INTEGRATING MENTAL HEALTH INTO COMMUNITY- BASED MATERNAL HEALTH SERVICES IN SÉLINGUÉ, MALI

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Abstract

Background. Common perinatal mental disorders (CPMDs) are frequently experienced in low and middle-income countries (LMIC), where low-educational attainment, poverty, and gender-based violence are widely recognized risk factors. The goal of this dissertation research was to examine local understandings of perinatal mental health to inform the development of a mental health intervention that will be integrated into community-based maternal health services in Sélingué, Mali. To achieve this goal, we had three research aims: first, to qualitatively identify local terms and ethnomedical models for mental health among perinatal women in Mali, West Africa; second, to develop a holistic understanding of local syndrome(s) for mental health among perinatal women; and third, to identify a feasible and acceptable intervention model for the integration of mental health into community-based maternal services for perinatal women in Sélingué, Mali.

Methods. First, we conducted freelist interviews among perinatal women, auxiliary midwives, and community health workers (CHWs), to identify local terms for mental health. In-depth interviews were carried out among perinatal women, auxiliary midwives, CHWs, and mental health specialists to gain a nuanced understanding of priority mental health problems, perceived causes, and if and how women seek care or manage their distress. To gain a holistic understanding of local syndrome(s) for perinatal mental health, we conducted pile sorts, asking participants to sort 36 terms, identified from the free lists, into groups based on which terms go together. We then performed exploratory factor analysis (EFA) on a perinatal depression scale, adapted for the Malian context. Lastly, we performed a scoping literature review on current best practices for closing the maternal
mental health treatment gap and used data from in-depth interviews to develop recommendations for a locally informed approach for integrated mental and maternal health care.

**Results.** Perinatal women used idioms of distress to communicate difficulties (*gèlèya*), pain, stress, and suffering (*tôôrô*), worries (*hamin*), and a crying heart or sadness (*dusukasi*). Participants indicated that these idioms of distress operate along a progressive continuum of severity of distress that increases with time, both between and within idioms. Using multidimensional scaling to analyze the pile sorts data, we identified a single large cluster, indicating that there is one single category of included terms for perinatal mental distress. The EFA results were in agreement with the pile sorts findings, yielding one single underlying construct for perinatal mental distress. Results from the scoping literature review indicate that integrated mental health intervention models that rely on task-sharing, are successful and strong approaches to address barriers towards closing the mental health treatment gap. Our qualitative findings suggest that it is both locally feasible and acceptable to integrate mental health services into existing community health care systems.

**Conclusions.** Qualitative and quantitative examination of perinatal mental health in Sélingué, Mali, contributed to both the holistic understanding and measurement of perinatal depression. In the context of poverty and lack of care and treatment options for mental illness, interventions that integrate mental health into community-based maternal health services emerge as locally acceptable and feasible strategies to narrow the mental health treatment gap in Sélingué, Mali.
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<th>Description</th>
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<tbody>
<tr>
<td>ANC</td>
<td>Antenatal care</td>
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<tr>
<td>CBT</td>
<td>Cognitive behavioral therapy</td>
</tr>
<tr>
<td>CHW</td>
<td>Community health workers</td>
</tr>
<tr>
<td>CMDs</td>
<td>Common mental disorders</td>
</tr>
<tr>
<td>CP</td>
<td>CenteringPregnancy</td>
</tr>
<tr>
<td>CP+PW</td>
<td>CenterPregnancy + psychosocial wellbeing</td>
</tr>
<tr>
<td>CPMDs</td>
<td>Common perinatal mental disorders</td>
</tr>
<tr>
<td>CSCom</td>
<td>Community health center, or <em>Centre de Santé Communautaire</em></td>
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<tr>
<td>CSRef</td>
<td>District referral hospital, or <em>Centre de Santé de Référence</em></td>
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<tr>
<td>DALYS</td>
<td>Disability-adjusted life years</td>
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<tr>
<td>EFA</td>
<td>Exploratory factor analysis</td>
</tr>
<tr>
<td>EPDS</td>
<td>Edinburgh Postpartum Depression Scale</td>
</tr>
<tr>
<td>FGDs</td>
<td>Focus group discussion</td>
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<tr>
<td>G-ANC</td>
<td>Group antenatal care</td>
</tr>
<tr>
<td>GEMS</td>
<td>Global Established Multidisciplinary Sites</td>
</tr>
<tr>
<td>HSCL</td>
<td>Hopkins Symptom Checklist</td>
</tr>
<tr>
<td>IDI</td>
<td>In-depth interview</td>
</tr>
<tr>
<td>IPT</td>
<td>Interpersonal therapy</td>
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<tr>
<td>JHSPH</td>
<td>Johns Hopkins Bloomberg School of Public Health</td>
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<tr>
<td>LMIC</td>
<td>Low and middle- income country</td>
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<tr>
<td>mhGAP</td>
<td>Mental Health Gap Action Programme</td>
</tr>
<tr>
<td>MMR</td>
<td>Maternal mortality ratio</td>
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<tr>
<td>NIMH</td>
<td>National Institute of Mental Health</td>
</tr>
<tr>
<td>NSHW</td>
<td>Non-specialist health workers</td>
</tr>
<tr>
<td>PCA</td>
<td>Principal components analysis</td>
</tr>
<tr>
<td>UNICEF</td>
<td>United Nations International Children's Emergency Fund</td>
</tr>
<tr>
<td>USTTB</td>
<td>University of Sciences, Techniques and Technologies of Bamako</td>
</tr>
<tr>
<td>TBA</td>
<td>Traditional birth attendant</td>
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WHO    World Health Organization
Chapter 1. Introduction

1.1 Study background

Common perinatal mental disorders (CPMDs) are highly prevalent in low and middle-income countries (LMIC) and have negative intergenerational effects (1-3). For the purposes of this dissertation, we defined the perinatal period, as commonly referenced in the mental health literature, as first trimester of pregnancy to two years postpartum, and is used interchangeably with maternal. A recent meta-analysis of 13 studies in LMIC revealed a 15.5% prevalence of antenatal common mental disorders, and 19.8% prevalence of postnatal common mental disorders (1). Multiple LMICs globally have identified perinatal depression rates of around 15-25%, and a mean rate of postnatal anxiety in Africa of 14% (4-8). Children of mothers experiencing CPMDs are at increased risk for malnutrition, stunting, cognitive and emotional delays, and low educational attainment (2, 9-11). Furthermore, studies in high-income countries suggest that women with perinatal depression and depressed mood are less likely to seek antenatal and postnatal care (12-14).

Many LMIC allocate less than 1% of their health budgets for the development and maintenance of their mental health systems (15, 16). In low-income settings, 70-100% of people with depression remain untreated due to a lack of access to services, social stigma, and recognition that mental health problems are medically treatable (16-20). In Mali, it is imperative to implement interventions delivered outside formal health facilities by non-specialist health workers (NSHWs), also known as community health workers (CHW), and to train and increase the capacity of specialist and lay providers to reduce the burden
of maternal mental health problems. NSHW is a term frequently used in the mental health literature, and community health worker (CHW), is a term widely used in the maternal child health literature. Both terms can be viewed as being relatively synonymous regarding the training, education, and type of care delivered. For the purposes of this proposal, the term community health worker (CHW) will be used.

Despite growing recognition of the global burden of CPMDs, limited research has been conducted to develop, implement, and systematically evaluate prevention interventions for CPMDs within the context of antenatal care, with even fewer studies in LMIC (18, 21-23). Psychological interventions treating perinatal depression delivered by CHWs have been found to be effective in LMIC, however there is a dearth of research on interventions for the prevention, psychosocial care, and early treatment of CPMDs, delivered by CHWs in LMIC (24, 25). Qualitative, formative research is needed to systematically identify local mental health terms, and local understandings of perinatal mental health in rural Mali.

This dissertation addresses these gaps in the research to inform the development of a locally relevant intervention that integrates mental health into existing community-based maternal health services in Sélingué, Mali. First, I examine local understandings and terms for mental health. Next, I describe the complementary use of two distinct methods to aid the understanding and measurement of a local perinatal depression-like syndrome. Finally, I present recommendations for the development of an intervention that integrates mental health into group antenatal care.
1.2 Study Aims

The goal of this dissertation was to examine local understandings of maternal mental health to inform the development of a mental health intervention that will be integrated into community-based maternal health services in Sélingué, Mali. The specific aims of this dissertation were:

**Aim 1:** To qualitatively identify local terms and ethnomedical models for mental health among perinatal women in Mali, West Africa.

**Aim 2:** To develop a holistic understanding of local syndrome(s) for mental health among perinatal women in Mali, West Africa.

**Aim 3:** To identify a feasible and acceptable intervention model for the integration of mental health into community-based maternal services for perinatal women in Mali, West Africa.

1.3 Theoretical framework

This section draws together theories and concepts that inform this study on perinatal mental health in Mali. First, an orientation to the proposed study is provided. Then the ethnomedical theoretical perspective, ethnopsychology and ethnophysiology theoretical perspectives, and Patel’s concept of the credibility gap informs this research.

Mental health in Mali is not fully described in the anthropological, medical, or psychiatric literature (26-28). Health, illness and treatment pathways need to be understood more complexly and locally situated in order to develop locally relevant and acceptable prevention and treatment strategies. The majority of perinatal women experiencing mental health problems in low-resource settings do not receive mental
health care (1, 29). In the absence of mental health service availability and utilization, it is imperative to understand the processes by which people conceptualize of mental health, specifically how problems are recognized and interpreted, and how and when care is sought (30). Towards this end there is a need to move beyond studies that consider illness and treatment as imposed categories and bounded sets of linear action. Comaroff (1981, 1983) highlights the shortcomings of such biomedical perspectives for illness causation and treatment as they fall victim to “analytic involution,” or the decontextualization of illness and healing systems as discrete domains of empirical inquiry (31, 32). Rather, qualitative, in-depth exploration of local medical systems is needed to fully articulate the multiple dimensions that determine illness, well-being, and careseeking.

The process of identifying an intervention model for an integrated maternal mental health community-based intervention requires the foundational step of the emic identification of mental health terms and concepts to understand how illness and well-being are culturally constructed (33, 34). Understanding local illness concepts is important to ensuring that local priorities are addressed, and addressed in ways that are likely to be acceptable and effective (35). Additionally, consideration of health systems approaches to reduce the treatment and credibility gaps will further enhance the development, acceptability, and ultimate impact of interventions. The ethnomedical theoretical perspective, ethnopsychology and ethnophysiology theoretical perspectives, and Patel’s concept of the credibility gap offer valuable insight for the study of perinatal mental health and development of maternal mental health intervention content for perinatal women in Sélingué, Mali.
1.3.1 Ethnomedicine

The ethnomedical theoretical perspective in medical anthropology posits that local ways of identifying, classifying and responding to illnesses are best understood holistically as a system of mutually-reinforcing forms of knowledge and practice (36). This perspective is an example of ethnoscience, which has been defined as “an attempt to reconstitute what serves as science for others, their practices of looking after themselves and their bodies, their botanical knowledge, but also their forms of classification, or making connections, etc.” (37). Ethnoscience argues that there are local bodies of knowledge on various topics, and not every cultural group has knowledge of every topic (38). Therefore, ethnoscience and the ethnomedical perspective offer insight on what should be studied in unique cultural contexts, how to study it, and how to translate and integrate findings into interventions.

The traditional focus of the ethnomedical theoretical perspective has been on the “words, situations, context and feelings which are associated with illness and give it meaning for the sufferer” (39). Implicit in this perspective is a strong emphasis on culture, which can be understood as a lens through which people classify, interpret and respond to meaning. Much like language and cuisine, medicine is a subset of culture that is locally situated, whereby each society has a unique medical culture. These medical cultures or ethnomedical systems are comprised of “interrelated notions about the body, the causes and prevention of illnesses, diagnosis and treatment” (40).

Quinlan (2011) describes two central aims of the ethnomedical perspective: 1) to examine local health-related theories to explain and treat illness in specific cultural contexts; and 2) translation of ethnomedical findings to promote improvements in health
care delivery, and inform the content and communication of interventions (40). Research primarily seeks an ‘emic’ or insider view of the culture under study and relies on ethnographic methods and systematic data collection techniques from the field of cognitive anthropology to identify local terminology including idioms of distress and local priorities for care (40, 41). Identification of local terms and concepts not only reduces the risk of harm, but enhances the better design of effective intervention content, and ultimately leads to better outcomes (42-45).

For the study of global mental health the ethnomedical theoretical perspective is particularly apt as there are large cultural variations in mental illness, with some conditions seemingly universal, and others culturally unique (46). Culture can be understood to shape mental illness in three ways: 1) recognition of illness; 2) how illness is expressed (etio logically and symptomatically); and 3) whether or to what degree to which illness manifests at all (46). With these cultural foundations in mind, the ethnomedical theoretical perspective allows for the identification of local mental health constructs, symptoms, priorities, and treatment pathways. Culturally appropriate terminology has been found to be critical for development of effective mental health interventions (18, 35, 47, 48). For example, Rahman’s Thinking Healthy Program for perinatal women with mild to moderate depression in rural Pakistan uses culturally centered language including local symbols and concepts, and replaces technical terms with local colloquial expressions (18, 21). The program was perceived to be useful by the perinatal women, which may in part be due to the program’s focus on the experiences of depressed rural women, particularly on the individual and socio-cultural context of depression.
1.3.2 Ethnopsychology and Ethnophysiology

The theoretical perspectives of ethnopsychology and ethnophysiology within the ethnomedical theoretical perspective help further embed the notion that psychological suffering and well-being are dynamic processes that are best understood within a particular cultural context (40, 45, 49). Exploration of ethnopsychology and ethnophysiology models not only illuminates local communities’ voices and promotes local ownership of interventions, but allows for appropriate referrals to and promotion of local systems of care (45, 49-51).

White (1992) defines ethnopsychology as the “study of how individuals within a cultural group conceptualize of the self, emotions, human nature, motivation, personality and the interpretation of experience” (52). This translational field examines cultural views on mental illness, or local lay psychology to understand illness experiences (40, 45). Western biomedicine draws on a Cartesian ethnopsychology of mind-body dualism whereby pathologies are typically divided into mental disorders and physical disease, and non-western ethnopsychologies frequently reflect complex mind-body dualism that drive the bodily expression of psychological distress (40, 53, 54). For example, Nepali ethnopsychologies are comprised of the heart-mind, brain-mind, physical body, spirit/soul, and social status (45). Eliciting ethnopsychologies therefore enhances the understanding of how interconnections are made between mind and bodily states, and how external threats are thought to impact well-being (49).

A complement to ethnopsychology is ethnophysiology, which refers to culturally guided apperception about bodily structure and function, as opposed to biological differences (55). Ethnophysiology illuminates how a cultural group conceptualizes the
body and its processes, how these processes might be harmed, and which processes are most salient (45, 49). Hinton et al. (2006) found that the types and experiences of anxiety disorders reflect and are influenced cultural concepts underlying bodily and mental mechanisms (45, 56). It is clear that ethnophysiological findings have important implications for interventions as various intervention components “can engage different elements of the self, depending on the presentation and primary complaints of individuals” (57).

It is important to note that rather than producing a laundry list of decontextualized terms, the implicit cultural focus of the ethnomedical perspective, ethnopsychology, and ethnophysiology places terms, concepts and findings within a broader model that facilitates the better understanding of distress and wellbeing in a specific cultural context (45). Together, ethnopsychology and ethnophysiology not only allow for the identification and understanding of local concepts, and reductions in the risk of harm, but also enables improved treatment including culturally appropriate therapeutic interventions (45, 51).

Relatedly, for the study of local mental illness terms in public health, there are two common approaches. First, is the in-depth study of one local illness term or idiom of distress, sometimes referred to as a culture bound syndrome, such as susto or nervios (58, 59). The other approach focuses on identifying categories of local illness terms, and the distinctive features for each category. The first approach has its roots in anthropology, where the researcher spends extended period of time in the field conducting ethnographic research to document the context factors associated with the local illness term, and the local terms used to communicate distress. The second approach is more common in the
field of public mental health, where the researcher is concerned with identifying a wide range of local illness terms for mental health category, which are then used to inform intervention development and the adaptation of measurement instruments. This study draws on both approaches for the understanding of mental health in rural Mali.

1.3.3 Treatment and Credibility Gap

The treatment gap is defined as the number of people who have a mental disorder and are not receiving care (60). Patel (2014a) argues that the treatment gap occurs primarily as the result of supply and demand barriers in global mental health. Supply barriers include the shortage and inequitable distribution of specialist and lay health workers, complexities in providing care outside of specialist settings, and the limited funding for mental health services (16, 61). Currently the majority of global mental health action and innovation is focused on addressing these supply barriers through innovative intervention models involving task-sharing, creating structured treatment guidelines, and providing care outside of traditional health platforms (60). While these supply strategies help reduce time, stigma, and cost barriers related to careseeking, Patel argues that we must be wary of falling into the trap of mental health service models in high-income countries- care that is highly professionalized and inflexible, driven by biomedical diagnostic categories and narrowly defined treatment models, and top-down delivery systems that exclude the involvement of communities at hand. Therefore, in order to significantly reduce the treatment gap, complementary action is needed to address demand barriers. These barriers include stigma and discrimination surrounding mental illness, with the strongest barrier illustrated by the credibility gap, the conflicting views of mental illness held by mental health specialists, including diagnostic systems
and epidemiological instruments, and the communities they serve (60). Patel theorizes that the credibility gap occurs largely as a result of differences between somatic and psychological illnesses, and how they are conceptualized, addressed by interventions, and influenced by social determinants. Specifically, the credibility gap is exemplified by three facets: 1) medicalization of the emotional world and impositions of artificial dichotomies on dimensions of normative psychological experiences; 2) use of complex jargon; and 3) emphasis on biomedically oriented care as the primary solution to mental health problems (60). Patel’s concept of the credibility gap illustrates the purposeful shift in the field of global mental health in the balance between local narratives that are shaped by powerful social and cultural forces and individual identities, towards biomedical conceptualizations which impose false dichotomies on naturally occurring and culturally prescribed dimensions of normative psychological responses to human experiences.

