beneficial to me. […] Because I feel happy. I realize that before I got pregnant, I used to become worried, but after [the intervention], I am not worried. Your program is good to us. It is beneficial to us*." – Pregnant woman from Kuntair

Participants gave general positive evaluations as well as more specific ones about the music, the Kanyeleng group and the structure of the sessions.

> *"After the programme, my mind has changed because of the songs that were sung there."* – Pregnant woman from Pirang

> *"[I felt] a feeling of happiness [because] the kinds of dance were exciting. It felt really good in our bodies."* – Pregnant woman from Kuntair

> *"The performance of the Kanyeleng alone brings happiness*." – Pregnant woman from Pirang

> *"[The structure of the intervention session] is good. The way you should welcome a person when you do it properly, the person feels happy. When dispersing and you do it with a song that also makes the person feel happy and he or she keeps on thinking about it before the next meeting. […] The pregnant women need the middle song."* – Kanyeleng woman from Pirang

The only neutral or negative evaluations were related to the participants feeling the sessions should continue until birth and the transportation to the sessions being sometimes difficult. These are also discussed in suggestions for the future.

6.5.4.5. Suggestions for the future

The pregnant participants, as well as the Kanyeleng and CHNs, gave helpful suggestions for the future. The most common suggestions discussed how to support attendance and participation in the sessions. Even though participation and attendance were relatively high, pregnant participants, CHNs and Kanyeleng felt that providing funds to cover transportation would allow more women to participate more often.

> *"Sometimes transportation is [a] problem. For somebody who also finds it difficult to put food on the table, if you ask that individual even to come once in a week, they find it very difficult as some of them have to go in for credit to pay fares to come. If at all something is going to be created for them, everyday you ask how much do they pay for the fare to come, then you give them that so that […] coming to the session will be easier."* – CHN

Some participants also felt that women might also be given an allowance for coming to the sessions.

> *"To encourage pregnant women to join the programme, […] provide them some allowances to motivate them as some of them were complaining about it."* – CHN

Another suggestion that was discussed by the pregnant participants and the Kanyeleng was to provide food at the sessions. Many women came without having breakfast before, and this hindered their ability to participate in the dancing.

> *"We work with pregnant women and they should eat well. They feel lazy when they don't eat. When food is provided, we can even have more hours for the programme. You can consider that for us. We can bear our hunger but for them they cannot".* – Kanyeleng woman from Pirang

Some of the discussions around food related to participants' evaluations of the timing of the sessions. All sessions began around 9:00 AM. Some participants felt this was too early, while some felt that it was too late. It was explained that some women would have to go to work before the sessions and would come late, while some would come on time but then would miss breakfast.

Finally, pregnant participants, CHNs and Kanyeleng also suggested that the sessions should continue for longer than six weeks allowing for women to have access to these sessions closer to delivery.

> *"Can the programme be able to follow the antenatal from six months up to the delivery? When you start and stop within two months maybe before the delivery the woman can have stress. It is important to follow the woman until the delivery like from six months to the delivery so that you can see the impact." – CHN*
>
> *"I was not happy for the programme to end now. I want it to continue until I give birth."* – Pregnant participant from Sukuta

Overall, those who ran and those who participated in CHIME evaluated it positively. Results from the thematic analysis show that CHIME was culturally appropriate, and the goals of the sessions could be achieved. The suggestions for the future give concrete ideas that can be incorporated in a future definitive trial. These suggestions included extending the length of the intervention, reimbursing transportation cost and providing food.

6.5.5. EPDS and SRQ-20 detecting change.

Chapter 5 found no significant differences between language used or area type in terms of EPDS and SRQ-20 baseline scores within a larger sample size. Chapter 5

also found no demographic factors to be associated with the symptom level measured by these tools within this sample. Therefore, scores across clinics, area and language group were analysed together. Table 6.7 displays the average EPDS and the SRQ-20 scores at all three time-points. EPDS and SRQ-20 scores by clinic can be found in Appendix L Table L.3. An independent samples t-test showed a significantly lower EPDS baseline score (t (121.96) = 3.35, $p < 0.01$ 95%CIs[0.38, 2.91]) for the CHIME group (M = 2.90, SD = 3.07) compared to the Control group (M = 5.16, SD = 4.46). An independent samples t-test also showed a significantly lower SRQ-20 baseline scores (t (108.02) = 2.46, $p < 0.05$ 95% CIs[0.15, 3.56]) for the CHIME group (M = 6.22, SD = 3.83) compared to the Control group (M = 7.97, SD = 3.99).

Table 6.7.

EPDS and SRQ-20 Scores at Three Time-Points

EPDS	**Baseline**		**Post**		**Follow-up**	
	n	***M(SD)***	***n***	***M(SD)***	***n***	***M(SD)***
All	124	4.25 (4.10)	99	2.56 (2.74)	83	1.80 (2.23)
CHIME	50	2.90 (3.07)	39	1.18 (1.50)	33	0.94 (1.73)
Control	74	5.16 (4.46)	60	3.45 (2.99)	50	2.36 (2.36)
SRQ-20	**Baseline**		**Post**		**Follow-up**	
	n	***M(SD)***	***n***	***M(SD)***	***n***	***M(SD)***
All	124	7.27 (4.00)	99	5.31 (4.02)	83	4.25 (3.32)
CHIME	50	6.22 (3.83)	39	3.62 (3.32)	33	2.70 (3.03)
Control	74	7.97 (3.99)	60	6.42 (4.08)	50	5.28 (3.12)

Similar to the results from Chapter 5, the distribution of the EPDS scores at baseline was highly positively skewed (skewness = 1.48) with the majority of participants reporting few CMD symptoms. However, SRQ-20 scores were approximately symmetric (skewness = 0.45) at baseline. Figure 6.4 displays the distribution of the EPDS and SRQ-20 scores at all three time-points and by group.

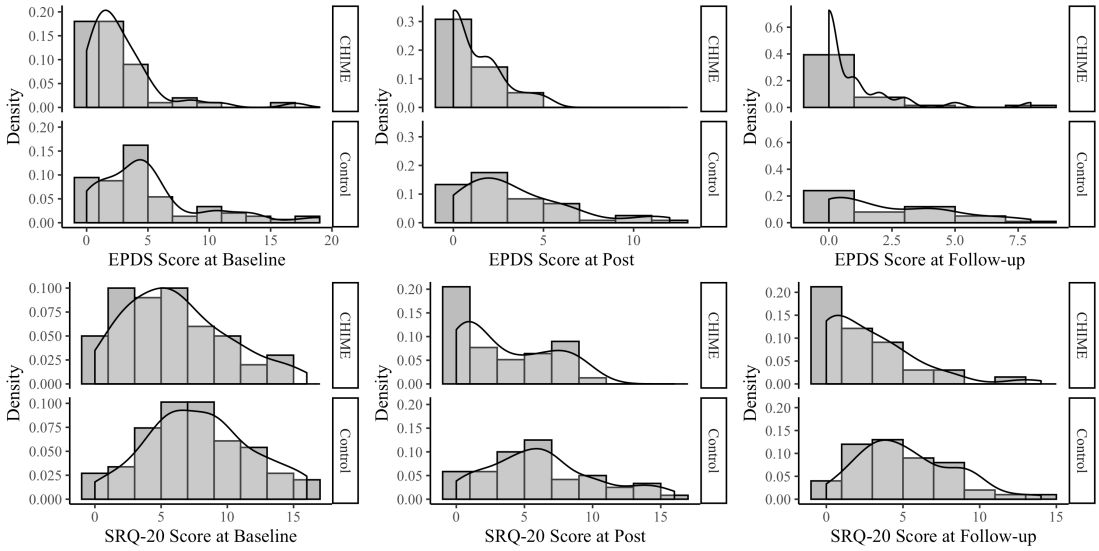

Figure 6.4. EPDS and SRQ-20 distributions at each time-point and by group.

This figure helps to visualise how the scores change over time. It also shows differences in how the two different tools are able to measure change. On the top two rows of the figure, the skewness of the EPDS distributions is present across all time-points. Across the different time-points, this skewness of the distribution becomes more severe, which makes it harder to measure any further change at the later time points. This severe skewness is especially evident in the CHIME group EPDS score distributions (row 2) with many participants reporting no or few symptoms at post and follow-up. The EPDS score distributions also seem to show a more considerable skewing across the time points in the CHIME group compared to the control group. However, the evident floor effect seems to limit the ability to observe the level of change.

The SRQ-20 does not exhibit the same floor effect. This is evident in the more symmetric distributions pictured within the bottom two rows of the figure. Investigation of the SRQ-20 distributions indicated change across the time-points in

both groups, with the distributions becoming more positively skewed, indicating lower reported symptoms over time. There is also a marked difference between groups in how these distributions shift. The CHIME group showed more considerable positive skewing across the three time-points compared to the Control group.

6.5.6. Indication of potential efficacy.

Multiple linear regressions were used to measure the mean reduction of EPDS and SRQ-20 scores between baseline and post-intervention and follow-up time points. The observed differences in participants' baseline scores and potential differences between the clinics were controlled for by including these as fixed factors within the regression models. A full explanation of how the models were created can be found in Methods Section 6.4.8.

At post-intervention there was a mean reduction of 1.81 points (95% CI [0.85, 2,78], $p < 0.001$, $n = 99$, $f^2 = 0.20$) on the EPDS in the CHIME group compared to the Control group and a mean reduction of 1.98 points (95%CI [0.63, 3.30], $p < 0.001$, $n = 99$, $f^2 = 0.44$) on the SRQ-20 in the CHIME group compared to the Control group. The regression tables for these two models can be found in Table 6.8 with the main treatment effect in bold.

Table 6.8.

Regression Tables for EPDS and SRQ-20 at Post-intervention

Model 1: Difference in EPDS scores at post-intervention					
	Est.	**S.E.**	***t***	***p***	**95% CIs**
(Intercept)	0.9	0.56	1.59	0.11	0.63, 1.16
Group.Control	**1.81**	**0.49**	**3.73**	**< 0.001**	**0.85, 2.78**
EPDS.Baseline	0.27	0.06	4.37	< 0.001	0.08, 0.46
Kuntair	-1.1	0.65	-1.69	0.1	-1.12, -1.08
Pirang	-0.57	0.67	-0.85	0.4	-0.91, -0.22
Sukuta	-0.54	0.67	-0.8	0.43	-0.83, -0.24
Model fit: *Adj.* R^2_{ABC} = 0.30					
Model 2: Difference in SRQ-20 scores at post-intervention					
	Est.	**S.E.**	***t***	***p***	**95% CIs**
(Intercept)	0.78	0.92	0.85	0.4	-1.04, 2.61
Group.Control	**1.97**	**0.67**	**2.93**	**< 0.001**	**0.63, 3.30**
EPDS.Baseline	0.52	0.09	6.15	< 0.001	0.35, 0.69
Kuntair	-1.07	0.91	-1.18	0.24	-2.88, 0.73
Pirang	-0.07	0.91	-0.07	0.94	-1.88, 1.75
Sukuta	-0.61	0.92	-0.67	0.51	-2.44, 1.21
Model fit: *Adj.* R^2_{ABC} = 0.38					

Note. n = 99 participants included

At follow-up a mean reduction of 1.19 points (95%CI [0.19, 2.19], $p < 0.05$, $n = 83$, $f^2 = 0.18$) on the EPDS was found in the CHIME group compared to the Control group, and a mean reduction of 2.30 points (95%CI [1.02, 3.58], $p < 0.001$, $n = 83$, $f^2 = 0.46$) on the SRQ-20 was found in the CHIME group compared to the Control group. The regression tables for these two models can be found in Table 6.9 with the main treatment effect in bold.

Table 6.9.

Regression Tables for EPDS and SRQ-20 at Follow-up

Model 3: Difference in EPDS scores at follow-up					
	Est.	**S.E.**	***t***	***p***	**95% CIs**
(Intercept)	1.21	0.62	1.97	0.05	-0.01, 2.44
Group.Control	**1.19**	**0.50**	**2.37**	**0.02**	**0.19, 2.19**
EPDS.Baseline	0.11	0.06	1.94	0.06	0.00, 0.23
Kuntair	-1.04	0.69	-1.52	0.13	-2.41, 0.33
Pirang	-0.53	0.71	-0.75	0.46	-1.94, 0.88
Sukuta	-0.72	0.72	-1.00	0.32	-2.17, 0.72
Model fit: $Adj\ R^2_{ABC}$ = 0.11					
Model 4: Difference in SRQ-20 scores at follow-up					
	Est.	**S.E.**	***t***	***p***	**95% CIs**
(Intercept)	1.36	0.93	1.47	0.15	-0.48, 3.21
Group.Control	**2.30**	**0.64**	**3.59**	**< 0.001**	**1.03, 3.58**
EPDS.Baseline	0.32	0.08	4.01	< 0.001	0.16, 0.48
Kuntair	-1.53	0.90	-1.70	0.09	-3.33, 0.26
Pirang	0.23	0.92	0.26	0.80	-1.59, 2.06
Sukuta	-1.41	0.94	-1.50	0.14	-3.27, 0.46
Model fit: $Adj\ R^2_{ABC}$ = 0.32					

Note. n = 83 participants included

In summary, the results from these multiple regressions show a significantly greater CMD symptom reduction across 7 weeks and again at 11 weeks in those who received the intervention (CHIME) versus those who received standard care (Control). Overall, the SRQ-20 showed a greater mean reduction (1.90 points [baseline-post] and 2.30 points [baseline-follow-up]) compared to the EPDS (1.81 points [baseline-post] and 1.19 points [baseline-follow-up]). The treatment effect sizes ranged from medium to large (0.18 to 0.46) with greater effect sizes found for the SRQ-20 (Cohen's f^2 = 0.44 [baseline-post] and Cohen's f^2 = 0.46 [baseline-follow-up]) compared to the EPDS at both time points (Cohen's f^2 = 0.18 [baseline-post] and Cohen's f^2 = 0.20 [baseline-follow-up]).

6.5.6.1. Subgroup analysis of those with high CMD symptom levels.

Participants whose baseline scores were in the top 35% of the entire sample were analysed separately. Previous research in LMICs suggests a prevalence of CMDs in pregnancy to be around 13 – 30% (Sawyer et al., 2010). In Chapter 5, different cut-off scores were used to explore the potential prevalence of participants with high levels of symptoms. 35% was found to be the average of the prevalence rates identified using the different cut-off scores in Chapter 5 (Table 5.4). As there were uneven numbers between the two groups and higher baseline scores for those in the Control group, there were more participants from the Control group identified than from the CHIME group. Based on previous literature and the findings from Chapter 5 as well as to ensure there were enough participants from the CHIME group within the analysis, the top 35% of the sample was chosen to represent the subgroup.

Two subgroups were created, one with the participants whose baseline EPDS scores were in the top 35% of the entire sample (EPDS subgroup) and those whose baseline SRQ-20 scores were in the top 35% of the entire sample (SRQ-20 subgroup). The EPDS subgroup consisted of 34 participants from the Control group and 8 from the CHIME group. The SRQ-20 subgroup consisted of 24 participants from the Control group and 10 from the CHIME group. The demographic information of both subgroups can be found in Tables 6.10 and 6.11. No significant differences in the demographic information were identified between the two subgroups (EPDS subgroup vs. SRQ-20 subgroup). Additionally, no significant differences between the participants within the subgroups (EPDS and SRQ-20 subgroups) and the entire sample were found.

Table 6.10.

Demographic Information of EPDS Subgroup

	Top 35% EPDS Subgroup		
	Overall ***(n* = 42)** ***M(SD)***	**CHIME Group** ***(n* = 8)** ***M(SD)***	**Control Group** ***(n* = 34)** ***M(SD)***
Age	27.5 (5.92)	27.75 (5.55)	27.44 (6.08)
Gestational Age	20.81 (3.21)	23.12 (1.81)	20.26 (3.24)
Gravida	3.81 (2.13)	3.88 (1.89)	3.79 (2.21)
	n(% of 42)	***n(% of 8)***	***n(% of 34)***
Parity			
Primiparous	6 (14%)	0 (0%)	6 (18%)
Multiparous	36 (86%)	8 (100%)	28 (82%)
Marital Status			
Single/Divorced/ Widowed	3 (7%)	0 (0%)	3 (9%)
Married (Monogamous)	25 (60%)	7 (87%)	18 (53%)
Married (Polygamous)	14 (33%)	1 (13%)	13 (38%)
Education Level			
None	1 (2%)	0 (0%)	1 (3%)
Informal (Arabic)	20 (48%)	3 (37%)	17 (50%)
Primary	5 (12%)	1 (13%)	4 (12%)
Secondary/Tertiary	16 (38%)	4 (50%)	12 (35%)
Interview Language			
Mandinka	34 (81%)	7 (87%)	27 (79%)
Wolof	8 (19%)	1 (13%)	7 (21%)
Occupation			
Housewife	22 (52%)	4 (50%)	18 (53%)
Other	20 (48%)	4 (50%)	16 (47%)
Husband's Occupation			
Skilled Work	14 (33%)	4 (50%)	10 (29%)
Manual/Trade Work	28 (67%)	4 (50%)	24 (71%)

Table 6.11.

Demographic Information of SRQ-20 Subgroup

	Top 35% SRQ-20 Subgroup		
	Overall ***(n* = 34)** ***M(SD)***	**CHIME Group** ***(n* = 10)** ***M(SD)***	**Control Group** ***(n* = 24)** ***M(SD)***
Age	28.00 (6.08)	26.1 (5.49)	28.79 (6.35)
Gestational Age	20.26 (3.60)	21.30 (3.33)	19.83 (3.68)
Gravida	4.12 (2.18)	3.70 (1.49)	4.29 (2.42)
	***n*(% of 34)**	***n*(% of 10)**	***n*(% of 24)**
Parity			
Primiparous	7 (21%)	2 (20%)	5 (21%)
Multiparous	27 (79%)	8 (80%)	19 (79%)
Marital Status			
Single/Divorced/ Widowed	2 (6%)	1 (10%)	1 (4%)
Married (Monogamous)	22 (65%)	9 (90%)	13 (54%)
Married (Polygamous)	10 (29%)	0 (0%)	10 (42%)
Education Level			
None	1 (3%)	0 (0%)	1 (4%)
Informal (Arabic)	17 (50%)	3 (30%)	14 (58%)
Primary	5 (15%)	2 (20%)	3 (13%)
Secondary/Tertiary	11 (32%)	5 (50%)	6 (25%)
Interview Language			
Mandinka	29 (85%)	9 (90%)	20 (83%)
Wolof	5 (15%)	1 (10%)	4 (17%)
Occupation			
Housewife	17 (50%)	7 (70%)	10 (42%)
Other	17 (50%)	3 (30%)	14 (58%)
Husband's Occupation			
Skilled Work	14 (41%)	7 (70%)	7 (29%)
Manual/Trade Work	20 (59%)	3 (30%)	17 (71%)

Average EPDS and SRQ-20 scores at all three time-points for both subgroups are presented in Table 6.12. Within both subgroups, scores reduced from baseline to post with the greatest difference observed in the CHIME EPDS subgroup (M = 8.25 at baseline, M = 0.29 at post). Scores continued to reduce at follow-up for all subgroups,

except in the CHIME EPDS subgroup, whose scores increased (M = 0.29 at post, M = 1.80 at follow-up).

Table 6.12.

Average Scores Across Three Time-Points for Both Subgroups

EPDS Subgroup	**Baseline**		**Post**		**Follow-up**	
	n	***M(SD)***	***n***	***M(SD)***	***n***	***M(SD)***
All	42	8.55 (4.21)	34	3.41 (3.48)	30	2.50 (2.36)
CHIME	8	8.25 (4.17)	7	0.29 (0.49)	5	1.80 (2.17)
Control	34	8.63 (4.29)	27	4.22 (3.47)	25	2.64 (2.41)

SRQ-20 Subgroup	**Baseline**		**Post**		**Follow-up**	
	n	***M(SD)***	***n***	***M(SD)***	***n***	***M(SD)***
All	34	12.44 (2.05)	26	8.38 (4.19)	20	6.40 (3.52)
CHIME	10	12.20 (1.93)	7	5.86 (3.80)	5	4.20 (5.31)
Control	24	12.54 (2.13)	19	9.32 (4.01)	15	7.13 (2.53)

Multiple linear regressions were used to measure the mean reduction of EPDS scores within the top 35% EPDS subgroup. Participants' baseline scores and differences between the clinics were controlled for within the models by including these factors as fixed effects. A full explanation of how the models were created can be found in Methods Section 6.4.8. At post-intervention a mean reduction of 4.03 points (95%CI [1.75, 6.30], $p < 0.001$, $n = 34$) on the EPDS was found in the CHIME group compared to the Control group. At follow-up a mean reduction of 0.37 points (95%CI [-2.10, 2.85], $p = 0.76$, $n = 30$) on the EPDS was found in the CHIME group compared to the Control group. The regression tables for these two models can be found in Table 6.13 with the main treatment effect in bold.

Table 6.13.

