

Perinatal depression in refugee and labour migrant women on the Thai-Myanmar border: prevalence, risk factors and experiences

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Abstract

Background

Perinatal depression is a significant contributor to maternal morbidity and mortality worldwide. Left untreated, perinatal depression has severe and far-reaching consequences for women, their families and wider society. Migrant women, including labour migrants and refugees, may be particularly prone to developing perinatal depression as a result of multiple stressors associated with displacement. Despite the vast majority of global migration flows occurring within low- and middle-income countries, evidence from these regions is severely lacking. This research addresses this imbalance by examining perinatal depression in migrant women living on the Thai-Myanmar border: a resource-poor setting of political tension and socio-economic disadvantage.

Aim

This research aims to review the existing evidence around perinatal depression among migrant women from low- and middle-income settings; identify an appropriate tool to detect perinatal depression in migrant women on the Thai-Myanmar border; determine the prevalence of, and risk factors for, perinatal depression in this setting; explore women's experiences of perinatal depression; and develop recommendations for policy and practice.

Methods

A sequential-exploratory mixed-methods design was used. The research included the following five study components: a systematic literature review; a validation study to identify a culturally-acceptable and appropriate assessment tool; a prospective cohort study of migrant women on the Thai-Myanmar border followed-up from the first trimester of pregnancy to one month post-partum; in-depth interviews with a subgroup of women with severe perinatal depression; and an informal exploration of stakeholder views.

Findings

The systematic review found a wide range in prevalence of perinatal depression among migrant women and confirmed the absence of studies conducted in low-and middle-income destination countries. A total of 568 migrant women on the Thai-Myanmar border participated in the prospective cohort study, of whom 18.5% experienced moderate-severe depression and 39.8% experienced depression of any severity during the perinatal period. Almost a third (29%) of women reported suicidal ideation. Interpersonal violence (OR 4.5), experience of trauma (OR 2.4), a self-reported history of depression (OR 2.3) and perceived insufficiency of social support (OR 2.1) were significantly associated with perinatal depression. Lives of women with severe perinatal depression were characterised by difficult partner relationships, alcohol use among partners and interpersonal violence. A lack of mental health services currently limits the effective management of perinatal depression in this setting. Alongside training of health staff, primary, secondary and tertiary prevention efforts are required to effectively address perinatal depression on the Thai-Myanmar border.

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List of publications

Peer-reviewed publications arising from this research

[In press] [Fellmeth G](#), Plugge E, Fazel M, Charunwatthana P, Nosten F, Fitzpatrick R, Simpson JA, McGready R. Validation of the Refugee Health Screener-15 for the assessment of perinatal depression among Karen and Burmese women on the Thai-Myanmar border. *Plos One* [Accepted May 2018]

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[Fellmeth G](#), Plugge E, Carrara V, Fazel M, Oo MM, Phichitohadungtham Y, Pimanpanarak M, Wai KW, Mu O, Charunwatthana P, Nosten F, Fitzpatrick R, McGready R. The Migrant Perinatal Depression Study: a prospective cohort study of perinatal depression on the Thai-Myanmar border. *BMJ Open* 2018 Jan 5; 8(1):e017129.

Ing H, [Fellmeth G](#), White J, Stein A, Simpson JA, McGready R. Validation of the Edinburgh Postnatal Depression Scale (EPDS) on the Thai-Myanmar border. *Tropical Doctor* 2017 Oct; 47(4):339-347. doi: 10.1177/0049475517717635.

[Fellmeth G](#), Oo MM, Lay B, McGready R. Paired suicide in a young refugee couple on the Thai-Myanmar border. *BMJ Case Rep*. 2016; Sep 15. doi: 10.1136/bcr-2016-215527.

[Fellmeth G](#), Fazel M, Plugge M. Migration and perinatal mental health in women from low- and middle-income countries: a systematic review and meta-analysis. *BJOG*. 2017; 124(5): 742-752.

[Fellmeth G](#), Paw MK, Wiladphaingern J, Charunwatthana P, Nosten FH, McGready R. Maternal suicide risk among refugees and migrants. *Int J Gynaecol Obstet* 2016 Aug; 134(2): 223-4.

Media coverage arising from this research

This research led to a number of media reports written by the author and journalists on regional (e.g. *Frontier Myanmar* news outlet), national (e.g. *Bangkok Post* newspaper) and international (*British Broadcasting Corporation*, BBC) platforms. Examples are available in **Appendices 1–3**.

Abbreviations and key terms

ANC	Antenatal clinic
Depression NOS	Depression ‘not otherwise specified’. Depression that does not fulfil DSM-IV criteria for major or minor depressive disorders
DSM-IV	Diagnostic and Statistical Manual of Mental Disorders, 4 th edition
EGA	Estimated gestational age
IOM	International Organization for Migration
Karen State	Region of Myanmar bordering the Thai province of Tak
Labour migrant	Subgroup of migrants living in villages along both sides of the Thai-Myanmar border
Maela	Refugee camp located 60km north of Mae Sot
Mae Sot	Border town located in Tak Province, Thailand, 5km from the border to Myanmar
Mawker Tai	Rural labour migrant village 60km south of Mae Sot
NGO	Non-governmental organisation
OR	Odds ratio
Refugee	Subgroup of migrants living in established refugee camps on the Thai side of the Thai-Myanmar border
SCID	Structured Clinical Interview for the Diagnosis of DSM-IV Disorders
SMRU	Shoklo Malaria Research Unit; host organisation for this research
Tak Province	Thai province in which study sites are located
UNDESA	United Nations Department of Economic and Social Affairs
UNDP	United Nations Development Programme
UNHCR	United Nations High Commissioner for Refugees
Wang Pha	Rural labour migrant village 30km north of Mae Sot
WHO	World Health Organization

Chapter 1.

Introduction

1.1 Chapter overview

This chapter provides the background, context and rationale for this study. Firstly, an overview of migration, migrant health, perinatal depression and the intersection of these fields is provided. Secondly, the geopolitical landscape of the Thai-Myanmar border area, where this study is based, is described. Protracted conflict in Myanmar has led to large-scale displacement of ethnic minority groups into neighbouring Thailand, and the characteristics of the refugee and labour migrant women living in this region are summarised. Thirdly, the study rationale is described within the context of current evidence gaps, and the study aims, objectives and methods are presented. Finally, a synopsis of each of the thesis chapters is given.

1.2 Thesis structure

This thesis consists of eight chapters, as follows:

Chapter 1 provides an introduction to the fields of migrant health and perinatal mental health. It presents the situation on the Thai-Myanmar border area and gives an overview of the local refugee and labour migrant populations. The study rationale, aims and objectives are explained and the thesis structure is summarised.

Chapter 2 presents the methods and findings of a systematic literature review of perinatal mental disorders in migrant women from low- and middle-income countries. The review assesses the prevalence of, risk factors for and interventions for perinatal mental disorders in this population. Current gaps in the evidence are highlighted.

Chapter 3 provides the rationale for the choice of instruments used to assess the outcome and exposure variables. The pilot testing and validation of two screening tools to assess for symptoms of depression are described. Scales used to assess complex exposures such as social support and interpersonal violence are presented along with the reasons for selecting these over other available instruments.

Chapter 4 discusses the methods used to conduct the prospective cohort and qualitative study components. The study setting, recruitment and procedures are explained and statistical and qualitative methods of analysis are presented.

Chapter 5 and Chapter 6 present the results of the prospective cohort study of pregnant and post-partum migrant women. Chapter 5 presents the socio-demographic and clinical characteristics of participants and the prevalence and incidence of perinatal depression, while Chapter 6 analyses the socio-demographic and clinical risk factors for perinatal depression.

Chapter 7 presents the findings of in-depth interviews with a selected group of women with severe depression. The interviews provide a deeper insight into the lived experiences of depression for these women, the social contexts within which they live and the day-to-day challenges associated with living in poverty and uncertainty.

Chapter 8 provides a concluding discussion. Results from each of the individual study components are integrated so as to draw overarching conclusions. Findings are compared to those from other settings and considered in the context of the published literature on other migrant populations. The strengths and limitations of the research as a whole are summarised and recommendations for policy, practice and future research are presented.

1.3 Topic overview

Perinatal depression is a significant contributor to maternal morbidity and mortality. Despite the availability of low-cost and effective treatment, perinatal depression often remains under-recognised and under-treated, especially in resource-constrained settings. The consequences of untreated perinatal depression are potentially serious and wide-reaching, affecting women, their partners and their children. Migrant women may be especially prone to developing perinatal depression as a result of multiple stressors associated with displacement. The vast majority of global migration flows occur within low- and middle-income regions, yet existing evidence around migrant health is heavily skewed towards migrant and refugee populations in high-income destination settings. The present study addresses this imbalance by examining perinatal depression in migrant women living on the Thai-Myanmar border – a resource-poor setting of political tension and socio-economic disadvantage.

1.4 Migration: the global context

1.4.1 Global migration trends

Migration has been a hallmark of global development over the last millennium. The past century – described as the “century of human mobility and migration” – has seen

unprecedented migration flows worldwide (Castles & Miller, 2009; Skeldon, 2013). Estimates suggest there are currently over 1 billion migrants globally, including 244 million international migrants, 740 million internal migrants and at least 50 million undocumented migrants, though the legal status of this latter group means true numbers are likely to be significantly higher (IOM, 2013; IOM, 2015; IOM, 2016; UNDP, 2009). Eighty-four million people are ‘forcibly displaced’: 41 million are internally displaced persons, 21 million are cross-border refugees, three million are asylum seekers and 19 million are displaced due to natural disasters (UNHCR, 2016a).