In order to reduce the treatment gap, the credibility gap must be bridged. Patel proposes three key ways to bridge the credibility gap: 1) distinguish mental disorders that may benefit from biomedical interventions from milder distress states; 2) offer interventions for distress states through low-intensity psychosocial interventions, delivered by CHWs, outside the formal health care system; and 3) ground the descriptions of diagnostic categories on the observed patterns of phenomena in general populations, rather than those of specialist settings (60). In the Malian context, CHWs might include auxiliary midwives and other workers recruited to deliver mental health interventions. These recommendations will serve as guiding principles for this study, which seeks to reduce the treatment gap among perinatal women in Mali through preventive maternal mental health intervention research.
1.4 Organization of the dissertation

The first chapter of this dissertation introduces the study and describes the theoretical framework guiding the research. Chapter two provides a brief description of the literature on maternal mental health and maternal health services in the context of LMICs. Chapter three describes the study context and setting. Chapters four through six describe the results of the analyses conducted to achieve the three specific aims. Chapter four addresses Aim 1, and describes local idioms of distress and the socio-cultural contexts surrounding perinatal mental health in Sélingué, Mali. Aim 2 is addressed in Chapter five, which discusses the complementary strengths of pile sorts and exploratory factor analysis (EFA) methodologies for the understanding and measurement of maternal mental health, and provides an example of their joint application in Mali. Chapter six addresses Aim 3, and discusses how mental health can be integrated into group antenatal care (G-ANC) in Mali, as informed by current best practices in the literature and local findings. Chapter seven synthesizes the dissertation’s findings and describes implications and recommendations for future research.
Chapter 2. Literature review

2.1 Maternal Mental Health

Neuropsychiatric disorders are responsible for approximately 19% of the burden of diseases in women aged 15 and older worldwide, as measured by disability-adjusted life years (DALYS) (62). In Mali, neuropsychiatric disorders are estimated to contribute 5.2% to the global burden of disease (29).

Maternal depression is common in low and middle-income countries (LMIC), where low-educational attainment, poverty, and gender based violence are widely recognized risk factors (63, 64). In 2012, the World Health Organization (WHO) published a systematic review of common perinatal mental disorders (CPMDs) among women in LMIC revealing the prevalence of antenatal mental disorders to be 15.5% and 19.8% for postnatal mental disorders, respectively (1, 65). Despite growing recognition of this problem among researchers and policy-makers, many developing countries allocate less than 1% of their health budget to mental health, and even fewer integrate mental health into primary or antenatal care (15, 16, 25).

The immediate and long-term consequences of CPMDs are burdensome and carry intergenerational effects. In high-income countries, CPMDs have been demonstrated to negatively impact child cognitive and emotional development (66, 67). Furthermore, depression in the antenatal period has been found to be associated with poor antenatal care (ANC) attendance in high-income countries (68, 69). There is growing evidence of this association in LMICs where environmental stressors such as poverty and exposure to violence place children at high risk for cognitive and psychological delays, and general
psychopathology (9-11, 70). A systematic review of maternal depression and child
development in developing countries revealed that children of mothers with depression or
symptoms of depression are found to have 1.5 times the odds of being underweight and
for stunting (2). This review estimated that around 23-29% fewer children would be
underweight or stunted had the infant population not been exposed to maternal depressive
symptoms. These intergenerational effects of CPMDs can be seen to extend beyond the
negative mental and physical health impacts of mother-child dyads, to impact child
educational attainment and employment opportunities, consequently perpetuating a cycle
of poverty (11). Given these detrimental and burdensome effects of CPMDs, there is an
overwhelming need for continued research to explore the role of CPMDs, and to develop
preventive and early treatment interventions for perinatal women and ultimately their
children (71).

In low resource settings, the treatment gap, the proportion of people with mental
illnesses that remain untreated is significant. Access to mental health services and
treatment is impeded by underdeveloped mental health systems, financial constraints,
lack of available services and trained providers, social stigma of mental illness, and a lack
of awareness that mental health problems are medically recognized (17-19, 72, 73). In
Mali, the mental health system is extremely limited, as the Ministry of Health lacks an
official mental health policy and budget for mental health expenditures (29). There are no
dedicated mental health hospitals and only five mental health outpatient facilities (29). At
the population level, there are only 0.04 psychiatrists, 0.02 psychologists, and 0.26 nurses
per 100,000 people (29). Furthermore, regarding antenatal care, a service that may hold
higher importance and attendance rates as a result of the high infant and maternal
mortality rates, only 34.6% of rural Malian women attend the recommended 4 or more ANC visits (74).

To address the treatment gap and shortage of mental health professionals a task sharing approach has been proposed by the World Health Organization and leading researchers in global mental health (75-77). The task sharing approach involves CHWs, who are trained and supervised by mental health specialists, and deliver low-cost and low-intensity interventions through routine primary health care platforms (77-80). Mounting evidence from LMIC supports task sharing approaches involving a variety of treatment strategies such as problem-solving therapy and cognitive behavioral theory, and their ability to improve mental health and quality of life (18, 81, 82). In the Malian context, where there is no mental health policy and extreme shortages in mental health providers, it is critical to examine the feasibility and acceptability of task sharing approaches, in addition to advancing research on prevention of mental disorders.

There is a need for continued research of evidenced-based prevention interventions for maternal mental health in LMICs. The majority of research evaluating evidence-based mental health interventions has been conducted in high-income countries, which are likely to have limited applicability in LMIC due to differing cultural contexts, health infrastructure, and socioeconomic status (79). While recent studies have examined and demonstrated the feasibility of integration of mental health components into maternal and child health care, prevention, early detection, and support services for maternal mental health are not widely available as a part of maternal health services (18, 20-23, 25, 64, 83). Understanding local ethnomedical models, unmet need, and priorities for mental health care can provide the foundation for developing appropriate and
effective prevention interventions that integrates mental health into maternal health services delivered by CHWs outside of health facilities.

2.2 Maternal Health Services

For the integration of mental health into community-based maternal health services, such as antenatal care, an examination of maternal health and maternal health services both globally and in Mali is warranted. Although estimates vary, approximately 300,000 maternal deaths take place yearly (84-86). During the intrapartum period, or within 24 hours of births, an estimated 40-50% of maternal deaths occur (87). Risk of maternal mortality is highest in sub-Saharan Africa, where the maternal mortality ratio (MMR) is estimated to be as high as 546 per 100,000 live births (88). Since 1990, when the risk of maternal mortality in sub-Saharan Africa was 987 per 100,000 live births, the MMR has been steadily decreasing in the region with an average annual decrease of 2.4%, or an overall reduction of 45% in the MMR from 1990 till 2015 (88).

Mali experiences extremely high rates of maternal mortality. Although estimates vary, Hogan et al. (2010) reported a national MMR of 670 per 100,000 live births, while Aa (2011) documented a MMR of 3,131 maternal deaths per 100,000 live births in rural Kita District in Kayes Region Mali (84, 89). This is a low-density rural area with poor access to care. UNICEF estimates the lifetime risk of maternal death to be one in 28 women, although this number is likely higher in isolated, rural areas of Mali (90). In response to such staggering rates of maternal mortality a long-term debate on when and how to best deliver maternal health care has taken place. Koblinsky (1999) developed four models of care for maternal health whereby deliveries are performed by either professionals or nonprofessionals, and taking place either in the home, basic obstetric
care facilities or comprehensive essential obstetric care facility (91). A similar debate can be seen in maternal mental health regarding reducing the treatment gap, particularly who can deliver care, and where, as reflected in stepped-care models for mental health (20, 60, 92).

Within maternal health there are specific services aimed at reducing maternal mortality and promoting safe motherhood, which may also serve as effective platforms for delivering maternal mental health care: antenatal, intrapartum and postpartum care. Each of these services may take place at home or in a health facility. Antenatal care (ANC) focuses on screening and treating disorders including hypertension, tuberculosis, and malaria; providing preventive services such as tetanus immunizations and counseling for birth preparedness, and parenting (93-95). In rural Mali, there is poor ANC compliance characterized by late entry to care and low completion rates. Only 34.6% of women attend four or more of the recommended ANC visits, and 29.9% of rural women receive no care (74). ANC, as well as care during and after deliveries is frequently provided by auxiliary midwives who work at community health centers and attend approximately 26% of births (96, 97). Intrapartum care is concerned with labor and childbirth, and 53.5% of rural Malian women deliver outside of a health facility, without a skilled birth attendant (74). Given the high prevalence of births outside of health facilities in rural Mali, women frequently rely on traditional birth attendants (TBAs), who attend approximately 28% of deliveries, or family members, or deliver alone (96). Postpartum care ideally is delivered to both the mother and infant through routine visits during the immediate days following birth while the risk of death is high, in order to identify potential complications and facilitate referrals to more comprehensive care (93,
In Mali, care during this period is typically focused on the child and delivered by literate CHWs who have more extensive formal training and skills, and the ability to assess and treat sick children. However, some CHWs in Sélingué previously worked as auxiliary midwives and therefore may be in a position to provide maternal health care while treating children.

Given the significant burden of maternal mortality, both globally and in Mali, there is an urgent need for interventions to improve the uptake of maternal health care services. A recent systematic review by Elmusharaf et al. (2015) describes three types of interventions to increase the demand of maternal health services: (1) financial incentives; (2) enhancing patient transfer; and (3) community involvement (98). Of particular relevance to the uptake of maternal health services is community involvement, which helps to ensure interventions are addressing specific community needs in a locally relevant manner. However, few of the studies reviewed by Elmusharaf involved the communities at hand, particularly in the planning, design and implementation of interventions to increase utilization of maternal health services and ultimately reduce maternal mortality. For the integration of mental health into community-based maternal health services, these interventions are likely to be equally relevant towards reducing the mental health treatment gap. Community involvement again assumes heightened importance for such integrated interventions as the views of mental illness held by mental health specialists and the communities they serve are likely to be in conflict. Therefore, in order to address maternal and mental health concerns, it is critical to engage the community and understand how maternal and mental health are understood and addressed locally.
It remains unclear what mental health problems exist among perinatal Malian women in the absence of mental health services. Additionally, the number of effective and promising interventions for CPMDs, delivered by CHWs in LMICs is limited (18, 20, 77). It is critical to identify local mental health constructs, including how they are recognized, prioritized, and treated, in order to design a culturally appropriate, prevention and early treatment intervention. This formative research will identify local constructs for mental disorders, and design a culturally relevant integrated maternal health-mental health intervention plan for perinatal women in Sélingué, Mali.
Chapter 3. Study context

3.1 Study setting

The study will be conducted in the Sélingué health district located 120 km south-west of Bamako, the capital of Mali. Sélingué Health District is composed of seven health zones (sub-districts) encompassing a total of 91,425 inhabitants (74). The district referral hospital, or Centre de Santé de Référence (CSRef), is located in Sélingué Town at the north end of the district, and each of the seven health zones (sub-districts) has their own community health center, or Centre de Santé Communautaire (CSCom), typically led by a nurse. Another district hospital is located just outside the south end of the district in Yanfolila. Specialty services, including radiography, surgery, anesthesia, and most lab tests, are only available in Sélingué Town or in Yanfolila.

The official national language of Mali is French (99). Bambara, the lingua franca of Mali is estimated to be spoken by close to 80% of the population (99). Other common languages in Mali include Malinke, and Kassonke (100). Literacy rates in Mali are particularly low, especially among women. Estimates from the 2012-2013 Demographic and Health Survey suggest that 79% of women and 62% of men, aged 15-49 years are considered illiterate (101). Polygyny, a form of plural marriage in which a man has more than one wife is normative marital system in Mali. In rural areas, the proportion of women in polygynous unions is 38%, compared to 22% in urban areas of Mali (74). In the Sikasso region of Mali, where this study takes place, 44% of women are polygynous (74).
Prior to the arrival of Islam in Mali in the 13th century, most Malians were animists (99). Animism is a worldview or religion in which spirits exist in natural objects including plants, animals, and inanimate objects. Therefore, any object is potentially sacred or possessing a soul. Today, many Malians continue to practice animism while also practicing other religions such as Islam or Christianity (99). In the Malian context of extreme poverty, high maternal and child mortality, low access to medical care, and limited biomedical explanations and understandings of illness, health symptoms, particularly mental health symptoms are frequently attributed to supernatural causes such as malevolent spirits, divination and witchcraft (102).

3.2 Overview of study participants

Participants included: 1) local women, 2) CHWs, 3) auxiliary midwives, 4) local healers, and 5) mental health providers from the University of Sciences, Techniques & Technologies of Bamako (USTTB).

Local women are eligible to participate if they are:

- Over 18 years of age
- Living in Sélingué
- Have had a child or are 3 at least months pregnant up to 1 year postpartum
- Not currently experiencing mental health problems

CHWs are eligible to participate if they are:

- Over 18 years of age
- Working in Sélingué
Auxiliary midwives are eligible to participate if they:

- Over 18 years of age
- Working in Sélingué

Local healers are eligible to participate if they are:

- Over 18 years of age
- Provided care for maternal mental health problems
- Working in Sélingué

Mental health providers are eligible to participate if they are:

- Over 18 years of age
- Full time employee of USTTB
- Routinely provides care to psychiatric patients

### 3.3 Overview of the GEMS Mali study

This dissertation draws partly on the study sample and quantitative data from a Johns Hopkins Center for Global Health funded study, the Global Established Multidisciplinary Sites (GEMS) Mali study, titled “Adaptation of a tool to screen for peripartum depression in community-based maternal health programs in Mali.” This study was conducted between September and October 2016, in Sélingué, Mali, and sought to conduct a brief quantitative study to validate an adapted perinatal depression and anxiety tool that can also be used for community-based maternal mental health prevention. Existing screening
instruments, the Edinburgh Postpartum Depression Scale (EPDS) and the Hopkins Symptom Checklist (HSCL-25) were adapted into Bambara, local language. The locally adapted screening instrument for perinatal depression was administered among a sample of 180 perinatal women in Sélingué, Mali to assess the instrument’s psychometric properties and validity using a local criterion for depression caseness.

3.4 Research ethics

Research undertaken for this dissertation was reviewed by the Institutional Review Board (IRB) at the Johns Hopkins Bloomberg School of Public Health and by the University of Sciences, Techniques & Technologies of Bamako. All participants in this study provided oral informed consent. As focus groups for Aim 3 were conducted at the community health centers, participants were provided travel reimbursement after the focus group had been conducted. All participants were provided with refreshments following data collection procedures.
Chapter 4. “Dusukasi- The heart that cries: An idiom of mental distress among perinatal women in rural Mali”

4.1 Abstract

Perinatal mental health problems such as depression and anxiety are prevalent in low and middle-income countries. In Mali, the lack of mental health care is exacerbated by few studies on mental health needs, including in the perinatal period. This paper examines the ways in which perinatal women experience and express mental distress in rural Mali. We describe a process, relying on several different qualitative research methods, used to identify understandings of mental distress specific to the Malian context. Participants included perinatal women, maternal health providers, and community health workers in rural southwest Mali. Participants articulated several idioms of distress, including gèleya (difficulties), tôrôrô (pain, suffering), hamin (worries, concerns), and dusukasi (crying heart), that occur within a context of poverty, interpersonal conflict, and gender inequality. These idioms of distress were described as sharing many key features and operating on a continuum of severity that could progress over time, both within and across idioms. Our findings highlight the context dependent nature of experiences and expressions of distress among perinatal women in Mali.
4.2 Introduction

Maternal depression is common in low and middle-income countries (LMIC) where risk factors such as poverty, low-educational attainment, and gender-based violence are prevalent (63, 64). In 2012, the World Health Organization (WHO) published a systematic review of common perinatal mental disorders (CPMDs) among women in LMIC that revealed the prevalence of antenatal and postnatal mental disorders to be 15.5% and 19.8%, respectively (65, 103). In high-income countries, CPMDs have been associated with child cognitive and emotional development (66, 67, 104). Growing evidence supports the existence of a similar association in LMICs, where environmental stressors such as poverty place children at high risk for cognitive and psychological delays, and general psychopathology (9-11, 70).