Regression Tables for EPDS Subgroup at Baseline and Follow-up

Model 1: Difference in EPDS scores at post-intervention for EPDS subgroup					
	Est.	**S.E.**	***t***	***p***	**95% CIs**
(Intercept)	-4.10	1.83	-2.24	0.03	-7.85, -0.35
Group.Control	**4.03**	**1.11**	**3.63**	**< 0.001**	**1.75, 6.30**
EPDS.Baseline	0.48	0.11	4.35	< 0.001	0.25, 0.71
Kuntair	0.16	1.59	0.10	0.92	-3.10, 3.42
Pirang	0.10	1.53	0.07	0.95	-3.02, 3.23
Sukuta	0.68	1.5	0.46	0.65	-2.38, 3.75
Model fit: $Adj\ R^2_{ABC}$ = 0.45, *n* = 34					
Model 2: Difference in EPDS scores at follow-up for EPDS subgroup					
	Est.	**S.E.**	***t***	***p***	**95% CIs**
(Intercept)	-2.16	2.2	-0.98	0.34	-6.7, 2.39
Group.Control	**0.37**	**1.20**	**0.31**	**0.76**	**-2.10, 2.85**
EPDS.Baseline	0.20	0.11	1.82	0.08	-0.03, 0.42
Kuntair	3.32	1.99	1.67	0.11	-0.78, 7.42
Pirang	2.55	1.91	1.34	0.19	-1.39, 6.49
Sukuta	2.66	1.92	1.38	0.18	-1.31, 6.62
Model fit: $Adj\ R^2_{ABC}$ = 0.01, *n* = 30					

Multiple linear regressions were also used to measure the mean reduction of SRQ-20 scores within the top 35% SRQ-20 subgroup. Participants' baseline scores and differences between the clinics were controlled for within the models by including these factors as fixed effects. A full explanation of how the models were created can be found in Methods Section 6.4.8. At post-intervention a mean reduction of 3.58 points (95%CI [0.41, 7.58], p = 0.08, n = 26) on the SRQ-20 was found in the CHIME group compared to the Control group. At follow-up and a mean reduction of 2.46 points (95%CI [-1.44, 6.36], $p < 0.20$, n = 20) on the SRQ-20 was found in the CHIME group compared to the Control group. The regression tables for these two models can be found in Table 6.14 with the main treatment effect in bold.

Table 6.14.

Regression Tables for SRQ-20 Subgroup at Baseline and Follow-up

Model 1: Difference in SRQ-20 scores at post-intervention for SRQ-20 subgroup					
	Est.	**S.E.**	***t***	***p***	**95% CIs**
(Intercept)	-6.31	6.22	-1.01	0.32	-10.29, 6.67
Group.Control	**3.58**	**1.92**	**1.87**	**0.08**	**-0.41, 7.58**
EPDS.Baseline	-0.37	0.47	-0.78	0.44	-1.34, 0.61
Kuntair	1.16	2.91	0.40	0.69	-4.9, 7.23
Pirang	1.58	2.56	0.62	0.54	-3.76, 6.91
Sukuta	2.61	2.68	0.98	0.34	-2.98, 8.21
Model fit: $Adj\ R^2_{ABC}$ = 0.01, *n* = 26					
Model 2: Difference in SRQ-20 scores at follow-up for SRQ-20 subgroup					
	Est.	**S.E.**	***t***	***p***	**95% CIs**
(Intercept)	-4.94	6.52	-0.76	0.46	-18.92, 9.03
Group.Control	**2.46**	**1.82**	**1.35**	**0.20**	**-1.44, 6.36**
EPDS.Baseline	-0.22	3.87	-0.06	0.96	-8.52, 8.09
Kuntair	-3.13	3.77	-0.83	0.42	-11.22, 4.95
Pirang	0.94	3.66	0.26	0.80	-6.90, 8.79
Sukuta	-0.12	0.40	-0.29	0.77	-0.97, 0.74
Model fit: $Adj\ R^2_{ABC}$ = 0.17, *n* = 20					

These findings indicate that the EPDS and SRQ-20 scores from those with higher levels of symptoms and who participated in the intervention (CHIME) had a greater point reduction in their scores compared to those in the Control group across all three time-points. The results from this preliminary exploratory analysis indicate a potentially greater benefit of participation in the CHIME group for women who are experiencing higher levels of CMD symptoms in pregnancy.

6.6. Discussion

6.6.1. Co-developing CHIME.

Overall, this study found that a Community Health Intervention through Music Engagement (CHIME) could be co-developed and delivered by local Kanyeleng groups. The results from Chapter 4 identified various elements that helped with the development of the intervention. The content of the lyrics was influenced by the relevant contributing factors discussed, such as the importance of social support. Similar to previous work on perinatal mental health interventions in LMICs (Chowdhary et al., 2014; Padmanathan & De Silva, 2013; Prost et al., 2013), the current intervention found the use of NSHW as the facilitators of a community-based intervention, and the inclusion of the cultural practices of the Kanyeleng, as vital elements to the intervention's success.

The Kanyeleng groups used existing health communication songs and lullabies within the intervention sessions. The use of repetition in these types of songs was helpful for the memorisation of the content and lyrics (Bingley, 2011; Trehub & Trainor, 1998). The use of recognisable and repetitive songs helped some women use these songs in their daily lives to cope with stressors and also encouraged participants to spread the information to others in the community.

Finally, the workshops allowed for consistency in the structure and general aim of the intervention sessions, while also simultaneously encouraging the Kanyeleng groups to tailor the specific content and music to meet the specific needs of those within their community. Overall, this study has shown that through careful co-development, a complex intervention can strike a balance between a consistent and flexible format, making it culturally appropriate and acceptable.

6.6.2. The feasibility of CHIME.

This study also found that the co-developed intervention (CHIME) was feasible to deliver, and potentially beneficial, compared with standard care, for pregnant women in The Gambia.

6.6.2.1. Retention

High recruitment levels (81% of those approached consented) and reasonably low attrition rates (33% across all three time-points, 20% between baseline and post) were found. Feedback from participants and RAs revealed that some attrition could have been due to the women being difficult to contact, either through low phone battery or call credit. A problem with the reliability of cell phones has been identified in other studies conducted in The Gambia (Cole-Ceesay et al., 2010). A future study might help overcome this by providing either phones or phone credit to the participants.

Another way to encourage participant retention would be to implement some of the suggestions given in the post-intervention interviews and FGDs. Lack of funds for transportation was a barrier many participants discussed. There was also concern from those running the sessions that the pregnant women lacked the energy needed to participate in the music-making because they were hungry. One study on women living in the rural areas of The Gambia found that, on average, women have low weight gain in pregnancy (about 60% of the recommended optimum) (Ceesay et al., 1997; Prentice, Whitehead, Roberts, & Paul, 1981). Traditional Kanyeleng ceremonies and gatherings, like naming ceremonies, usually also include cooking together and sharing food (McConnell, 2020; Saho, 2012). Including breakfast might be a helpful addition to the program as it would be appropriate culturally to share food and might support women's nutrition and increase participation. Finally, it was also

suggested that CHIME continue longer into pregnancy, following the women until delivery. Careful consideration of cost and sustainability would need to be considered to help address these suggestions.

The aim of this intervention, as well as other maternal mental health interventions around the world, is to be accessible to all members of the community, not just those with the financial means to attended (Patel et al., 2018). Additionally, mental health interventions, especially those within LMICs, should be sustainable and not reliant on outside funding, a concern raised by participants in Chapter 4 and previous research (McConnell, 2020; Wainberg et al., 2017). Collaborating with policymakers to identify areas of policy change can help ensure that a future iteration of this type of intervention is both accessible and sustainable (Petersen et al., 2016; Saxena, 2016; Saxena et al., 2007; Wainberg et al., 2017). The current project has already built a strong partnership with the Ministry of Health and Social Welfare (MoHSW), the government body responsible for health policy in The Gambia. Future research can work with these partners towards a more sustainable and accessible solution to the potential costs involved in CHIME.

6.6.2.2. Trial design.

As discussed, the timeline of the intervention needed to be shifted forward due to Ramadan. In addition, the rainy or 'hungry' season (July–October) can impact travel (Fardi, 2017; S. E. Moore et al., 1997). These factors made it challenging to complete a stepped-wedge trial design. For this reason, a future definitive trial may be better suited to a different design such as a randomized cluster crossover trial which is less dependant on specific intervals between starting dates (Arnup, McKenzie, Hemming,

Pilcher, & Forbes, 2017). If the future aim of the intervention is to run year-round then potential modifications, such as using Quran recitations instead of traditional music during Ramadan could be implemented.

6.6.2.3. Fidelity, acceptability and reach.

In terms of the deliverability of the intervention, we observed relatively high attendance, with 72% of participants attending at least half of the six sessions. Furthermore, the audio and video analysis confirmed the fidelity of the intervention. Both RAs agreed that all essential elements were included in every session viewed. However, there were differences in attendance between the urban clinic (Sukuta) and the three rural clinics (Gunjur, Pirang and Kuntair). More women in urban areas have a job in addition to needing to take care of all the housework (The Gambia Bureau of Statistics (GBOS) and ICF International, 2014). Additionally, many do not live with extended family members who can help with childcare (The Gambia Bureau of Statistics (GBOS) and ICF International, 2014). Therefore, women in the urban areas might have more time constraints making it difficult for them to attend. In addition, the RAs noted that the session recordings from Sukuta seemed less engaging and exciting than the other clinics sessions, even though all the required components were included. This could have been a reaction to low attendance, or low attendance could have been influenced by less engaging sessions. This marked difference might speak to the need for future work to investigate more closely differences between urban and rural settings in the intervention development and delivery.

The post-intervention interviews and FGDs allowed for a deeper understanding of participants' experience of the intervention. By using a mixed-methods approach,

potential problems with the intervention delivery or development could be examined (O'Cathain et al., 2015). The participants and the facilitators of the intervention were interviewed allowing for different perspectives and insights to be integrated, maximising the usefulness of the quantitative and qualitative data collected (O'Cathain et al., 2015; Padmanathan & De Silva, 2013).

In general, the intervention was found to be universally acceptable and enjoyable. Most surprisingly, the interviews and FGDs revealed the reach of the intervention went beyond that of the individuals involved. Participants explained how they had used what they had learned in the intervention sessions to educate other women in their communities. The extension of the intervention has been discussed as one of the benefits of community-led mental health interventions, giving those involved the agency in supporting and teaching others (Kohrt et al., 2018). This identified subsequential effect is a gap in the literature, where future work might aim to measure the potential population effects of a community-situated perinatal mental health intervention in The Gambia.

6.6.2.4. Feasibility of outcome measures.

While both tools were able to detect a change in antenatal CMD symptoms after the intervention, the SRQ-20 showed a more symmetrical distribution and allowed for more variance in the scores over time. As discussed in Chapter 5, the inclusion of somatic CMD symptoms within the SRQ-20 (e.g. headaches, shaking hands) might contribute to it being a more sensitive measure for antenatal CMD symptoms in The Gambia (Hanlon, Medhin, Alem, Araya, Abdulahi, Tesfaye, et al., 2008; Senturk et al., 2012). A difference between the two groups after the intervention was identified.

This difference indicates that the SRQ-20 is not just measuring changes in pregnancy-related somatic symptom, but rather is able to detect potential changes in CMD symptoms. A floor effect was observed in the EPDS scores making a change in EPDS symptom severity difficult to measure over time. Therefore, the SRQ-20 could be argued to be a more appropriate outcome measure for a future definitive trial.

6.6.2.5. Potential efficacy and subgroup analysis.

Though the results are preliminary, a beneficial effect of CHIME was identified when compared to standard care. Participants in the CHIME group saw about a 2 point greater reduction in the CMD symptoms scores compared to those in the Control group after the intervention. Results also indicated the effects last up to four weeks after the intervention had ended. The treatment effect sizes were medium to large, using a Cohen's f^2 calculation, helping with the power and sample size calculation needed for a larger definitive study.

Within the subgroup analysis of those with higher levels of baseline antennal CMD symptoms on both the EPDS and SRQ-20, a greater reduction in symptoms of about 4 points was found post-intervention in CHIME participants compared to those who only received standard care. However, the small sample size and imbalance between the groups present significant limitations in the interpretation of these findings. These limitations may have lead to the large decrease in EPDS average score (from an average score of 8.25 to 0.29) observed in the CHIME group. A future definitive trial that aims explicitly to measure these subgroup effects would be better suited to understand how CHIME affects those with a higher level of baseline antenatal CMD symptoms.

6.6.3. Limitations.

While the overall recruitment rate was high (81%), fewer women were recruited into the CHIME group (n = 50) compared to the Control group (n = 74). Feedback from the RAs indicated that this was potentially due to the frequency of available clinic days to complete recruitment. The four antenatal clinics varied in how often they were open. For instance, Sukuta ran an antenatal clinic three times a week while Pirang ran one antenatal clinic a month. Therefore, the number of potential participants depended heavily on how many women were present at the clinics within the week recruitment was completed.

In addition, participants were not blinded to which group they were assigned, increasing the potential for response bias, a problem faced by many research studies that use self-reporting (D. Chan, 2008). Furthermore, participants who consented to take part in CHIME needed to commit more time to the study. Women, who had work or childcare commitments may have found it more challenging to consent to the study. Nonetheless, if this was a significant barrier, one might expect that more people declined to take part in the CHIME group versus the Control group. However, this was not the case as 20% declined to take part in the Control group, and 12% declined to take part in CHIME. A future study might help reduce these limitations through a different trial design with a more extended recruitment period and a consenting process where participants are not aware of their group assignment until after they have agreed to take part.

There were two significant differences observed at baseline between the two groups. Participants in the CHIME group rated their enjoyment of participating in group music programmes as higher than those in the Control group. This difference is not

surprising as those who like music are more likely to consent to take part in a music study. However, there was no difference in the overall music engagement score, a combined score of all three music engagement and enjoyment questions, between the two groups. Participant's baseline antenatal CMD symptoms scores were also significantly lower in the CHIME group compared to the Control group. This difference might have also been due to those with less time constraints, and potentially less stress, being more likely to take part in the intervention. However, these differences could be accounted for within the regression model analysis. While these baseline group differences could have been random, a blind consenting process could also help lessen their effect within a future trial.

The Gambia is predominately Muslim with a significant Christian minority (The Gambia Bureau of Statistics (GBOS) and ICF International, 2014). The song repertoire used in the intervention is not religious and people of all faiths took part. In fact, in community settings, it is common for Muslims and Christians to attend each other's celebrations and sing and dance together. That said, some conservative Muslims choose not to participate in this kind of singing. This remains a relatively small minority in The Gambia. However, it is possible that some women declined to participate in the study for religious reasons and therefore may slightly limit the generalizability of this intervention to all women in The Gambia.

As the intervention was administered on the community level, the CMD symptom scores were used as continuous indicators of the quantity of symptoms, rather than as a tool to identify those with a diagnosed disorder (as suggested by Patel et al., 2018). However, one limitation of this method is that a clinically significant high-risk

subgroup of participants cannot be identified. Therefore, the current study cannot investigate how CHIME might affect those with a diagnosed disorder compared to those who are low-risk.

While initial results suggest that there is a higher mean reduction for those in the CHIME group compared to the Control group, the sample size, design and aims of the feasibility trial were not chosen to focus on testing the efficacy of the intervention. Therefore, a more extensive study would be needed to measure the efficacy of CHIME for antenatal mental health in The Gambia.

6.7. Conclusion

Building on the previous two chapters (Chapter 4 and 5), this mixed-methods study was able to demonstrate that a community intervention through musical engagement can be developed and delivered in The Gambia to reduce antenatal CMD symptoms. This study acts as a preface for which a more extensive study in The Gambia can be conducted. No previous study has been identified that investigates the potential of a community music intervention for perinatal mental health in a LMIC. Therefore, these novel results highlight the potential of music interventions for perinatal mental health in LMICs.

Chapter 7. General Discussion and Conclusion

This thesis investigated the potential of a community-led music intervention to support antenatal mental health in The Gambia. An approach focussing on the influence of group music-making on perinatal mental health, is, to my knowledge, completely novel in the low- and middle-income country (LMIC) context. Through the use of a mixed-methods approach and a multiphase sequential design, these studies allowed for a fuller understanding of the cultural processes that are important in the development, implementation and exploration of the impact of a culturally-embedded antenatal mental health intervention.

7.1. Summary of Key Findings

The findings demonstrate that a co-developed Community Health Intervention through Music Engagement (CHIME) to support antenatal mental health can be successfully implemented and evaluated in The Gambia. The information gained from the studies described in Chapters 4 – 6 (summarized below) will inform a future definitive trial to determine the overall efficacy of the intervention.

7.1.1. Chapter 4 results summary.

The qualitative study described in Chapter 4 was foundational in providing a rich understanding of Gambian women's experiences during the perinatal period and how music might play a role in supporting mental health. The pictorial representation created from the information gathered from the focus group discussions (FGDs) highlighted the interaction of different factors (economic, social and spiritual) found to influence women's mental health during the perinatal period in The Gambia. The pictorial representation's focus on these interactions within the broader societal

context, allowed for a novel presentation and discussion of the important factors that influence women's perinatal mental health in a LMIC.

In addition, the focus on music practice within the pictorial representation and in the discussion of the results address new questions not yet investigated in previous research: What musical practices surround the perinatal period? What role do these practices play in supporting mental health? Various practices by griots and Kanyeleng groups, including naming ceremonies, health communication and lullabies, were described as supporting health and mental health in the perinatal period. Various common symptoms and helpful behaviours were also identified. Similar to previous literature, a focus on somatic symptoms was found. These results, along with the identified idioms of distress (*Sondomoo tenkung baliyaa* (Mandinka) and *hel bu dalut* (Wolof)) were helpful in the translation of the two measurement tools used in Chapter 5 and 6. The behaviours and treatments that participants reported to be beneficial in supporting mental health in pregnancy included a mix of biomedical, traditional and social methods including engaging in music and community events. This study's findings helped to understand perinatal mental health in The Gambia and proved essential to the development of the intervention (Chapter 6).

7.1.2. Chapter 5 results summary.

Within the quantitative study described in Chapter 5, two measurement tools (the Edinburgh Postnatal Depression Scale (EPDS) and Self-Reporting Questionnaire (SRQ-20)) were translated into two local languages (Mandinka and Wolof). They were then tested within a sample of pregnant Gambian women. The EPDS was also used to compare the tool performance in a Gambian versus UK context. The results from this chapter helped to determine if the EPDS and SRQ-20 could be used as an

outcome measure for the intervention study described in Chapter 6. Differences in the performance between the two tools and between the two cultural contexts were observed, revealing important distinctions in antenatal CMD symptom expression in The Gambia. These included more somatic, social, and anxiety related symptoms being expressed.

The EPDS and SRQ-20 performed differently. The EPDS was highly positively skewed while the SRQ-20 was more symmetric. This difference was interpreted as being influenced by the difference in the types of symptoms measured by both tools; the SRQ-20 includes somatic symptoms items while the EPDS does not. While the inclusion of somatic symptom measurement in a pregnant population presents a difficulty in disentangling the pregnancy-related symptoms from CMD symptoms, previous work with perinatal populations in Africa have found the somatic symptoms to be important indicators of CMD (Stewart et al., 2009; Tesfaye et al., 2010). The somatic symptoms were the most endorsed SRQ-20 items, supporting the prevalence of somatic symptoms discussed in the FGDs in Chapter 4 and previous literature (Okulate et al., 2004). The EPDS was found to have a different factor structure when comparing UK pregnant participant's scores to Gambian pregnant participant's scores. This observed difference revealed dissimilarities in the constructs represented by EPDS scores between these two cultures.

Differences in the proportion of women identified as above or below various thresholds were found. These discrepancies led to a more appropriate method of measurement throughout the rest of the research whereby symptoms were measured along a spectrum of severity, in line with suggestions made by a recent commission

on mental health interventions (Patel et al., 2018). Therefore, both the EPDS and SRQ-20 were used in the last study (Chapter 6) to investigate their usefulness as an antenatal intervention outcome measure in The Gambia.

7.1.3. Chapter 6 results summary.

The aim of the final study was to develop and test the feasibility of a Community Health Intervention through Musical Engagement (CHIME). Workshops were held with Kanyeleng groups, and an intervention mission statement was developed. This type of co-development led to the creation of a complex intervention (CHIME) that is consistent in its aim, structure and content, but flexible enough to cater to the individual communities it is aiming to serve. Using a mixed-methods approach, CHIME was found to be enjoyable, feasible and acceptable by both the participants and the facilitators. Preliminary results indicated that CHIME might have a beneficial effect, where those who participated showed a greater mean reduction in antenatal CDM symptoms, as measured by the EPDS and SRQ-20, than those who received standard care. The fidelity of the intervention was confirmed through video and audio recordings, indicating that the goals of the sessions could be realised across four different antenatal clinics. Findings from the qualitative data indicated that information shared within the intervention sessions were spread to others within the wider community. Participants who took part in CHIME felt an increased sense of agency equipping them with skills and information to help others. This speaks to the potentially broader effect this type of community intervention might serve. This feasibility study, along with the information gained from the previous two chapters, sets the stage for the development of a more extensive definitive trial where CHIME can be scaled-up across The Gambia and potentially other areas of West Africa.