The vast majority of global migration occurs within low- and middle-income regions (IOM, 2013; UNDP, 2009). Refugees and asylum-seekers originate predominantly from low-income countries, and most resettle either internally or in neighbouring low- or middle-income countries (IOM, 2016). Similarly, labour migration is increasingly occurring within low-and middle-income countries, with fast-growing economies in East Asia, South Africa, India and Brazil attracting populations from poorer economies in these regions (IOM, 2015; UNDESA, 2015; UNDESA, 2016).

1.4.2 Definitions: migrants and subgroups

Migration is defined by the International Organization for Migration (IOM) as the movement of people across international borders or within a state for any duration, from any cause and for any purpose (IOM, 2011). A migrant is defined in similarly broad terms as any person who has moved from their habitual place of residence, regardless of the circumstances (**Table 1**). Migrants who are displaced as a result of conflict or violence are referred to as refugees, asylum seekers or internally displaced persons. Those who move primarily in search of employment or educational opportunities may be

referred to as labour migrants, economic migrants or simply as ‘migrants’, leading to confusion with the wider IOM definition of a migrant. In this thesis, the term *migrant* is used in its broadest sense to encompass any person who has resettled. This thesis focuses on two distinct groups of migrants from Myanmar living on the Thai-Myanmar border: *labour migrants*, who live and work in villages along both sides of the border, and *refugees*, who reside within established refugee camps on the Thai side of the border.

Table 1 Definitions of migrants and subgroups (IOM, 2007; IOM, 2011)

Category	Definition
Migrant	A person who has moved across an international border or within a state away from their habitual place of residence, regardless of their legal status; whether the movement is voluntary or involuntary; what the causes for the movement are; or what the length of the stay is.
Refugee	A person who, owing to a well-founded fear of persecution for reasons of race, religion, nationality, membership of a particular social group or political opinions, is outside the country of their nationality and unable or, owing to such fear, is unwilling to avail themselves of the protection of that country.
Internally displaced person	A person who has been forced to leave their place of habitual residence as a result of armed conflict, generalized violence, violations of human rights or natural or human-made disasters, and who has not crossed an internationally recognized state border.
Asylum seeker	A person who seeks safety from persecution or serious harm in a country other than their own and awaits a decision on the application for refugee status under relevant international and national instruments.
Labour migrant	A person who has migrated with a view to being employed or engaged in a remunerated activity. Those who move for work in their own country are ‘domestic’ or ‘internal’ labour migrants, while those who move for work to another country are ‘international’ labour migrants. Commonly also referred to as ‘economic migrants’ or ‘migrant workers’.

1.4.3 Drivers of migration

Drivers of migration are diverse (**Table 2**). In most cases, the decision to move is precipitated by an array of factors both within and beyond individuals' control, and as a result, the distinction between 'forcibly' displaced refugee populations and economically-motivated, 'voluntary' labour migrant populations has become increasingly blurred (Castles, 2003). The poverty and unemployment that compel people to leave their homes and seek employment elsewhere, for instance, are often the result of long-standing conflict and war. Similarly, 'push' factors attracting migrants to new locations do not occur in isolation but work alongside 'pull' factors to precipitate departure. Despite this complexity, much evidence and policy continues to differentiate between economic migration and 'forced' displacement, to the detriment of all displaced populations.

Table 2 Common drivers of migration (IOM, 2013)

Factor	Examples
Economic factors	Growing gaps in living standards and wages in origin countries can act as push factors, while comparatively higher standards of living, greater economic growth and employment opportunities in destination countries act as pull factors.
Demographic imbalances	Declining fertility and increased life expectancy in higher-income countries coupled with predominantly younger populations in low- and middle-income countries create an imbalance in demand and supply of labour, which can be a trigger for population movement.
Transitional networks	The emergence of organised migrant communities in destination countries can act as a social and cultural pull factor for relatives, friends and colleagues in origin countries.
Conflict	Conflict arising from ethnic or religious tensions, economic inequality or competition for natural resources and assets.
Environmental factors	Natural disasters such as earthquakes, floods, drought, and coastal erosion lead predominantly to internal migration.
Public services	Poor availability, quality and accessibility of public services such as education, health and social services can act as push or pull factors towards countries where these services are better and easier to access.
Governance	Corruption and human rights violations can drive populations to seek refuge and better opportunities elsewhere.

1.5 Perinatal depression

1.5.1 Definition and prevalence

Perinatal depression is a depressive episode of mild to major severity occurring during pregnancy or up to twelve months postnatally (Gavin et al, 2005; Gelaye et al, 2016). It is a major contributor to maternal morbidity and mortality (Gelaye et al, 2016; Howard et al, 2014). The social, psychological and hormonal changes that accompany pregnancy and the post-partum period can trigger the onset of new depressive episodes or the recurrence or exacerbation of pre-existing episodes, making this major life event a time of high-risk for women (Bennett et al, 2004; Gelaye et al, 2016). There is debate around

whether perinatal depression is phenomenologically distinct from depression occurring at other times of a woman's life (Patton et al, 2015; Woody et al, 2017). In epidemiological terms, however, and according to the major disease classification systems, perinatal depression is differentiated from other forms of depressive disorders only by its occurrence during the perinatal period (Howard et al, 2014). In this thesis, perinatal depression is used as a descriptive term to refer to depression during the perinatal period, and no attribution of causality is intended.

Prevalence estimates for perinatal depression vary according to geographical region, population characteristics and methodological issues such as the mode of assessment (Woody et al, 2017). One systematic review found that women in low- and middle-income countries were almost twice as likely to experience perinatal depression as women in high-income countries (OR 1.8; 95% CI 1.4–2.2) (Woody et al, 2017). In high-income countries, data from meta-analyses suggest that the prevalence of perinatal depression lies between 7.4% (Bennett et al, 2004) and 18.4% (Gavin et al, 2005) in pregnancy and between 9.5% (Woody et al, 2017) and 19.2% (Gavin et al, 2005) post-partum. In low- and middle-income countries, estimates range from 15.6% (Fisher et al, 2012) to 25.3% (Gelaye et al, 2016) in pregnancy and from 10.8% (Fisher et al, 2012) to 19.0% (Gelaye et al, 2016) post-partum. Prevalence estimates from meta-analyses are summarised in **Table 3**. These pooled estimates mask significant variability between countries: one review of 143 studies reported postnatal depression prevalence rates ranging from 0.5% in Singapore to 57.0% in Guyana (Halbreich & Karkun, 2006). Another review of 203 studies found ranges of 1.9 to 82.1% in high-income countries and 5.2 to 74.0% in low- and middle-income countries (Norhayati et al, 2015). Further

differences are seen according to socio-economic or ethnic background (Halbreich & Karkun, 2006; Zlotnick et al, 2001).

Table 3 Prevalence of perinatal depression: estimates from meta-analyses

Setting and study	Pooled prevalence of perinatal depression	
	Pregnancy	Post-partum
High-income countries O'Hara <i>et al.</i> 1996 Gavin <i>et al.</i> 2005 Bennet <i>et al.</i> 2004 Woody <i>et al.</i> 2017	- 18.4% 7.4%–12.8% 9.2 (8.4-10.0)	13.0% 19.2% - 9.5 (8.9-10.1)
Low- and middle-income countries Fisher <i>et al.</i> 2012 [†] Gelaye <i>et al.</i> 2016 Woody <i>et al.</i> 2017	15.6% 25.3% 19.2% (18.0-20.5)	19.8% 19.0% 18.7% (17.8-19.7)
All countries Underwood <i>et al.</i> 2016	17.2%	13.1%

[†] Fisher *et al.* (2012) report the prevalence of common mental disorders (depression, anxiety and post-traumatic stress disorder)

1.5.2 Risk factors for perinatal depression

Risk factors for perinatal mental disorders are complex, spanning biological, psychological, obstetric, socio-demographic and cultural factors, as summarised in **Table 4** (Fisher et al, 2012; Gelaye et al, 2016; Halbreich & Karkun, 2006; Howard et al, 2014; Norhayati et al, 2015). Conditions of socio-economic disadvantage have consistently been associated with perinatal depression, and women living in poverty are at higher risk across high-income and low-income countries alike (Norhayati et al, 2015). There is much evidence around the association between interpersonal violence and perinatal depression – an important consideration given that pregnancy in itself is a time of greater

risk of interpersonal violence (Halim et al, 2017). Prior psychopathology also increases women's risk of perinatal depression, and antenatal depression has consistently been identified as one of the strongest predictors of postnatal depression (Norhayati et al, 2015). A number of cultural factors have been implicated including infant gender and adherence to traditional post-partum practices, though these associations appear to be context-specific. The availability, accessibility and quality of health systems play an important role in the detection and appropriate management of perinatal depression.