The global mental health research community has increasingly come to recognize the impact of cultural context on expressions and experiences of distress, and the importance of accounting for cultural context when designing or modifying diagnostic and treatment systems (105, 106). Compared to the wealth of epidemiological studies on perinatal mental health in high-income countries, studies of perinatal mental health in LMIC are scarce, particularly ones that use locally-appropriate conceptualization of mental health. This lack of research exists despite the recognized need for appropriate and effective perinatal care in these settings. Accurate epidemiologic and services research relies on appropriate measurement. When studies fail to account for culture and context in their measurement of mental health problems, they may not only produce misleading or erroneous results, but potentially support the use of scarce resources for non-efficacious interventions and stigmatize already vulnerable populations (45, 106).
The study of local conceptualizations of mental health can reduce the probability of such harms and facilitate the selection and adaptation of culturally sensitive therapeutic interventions (45, 51). The study of local syndromes and conceptualizations of mental health, of which idioms of distress are a key component, is a necessary first step in the investigation of mental health, measurement development, and intervention planning (106).

The study of idioms of distress, or “social and culturally resonant means of experiencing and expressing distress in local worlds,” allows for the communication of experiential states along a spectrum of mildly stressful to deep suffering that may inhibit functional capabilities (105). Idioms of distress frequently overlap with biomedical diagnostic categories, but may be more useful in the identification of individuals experiencing distress in places where biomedical systems of understanding are not common (107, 108). Additionally, idioms of distress may serve as indicators of life distress, including interpersonal problems, personal safety concerns, financial distress, or health-related concerns (51). Research approaches attentive to idioms of distress and local context are able to produce detailed and nuanced accounts of experiences of suffering and distress that can serve as source material for efforts to sensitize providers to the nature and impacts of mental health problems and contributing factors. Such research approaches furthermore lay the groundwork for culturally and contextually appropriate interventions to improve mental health.

In the West African country of Mali, the mental health system is of very limited capacity. The Ministry of Health lacks an official mental health policy or budget, and there are fewer than 10 psychiatrists in the entire country (29). Ranked 175 of 188
countries by the UN Human Development Index, Mali is one of the poorest countries in the world and consistently experiences high rates of maternal and child morbidity and mortality (109). Literacy rates in Mali are particularly low, especially among women, with estimates suggesting that 79% of women aged 15-49 years are illiterate (74). Polygyny, a form of plural marriage in which a man has more than one wife, is a normative marital system in Mali. In our study region, roughly 44% of women are in polygynous unions (74). Islam is the majority religion in Mali; however, many Malians also practice animism in tandem with Islam. Animists have a religious worldview characterized by an understanding that spirits exist in natural objects (e.g. plants, animals, and inanimate objects) (110).

To date, no study has explored the experiences and expressions of perinatal mental health in Mali. To address this gap, we utilized qualitative research methods for the study of perinatal mental health in Sélingué, Mali. This study aimed to describe local idioms of distress and the socio-cultural contexts surrounding perinatal mental health to inform the development of locally-appropriate interventions.

4.3 Methods

We conducted a qualitative study of local conceptualizations of perinatal mental distress in the Sélingué health district of rural Mali during two fieldwork visits conducted over three months: one visit in April and one in June of 2016. Sélingué is comprised of nine health zones (sub-districts), that encompass approximately 91,425 people (74). Each health zone contains one community health center, which provides antenatal, intrapartum and postpartum care, as well as vaccinations and primary care for all ages. Life in Sélingué is characterized by profound poverty. Most income generating activities are
related to agriculture, fishing and petty trading. Daily life for women in Sélingué is dominated by child rearing, maintaining the family compound, and agricultural work. Some women also participate in economic activities such as selling fire wood and fruits and vegetables at the local market.

Our data collection field team was comprised of the first author and three female Malian research assistants who spoke Bambara, French, and English. The research assistants had at least a bachelor’s degree and work experience in general medicine, qualitative and quantitative public health research, and linguistics. All research assistants participated in a two-day training that covered qualitative research methods, the ethics of human subjects research, and an introduction to perinatal mental health.

The chief medical officer in Sélingué assisted with study recruitment by providing introductions to the directors of each of the five community health centers where we collected data. The directors of each community health center helped the research team identify community health workers (CHWs) and auxiliary midwives to lead study recruitment. CHWs and midwives who were 18 years of age or older and working in Sélingué were also eligible to be sampled as participant informants. With the help of CHWs working in local villages, we approached family compounds to recruit women. Women were eligible if they were 18 years of age or older, pregnant or had a child two years of age or younger, and were currently living in Sélingué. We designed this sampling approach to yield a diverse cross-section of women with regard to mental health and individual circumstances, allowing us to capture a wide range of terms and concepts that were salient and well understood across villages in Sélingué.
Data collection methods included free lists, semi-structured interviews, and focus group discussions (FGDs). All data collection activities were conducted in either Bambara, the lingua franca of southern Mali, or French, the national language in Mali, according to the participants’ preference. We first conducted free lists to identify mental health terminology and problems. Thirty-one individuals, including perinatal women (n=26), auxiliary midwives (n=1), and CHWs (n=4), participated in the free list portion of the study. In the free list interviews, participants were asked “What are all of the problems that affect pregnant women and women who have recently given birth in this community?” Interviewers probed for as many problems as possible. When participants could no longer list terms, they were asked to provide a brief description of each term they had listed. Analysis of free list data took place immediately following data collection. Free lists from all participants were consolidated into one master list. When the research team judged two or more participants to have referred to the same concept with different wording, the team selected the term they felt to be most comprehensive and understood by the population. The final consolidated master free list noted how many participants reported each problem and ranked problems by number reporting in descending order.

Thirty semi-structured interviews were then conducted to gain an in-depth, nuanced understanding of priority mental health problems identified during free listing. Using a purposive sampling strategy, we followed up with perinatal women (n=10), auxiliary midwives (n=1) and CHWs (n=3) from the free listing exercises whom the fieldwork team identified as either being a) uniquely knowledgeable about mental health and the problems faced by women within their community, or b) open and able to provide
rich, relevant responses. In addition, we recruited CHWs (n=5) and auxiliary midwives (n=6) in Sélingué who had not previously participated in the free lists, and mental health providers working in Bamako (n=4), including psychiatrists, a psychologist and psychiatric medical assistant. Interviews with local women and CHWs focused on developing an in-depth understanding of priority mental health problems, terminology used to describe the problems, perceived causes, and if and how women seek care or manage their distress. Interviews with mental health providers in Bamako elicited descriptions and symptoms of local syndromes or problems identified by freelists in Sélingué, models of causation, pathways to careseeking, and information on informal and traditional mental health treatment modalities found in Mali. Interviews were audio recorded and lasted approximately 60-90 minutes. Detailed notes were taken in French during interviews, as Bambara is primarily a spoken language. At the end of each day, research assistants listened to the audio recording of each interview to elaborate on their notes and transcribe key quotes related to descriptions of idioms of distress. Idioms of distress and key quotes were preserved in Bambara. Interview notes were translated into English and inductively coded using Atlas ti. (111). Following coding, we summarized and analyzed the overall themes derived from the inductive coding to draw inferences and characterize our findings.

All study participants provided verbal informed consent in either French or Bambara. The study was approved by the Institutional Review Boards of the Johns Hopkins Bloomberg School of Public Health and the University of Bamako.
4.4 Findings

4.4.1 Gèlèya (difficulties): context for perinatal mental distress

We found that women in Sélingué are born into a life beset with many gèlèya (difficulties), including chronic poverty, resource insecurity, and profound gender inequality (see Figure 1). As children, women may have the opportunity to attend primary school for a few years, but most have very limited literacy or are illiterate. Once a woman is married, usually via forced or arranged marriage, she leaves her family compound and moves into her husband’s patrilocal residence with her new parents-in-law, brothers and sisters-in-laws, and possibly co-wives. In Mali, much of the financial burden of providing for the family falls on women, even in cases where men have the financial resources to do so.

Here all of the expenses are women’s responsibility. They should pay for their clothing, clothing of children, and health care costs, buying ingredients for the family sauce, some even buy the cereals which is supposed to be only the role of the man. They do hard work in the field without help of the husband, while all of the benefits that women make from the husband’s field is used for the expenses that the husband should carry. There is only one type of difficulty, the worst kind, and women experience it. [Auxiliary midwife, age 40]

Women described a constant need for financial capital, which they may access through small businesses, such as selling fruits and vegetables in front of their house or at the weekly village market. However, in their new patrilocal residence women expressed having markedly less decision-making power. The majority of decisions pertaining to a
woman, including the decision to engage in small income generating activities, are typically the purview of her husband and/or her parents-in-law. While some women’s husbands and in-laws allow them to work, others do not, creating a source of great distress,

I cannot do anything by myself in terms of money, it has to be other people who solve my money problems for me, and if those people refuse or are in lack of money I stay powerless, and this problem stays unresolved. [Woman, age 30]

Given the stressors associated with marriage, an auxiliary midwife in training explained:

I am not yet married, but I have hamin (worries) because I see other women married, and their situation makes me scared. There are many men here who want to get married to me but I am concerned a lot. What to do, and then they are all married either to one woman or to two women. [Auxiliary midwife, age 22]

Once married, a woman is expected to bear and raise children, which is associated with additional responsibilities and life stressors. Despite increased financial demands, including user fees for health care, clothes for the child, and medications for a sick child, women are left to their own devices to provide for themselves and their children. One young mother said:

My husband went to Bamako, he works there. He goes back and forth, but the last time he came was when I was 8 months pregnant. Since he has left he hasn’t returned and I gave birth. My baby is 3 months old today. He rarely calls me, he doesn’t send me money, neither for the expenses of the baby or to buy clothes for
the baby. He told me to continue with my school, because I should be in 9th grade this year. I asked him ‘how am I going to go to school with a baby, how is the baby going to eat?’ Till now he hasn’t said anything as a response. My father-in-law told me that I cannot go to school while the baby is still young. My mother wanted to take care of my baby so that I can go to school. But what is the baby going to eat? I don’t have money to buy milk for the baby. [Woman, age 18]

Issues related to money between a husband and wife were said to frequently result in marital strain and conflict. As reflected in the prior quote, women described feeling neglected by their husbands and powerless as they are commonly refused access to money-generating activities, and ultimately are left without recourse to address the stressors in their lives. One 31-year old midwife said:

“…when you argue with your husband he will tell you to go ask your mom if she receives something (money) from your dad. Your dad will also make you understand that he does it (withholds or controls family finances) too. If he (the father) has the same problem of doing what he wants, then it is not an obligation (for the husband to give money for food and the needs of his children).

Marital conflict also takes place among co-wives. Women expressed how a new wife is frequently favored by the husband, leaving the other wife(s) neglected, both in terms of financial and emotional support. Women also described that while pregnant, husbands may take on girlfriends or additional wives. As a result of these new relationships, a husband may use his money to dote on the new wife or girlfriend while withholding financial and emotional support from his current wife.
The problem is men are neglecting women. Some men when they get married to the second wife, they are finished with the first wife. They wouldn’t have anything in common with the first wife. All of the expenses of the first wife and her children will be in her own responsibility. That causes *dusu tôôrô* (pain of heart). What hurts a lot is when the woman is pregnant, because it is the only moment when the woman can’t work. He didn’t even give money for antenatal care. [Pregnant woman, 21 years old]

4.4.2 *Idioms of distress*

Women described four dominant idioms of suffering and distress (Table 1) that operated on a progressive continuum of severity, both across and within idioms. As detailed above, *gèlèya* (difficulties), and the low levels of distress that it produces, initiates the sequence. Over time, this can lead to * tôôrô* (pain), and too much * tôôrô* (pain) can then result in *hamin* (worry or concern). Continued experiences with pain and worry can eventually culminate in *dusukasi* (crying heart).

4.4.2.1 *Tôôrô*

In its routine use, the local term for pain, * tôôrô*, can denote a wide range of suffering and misfortune, both health and non-health related. As a health condition, participants described * tôôrô* as an internal condition that can affect the body, mind, or both. Cuts or bruises, bodily pain, and fatigue were described as examples of physical or somatic * tôôrô*, while experiences of *gèlèya*, worry, rumination, or a pained heart or soul invoked mental * tôôrô*. 
Explanations of *tôôrô* signaled that it can represent both an emotional reaction to a stressor, as well as symptoms of *hamin* (worry) or *dusukasi* (a crying heart) (see discussion below). To learn more about what people mean when they report *tôôrô*, we spoke with mental health professionals at the University of Bamako:

It will provoke insomnia, and it is a cause of social isolation; the person feels isolated, humiliated. It is a cause that explains the behavioral problems, the fact that the person is and feels that they are in this situation, which causes, effectively, the symptoms. It is not a real sickness, but it is a factor that leads to sickness. [Psychologist, male]

Another professional spoke to the meaning of *tôôrô* in its widest sense,

In my opinion *tôôrô* is equal to stress, mentally. It’s our way to express the pain in us, let it be mental or somatic… Women may have a problem in the family or in the work… Generally they express themselves as ‘I am pained, I am worried, I am concerned.’ [Psychiatry resident, female]

Later this psychiatry resident remarked that patients suffering from *tôôrô* often experience somatic symptoms (specifically stomach or chest pain) that can prompt them to seek care from general practitioners.

Participants reported that in chronic experiences of *tôôrô*, increasing severity can result in diminished functionality and motivation. One mother described functional impairment across life domains:
I didn’t like to get dressed. I diminished taking care of my husband. I couldn’t eat well, even if I wanted to eat, once I started to think about the problem, I didn’t want to eat anymore. I didn’t take care of myself. [age 28]

4.4.2.2 Hamin

Most participants reiterated that *hamin* (worry) is experienced following *gëlêya* (difficulties) and * tôôrô* (pain). *Hamin* translates to worry or concerns. A psychologist provided the following explanation of people suffering from *hamin*: “They have lost their energy, this joy of life is gone, when you have *hamin* you are not calm in your mind… and little things can bother you” [Psychologist, male]. *Hamin* communicates an internal condition characterized by intense thinking and rumination (*miiri miiri*), withdrawal and social isolation, being silent, and talking to oneself. *Hamin*, also invokes an embodied experience of a “hot head” or “a mind that won’t sit still.” Participants mentioned several behavioral indicators for *hamin*, such as walking back and forth aimlessly, having a serious face, nonsense talk, talking too much or not talking at all, and either not greeting people or doing a very short greeting, which is widely seen as a violation of social norms in Malian culture.

*Hamin* is situated in the center of the continuum that goes from “small” *hamin* (worries and concerns) to “big” *hamin* (intense rumination and anxiety). One mother described an example of small *hamin* as the worries related to finding enough money for the ingredients for a meal when it was her turn to cook for the family, which may cause sleep disturbances and changes in appetite. While this kind of small *hamin* might resolve on its own (for instance after a woman’s turn cooking had passed), *hamin* in general was described as a pervasive issue that weighs on women. Multiple and chronic experiences
of *hamin* was described as leading to big *hamin*, which, as described by one participant, could ultimately have serious mental and social consequences.

The person (who experiences big *hamin*) loses weight and looks bad. The person becomes like *fato* (crazy). The person talks alone to herself because she has a lot of *hamin*. The person sits next to people without being present and is silent. The person is always *miiri miiri* (thinking). Even if the person hangs out in a group, you will find out that she is not thinking of what the group is saying or talking, but she is thinking all of her problems in the family, she is not there. [CHW, age 19]

A metaphor used to describe those suffering from big *hamin* was “being stuck between two rocks with nowhere to go,” alluding to women having no options to resolve their *hamin* once it has reached this level of severity.

Additionally, in describing emotional responses to *hamin*, participants frequently mentioned *kashi* (crying):

Every time you see her she will be thinking, even if she came to hang out she will just think and cry. During the social gathering she will be thinking, she will not take part in the conversation, and if she wants to talk about the problem she will just cry, and people will pity you (Pregnant woman, age 19).

### 4.4.2.3 Dusukasi

Participants widely reported that *dusukasi* (a crying heart) is the peak of mental distress. Similar to * tôôró* and *hamin*, *dusukasi* was also described as being experienced on a continuum. Our participants conveyed the notion of ‘feeling’ *dusukasi* as a symptom,
whereby one can experience a normative response of feeling sad in reaction to some situation or experience, but without ‘having’ dusukasi. At the opposite end of the continuum is ‘having’ dusukasi, which is considered serious and framed by idioms of distress related to fatigue, rumination, social isolation, difficulty with concentration, and sadness.