7.2. Generalizability

Throughout the research, representation in terms of area and language were considered. Fourteen areas, covering three different regions, were represented in the participants involved in the FGDs described in Chapter 4. In addition, the expertise of the participants varied, representing a mix of stakeholders relevant to this work. They included pregnant women, health workers and musicians. Ten different clinics were used in Chapter 5 and four in Chapter 6. The chosen clinics were in both rural and urban areas as well as Mandinka and Wolof communities. However, further adaptations might need to be made to ensure the intervention can be effectively delivered with appropriate attendance in both rural and urban areas. The suggestions made within the post-intervention FGDs (e.g. payment for transportation) or changes in the design (e.g. blinded design) could be potential helpful adaptations.

Even though our findings had a good level of generalizability to The Gambia (e.g. with participants representing a range in participant age, marital status and education), it is important to consider how generalizable the intervention would be to other similar African contexts. In Senegal, *Bajenu Gox* (‘aunts of the nation’) are respected, older women who have long provided support and advice to younger women relating to pregnancy and motherhood (Quagliariello, 2014). Moreover, Senegal and The Gambia share traditional languages and cultures. The ability for this intervention to be extended across the Senegalese area, West Africa and even the entire continent is dependent on the ability to work with local music groups to create an appropriate and feasible community-led music intervention.

7.3. Limitations and Future Directions

There are various limitations within this research with specific limitations summarised at the end of each data chapter (Chapter 4, 5 and 6). By combining the discussion of limitations with proposed future directions, how limitations can lead to future research designs and ideas is emphasised.

Throughout the current work, there is a potential effect of consent bias. Consent bias is when the baseline data collected differs due to the consenting process (Junghans & Jones, 2007). While the demographic information of the participants is generally representative of the population, other differences were present. For example, as explained in Chapter 6, because of the non-blinded design of the feasibility trial, participants knew that involvement in the CHIME sessions required participating in a music group. This could have resulted in participants within all three studies representing women who enjoy this type of activity, as opposed to those who do not. However, information from the FGD explained the embedded nature of music and music engagement, which indicates that the number of people in The Gambia who do not engage in this type of music engagement is small.

Within the feasibility trial, participants in the CHIME group had to attend weekly hour-long sessions for 6 weeks. Time constraints due to childcare or work responsibilities made it hard for some women to take part in this research. Women, who are busy with work and childcare, might also have more antenatal CMD symptoms due to higher levels of stress. A difference in baseline CMD symptoms scores was found, where women in the CHIME group had lower baseline CMD symptoms than those in the Control group. The present consenting bias could explain

this identified difference. Therefore, future work should try to blind participants to their group assignment until after informed consent is obtained.

Additionally, some women might not have consented because they did not have permission or consent from their husband or another family member. Withdrawing consent due to a family member has been found in other health intervention studies conducted in The Gambia (O. T. Idoko et al., 2014). Future work could help mitigate this by including the husbands in the consenting process, as suggested in the FGDs summarised in Chapter 4.

The development of the intervention is aimed to support those with a variety of symptoms (from low to moderate) and, therefore, women with severe mental illness during pregnancy may not benefit from this type of intervention. Globally, about 0.89 to 2.6 in 1000 women experience perinatal psychosis (VanderKruik et al., 2017). Women with this disorder or other severe mental illnesses like schizophrenia or bipolar disorder are more at risk in LMIC where services are fewer and stigma is greater (Van der Kruik et al., 2017). While the CHIME intervention described in these studies may not be appropriate to help reduce symptoms in women with severe mental illness, the messaging within the intervention sessions could help reduce stigma within the community. Furthermore, through the existing partnerships created within The Gambia, future work could be developed to help address this specific need.

7.3.1. Missing demographic factors of interest.

There are various factors, identified by previous research and the results from the FGDs (Chapter 4), which are known to be associated with perinatal CMD symptoms that were not measured within this study. While it is important to consider the burden

on the participant, future research could measure other baseline information to investigate possible associations between them and antenatal CMD symptom level. Possible suggestions are outlined below.

7.3.1.1. Previous experience.

A woman's previous experiences, such as previous mental illness, miscarriage, loss of a child or traumatic birth, can increase perinatal CMD symptoms (Biaggi et al., 2016). While no demographic factors were found to be associated with increased EPDS and SRQ-20 scores within the current work (Chapter 5), future research could collect this information, either through an interview with the participant or from any available medical records, to determine the potential impact of these factors on Gambian women's levels of antenatal CMD symptoms.

7.3.1.2. HIV status.

In addition to these health factors, participants' HIV status was not explicitly collected. Participants were asked about any history of a serious illness, which could include their HIV status. This was done based on advice from colleagues in The Gambia who felt that directly asking might be too sensitive, especially as the information was not pertinent to the primary research aim. About 1.36 million pregnant women are living with HIV in Sub-Saharan Africa (World Health Organization, 2011), and about 2.1% of women in The Gambia are HIV positive. Studies in other Sub-Saharan African countries have shown that having HIV elevated reported antenatal depression symptoms (Rochat, Tomlinson, Newell, & Stein, 2013). About 54% of women in The Gambia receive an HIV test at their antenatal visit, and this is usually the first time they have been tested (The Gambia Bureau of Statistics

(GBOS) and ICF International, 2014). Therefore, receiving the test and subsequent results could also cause distress. Future studies could collect participants' HIV status, confidentially, through an ethically conducted data transfer between the health centre and the research team. It is also possible, in future studies, for some of the content within the CHIME sessions to include information about the mental health implications of living with HIV or anxiety around getting tested.

7.3.1.3. Intimate partner violence.

Intimate partner violence (IPV) is a global health problem that affects pregnant women and their mental health (Halim et al., 2018). IPV is defined by the World Health Organization (WHO) as "a range of sexually and/or psychologically coercive acts which are used against women or men by a current or former partner" (Krug, Gahlberg, Mercy, Zwi, & Lozano, 2002). Rates of IPV within pregnancy range between 3% – 30% (Van Parys, Verhamme, Temmerman, & Verstraelen, 2014), with higher rates (3% – 65%) identified in women from LMICs (Halim et al., 2018). IPV has also been found to be associated with more symptoms of perinatal depression, anxiety and post-traumatic stress disorder (PTSD) (Halim et al., 2018; Howard, Oram, Galley, Trevillion, & Feder, 2013). In the 2013 demographic survey within The Gambia, it was found that 58% of women felt that wife-beating was justified (The Gambia Bureau of Statistics (GBOS) and ICF International, 2014). Also, a study whose main aim was to measure IPV prevalence in pregnancy in The Gambia, found that 62% of pregnant women who attended their antenatal visits reported experiencing some form of IPV with verbal abuse being the most common (P. Idoko, Ogbe, Jallow, & Ocheke, 2015). Due to the identified high prevalence of IPV in The Gambia, future research could collect information on IPV rates to investigate its association with

antenatal CMD symptoms. A future iteration of the intervention sessions could also include songs that help change perceptions around IPV and provide women with helpful recourses.

7.3.1.4. Partner and social support.

Previous research (Fisher et al., 2012; Wittkowski et al., 2014), as well as the results from the FGDs in Chapter 4, found lack of husband support as one of the most salient contributing factors related to poor perinatal mental health globally and in LMICs. An effort was made to include suggestions of how to manage this relationship within the content of the intervention session songs. However, no information was collected to give any indication of the support, or lack there of, women had from their husbands at baseline.

Social support from other members of the family has also been identified as a prevalent contributing factor within this current work (Chapter 4) and in previous research (Fisher et al., 2012; Wittkowski et al., 2014). A study conducted in Ethiopia investigated the potential moderating role social support had on the association between an unwanted pregnancy and antenatal depression symptoms (Dibaba, Fantahun, & Hindin, 2013). They were able to use the Maternal Social Support Scale (MSSS; Webster et al., 2000) and collect the data orally. Future work in The Gambia could use similar methods to explore the relationship between social support and perinatal CMD symptoms.

7.3.2. Alternative outcome measures.

Only reduction of antenatal CMD symptoms, using the EPDS and SRQ-20, was investigated within this thesis. Other potential factors might also be affected by the

intervention. Future work could include various secondary outcomes to understand the potential additional benefits of CHIME.

7.3.2.1. Pregnancy-related anxiety.

Previous research has suggested that pregnancy-related anxiety (PRA), which is distinct from depression, stress, or general anxiety, is more strongly associated with maternal and child outcomes than general anxiety and depression (Bayrampour et al., 2016). PRA is a specific form of anxiety that is related to worries about foetal health, foetal loss, childbirth, parenting and new-born care (Bayrampour et al., 2016; Huizink et al., 2016). High PRA symptoms have been linked to preterm birth, pregnancy complications and adverse infant outcomes (Lobel et al., 2008). In LMICs this form of anxiety may be greater where the risk of death for the mother and her infant is higher (Glover et al., 2018; Sawyer et al., 2010; The Gambia Bureau of Statistics (GBOS) and ICF International, 2014). The current research did not measure the effect of CHIME on PRA symptoms in particular. However, one of the aims of the intervention was to give women information about the common physical and psychological symptoms of pregnancy. Further, it aimed to create a network of other women to help with any worries they might have. It could be hypothesised that these elements would have reduced not only CMD symptoms but PRA symptoms as well. One study in Tanzania was able to measure PRA symptoms successfully and found they were highly associated with antenatal depression symptoms (Rwakarema, Premji, Nyanza, Riziki, & Palacios-Derflingher, 2015). Therefore, subject to adequate translation processes of an existing tool like the Pregnancy-Related Anxiety Questionnaire (PRAQ; Huizink et al., 2016), the effect of CHIME on PRA symptoms could be investigated.

7.3.2.2. Mother-infant attachment.

A review of community perinatal mental health interventions in LMICs found that interventions that are led by non-specialist health workers (NSHW) were able to improve mother-infant relationships (Rahman, Fisher, et al., 2013). In addition, singing songs during pregnancy, especially lullabies, has been shown to increase a mother's bond with her infant, though few studies have been conducted (Perkins et al., 2018; Persico et al., 2017) and none in a LMIC context. One of the functions of lullabies is to create a bond between the mother and her baby (Trehub & Trainor, 1998), a function also identified through the FGDs summarised in Chapter 4. Within the post-intervention interviews and FGDs, the usefulness of lullabies once the infant was born, was expressed. Investigating whether CHIME has a measurable effect on attachment, by using, for example, a translated version of the Maternal Antenatal Attachment Scale (MAAS; Condon & Corkindale, 1997), could be an interesting secondary outcome and inform an area substantially under-researched globally.

7.3.2.3. Social support.

One of the aims of the intervention was to reduce symptoms through the creation of a socially supportive network. While the post-intervention interviews and FGDs indicate that the intervention was able to achieve this, future research could also use the Maternal Social Support Scale (MSSS; Webster et al., 2000) as a secondary outcome measure.

Research in HICs has found that singing in groups increases participants' feelings of social cohesion and bonding, even after one singing session (Pearce et al., 2015;

Williams et al., 2018). However, to our knowledge, no research has been conducted to quantitatively investigate the effect of group singing on social bonding in LMICs. Bondedness with others is likely to depend on the structure and dynamics of culture and society. Research conducted in Kenya found that conceptions of the self are more collective and less individualized than Western self-concepts (Ma & Schoeneman, 1997). Therefore, using oral measures of social identity and bondedness, might allow for a fuller understanding of the potential effect of group singing on social bonding in a West African context.

7.3.2.4. Postnatal CMD symptoms.

Antenatal depression and anxiety strongly predict postnatal depression (Milgrom et al., 2008). In LMICs, community-led interventions that take place in pregnancy, like CHIME, can reduce postnatal CMD symptoms (Rahman, Fisher, et al., 2013). Previous research has also shown that music interventions in pregnancy can reduce postnatal depression symptoms and stress (Friedman et al., 2010; Persico et al., 2017). Investigating whether the intervention could reduce women's postnatal CMD symptoms would be a valuable next step in the development of the intervention. It would also be straightforward to implement this within the larger definitive trial design, where postnatal time points could be added.

7.3.2.5. Infant outcomes.

Previous research, summarised in Chapter 2 Section 2.4, has shown the effect antenatal CMDs and their symptoms have on various physical, psychological, cognitive and behavioural infant outcomes in high-income countries (HICs) and LMICs. Community mental health interventions in LMICs have been found to

positively impact various infant outcomes, including better cognitive development and growth, reduced diarrhoeal episodes and increased immunization rates (Rahman, Fisher, et al., 2013). Secondary infant outcomes could also be included in a future definitive trial. These could include gestational age at birth, birth weight, the presence of birth complications, breastfeeding success and vaccination uptake.

Additionally, infant behavioural and cognitive development could be measured. One study conducted in The Gambia investigated the association between postnatal depression and infant behavioural development (Bartram, 2018). As part of this work, the Neonatal Behavioural Assessment Scale (NBAS; Brazelton, 1973) was adapted for use within The Gambia and local research assistants were trained to administer the scale. While the use of an already adapted and tested scale would be possible for use in future work, these types of developmental instruments tend to be time-consuming and costly. The Ages and Stages Questionnaire (ASQ; Squires, Twombly, Bricker, & Potter, 2009), is a brief parental-report measure of infant function across several domains, which has been successfully used in South Africa (Hsiao et al., 2017). Using a translated tool, like ASQ, might be more feasible when investigating the secondary effect of CHIME on infant behavioural development within future work.

Overall, there are many different potentially relevant factors that could not be measured within the scope of the current work, many of these relating to pragmatic reasons of time and resource. While one limitation of the current work is the absence of information related to some of these relevant factors, future research studies could be conducted to help fill the gap within the literature investigating associations between perinatal CMD symptoms and other relevant factors in LMICs. Future work

could also investigate the potential additional benefits of a community-led music group intervention, beyond the reduction of antenatal CMD symptoms.

7.3.3. The elements of a complex intervention.

The developed complex intervention includes many different interacting components. The potential effect of each element included in the intervention on the outcome is difficult to determine. The CHIME intervention includes singing, dancing, being in a group with others, singing lullabies, and receiving health information. These elements, individually or in combination, might act as the 'active ingredient' behind the potential effect observed. While the post-intervention interviews and FGDs give some indication of the essential elements, a process evaluation could help disentangle the mechanisms involved in CHIME (G. F. Moore et al., 2015). In addition, the CHIME group had more contact with the research team, the Kanyeleng and CHNs. The inclusion of an active control group, such as a weekly group health talks held for the same amount of time, could help control for differences in the allocated time given to each group and reveal the potential mechanisms behind the observed effects.

7.3.4. Sustainability.

Within the FGDs (Chapter 4), the midwives specifically spoke about sustainability as a vital factor to consider in the development of the intervention. While a future definitive trial would require funding, an ultimate goal would be to have CHIME implemented and supported by the local health service and government, without the dependence, or at least very little dependence, on foreign funding. With very little money and resources available (World Bank, 2015), the cost-effectiveness of the intervention is crucial. While psychotherapies are more cost-effective than pharmaceutical treatment in LMICs, the specific cost-effectiveness of this

intervention within The Gambia would need to be assessed (Chisholm et al., 2004). However, the intervention itself is inherently low-cost.

Sustainability of a mental health intervention can also be achieved through the sustained advocacy from a diverse group of stakeholders (Chisholm et al., 2007; Rahman, Surkan, et al., 2013). Through the early involvement of two government bodies, the Ministry of Health and Social Welfare (MoHSW) and the National Centre for Arts and Culture (NCAC), as well as the involvement of community leaders, a large group of individuals within The Gambia have been identified to help advocate for this work in the future. This type of support and partnership can help influence policymakers to implement the intervention within the perinatal health service within The Gambia.

7.4. Implications and Final Conclusion

Through the interdisciplinary nature of the work, significant partnerships have been created, which can help to develop the work further. The feasibility of CHIME has been confirmed, showing how a community-led music intervention is possible to implement within The Gambia, paving the way for a definitive full-scale trial.

While the potential impact on The Gambia is evident, this research also has implications for research in other LMICs. Research has shown that poor perinatal mental health is highly prevalent and is more prevalent in LMICs, where poverty and other risk factors exacerbate symptoms. The Millennium Development Goals (UN General Assembly, 2000) followed by the Sustainable Development Goals (World Health Organization, 2015) have encouraged researchers, health professionals and global health organisations to address the large mental health treatment gap present in

many LMICs (Demyttenaere et al., 2004). Research in this area has focused on the use of embedded community members and groups to deliver mental health interventions (Rahman, Fisher, et al., 2013). The inequities in mental health care distribution, inefficiencies in their use, the high levels of stigma (Saxena, 2016) and the high burden of maternal mental health globally have led to a specific need to develop low-cost, sustainable, culturally-embedded and non-stigmatising maternal mental health interventions.

This thesis shows the potential of an unexplored community-based approach, the utility of music-based interventions. The findings act as a proof-of-concept for other research on interventions for perinatal mental health in LMICs. Music is present in every known culture (Wallin et al., 2000) and offers an opportunity to develop culturally-embedded, non-stigmatising, community-led and low-cost perinatal mental health interventions around the world. The work presented here shows how a community health intervention through music engagement can be developed and implemented in a LMIC to help support antenatal mental health.

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Appendices

Appendix A: English Version of EPDS and SRQ-20

Edinburgh Postnatal Depression Scale (EPDS) (Cox et al., 1987)

Please tick the answer which comes closest to how you have felt ***in the past week***, not just how you feel today. There are no right or wrong answers and please feel free to answer honestly as these questionnaires are confidential.

1. **I have been able to laugh and see the funny side of things:**
   - ☐ As much as I always could
   - ☐ Not quite so much now
   - ☐ Definitely not so much now
   - ☐ Not at all

2. **I have looked forward with enjoyment to things:**
   - ☐ As much as I ever did
   - ☐ Rather less than I used to
   - ☐ Definitely less than I used to
   - ☐ Hardly at all

3. **I have blamed myself unnecessarily when things went wrong:**
   - ☐ Yes, most of the time
   - ☐ Yes, some of the time
   - ☐ Not very often
   - ☐ No, never

4. **I have been anxious or worried for no good reason:**
   - ☐ No, not at all
   - ☐ Hardly ever
   - ☐ Yes, sometimes
   - ☐ Yes, very often

5. **I have felt scared or panicky for no good reason:**
   - ☐ Yes, quiet a lot
   - ☐ Yes, sometimes
   - ☐ No, not much
   - ☐ No, not at all

6. **Things have been getting on top of me:**
   - ☐ Yes, most of the time I haven't been able to cope at all
   - ☐ Yes, sometimes I haven't been coping as well as usual
   - ☐ No, most of the time I have coped quite well
   - ☐ No, I have been coping as well as ever

7. **I have been so unhappy that I have had difficulty sleeping:**
   - ☐ Yes, most of the time
   - ☐ Yes, sometimes
   - ☐ Not very often
   - ☐ No, not at all

8. **I have felt sad or miserable:**
   - ☐ Yes, most of the time
   - ☐ Yes, quite often
   - ☐ Not very often
   - ☐ No, not at all

9. **I have been so unhappy that I have been crying:**
   - ☐ Yes, most of the time
   - ☐ Yes, quite often
   - ☐ Only occasionally
   - ☐ No, never

10. **The thought of harming myself had** occurred to me:
    - ☐ Yes, quite often
    - ☐ Sometimes
    - ☐ Hardly ever
    - ☐ Never

Self-Reporting Questionnaire (SRQ-20) (Beusenberg & Orley, 1994)

1. Do you often have headaches?	yes/no
2. Is your appetite poor?	yes/no
3. So you sleep badly?	yes/no
4. Are you easily frightened?	yes/no
5. Do your hands shake?	yes/no
6. Do you feel nervous, tense or worried?	yes/no
7. Is your digestion poor?	yes/no
8. Do you have trouble thinking clearly?	yes/no
9. Do you feel unhappy?	yes/no
10. Do you cry more than usual?	yes/no
11. Do you find it difficult to enjoy your daily activities?	yes/no
12. Do you find it difficult to make decisions?	yes/no
13. Is your daily work suffering?	yes/no
14. Are you unable to play a useful part in life?	yes/no
15. Have you lost interest in things?	yes/no
16. Do you feel that you are a worthless person?	yes/no
17. Has the thought of ending your life been on your mind?	yes/no
18. Do you feel tired all the time?	yes/no
19. Do you have uncomfortable feelings in your stomach?	yes/no
20. Are you easily tired?	yes/no

Appendix B: Back-Translations with Comments

EPDS Back-Translations
Mandinka

1. Fo i ka jele aning ka suuteroo ke jelekuwolu fanang be daameng?

1. Do you laugh and recognises laughable things?

Comment: The expert panel changed this question slightly to make it more straightforward. The final version is: Fo I ka jele aning fo I ka jelekuwolu fanang kalamuta. This literally means Do you laugh and are you aware/do you feel when something is funny? The only difference is the change from *recognizing* to *being aware/feeling* when things are funny. This was seen to be a clearer phrasing.

2. Fo i ka niidiyaa kuwolu jamaa le nyaatosii?

2. Do you anticipate many happy events in the future?

3. Fo i ka i fango jalai kensengke ning kuwolu mang taa a nyaama

3. Do you blame yourself unnecessary when things don't work accordingly?

4. Fo ila miraloo ka siyaa wara i ka tara detering i fango feyi a ye a tara a mang jara wo la?

4. Do you think a lot or feel depressed unnecessarily?

Comment: The expert panel changed this question to Fo i ka fiti le waranta i ka tara detering ne i fango feyi a ye a tara a mang jara wo la? The difference is the "thinking a lot" was changed to fiti which was seen as a better translation for worry. The second term "ka tara detering I fango fey" refer to a feeling of tension or anxiety. (Not depression as Lamin translated it).