Table 4 Risk factors for perinatal depression (Fisher et al, 2012; Gelaye et al, 2016; Halbreich & Karkun, 2006; Howard et al, 2014; Norhayati et al, 2015)

Category	Risk factors
Biological	Maternal age (both lower age and higher age) Genetic and hormonal susceptibility Chronic physical illness
Psychological	Prior psychopathology Personality traits (e.g. neuroticism) Stressful life events
Socio-demographic factors	Socio-economic disadvantage (relative and absolute) Minority ethnic status Low educational attainment Psychological, physical and sexual abuse Single relationship status or poor relationship quality Low level, low quality or perceived insufficiency of social support
Cultural factors	Gender preference for male babies Traditional post-partum practices (e.g. post-partum seclusion)
Obstetric and paediatric	Current or previous pregnancy complications Unplanned pregnancy Mode of delivery (instrumental) Parity
Health systems factors	Access to perinatal care Quality of care available Availability of perinatal support services Time and resources to seek health service

1.5.3 Consequences of perinatal depression

The consequences of untreated perinatal depression are potentially serious, long-lasting and wide-reaching. Depression in pregnancy is associated with a number of negative health behaviours including poor nutrition, substance use and lower uptake of antenatal care (Gelaye et al, 2016). Perinatal depression predisposes women to chronic and recurrent depression, and women with antenatal depression often continue their symptoms post-partum (Gelaye et al, 2016; Howard et al, 2014). At its most severe, depression is an important risk factor for suicide, a significant contributor to maternal deaths globally (Fellmeth et al, 2016c; Khalifeh et al, 2016; Knight et al, 2016). By impairing a woman's ability to work and provide care, perinatal depression can further exacerbate mental as well as economic and social well-being (Howard et al, 2014). Relationships are at risk as depression is associated with conflict with partners, and some evidence suggests partners of depressed women are more likely to experience depression themselves (Stein et al, 2014).

There are also important psychological and developmental consequences for children. Perinatal depression has been associated with premature delivery, low birthweight, poor infant growth and childhood stunting (Grigoriadis et al, 2013; Grote et al, 2010; Stein et al, 2014). In low- and middle-income countries, perinatal depression is associated with higher rates of diarrhoeal and febrile diseases and reduced rates of breastfeeding, which may further impair child growth (Grigoriadis et al, 2013; Stein et al, 2014). Emotional difficulties, insecure attachments, poor social development, a reduced ability to learn and an increased risk of clinical depression in adolescence have also been observed in children of depressed mothers, especially when maternal depression is persistent (Pearson et al, 2013; Stein et al, 2014). Mechanisms for these effects are likely to be a

combination of genetic, environmental and parenting factors (Stein et al, 2014). Overall, the effects of perinatal depression on children are most severe in low- and middle-income settings where co-morbidity with other illnesses and exposure to additional socio-economic adversities are higher (Stein et al, 2014).

1.5.4 Management of perinatal depression

Evidence-based psychological and psychosocial interventions have been effective in treating perinatal depression (Dennis & Hodnett, 2007; Thornicroft & Patel, 2014). In low- and middle-income settings, trained non-specialists such as community health workers or peer supporters can deliver these interventions with good results (Rahman et al, 2013; van Ginneken et al, 2013). Evidence around the safety of antidepressant treatment during pregnancy and post-partum is limited, especially with regards to long-term effects on infants (Howard et al, 2014; Molyneaux et al, 2014). Although the risk of adverse consequences appears to be small, benefits and risks must be considered on an individual basis when considering the use of antidepressants in pregnant and post-partum women (Howard et al, 2014; Molyneaux et al, 2014).

Despite these effective management options, perinatal depression remains under-recognised and under-treated, especially in low- and middle-income countries where there is often a lack of awareness and persisting stigma around perinatal mental disorders. The scarcity of resources in such settings also diverts attention from competing obstetric issues. Given that pregnancy and the post-partum period are times of increased contact with health services, the perinatal period offers a valuable opportunity for case identification (Gavin et al, 2005). The early identification of perinatal depression

alongside effective management options are critical to minimising suffering and adverse consequences of perinatal depression (Gelaye et al, 2016; Howard et al, 2014).

1.6 Mental health of migrant populations

1.6.1 Migrant mental health

The health of migrant populations is determined by a wide array of factors including stressors experienced before, during and after migration (Bateman Steel & Zwi, 2015; IOM, 2015; Schweitzer et al, 2011; WHO et al, 2013; Zimmerman et al, 2011). It is increasingly recognised that migration can adversely affect mental health. Experiences such as poverty and conflict prior to displacement, arduous transit journeys which may include exploitation, trafficking and violence, and on-going hardships after resettlement are common among migrant populations, and can increase migrants' vulnerability to mental health disorders (Shishehgar et al, 2017). Although displacement resulting from war, conflict or natural disasters is often associated with particular challenges, even planned migration can cause significant distress, for example through separation from families and friends, exploitation, discrimination and violence (IOM, 2015; Meyer et al, 2016). Lack of proficiency in the host language and cultural differences can lead to loneliness, isolation and social exclusion (Shishehgar et al, 2017). Pre-existing vulnerabilities thus work alongside on-going life stressors and a loss of cultural, social, material and personal resources to create a high-risk situation for migrant populations (IOM, 2015).

The socio-economic context within which migration occurs plays an important role in determining mental health outcomes. The post-migration environment is emerging as one of the most significant predictors of migrants' mental health (Li et al, 2016). Migrants

who resettle in low- and middle-income regions, particularly those who are low-skilled, report the lowest levels of mental health and well-being after migration (IOM, 2013; IOM, 2015; WHO et al, 2013). On-going poor living conditions, socio-economic inequalities and poor access to health and social care exacerbate the mental health of migrant communities in low-income destination settings (Bateman Steel & Zwi, 2015; IOM, 2015). Existing infrastructure in destination countries also varies greatly and can shape the levels of stability, security and access to health and social services that migrant populations experience (Bateman Steel & Zwi, 2015) (IOM, 2015; Murray et al, 2008; WHO et al, 2013). Finally, legal, cultural and social barriers can impair access to resources, services and opportunities in the destination location spanning employment, housing, healthcare, education and social support, further contributing to the marginalisation and vulnerability of migrant communities (IOM, 2015).

1.6.2 Migrant perinatal mental health

Migrant women are likely to experience many of the risk factors listed in **Table 4**, placing them at high-risk of developing perinatal depression (Collins et al, 2011; Morrow et al, 2008; Norhayati et al, 2015). Migrant women are more likely than non-migrants to experience poor social support, violence, poverty, adverse health conditions and discrimination (Shishehgar et al, 2017). Pregnancy and motherhood bring with them the challenges of caring for a new being, and doing this without adequate social support infrastructure whilst navigating an unfamiliar culture and health system poses many challenges (Shishehgar et al, 2017). One review of postnatal depression symptoms among migrant women resettled in high-income countries reported prevalence rates between 24% and 42% (Collins et al, 2011). A meta-analysis of 53 studies found that migrant women in Canada were almost twice as likely to experience symptoms of

perinatal depression compared to non-migrant counterparts (OR 1.86, 95% CI 1.3–2.6 for antenatal symptoms; OR 2.0, 95% CI 1.6–2.5 for postnatal symptoms) (Anderson et al, 2017). Both of these reviews focused on women who migrated from low- and middle-income origin countries to high-income destination countries. Women migrating from one low-income setting to another low-income setting may face relatively greater challenges due to a greater likelihood of continued socio-economic adversity and poorer health and social support infrastructure in place at their destination.

1.7 The Thai-Myanmar border

1.7.1 Geography and population

The Republic of the Union of Myanmar (Burma) is a Southeast Asian state bordered by Bangladesh, India, China, Laos and Thailand. Myanmar is an ethnically diverse nation: its estimated population of 54 million includes 135 recognised distinct ethnic groups and a number of unrecognised groups such as the Rohingya (United Nations Statistics Division, 2015). Each ethnic group has its own history, culture, traditions and language. The majority ethnic group are the Burman, who constitute 68% of the population, followed by the Shan (9%) and Karen (7%). Burmese is the official state language and Buddhism the predominant religion. Despite being rich in gemstones, oil and natural gas Myanmar ranks 140th out of 188 countries in the Human Development Index, and its income gap is among the widest in the world (UNDP, 2015).

1.7.2 Historical context

Myanmar was under colonial British rule for much of the 19th century. Following the Second World War, Myanmar gained independence and became a democratic nation in

1948. In 1962, the government was overthrown by a military coup d'état, and military dictatorship rule ensued for the following five decades. In 1988, a democratic election was held. The National League for Democracy, under the leadership of Aung San Suu Kyi, won the popular vote, but election results were quashed by the government. Aung San Suu Kyi was placed under house arrest, and ensuing student protests were met with bloodshed by the military. The 1988 uprising represented the first in a series of mass population movement into neighbouring Thailand. In 2011 a civilian government was installed and a number of democratic, political and economic reforms began, but control was largely retained by the military. In 2015 the National League for Democracy won a majority victory and in March 2016 the first democratically-elected parliament since 1962 was convened.