Your body is weak, your head hurts, you think over and over the same thing, you are physically there but your mind is elsewhere. When your body is farī faga (weak), talking to other people disturbs you, you prefer to be kato i kelena (alone), you don’t want to do anything, you can’t even work or talk to people, it doesn’t please you. You become silent, have lots of worries, which makes you have dusukun chaufē (a hot heart). All of this pains your soul, and you stay alone like that. [CHW, female, 20 years]

Given the duality of dusukasi, participants stressed its prevalent nature in their communities, and the potential for ‘feeling’ dusukasi to evolve into ‘having’ dusukasi: “Dusukasi risks to kill all of the women here, they are just barely living. We always say that these women are traumatized, but it is being worried and feeling dusukasi which is the basis of [having] dusukasi.” (Pregnant woman, age 18)

Participants described how ‘having’ dusukasi may lead women to internalize the social and marital conflicts in their lives, causing her to “not like herself”, “neglect herself” or feel “demolished”. Women with extreme cases of dusukasi may become fato (crazy), because they become detached from reality, silent, and withdrawn. In addition, participants reported that dusukasi can result in death or suicide if adversities are not resolved: “They (women) say to their children ‘I am going to go. When you grow up they
will tell you where I am. That is better than if we show you my grave.” [Pregnant woman, age 18]

Given the progressive nature of the idioms of distress in terms of severity, both across and within idioms, many participant descriptions of tôôrô and hamin suggested a large degree of overlap or shared features with dusukasi. Regarding tôôrô, participants indicated an interrelation between mental and physical tôôrô that resembled idioms of the heart related to dusukasi:

“For me, all of tôôrô is about the heart. If your heart is tôôrô, your body gets tôôrô. If you heart is tôôrô your body becomes dead, you can’t do anything, sometimes you don’t sleep. Like if you are in a large family and you are having disputes all the time with people, all this can bring you tôôrô, so if the heart is tôôrô, the body will be tôôrô too.” (Auxiliary midwife, female)

4.5 Discussion

Among perinatal women in rural Mali, idioms of distress communicate individual experiences of suffering; however, these idioms are interpersonal and social in nature, deeply rooted within a context of poverty and gender inequality. Women used idioms of distress to communicate difficulties (gèlèya), stress, pain, and suffering ( tôôrô), worries (hamin), and a crying heart (dusukasi), which operate progressively along a continuum of severity of distress that increases with time, both within and between idioms. For example, hamin was frequently described as an emotional response to a concerning exchange or situation, that can be experienced as a one-time event, a local syndrome, or a symptom of dusukasi. Whether hamin, or the condition of interest, is experienced as a
symptom or syndrome is dependent on the duration of *hamin*. With the passage of time, or reoccurrence of distressing experiences, one’s *hamin* can worsen if not addressed or resolved, and lead to *dusukasi*. A study among traditional healers in The Gambia described a similar temporal relationship between trauma-induced disorders and affective disturbances, whereby an individual may develop an anxiety-like condition following a traumatic event, and as a result of rumination develop a more serious ‘thinking sickness’ characterized by sleep and appetite disturbances, sadness, apathy, and social isolation (112). Similarly, Hinton and Lewis observe this facet of idioms of distress, noting that when an idiom of distress is experienced as a near continual condition, the idiom is frequently perceived to predispose to other idioms of distress that may be experienced both chronically or episodically (51).

As has been observed in other studies of perinatal mental health in low-income countries, the local cultural and socio-economic context was seen by women in rural Mali as exerting great influence on the mental health of pregnant women and young mothers (103, 113). As women move through seminal life phases they amass increasing levels of responsibility, adversity, and stress. For women in rural Mali, the stressors and adversity associated with living in chronic poverty are greatly compounded after marriage, a pivotal and transformative life event. With marriage, individual responsibilities and stress sharply increase, while at the same time, women’s resources for coping are limited by the decreases in social support and personal agency that occur as they relocate to their husband’s patrilocal residence.

Studies from West Africa describe how marriage constitutes a social relationship between two kin groups, but not one in which the sharing of resources or decision making
by a husband and wife are common (113-115). Rather, marriage acts as a means to transfer control and influence over women’s individual rights, including rights to labor and reproduction, from the natal to the marital household (116). Women described demanding workloads, limited control over their work, and generally an inability to earn income, after being married as factors contributing to distress. Despite widely held social norms dictating that husbands are responsible for providing grains for the family and funds for expenditures associated with children’s schooling, medical visits, and clothing, husbands were frequently said to refuse to pay for such expenses. As such, women are forced to bear the majority of financial responsibilities and associated heavy workloads, while gender roles and norms simultaneously limit women’s agency, decision-making power, and access to resources. While having a trusting relationship, particularly with an intimate partner, are commonly found to be protective of mental disorders or distress, such relationships appear to be rare in rural Mali (117, 118). Instead, traditional marital systems coupled with gender and power inequality may constitute vulnerabilities for perinatal mental distress.

Our findings are consistent with other studies demonstrating the role of household dynamics, interpersonal conflict, and related factors in the production of perinatal mental distress (118-122). Study participants described interpersonal conflicts with their husbands, co-wives, and parents-in-law. Conflicts with husbands, as described above, were typically centered around the negotiation of household finances and amount of time spent with each co-wife, issues that also generated conflict among co-wives themselves. Studies in Nigeria and Nepal have documented increased symptom scores for CPMDs among women in polygynous marriages compared to monogamous marriages, citing
marital discord and friction and low spousal support as mechanisms linking polygyny to depression (120, 123). Among our study population, polygyny serves as an example of the “co-operative conflict” model, whereby co-wives must cooperate in their household duties while, at the same time, competing for the attention, parental investment, and material and financial resources of the husband (124, 125). In rural Mali, the mental health impacts of polygyny may be further compounded by the social subordination of women to their husbands and husband’s family, including older female in-laws and co-wives, who may have greater access to resources and social capital. Women also described difficult interpersonal relationships with in-laws in relation to a lack of autonomy regarding personal decision making. Similar to polygyny, this may reflect the hierarchical nature of household relationships and the authority of husbands and in-laws over women’s lives.

Idioms of distress are highly dependent on culture and context, reflecting the complexity of their uses and dynamic interactions with other idioms of distress. While idioms of distress are characterized by distinctive elements, the boundaries between idioms are fluid with many shared features, reflecting their progressive nature. Revisiting the example of _hamin_ from above, depending on the duration or chronicity of distressing experiences and situational factors, _hamin_ may denote different meanings, such as a symptom of _dusukasi_ or a local syndrome of anxiety. Similarly, a study among the Highland Quechua in Peru describes idioms of distress as being polysemic and multivocal in nature, as they are entities dependent on risk exposures, individual contexts, as well as larger social contexts spanning colonial influences, poverty, and globalization (126). As such, it is important to caution the labeling of these idioms, particularly in
comparison to Western diagnostic constructs, given that the meanings and interpretations of idioms of distress vary according to individual and experience.

Future studies on idioms of distress must examine the nuanced local and contextualized meanings of idioms of distress in order to understand how suffering is understood and presented in a given cultural context. Evidence from research that used locally validated screeners indicates that even when a cultural syndrome is non-specific to biomedical diagnostic criteria, the use of local idioms of distress in interventions can facilitate interpersonal communication, accurate identification of elevated levels of distress, and therapeutic rapport and efficacy (51, 54, 107, 108). Additionally, in settings such as rural Mali where perinatal mental health problems are rooted in social and economic strain, mental health interventions necessitate multidisciplinary approaches that focus on investments in women’s empowerment as well as individual and community strengthening.

Several limitations must be noted while interpreting findings from this study. While our study produced rich and nuanced data on maternal mental health, we only worked one region of Mali, among women of a single ethnic and linguistic group. Therefore, the results of our study may not necessarily reflect other regions of Mali. Given the rich ethnic, linguistic, and socio-economic diversity in Mali, any single model of idioms of distress related to maternal mental health in Mali would likely be an oversimplification. Another limitation of this study is that the first author was not fluent in Bambara or French. As such, when data collection activities were conducted in Bambara, the data went through three rounds of translation from Bambara, to French, to English. Through this process of translation, meanings ascribed to the data may have
changed. To overcome this challenge, we worked with research assistants who were fluent in French and Bambara, and one who was also fluent in English, and all data was translated from French to English by a single research assistant. Additionally, the team held debriefings at the end of each day of data collection to review the interviews that had been conducted and to develop group consensus on how to interpret the meaning of the translated data.

In summary, idioms of distress among perinatal women in Sélingué, Mali reflect and communicate substantial challenges and hardships in life that create vulnerabilities and opportunities for mental distress. A complex web of interacting factors related to poverty and gender inequality lies at the root of maternal mental distress, and one form of distress can interact circuitously to further perpetuate vulnerabilities for other forms of distress. Understanding how people label and confer meaning to life’s stressors through the study of idioms of distress is the first step in developing locally adapted and validated screeners to measure mental distress, and ultimately to developing locally relevant mental health interventions.
4.6 Tables for Chapter 4

<table>
<thead>
<tr>
<th>Bambara idiom</th>
<th>English translation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dusukun chauffé*</td>
<td>Hot heart</td>
</tr>
<tr>
<td>Dusu tôôrô</td>
<td>Pain in the heart</td>
</tr>
<tr>
<td>Dusukasi</td>
<td>Crying heart</td>
</tr>
<tr>
<td>Fari faga</td>
<td>Weak body, fatigue, low energy</td>
</tr>
<tr>
<td>Fatoya</td>
<td>Crazy, psychotic</td>
</tr>
<tr>
<td>Gèlèya</td>
<td>Difficulties</td>
</tr>
<tr>
<td>Hamin</td>
<td>Worry, concerns</td>
</tr>
<tr>
<td>Kato I kelena</td>
<td>To be alone</td>
</tr>
<tr>
<td>Kelena kuma</td>
<td>Talking to oneself</td>
</tr>
<tr>
<td>Tôôrô</td>
<td>Pain, suffering</td>
</tr>
</tbody>
</table>

* First word is Bambara, second word is French
Figure 1. Context for Perinatal Mental Distress

- **Structural factors**
  - Limited employment opportunities
  - Poverty
  - Gender inequality

- **Community factors**
  - Geographic isolation
  - Limited employment opportunities
  - Low literacy

- **Household factors**
  - Reduced agency and decision making
  - Interpersonal conflict with in-law and co-wives
  - Loss of social support
  - Economic strain

- **Woman’s life course**
  - Possible elementary schooling
  - Marriage
  - Pregnancy
  - Birth of first child
  - 2nd pregnancy and continued child bearing

- **Individual Vulnerability factors**
  - Low literacy/ no French literacy
  - Move to husband’s patrilocality
  - New role as wife (co-wife), daughter and sister-in-law
  - Loss in social support from natal family
  - Increased financial demands for antenatal care
  - Increased financial demands for child care
  - Husband may marry a new wife

4.7 Figures for Chapter 4
Chapter 5. “Complementary strengths of pile sorting and exploratory factor analysis: Mental health of perinatal women in Sélingué District, Mali”

5.1 Abstract

Pile sorting and exploratory factor analysis (EFA) are two complementary methods that facilitate the understanding and measurement of mental illness. Pile sorting reveals how participants group included terms together in a way that makes sense to them, while EFA helps us understand how items may reflect an underlying construct based on their shared variance. These two methods produce complementary information, yet they are rarely used together. In this paper, we describe pile sorting and EFA methodologies and provide an example of how we applied these two methods in parallel to understand perinatal depression in Sélingué, Mali. Pile sorts yielded a single cluster of included terms for perinatal depression and EFA revealed a single latent factor underlying perinatal depression, indicating agreement between the two methods. When used in complement, these methods provide insights that would not have been apparent with the application of either method in isolation.
5.2 Introduction

The valid and reliable measurement of mental disorders constitutes a major focus area of global mental health research, given that diagnostic and screening tools developed in one setting may not be relevant or applicable in new contexts (106). For example, a screening instrument for perinatal depression developed in the United States will not necessarily contain items that are relevant to the experience of perinatal depression in rural Mali due to disparate socio-cultural contexts. In order to address the mental health needs of a given population and develop relevant interventions, a thorough understanding of the local mental health problems and adequate measurement are necessary prerequisites.

Pile sorting and exploratory factor analysis (EFA) are unique but complementary methods that can aid in the understanding of mental illness in different cultural settings. While these methods have similar goals and epistemological foundations, they differ with in their theoretical grounding and are rarely used together as complementary research methods. In the following, we provide a description of these methods and their applications within psychometric research. We then provide an example to demonstrate their synergistic utility and relevance in cross-cultural psychometric research.

5.2.1 Psychometrics and the importance of measuring constructs

Psychometrics is a field of study concerned with measuring psychological and social phenomena (127). Measurement is a key component within psychometrics, and measurement instruments, also known as scales, refer to a collection of items that are combined to form a composite score that is intended to uncover levels of theoretical variables or constructs, that are not directly observable, by means of statistical analysis.
such as EFA (127). In mental health research, “items” refers to a statement about the experience of a local symptom, that study participants respond to typically using Likert-type response categories. For example, “I have had difficulty falling asleep” is an item, and a Likert-type response options commonly include: “never,” “sometimes,” “often,” and “always”. Participant responses to a set of items on scale form the dataset for EFA analyses.

The underlying construct that a scale is intended to reflect is common known as a latent variable, meaning that it is unobservable and that some aspect of it, such as its strength and directionality are subject to change (127). Poor measurement can threaten the validity of one’s conclusions and have negative implications for intervention planning and treatment pathways. Given that, selection of cut-off scores for screening positive in one setting may not be relevant or applicable in another setting, sufficient measures that reflect the experience of local symptoms are necessary for valid and reliable research.

5.2.2 Pile sorting

Pile sorting is a systematic data collection method with origins in cognitive anthropology (128). Pile sorting allows for the elicitation of similarity judgments regarding a set of local terms from the same cognitive domain, revealing how people in a given population think about how included terms in a group are similar to one another (129, 130). For the purposes of this article, “included term” refers to language describing locally-recognized illness and its component features that study participants sort into piles.
In practice, pile sorting involves supplying participants with a set of cards with words or pictures on them that describe different included terms from a pre-selected domain and asking the participants to sort the cards into piles according to their similarity to one another. During the activity, the researcher may ask respondents to name groups, and to provide a rationale or explanation for their groupings, yielding a wealth of information that otherwise would not be collected with traditional qualitative techniques. Therefore, within psychometrics, pile sorting emerges as a strong complementary method to in-depth interviews and focus groups by further explicating the meanings of, and perceived similarities between, different locally-defined syndromes and illness terms (131). Despite the relevance and utility of pile sorts in their ability to elucidate how study participants understand and organize a domain, it is a relatively underutilized and underrepresented method in the public health literature compared to other qualitative research methods.

Within pile sorting, there are two variations: constrained and unconstrained sorting. With constrained pile sorting respondents are asked to make a specific number of piles, while unconstrained pile sorting allows the respondent to make as many piles as they want (128). Frequently, a free listing exercise precedes pile sorting, whereby respondents are asked to list as many terms as possible on a certain topic. For example, respondents may be asked to list all types of traditional illnesses. The researchers can then use the free listing data as the included terms for the pile sort activity in order to ensure that the terms being sorted the local cultural domain. Sample size considerations for pile sorts are generally dependent on the degree of shared cultural knowledge with
respect to a cultural domain. If an average level of cultural competence is assumed across informants, the minimum sample size needed is 7-19 (132).

The data from pile sorting are used to create a proximity matrix, revealing categories of included terms judged to be similar to one another (128). Proximity data reveals mental maps of a cognitive or cultural domain that help to identify attributes or features of included terms that respondents use to distinguish among them (132, 133). The internal organizations of cultural domains into sub-domains reflects a group of people’s shared perceptions of similarity between different sets of included terms in the domain (133). Applications of pile sorting in the public health literature have included relationships between symptoms and disease severity (134), exploring gender norms (135), descriptions of local illnesses (48, 136-138), HIV-risk behaviors (139), and drugs (140).

Analysis of pile sort data produces a proximity matrix of included terms which quantifies the similarity of included terms based on the percentage of participants who sorted any two terms in the same pile. The data is then analyzed using multidimensional scaling (MDS) which creates a visual representation or map of similarities among included terms, reflecting the distance between any two terms (141). Hierarchical cluster analysis can also be performed to identify groups of included terms that are more similar to each other in some manner than to those in other groups or clusters (128). Graphical layout algorithms can be used to visualize proximity data from pile sorts by representing the presence or absence of relationships according to the similarity of two included terms, as denoted by a linking line in the visualization (141). Cultural consensus analysis or the degree to which participants in a sample belong to the same culture with respect to a
specific domain, can also be performed on proximity data, yielding a measure of reliability (128, 142). While MDS does not allow for the mapping of included terms onto meaningful axes, dimensions can be identified that point to variation of a specific feature inherent in the cultural domain (133, 141).

5.2.3 Exploratory Factor Analysis (EFA)

EFA is a method that helps explain variation among several original variables (derived from a battery of items with Likert-type responses) using relatively few newly created variables or factors (127). As a statistical data reduction technique, EFA allows for the development of a more parsimonious conceptual understanding of a set of measured variables by determining the nature and number of factors required to describe the patterning of correlations among the measured variables (143). The primary assumption underlying EFA is that if observed variables exhibit correlations with one another, then they must relate to, and be indicators of, some underlying latent variable (factor). The sample size required for EFA should be large in order to eliminate subject variance as a significant concern (127). Nunnally (1978) suggests that a sample size of 300 is sufficient, however practical experience with scales successfully developed among smaller sample sizes suggests that a minimum sample size of 50 is a reasonable absolute minimum (144, 145). EFA is a widely used statistical method in psychometrics that allows for the mapping of variables onto latent constructs or factors, the assessment of dimensionality and construct validation, and scale development. The utility of EFA is primarily a function of the decision made during the implementation of analysis including: selection of specific procedures to fit the model to the data, selection of the number of factors to be included in the final model, and selection of the factor rotation.
method to allow results to be more readily interpreted (143, 146). Therefore, EFA differs from the analyses of data from pile sorts in that the researcher’s understanding of the data correlations, specific population, and literature influence the selection and naming of factors, which may not necessarily reflect local understandings (147).