5. Fo i ka silla wara i kijo ka i fara a ye a tara a mang jara wo la

5. Do you feel scared or nervous unnecessarily?

6. Fo haajoolu meng be i kang, i mang a samba noo bang?

6. Where you able to solve the problem bothering you?

Comment: Because this backtranslation did not quite match the original concept, the expert panel changed this question. The final version is: Hajoolu k'e detendi le fo a ka koleyaa i bulu ka ila kuwolu tamandi? Literally this means, do things pressure you /stress you to the extent that it is difficult to manage?

7. Fo kontaani baliyaa le ka tinna i buka siinoo noo a nyaama?

7. Does depression prevent you from sleeping well?

Comment: A direct translation of “kontanni baliyaa” is lack of happiness rather than depression.

8. Fo niikuyaa wara niitooroo ka i batandi le bang?

8. Do you suffer from stress and depression?

Comment: This one is a mistranslation by Lamin. Niikuyaa refers to sadness, while niitooroo is more extreme sadness or misery (all dictionaries agree on this). The literal translation is, “Does sadness or misery bother you?”

9. Fo kontaani baliyaa ka i kumbondi le bang?

9. Does sadness makes you cry?

Comment: The expert panel changed this one slightly to make the meaning clearer. This is because when people refer to sadness or unhappiness in Mandinka, they are usually talking about an external event rather than an internal state. The new wording is Fo i ka tara kontaani baliyaa le kono fo i ka kumboo? “Are you in a state of unhappiness to the extent that it makes you cry”. This wording tries to accentuate the state of the individual rather than the external event.

10. Fo waati do ka soto i ka i mira pur ka i fango mantora?

10. Do you sometimes think of harming/hurting yourself?

EPDS Back-Translations
Wolof

1. Ndakh yaw dang nga deh muna ree soo gissee lu la reetaan lo?

1. Had (have) you been able to laugh whenever you would see something laughable?

Comment: The word ndakh in wollof means have you? Instead of had.

2. Ndakh yaw dang dee mu na seentu mbiir yoo khamneh mun na laa kontaan loo?

2. Do you often anticipate things that can amuse you?

Comment: Ndakh yaw dang dee mu na seentu mbiir yoo khamneh mun na laa kontaan loo, in wollof means to look forward to enjoyment things that could make you happy (kontaan) instead of the word to anticipate (anticipate in most cases is to act before in meaning which is gital darra si jaff)

3. Ndakh yaw dang dee am sikka si sa boppa su mbirr demee nom waruta demee?

3. Do you often have doubt in yourself if things don't come out the way expected?

4. Ndakh dang dee ham jaakhleh walla khel bu dalut si li ko jarut?

4. Do you often feel nervous on unnecessarily to things?

Comment: The word jakhhleh means worries instead of nervous. Khel bu dalut (literally lack of peace of mind) is a good Wolof translation for anxiety.

5. Ndakh danga dee ham ragal walla titaangeh si lu ko jarut?

5. Do you often feel fear or frightened in irrelevant issues?

6. Ndakh Jeffeh- jeffeh daffa barri si sa boopa bi be nga khamneh aatanoo ko?

6. Are you overcome with difficulties that you cannot bear?

7. Ndakh danga dee ham nyaka kontaante (walla nakhar) be takh doo muna nelew?

7. Do you experience unhappiness {or sorrow} (sadness) so much that you can't sleep?

8. Ndakh danga dee yeek nakhar walla chono boo khamneh daffa doi war?

8. Do you often feel tremendous sorrow or difficulties?

9. Ndakh dang dee ham nakhar bula deh jooy loo?

9. Do you often experience sorrows (sadness) that makes you cry?

Comment: Sorrows is big to be used as compared to sadness

10. Ndakh am khelaat purr loor sa boopa daff dee nyaw si sa khel bi?

10. Do you have the thought of causing harm upon yourself?

SRQ-20 Back-Translations
Mandinka

1. Fo i ka kundimoo soto le waati ning waati?
1. Do you have headache from time to time?

2. Fo I ka domoro ke a nyaama?
2. Do you eat well/sufficiently?

Comment: The expert panel changed this question to "fo domoro buka diyaa I daa kono?" Literally, "Is the food not sweet in your mouth?" This is the Mandinka equivalent of appetite. The first version could be misinterpreted as lacking resources to buy food. The final version has to do with the individual's interest in food.

3. Sinoo kono i ka bataa le bang?
3. Do you experience difficulties during your sleep?

Comment: The expert panel changed this question to be more direct, "fo ila siinoo buka beteyaa le bang?" (Is your sleep not good?)

4. Fo i ka tariyaa ka silla le bang?
4. Do you quickly get scared?

5. Fo i buloolu ka jarajara
5. Do your hands shakes?

6. I ka tu detering ne i fango feyi wara ila miraloo ka siyaa le bang?
6. Do you feel uncomfortable with yourself or do you meditate a lot?

Comment: The expert panel changed this one to "I ka fiti le bang wara sondomo tenkung baliyaa ke batandi le bang?" This means, "Are you bothered by worries or lack of peace of mind?"

7. Fo konomaakuyaa le ka i batandi le bang?
7. Do you suffers from diarhia/stomach complications?

Comment: The expert panel changed this one to "Fo ni ye domoro ke a buka tariya ka jii le bang?" This is, "When you eat, is the food not fast to go down?" Extensive discussions about this showed that this is the main phrase used in Mandinka to describe problems with digestion. Also, mental health experts explained that this was how people often described their symptoms.

8. Fo miralotenkung baliyaa le ka i batandi le bang?
8. Do you suffer from depression?

Comment: Depression is an inaccurate translation here. "miralotenkung baliyaa" is used to describe lack of focused/steady thoughts.

9. Fo i ka niikuyaa soto le bang?
9. Do you get sad/depressed?

Comment: This was changed from niikuyaa to niitooroo. This is because the first term is often used to describe a sad event. We felt that niitooroo would be more suggestive of an internal state.

10. Fo ila kumboo siyaata le nying waatoo kono le bang?
10. Do you cries a lot during this period?

Comment: The expert panel added the phrase "danna tambiringo" meaning "more than before".

11. Ka kontani ka ila lung o lung haajoolu ke fo a ka koleya i bulu le bang?
11. Do you encounter difficulty for being happy doing your daily errand?

Comment: The expert panel simplified the phrasing on this one slightly to make it more easily understood (Fo i buka kontan ka ila lung o lung haajoolu ke le bang?)

12. Fo i ka bataa kuwo soto ka ila haajoolu tamandi I fango ye?
12. Do you encounter any difficulties by embarking on errands by yourself?

Comment: After lengthy discussion, the panel did not find a direct translation for "decision" that was both widely understood in the Western Region and captured the original meaning. Natandiroo was considered as a direct translation of decision, but this term is not widely used and understood by the younger generation. The expert panel changed this one to "Fo I ka bataa kuwo soto le ka hajoolu t'ee i fango ye?" This means "Is it difficult for you to take charge of things/do things for yourself?" It was felt that this best captured the conceptual meaning of the original question in the Mandinka context.

13. Fo i ka bataa kuwo soto le ka ila lung o lung haajoolu ke?
13. Do you have trouble doing your everyday errands?

Comment: The expert panel changed this one to "I ka naasoo soto ila lung o lung dookuwo to bang?" Literally it means, "do you have a shortness/disability/incompleteness in your daily work?" This captures the concept of the original version better (work being affected) and is clearly understood in Mandinka.

14. Fo waati doo be jee i ka koleya kuwo soto ka haji kendo tamandi dunia baluwo to?
14. Do you sometimes encounter difficulties to embark on important livelihood errands?

Comment: The expert panel changed this one to "Fo i ka koleya kuwo soto ka nafaa kuwolu tamandi dunia baluwo kono?
The only difference here is that "good things" was changed to "worthwhile things." That is, "Do you have trouble engaging with/running worthwhile things in this world?"

15. Fo i buka hamo soto dunia kuwolu to?

15. Don’t you have ambition in worldly affairs?

Comment: The expert panel changed this one to “Fo ila lafoo talaata fengolu to i ka lafi meng na nung? This means, Has your interest/liking for things that you used to like decreased?

16. Fo waati doo be jee, i ka i fango je ko i mang nafaa soto dunia?
16. Is there any given time you consider yourself as worthless in life/in this world?

17. Fo waati do ka soto i ka i mira pur ka i fango faa?
17. Are there times you think of committing suicide?

18. Fo i ka bataa waati o waati?
18. Do you feel tired every time?

19. Fo i kono ka i batandi le bang?
19. Do always suffer from your stomach?

20. Fo i ka tariyaa ka bataa?
20. Do you easily get tired?

SRQ-20 Back-Translations
Wolof

1. Ndakh dang dee ham boopa bu meeti leego leg?
1. Do you often experience headache?

2. Ndakh sa leeka bi daffa wanyeekou?
2. Do you experience lack of appetite?

3. Ndakh dang dee ham nelew bu bon?
3. Do you experience unsound sleep?

4. Ndakh da nga dee gaawa tiit?
4. Do you easily become frightened?

5. Ndakh sa lokhoyi daff dee lokh?
5. Do you often experience shivering of the hands?

6. Ndakh dang dee yeek titaangeh wala d jaakhleh?
6. Do you often feel frightened or nervous?

Comment: The word jaakhleh is used as worries instead of nervous and is the most commonly used to translate the word jaakhleh.

7. Ndakh dang dee ham leeka budut gaawa ress?
7. Do you have digestion problem?

Comment: The word budut gaawa ress; Literarily mean wollof the food that does not easily digest and the word is most commonly used as a complain.

8. Ndakh dang dee ham jeffeh-jeffeh si khalaat bu baakh?
8. Do you have a problem of extreme meditation?

Comment: The word extreme meditation sounds very big to be used. The word jeffeh-jeffeh si khalaat bu baakh means the person have problems in thinking clearly/well

9. Ndakh dang dee nyakaa kontaan?
9. Do you often become unhappy?

10. Ndakh dang dee bug di jooy lu barri?
10. Do you often cry too much?

11. Ndakh da nga dee ham jeffeh-jeffeh purr ham kontaanteh si linga warra deef si bess bi?
11. Do you have problem getting excited regarding your daily responsibilities?
Comment: Getting excited might not be the right phrase in this sentence. The word jeffeh-jeffeh purr ham kontaanteh si linga warra deff si bess bi means having problems being happy in doing your daily activities rather than responsibilities

12. Ndakh dang dee ham jeffeh-jeffeh purr deef sai khelaati boopa?

12. Do you have problem executing your own individual decision?

Comment: Executing is another big word; though it can be a meaning of to make but the most common phrase to make decision used in wollof communities is, deff sai khalati boopa which means to make your own individual thinking.

13. Ndakh doo dee ham khat-khat si sa ligei yi bess bi?
13. Do you usually have obstacles in your daily jobs?

Comment: Ndakh doo dee ham khat-khat si sa ligei yi bess bi? This phrase in wollof means whether the individual is not tie up in her daily activities or work which is most used instead of obstacle and obstacle means something that impedes or holds up progress.

14. Ndakh dang dee ham jeffeh-jeffeh si loo kham neh di nala njering si sa dundu?
14. Do you encounter problems in significant matters concerning your livelihood?

Comment: The word njering in wollof means benefit and also si sa dundu means life. Therefore, this whole means whether the person can't play an important/beneficial part in in his or her life which is the most common phrase used.

15. Ndakh doo dee nyaka iteh si linga warra deef?
15. Do you often show less concern regarding your responsibilities?

Comment: Showing less concern means the individual is doing things but not properly as compared to lost of interest in things. So the better wording should be nyaka iteh (lost of interest in things)

16. Ndakh dang dee ham yeek-yeek ne yaw doo darra?
16. Do you often feel low self-esteem?

Comment: The word low self-esteem sounds very big in translation to yaw dor darra which literally means in wollof that you are worthless somebody

17. Ndakh danga dee toog di khalat neh dee moo la genal?
17. Do you often sit and think that dead is more preferable to you?

18. Ndakh dang dee soona wakhtu bu neeka?
18. Do you often feel tiredness every time?

19. Ndakh dang dee ham yeek-yeek gi jeffeh-jeffeh biir?
19. Do you often feel stomach complications?

Comment: Still, complications is big to use. The jeffeh-jeffeh birr in wollof can mean stomach pains or problems.

20. Ndakh dang dee gaawa soona?
20. Do you easily experience tired?

Appendix C: Mandinka and Wolof Versions of EPDS and SRQ-20

EPDS
Mandinka

Please tick the answer which comes closest to how you have felt *in the past week, not just how you feel today*. There are no right or wrong answers and please feel free to answer honestly as these questionnaires are confidential.

Bao saaying kono bee la, waranta i wuluuta a mang mee, m be lafi la ka a long i be nyaadi le. M be nyininkaroo ke la ka juubee i be nyaadii le tili worowulo nying kono, a manke i ye i fango je nyaameng bii damma.

1. Have you been able to laugh and see the funny side of things? 1. Fo i ka jele aning fo i ka jelekuwolu fanang kalamuta?	☐0. As much as I always could Haa, baake fango n lafita ala nyaameng	☐1. Not quite so much now A buka siyaa baake ko a be nung nyaameng	☐2. Definitely not so much now A buka siyaa fereng	☐3. Not at all M buka jele fereng
2. Have you looked forward with enjoyment to things? 2. Fo i ka niidiyaa kuwolu jamaa le nyaatosii?	☐0. As much as I ever did Haa, baake fango n lafita ala nyaameng	☐1. Rather less than I used to A buka siyaa baake ko a be nung nyaameng	☐2. Definitely less than I used to A buka siyaa fereng	☐3. Hardly at all Haani, m buka feng nyaatosii
3. Have you blamed yourself unnecessarily when things went wrong? 3. Fo i k'e fango jalai kensengke le ning kuwolu mang taa a nyaama?	☐3. Yes, most of the time Haa, waati jamaa	☐2. Yes, some of the time Haa, waati doolu	☐1. Not very often Haani, a mang siyaa	☐0. No, never Haani, mbuka wo ke fereng

4. Have you been anxious or worried for no good reason? 4. Fo i ka fiti le waranta i ka tara detering ne i fango feyi a ye a tara a mang jara wo la?	☐0. No, not at all Haani, m buka wo ke fereng	☐1. Hardly ever Haani, a mang siyaa	☐2. Yes, sometimes Haa, waati doolu	☐3. Yes, very often Haa, waati jamaa
5. Have you felt scared or panicky for no good reason? 5. Fo i ka silla wara i kijo k'e fara a y'a tara a mang jara wo la?	☐3. Yes, quite a lot Haa, waati jamaa	☐2. Yes, sometimes Haa, waati doolu	☐1. No, not much Haani, a buka siyaa	☐0. No, not at all Haani, mbuka wo ke
6. Have things been getting on top of you? 6. Hajoolu k'e detendi le fo a ka koleyaa i bulu ka ila kuwolu tamandi?	☐3. Yes, most of the time I haven't been able to cope at all Haa, jamaa jamaa a ka koleyaa m bulu	☐2. Yes, sometimes I haven't been coping as well as usual Haa, waati doolu a ka koleyaa	☐1. No, most of the time I have coped quite well Haani, jamaa jamaa a buka koleya m bulu	☐0. No, I have been coping as well as ever Haani, n ka nna kuwolu tamandi noo n ka ke nung nyaameng
7. Have you been so unhappy that you have had difficulty sleeping? 7. Fo kontaani baliyaa le ka tinna i buka siinoo noo a nyaama?	☐3. Yes, most of the time Haa, waati o waati	☐2. Yes, sometimes Haa, waati doolu	☐1. Not very often Haani, a buka siyaa	☐0. No, not at all Haani, wo mang soto

8. Have you felt sad or miserable? 8. Fo niikuyaa waranta niitooroo k'e batandi le bang?	☐3. Yes, most of the time Haa, waati o waati	☐2. Yes, quite often Haa, waati doolu	☐1. Not very often Haani, a buka siyaa	☐0. No, not at all Haani, wo buka m batandi
9. Have you been so unhappy that you have been crying? 9. Fo i ka tara kontaani baliyaa le kono fo i ka kumboo?	☐3. Yes, most of the time Haa, waati jamaa	☐2. Yes, quite often Haa, waati ning waati	☐1. Only occasionally Haa, bari a mang siyaa	☐0. No, never Haani, a mang soto
10. Has the thought of harming yourself occurred to you? 10. Fo waati doo ka soto i k'e mira pur ka kuu jawo ke i fang na?	☐3. Yes, quite often Haa, sinyaa jamaa	☐2. Sometimes Haa, waati doolu	☐1. Hardly ever Haani, a mang siyaa fereng	☐0. Never Haani, a mang soto

EPDS
Wolof

Please tick the answer which comes closest to how you have felt *in the past week,* not just how you feel today. There are no right or wrong answers and please feel free to answer honestly as these questionnaires are confidential.

Kom nu nga neeke geugeni birr ne wala musa ham doom, dange bugga ham sa yeek-yeek. Ndimbaleh nyu nga hol tontu bu ngena jageh si sa yeek-yeek si birr bess bu ai bu passeh. Kom neekut le ngai yeek tai.

1. Have you been able to laugh and see the funny side of things? 1. Ndakh yaw dang nga deh muna rreh sor gisseh lula rretanlo?	☐0. As much as I always could Waaw, lu si baari kom nu ma ko muneh	☐1. Not quite so much now Waaw, neekut lu bareh kom nonu leegue	☐2. Definitely not so much now Degga-degga neekut lu bareh sah leegue	☐3. Not at all Amut sah
2. Have you looked forward with enjoyment to things? 2. Ndakh yaw dang deh muna saintu yo hamneh munnala kontanlo?	☐0. As much as I ever did Waaw, kom numa ko musa deffeh	☐1. Rather less than I used to Waaw, lu meelut kom nu ma ko dan deffeh	☐2. Definitely less than I used to Degga-degga neekut kom numa kodan deffeh	☐3. Hardly at all Waaw, su ameh sah barewut
3. Have you blamed yourself unnecessarily when things went wrong? 3. Ndakh yaw dang deh am sikka nge si sa boppa su mbirr dameh nom waruta demeh?	☐3. Yes, most of the time Waaw, si wakhtu yu bareh	☐2. Yes, some of the time Waaw, si yeena sayee	☐1. Not very often Neekut lu bareh	☐0. No, never Dadet, musuta ham

4. Have you been anxious or worried for no good reason? 4. Ndakh dang de ham jahleh walla hel bu dalut si li ko jarut?	☐0. No, not at all Dadet musuta ham	☐1. Hardly ever Su ameh yet bareh wut	☐2. Yes, sometimes Waaw, yeena sayee	☐3. Yes, very often Waaw, si wahktu yu bareh
5. Have you felt scared or panicky for no good reason? 5. Ndakh danga de ham ragal walla titangeh si lu ko jarut?	☐3. Yes, quite a lot Waaw, si wakhtu yu bareh	☐2. Yes, sometimes Waaw, yeena sayee	☐1. No, not much Dadet, barehwut	☐0. No, not at all Dadet, musuta ham sah
6. Have things been getting on top of you? 6. Ndakh Jeffeh-jeffeh daffa bareh si sa boopa bi be-nga hamneh anta nulo ko?	☐3. Yes, most of the time I haven't been able to cope at all Waaw, yeena sayee duma henu jeffeh-jeffeh yoyu	☐2. Yes, sometimes I haven't been coping as well as usual Waaw, yeena sayee duma deh muna henu jeffeh-jeffeh yoyu kom num wara demeh	☐1. No, most of the time I have coped quite well Dadet, yeena sayee dama deh muna henu jeffeh-jeffeh yoyu	☐0. No, I have been coping as well as ever Dadet, dama deh henu jeffeh-jeffeh yoyu kom nom musa mel
7. Have you been so unhappy that you have had difficulty sleeping? 7. Ndakh danga de ham nyaka kontante (walla nakhar) be takh dor deh muna nelew?	☐3. Yes, most of the time Waaw, wakhtu bu neeka	☐2. Yes, sometimes Waaw, yeena sayee	☐1. Not very often Neekut lu bareh	☐0. No, not at all Dadet, musuta ham sah

8. Have you felt sad or miserable? 8. Ndakh danga de yeek nakhar walla chono bo hamneh daffa doi war?	☐3. Yes, most of the time Waaw, wakhtu yu bareh	☐2. Yes, quite often Waaw, yeena sayee	☐1. Not very often Neekut lu bareh	☐0. No, not at all Dadet, musuta ham sah
9. Have you been so unhappy that you have been crying? 9. Ndakh dang de ham nekhar bula deh joi lo?	☐3. Yes, most of the time Waaw, wakhtu yu bareh	☐2. Yes, quite often Waaw, yeena sayee	☐1. Only occasionally Lu tuti si ai hew-hew	☐0. No, never Dadet, musuta ham
10. Has the thought of harming yourself occurred to you? 10. Ndakh am halat purr lurr sa boopa daff deh nyaw sisa hell bi?	☐3. Yes, quite often Waaw, si wahktu yu bareh	☐2. Sometimes Yeena sayee	☐1. Hardly ever Suma amet het barewut	☐0. Never Musuta ham

SRQ-20
Mandinka

The following questions are related to certain pains and problems that may have bothered you in the last 30 days. If you think the question applies to you and you have had the described problem in the last 30 days, answer YES.
On the other hand, if the question does not apply to you and you did not have the problem in the last 30 days, answer NO.
If you are unsure about how to answer a question, please give the best answer you can.