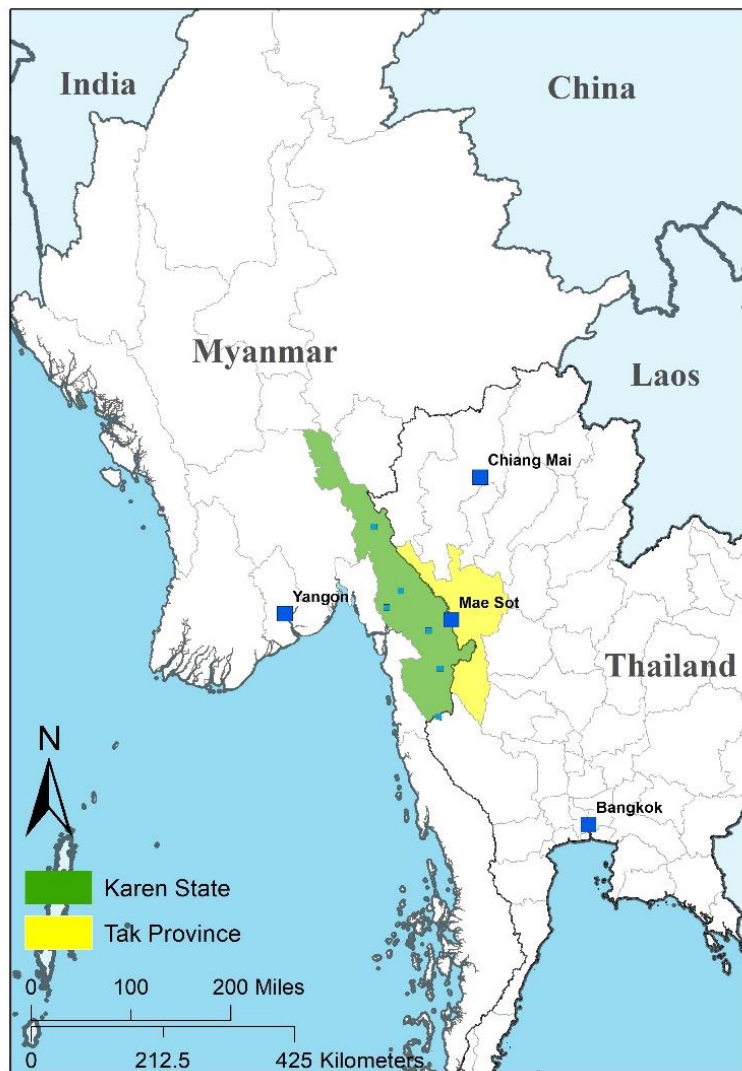
For the past six decades Myanmar has seen continued conflict between the ethnic Burman-dominated central government and the country's multiple ethnic minority groups, many of whom are armed. The causes of this conflict are complex. Minority groups are under-represented within central government, and many of these groups seek autonomy and self-governance. The Karen – the main ethnic group represented within this thesis – sided with British forces during the Second World War in return for a promise of an independent Karen State at the end of the war. When British forces left, the Karen were left in a state of limbo, and their struggle for independence continues to this day. More generally, the central government has confiscated much of the resource-rich land where ethnic minority groups live for development projects and resource exploitation. The conflict – regarded as one of the world's most protracted refugee situations – has included systematic human rights abuses perpetrated by both the central government and armed ethnic groups ranging from the persecution to forced conscription

and the imprisonment and torture of political activists (UNHCR, 2004). Despite a ceasefire agreement signed in 2012, fighting continues across many states.

1.7.3 Displaced communities: refugees and labour migrants

Decades of conflict in Myanmar have resulted in large-scale population displacement internally and into neighbouring countries. The Thai-Myanmar border is home to an estimated 200,000 migrants and an additional 145,000 refugees (Dunlop, 2011; Pearson & Kusakabe, 2012). In Tak Province, Thailand, where the current study is based, the majority of displaced populations are Karen, originally from Karen State, which neighbours the western border of Thailand (**Figure 1**). The two main subgroups of Karen in this region are the Poe Karen and Sgaw Karen, each with their own language. Other ethnic groups in this area include the Burman – who are affected by the conflict despite their majority ethnic status – and Burman Muslim. Displaced populations along the border are categorised either as refugees or labour migrants. There are important similarities as well as differences between these two groups.

Figure 1. Map of the Thai-Myanmar border area (Credit: Myo Chit Win, SMRU)



Refugee populations on the Thai-Myanmar border

Refugees in this region currently live in one of nine established refugee camps on the Thai side of the border. The largest camp, Maela, is home to 38,000 residents (The Border Consortium, 2016). Refugees cite a variety of reasons for leaving Myanmar, including persecution, destruction of homes and livelihoods as a consequence of conflict, generalised poverty and a lack of opportunities for employment and education (Salisbury et al, 2016). Refugees in these camps receive a basic package of aid and support, with a number of international non-governmental organisations and community-based

organisations providing healthcare, education, food rations and housing. The IOM and the United Nations Refugee Agency (UNHCR) have led what constitutes the largest-ever repatriation programme to help refugees repatriate to Myanmar or resettle to ‘third’ countries such as Australia, the USA and the UK, though only a minority of camp residents have the opportunity of registering for such resettlement schemes. The Thai government does not officially recognise this population’s refugee status, and although the camps provide a degree of security, residents have limited opportunities for employment, and movement into and out of the camp is highly restricted. Many of the younger generation were born within the camps and have never left the camp perimeter nor visited their ‘home’ country of Myanmar. Such long-standing refugee situations are becoming increasingly common globally as a result of complex and protracted situations of political instability and the challenges involved in resolving them (UNHCR, 2016b).

Labour migrant populations on the Thai-Myanmar border

In contrast to the refugee population, the labour migrant population in this region resides and works in rural villages on both sides of the border, rather than within camps. Labour migrants often make daily commutes across the Moei River which constitutes the border between Myanmar and Thailand. The main drivers for migration among labour migrants are the lack of employment opportunities in Myanmar and the relatively greater work opportunities and higher wages offered in Thailand. Accordingly, most labour migrants opt to live outside of the established refugee camps in order to be able to seek paid employment. Though the more immediate drivers of migration differ between labour migrants and refugees, the root causes of displacement for the two groups overlap significantly, especially given that the dearth of employment opportunities in Myanmar is largely the result of long-standing conflict and land confiscation.

Among rural labour migrant populations in this area, the main employment sector is seasonal agricultural work such as corn picking and rice planting and harvesting. This differs from labour migrants in urban centres who seek work in manufacturing and service industries. In rural areas, labour migrants are paid daily wages significantly below Thailand's legal minimum wage (Meyer et al, 2016). Incomes are precarious, especially during the dry season when less work is available. Most labour migrants are unregistered, meaning they have illegal status in Thailand and are not entitled to Thai government-provided healthcare, social services or education. This lack of access to services in Thailand is compounded by services on the Myanmar side of the border being scarce and of poor quality. Labour migrants are vulnerable to fines, arrest and deportation by the Thai authorities. The lack of entitlement to schooling for their children perpetuates the cycle of poverty into the next generation, contrasting with the situation of refugee children in this setting, for whom educational opportunities are much more accessible.

Refugees and labour migrants: similarities and differences

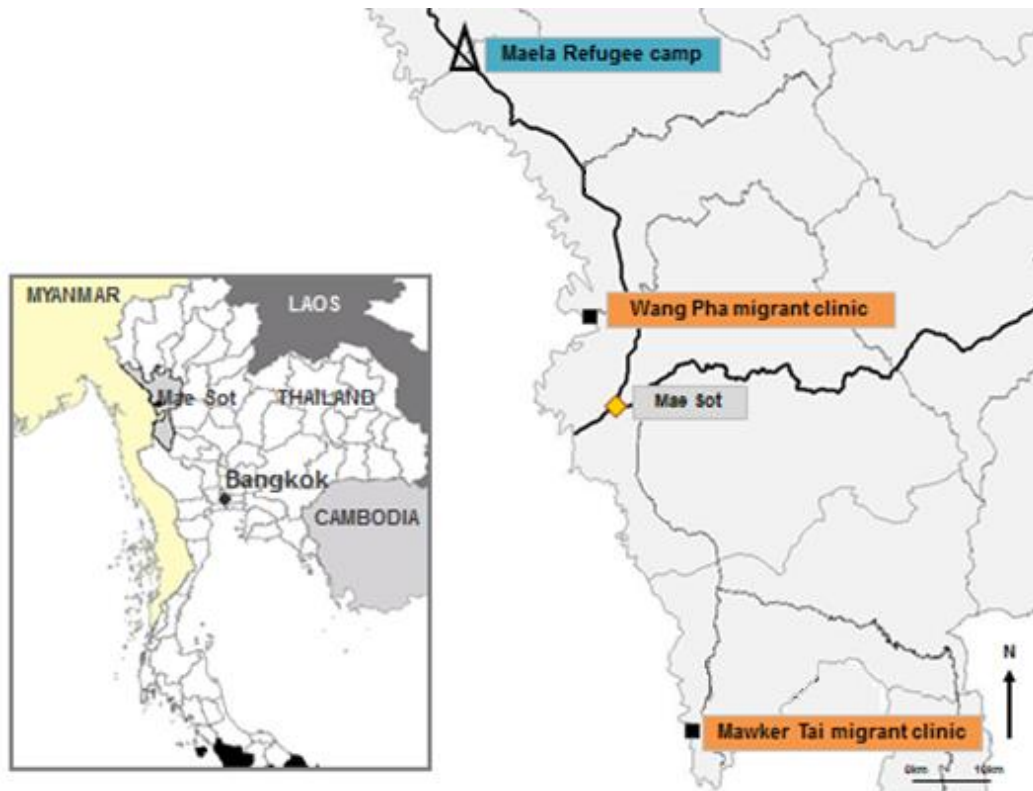
Both refugees and labour migrants in this region live in socially and economically challenging conditions. While refugees have many of their basic needs for housing and food met in the camp setting, they lack the opportunity to earn an income and to move freely into and out of the camp. Though many refugees view resettlement as an opportunity to improve their life chances, the psychological impacts of the long selection process, the lack of control over one's own future and the challenges of moving to an unknown 'third' country are often underestimated. Since the end of military rule in Myanmar in 2016, UNHCR is no longer accepting resettlement applications, and this in itself has caused much despair and uncertainty among the refugee community. In comparison, labour migrants face a different set of challenges. Though they experience

relatively greater freedom of movement and opportunities for work, their day-to-day living situations are more precarious. Labour migrants engage in daily labour that is physically arduous, insecure, seasonal and severely under-paid. The continuous psychological stresses of arrest and potential deportation by Thai authorities are also significant. Thus each group carries its own advantages and disadvantages relative to the other.