5.2.4 Strengths and weaknesses of piles sorting and EFA

The strengths and weaknesses of both pile sorting and EFA as related to the understanding and measurement of mental health are detailed in Table 2. With pile sorts, the respondent is directly asked the question of interest, that is, to define in their own perspective which included terms similar or different to one another. Analysis of pile sorts data can produce a visual representation of the relationships among included terms, making it easy to see how similar or different included terms are perceived to be by the participants. Pile sorting can be a useful method to develop and test theories rooted in the local context (148). This method allows the researcher to elicit the names of groups and explanations of their sorting process from participants. While the elicitation of names and explanations is also possible with EFA, it is much more frequently used in the process of pile sorting studies. This is of particular importance to measurement in global mental health as it helps to provide investigators a better understanding of the local context.

While there is much to be gained from pile sorts, it is not without its limitations. Lumping (placement of all items in a few piles) and splitting (resulting in a large number of piles with few items in each pile) are common challenges that can obscure understandings of cultural domain, and ultimately threaten the validity of findings. (128). However, this weakness can be overcome by conducting both constrained and
unconstrained pile sorts. Additionally, it can be difficult to discern from pile sorts which included terms “perform” better, that is, which terms best reflect the underlying cultural domain, or perform worse. Finally, as with other qualitative research methods, the results of pile sorting are dependent on the respondents. Given that the sample size for pile sorting is usually small, each person’s perspective or sorting is important. Therefore, including people who belong to another cultural group with respect to the cultural domain being sorted, may impact the reliability of the results for intensely than with EFA.

A key strength of EFA is its contribution to data reduction, allowing for the understanding of latent constructs, and dimensionality more easily (127). Unlike pile sorts, EFA allows for the identification of items that perform better or worse and help guide decisions for item retention in scale development (127). However, EFA has several weaknesses. EFA requires the researcher to make multiple decisions throughout the analyses based on a combination of a priori knowledge, the literature, and analysis of other data. If these decisions are based on theory or conceptual models that do not fit with the local context, the utility and local relevance of the resulting measurement tool may be threatened. Lastly, EFA has limited use in theory development, as it cannot provide meaningful insights into the data that reflects the direct perspectives of participants.

Piles sorting is rarely used in tandem with EFA despite their synergistic potential to complement and compensate the strengths and weaknesses of the other. In order to facilitate the holistic understanding of perinatal depression in rural Mali, we applied both of these methods. Below, we describe our study procedures and findings.
5.3 Application of pile sorts and exploratory factor analysis for the study of perinatal depression in rural Mali

5.3.1 Study context and methods

In rural Mali, there is a lack of research and interventions for maternal mental health. To address this gap, we conducted a study on perinatal mental distress that was carried out in two sequential phases. Phase one was conducted during March-June 2015, where we sought to qualitatively understand how perinatal women perceive and understand mental health. During phase two, in September and October 2015 (see Lasater 2018b), we conducted a quantitative study to adapt and validate a locally relevant screening tool for perinatal depression. A detailed description of the study setting and methods is available elsewhere (Chapter 4; (149)).

During Phase one, we conducted 31 free list interviews among perinatal women (n=26), auxiliary midwives (n=1), and community health workers (CHWs) (n=4), asking them, “What are all of the problems that women in your community face?” to elicit terms used to communicate mental distress. The most frequently mentioned terms were identified as priority problems based on local perspectives. We then conducted 30 in-depth interviews (IDIs) with perinatal women (n=10), auxiliary midwives (n=1) and CHWs (n=3), to better understand these priority problems. Findings from the IDIs are reported in Chapter 4. At the end of the IDIs, we conducted individual unconstrained pile sorting exercises. Pile sorts were conducted in this study to elicit similarity judgments of the included terms in order to understand the dimensionality or categories underlying perinatal mental distress. We asked participants to sort 36 terms, identified from the free
lists, into groups based on which terms go together. When participants completed sorting their pile, we asked them to explain their piles, if they had a process for sorting, and to name the groups the sorted. Due to incomplete data of the pile sorts, we included pile sorts data from 15 participants in the analysis (6 perinatal women, 5 CHWs, and 4 auxiliary midwives).

The piles created by each participant were recorded and entered into Microsoft Excel. We used Visual Anthropac- Pile Sorts (133) to analyze the data using MDS (141). We conducted a cluster analysis to identify possible sub-domains among included terms, however no significant clusters were identified. An eigenratio, or ratio of first-to-second eigenvalues of the similarity matrix, was calculated to determine consensus among participants regarding the relationships among included terms. An eigenratio of 3 or greater is generally agreed to indicate consensus with respect to the domain (132).

Building on findings from phase one, we selected the Edinburgh Postpartum Depression Scale (EPDS) (150) and Hopkins Symptom Checklist (HSCL-25) (151) for adaptation in phase two, as the items on their respective scales best reflected the experiences of distress described by participants. The adapted scale that we created based on the EPDS and HSCL-25 also included five local items that were specific to the local experience of distress as described by participants during phase one. Given that the adapted scale includes items from EPDS and HSCL, not all of the included terms in the pile sorts are present in the adapted scale items. For example, ‘feeling hopeless,’ blaming yourself for things,’ and ‘things have been getting on top of me’ are among some of the items that do not directly correspond to the included terms in the pile sorts.
The adapted scale was piloted among a sample of 180 perinatal women to assess the instrument’s psychometric properties and validity. To assess the dimensionality of the 29 depression and anxiety items included on the adapted screening instrument, we performed principal components analysis (PCA), which captures the proportion of variance explained by each component and yields one or more composite variables that have eigenvalues greater than one. The decision of the number of factors to include in the EFA was guided by the number of eigenvalues over one yielded from the PCA, and a visual examination of a plot of eigenvalues on a scree plot. In view of the ordinal response scale of the items, we used weighted least squares estimation and a polychoric correlation structure. Items were considered to meaningfully load onto a factor if the estimated factor loading was >0.4. The uniqueness of each item and item-rest correlations were also considered in decisions on item retention. The factor loadings of items were represented graphically using MATLAB software (152).

5.3.2 Results

Findings from both the pile sorting analysis and EFA revealed a single cluster for perinatal depression in Sélingué, Mali. Figure 1 visually displays the relationship among the 36 included terms from the pile sorts. Cultural consensus analysis exhibited a strong fit to the consensus model with an eigenratio of 13.57, suggesting that despite individual differences, all respondents in this sample belong to the same culture with respect to this domain. The map displays one big cluster, suggesting that there is a single construct underlying the sorted included terms. Conceptually similar included terms, such as ‘head overwhelmed’ and ‘lose your head’ are nearly overlapping, indicating that participants frequently sorted the two terms in the same group. While we did not identify any
meaningful clusters in the cluster analysis, patterns of groupings among included terms are present. Somatic symptoms occupy the upper left of the map, while a mix of emotional, somatic, cognitive, and behavioral symptoms are dispersed around the center, and more intense cognitive symptoms grouping together on the far right.

When we asked participants to explain their piles, most commented that the piles represent different problems in their life, such as marital problems, worries or stress, and feeling overwhelmed in one’s mind. Many of the included terms in the center of the map reflect the commonly used terms by women to describe their experiences of distress during the IDIs of phase one. Through examination of the pile sorts and IDI findings, we were able to identify and name the underlying construct, dusukasi, which translates to a crying heart. Dusukasi can refer to both mildly distressing experiences of sadness, and also profound sadness or experiences of depression depending on individual contexts.

Results from the exploratory factor analysis (EFA) of all 29 depression and anxiety items included in the symptomology portion of our screening instrument are presented in Table 3. The PCA produced seven eigenvalues greater than one that explained 67% of the variance. The first eigenvalue was highly predominant, explaining 38% of the variance. In a one-factor EFA, all but one item (“I have been able to laugh and see the funny side of things”) produced factor loadings above 0.4 onto the single factor (see Table 4). As a sensitivity analysis, we ran a two-factor EFA with all items and without “been able to laugh and see the funny side of things” (results not presented). Inclusion of a second factor resulted in some items related to fear as well as thoughts of ending one’s life loading together. However, it also resulted in multiple items loading poorly or cross-loading on both factors, suggesting that we were unnecessarily parsing a
single underlying factor. Therefore, we decided to handle the screening instrument as a single 28-item scale (i.e. without the item “I have been able to laugh”) measuring one underlying construct of perinatal depression.

5.4 Discussion

This study demonstrated that both the pile sorts and EFA yielded a single cluster and single factor structure, respectively, for perinatal depression among this sample of women in rural Mali. While both of these methods offer strengths on their own, together they synergistically balance each other’s limitations, yielding a holistic understanding of perinatal depression in Sélingué, Mali. Pile sorts are able to address the atheoretical nature of EFA by adding contextual meaningfulness and utility to findings. Further, given the atheoretical nature of EFA, pile sorting is a complementary method that can act as a qualitative validity check to EFA findings. Finally, pile sorting has many limitations for scale development, and EFA is limited in its ability to ensure face validity. However, together, both methods address each other’s weaknesses to help ensure the development of a locally valid and reliable scale for perinatal depression.

As demonstrated in our example from rural Mali, analysis of pile sorting data allows for the identification of domains or constructs of interest that are both meaningful and relevant within a given local context. Several qualitative researchers (153-155) underscore the importance of systematic data collection methods, such as pile sorts, as a rigorous means to develop and test theories rooted in local perspectives. Throughout the analysis process of IDIs during phase one, we struggled to understand whether the symptoms that participants were describing belonged to one syndrome or construct, or
many. When we asked participants about the possibility of two locally existing syndromes, one depression-like syndrome, *dusukasi* (crying heart), and one anxiety-like syndrome, *hamin* (worries), they frequently remarked that “they all are the same.” Pile sorting allowed us to confirm participants’ descriptions that all symptoms or included terms were related to a single construct, a perinatal depression-like syndrome, *dusukasi* (crying heart).

Pile sorting is also a powerful method for the identification of redundancy among included terms (142). We identified several terms during the freelists that appeared conceptually similar. However, we were concerned that if we a single term to include in the pile sorts, we would be imposing our own views about what symptoms were distinct or important that might not be consistent with local understandings. Rather, to enable participants themselves to make these distinctions and guide these decisions, we included a few seemingly redundant terms identified from the free lists in the pile sorting activities. On the resulting MDS plot, ‘head overwhelmed’ and ‘lose your head’ were nearly overlapping, which allowed us to discern the strong conceptual similarity between the two terms and confidently summarize them into a single term.

EFA aids us in determining how many constructs or factors underlie a set of items (127). Compared to other statistical techniques, EFA provides information on dimensionality that cannot be provided by other metrics, such as Cronbach’s alpha for internal reliability (127). While our EFA exhibited strong internal consistency (Cronbach’s alpha = 0.92), our analyses helped to identify the specific items that performed better or worse. Eleven items were found to have performed well with substantial factor loadings of 0.65 or greater, indicating that they most strongly reflect the
latent construct and were important to retain on our final adapted scale. We also were able to identify items that did not perform well, for example “I have been able to laugh and see the funny side of things”. We decided to omit this item based on this weak relationship to the underlying construct of perinatal depression. The concepts underlying this item, such as being able to laugh, finding things funny, or even enjoyment, were not mentioned during the free listing exercises or in the in-depth interview, and therefore there was not an included term reflecting this item in the pile sorts. This, together with the poor factor loading of the item, may suggest that the item was not well understood by participants, or locally relevant.

Application of pile sorts alongside EFA adds meaningfulness and utility to study findings that would not have been uncovered by means of EFA alone. For example, EFA items “Your mind is wandering or distracted,” and “Worrying too much about things,” exhibited high factor loadings, demonstrating their importance in reflecting the underlying factor. However, seeing how these items clustered as included terms (“thinking thinking” and “worries”) in the MDS plot, we are able to see that participants viewed these terms as similar to each other in one way as they are located together in the same cluster that reflects local symptoms of perinatal depression. While it was insightful to see how items reflecting experiences of perinatal depression loaded together in our EFA analyses, in situations where the phenomena of interest is not well studied or understood in a given setting, as was the case for us, it is difficult to name and define constructs based on interview data, correlation patterns, or findings from the literature alone (148). The utility and meaningfulness of pile sorts data is further demonstrated by its ability to aid the naming of the single underlying latent construct from the EFA.
Moreover, the pile sort analysis contributes to the development of a theory of perinatal depression and how it is understood in rural Mali, in its ability to reveal how participants understand included terms to be similar or different from one another. Therefore, as demonstrated with our study, pile sorting complements EFA by adding meaningful findings from the perspective of the local population above and beyond EFA, given its ability to directly elicit the names of groups in pile sorts.

Findings from pile sorting also helped to qualitatively confirm the findings from the EFA with a high level of consensus, or reliability, among participants (142). Results from MDS analysis indicate a consistent and culturally shared understanding of the perinatal depression. While these findings are in agreement with the EFA findings, the pile sorts results helped us to flush out the phenomenological experience of the construct in the local setting (148). Through the MDS analysis, we were able to identify similarities among included terms and identify a large cluster of terms including: heart sickness, pain in soul, pained heart, insomnia, sadness, worries, nervousness, weak body, lose weight, thinking and thinking, and isolated. Taken together, these terms perceived to be similar to one another from the perspective of the participants, aid the development of a local definition for perinatal depression, which was then be used to validate the findings from the EFA.

Additionally, given the numerous decisions made throughout the process of an EFA, findings may ultimately be dependent on the investigators knowledge and perceptions of the problem at hand which may not reflect the understandings and perspectives of the local population and ultimately threaten the validity of findings. Bartunek and Seo (2002) aptly highlight that this is frequently the case in psychometrics
when a scale developed in one setting is used to assess experiences in another setting without adaptation to the local context (148). Through dual application of pile sorts and EFA, we were able to preserve perspectives of the local population and lessen such threats to validity. Therefore, pile sorting has the potential to serve as a tool to help ground decision making during an EFA within the local context and future beneficiaries understandings of the health problem that is being addressed.

Pile sorting has limited utility for scale development, particularly regarding construct validity, and while EFA is strong method for scale development, it is limited by its ability to ensure face validity. When these methods are used together, they are able to balance the other’s weaknesses to help ensure the development of a locally valid and reliable scale for perinatal depression. Face validity is a key consideration in scale development for which pile sorting can help guarantee. For example, if participants feel that key items are missing from a scale, they may not respond to questions, and may even question or distrust the results of the instrument. EFA is not able to detect whether key items are missing from a scale. With simultaneous application of pile sorts, we were able to uncover the local population’s shared understanding of the construct and the included terms used to describe it. We were able to attain strong face validity by using the terms from the pile sorts in the creation of local items that were included in our final adapted scale. Moreover, prior to the pile sorts we conducted freelist interviews to identify the included terms for the pile sorts, as a means to help ensure adequate content validity, or that all domains of perinatal distress were included in addition to strengthening face validity.
5.4.1 Limitations

While one strength of this study is the methodological triangulation of pile sorting and EFA, we were limited by the fact that the included terms in the pile sorts were not identical to the items in the adapted perinatal depression scale. While included terms and items were not identical in terms of phrasing, many shared conceptual similarities which allowed for the meaningful comparison of findings. Another limitation is the sample size for the pile sorts. We encountered challenges preserving the sorted groups, and therefore decided to include data from 15 participants as a means to strengthen the quality of the data. However, despite this limited sample size, we were able to analyze the pile sorts data with a high degree of reliability. A final limitation is that several participants faced difficulty explaining their process for sorting piles, or naming their groups. This is not surprising given that mental health is a topic that is rarely discussed in rural Mali. We did however have a few participants who were able to explain their piles and sorting process in detail, which helped to overcome this limitation.