Nying nyininkari dantangolu i be dending dimoo doolu la aning mantooro doolu la meng y'a long a si ke a ye batandi nying tili tansabo meng tambita.
N'ii y'a mira ko nyininkaroo nying ye maa le, aning i ye nying mantooro sifa soto nying tili tansabo kono, i s'a fo haa.
N'ii y'a tara nyininkaroo nying m'ee maa, aning i mang nying mantooro sifa soto nying tili tansabo kono, i s'a fo haani.

1. Do you often have headaches? 1. Fo i ka kundimoo soto le waati ning waati?	☐$_1$. Yes	☐$_0$. No
2. Is you appetite poor? 2. Fo domoro buka diyaa i daa kono?	☐$_1$. Yes	☐$_0$. No
3. Do you sleep badly? 3. Fo ila siinoo buka beteyaa le bang?	☐$_1$. Yes	☐$_0$. No
4. Are you easily frightened? 4. Fo i ka tariyaa ka silla le bang?	☐$_1$. Yes	☐$_0$. No

5. Do your hands shake? 5. Fo i buloolu ka jarajara?	☐$_1$. Yes	☐$_0$. No
6. Do you feel nervous, tense or worried? 6. I ka fitii le bang wara sondomoo tenkung baliyaa k'e batandi le bang?	☐$_1$. Yes	☐$_0$. No
7. Is your digestion poor? 7. Fo n'ii ye domoro ke a buka tariyaa ka jii le bang?	☐$_1$. Yes	☐$_0$. No
8. Do you have trouble thinking clearly? 8. Fo miralotenkung baliyaa k'e batandi le bang?	☐$_1$. Yes	☐$_0$. No
9. Do you feel unhappy? 9. Fo i ka niitoroo soto le bang?	☐$_1$. Yes	☐$_0$. No
10. Do you cry more than usual? 10. Fo i ka kumboo danna tambiringo ke le bang?	☐$_1$. Yes	☐$_0$. No

11. Do you find it difficult to enjoy your daily activities? 11. Fo i buka kontan ka ila lung o lung haajoolu ke le bang?	☐1. Yes	☐0. No
12. Do you find it difficult to make decisions? 12. Fo I ka bataa kuwo soto le ka hajoolu t'ee i fango ye?	☐1. Yes	☐0. No
13. Is your daily work suffering? 13. I ka naasoo soto ila lung o lung dookuwo to bang?	☐1. Yes	☐0. No
14. Are you unable to play a useful part in life? 14. Fo i ka koleya kuwo soto ka nafaa kuwolu tamandi dunia baluwo kono?	☐1. Yes	☐0. No
15. Have you lost interest in things? 15. Fo ila lafoo talaata fengolu to i ka lafi meng na nung?	☐1. Yes	☐0. No
16. Do you feel that you are a worthless person? 16. Fo i k'e fango je ko i nafaa soto bang?	☐1. Yes	☐0. No

17. Has the thought of ending your life been on your mind? 17. Fo waati do ka soto i k'e mira pur ka i fango faa?	☐$_1$. Yes	☐$_0$. No
18. Do you feel tired all the time? 18. Fo i ka tara bataring waati o waati le bang?	☐$_1$. Yes	☐$_0$. No
19. Do you have uncomfortable feelings in your stomach? 19. Fo i kono k'e batandi le bang?	☐$_1$. Yes	☐$_0$. No
20. Are you easily tired? 20. Fo i ka tariyaa ka bataa?	☐$_1$. Yes	☐$_0$. No

SRQ-20
Wolof

The following questions are related to certain pains and problems that may have bothered you in the last 30 days. If you think the question applies to you and you have had the described problem in the last 30 days, answer YES.
On the other hand, if the question does not apply to you and you did not have the problem in the last 30 days, answer NO.
If you are unsure about how to answer a question, please give the best answer you can.

Lache yii daffa khetog meetit walla jeffeh-jeffeh yii nga khamneh manala sohnal si birr fenwerry-fen yu passeh. So fongehneh lache bi andana ak sa halat teh am nga meetit yii ak jeffeh-jeffeh yii si fenwerry-fen yu passeh, tontuma WAAW
Si benen borrbi, su lache bi andutak lee nga halat si yaw teh amulo jeffeh-jeffeh yii si birr fenwerry-fen yu passeh, tontma DADET
Su feekeh danga ham nyarry khel si negga warra tontor lache bi, ngela wyyy jokhma tontu bi nga fogneh mo ngane.

1. Do you often have headaches? 1. Ndakh dang de ham bopa bu meeti lego lake?	☐$_1$. Yes	☐$_0$. No
2. Is you appetite poor? 2. Ndakh sa leeka bi daffa wanyekou?	☐$_1$. Yes	☐$_0$. No
3. Do you sleep badly? 3. Ndakh dang de ham nelew bu bon?	☐$_1$. Yes	☐$_0$. No
4. Are you easily frightened? 4. Ndakh danga de gawa tit?	☐$_1$. Yes	☐$_0$. No

5. Do your hands shake? 5. Ndakh sa lohoyee daff de lokh?	☐1. Yes	☐0. No
6. Do you feel nervous, tense or worried? 6. Ndakh dang de yeek titangeh wala d jahleh?	☐1. Yes	☐0. No
7. Is your digestion poor? 7. Ndakh dang de ham leeka budut gawa ress?	☐1. Yes	☐0. No
8. Do you have trouble thinking clearly? 8. Ndakh dang de ham jeffeh-jeffeh si halat bu bakh?	☐1. Yes	☐0. No
9. Do you feel unhappy? 9. Ndakh dang de nyaka kontan?	☐1. Yes	☐0. No
10. Do you cry more than usual? 10. Ndakh dang de bug d joi lu barre?	☐1. Yes	☐0. No

11. Do you find it difficult to enjoy your daily activities? 11. Ndakh danga de ham jeffeh-jeffeh purr ham kontateh si leenga warra deff si bess bi?	☐1. Yes	☐0. No
12. Do you find it difficult to make decisions? 12. Ndakh dang de ham jeffeh-jeffeh purr deff saye halati boppa?	☐1. Yes	☐0. No
13. Is your daily work suffering? 13. Ndakh dor de ham khat-khat si sa leugue bess bi?	☐1. Yes	☐0. No
14. Are you unable to play a useful part in life? 14. Ndakh dang de ham jeffeh-jeffeh si lo hmneh dinala njering sisa ngerre dundu?	☐1. Yes	☐0. No
15. Have you lost interest in things? 15. Ndakh dor de nyaka eteh si lega warra deff	☐1. Yes	☐0. No
16. Do you feel that you are a worthless person? 16. Ndakh dang de ham yeek-yeek ne yaw dor darra?	☐1. Yes	☐0. No

17. Has the thought of ending your life been on your mind? 17. Ndakh danga de tog di halat neh dehh mo la ngenal?	☐1. Yes	☐0. No
18. Do you feel tired all the time? 18. Ndakh dang de soona wakhtu bu neeka?	☐1. Yes	☐0. No
19. Do you have uncomfortable feelings in your stomach? 19. Ndakh dang de ham yeek-yeek ngi jeffeh-jeffeh birr?	☐1. Yes	☐0. No
20. Are you easily tired? 20. Ndakh dang de gawa soona?	☐1. Yes	☐0. No

Appendix D: Chapter 4 Information Sheet, Consent Form, and Focus Group Discussion Questions

Focus Group Discussion Information Sheet
Please take time to carefully listen to this information sheet and feel free to ask any questions or concerns you may have.

Project Title: Developing a Community Singing-Based Intervention for Perinatal Mental Health in The Gambia

Researchers and Partners: This project is being conducted by an international team of researchers in partnership with the Gambia National Centre for Arts & Culture and the Ministry of Health and Social Welfare. The project includes researchers from Goldsmiths, University of London, University of Cambridge, the Australian National University, and Imperial College London.

General Outline of the Project:
Description and Methodology: We are trying to understand the experience of mental distress in the perinatal period, and to determine whether and how a music-centred approach could be useful for alleviating symptoms. We will conduct focus group discussions and interviews with health professionals, musicians, pregnant women, and mothers.

Participants: You are being invited to take part in this research because we feel that your experience as a pregnant woman, a new mum or an individual in the community supporting and/or working with these women can contribute to our understanding. We will conduct approximately 6 focus group discussions, 20 interviews, and 100 questionnaires with a total of 180 participants.

Use of Data and Feedback: Following the study, we plan to publish the results in academic/practitioner-based journals and to present our findings at conferences and meetings so that others can learn from the research. The results of the study will also be used to develop community-based mental health awareness programs and training for health professionals in the Gambia. To access the results of the study, contact the National Centre for Arts and Culture by phone (7781963) or email (hceesay@gmail.com).

Project Funding: This research study is being funded by the UK Medical Research Council and organized by Goldsmiths, University of London.

Participant Involvement:
Voluntary Participation & Withdrawal: Participation in the project is voluntary and you may decline to take part or withdraw from the research without providing an explanation at any time until the work is prepared for publication. You can also refuse to answer a question. You should also be aware that data collected up to the time you withdraw will form part of the research project results and it may not be possible to withdraw your data from the study results if these have already had your identifying details removed.

What does participation in the research entail? Participation in the project will involve undertaking a group discussion with 5 other participants. There will be a facilitator who will ask questions and invite you to share your experiences and ideas. With your consent, the discussion will be audio-recorded by the researchers and then transcribed for analysis. Only the researchers will have access to the interview recording. If any information about child abuse or neglect is disclosed we will have to share this information, and only this information, with the police.

Location and Duration: Each focus group discussion is expected to last for 60-90 minutes. Focus group discussions will take place at regional health facilities or the offices of the National Centre for Arts and Culture.

Risks: The research carries little risk, but it may make you think of negative experiences relating to anxiety or depression. Because confidentiality cannot be guaranteed in the group discussion, you should not share sensitive, personal information. If you feel uncomfortable at any time, you are free to stop the interview or leave the focus group discussion without penalty. If you feel distressed, contact Hajara Huma (phone 3087007) or Malick Gaye (phone 3266132) for support.

Benefits: The project will contribute better understanding of the mental health issues faced by women in the perinatal period, and the most effective ways in which they could be supported through intervention.

Confidentiality:
Confidentiality: Participants will be instructed not to repeat what is said in the focus group discussion to others, but confidentiality cannot be guaranteed. The focus group discussion will be audio-recorded and then transcribed for analysis. The data will be stored on a password-protected secure server and it will not be made publicly available. The researchers will keep the information you provide confidential as far as the law allows.

Privacy Notice:
In collecting your personal information within this research, the ANU must comply with the Privacy Act 1988. The ANU Privacy Policy is available at https://policies.anu.edu.au/ppl/document/ANUP_010007 and it contains information about how a person can:
Access or seek correction to their personal information;
Complain about a breach of an Australian Privacy Principle by ANU, and how ANU will handle the complaint.

Data Storage:
Where: Data will be stored on a password-protected server at Goldsmiths, University of London.
How long: Data will be stored for at least ten years from the date of publication of the research.
Handling of Data following the required storage period: The data will be stored indefinitely for potential further research on the project.

Queries and Concerns:

Contact Details for More Information: For further information or queries regarding the research project, contact:
Buba Darboe, Gambia Ministry of Health and Social Welfare by telephone (3568867) or email (darboejula@hotmail.com)
Contact Details if in Distress: For support, contact Hajara Huma (phone 3087007) or Malick Gaye (phone 3266132).

Ethics Committee Clearance:
The ethical aspects of this research have been approved by the ANU Human Research Ethics Committee, Goldsmiths Research Ethics Committee and The Gambia Government/MRC Joint Ethics Committee. If you have any concerns or complaints about how this research has been conducted, please contact:

Ethics Manager
The ANU Human Research Ethics Committee
The Australian National University
Telephone: +61 2 6125 3427
Email: Human.Ethics.Officer@anu.edu.au

Focus Group Discussion Consent Form

To confirm that you and your baby are willing to participate in the research study, please fill out this form.

If you have any questions please feel free to ask.

1. I confirm that I have understood the information sheet provided.
2. I have had time to consider my participation, ask any questions and they have been answered sufficiently.
3. I understand that my participation is completely voluntary and I am free to withdraw at any time without reason, without my or my baby's care being affected.
4. I understand that I do not have to share any information I am uncomfortable sharing.
5. I am willing to be interviewed
6. I consent to being audio and video recorded.
7. I understand that information collected during the study (video recording, medical information, answers to questionnaires) will only be available to the research team. I give permission for the research team to have access to this information.
8. I agree that personal information collected about me and the audio and video recordings can be kept, securely and will be destroyed after 10 years
9. I understand that if any information about child abuse or neglect is disclosed we will have to share that information, and only that information with the police.

Participants Name_____

Has verbal Consent been received Yes/No _____

Date_____

Researcher Signature_____

Date_____

Focus Group Discussion Questions by Informant Group

Pregnant Women

1. *Do women sometimes experience mental health issues during pregnancy?*
   Ndakh gigen yii dang deh lego-leag ham hel bu dalut (si missal, nakhare, jahleh, ak ragal) su nyu biree?

2. What are the possible effects of mental health issues during and after pregnancy? How severe can it be? (For the mother and her baby)?
   Lan moi jurel lu hel bu dalut si gigen bu birr ak su wosine? Nakala buna garawee? (si yaai bi ak doomam)

3. What kinds of things do women typically do to help themselves if they experience mental health issues?
   Yan mbirr la gigen yii warr di deff purr ndimbaleh sen bopa su nyu hameh jahleh, nakhare, walla hel bu dalut?

4. Who can a pregnant woman go to for help or support when she feels anxious or depressed?
   Si kanla gigen bu birr muna dem purr ham ndimbal su ameh yeek-yeek ngi jahleh walla hel bu dalut?

5. What do you think might help women deal with stress, anxiety, and depression during pregnancy?
   Lan ngen fox ne dina ndimbaleh gegen yii si sen wallu nakhare, jahleh ak hel bu dalut sun nyu birree?

6. Do you think singing together would be beneficial for women who are experiencing stress, anxiety, or depression during and after pregnancy? If so, why? If not, why not?
   Ndakh fox ngen neh woi mbolo dina ham njerign si gigen yii ham nakhare, jahleh, walla helbu dalut su nyu birree ak su nyu wosine? Su hameh, lan mo takh? Walla su hamute lan mo ko waral?

7. What kind of singing or music do you think would be beneficial (if any)?
   Yan fasong ngi woi walla misik ngen fox ne di ham njerign? (su ameh)?

Kanyeleng

1. What do you call your group?
   Lan gen deh yoyeh sen mbotai bi?

2. What kinds of activities does your group engage in?
   Yan fasong ngi yangu-yangu la sen mbotai bi di yangu?

3. Can music help people deal with their stress, worries, and concerns? If so, how?
   Ndakh misik muna dembaleh nengi si sen hol bu nakhare, jahleh, ak buga-buga yii?Su deh neka na, nakala?

4. What kinds of support do you give to people experiencing sadness or mental distress?

Yan fasong ngi ndimbal ngai jokh nengi nyu nga ham neh nyngi ham hol bu nakhre, walla hel bu dalut?

5. What kinds of songs are sung to babies? Follow up: Can you sing any of these songs?

Yan woi lanyo woyal lirryi? Ndakh munnga woi bena si woyi?

   a. Who knows these songs and who sings them to babies?
   Kan mo kham woyi ak kan moi ko woyal lirryi?
   b. What is the benefit of these songs/ why are these songs performed?
   Lan moi njerign woi/ lan motakh nyun koi deff?

6. What kinds of songs and dances are performed at naming ceremonies?

Yan fasong ngi woi ak fecha lang de deff si guenteyii?

   a. How does it make the woman feel? (OR how did you feel at your child's naming ceremony?)
   Ban fasong ngi yeek-yeek la de jokh gigen bi si bessi guente bi?

7. What group-based activities do you think might help women deal with stress, anxiety, and depression if they came together regularly during pregnancy/after delivery?
   Yan fasong ngi khew-khew wii mbolo nga fok neh dina dimbaleh gegen yii sung hameh nakhare, jahleh, ak halat bu barreh su fekek nyu ngi ham dageeh wakh tu bu neeka sung birreh ak sung wosine?

8. Do you think singing together would be beneficial for women who are experiencing stress, anxiety, or depression during and after pregnancy? If so, why? If not, why not?
   Ndakh fox nga neh woi mbolo dina ham njerign si gigen yii ham nakhare, jahleh, walla helbu dalut su nyu birree ak su nyu wosine? Su hameh, lan mo takh? Walla su hamute?
   a. Do you think it might be beneficial for some women and not others?
   Ndakh fox nga ne di ham njerign si yee baayi yee?

9. What kind of singing or music do you think would be beneficial (if any)?

Yan fasong ngi woi walla misik nga fox ne di ham njerign? (su ameh)?

   a. Would it be beneficial to teach pregnant mothers lullabies to sing to their babies?
   Ndakh fox nga neh di ham njerign purr jangal gigenii birr yii woi yii lirr yii purr nyu ko woiyal sen doom yii?

Griots

1. Can music help people deal with their stress, worries, and concerns? If so, how? *Ndakh misik muna dembaleh nengi si sen hol bu nakhare, jahleh, ak buga-buga yii?Su deh neka na, nakala?*

2. What kinds of support do you give to people experiencing sadness or mental distress?

Yan fasong ngi ndimbal ngai jokh nengi nyu nga ham neh nyngi ham hol bu nakhre, walla hel bu dalut?

3. What kinds of songs are sung to babies? Follow up: Can you sing any of these songs?
   Yan woi lanyo woyal lirryi? Ndakh mun nga woi bena si woyi?
   a. Who knows these songs and who sings them to babies?
   Kan mo kham woyi ak kan moi ko woyal lirryi?
   b. What is the benefit of these songs/ why are these songs performed?
   Lan moi njerign woi ak fechayi/ lan motakh nyun koi deff?

4. What kinds of songs and dances are performed at naming ceremonies?
   Yan fasong ngi woi ak fecha lang de deff si guenteyii?
   c. What is the benefit of these songs and dances/why are they performed?
   Yan fasong nginjerign la woi ak fecha yii ham/ ak lan motakh nyu koi deff?
   d. How does it make the woman feel? (OR how did you feel at your child's naming ceremony?)
   Ban fasong ngi yeek-yeek la de jokh gigen bi si bessi guente bi?

5. What group-based activities do you think might help women deal with stress, anxiety, and depression if they came together regularly during pregnancy/after delivery?
   Yan fasong ngi khew-khew wii mbolo nga fok neh dina dimbaleh gegen yii sung hameh nakhare, jahleh, ak halat bu barreh su fekek nyu ngi ham dageeh wakh tu bu neeka sung birreh ak sung wosine?

6. Do you think singing together would be beneficial for women who are experiencing stress, anxiety, or depression during and after pregnancy? If so, why? If not, why not?
   Ndakh fox nga neh woi mbolo dina ham njerign si gigen yii ham nakhare, jahleh, walla helbu dalut su nyu birree ak su nyu wosine? Su hameh, lan mo takh? Walla su hamute lan mo ko waral?
   e. Do you think it might be beneficial for some women and not others?
   Ndakh fox nga ne di ham njerign si yee baayi yee?

7. What kind of singing or music do you think would be beneficial (if any)?
   Yan fasong ngi woi walla misik nga fox ne di ham njerign? (su ameh)?

8. Would it be beneficial to teach pregnant mothers lullabies to sing to their babies?

Ndakh fox nga neh di ham njerign purr jangal gigenii birr yii woi yii lirr yii purr nyu ko woiyal sen doom yii?

CBCs

1. What kinds of challenges do women encounter during pregnancy and after delivery?
   Ban fasong ngi jeffe-jeffe walla tekha-tekha la gigenyi de am sunyu biree ak sunyu wosine?
   f. Follow up questions – what causes this challenge? What are the results/ why is it a problem?

Lan moi waral tekha-tekha yii? Lu moi jurrel lam/ Lan mo takh mu neeka tekha-tekha?

2. What kinds of support do CBCs offer to women during and after pregnancy? Follow up on each point.
   Yan fasong ngi ndimbal la forrkati doom di ndimbaleh gigen yii su nyu biree ak su nyu wosine?

3. Do women sometimes experience mental health issues (e.g. sadness, worry, fear) during pregnancy or after they have given birth?
   Ndakh gigen ngi dang deh lego-leag ham hel bu dalut (si missal, nakhare, jahleh, ak ragal) su nyu biree walla su nyu hameh doom?
   a. (If so) Is there a special name for this?
   (su hameh) ndakh ham turee bopam?
   b. (If so) What are the causes of mental health issues during and after pregnancy?
   (su hameh) lan moi waral hel bu dalut si gigen bu birr ak su wosine?

4. Is there any way to avoid experiencing mental health issues during and after pregnancy?
   Ndakh hamna hai yon yoo hamneh mon nga ko moitu si waali hel bu dalut si gigen bu birr ak su wosine?