1.7.4 Shoklo Malaria Research Unit

The Shoklo Malaria Research Unit (SMRU) is a field station of the Mahidol-Oxford Tropical Medicine Research Unit (MORU), a research collaboration between Mahidol University (Thailand), Oxford University (UK) and the Wellcome Trust. Based in Tak Province on the Thai-Myanmar border, SMRU has carried out research and provided maternity services in this area since 1986. SMRU runs three clinics along the border, 30–60 kilometres north and south of the town of Mae Sot. Healthcare services are provided to refugee women and infants in Maela camp and to rural labour migrant families at clinics in Mawker Tai and Wang Pha (**Figure 2**). The current study was conducted at all three of these sites.

Figure 2. Map of SMRU refugee (Δ) and labour migrant clinics (■) (Credit: Dr Verena Carrara, SMRU)



1.7.5 Mental health and perinatal depression on the Thai-Myanmar border

Mental health has received scant attention on the Thai-Myanmar border. Until recently, malaria was the most common cause of maternal mortality and morbidity in this region (McGready et al, 2012). A notable decline in malaria – due largely to the efforts of SMRU over the past three decades – has resulted in an increased focus on chronic and non-communicable diseases. But despite this epidemiological shift, mental health disorders remain a neglected area due to stigmatisation and a low awareness among health professionals and the general community. Previous work conducted among Karenni refugees living in refugee camps near Mae Hong Son in Northern Thailand found a high prevalence of symptoms of mental disorders: 41% of adults reported symptoms of depression and 42% reported symptoms of anxiety (Lopes Cardozo et al,

2004). A study of Burmese political dissidents in Bangkok found a prevalence of depression symptoms of 38% in 1996 (Allden et al, 1996). More recently, however, a study of Karen adults in Karen State (Myanmar) found that only five percent screened positive for depression (Parmar et al, 2015).

These conflicting findings highlight the uncertainty around true estimates of depression prevalence. Specifically, depression among pregnant and post-partum women has not been systematically studied in this setting. Suicide is a significant contributor to maternal mortality in this region: between 1998 and 2015, suicide accounted for 9% (6/65) of maternal deaths (Fellmeth et al, 2016c). An improved understanding of perinatal depression – including its prevalence, the risk factors associated with it and the lived experiences of the condition in this low-income, migrant setting – is therefore of importance.

1.8 Research rationale

Perinatal depression is common and can have serious and long-standing consequences for women, their children and their families. Migrant women are at risk of perinatal depression due to an array of stressors experienced throughout the migration trajectory. Evidence around perinatal mental health of migrant women who have resettled from one low-income setting to another, and whose needs are likely to differ significantly from those relocating to high-income destination countries, is lacking. This research addresses the significant evidence gap by examining perinatal mental disorders in women who have migrated from Myanmar to the Thai-Myanmar border.

In low- and middle-income countries the treatment gap for mental disorders is high, and there is an urgent need to improve recognition and treatment of these conditions. An improved understanding of perinatal depression is essential for enabling better support for women suffering from the condition. Reliable data on the prevalence of perinatal depression can enable quantification of the disease burden in the local population and justify the need for mental health services. An understanding of risk factors for perinatal depression in this particular setting may help to target resources and optimise prevention and treatment efforts (Bennett et al, 2004). Combined with appropriate counselling, referral and management mechanisms, an improved understanding of the prevalence, risk factors and experiences of perinatal depression can contribute to the improvement of women's experiences of pregnancy and the postpartum period.

1.9 Research aim and objectives

1.9.1 Aim

The overarching aim of this research is to provide evidence to improve the understanding of perinatal depression among migrants in a low-income setting, thereby enabling better identification and support of women suffering from the condition in these regions.

1.9.2 Objectives

The specific objectives of the research are to:

1. Review the existing evidence around perinatal depression among migrant women from low- and middle-income settings;

2. Identify an appropriate tool to assess perinatal depression among labour migrant and refugee women on the Thai-Myanmar border;
3. Determine the prevalence of perinatal depression at different stages of the perinatal period in this setting;
4. Identify socio-demographic and clinical factors associated with perinatal depression;
5. Explore women's experiences of perinatal depression in this socio-economic and cultural context; and
6. Explore options for managing perinatal depression and develop recommendations for policy and practice in this setting.

1.10 Ethical approval

Ethical approval for this research was sought from the University of Oxford, UK, where the author was registered as a doctoral candidate, and Mahidol University, Bangkok, which oversees all research studies carried out at SMRU, where the study was carried out. In addition, approval was sought from the Tak Border Community Advisory Board (T-CAB), a committee of community representatives on the Thai-Myanmar border who review the ethics, applicability, relevance and appropriateness of research proposals involving the local population (Maung Lwin et al, 2014). Final approval was granted by the University of Oxford Tropical Research Ethics Committee (OxTREC 28-15), the Mahidol University Faculty of Tropical Medicine Ethics Committee (TMEC 15-045) and

the Tak Border Community Advisory Board (T-CAB 6/2/2015) prior to the start of the study.

1.11 Organisation of component studies

The aim and objectives are achieved using a sequential exploratory mixed-methods design. This research consists of the following five study components:

1. A systematic literature review of the evidence on perinatal mental health disorders among migrant women from low- and middle-income countries. The methods and results of this study component are presented in Chapter 2.
2. A validation study to identify and establish the validity of a culturally-acceptable and appropriate screening tool for perinatal depression on the Thai-Myanmar border. The methods and results of this study component are presented in Chapter 3.
3. A prospective cohort study of migrant women on the Thai-Myanmar border from the first trimester of pregnancy through to one month post-partum. The methods of this study component are presented in Chapter 4, and results are presented in Chapters 5 and 6.
4. A qualitative study of women with severe depression to elicit insights into women's experiences of depression in this context. The results of this study component are presented in Chapter 7.

5. An informal exploration of selected stakeholders' views to understand priorities and inform recommendations for policy and practice. Results of this study component are incorporated into Chapter 8.

The objectives addressed by each study component are summarised in **Table 5**.

Table 5 Research objectives addressed by individual study components

Study component	Objective addressed	Description
Systematic literature review	1	The systematic literature review sought to provide an overview of existing evidence around perinatal depression among migrant women from low- and middle-income settings.
Validation study	2	It was necessary to find a culturally appropriate and valid tool with which to identify women with perinatal depression in this setting. The validation study component tested two potential screening tools.
Prospective cohort study	3 & 4	The prospective cohort study established the prevalence of depression and identified factors associated with depression. Repeated measurements through the perinatal period provided information on the time of greatest risk and thereby informed decisions on optimal timing of screening.
Qualitative study	4 & 5	The qualitative study component provided in-depth understanding of women's experiences of living with severe depression in this setting, and further insight into broader socio-economic factors associated with depression.
Stakeholder views	6	Interviews with stakeholders explored options for the management of perinatal depression in this setting and informed the policy recommendations arising from the study.

A mixed-methods approach was selected for this study for a number of reasons. Firstly, the study of complex phenomena such as perinatal depression can benefit from such an approach. This is exemplified by individual study objectives each benefitting from different methodologies. For example, establishing the prevalence of and risk factors for perinatal depression required a quantitative approach whereas understanding the

experiences of women living with depression was best elicited using a qualitative approach. A mixed-methods design was therefore deemed the most appropriate means of achieving the overall aims of the research. Secondly, the qualitative components allowed findings from the quantitative component to be contextualised and explored in greater depth, enabling a more meaningful understanding of the complex nature of depression, its associated factors and its ramifications in this setting (Cresswell, 2009). The sequential exploratory design allowed findings emerging from the cohort study to be used to inform the structure and development of the interview guide for the subsequent in-depth interviews (Cresswell, 2009). Finally, the integration of multiple and diverse methods allowed for a deeper, broader and enriched understanding of perinatal depression than would be possible through single-method research.

1.12 Chapter summary

Migrant women who are pregnant or post-partum are at risk of developing perinatal depression as a result of stressors experienced before, during and after migration. Although the vast majority of migrants globally move within low- and middle-income regions, populations living in these regions are severely under-represented in the current literature. This research seeks to address this evidence gap by quantifying and exploring the experiences of perinatal depression among migrant women in the resource-poor setting of the Thai-Myanmar border. Perinatal mental health has not previously been studied in this region. A mixed-methods approach is applied, and the research objectives are addressed through five component studies which are described in the following chapters.

Chapter 2.

Systematic literature review

2.1 Chapter overview

This chapter presents the methods and findings of a systematic literature review of migrant perinatal mental health. The systematic review synthesises evidence around the prevalence, risk factors and interventions for any perinatal mental disorders in migrant women from low- and middle-income countries. Perinatal depression emerged as an important and common condition among migrant women, and a number of risk factors including a history of depression and low levels of social support were identified. Studies conducted in low- and middle-income destination countries were severely lacking, representing a significant gap in the current evidence.