5.5 Conclusion

In this paper, we demonstrated the complementary strengths and utility of pile sorting and EFA in psychometric global mental health research. Through methodological triangulation of pile sorts and EFA, we uncovered a single cluster and a single latent factor, respectively, underlying perinatal depression in Sélingué, Mali. Combined, these two methods yielded information about the similarities or differences of included terms. This allowed us to make inferences about the classification of the domain of perinatal depression and also how symptoms cluster in experience in relation to an underlying
latent construct. Together, these methods can help ensure valid measurement of local latent constructs, while retaining relevance to the local context and perspectives.
### 5.6 Tables for Chapter 5

#### Table 2. Introduction to pile sorts and exploratory factor analysis

<table>
<thead>
<tr>
<th></th>
<th>Data</th>
<th>Analysis</th>
<th>Theoretical foundations</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Pile Sorts</strong></td>
<td>• Proximity matrix of included terms</td>
<td>• Multidimensional scaling</td>
<td>• Sorted piles reflect how individuals think about and categorize the domain of interest</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Graphical Layout Algorithms</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Hierarchical cluster analysis</td>
<td></td>
</tr>
<tr>
<td><strong>Exploratory Factor Analysis</strong></td>
<td>• Battery of items with Likert- type responses</td>
<td>• Exploratory factor analysis</td>
<td>Correlations among observed items exists based on a common underlying factor(s)</td>
</tr>
</tbody>
</table>
Table 3. Strengths and weaknesses of pile sorts and exploratory factor analysis

<table>
<thead>
<tr>
<th></th>
<th>Strengths</th>
<th>Weaknesses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pile sorts</td>
<td>• Directly asks individuals how included terms are similar to each other</td>
<td>• Lumpers and splitters</td>
</tr>
<tr>
<td></td>
<td>• Allows for naming of groups</td>
<td>• Difficult to identify items that perform better or worse</td>
</tr>
<tr>
<td></td>
<td>• Analysis through multidimensional scaling or graph layout algorithms</td>
<td>• Small sample size</td>
</tr>
<tr>
<td></td>
<td>produces visual map of similarities among included terms</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Enables identification of redundant included terms</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Powerful means to develop and test theories rooted in the local context</td>
<td></td>
</tr>
<tr>
<td>Exploratory factor</td>
<td>• Strong method for scale development</td>
<td>• Requires decision making that may not be rooted in the local context</td>
</tr>
<tr>
<td>analysis</td>
<td>• Enables data reduction while retaining as much of the original variance as possible</td>
<td>• Limited utility in theory development</td>
</tr>
<tr>
<td></td>
<td>• Enables interpretation of latent constructs and dimensionality</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Allows for identification of items that perform better or worse in a scale to measure mental illness</td>
<td></td>
</tr>
<tr>
<td>Study phase</td>
<td>Aims</td>
<td>Participants</td>
</tr>
<tr>
<td>-------------------------</td>
<td>----------------------------------------------------------------------</td>
<td>--------------------------------------------------</td>
</tr>
</tbody>
</table>
| 1) Exploratory qualitative study | Understand how perinatal women conceptualize and perceive mental health | • Perinatal women  
• Community health workers  
• Auxiliary midwives | • Freelisting  
• In-depth interviews  
• Pile sorting | • Salience ranking  
• Thematic analysis  
• Multidimensional scaling |
| 2) Quantitative validation study | Develop a valid and reliable scale for perinatal depression | • Perinatal women  
• Survey questionnaire with Likert-type response categories | • EFA with weighted least squares estimation and polychoric correlation structure |
Table 5. Exploratory Factor Analysis results (n=180)

<table>
<thead>
<tr>
<th>Item</th>
<th>Item Source</th>
<th>Factor Loading</th>
</tr>
</thead>
<tbody>
<tr>
<td>Suddenly scared for no reason</td>
<td>HSCL-A</td>
<td>0.66</td>
</tr>
<tr>
<td>Feeling fearful</td>
<td>HSCL-A</td>
<td>0.55</td>
</tr>
<tr>
<td>Faintness, dizziness, or weakness</td>
<td>HSCL-A</td>
<td>0.49</td>
</tr>
<tr>
<td>Nervousness or shakiness inside</td>
<td>HSCL-A</td>
<td>0.56</td>
</tr>
<tr>
<td>Heart pounding or racing</td>
<td>HSCL-A</td>
<td>0.52</td>
</tr>
<tr>
<td>Trembling</td>
<td>HSCL-A</td>
<td>0.56</td>
</tr>
<tr>
<td>Feeling tense or keyed up</td>
<td>HSCL-A</td>
<td>0.62</td>
</tr>
<tr>
<td>Headaches</td>
<td>HSCL-A</td>
<td>0.52</td>
</tr>
<tr>
<td>I have felt scared or panicky for no very good reason</td>
<td>HSCL-A; EPDS</td>
<td>0.61</td>
</tr>
<tr>
<td>Feeling restless, can’t sit still</td>
<td>HSCL-A</td>
<td>0.67</td>
</tr>
<tr>
<td>Feeling low in energy, slowed down</td>
<td>HSCL-D</td>
<td>0.73</td>
</tr>
<tr>
<td>Blaming yourself for things</td>
<td>HSCL-D</td>
<td>0.41</td>
</tr>
<tr>
<td>Crying easily</td>
<td>HSCL-D</td>
<td>0.61</td>
</tr>
<tr>
<td>Poor appetite</td>
<td>HSCL-D</td>
<td>0.67</td>
</tr>
<tr>
<td>Difficulty falling asleep, staying asleep</td>
<td>HSCL-D</td>
<td>0.61</td>
</tr>
<tr>
<td>Feeling hopeless about the future</td>
<td>HSCL-D</td>
<td>0.66</td>
</tr>
<tr>
<td>Feeling sad</td>
<td>HSCL-D</td>
<td>0.64</td>
</tr>
<tr>
<td>Feeling lonely</td>
<td>HSCL-D</td>
<td>0.56</td>
</tr>
<tr>
<td>Worrying too much about things</td>
<td>HSCL-D</td>
<td>0.74</td>
</tr>
<tr>
<td>Feeling everything is an effort</td>
<td>HSCL-D</td>
<td>0.68</td>
</tr>
<tr>
<td>Feelings of worthlessness</td>
<td>HSCL-D</td>
<td>0.64</td>
</tr>
<tr>
<td>I have been able to laugh and see the funny side of things</td>
<td>EPDS</td>
<td>0.21</td>
</tr>
<tr>
<td>Things have been getting on top of me</td>
<td>EPDS</td>
<td>0.50</td>
</tr>
<tr>
<td>Talking to yourself</td>
<td>Local</td>
<td>0.71</td>
</tr>
<tr>
<td>Finding it difficult to talk to others</td>
<td>Local</td>
<td>0.64</td>
</tr>
<tr>
<td>Feeling your heart is broken or pained</td>
<td>Local</td>
<td>0.72</td>
</tr>
<tr>
<td>Your mind is wandering or distracted</td>
<td>Local</td>
<td>0.75</td>
</tr>
<tr>
<td>Becoming angry easily</td>
<td>Local</td>
<td>0.65</td>
</tr>
<tr>
<td>Thoughts of ending your life</td>
<td>HSCL-D</td>
<td>0.43</td>
</tr>
</tbody>
</table>
5.7 **Figures for Chapter 5**

**Figure 2.** Spatial representation of MDS analysis
Figure 3. Graphical visualization of factor loadings
Chapter 6. “Integrating mental health into group antenatal care in rural Mali: recommendations for implementing a locally informed approach”

6.1 Abstract

Reducing the gap between treatment availability and need for mental health services is key to improving maternal mental health in low-and middle-income countries. Integrating mental health care into primary health care platforms is an evidenced based approach towards reducing the treatment gap by addressing systems and stigma-related factors. This study conducts a scoping literature review on current best practices for closing the maternal mental health treatment gap and uses qualitative research in order to identify and adapt best practices for the development of a locally informed approach for integrated mental and maternal health care. Qualitative data were collected from local stakeholders (health center staff, mental health specialist, midwives, and perinatal women) in Sélingué health district of Mali. Our scoping review revealed the strengths of integrated mental health approaches to address weak health system barriers and reduce mental health related stigma. Qualitative findings indicated that integrating mental health into antenatal care is both a locally feasible and acceptable strategy to increase access to care and reduce the treatment gap. Based on the literature and our qualitative findings we recommend the integration of mental health services into CenteringPregnancy (CP), a group antenatal care model. Use of this locally informed approach suggests that
integrating components of cognitive-behavioral therapy and interpersonal therapy into CP is both feasible and acceptable in the Malian context.
6.2 Introduction

Common perinatal mental disorders (CPMDs) are highly prevalent in low-and middle-income countries (LMICs) (1). Two systematic reviews in LMICs found weighted mean prevalence rates of 11.3 and 15.6% for antenatal depression, and 18.3 and 19.8% for postnatal depression (1, 6). Despite this high prevalence and an increasingly robust evidence-base for treatment interventions for CPMDs globally, there is a great need for improved access to mental health services for women in the perinatal period in LMIC. The gap between the availability and need for mental health services, known as the “treatment gap,” is estimated to be greater than 75% in most parts of the world and may exceed 90% in LMICs for all mental health services, and perinatal mental health care is no different (156).

Factors that contribute to existence of the treatment gap operate at multiple levels. A key factor at the health systems level includes limited human and financial resources specific to mental health, which leads to weak or underdeveloped care systems. Low-income countries (LIC) have a median of 0.05 psychiatrists and 0.16 psychiatric nurses per 100,000 population; the ratio of psychiatric health workers to population is about 200 times greater in high-income countries (HIC) (16). Not only are there profound inequities in the distribution of skilled human resources for mental health globally, but the education and training facilities in LMIC are wholly lacking to make up for the scarcity of mental health professionals (16, 157, 158). Globally, about one third of all countries lack an official mental health policy or plan, and in African countries this proportion nearly reaches fifty percent (16, 29). Moreover, almost one third of countries lack a
public budget for mental health, and in Africa, most countries allocate less than 1% of their meager health budgets on mental health expenditures and services (16). These disparities in policy, resources, and training reflect, among other factors, structural stigma related to mental health across cultures and contexts (61).

In LMIC, the lack of investment in mental health services has been attributed not only to an overall scarcity of funding, but also the absence of interest in mental illness and individuals with mental illness (159). A qualitative study on the barriers and facilitating factors for mental health financing and service provision in LMIC conducted among 57 academics and policy makers from 30 countries, including 18 LMIC, found that stigmatizing attitudes are expressed by actors within the health sector, including providers and policy makers (61). This stigma within the health system is echoed by stigma in the general community that acts as an additional barrier towards narrowing the treatment gap. Numerous studies have found that stigma is a key contributor to the denial of mental illness as a health concern and a barrier to care seeking (16, 160-162). One study on stigma and discrimination faced by individuals with schizophrenia found that while negative experiences of discrimination were common (42%), it was internalized forms of stigma, such as alienation, that were most prevalent (79%) and most strongly associated with impaired functioning (163).

To address these factors and close the treatment gap, innovative strategies for improved access to mental health services and care are urgently needed. Evidence from high income countries suggests that psychosocial and psychological interventions compared with usual postpartum care can be effective in reducing perinatal depression (164, 165). In LMICs, psychological interventions for perinatal depression delivered by
Community health workers (CHWs) have been found to be effective and readily adaptable to meet the needs of diverse populations cross culturally (162, 166). Evidence from LMICs further suggests that the integration of mental health services into primary health care platforms is an optimal strategy for bringing mental health care to scale in countries with a large treatment gap (16, 167-169). Further, specific recommendations have been made for integration of maternal child health programs with primary care (64). Treatments for common mental disorders (CMDs) such as depression and anxiety are particularly appropriate for integrated care models due to the overall high prevalence of these disorders and their high co-morbidity with other health problems treated in primary health care settings. Moreover, there is also growing evidence that interventions to treat CMDs can be effectively provided by lay-workers through task-sharing models of care (164, 170, 171).

The successful integration of treatments for CMDs into maternal health care systems requires: capacity building supported by training guidelines for psychological care, (e.g. WHO’s mhGAP intervention guide); valid and reliable instruments for CMD screening and tracking clinical outcomes; patient and family support; policies and payment systems conducive to integrated care (171, 172); strengthening of mental health training for all health service personnel, and efforts to address stigma around mental health (171). The WHO’s report on the integration of mental health into primary health care argues that integration is “most successful when mental health is incorporated into health policy and legislation frameworks and supported by senior leadership, adequate resources, and ongoing governance” (169). This report argues that a coordinated network of services and stepped-care approaches that include community-based and hospital
services, informal services, and self-care are necessary to meet the comprehensive mental health needs of populations in LMIC (169).

Research-informed approaches that focus on delivering locally appropriate and relevant interventions are greatly needed to narrow the treatment gap (60). Attention to the local cultural context enables the identification of intervention modalities that are more likely to be perceived as acceptable and feasible across stakeholders, and less stigmatizing among patients (106). Further, the implementation of interventions that have not assessed the nuances of the local cultural context not only runs the risk of wasting already very limited resources, but may lead to the development of interventions that may place vulnerable populations at risk for increased harm and stigmatization (106).

To date, the scientific literature lacks descriptions for locally-informed, integrated care approaches aimed towards closing the mental health treatment gap. To address this gap, we sought to understand what would constitute a feasible and accessible integrated care approach to maternal mental health in rural Mali. We discuss how fusing current best practices of integrated care with findings on the local maternal mental health context can inform intervention selection and development of an integrated care approach for CMD among perinatal women in rural Mali.

6.3 Methods

6.3.1 Study setting

In Mali, the maternal health system is largely inadequate. Antenatal care (ANC), as well as care during and after deliveries, is frequently provided by midwives working at
community health centers; however, only about a quarter of births are attended by a midwife in Mali (96, 97). Relatedly, women in Mali experience extremely high rates of maternal mortality; Hogan et al. (2010) reported a national maternal mortality ratio (MMR) of 670 per 100,000 live births, while Aa (2011) documented a MMR of 3,131 maternal deaths per 100,000 live births in the rural Kita District (84, 89). In rural Mali there is poor ANC attendance, characterized by late entry to care and low completion rates. Only 34.6% of women attend four or more of the recommended ANC visits (74). Within the overall system, the state of mental health care is particularly dismal. The Ministry of Health lacks an official mental health policy and budget for mental health expenditures (29). Additionally, there are no dedicated mental health hospitals and only five mental health outpatient facilities (29). At the population level, there are only 0.04 psychiatrists, 0.02 psychologists, and 0.26 nurses per 100,000 people, which falls below the overall average for LIC (29).

We conducted our study in the Sélingué health district of Southern rural Mali, which is comprised of nine health zones (sub-districts), and is home approximately 91,425 people (74). Each health zone contains one community health center which provides routine primary care as well as antenatal, intrapartum and postpartum care. There is not psychiatric or psychosocial care available in Sélingué. Life in Sélingué is impoverished with most economic activities centered around agriculture, fishing and petty trading. Most women in Sélingué are illiterate, and receive very limited, if any formal education.
6.3.2 Data Collection

6.3.2.1 Scoping Review

We conducted a scoping review of the global mental health literature to describe the treatment gap in LMIC and best practices for integrating mental health into primary health care platforms (173). Databases used to identify articles included PubMed, Embase, and PsychINFO. In addition, we searched websites of relevant agencies (UNICEF, WHO) and reference lists of key articles. The search strategies contained terms describing mental health, low- and middle-income settings, integrated care, interventions for maternal mental health, stigma, barriers to mental health services, and the treatment gap. Using our key search descriptors, 214 articles were identified. 34 articles were selected for inclusion based on their relevance with the subject matter, including: the treatment gap, mental health stigma, barriers to mental health services in LMIC, and integration models in LMIC. The first author completed a narrative review of all included articles and extracted all relevant data and recommendations. The narrative review was then collated and summarized.

6.3.2.2 Qualitative Data Collection

We conducted formative, qualitative research in the Sélingué health district of Mali, to inform selection of an appropriate, evidence-based mental health intervention and inform the process for proposing an integration of the intervention into local maternal health services. Data collection took place from April to June 2016 and included semi-structured in-depth interviews (IDIs) and focus group discussions (FGDs). All data collection
activities were conducted in Bambara or French based on the participant’s language preference.

We recruited three categories of participants from five health centers in Sélingué: 1) community health workers (CHWs), 2) midwives or obstetric nurses, and 3) pregnant women or women with a child under two years old (i.e. perinatal women). To be eligible for inclusion, participants had to be at least 18 years of age and living in Sélingué. Using a purposive sampling strategy, we interviewed perinatal women (n=10), auxiliary midwives (n=7) and CHWs (n=8) who, after recruitment into an earlier phase of our study, had demonstrated a nuanced understanding of the mental health problems faced by women within their community. In addition, we also recruited mental health specialists located in Bamako (n=4), including one psychiatrist, one psychologist, one psychiatric medical assistant, and one psychiatric medical resident, who were eligible if they were involved in the routine provision of psychiatric care.

Across participant type, we conducted thirty-one IDIs, including two follow-up interviews, to gain an in-depth, nuanced understanding of local mental health problems, coping strategies, and possible treatment options. Interviews with local women and CHWs focused on understanding mental health problems, as well as if and how women seek care or manage their distress. Interviews with mental health providers in Bamako elicited descriptions of careseeking patterns and information on informal and traditional mental health treatment modalities found in Mali. In addition, three FGDs were conducted among mixed groups of CHWs (n=1), auxiliary midwives (n=8), and obstetric nurses (n=1). During FGDs we discussed the feasibility and acceptability of integrating mental health components including screening, referrals to higher level care, and
psychosocial care, to be delivered by midwives into existing ANC services.

All IDIs and FGDs were audio recorded, lasting approximately 60-90 minutes, and detailed notes were taken. Following data collection, research assistants listened to the audio recordings and expanded their notes. Interview notes were translated into English and analyzed using Atlas ti software (111). The first author read through and in vivo coded all transcripts in order to identify emerging themes and develop a formal codebook. The first author then recoded all transcripts following the themes outlined in the codebook including codes related to coping strategies for mental distress and opportunities for community-based, integrated mental health interventions. Regular meetings took place among the first author and the research team to discuss emerging findings.

6.3.2.3 Ethical review

All study participants provided verbal informed consent in either French or Bambara. The study was approved by the Institutional Review Boards of the Johns Hopkins Bloomberg School of Public Health and the University of Bamako.

6.4 Results

We first present best practices for addressing the mental health treatment gap in LMIC based on our review of the global mental health literature. We then present our qualitative findings from rural Mali to demonstrate how to apply best practices identified in the literature to a given setting and health problem.
6.4.1 Scoping review best practices: addressing weak health systems and stigma

Our scoping review yielded 34 articles that were included in this article. Topics of these articles included: mental health stigma (n=7), integration of mental health into existing health platforms (n=11), mental health problems in LMIC (n=3), interventions for CPMDs (n=5), mental health services in LMIC (n=2), the treatment gap (n=1), general mental health reports (n=2), and three articles that addressed one of more of the above topics.