5. Is there any treatment for mental health issues during and after pregnancy? If so, how effective is this treatment thought to be?
   Ndakh hamna hai fasong ngi fach purr hel bu dalut si gigen bu birr ak su wosine? Su hameh, naka nga fox neh la ameh njerign?

6. What kinds of things do women typically do to help themselves if they experience anxiety, stress, or depression?
   Yan mbirr la gigen yii warr di deff purr ndimbaleh sen bopa su nyu hameh jahleh, nakhare, walla hel bu dalut?

7. What are the signs of mental health issues during and after pregnancy?
   Lan moi mandarga hel bu dalut si gigen bu biir ak su wosine?

8. What are the possible effects of mental health issues during and after pregnancy? How severe can it be? (for the mother and her baby)
   Lan moi jurel lu hel bu dalut si gigen bu birr ak su wosine? Nakala bun a garawee? (si yaai bi ak doomam)

9. What kinds of support do CBCs give to women with mental health issues during pregnancy and after delivery?
   Yan fasong ndimbal lai forrkati doom yii di joh gigen bu helam bi dalut su biiree ak su wosine?

10. Are you involved in singing or music activities? If so, of what kind?
Ndakh boka nga si walu yengu-yengu woi ak fecha? Su amee, ban fasong?

11. What kinds of songs are sung to babies? Follow up: Can you sing any of these songs?
    Yan woi lanyo woyal lirryi? Ndakh mun nga woi bena si woyii?
    a. Who knows these songs and who sings them to babies?
    Kan mo kham woyi ak kan moi ko woyal lirryi?
    b. What is the benefit of these songs/ why are these songs performed?
    Lan moi njerign nyi woiyi/ lan mo takh nyu woi woyi?

12. What group-based activities do you think might help women deal with stress, anxiety, and depression if they came together regularly during pregnancy/after delivery?
    Yan fasong ngi khew-khew wee mbolo nga fok neh dina dimbaleh gegen yii sung hameh nakhare, jahleh, ak halat bu barreh su fekek nyu ngi ham dageeh wakh tu bu neeka sung birreh ak sung wosine?

13. Do you think singing together would be beneficial for women who are experiencing stress, anxiety, or depression during and after pregnancy? If so, why? If not, why not?
    Ndakh fox nga neh woi mbolo dina ham njerign si gigen yii ham nakhare, jahleh, walla helbu dalut su nyu birree ak su nyu wosine? Su hameh, lan mo takh? Walla su hamute lan mo ko waral?
    a. Do you think it might be beneficial for some women and not others?
    Ndakh fox nga ne di ham njerign si yee baayi yee?

14. What kind of singing or music do you think would be beneficial (if any)?
Yan fasong ngi woi walla misik nga fox ne di ham njerign? (su ameh)?
    b. Would it be beneficial to teach pregnant mothers lullabies to sing to their babies?
    Ndakh fox nga neh di ham njerign purr jangal gigenii birr yii woi yii lirr yii purr nyu ko woiyal sen doom yii?

Midwives

1. What kinds of challenges do women encounter during and after pregnancy?
    a. Follow up questions – what causes this challenge? What are the results/ why is it a problem?

2. What kinds of support do women need during and after pregnancy? Why?

3. What kinds of support do midwives offer to women during and after pregnancy?

4. What do you understand about mental health issues during and after pregnancy?
    a. Unsteady mind
    b. Stress
    c. Trouble thinking, worries etc.

5. What are the signs of mental health issues during and after pregnancy?

6. What are the possible effects of mental health issues during and after pregnancy? (for the mother and her baby)

7. What kinds of support do you give to women with mental health issues during and after pregnancy?

8. Do women confide in midwives when they are experiencing mental distress? Can you provide examples?

9. What is the impact of midwives' activities?

10. Are you involved in singing or music activities? If so, of what kind? E.g. we are interested in learning more about the songs and music associated with the perinatal period (during and after pregnancy).

11. What kinds of songs are sung to babies?
    a. Who knows these songs and who sings them to babies?
    b. What is the benefit of these songs/ why are these songs performed?

12. Do you think a singing-based intervention at the RCH clinic would be beneficial for women who are experiencing mental distress during and after pregnancy? If so, why? If not, why not?
    a. What kind of singing or music do you think would be beneficial (if any)? (e.g. teaching and singing lullabies for babies or songs to promote awareness of mental health issues during and after pregnancy)
    b. Do you think it might be beneficial for some women and not others?

Appendix E: Chapter 5 Supplementary Tables and Figures

Table E.1a

Demographic Information by Clinic

Antenatal Clinic	**Total** ***n***	**Age** ***M(SD)***	**GA** ***M(SD)***	**Parity** ***M(SD)***	**Gravida** ***M(SD)***	**Primip** ***n(% of total)***
Banjuliding Health Centre	9	27.78 (7.08)	26.89 (3.76)	1.67 (2.40)	2.78 (2.49)	5 (56%)
Essau Distract Hospital	10	27.10 (5.00)	24.00 (3.53)	2.10 (1.97)	3.30 (2.16)	3 (30%)
Fajikunda Health Centre	9	26.33 (6.02)	20.00 (6.48)	1.00 (1.12)	2.33 (1.73)	4 (44%)
Gunjur Health Centre	39	26.46 (5.90)	20.41 (3.98)	2.56 (2.48)	3.64 (2.27)	9 (23%)
Kafuta Health Centre	10	28.10 (5.01)	26.60 (4.22)	2.80 (2.15)	3.80 (2.15)	2 (20%)
Kuntair Health Centre	37	27.19 (5.25)	20.59 (4.80)	3.11 (1.91)	4.40 (2.23)	5 (14%)
Pirang Health Centre	46	26.83 (6.55)	21.65 (3.61)	2.35 (2.00)	3.41 (2.01)	12 (26%)
Serekunda Health Centre	10	26.40 (5.10)	23.60 (6.31)	2.20 (1.55)	3.60 (1.96)	2 (20%)
Sinchu Baliya Health Post	10	29.50 (7.04)	24.40 (2.59)	3.20 (2.25)	4.20 (2.25)	0 (0%)
Sukuta Health Centre	41	27.10 (5.39)	20.49 (3.33)	2.07 (2.13)	3.27 (2.29)	14 (34%)

Note. GA = Gestational Age. Primip is short for Primiparious (A woman who is pregnant for the first time).

Table E.1b

Categorical Demographic Information by Clinic

	Banjulding	**Essau**	**Fajikunda**	**Gunjur**	**Kafuta**	**Kuntair**	**Pirang**	**Serekunda**	**Sinchu Baliya**	**Sukuta**
	n(% of 9)	***n(% of 10)***	***n(% of 9)***	***n(% of 39)***	***n(% of 10)***	***n(% of 37)***	***n(% of 46)***	***n(% of 10)***	***n (% of 10)***	***n (% of 41)***
Marital Status										
Single/Divorce /Widowed	0 (0%)	0 (0%)	0 (0%)	3 (8%)	0 (0%)	0 (0%)	2 (4%)	0 (0%)	0 (0%)	1 (2%)
Married (Monogamous)	6 (67%)	10 (100%)	8 (89%)	29 (74%)	9 (90%)	18 (49%)	30 (65%)	8 (80%)	8 (80%)	34 (83%)
Married (Polygamous)	3 (33%)	0 (0%)	1 (11%)	7 (18%)	1 (10%)	19 (51%)	14 (30%)	2 (20%)	2 (20%)	6 (15%)
Education Level										
None	0 (0%)	3 (30%)	0 (0%)	3 (8%)	1 (10%)	1 (3%)	2 (4%)	1 (10%)	2 (20%)	0 (0%)
Informal (Arabic)	4 (44%)	1 (10%)	2 (22%)	15 (38%)	4 (40%)	24 (65%)	23 (50%)	4 (40%)	5 (50%)	19 (46%)
Primary	2 (22%)	3 (30%)	0 (0%)	7 (18%)	0 (0%)	4 (11%)	4 (9%)	1 (10%)	1 (10%)	7 (17%)
Secondary/ Tertiary	3 (33%)	3 (30%)	7 (78%)	14 (36%)	5 (50%)	8 (22%)	17 (37%)	4 (40%)	2 (20%)	15 (37%)
Occupation										
Housewife	5 (56%)	8 (80%)	5 (56%)	14 (36%)	10 (100%)	35 (95%)	21 (46%)	8 (80%)	9 (90%)	23 (56%)
Other	4 (44%)	2 (20%)	4 (44%)	24 (62%)	0 (0%)	2 (5%)	25 (54%)	2 (20%)	1 (10%)	18 (44%)
Husband's Occupation										
Skilled work	5 (56%)	7 (70%)	6 (67%)	19 (49%)	4 (40%)	12 (32%)	14 (30%)	7 (70%)	3 (30%)	20 (49%)
Manual/ Trade Work	4 (44%)	3 (30%)	3 (33%)	19 (49%)	6 (60%)	25 (68%)	31 (67%)	3 (30%)	7 (70%)	21 (51%)

Table E.2a

Demographic Information by Language and Area Type

	Total ***n***	**Age** ***M(SD)***	**GA** ***M(SD)***	**Parity** ***M(SD)***	**Gravida** ***M(SD)***	**Primip** ***n(% of total)***
Language						
Mandinka	145	26.99 (5.94)	21.66 (4.18)	2.32 (2.19)	3.42 (2.18)	42 (29%)
Wolof	76	27.28 (5.48)	21.87 (5.07)	2.62 (1.95)	3.93 (2.24)	14 (18%)
Area Type						
Rural	132	26.96 (5.87)	21.36 (4.38)	2.66 (2.14)	3.82 (2.20)	28 (21%)
Urban	89	27.28 (5.67)	22.27 (4.63)	2.07 (2.03)	3.27 (2.20)	28 (31%)

Note. GA = Gestational Age. Primip is short for Primiparious (A woman who is pregnant for the first time).

Table E.2b

Categorical Demographic Information by Language and Area Type

	Mandinka ***n (% of 145)***	**Wolof** ***n (% of 76)***	**Rural** ***n (% of 132)***	**Urban** ***n (% of 89)***
Marital Status				
Single/Divorced/ Widowed	6 (4%)	0 (0%)	5 (4%)	1 (1%)
Married (Monogamous)	108 (74%)	52 (68%)	86 (31%)	74 (83%)
Married (Polygamous)	31 (21%)	24 (32%)	41 (31%)	14 (16%)
Education Level				
None	6 (4%)	7 (9%)	7 (5%)	6 (7%)
Informal (Arabic)	65 (45%)	36 (47%)	66 (50%)	35 (39%)
Primary	20 (14%)	9 (12%)	15 (11%)	14 (16%)
Secondary/Tertiary	54 (37%)	24 (32%)	44 (33%)	34 (38%)
Occupation				
Housewife	73 (50%)	65 (86%)	80 (61%)	58 (65%)
Other	71 (49%)	11 (14%)	51 (39%)	31 (35%)
Husband's Occupation				
Skilled work	62 (43%)	35 (46%)	49 (37%)	48 (54%)
Manual/Trade Work	81 (56%)	41 (54%)	81 (61%)	41 (46%)

Note. Housewife includes women who stated they did not have a job ("None")

Differences Between Languge Groups and Area Types
(Table E.2a & Table E.2b)

There were no differences between the two language groups' age, GA, parity, gravida, marital status, education or husband's occupation. There was a difference in women's occupation (X^2 (1) = 24.35, $p < 0.001$), with more women who spoke Wolof being housewives compared to participants who spoke Mandinka.

No differences were found between the two area types in terms of the participants' age, GA, parity, gravida, education, and occupation. Participants in urban areas were more likely to be in a monogamous marriage than participants in rural areas (X^2 (2) = 8.79, $p < 0.05$). Additionally, more participants in the rural areas had husbands with manual or trade work than those in urban areas (X^2 (1) = 5.00, $p < 0.05$). These differences between rural and urban areas have been observed throughout the country (The Gambia Bureau of Statistics (GBOS) and ICF International, 2014).

Table E.3a

EPDS Scores by Clinic, Marital Status, Education, Participant and Husband Occupation

EPDS	***n***	***M(SD)***	***Median***	***Range***	***IQR***
Clinic					
Banjuliding Health Centre	9	4.44 (2.40)	4	1 -8	3-7
Essau Distract Hospital	10	3.70 (3.42)	4	0-10	0.25-5.75
Fajikunda Health Centre	9	4.44 (3.97)	4	0-11	1-8
Gunjur Health Centre	39	3.46 (3.26)	3	0-19	1-4
Kafuta Health Centre	10	3. 9 (2.69)	4	0-10	2.25-4
Kuntair Health Centre	37	3.78 (3.65)	3	0-15	1-6
Pirang Health Centre	46	4.72 (4.23)	4	0-20	2-6
Serekunda Health Centre	10	5.80 (3.26)	5	2-12	3.25-8.25
Sinchu Baliya Health Post	10	4.70 (3.83)	5	0-11	1-7.75
Sukuta Health Centre	41	5.15 (4.08)	4	0-15	2-8
Marital Status					
Single/Divorced/Widowed	6	6.67 (6.38)	6	0-17	1.75-9.5
Married Monogamous	160	4.28 (3.44)	4	0-19	2-6
Married/polygamous	55	4.35 (4.22)	4	0-20	1-6
Education					
None	13	3.54 (4.16)	3	0-13	0-4
Informal	101	4.39 (3.74)	4	0-20	2-6
Primary	29	3.83 (2.51)	4	0-10	2-5
Seconday/Teritary	78	4.67 (4.07)	4	0-19	1.25-6
Occupation					
Housewife	138	4.25 (3.61)	4	0-17	1.25-6
Other	82	4.49 (3.94)	4	0-20	2-6
Husband Occupation					
Skilled Work	97	3.91 (3.14)	4	0	1-6
Manual/Trade work	122	4.66 (4.13)	4	0	2-6

Note. Housewife includes women who stated they did not have a job ("None")

Table E.3b

SRQ-20 Scores by Clinic, Marital Status, Education, Participant and Husband Occupation

SRQ-20	***n***	***M(SD)***	***Median***	***Range***	***IQR***
Clinic					
Banjuliding Health Centre	9	7.33 (3.77)	8	2-14	5-10
Essau Distract Hospital	10	6.3 (3.71)	6	2-14	3.25-8.75
Fajikunda Health Centre	9	5.00 (2.87)	5	1-10	3-6
Gunjur Health Centre	39	6.79 (3.64)	7	1-16	4-6
Kafuta Health Centre	10	3.70 (3.53)	3	0-11	1-4.75
Kuntair Health Centre	37	6.95 (4.31)	7	0-17	4-10
Pirang Health Centre	46	8.26 (4.12)	8.5	0-16	5.25-11
Serekunda Health Centre	10	6.10 (3.11)	6	1-13	5.25-7
Sinchu Baliya Health Post	10	6.30 (3.77)	6.5	2-13	3-8.75
Sukuta Health Centre	41	7.68 (3.97)	7	1-16	5-10
Marital Status					
Single/Divorced/Widowed	6	9.33 (5.16)	9.5	1-16	7.5-12.25
Married Monogamous	160	6.81 (3.75)	7	0-16	4-9.25
Married/polygamous	55	7.40 (4.38)	7	0-16	4.5-10
Education					
None	13	5.15 (3.24)	5	1-10	3-8
Informal	101	6.99 (4.28)	6	0-17	3-10
Primary	29	6.93 (3.39)	7	1-14	5-9
Seconday/Teritary	78	7.41 (3.81)	7	1-16	5-10
Occupation					
Housewife	138	6.72 (3.82)	7	0-16	4-9
Other	82	7.51 (4.20)	7	0-17	5-10.75
Husband Occupation					
Skilled Work	97	6.52 (3.83)	6	0-17	4-9
Manual/Trade work	122	7.38 (4.05)	7	0-16	5-10

Note. Housewife includes women who stated they did not have a job ("None")

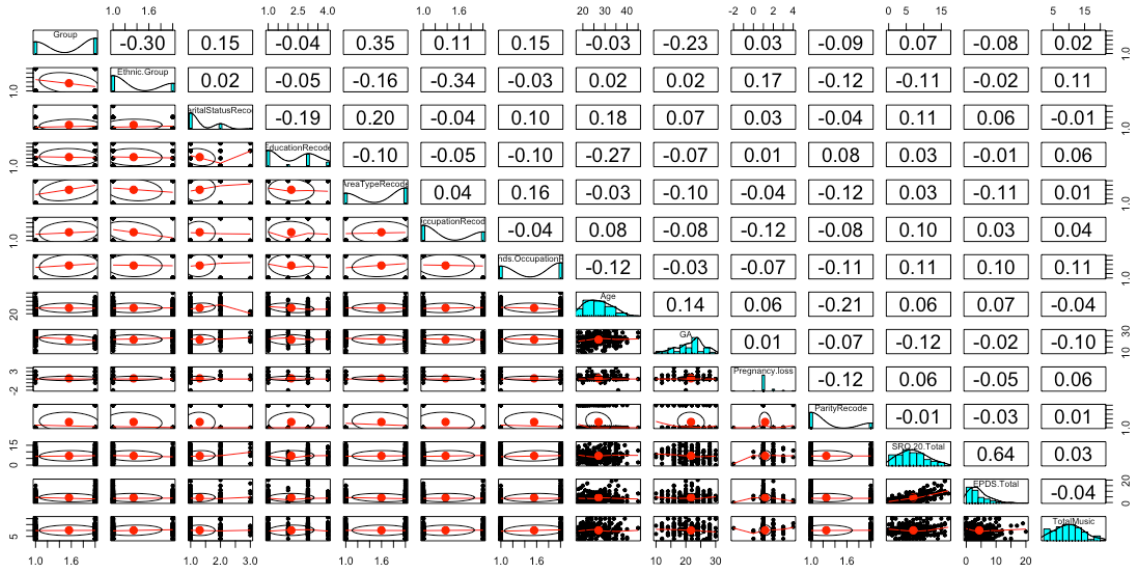

Figure E.1. Correlation matrix between predictor variables and both outcome variables. The distribution of each variable is shown on the diagonal. On the bottom of the diagonal the bivariate scatter plots with a fitted line are displayed. On the top of the diagonal the value of the correlation with any significance level stared. Created using the *PerformanceAnalytics* package in R (B. G. Peterson et al., 2019)

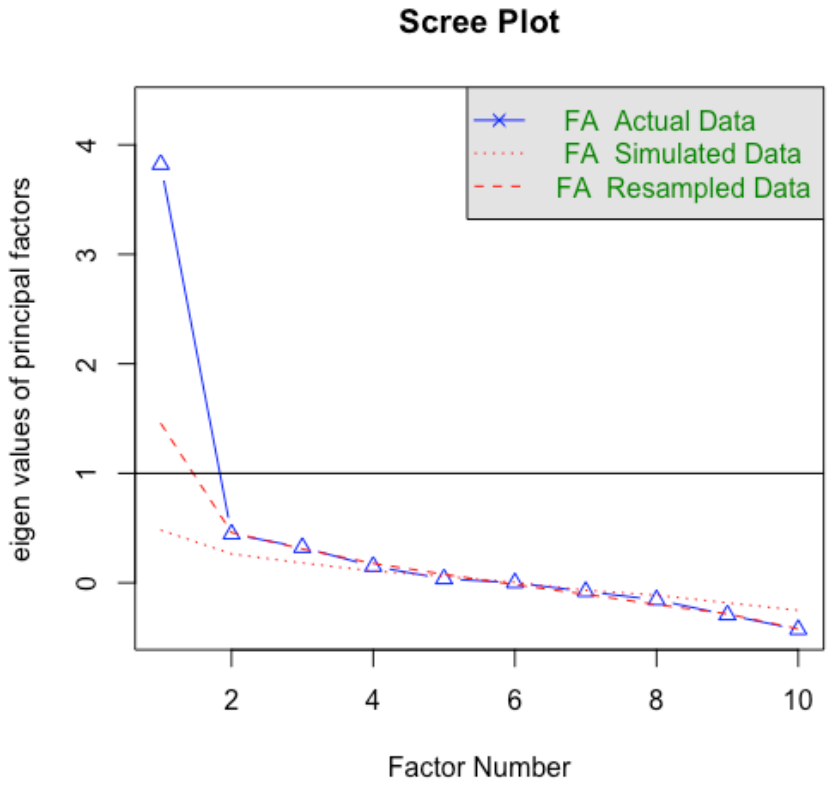

Figure E.2a. Scree plot for EPDS Gambian sample. Parallel Analysis compares the eigenvalues generated from the data (blue line) and those from a simulated data set (red dotted line) to identify the potential number of factors (Baglin, 2014).