2.2 Aims

This systematic review of the literature aims to provide a comprehensive overview of the evidence on the prevalence, risk factors and interventions for perinatal mental health disorders including depression, anxiety and post-traumatic stress disorder in migrant women originating from low- and middle-income countries. It seeks to address the following questions:

1. How common are perinatal mental health disorders among migrant women from low- and middle-income countries?

2. What are the risk factors for perinatal mental health disorders among migrant women from low- and middle-income countries?
3. Which interventions are effective in the prevention and/or treatment of perinatal mental health disorders among migrant women from low- and middle-income countries?
4. Where are the gaps in the current evidence base around migrant perinatal mental health?

2.3 Methods

2.3.1 Search strategy and selection criteria

A systematic search of nine electronic databases was conducted to identify studies of mental disorders in pregnant and post-partum migrant women (including labour migrants, refugees, asylum seekers and displaced persons) originating from low- and middle-income countries as defined by the World Bank. A search strategy was devised using combinations of free text and keywords and adapted for each database. The search strategy and databases searched are shown in **Table 6**. Additional strategies included hand-searching of key journals; screening of publications from relevant organisations such as IOM, UNHCR and the World Health Organization (WHO); and searching of population datasets such as the Global Burden of Disease and the UK Millennium Cohort Study databases. Reference lists of included studies were also screened for further potentially relevant articles. The review was registered on PROSPERO (CRD42013005929). The search was conducted in January 2015.

Table 6 Electronic databases searched and search strategy used for systematic literature review

Electronic databases searched Cumulative Index to Nursing and Allied Health Literature (CINAHL); EMBASE; Francis; Global Health; Medline; PsycINFO; Scopus; Web of Knowledge; and Web of Science
Search strategy A search strategy was developed and adapted for each database using combinations of free text and keywords (including MeSH headings) relating to psychiatric illnesses (“mental health”, “mental illness*”, “mental disorder*”, “depress*”, “anxiety”, “psycho*”, “psychiatry*”, “trauma*”, “stress*”), pregnant or post-partum status (“pregnant”, “pregnancy”, “postnatal”, “postpartum”, “perinatal”, “antenatal”, “puerper*”) and migration status (“migrant*”, “emigrant*”, “immigrant*”, “migration”, “refugee*”, “displaced person*”, “displaced people*”, “asylum seeker*”, “foreign*”, “non-native*”). No restrictions were applied on the basis of country or low- or middle-income country focus within the search strategy.

2.3.2 *Inclusion and exclusion criteria*

In order to be included, studies or datasets had to meet the criteria listed in **Table 7**.

Studies of internal migrants, qualitative studies and studies in which outcome assessment tools were not described were excluded in order to minimise reporting and selection bias. No language or date restrictions were applied.

Table 7 Inclusion criteria for systematic literature review

Inclusion criteria for all studies

- Study should be a case-control, cross-sectional, cohort or intervention study
- Study should assess prevalence, risk factors or interventions for any mental disorder (including anxiety, mood and psychotic disorders)
- Assessment of mental disorder should be made using a diagnostic interview or standardised and valid screening tool
- Participants should be women who are pregnant or up to 12 months post-partum
- Participants should be first generation, international migrant women originating from low- and middle-income countries
- Studies should include a minimum of 20 participants

Additional criteria for risk factor and intervention studies

- Studies should include an appropriate comparison group
- Results should be presented as odds ratios or in a form that enables odds ratios to be calculated (e.g. raw proportions)

2.3.3 Screening

Titles and abstracts of all papers identified were screened by the author. Full texts were obtained for all potentially relevant studies. Full text screening was conducted by the author, and a random twenty percent sample of full texts were independently screened by a member of the author's supervisory team to ensure accuracy. Full texts were classified either as included or excluded. For those studies that were double-screened, results were compared and any discrepancies were resolved through discussion and reference to the full text. When insufficient information was available (for example, if participants' pregnancy or migration status were not clearly defined) or if a combination of eligible and ineligible participants were included (for example, women from high-income as well as low- and middle-income origin countries; or women within as well as beyond twelve months post-partum), the authors of individual studies were contacted and asked whether they might be able to provide disaggregated results.

2.3.4 *Data extraction*

Data extraction forms for prevalence, risk factor and intervention studies were developed by the author and comprised information on study design, participant characteristics and outcome assessment as well as measures of effect (raw proportions, mean scores and odds ratios) (**Appendices 4–6**). Data from each of the studies included in the review was extracted independently by the author and one member of the supervisory team. Results were compared and disagreements were resolved through discussion, reference to the text and, when necessary, communication with study authors.

2.3.5 *Quality assessment*

The quality of each included study was assessed independently by the author and one member of the supervisory team. The quality of prevalence and risk factor studies was assessed using scoring criteria devised by the author and based upon the Newcastle-Ottawa Scale (**Appendices 7 and 8**) (Wells et al, 2011). Aspects assessed included the quality of participant selection, participant representativeness and the reliability of outcome assessment. Possible scores ranged from 0 (poorest quality) to 14 (highest quality) for prevalence studies and from 0 to 18 for risk factor studies. The quality of intervention studies was assessed using the Cochrane Collaboration's GRADE tool, which scores the risk of selection, performance, attrition and reporting bias as high, low or unclear (Deeks et al, 2011).

2.3.6 Analysis

Prevalence studies

The characteristics and findings of individual studies were summarised in a pre-specified table. Heterogeneity between studies was estimated using the I^2 statistic and pre-specified sub-group analyses according to participants' region of origin, destination country, migrant category and study quality were conducted to identify possibly sources of heterogeneity. Because heterogeneity was significant ($I^2 > 80\%$) and remained high in subgroup analyses, it was decided that statistical synthesis of results was not appropriate (Higgins et al, 2011).

Studies that used comparable methods of assessment were included in funnel plots to look for evidence of publication bias. Studies were considered to have comparable assessment methods if they used standardised measurement instruments and applied a standard threshold which made comparison with other instruments possible. Specifically, studies that used the Edinburgh Postnatal Depression Scale (EPDS), Center for Epidemiologic Studies Depression Scale (CES-D), Beck Depression Inventory (BDI-II) or Postpartum Depression Screening Scale (PDSS) with the following cut-offs were assessed together, as high correlation between these scales has been demonstrated previously (Chaudron et al, 2010; Tandon et al, 2012):

- Symptoms of minor or major depression (moderate-severe depression):
 - EPDS ≥ 10
 - CES-D ≥ 16
 - BDI-II ≥ 14
 - PDSS ≥ 60
- Symptoms of major depression (severe depression) only:
 - EPDS ≥ 13
 - CES-D ≥ 24
 - BDI-II ≥ 20
 - PDSS ≥ 80

Prevalence rates of perinatal depression and their corresponding 95% confidence intervals (95% CI) were summarised in Forest plots without a pooled prevalence measure in order to provide a visual overview of results. Separate forest plots were generated for studies which reported symptoms of minor or major depression, termed *moderate-severe depression*, and those which reported symptoms of major depression alone, termed *severe depression*. Forest plots were generated using *MetaXL* version 5.3 (MetaXL, 2016). Results of prevalence studies that assessed outcomes other than depression were summarised narratively as the small number of studies and different measurement tools used limited the capacity to pool results.

Risk factor studies

The small number of studies that assessed each risk factor precluded meta-analysis. Risk factors for perinatal depression were examined by classifying effect estimates according to their size and direction of effect. This enabled the consistency of effect estimates to be assessed (Cohen, 1988). Odds ratios were used as the effect estimate. When these were not reported or calculable, study authors were contacted. Unadjusted odds ratios were used in order to maximise comparability, as different studies controlled for different

factors in their adjusted analyses, limiting the comparability of adjusted results across studies. Odds ratios of 1.6, 3.1 and 5.7 were used as equivalents of Cohen's *d* values of 0.2 (small effect), 0.5 (medium effect) and 0.8 (large effect), respectively (Cohen, 1988). Risk factors for perinatal anxiety and other outcomes were summarised narratively.