As a precursor to improving access and services for mental health care through the integration of mental health interventions into existing primary health care platforms, weak health system factors must be addressed through building the political will of policy makers in LMIC (61). Specifically, policy makers need to be convinced that treating mental health disorders is a public health priority, necessitating a mental health policy (174-176). A survey was conducted to assess the progress in scaling up mental health services worldwide among expert key informants with knowledge of the national level mental health services in LMIC, as well as relevant stakeholders including service users. This survey found that around 40% of respondents from 26 countries identified poor awareness and low priority by political leaders as major barriers to the development and scale of up mental health services (176). One respondent from Nigeria stated: “[There is a] lack of political will to provide a workable mental health policy, introduce reforms in health service delivery, and poor funding at all levels of government” (176).
In addition, policy makers and stakeholders must be engaged in discussion that highlights the potential that integrating mental health care into existing community health systems has for decentralizing mental health care services and resources and making it possible for individuals outside of large, urban regions to gain access (61). Key elements of the 1999 Ugandan National Mental Health Program focused on staff training, strengthening of drug supply lines, implementation guidelines, and public education. While subsequent implementation evaluations have been mixed, more substantial progress has been achieved in districts where mental health personnel were included as members of the District Technical Planning Committee. By 2010, there were nine operational regional mental health units in Uganda compared with four in 2001, a 75% increase in psychiatric nurses at district level, and at least one antipsychotic, one antiepileptic, and one antidepressant drug were available at 80% of all health sub-districts (177).

Task sharing strategies have emerged as effective and integral components of integration approaches. As an example, the Perinatal Mental Health Project in South Africa found training nurses and midwives to deliver low-level mental health services, including screening and referral to more specialized levels of care, to all women at their first antenatal visit was a feasible and acceptable integrated, task-sharing strategy (92). Specifically, 90% of the women who attended the health facility were offered mental health screening, of which 95% of the women accepted. Of the 5,407 women screened, 32% qualified for referral to a counselor, and 62% agreed to be referred. Among the referred women, 77% attended their counseling sessions and received an average of 2.7 face-to-face sessions. These findings suggest that when task-sharing approaches are
provided in the context of a good referral system and quality assurance, they could contribute to a narrowing of the treatment gap by making more efficient use of scarce financial and human resources (81, 174, 178, 179). An added benefit of task-sharing approaches is that mental health services can be provided in a locally-informed way and by people of the same language and culture because services can be provided by local staff with less formal education. This can lead to interventions being perceived as more culturally appropriate by users, potentially encouraging greater usage and greater reach (162, 164, 179).

Additionally, the Thinking Healthy Programme in rural Pakistan has demonstrated the feasibility and effectiveness of such an integrated mental health approach among perinatal women with depression (175). This intervention consisted of one weekly session (home visits) for the last four weeks of pregnancy, three sessions in the first postnatal month, and nine once monthly sessions thereafter (21, 175). The Thinking Healthy Programme drew on principles of cognitive behavioral therapy, which CHWs integrated into their routine work. Training for CHWs included an initial two day workshop, and a one-day refresher workshop conducted three months after the first training (175). During delivery of the intervention, all CHWs were supervised in monthly groups by a mental health professional and a public health expert. During supervisory meetings CHWs were able to discuss problems encountered and shared experiences. Solutions to the encountered problems were produced through brainstorming sessions, for which local language and cultural customs and practices were incorporated into the solutions. At both 6 and 12 months, the prevalence of major depressive disorder was almost two times higher in the control group (routine care) compared to the intervention
group (Thinking Healthy Programme). Moreover, mothers in the intervention group had less disability and better overall and social functioning, and these effects were sustained after 1 year.

Another barrier to integration that must be addressed is mental health stigma at the systems-level. Specific evidence on mental health-related stigma reduction programs within LMIC is highly limited, which is problematic given the health system differences in how mental health services are delivered in high versus low-income countries (159). Integration of mental health care into existing primary health services may be a promising strategy for circumventing the effects of stigma at the community level in LMIC contexts via three mechanisms. First, treating individuals with mental illness in the same manner as those seeking care for other conditions may decrease experiences of stigma and discrimination by normalizing mental health as a part of broader health (169). Second, integrated programs may make it less likely for people to be identified as having a mental health problem and for this reason may be viewed more favorably by patients and family members compared to specialized treatment (171). Third, mental health trainings for CHWs involved in task sharing interventions have shown improvements in the attitudes of CHWs towards mental illness and those with mental illness (180-182). Research from high income countries suggests that while for young people educational interventions with or without indirect contact shows effectiveness for reducing mental illness-related stigma, the most effective stigma reduction interventions among adults include direct social contact between people with and without mental illness (183-185). As such, including a contact based component in CHW training (i.e. engaging CHWs
with people with mental illness) may therefore augment impacts of training on mental health stigma in LMIC.

6.4.2 Local context: addressing weak health systems and stigma

Health worker support for integration of mental health care in ANC at multiple levels

Our analysis of qualitative data from rural Mali largely supports the feasibility and acceptability of integrating mental health services into existing community health care systems. One mental health specialist in Bamako described efforts made over the past two decades to create an official national mental health policy. However, physical health problems, such as malaria, tuberculosis, and cholera, were described as continuing to take precedence over efforts to establish an official mental health policy.

For women in rural Mali, antenatal care (ANC) is frequently the only line of care that women can access. Screening for mental health problems in ANC therefore arose as a promising strategy for integration. One mental health specialist explained that:

... if a woman comes for antenatal care at three months of pregnancy with a serious face because she was beaten up by her husband, the midwife should know what is going on if she does an interview with her. It’s what we call psychotherapy, even without medicines it can work…In my opinion this is the role the midwife. (Psychiatrist, male).

As demonstrated in the quote above, not only was there a feeling among the majority of mental health specialists included in our study that midwives had a role in screening, but that they should provide initial psychosocial or psychotherapeutic services for women. To this effect, mental health specialists in Bamako (the capital) had already
begun trying to increase the mental health competency and capacity of midwives and general medicine practitioners.

We fought to train midwives and the general medicine physicians who are working all over [the country] on basic courses in psychiatry, and we have even created model courses. We would train them over 15 days and then they would return back to their posts. We should normally supervise them to see if they are able to do the work. It seems like we have a little bit of money and I don’t know [if] it will be done or not (Psychiatrist, male).

Delivery mechanisms of potential interventions for maternal mental health were discussed during FGDs with midwives and CHWs. Overall, midwives and CHWs were in favor of delivering mental health services during ANC. One midwife said, “They [women] need their ANC…So if you can chat with them in these places they can accept it, and especially if we give explanations to them” (Auxiliary midwife). Participants described how women are very busy maintaining their households and have extremely limited financial resources for health care seeking. However, when women do seek care it is typically for ANC, thus ANC emerged as a prime platform for an integrated mental health intervention. Both, midwives and CHWs also felt that midwives were ideal health providers to screen women for mental illness and deliver care, in part because they described that midwives are trusted individuals in the community that women already seek out if they have a problem.

Acceptability of integrated care by perinatal women

Regarding CPMDs, rural Malian women have adopted several practices to cope with
their distress that have important implications for the selection of locally relevant and appropriate mental health interventions integrated into ANC. In response to weak health systems and a lack of funding for community-based mental health services, one woman described, “some go to their parent’s [house] to spend 2-3 days there. That can help them a lot to diminish their degun (pain) a little bit,” (CHW, female). This was echoed by multiple other women, particularly in the case of marital conflicts. Women also described the importance of trusting and supportive friendships, which allow for joint problem-solving opportunities:

It was my childhood friend who came and stayed with me, and I confided in her. When I have geleya (difficulties) in my life, she will talk about her difficulties too, so we mutually support each other (Women’s association leader, age 58).

Similarly, women discussed how they were could talk to their CHW about any hardships in their lives in order to receive advice on how to cope with or resolve the problem.

Each village in Sélingué has a women’s association that primarily acts as a way for women to pool their very limited savings into a joint voluntary savings and loan program or business venture. While these groups are practically oriented towards reducing poverty, they also function as de facto social support and problem-solving networks. One woman described that:

Our women don’t participate in the associations, by pleasure, we go confide to the other members of the association to exchange ideas among them. We gather to just talk about our Dusukasi (sadness, challenges in life)…women can give her
story and another person who is in the same situation will picture herself in this situation (Pregnant woman, age 18).

Role of stigma in accessing care

Women also revealed that stigma from both the community and CHWs is a large obstacle to surmount in seeking formal mental health care. This stigma was in part described as being related to a pervasive understanding that mental health problems are the result of curses or evil spirits. One mental health specialist remarked that people in Mali believe that mental illness “is not a doctor sickness…they will say you have a curse or an evil spirit is after you, or you have done something bad so this [mental health problem] is the consequence” (Psychiatry resident, female). This specialist went on to describe how psychiatry is not well understood in Mali, even among medical students, “when you come here [psychiatry unit] you think that there are only crazy people here, you will be attacked, and it’s not only the population, even the students,” (Psychiatry resident, female).

CHWs and midwives also described how women are reluctant to discuss their distress with their peers out of fear of stigma. One CHW stated that women “confide in the CHW and avoid seeing their friends for fear that their problem wouldn’t be popular.” Similarly, community gossip was described as a factor that increases internalized stigma among women: “if you find someone that you can trust, which is rare in Africa, and if you confide in this person, maybe you will be released [feel better], but it is difficult to find this kind of person because most of the time these people go and tell your story to
others. When your story is told to everyone, you are ashamed” (Auxiliary midwife, age 39).

6.5 Discussion

Findings from our scoping review and qualitative research support the global mental health literature suggesting that a maternal health care integrated approach is an appropriate and feasible way to increase access to mental health care among perinatal women in rural Mali. In the following sections, we summarize lessons learned and make key recommendations for an integrated care approach for maternal mental health with this population.

6.5.1 Lessons learned for integrated care in Mali

1. Integrate screening into ANC

Despite the lack of an official national mental health policy, providers in Mali at multiple levels recognized and supported the need for decentralized and integrated mental health services and care, particularly within ANC. In Mali, the majority of mental health services are located in Bamako, the capital city. Given distance, transportation costs, and stigma associated with accessing specialized mental health care, women in Sélingué, and other rural parts of the country are unable to access care. As many women in Sélingué only seek care during pregnancy, integrating mental health screening and services into ANC emerges as a key and feasible strategy to reduce barriers and ultimately increase access to care. Further, evidence from numerous studies including the Perinatal Mental Health Project in South Africa (92) and the Thinking Healthy Programme in rural
Pakistan (175) provide substantial support for the feasibility and effectiveness of integrating mental health into ANC.

2. *Auxiliary midwives are appropriate health workers for providing psychosocial care*

All midwives articulated that with the provision of adequate training, they would be well equipped to screen for mental illness, make referrals to higher level care, and deliver psychosocial care to women. According to the MhGAP psychosocial care includes providing psychoeducation, addressing current psychosocial stressors and strengthening social support, and promoting functioning in daily activities (172). Again, strong evidence from Perinatal Mental Health Project in South Africa(92) and the Thinking Healthy Programme in Pakistan(175) indicates the feasibility of a task sharing approach that integrates mental health into the routine care provided by non-specialist health workers, including CHWs, midwives, and nurses.

3. *A group format is best suited to complement existing coping strategies of Malian women*

In the absence of formal mental health services in rural Mali, women spoke of several coping strategies that provide important insight into the local context that may inform the selection of intervention types and modalities. These strategies included finding and confiding in trustworthy friends, peers, the women’s association, and health workers to engage in joint problem solving and mutual learning. This suggests that not only group format interventions may be readily acceptable, but also low intensity talk-based psychosocial care interventions.
6.5.2 Intervention recommendations for rural Mali

1. Centering Pregnancy as an intervention framework

Given these lessons learned, as a group based model of ANC care, Centering Pregnancy (CP) emerges as a potential locally appropriate and feasible framework into which to integrate mental health screening and services at the community level. CP aims to create a person-centered, positive pregnancy experience, which is consistent with WHO’s newest ANC guidelines (186). In the CP model, after a woman receives standard services in her first ANC visit, she is invited to receive ongoing ANC within a group of 8-12 women of similar gestational ages for the remaining four CP sessions (187, 188). The first 30 minutes of each CP session entails each woman conducting a self-assessment of her health (e.g. weight gain, blood pressure) and seeing the midwife for a brief clinical assessment and discussion of any concerns. The remainder of the program is reserved for group discussions regarding general health, pregnancy, and other issues of interest to the women. The goal is that women’s pregnancy experiences and concerns are placed at the center of care, creating high quality and satisfying services (189). Reported positive outcomes of CP include: decreased rates of preterm birth and low birth weight infants, enhanced health literacy, promotion of health behavior change, promotion of women’s sense of control over their health, social support, and a collaborative midwife-patient relationship that promotes continuity of care (187, 189). Moreover, CP has been adapted to meet the needs of women with specific challenges, such as obesity, HIV, and adolescence, and tested in multiple sub-Saharan African contexts (187).

An implicit, yet under-researched outcome of CP is women’s mental health. Ickovics et al (2011) piloted an adapted CP model with a focus on HIV prevention among
high-risk women in the United States and reported improved psychosocial outcomes among high stress women (190). Specifically, this study found that high-stress women randomly assigned to CP reported significantly increased self-esteem, decreased stress, and reduced social conflict in the third trimester of pregnancy. At one year postpartum women also reported significantly decreased social conflict and depression compared to women receiving standard individual care (190).

2. Bolstering the mental health impacts of CP

Training midwives to teach principles and skills adapted from cognitive behavioral therapy (CBT) and interpersonal therapy (IPT) as a part of an adapted CP model which may bolster the positive psychosocial effects of CP. The effectiveness of CBT and IPT based interventions for the treatment and prevention of depression among perinatal women has been demonstrated across high, middle, and low-income countries (164, 175, 191). CBT techniques suggests that when individuals are taught to monitor their negative mood, thoughts, and behaviors, they can learn to alter or replace them with healthy thinking and behavioral activation (175). IPT suggests that understanding the root of interpersonal stress can help an individual develop new responses to situations and reduce triggers for depressive symptoms (192). IPT helps individuals to do this by focusing on four interpersonal problem areas: grief, role transitions, interpersonal or role conflicts, and interpersonal deficits. By adding components from these therapy models to each CP session to form a CP + psychosocial wellbeing (CP+PW) intervention, we hypothesize that women will be at lower risk for developing depressive symptoms, be better equipped to handle symptoms of depression if they arise, and be more likely to stay engaged in
antenatal and postnatal care. Raising awareness of depression and common mental health problems among ANC staff would also allow them to recognize when women have more severe symptoms in order to establish referrals to more specialized care as necessary.

3. **CP+PW from an Implementation Science perspective**

Our focus on the local context, together with best practices from the global literature, enhances our ability to make readily applicable and locally appropriate recommendations. While integrated mental health care is becoming more common, evidence of the importance of locally informed integration approaches remains sparse (171). Literature from high income countries suggests that while interventions may demonstrate effectiveness in initial studies, they frequently lose their effectiveness when implemented widely and in different settings (193, 194). Among the reasons for shortcomings or implementation failures of integrated mental health care is the lack of an understanding on the local context, regarding both the health system and community (171, 193). As such, policy experts argue that in order for interventions to be successfully implemented, increased focus must be paid to the actors (healthy facility, mental health specialist, ANC providers, and perinatal women), the processes for developing and implementing interventions, and the context within which the intervention is developed (195).

Qualitative examination with our data of the proposed CP+PW model against key implementation science outcomes including acceptability, feasibility, penetration, and sustainability (Table 1), demonstrates the potential sustainability of a CP+PW program in rural Mali. Our qualitative findings demonstrate the acceptability of CP+PW to be high across stakeholders. This is due to the potential of CP+PW to make more efficient use of
limited resources (including human resources), allow ANC providers to treat the whole patient with additional tools and training in mental health, and appeal to women as the intervention is pregnancy focused reducing mental health-related stigma.

Additionally, this model is highly feasible due to the existing infrastructure currently in place for integrated care and the readiness of mental health specialists to serve in a leadership capacity supporting training and supervision of ANC providers. All sub-districts in Sélingué are equipped with a community health center that delivers maternal health services. Each health center is run by a chief physician, several midwives, and at least two CHWS serving each village in the sub-district. Furthermore, with the provision of mental health training and support, ANC providers will be able to make more efficient use of their time while treating women in groups. This also extends to patients where instead of waiting an hour or longer to be seen for a 15 minute ANC consultation, they will be able receive high quality, comprehensive care with their peers.

Increased penetration, or reach is also expected, as women will now have access to mental health services and care that previously were not available to them. Finally, integrated care frequently encounters issues with sustainability, particularly regarding retaining health workers due to high workloads. However, under CP+PW, health facilities should result in more efficient use of their resources, and may be able to pay midwives increased wages to reflect the new scope of their work and to motivate them to continue delivering care.
6.5.1 Limitations

Several limitations must be considered when interpreting our findings and recommendations. While we did conduct several interviews with mental health specialists in Mali, we were not able to conduct interview with policy makers or members of the Ministry of Health to elicit feedback on our proposal for integrated mental health care. However, the mental health specialists that we engaged have had a long working history with the Ministry of Health and policy makers and were able to provide us with information and perspectives likely reflecting their perspectives. Another important limitation of this study is that because we did not collect data on trauma, the CP+PW intervention is not specifically oriented towards addressing the needs of trauma affected populations. The implementation of the CP+PW model is a necessary starting point for the development of referral systems and more specialized levels of care that can be addressed in future studies.