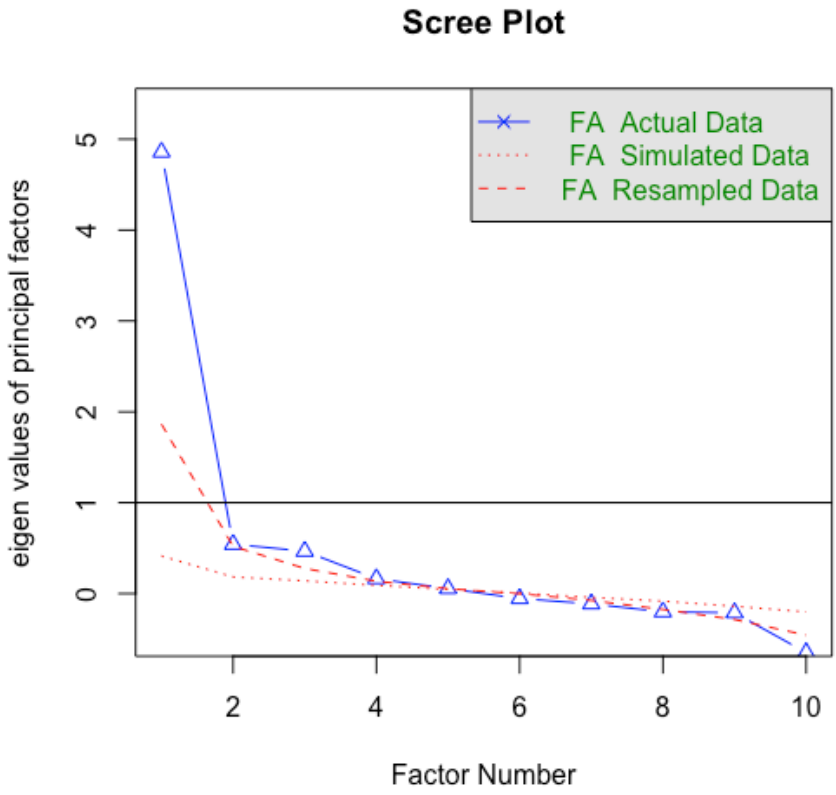

Figure E.2b. Scree plot for EPDS UK sample. Parallel Analysis compares the eigenvalues generated from the data (blue line) and those from a simulated data set (red dotted line) to identify the potential number of factors (Baglin, 2014).

Appendix F: Chapter 5 (Cohort 1) Information Sheet and Consent Form

Participant Information Sheet
Please take time to carefully listen to this information sheet and feel free to ask any questions or concerns you may have.

Project Title: Developing a Community Singing-Based Intervention for Perinatal Mental Health in The Gambia

Researchers and Partners: This project is being conducted by an international team of researchers in partnership with the Gambia National Centre for Arts & Culture and the Ministry of Health and Social Welfare. The project includes researchers from Goldsmiths, University of London, University of Cambridge, the Australian National University, and Imperial College London.

General Outline of the Project:

- **Description and Methodology:** We are trying to understand the experience of mental distress in the perinatal period, and to determine whether and how a music-centred approach could be useful for alleviating symptoms.
- **Participants**: We will conduct approximately 6 focus group discussions, 20 interviews, and 100 questionnaires with a total of 180 participants. You are being invited to take part in this research because we feel that your experience as a pregnant woman or new mum can contribute to our understanding.
- **Use of Data and Feedback:** Following the study, we plan to publish the results in academic/practitioner-based journals and to present our findings at conferences and meetings so that others can learn from the research. The results of the study will also be used to develop community-based mental health awareness programs and training for health professionals in the Gambia. To access the results of the study, contact the National Centre for Arts and Culture by phone (7781963) or email (hceesay@gmail.com).
- **Project Funding:** This research study is being funded by the UK Medical Research Council and organized by Goldsmiths, University of London.

Participant Involvement:

- **Voluntary Participation & Withdrawal:** Participation in the project is voluntary and you may decline to take part or withdraw from the research without providing an explanation at any time until the work is prepared for publication. You can also refuse to answer a question. You should also be aware that data collected up to the time you withdraw will form part of the research project results and it may not be possible to withdraw your data from the study results if these have already had your identifying details removed.
- **What does participation in the research entail?** Participation in the project will involve completing a questionnaire. We will ask you questions about how you have been feeling. Only the researchers will have access to the information you share. If any information about child abuse or neglect is disclosed we will have to share this information, and only this information, with the police.
- **Location and Duration:** Each questionnaire is expected to last for approximately 15 minutes. Questionnaires will take place at regional health facilities.

- **Risks:** The research carries little risk, but it may make you think of negative experiences relating to anxiety or depression. If you feel uncomfortable at any time, you are free to stop the questionnaire without penalty. You will be debriefed and offered support and guidance by the researcher.
- **Benefits:** The project will contribute better understanding of the mental health issues faced by women in the perinatal period, and the most effective ways in which they could be supported through intervention.

Confidentiality:

- **Confidentiality:** Only the researchers will have access to the information that you share. The data will be stored on a password-protected secure server and it will not be made publicly available. The researchers will keep the information you provide confidential as far as the law allows.

Privacy Notice:

In collecting your personal information within this research, the ANU must comply with the Privacy Act 1988. The ANU Privacy Policy is available at https://policies.anu.edu.au/ppl/document/ANUP_010007 and it contains information about how a person can:

- Access or seek correction to their personal information;
- Complain about a breach of an Australian Privacy Principle by ANU, and how ANU will handle the complaint.

Data Storage:

- **Where:** Data will be stored on a password-protected server at Goldsmiths, University of London.
- **How long:** Data will be stored for at least ten years from the date of publication of the research.
- **Handling of Data following the required storage period:** The data will be stored indefinitely for potential further research on the project.

Queries and Concerns:

- **Contact Details for More Information:** For further information or queries regarding the research project, contact:
  - Buba Darboe, Gambia Ministry of Health and Social Welfare by telephone (3568867) or email (darboejula@hotmail.com)
- **Contact Details if in Distress:** For support, contact Hajara Huma (phone 3087007) or Malick Gaye (phone 3266132).

Ethics Committee Clearance:

The ethical aspects of this research have been approved by the ANU Human Research Ethics Committee, Goldsmiths Research Ethics Committee and The Gambia Government/MRC Joint Ethics Committee. If you have any concerns or complaints about how this research has been conducted, please contact:

Ethics Manager
The ANU Human Research Ethics Committee
The Australian National University
Telephone: +61 2 6125 3427
Email: Human.Ethics.Officer@anu.edu.au

Participant Consent Form

I have read to you the Information Sheet about the research project. Do you have any questions about the project?

1. Do you confirm that you have understood the information sheet about the project?
2. Do you understand that your participation is completely voluntary and you are free to withdraw at any time without reason, without your or your baby's care being affected?
3. Do you understand that you do not have to share any information you are uncomfortable sharing?
4. Do you agree to participate in this project?
5. Do you agree to being audio recorded?

Participants
Name_____

Has verbal Consent been received Yes/No _____

Date_____

Researcher
Signature_____

Date_____

Appendix G: Chapter 6 Information Sheets and Consent Forms

Clinic Information Sheet

Please take time to carefully listen to this information sheet and feel free to ask any questions or concerns you may have.

Project Title: Developing a Community Singing-Based Intervention for Perinatal Mental Health in The Gambia

Researchers and Partners: This project is being conducted by an international team of researchers in partnership with the Gambia National Centre for Arts & Culture and the Ministry of Health and Social Welfare. The project includes researchers from Goldsmiths, University of London, University of Cambridge, the Australian National University, and Imperial College London.

General Outline of the Project: We know that pregnancy can be physically and emotionally demanding and that these issues are particularly challenging in low-income countries such as the Gambia. We would like to know whether a community-based singing approach, led by local Kanyeleng groups, could be useful for reducing symptoms of anxiety and depression during pregnancy. We intend to run a larger study in the future, but the current study will be a smaller version of this, which will allow us to better understand the factors we need to consider in the larger trial.

For the current study we are inviting four antenatal clinics to participate in our trial. From each participating clinic we will recruit a total of 30 pregnant women between 14 – 30 weeks gestational age to take part. 15 women will be recruited first to be in the control group. Women in the control group will take part in the following:

- answering brief questionnaires asking about possible symptoms of anxiety and depression. These questionnaires will be administered within one week of consent, 6 weeks later and a month later (3 times in total)
- women will receive _____ in reimbursement as a thank you for the time they have taken to help us in our research

We will have three data collections points. They will take place at the clinic. The dates of those will be:

_____, _____, _____, (Starting at 10am)

15 women will be recruited first to be in the singing group. Women in the singing group will take part in the following:

- participation in a 2 hour group singing session every week for 6 weeks (dates below), led by a local Kanyeleng group and taking place at _____
- answering brief questionnaires asking about possible symptoms of anxiety and depression. These questionnaires will be administered one week before the group singing sessions begin, one week after and a month later (3 times in total)
- women will receive _____ in reimbursement as a thank you for the time they have taken to help us in our research

_____has been specifically selected for this study and we would value your participation in this study.

The group singing sessions for your clinic will be on the following dates:

_____,_____,_____,_____,_____,_____,
(starting at 4pm, finishing no later than 6pm)

We will also have three data collections points. They will take place at the clinic in the same venue as the singing sessions. The dates of those will be:

_____, _____, _____, (Starting at 10am)

If your clinic consents to be involved, members of our research team would visit your clinic the week of _____ to explain the study to women who are visiting the clinic. Those women who are eligible and interested to take part will be recruited and consented.
Following this, the clinic would be requested to host each of the group singing sessions, providing a suitable indoor or outdoor space that would be large enough for up to 30 women (participating women and Kanyeleng group). In addition, we would enlist the involvement of a Community Health Nurse attached to the clinic who would be requested to record attendance data for each session (registering which women attended at each session, how many Kanyeleng women attended and whether any adverse events occurred).

Please see the attached information which will be shared with the women visiting your clinic for more information.

**** To indicate your agreement to participate in the study, please fill in the attached consent form ****

Queries and Concerns:

- **Contact Details for More Information:** For further information or queries regarding the research project, contact:
    - Buba Darboe, Gambia Ministry of Health and Social Welfare by telephone (3568867) or email (darboejula@hotmail.com)
- **Contact Details if in Distress:** For support, contact Hajara Huma (phone 3087007) or Malick Gaye (phone 3266132).

Ethics Committee Clearance:
The ethical aspects of this research have been approved by the ANU Human Research Ethics Committee, Goldsmiths Research Ethics Committee and The Gambia Government/MRC Joint Ethics Committee. If you have any concerns or complaints about how this research has been conducted, please contact:

Ethics Manager
The ANU Human Research Ethics Committee
The Australian National University
Telephone: +61 2 6125 3427
Email: Human.Ethics.Officer@anu.edu.au

Clinic Consent Form

I have read to you the Information Sheet about the research project. Do you have any questions about the project?

Do you confirm that you have understood the information sheet about the project?
Do you understand that what your responsibilities are as a clinic involved?
Do you agree to participate in this project?

Clinic Representatives name_____

Has verbal Consent been received Yes/No _____

Date_____

Researcher Signature_____

Date_____

Participant Information Sheet Control Group
Please take time to carefully listen to this information sheet and feel free to ask any questions or concerns you may have.

Project Title: Developing a Community Singing-Based Intervention for Perinatal Mental Health in The Gambia

Researchers and Partners: This project is being conducted by an international team of researchers in partnership with the Gambia National Centre for Arts & Culture and the Ministry of Health and Social Welfare. The project includes researchers from Goldsmiths, University of London, University of Cambridge, the Australian National University, and Imperial College London.

General Outline of the Project:
Description and Methodology: We have worked with Kanyeleng groups to design an intervention for pregnancy that will involve group singing. The current study will try out this intervention in order to understand which bits of it work well, and which bits do not. We need to include a group of women who are not involved in the intervention, as a comparison group and you have been selected to be in this comparison group.
Participants: You are being invited to take part in this research because we feel that your experience as a pregnant woman can contribute to our understanding.
Use of Data and Feedback: Following the study, we plan to publish the results in academic/practitioner-based journals and to present our findings at conferences and meetings so that others can learn from the research. The results of the study will also be used to develop community-based mental health awareness programs and training for health professionals in the Gambia. To access the results of the study, contact the National Centre for Arts and Culture by phone (7781963) or email (hceesay@gmail.com).
Project Funding: This research study is being funded by the UK Medical Research Council and organized by Goldsmiths, University of London.

Participant Involvement:
Voluntary Participation & Withdrawal: Participation in the project is voluntary and you may decline to take part or withdraw from the research without providing an explanation at any time until the work is prepared for publication. You can also refuse to answer a question. You should also be aware that data collected up to the time you withdraw will form part of the research project results and it may not be possible to withdraw your data from the study results if these have already had your identifying details removed.

What does participation in the research entail? You will invite you to take part in 3 data collection sessions. You will be invited to:

answer brief questionnaires asking about possible symptoms of anxiety and depression. These questionnaires will be administered within one week from consent, six weeks later and then one a month later (3 times in total)

Location and Duration: _____ has been specifically selected for this study and we would value your participation in this study. Your data collection sessions will take place at the clinic. The dates of those will be:

_____, _____, _____, (Starting at 10am)

Risks: The research carries little risk. Because confidentiality cannot be guaranteed in the group, you should not share sensitive, personal information. If you feel uncomfortable at any time, you are free to stop or leave the singing group without penalty. If you feel distressed, contact Hajara Huma (phone 3087007) or Malick Gaye (phone 3266132) for support.
Benefits: The project will contribute better understanding of the mental health issues faced by women in the perinatal period, and the most effective ways in which they could be supported through intervention. You will receive _____ in reimbursement as a thank you for the time they have taken to help us in our research

Confidentiality:
Participants will be instructed not to share personal information of other group members to others outside the group. Some of the singing sessions will be video and audio-recorded and then transcribed for analysis. The data will be stored on a password-protected secure server and it will not be made publicly available. The researchers will keep the information you provide confidential as far as the law allows.

Privacy Notice:
In collecting your personal information within this research, the ANU must comply with the Privacy Act 1988. The ANU Privacy Policy is available at https://policies.anu.edu.au/ppl/document/ANUP_010007 and it contains information about how a person can:
Access or seek correction to their personal information;
Complain about a breach of an Australian Privacy Principle by ANU, and how ANU will handle the complaint.

Data Storage:
Where: Data will be stored on a password-protected server at Goldsmiths, University of London.
How long: Data will be stored for at least ten years from the date of publication of the research.
Handling of Data following the required storage period: The data will be stored indefinitely for potential further research on the project.

Queries and Concerns:
Contact Details for More Information: For further information or queries regarding the research project, contact:
Buba Darboe, Gambia Ministry of Health and Social Welfare by telephone (3568867) or email (**darboejula@hotmail.com**)
Contact Details if in Distress: For support, contact Hajara Huma (phone 3087007) or Malick Gaye (phone 3266132).

Ethics Committee Clearance:

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The ANU Human Research Ethics Committee
The Australian National University
Telephone: +61 2 6125 3427
Email: Human.Ethics.Officer@anu.edu.au

Participant Information Sheet CHIME Group
Please take time to carefully listen to this information sheet and feel free to ask any questions or concerns you may have.

Project Title: Developing a Community Singing-Based Intervention for Perinatal Mental Health in The Gambia

Researchers and Partners: This project is being conducted by an international team of researchers in partnership with the Gambia National Centre for Arts & Culture and the Ministry of Health and Social Welfare. The project includes researchers from Goldsmiths, University of London, University of Cambridge, the Australian National University, and Imperial College London.

General Outline of the Project:

- **Description and Methodology:** We have worked with Kanyeleng groups to design an intervention for pregnancy that will involve group singing. The current study will try out this intervention in order to understand which bits of it work well, and which bits do not.
- **Participants**: You are being invited to take part in this research because we feel that your experience as a pregnant woman can contribute to our understanding.
- **Use of Data and Feedback:** Following the study, we plan to publish the results in academic/practitioner-based journals and to present our findings at conferences and meetings so that others can learn from the research. The results of the study will also be used to develop community-based mental health awareness programs and training for health professionals in the Gambia. To access the results of the study, contact the National Centre for Arts and Culture by phone (7781963) or email (hceesay@gmail.com).
- **Project Funding:** This research study is being funded by the UK Medical Research Council and organized by Goldsmiths, University of London.

Participant Involvement:

- **Voluntary Participation & Withdrawal:** Participation in the project is voluntary and you may decline to take part or withdraw from the research without providing an explanation at any time until the work is prepared for publication. You can also refuse to answer a question. You should also be aware that data collected up to the time you withdraw will form part of the research project results and it may not be possible to withdraw your data from the study results if these have already had your identifying details removed.
- **What does participation in the research entail?** You will invite you to take part in a singing group as well as a couple data collection sessions. You will be invited to:

- participate in a 2 hour group singing session every week for 6 weeks (dates below), led by a local Kanyeleng group and taking place at _____

- answer brief questionnaires asking about possible symptoms of anxiety and depression. These questionnaires will be administered one week before the group singing sessions begin, one week after and a month later (3 times in total)

- **Location and Duration:** _____has been specifically selected for this study and we would value your participation in this study. The group singing sessions for your clinic will be on the following dates:

_____, _____, _____, _____, _____, _____, (starting at 4pm, finishing no later than 6pm)

We will also have three data collections points. They will take place at the clinic in the same venue as the singing sessions. The dates of those will be:

_____, _____, _____, (Starting at 10am)

- **Risks:** The research carries little risk. Because confidentiality cannot be guaranteed in the group, you should not share sensitive, personal information. If you feel uncomfortable at any time, you are free to stop or leave the singing group without penalty. If you feel distressed, contact Hajara Huma (phone 3087007) or Malick Gaye (phone 3266132) for support.
- **Benefits:** The project will contribute better understanding of the mental health issues faced by women in the perinatal period, and the most effective ways in which they could be supported through intervention. You will receive _____ in reimbursement as a thank you for the time they have taken to help us in our research

Confidentiality:

- **Confidentiality:** Participants will be instructed not to share personal information of other group members to others outside the group. Some of the singing sessions will be video and audio-recorded and then transcribed for analysis. The data will be stored on a password-protected secure server and it will not be made publicly available. The researchers will keep the information you provide confidential as far as the law allows.

Privacy Notice:

In collecting your personal information within this research, the ANU must comply with the Privacy Act 1988. The ANU Privacy Policy is available at https://policies.anu.edu.au/ppl/document/ANUP_010007 and it contains information about how a person can:

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Data Storage:

- **Where:** Data will be stored on a password-protected server at Goldsmiths, University of London.
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- **Handling of Data following the required storage period:** The data will be stored indefinitely for potential further research on the project.

Queries and Concerns:

- **Contact Details for More Information:** For further information or queries regarding the research project, contact:
    - Buba Darboe, Gambia Ministry of Health and Social Welfare by telephone (3568867) or email (darboejula@hotmail.com)
- **Contact Details if in Distress:** For support, contact Hajara Huma (phone 3087007) or Malick Gaye (phone 3266132).

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Ethics Manager
The ANU Human Research Ethics Committee
The Australian National University
Telephone: +61 2 6125 3427
Email: Human.Ethics.Officer@anu.edu.au

Feasability Trial Participant Consent Form

I have read to you the Information Sheet about the research project. Do you have any questions about the project?

Do you confirm that you have understood the information sheet about the project?
Do you understand that your participation is completely voluntary and you are free to withdraw at any time without reason, without your or your baby's care being affected?
Do you understand that you do not have to share any information you are uncomfortable sharing?
Do you agree to participate in this project?
Do you agree to being audio and video recorded?

Participants
Name_____

Has verbal Consent been received Yes/No _____

Date_____

Researcher
Signature_____

Date_____

Appendix H: CHIME session Check-List

1. Did any of the songs address any of the following topics? Y/N (Circle ehich ones below)
    a. Importance of the singing group in supporting each other
    b. Importance of other positive relationships in their lives
    c. Resilience to challenges and empowerment
    d. Importance of being open, removing stigma to discuss challenges

2. Did the sessions dwell on the challenges of pregnancy or more the coping mechanisms and resilience? Y/N

3. Did the kanyeleng group incorporate a lullaby? If so, which? Y/N
    a. Lullaby name:
4. Did the kanyeleng group explain the benefits of singing lullabies? Y/N

5. Did the kanyeleng group use a welcoming song? If so, which? Y/N
    a. Song name:

6. Did the kanyeleng group use a closing song at the end? If so, which song? Y/N
    a. Song name:

7. Overall, did the participants actively participate in the session by joining in with the singing, dancing or clapping? Y/N

8. Were there any examples where the kanyeleng group acted to encourage women to participate? Y/N
    a. Give example and time point in the video:

Appendix I: Debrief Form

For the participants after data collection:

Feelings of stress, anxiety or depression are very common during pregnancy. They may come and go, or they may persist. Having these feelings is nothing to be ashamed of or worried about. If you are having these feelings it is important to be aware of how you feel and ask for help when needed.

Different people find different things stressful, and triggers may be quite normal everyday things, or they might be extraordinary events.

Things you may find helpful

- Don't feel guilty or ashamed
- Talk to your birth companion or nurse
- Talk to a family member or a good friend about how you are feeling
- Diet: try to eat fruits and vegetables, avoid too much sugar
- Drink plenty of water
- Get your body moving by walking, dancing or exercising
- Try to get at least 8 hours of sleep every night
- Relaxed breathing
- Gardening
- Singing or listening to music
- Recitation of the Qur'an/offering prayers or reading bible
- Massage
- Call Research Assistants for referrals for more support

Appendix J: Case Report Form

CASE REPORT FORM
VERSION: 0.3 (SEPTEMBER 21 2018)

PROTOCOL: 2018235

[*DEVELOPING A COMMUNITY SINGING-BASED INTERVENTION FOR PERINATAL MENTAL HEALTH IN THE GAMBIA*]

Participant Study Number: | | | | | |

Study group: | | |

General Instructions for Completion of the Case Report Forms (CRF)

Completion of CRFs

- A CRF must be completed for each study participant who is successfully enrolled and consented
- For reasons of confidentiality, the name and initials of the study participant should **not** appear on the CRF.