Intervention studies

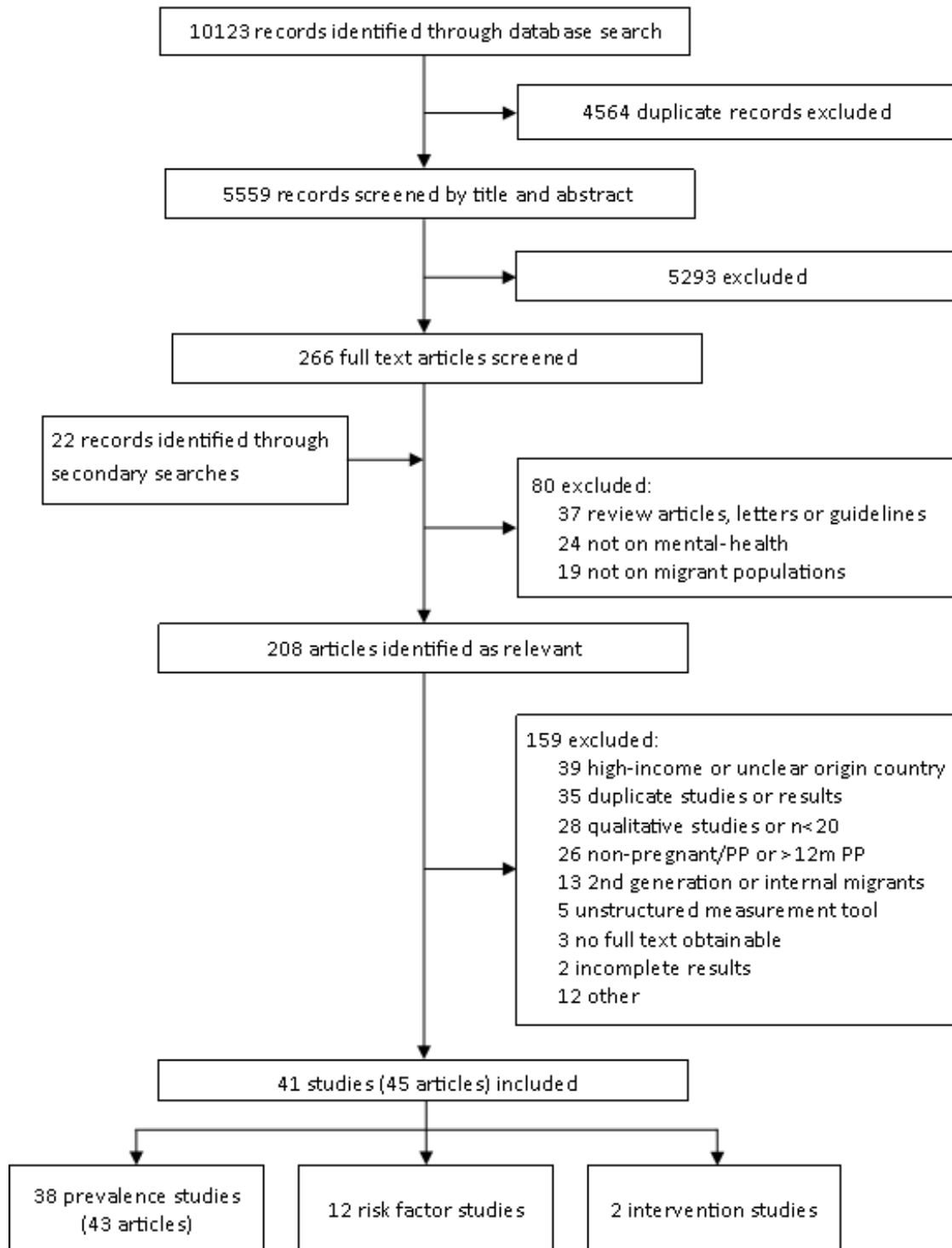
The very small number of intervention studies that met the inclusion criteria precluded pooling of results. A narrative summary of intervention study results is presented.

2.4 Results

2.4.1 Results of the literature search

The initial search identified 5,559 articles (excluding duplicates), of which 208 were considered potentially relevant on the basis of titles and abstracts (**Figure 3**). The authors of eighty-one studies were contacted to determine if their studies could be included. Of these, 65 replied, of whom 21 supplied the additional information required for inclusion in the review. Following full text screening, 41 studies were included.

Figure 3 Flow chart of studies identified in systematic literature review



2.4.2 *Characteristics of included studies*

Forty-one studies comprising a total of 19,349 women (7895 migrant women and 11,454 non-migrant controls) were included (Abbott & Williams, 2006; Alati et al, 2004; Bennett et al, 2007; Bjerke et al, 2008; Chen et al, 2013; Chen et al, 2012; Cheng & Pickler, 2009; Cheng et al, 2013; Chien et al, 2012; Choi et al, 2012; Dankner et al, 2000; Davey et al, 2011; Davila et al, 2009; Elo & Culhane, 2010; Fabian et al, 2008; Fan, 2008; Gagnon et al, 2013; Ganann et al, 2012; Gonidakis, 2012; Goyal et al, 2006; Hassert & Kurpius, 2011; Hesselink et al, 2012; Huang & Mathers, 2008; Hung et al, 2012; John, 2008; Kieffer et al, 2013; Lara et al, 2009; Le et al, 2011; Lee, 2009; Lucero et al, 2012; Luecken et al, 2013; Manber et al, 2013; Matthey et al, 1997; Matthey et al, 1999; Miskurka et al, 2010; Mora et al, 2009; Munoz et al, 2007; Ruiz et al, 2012; Shafiei et al, 2011; Small et al, 2003; Stewart et al, 2008; Stuchbery et al, 1998; Turella et al, 2010; Valentine et al, 2011; Watson & Evans, 1986).

Thirty-eight studies (7,766 migrant women) assessed prevalence (**Table 8**), twelve studies (1,977 migrant women) assessed risk factors (**Table 9**) and two studies (247 participants) assessed interventions (**Table 10**). Study outcomes were depression (40 studies), anxiety (three studies) and post-traumatic stress disorder (two studies). Thirteen different measurement tools were used: the Edinburgh Postnatal Depression Scale (EPDS; 23 studies) and the Center for Epidemiologic Studies-Depression Scale (CES-D; nine studies) were the most common.

Sample sizes of migrant women in individual studies ranged from 31 (Lee, 2009; Matthey et al, 1999) to 909 (Abbott & Williams, 2006) and the mean age of participants ranged from 24 (Davey et al, 2011) to 33 (Cheng & Pickler, 2009; Turella et al, 2010)

years. Sixteen studies included pregnant women and 33 studies included post-partum women. Only two studies explicitly included refugees or asylum seekers (Gagnon et al, 2013; Stewart et al, 2008). Fourteen studies included a non-migrant comparison group. North America (22 studies) was the most heavily represented destination region, followed by Europe (six studies) and Australasia (six studies). Thirty-seven studies were conducted in high-income destination countries, four in middle income countries and none in low-income countries. The most common regions of origin of participants were Latin America and Southeast Asia. The characteristics of prevalence, risk factor and intervention studies are summarised in **Table 8**, **Table 9** and **Table 10**, respectively.

Table 8 Table of study characteristics: prevalence studies

Study & setting	Study design & participant origin	Outcome & timing of assessment	Mean age (sd)	Instrument & cut-off	Migrant group			Comparison group
					N	Proportion	Mean (sd)	
Abbott 2006* <i>New Zealand</i>	Cohort <i>Pacific Islands</i>	Depression <i>PP</i>	NR	EPDS ≥ 13	909	16.3%	6.44 (5.42)	N/A
Alati 2004 <i>Australia</i>	Cohort <i>Philippines</i>	Depression Anxiety <i>Preg</i>	NR	DSSI-sAD mean no. of symptoms	46	N/A	Depression: 1.17 Anxiety: 2.06	3435 native Australian Depression: 0.82 Anxiety: 1.48
Bennett 2007* ^a <i>USA</i>	Cohort <i>Africa</i>	Depression <i>Preg & PP</i>	NR	CES-D ≥ 16 CES-D mean	120	Preg: 38.3% 3m PP: 44.2% 12m PP: 44.1%	Preg: 14.9 (11.9) 3m PP: 16.4 (12.3) 12m PP: 16.4 (12.5)	N/A
Bjerke 2008* <i>Norway</i>	CS <i>Pakistan</i>	Depression <i>PP</i>	28 (5)	EPDS ≥ 10	197	7.6%	N/A	N/A
Chen 2013 <i>Taiwan</i>	Cohort <i>China, Vietnam</i>	Depression <i>PP</i>	27 (4.2)	EPDS ≥ 10 EPDS mean	203	1m: 24.1% 6m: 12.3%	1m: 6.67 6m: 4.02	N/A
Cheng 2013* ^b <i>USA</i>	CS <i>China</i>	Depression <i>PP</i>	33 (3.8)	CES-D ≥ 16 CES-D mean	143	23.7%	11.09 (8.94)	N/A
Chien 2012* ^c <i>Taiwan</i>	CS <i>China, Vietnam</i>	Depression <i>PP</i>	27 (4.3)	EPDS ≥ 10 EPDS ≥ 13 EPDS mean	190	≥ 10 : 41.1% ≥ 13 : 24.2%	8.45 (5.27)	190 native Taiwanese EPDS ≥ 10 : 8.4% EPDS ≥ 13 : 5.8% EPDS mean: 3.09 (4.26)
Choi 2012 <i>South Korea</i>	CS <i>Vietnam</i>	Depression <i>PP</i>	24.1	EPDS ≥ 13 EPDS mean	69	34.3%	11.1 (4.3)	72 native South Korean EPDS ≥ 13 : 18.1% EPDS mean 8.5 (4.59)
Dankner 2011 <i>Israel</i>	Cohort <i>N. Africa, Middle East</i>	Depression <i>PP</i>	28.9 (5.5)	EPDS ≥ 9	37	25.0%	N/A	N/A