6.6 Conclusions

We describe CP+PW as a locally-informed intervention for the integration of mental health care into group ANC in rural Mali. Our emphasis on adapting best practices for integrated mental health care approaches, rooted in data on the local mental health context in Mali, enabled us to conceive of and recommend CP+PW as a locally feasible and acceptable intervention that can help narrow the mental health treatment gap. While this locally informed approach is not generalizable to other settings, the process we describe provides a framework for other researchers, policy makers, and health providers
to develop similarly locally-informed approaches for the integration of mental health into primary health care platforms.
### Table 6. Key implementation science factors for integration

<table>
<thead>
<tr>
<th></th>
<th>Health facility</th>
<th>MH specialists</th>
<th>ANC providers</th>
<th>Patients</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Acceptability</strong></td>
<td>• More efficient use of limited resources</td>
<td>• In support of decentralized, community-based, integrated mental health services</td>
<td>• Already seeing distressed women during clinic visits but lack the training and tools to help them</td>
<td>• Focus on pregnancy avoids mental health related stigma</td>
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<td></td>
<td></td>
<td></td>
<td>• Allows for more time to provide quality care</td>
<td>• Tailored intervention materials for illiterate population</td>
</tr>
<tr>
<td><strong>Feasibility</strong></td>
<td>• Existing infrastructure in place to build off of</td>
<td>• Move from role of provider to leadership, training and supervision</td>
<td>• Ongoing training, support, and supervision allows for more efficient use of provider’s time</td>
<td>• More efficient use of women’s time</td>
</tr>
<tr>
<td><strong>Penetration</strong></td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>• Increases proportion of women attending more than 1 ANC visit</td>
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<tr>
<td><strong>Sustainability</strong></td>
<td>• More efficient use of limited resources, and decreased staffing turn over</td>
<td>--</td>
<td>• Decreased staff turnover with ongoing training and support and financial incentives</td>
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Chapter 7. Conclusions

7.1 Summary of results

The goal of this dissertation was to explore local understandings of perinatal mental health to inform the development of interventions for perinatal mental health in Sélingué, Mali. To achieve this goal, we conducted a study among perinatal women, CHWS, auxiliary midwives in Sélingué, Mali, and mental health specialists in Bamako, Mali. Using qualitative research methods for Aim 1, we sought to identify local terms and ethnomedical models for mental health among perinatal women. We then used both qualitative and quantitative research methods to develop a holistic understanding of local syndrome(s) for mental health among perinatal women, in Aim 2. Finally, in Aim 3 we relied on qualitative methods and a scoping literature review to identify a feasible and acceptable intervention model for the integration of mental health into community-based maternal services. Together, these aims inform the understanding and measurement of perinatal mental health towards the end of the developing a perinatal mental health intervention integrated within antenatal care (ANC) in Sélingué, Mali.

7.1.1 Dusukasi: An idiom of perinatal mental distress

Results from Aim 1 demonstrate how perinatal women experience and express mental distress. Women used idioms of distress to communicate difficulties (gélèya), pain, stress, and suffering ( tôôrô), worries (hamin), and a crying heart or sadness (dusukasi). Participants indicated that these idioms of distress operate along a progressive continuum of severity of distress that increases with time, both between and within idioms. At the root of perinatal mental distress is a complex web of interacting factors related to poverty
and gender inequality, where distinct forms of distress can interact to further perpetuate vulnerabilities for other experiences of distress.

Women described that as they move through seminal life phases, they amass increasing levels of individual responsibility, adversity, and stress. The daily stressors and challenges of life among women in Mali are in part due to living in a context of chronic poverty. Additionally, these stressors and challenges are sharply intensified after a woman is married, and are further intensified once they start bearing children. Our qualitative findings suggest that not only do women experience increases in responsibilities and stress after marriage, but at the same time the availability of coping resources is constrained by decreases in social support and personal agency that takes place when they move to their husband’s patrilocal residence following marriage.

In the face of such hardships, women expressed and communicated their suffering using idioms of distress. While these idioms of distress are distinct in the minds of our study participants, the boundaries between them are fluid, reflecting their progressive and polysemic nature. Moreover, idioms of distress are greatly dependent on culture and context, highlighting the complexities of their uses and dynamic interactions with other idioms. Therefore, it is important to refrain from labeling and biomedicalization of idioms of distress as the meanings and interpretations ascribed to each idiom of distress vary according to context, individual, and experience. Given the context dependent nature of idioms of distress, it is imperative that future studies on idioms of distress seek to understand how suffering and distress is experienced and understood in a given cultural context, with directed attention to the nuanced local and contextualized meanings of idioms of distress.
7.1.2 Holistic understanding and measurement of *dusukasi*: an example of methodological triangulation

To address Aim 2, we utilized pile sorting and exploratory factor analysis (EFA) to support the holistic understanding and measurement of *dusukasi*, and ultimately, demonstrate the complementary strengths and utility of pile sorting and EFA in global mental health research. Using multidimensional scaling to analyze the pile sorts data we identified a single large cluster, indicating that there is one single construct underlying the included terms for perinatal mental distress. Similarly, the EFA results were in agreement with the pile sorts findings, yielding one single underlying construct for perinatal mental distress.

While there is much to be gained from each method when conducted on their own, together they synergistically balance each other’s limitations. EFA findings have limited ability to elucidate groupings of local illness terms and categories, and the meanings of these groupings and categories. Seeing how items that reflect perinatal depression load together in our EFA analyses provides little insight for the naming of constructs. Pile sorts are able to address this weakness in their ability to add meaningfulness and utility to study findings. However, findings from our pile sorts yielded qualitative data to aid the naming of the latent construct in the EFA, while also contributing to the development of a theory of perinatal depression in rural Mali.

Pile sorting is a complementary method that can act as a qualitative validity check to EFA findings. Results from our MDS analysis of pile sorts data suggest there is a consistent and shared understanding of perinatal depression among our sample of perinatal women in Sélingué, Mali. While the findings from both the pile sorts and EFA...
are complementary with each other, pile sorting adds a layer of data that qualitatively helps to describe the experience and symptoms of the underlying construct from the vantage of the participants. Additionally, as numerous decisions are required to be made throughout the EFA process, findings may ultimately not reflect the perspectives of the local population and threaten the validity of findings. With our example, we were able to demonstrate how pile sorting has the ability to act as a tool to help guide decision making during an EFA that is grounded in the local context.

Lastly, limitations for scale development are present in both pile sorting and EFA. However, when applied together, both methods help mitigate each other’s weaknesses to help ensure the development of a locally valid and reliable scale for perinatal depression. We found that while EFA findings have limited utility for face validity, pile sorts findings are able to reveal perinatal women’s shared understandings of the underlying construct and the included terms they use to describe it, to help ensure strong face validity.

7.1.3 Integrating mental health into group antenatal care

Building on Aims 1 and 2, we conducted a scoping literature review of the current best practices for integrated mental health interventions, and qualitatively examined locally feasible and acceptable interventions models for the integration of mental health into community-based maternal health services. Results from the scoping literature review indicate that integrated mental health intervention models that rely on task-sharing, are successful and strong approaches to address barriers towards closing the treatment gap, including weak health system factors, limited financial and human resources, and mental health stigma. Our qualitative findings suggest that it is both locally feasible and
acceptable to integrate mental health services into existing community health care systems. Given that the majority of mental health services are located in Bamako, there are distance and cost barriers associated with seeking mental health care, in addition to barriers of stigma associated with seeking care. Further, as women in Mali only, if ever, seek care during pregnancy, integrating mental health into ANC, emerged as a strong strategy to reduce the treatment gap and increase access to care.

Based on these findings we recommend the integration of mental health services into CenteringPregnancy (CP), a group antenatal care model. Within this model, midwives would be trained to teach principles and skills adapted from cognitive behavioral therapy (CBT) and interpersonal therapy (IPT) as a part of an adapted CP model which may bolster the positive psychosocial effects of CP. The addition of these components to each CP session to form a CP + psychosocial wellbeing (CP+PW) intervention, be position women to be better able to cope with symptoms of depression if they arise, be more likely to stay engaged in antenatal and postnatal care, as well as potentially lowering the risk for developing depressive symptoms. In view of the implementation science outcomes of acceptability, feasibility, penetration and sustainability, the proposed CP+PW model emerges as a strong locally informed approach to narrow the treatment gap in rural Mali.

7.2 **Strengths and limitations**

This dissertation contributes to the global perinatal mental health literature in several ways. To our knowledge, the qualitative results presented in Aim 1 are the first of its kind to examine local understandings of mental health, idioms of distress and the socio-
cultural contexts surrounding perinatal mental health in rural Mali. Gaining a deep understanding of local conceptions of mental health, and identifying idioms of distress that are situated within their unique socio-cultural contexts are the necessary and vital first step towards developing locally appropriate interventions for perinatal mental health and reducing the treatment gap. Relatedly, a strength of this dissertation is the extended time the author spent in the Mali. This allowed the author to develop rapport with study participants, local stakeholders, and to ensure thorough training of the research assistants. As such, the extended time the author spent in Mali contributes to the dependability and credibility of study findings.

Several limitations should also be considered when interpreting the findings of this dissertation. First, this study was conducted in only one region of Mali, and therefore findings may not be generalizable to other populations in Mali. However, given the rich ethnic, linguistic, cultural, and socio-economic diversity of Mali, a single model of idioms of distress, measure for mental distress, and intervention recommendation for maternal mental health in Mali would likely be grossly oversimplified, and not necessarily reflective of the diverse mental health needs of perinatal women across Mali. However, by working in just one region of Mali we were able to cultivate an in-depth local understanding of maternal mental health in Sélingué, Mali. Moreover, the process and methods described in this dissertation can be used as a guide for other researchers aiming to explore local understandings of perinatal mental health towards the development of locally relevant interventions for mental health.

Another limitation of this dissertation is that the author was not fluent in Bambara or French. This required data collected in Bambara or French to go through three or two
rounds of translation (respectively) to English. During the translation process, meanings and interpretations derived from the data may have changed. However, to overcome this challenge, the author worked with research assistants who were fluent in French and Bambara, and one who was also fluent in English. Additionally, all data was translated to English by a single research assistant. The fieldwork team also held daily debriefings following data collection to review the interviews that had been conducted and to develop group consensus on how to interpret the meaning of the translated data.

While we did conduct several interviews with mental health specialists in Mali, due to time and resource constraints, we were not able to conduct interviews with policy makers or members of the Ministry of Health to elicit feedback on our proposed intervention integrating mental health into group ANC. However, we were able to interview mental health specialists who have had a long working history with the Ministry of Health and policy makers, and were able to provide us with information and perspectives likely reflecting the perspectives of the Ministry of Health and policy makers.

Finally, there were limitations in our application of pile sorting. First, the included terms from the pile sorts and items on our adapted perinatal depression scale were not identical in terms of phrasing. However, the included terms and scale items shared many conceptual similarities which allowed for the meaningful comparison of findings. We were also limited by the sample size for the pile sorts. We included data from 15 participants in our analyses due to challenges preserving the sorted groups. Additionally, several participants faced difficulty explaining their process for sorting piles, or naming their groups. However, several other participants were able to explain their piles and sorting.
process in detail, to help overcome this limitation. Despite all of these limitations were able to analyze the pile sorts data with a high degree of reliability.

7.3 **Recommendations for future research**

This dissertation research examined local understandings of perinatal mental health and explored potential intervention models to inform the development of an intervention that integrates mental health into community based maternal health services in Sélingué, Mali. Future research can build on the evidence presented in this dissertation to develop and test an intervention that integrates mental health into group antenatal care (G-ANC) among perinatal women in this context. The findings and recommendations for implementing a locally informed integrated intervention approach, presented in Chapter 6 warrants additional qualitative, formative investigation to examine the acceptability and feasibility of a manualized G-ANC intervention that is bolstered with components of CBT and IPT. Additionally, qualitative research is needed to develop the content for the G-ANC intervention.

Future research would be strengthened with the conduct and rigorous assessment of randomized controlled trials for G-ANC interventions that integrate mental health components. Such studies should include locally adapted and validated measures for CPMDs through the first postpartum year, mother-child interactions, and infant development outcomes. Findings from these trials would be able to contribute to the literature by describing the efficacy of such trials as well as the directionality of mother-child interactions and infant development outcomes.
Within the Malian health policy context, future research is needed to explore and conceive of a public mental health policy. As there currently is no mental health policy in place, healthy policy research is needed to: 1) identify the actors (at the international, national, and sub-national levels) to be involved in policy development and implementation; 2) examine the processes contingent on developing and implementing the policy; and 3) the context within which the policy implemented (195). Such research would help contribute to the narrowing of the treatment gap.

Although we did not directly examine issues related to gender inequality or women’s empowerment in this study, we did uncover a relationship among gender inequality and women’s mental distress. Given that most women described their mental distress in relation to gender inequality, including the financial control that husbands exert over family finances, future research should develop and test interventions with a focus on women’s empowerment and reducing gender inequality. In view of largely polygynous family structure in this context, future research is needed to examine the family dynamics including family dynamics of power, family dysfunction, and family wealth. Such research should examine the associations and mechanisms between family dynamics with CPMDs, mother-child interactions, and child development outcomes.

7.4 Implications for public health policy and practice
The results of this dissertation yield important implications for public health policy and practice within global mental health. Globally, between 1990 and 2010, the occurrence of mental, neurological, and substance use disorders increased by 41%, accounting for one in every ten lost years of health (196). A large multi-country survey found that the mental health treatment gap is large, with around 76% and 85% of people with severe mental
disorders not receiving any treatment in the previous 12 months (197, 198). Within the Malian context, while indicators for the magnitude of the treatment gap or burden of mental disorders are presently lacking, the treatment gap is expected to be equally large. As such, there is an urgent need for the development and implementation of mental health policies and laws in Mali.

In response to the WHO’s Global Mental Health Action Plan (mhGAP) (172), several LMICs have made concerted action to adopt public mental health policies and plans that promote the integration of mental health into primary health care platforms to help close the treatment gap (199). Task-sharing approaches have been shown to bolster the impacts of integrated care, with mounting evidence demonstrating its efficacy and cost effectiveness (200). Our qualitative findings highlight the need for integrated, task-sharing approaches, Policy makers and stakeholders in Mali should heed the recommendations of the mhGAP, and evidence supporting integrated, task sharing approaches as a more efficient means to increase coverage than vertical specialist care, which historically have received the majority of the limited resources allocated to mental health in LMICs (61).

Towards the end of developing and implementing a mental health policy in Mali, a study examining key governance challenges and needs to inform the integration of mental health into primary health care in LMIC identified several strategies for countries, like Mali, to support the development of mental health policies and laws (199). The strategies included: 1) capacity-building for ministries of health to develop progressive mental health policies and laws; 2) strengthening advocacy efforts to increase the public
health priority of mental health; and 3) the establishment of a mental health unit at the national level with an individual responsible for spearheading the process (199).
Chapter 8. Appendices

8.1 Data collection instruments

8.1.1 Data Collection Instrument 1.1a

Freelists with women, auxiliary midwives, CHWs

1. Quelles sont les difficultés que les femmes enceintes ou celles qui ont récemment accouché peuvent rencontré dans ce village?

(What are all of the problems that affect pregnant women and women who have recently given birth in this community?)

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<tr>
<th>LES DIFFICULTES</th>
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8.1.2 Data Collection Instrument 2

Module 1: Problèmes de santé mentale maternelle

1. La fois dernière vous avez mentionné le problème x. Pouvez-vous me parler de (problème x) en détails ?
   a. Pouvez-vous me décrire le problème x ?
   b. Comment pouvez-vous savoir si une femme en a ? / Quels sont les signes et les symptômes de ce problème ?
c. A votre avis, qu’est-ce qui avait causé ce problème ?

d. Où les femmes vont-elles pour les soins contre ce problème ?

2. Que faites-vous pour vous sentir mieux? Quels autres problèmes rendent les femmes tristes ou affectent leur cœur ou leur pensée ?

   a. Pouvez-vous me parler de l’un de ces problèmes en détails ?

**Module 2: SI la femme dit qu’elle avait un problème de santé mentale avant**

3. Comment étiez-vous devenue consciente que vous aviez ces problèmes qui affectent votre pensée et vous rendent triste ?

   a. Quel était le problème?

   b. Comment avez-vous su que vous aviez ce problème ? / Quels sont les signes et les symptômes de ce problème ?

   c. Parlez-moi de votre expérience

   d. Comment a-t-il affecté votre vie quotidienne ? ou votre vie familiale ?

   e. A votre avis, qu’est-ce qui avait causé ce problème ?

   f. Avez-vous consulté quelqu’un pour les soins?

      • Où et quand?

      • Les traitements étaient-ils efficaces ?

      • Comment avez-vous, ou votre famille, décidé de chercher les soins ?

**Module 3: Le Triage de Piles**
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PUBLICATIONS


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