General

- Please print all entries in BLOCK CAPITAL LETTERS using a **black** ballpoint pen.
- All text and explanatory comments should be brief.
- Answer every question explicitly; do not use ditto marks.
- Do not leave any question unanswered. If the answer to a question is unknown, write "**NK**" (Not Known). If a requested test has not been done, write "**ND**" (Not Done). If a question is not applicable, write "**NA**" (Not Applicable).
- Where a choice is requested, **cross (X)** the appropriate response.

Dates and Times

- All date entries must appear in the format DD-MMM-YYYY e.g. 05-May-2009. The month abbreviations are as follows:

January	=	Jan	May	=	May	September	=
February	=	Feb	June	=	Jun	October	=
March	=	Mar	July	=	Jul	November	=
April	=	Apr	August	=	Aug	December	=

In the absence of a precise date for an event that precedes the participant's inclusion into the study, a partial date may be recorded by recording "NK" in the fields that are unknown e.g. where the day and month
are not clear, the following may be entered into the CRF:

N K	N K	2 0 0 9
DD	MMM	YYYY

- All time entries must appear in **24-hour format** e.g. 13:00. Entries representing midnight should be recorded as 00:00 with the date of the new day that is starting at that time.

Correction of Errors

- **Do not** overwrite erroneous entries, or use correction fluid or erasers.
- Draw a straight line through the entire erroneous entry without obliterating it.
- Clearly enter the correct value next to the original (erroneous) entry.
- Date and initial the correction.

Participant Number	☐☐☐☐☐
Study Group	_____
Study Site (Clinic Name): _____	Time to get to clinic: _____ min
Inclusion/exclusion criteria *Patient must meet all criteria to eligible for the study	Met all ☐1. Not met* ☐2.
Date of Informed Consent	D D M M M Y Y Y Y
Date of Birth	D D M M M Y Y Y Y Or estimated age _____
Gestational Age _____weeks	
Parity (# of births) _____	
Gravida (# of pregnancies) _____	
Place of Birth _____	
Current Place of Residence (Town/Village)_____	
Ethnic Group _____	
History of Serious Illness (Please briefly explain) _____	
Occupation _____	
Marital Status ☐1. Single ☐2. Divorced/Separated ☐3. Widowed	☐4.Married Monogamous ☐5.Married Polygamous 1st, 2nd, 3rd or 4th wife (*Circle one*)
Educational Background ☐1. None ☐2. Primary ☐5 Arabic	☐3 Secondary ☐4 Tertiary

Music Engagement							
I enjoy participating in group music activities.	☐1 Completely Disagree	☐2 Strongly Disagree	☐3 Disagree	☐4 Neither Agree nor Disagree	☐5 Agree	☐6 Strongly Agree	☐7 Completely Agree
I listen attentively to music for __ per day.	☐1 0-15 min	☐2 15-30 min	☐3 30-60 min	☐4 60-90 min	☐5 2 hours	☐6 2-3 hours	☐7 4 hours or more
I participate in an event that involves music _____ times per month.	☐1 Not at all	☐2 Once	☐3 Twice	☐4 Three times	☐5 Four times	☐6 Five times	☐7 6 or more times

MENTAL HEALTH EPDS – Baseline				
Date Collected	D D M M M Y Y Y Y			
Time Collected	H H : M M			
EPDS SCORE				
1.	☐0.	☐1.	☐2.	☐3.
2.	☐0.	☐1.	☐2.	☐3.
3.	☐3.	☐2.	☐1.	☐0.
4.	☐0.	☐1.	☐2.	☐3.
5.	☐3.	☐2.	☐1.	☐0.
6.	☐3.	☐2.	☐1.	☐0.
7.	☐3.	☐2.	☐1.	☐0.
8.	☐3.	☐2.	☐1.	☐0.
9.	☐3.	☐2.	☐1.	☐0.
10.	☐3.	☐2.	☐1.	☐0.
Total Score: _____				
Referred on further:	☐1. Yes		☐2. No	

MENTAL HEALTH SRQ-20 – Baseline		
Date Collected	D D M M M Y Y Y Y	
Time Collected	H H : M M	
SRQ-20 Score		
1.	☐1. Yes	☐0. No
2.	☐1. Yes	☐0. No
3.	☐1. Yes	☐0. No
4.	☐1. Yes	☐0. No
5.	☐1. Yes	☐0. No
6.	☐1. Yes	☐0. No
7.	☐1. Yes	☐0. No
8.	☐1. Yes	☐0. No
9.	☐1. Yes	☐0. No
10.	☐1. Yes	☐0. No
11.	☐1. Yes	☐0. No
12.	☐1. Yes	☐0. No
13.	☐1. Yes	☐0. No
14.	☐1. Yes	☐0. No
15.	☐1. Yes	☐0. No

16.	☐$_1$. Yes	☐$_0$. No
17.	☐$_1$. Yes	☐$_0$. No
18.	☐$_1$. Yes	☐$_0$. No
19.	☐$_1$. Yes	☐$_0$. No
20.	☐$_1$. Yes	☐$_0$. No
Total Score: _____		
Referred on further:	☐$_1$. Yes	☐$_2$. No

MENTAL HEALTH EPDS – Post				
Date Collected	D D M M M Y Y Y Y			
Time Collected	H H : M M			
EPDS SCORE				
1.	☐0.	☐1.	☐2.	☐3.
2.	☐0.	☐1.	☐2.	☐3.
3.	☐3.	☐2.	☐1.	☐0.
4.	☐0.	☐1.	☐2.	☐3.
5.	☐3.	☐2.	☐1.	☐0.
6.	☐3.	☐2.	☐1.	☐0.
7.	☐3.	☐2.	☐1.	☐0.
8.	☐3.	☐2.	☐1.	☐0.
9.	☐3.	☐2.	☐1.	☐0.
10.	☐3.	☐2.	☐1.	☐0.
Total Score: _____				
Referred on further:	☐1. Yes		☐2. No	

MENTAL HEALTH SRQ-20 – Post		
Date Collected	D D M M M Y Y Y Y	
Time Collected	H H : M M	
SRQ-20 Score		
1.	☐1. Yes	☐0. No
2.	☐1. Yes	☐0. No
3.	☐1. Yes	☐0. No
4.	☐1. Yes	☐0. No
5.	☐1. Yes	☐0. No
6.	☐1. Yes	☐0. No
7.	☐1. Yes	☐0. No
8.	☐1. Yes	☐0. No
9.	☐1. Yes	☐0. No
10.	☐1. Yes	☐0. No
11.	☐1. Yes	☐0. No
12.	☐1. Yes	☐0. No
13.	☐1. Yes	☐0. No
14.	☐1. Yes	☐0. No
15.	☐1. Yes	☐0. No

16.	☐$_1$. Yes	☐$_0$. No
17.	☐$_1$. Yes	☐$_0$. No
18.	☐$_1$. Yes	☐$_0$. No
19.	☐$_1$. Yes	☐$_0$. No
20.	☐$_1$. Yes	☐$_0$. No
Total Score: _____		
Referred on further:	☐$_1$. Yes	☐$_2$. No

MENTAL HEALTH EPDS – Follow-up				
Date Collected	D D M M M Y Y Y Y			
Time Collected	H H : M M			
EPDS SCORE				
1.	☐0.	☐1.	☐2.	☐3.
2.	☐0.	☐1.	☐2.	☐3.
3.	☐3.	☐2.	☐1.	☐0.
4.	☐0.	☐1.	☐2.	☐3.
5.	☐3.	☐2.	☐1.	☐0.
6.	☐3.	☐2.	☐1.	☐0.
7.	☐3.	☐2.	☐1.	☐0.
8.	☐3.	☐2.	☐1.	☐0.
9.	☐3.	☐2.	☐1.	☐0.
10.	☐3.	☐2.	☐1.	☐0.
Total Score: _____				
Referred on further:	☐1. Yes		☐2. No	

MENTAL HEALTH SRQ-20 – Post		
Date Collected	D D M M M Y Y Y Y	
Time Collected	H H : M M	
SRQ-20 Score		
1.	☐1. Yes	☐0. No
2.	☐1. Yes	☐0. No
3.	☐1. Yes	☐0. No
4.	☐1. Yes	☐0. No
5.	☐1. Yes	☐0. No
6.	☐1. Yes	☐0. No
7.	☐1. Yes	☐0. No
8.	☐1. Yes	☐0. No
9.	☐1. Yes	☐0. No
10.	☐1. Yes	☐0. No
11.	☐1. Yes	☐0. No
12.	☐1. Yes	☐0. No
13.	☐1. Yes	☐0. No
14.	☐1. Yes	☐0. No
15.	☐1. Yes	☐0. No

16.	☐$_1$. Yes	☐$_0$. No
17.	☐$_1$. Yes	☐$_0$. No
18.	☐$_1$. Yes	☐$_0$. No
19.	☐$_1$. Yes	☐$_0$. No
20.	☐$_1$. Yes	☐$_0$. No
Total Score: _____		
Referred on further:	☐$_1$. Yes	☐$_2$. No

Session Attendance					
Session #	**Date of session**	**Start Time**	**End Time**	**Attended?**	
1.	D D M M M Y Y Y Y	H H : M M	H H : M M	☐ 1· Yes	☐ 0· No
2.	D D M M M Y Y Y Y	H H : M M	H H : M M	☐ 1· Yes	☐ 0· No
3.	D D M M M Y Y Y Y	H H : M M	H H : M M	☐ 1· Yes	☐ 0· No
4.	D D M M M Y Y Y Y	H H : M M	H H : M M	☐ 1· Yes	☐ 0· No
5.	D D M M M Y Y Y Y	H H : M M	H H : M M	☐ 1· Yes	☐ 0· No
6.	D D M M M Y Y Y Y	H H : M M	H H : M M	☐ 1· Yes	☐ 0· No
7.	D D M M M Y Y Y Y	H H : M M	H H : M M	☐ 1· Yes	☐ 0· No
8.	D D M M M Y Y Y Y	H H : M M	H H : M M	☐ 1· Yes	☐ 0· No
9.	D D M M M Y Y Y Y	H H : M M	H H : M M	☐ 1· Yes	☐ 0· No
10.	D D M M M Y Y Y Y	H H : M M	H H : M M	☐ 1· Yes	☐ 0· No

Withdrawal Information		
Date of Withdrawl : D D M M M Y Y Y Y		
Has participant withdrawn from the intervention only ?	☐1. Yes	☐2. No
Has participant withdrawn from intervention and data collection?	☐1. Yes	☐2. No
Reason(s) for withdrawal: ☐1 Change in health ☐2 Miscarriage ☐3 Unable to attend sessions ☐4 Doesn't enjoy the intervention ☐5 Other (specify) _____		
Remarks:		
Investigator's Statement: I have reviewed the data recorded in this CRF and confirm that the data are complete and accurate Investigator (Full name): _____ Investigator Signed? ☐1 Signature Date: D D M M M Y Y Y Y		

Appendix K: Chapter 6 Interview and Focus Group Discussion Questions

Open-ended questions for participants:

1. Did you feel that the singing sessions were helpful to you? In what way?
2. Did you learn new information from the sessions? If so, what?
3. Was there anything you didn't like about the sessions? If so, how could these be improved for next time?
4. The program ran for six weeks for one hour each week. Did this schedule work well for you?
5. Now that you've attended 6 or less singing sessions, can you tell us what you understood to be the purpose of these sessions?
6. Would you recommend the program to any of your friends or family if they were pregnant?

Questions for Kanyeleng groups (focus group):

1. Now that you've delivered 6 singing sessions to the group, can you tell us what you understood to be the purpose of these sessions?
2. What information did you try to get across to the women in the group?
3. Did you ever have a situation where some of the women were not really participating? What did you do in this situation?
4. Did you feel that the singing sessions were helpful to the women? In what way?
5. What challenges did you encounter in carrying out the program? And what could be improved if we do this program again?
6. The program ran for six weeks for one hour each week. Did this schedule work well for the participants?
7. Each session included a welcoming song, a middle section with songs on topics relating to pregnancy and mental health and one or more lullabies; and a closing song. Did this structure work well? If Yes, Explain, If No, Explain
8. Would you recommend the program to any of your friends or family if they were pregnant?

Questions for CHNs (focus group):

1. Now that you've observed 6 singing sessions, can you tell us what you understood to be the purpose of these sessions?
2. What information did you think the women learned in the singing groups?
3. Was there ever a situation where some of the women were not really participating? What did you or the Kanyeleng do in this situation?
4. Did you feel that the singing sessions were helpful to the women? In what way?
5. What challenges did you encounter in carrying out the program? And what could be improved if we do this program again?
6. The program ran for six weeks for one hour each week. Did this schedule work well for you and the participants?
7. Each session included a welcoming song, a middle section with songs on topics relating to pregnancy and mental health and one or more lullabies; and a closing song. Did this structure work well? If Yes, Explain, If No, Explain.
8. Would you recommend the program to any of your friends or family if they were pregnant?

Appendix L: Chapter 6 Supplementary Tables

Table L.1a

Demographic Information by Clinic

Overall	**Gunjur** ***n* = 30**	**Kuntair** ***n* = 27**	**Pirang** ***n* = 36**	**Sukuta** ***n* = 31**
	M(SD)	***M(SD)***	***M(SD)***	***M(SD)***
Age	26.93 (6.17)	27.41 (5.60)	26.50 (6.25)	27.10 (4.92)
GA	20.67 (3.65)	19.70 (3.91)	21.72 (2.79)	20.84 (2.79)
Gravida	3.65 (2.17)	4.63 (2.32)	3.31 (2.05)	3.32 (2.09)
	n(% of total)	***n(% of total)***	***n(% of total)***	***n(% of total)***
Parity				
Primiparous	6 (20%)	3 (11%)	10 (3%)	8 (26%)
Multiparous	24 (47%)	24 (89%)	26 (72%)	23 (74%)
Marital Status				
Single/Divorced /Widowed	3 (10%)	0 (0%)	1 (3%)	1 (3%)
Married (Monogamous)	22 (73%)	14 (52%)	22 (61%)	25 (81%)
Married (Polygamous)	5 (17%)	13 (48%)	13 (36%)	5 (16%)
Education Level				
None	2 (7%)	1 (4%)	2 (6%)	0 (0%)
Informal (Arabic)	12 (3%)	18 (67%)	18 (50%)	14 (45%)
Primary	6 (20%)	4 (15%)	4 (11%)	5 (16%)
Secondary/Tertiary	10 (33%)	4 (15%)	12 (33%)	12 (39%)
Occupation				
Housewife	11 (37%)	26 (96%)	17 (47%)	18 (58%)
Other	19 (63%)	1 (4%)	19 (53%)	13 (42%)
Husband's Occupation				
Skilled Work	14 (46%)	7 (26%)	12 (33%)	14 (45%)
Manual/Trade Work	16 (53%)	20 (74%)	24 (67%)	17 (55%)

Note. Housewife includes women who stated they did not have a job ("None")

Table L.1b

Demographic Information for CHIME Group by Clinic

CHIME group	**Gunjur n = 11**	**Kuntair n = 10**	**Pirang n = 16**	**Sukuta n = 13**
	M(SD)	***M(SD)***	***M(SD)***	***M(SD)***
Age	27.64 (7.21)	27.60 (4.55)	25.31 (5.34)	27.38 (5.35)
GA	21.09 (3.27)	20.00 (4.32)	22.25 (2.82)	20.69 (2.78)
Gravida	3.73 (2.33)	5.1 (2.60)	3.38 (1.82)	3.08 (2.47)
	n(% of total)	***n(% of total)***	***n(% of total)***	***n(% of total)***
Parity				
Primiparous	2 (18%)	0 (0%)	4 (25%)	5 (38%)
Multiparous	9 (81%)	10 (100%)	12 (75%)	8 (62%)
Marital Status				
Single/Divorced/ Widowed	1 (9%)	0 (0%)	0 (0%)	0 (0%)
Married (Monogamous)	7 (64%)	5 (50%)	13 (81%)	12 (92%)
Married (Polygamous)	3 (27%)	5 (50%)	3 (19%)	1 (8%)
Education Level				
None	1 (9%)	1 (10%)	1 (6%)	0 (0%)
Informal (Arabic)	6 (55%)	8 (80%)	8 (50%)	6 (46%)
Primary	2 (18%)	0 (0%)	3 (19%)	2 (15%)
Secondary/Tertiary	2 (18%)	1 (10%)	4 (25%)	5 (38%)
Occupation				
Housewife	6 (55%)	9 (9%)	9 (56%)	8 (62%)
Other	5 (45%)	1 (10%)	7 (44%)	5 (38%)
Husband's Occupation				
Skilled Work	7 (64%)	3 (30%)	5 (31%)	7 (54%)
Manual/Trade Work	4 (36%)	7 (70%)	11 (69%)	6 (46%)

Note. Housewife includes women who stated they did not have a job ("None")

Table L.1c

Demographic Information for Control Group by Clinic

Control group	**Gunjur n = 19**	**Kuntair n = 17**	**Pirang n = 20**	**Sukuta n = 18**
	M(SD)	***M(SD)***	***M(SD)***	***M(SD)***
Age	26.53 (5.65)	27.29 (6.27)	27.45 (6.88)	26.89 (4.74)
GA	20.42 (3.92)	19.53 (3.78)	21.30 (2.77)	20.94 (2.88)
Gravida	3.58 (2.14)	4.35 (2.18)	3.25 (2.27)	3.50 (1.82)
	n(% of total)	***n(% of total)***	***n(% of total)***	***n(% of total)***
Parity				
Primiparous	4 (21%)	3 (18%)	6 (30%)	3 (17%)
Multiparous	15 (79%)	14 (82%)	14 (70%)	15 (83%)
Marital Status				
Single/Divorced/ Widowed	2 (11%)	0 (0%)	1 (5%)	1 (6%)
Married (Monogamous)	15 (79%)	9 (53%)	9 (45%)	13 (72%)
Married (Polygamous)	2 (11%)	8 (47%)	10 (50%)	4 (22%)
Education Level				
None	1 (5%)	0 (0%)	1 (5%)	0 (0%)
Informal (Arabic)	6 (32%)	10 (59%)	10 (50%)	8 (44%)
Primary	4 (21%)	4 (24%)	1 (5%)	3 (17%)
Secondary/Tertiary	8 (42%)	3 (18%)	8 (40%)	7 (39%)
Occupation				
Housewife	5 (26%)	17 (100%)	8 (40%)	10 (56%)
Other	14 (74%)	0 (0%)	12 (60%)	8 (44%)
Husband's Occupation				
Skilled Work	7 (37%)	4 (24%)	7 (35%)	7 (39%)
Manual/Trade Work	12 (63%)	13 (76%)	13 (65%)	11 (61%)

Note. Housewife includes women who stated they did not have a job ("None")

Table L.2

Attrition Rates by Clinic and by Group

	Retention			Attrition		
	Pre ***n* (%)**	**Post** ***n* (%)**	**Follow-up** ***n* (%)**	**Pre-Post (%)**	**Post-Follow-up (%)**	**Pre-Follow-up (%)**
Overall						
Gunjur	30 (100%)	24 (80%)	15 (50%)	20%	38%	50%
Kuntair	27 (100%)	26 (96%)	25 (93%)	4%	4%	7%
Pirang	36 (100%)	25 (69%)	22 (61%)	31%	12%	39%
Sukuta	31 (100%)	24 (77%)	21 (68%)	23%	13%	32%
CHIME						
Gunjur	11 (100%)	10 (91%)	7 (64%)	9%	30%	36%
Kuntair	10 (100%)	10 (100%)	10 (100%)	0%	0%	0%
Pirang	16 (100%)	11 (69%)	11 (69%)	31%	0%	31%
Sukuta	13 (100%)	8 (62%)	5 (38%)	38%	38%	62%
Control						
Gunjur	19 (100%)	14 (74%)	8 (42%)	26%	43%	58%
Kuntair	17 (100%)	16 (94%)	15 (88%)	6%	6%	12%
Pirang	20 (100%)	14 (70%)	11 (55%)	30%	21%	45%
Sukuta	18 (100%)	16 (89%)	16 (89%)	11%	0%	11%

Table L.3

EPDS and SRQ-20 Scores at Three Time-points by Clinic

		Baseline		Post		Follow-up	
		n	***M(SD)***	***n***	***M(SD)***	***n***	***M(SD)***
Gunjur	EPDS	30	3.67 (4.33)	24	2.83 (2.82)	15	2.27 (2.69)
	SRQ-20	30	6.90 (3.86)	24	5.71 (4.53)	15	4.87 (4.21)
Kuntair	EPDS	27	3.26 (3.63)	26	1.18 (1.96)	25	1.28 (2.07)
	SRQ-20	27	5.81 (3.87)	26	3.92 (3.65)	25	3.08 (2.48)
Pirang	EPDS	36	5.00 (4.47)	25	3.68 (2.84)	22	1.82 (2.06)
	SRQ-20	36	8.44 (3.84)	25	6.20 (4.02)	22	5.09 (3.68)
Sukuta	EPDS	31	4.81 (3.70)	24	2.96 (3.25)	21	2.05 (2.29)
	SRQ-20	31	7.52 (4.16)	24	5.50 (3.73)	21	4.33 (2.90)