Table continued overleaf

Table 8 continued. Table of study characteristics: prevalence studies

Study & setting	Study design & participant origin	Outcome & timing of assessment	Mean age (sd)	Instrument & cut-off	Migrant group			Comparison group
					N	Proportion	Mean (sd)	
Davey 2011* <i>Canada</i>	RCT <i>Africa, Asia, E. Europe, Latin America</i>	Depression <i>PP</i>	NR	EPDS ≥ 13 EPDS mean	246	9.8%	5.55 (4.68)	N/A
Davila 2009 <i>USA</i>	CS <i>Mexico</i>	Depression <i>Preg & PP</i>	NR	CES-D ≥ 21 CES-D ≥ 24 CES-D mean	318	CES-D ≥ 21 : 17.9% CES-D ≥ 24 : 12.9%	12.7 (10.2)	121 US-born Latinas CES-D ≥ 21 : 28.1% CES-D ≥ 24 : 20.7% CES-D mean: 14.95 (11.1)
Fabian 2008 <i>Sweden</i>	Cohort <i>Africa, Asia, E. Europe, Latin America, Middle East</i>	Depression <i>Preg & PP</i>	NR	Preg: EPDS >14 PP: EPDS >11	175	Preg: 18.9% PP: 32.7%	N/A	2328 Swedish-speaking migrants Preg (EPDS >14): 6.9% PP (EPDS >11): 13.1% 125 migrants from HIC: Preg (EPDS >14): 9.6% PP (EPDS >11): 19.1%
Fan 2008* <i>USA</i>	CS <i>Taiwan</i>	Depression <i>PP</i>	31.5 (2.8)	EPDS ≥ 13 EPDS mean BDI mean	81	18.5%	EPDS: 8.91 (5.14) BDI: 8.48 (7.43)	81 native US EPDS mean: 9.83 (4.93) BDI mean 9.57 (7.92)
Gannan 2012* <i>Canada</i>	Cohort <i>Africa, Asia, E. Europe, Latin America, Middle East</i>	Depression <i>PP</i>	32.7 (4.9)	EPDS ≥ 12	196	11.2%	NA	421 native Canadian EPDS ≥ 12 : 6.7%
Gagnon 2013 <i>Canada</i>	Cohort <i>Africa, Asia, Latin America</i>	Depression Anxiety PTSD <i>PP</i>	27.9 (5.6)	EPDS ≥ 10 HTQ HSCL-25	513	EPDS: 24.8% HTQ: 44.2% HSCL-25: 40.5%	NA	311 native Canadian EPDS 7.4%

Table continued overleaf

Table 8 continued. Table of study characteristics: prevalence studies

Study & setting	Study design & participant origin	Outcome & timing of assessment	Mean age (sd)	Instrument & cut-off	Migrant group			Comparison group
					N	Proportion	Mean (sd)	
Gonidakis 2012 <i>Greece</i>	CS <i>Albania</i>	Depression <i>PP</i>	NR	EPDS ≥ 13	68	1m: 11.8% 3m: 11.6%	N/A	74 native Greek 1m: 13.5% 3m: 11.6%
Goyal 2005 <i>USA</i>	CS <i>India</i>	Depression <i>PP</i>	29 (3.4)	PDSS ≥ 60 PDSS ≥ 80	58	≥ 60 : 51.7% ≥ 80 : 24.1%	65.7 (24.88)	N/A
Hassert 2011* <i>USA</i>	CS <i>Central America</i>	Depression <i>PP</i>	26.6 (6.2)	EPDS ≥ 10 EPDS mean	50	48%	10.27 (4.3)	N/A
Hesselink 2011* <i>Netherlands</i>	Non-random trial <i>Turkey</i>	Depression Preg & PP	NR	CES-D mean	187	NA	3m preg: 16.71 (10.14) 8m preg 15.99 (9.66) 2m PP: 12.53 (10.01) 6m PP: 11.35 (10.71)	N/A
Huang 2008 <i>Taiwan</i>	CS <i>Indonesia, Vietnam</i>	Depression <i>PP</i>	NR	EPDS ≥ 13	106	25.5%	N/A	N/A
Hung 2012 <i>Taiwan</i>	CS <i>China, Southeast Asia</i>	Depression <i>PP</i>	25.9 (4.4)	BDI-II ≥ 14 BDI-II ≥ 20	340	≥ 14 : 1.8% ≥ 20 : 0.6%	N/A	N/A
John 2008 <i>USA</i>	CS <i>Central America</i>	Depression Preg	25.9 (5.7)	EPDS ≥ 13	60	11.7%	N/A	N/A
Kieffer 2013* <i>USA</i>	RCT <i>Mexico</i>	Depression Preg	NR	CES-D ≥ 16 CES-D mean	240	35.8%	12.94 (7.24)	N/A
Lara 2009 <i>USA</i>	CS <i>Latin America</i>	Depression <i>Preg</i>	25.9 (5.5)	CES-D ≥ 16 CES-D ≥ 24 CES-D mean	108	≥ 16 : 32.4% ≥ 24 : 15.7%	12.9 (10.7)	117 native Mexican ≥ 16 : 36.8% ≥ 24 : 23.9% Mean 14.7 (12.6)

Table continued overleaf

Table 8 continued. Table of study characteristics: prevalence studies

Study & setting	Study design & participant origin	Outcome & timing of assessment	Mean age (sd)	Instrument & cut-off	Migrant group			Comparison group
					N	Proportion	Mean (sd)	
Lee 2009 <i>USA</i>	CS <i>China</i>	Depression <i>PP</i>	31.8	PDSS ≥ 60 PDSS ≥ 80	31	≥ 60 : 38.7% ≥ 80 : 9.7%	N/A	N/A
Lucero 2012* <i>USA</i>	CS <i>Latin America</i>	Depression <i>PP</i>	26.6	PDSS ≥ 60	96	54.2%	69	N/A
Luecken 2013* <i>USA</i>	Cohort <i>Mexico</i>	Depression <i>Preg & PP</i>	28.2 (6.4)	EPDS ≥ 13 EPDS mean	193	Preg: 12.6% PP: 6.8%	Preg: 5.11 (5.18) PP: 4.24 (4.82)	N/A
Manber 2013* <i>USA</i>	CS <i>Mexico</i>	Depression <i>Preg</i>	26.5 (6.7)	EPDS mean	776	NA	5.09 (4.84)	N/A
Matthey 1997 ^d <i>Australia</i>	Cohort <i>Vietnam</i>	Depression <i>PP</i>	28.0	EPDS mean GHQ mean	113	NA	EPDS: 7.5 (5.4) GHQ: 6.6 (6.5)	105 native Australian EPDS 6.5 (5.4) GHQ 4.3 (5.5)
Matthey 1999 <i>Australia</i>	CS <i>Cambodia</i>	Depression Anxiety PTSD <i>PP</i>	28.3 (4.6)	EPDS mean HSCL-25 >1.75 HTQ >2.50	31	HSCL: 48% HTQ: 16%	EPDS: 11.4 (7.6)	N/A
Miszkurka 2010* <i>Canada</i>	CS <i>Africa, Asia, Latin America</i>	Depression <i>Preg</i>	NR	CES-D ≥ 16	674	36.5%	N/A	3834 native Canadian 22.8%
Ruiz 2012 <i>USA</i>	CS <i>Latin America</i>	Depression <i>Preg</i>	NR	CES-D ≥ 16	320	37.2%	N/A	N/A
Shafiei 2011* <i>Australia</i>	CS <i>Afghanistan</i>	Depression <i>PP</i>	NR	EPDS ≥ 13	39	31%	N/A	N/A
Small 2003 <i>Australia</i>	CS <i>Philippines, Turkey, Vietnam</i>	Depression <i>PP</i>	NR	EPDS ≥ 13 SF-36 lowest quartile	318	EPDS: 15.3% SF-36: 25.2%	N/A	N/A

Table continued overleaf

Table 8 continued. Table of study characteristics: prevalence studies

Study & setting	Study design & participant origin	Outcome & timing of assessment	Mean age (sd)	Instrument & cut-off	Migrant group			Comparison group
					N	Proportion	Mean (sd)	
Stewart 2008 <i>Canada</i>	CS NR	Depression PP	29.3 (5.3)	EPDS ≥ 10	268	31.3%	N/A	73 native Canadian 8.1%
Turella 2010* <i>Italy</i>	CS <i>Africa, Eastern Europe, Latin America</i>	Depression PP	33	EPDS ≥ 13 PDSS ≥ 80	52	EPDS: 7.6% PDSS: 12.2%	N/A	511 native Italian EPDS: 3.7% PDSS: 4.8%
Valentine 2011* <i>USA</i>	Cohort <i>Latin America</i>	Depression Preg & PP	27.7	BDI-FS ≥ 4	143	41.26%	N/A	N/A
Watson 1986 <i>UK</i>	Cohort <i>Bangladesh, China, Egypt India, Vietnam</i>	Depression PP	NR	GHQ ≥ 8	52	19.2%	N/A	49 native UK 26.5%

^a Same dataset as Elo *et al.* (2010) and Mora *et al.* (2009)

^b Same dataset as Cheng *et al.* (2009)

^c Same dataset as Chen *et al.* (2012)

^d Same dataset as Stuchbery *et al.* (1998)

*Additional data received from study authors; results presented in table may differ from results reported in published studies

Abbreviations: BDI Beck Depression Inventory; CES-D Center for Epidemiologic Studies-Depression Scale; CS cross-sectional; DSSI-sAD Delusions-Symptoms-States Inventory/states of Anxiety and Depression; EPDS Edinburgh Postnatal Depression Scale; GHQ General Health Questionnaire; HIC high income country; HSCL Hopkins Symptom Checklist; HTQ Harvard Trauma Questionnaire; m months; N/A not applicable; NR not reported; PDSS Postpartum Depression Screening Scale; PP post-partum; Preg pregnancy; PSS Perceived Stress Scale; PTSD post-traumatic stress disorder; RCT randomised control trial; SF-36 Short Form-36 Health Survey;

Table 9 Table of study characteristics: risk factor studies

Study & setting	Study design & participant origin	Outcome and timing	Mean age (sd)	N	Comparison group	Factors assessed							
						Age	Marital status	Parity	Social support	Education	Infant feeding	Mode of delivery	Other
Bjerke 2008 <i>Norway</i>	CS <i>Pakistan</i>	Depression <i>PP</i>	28 (5)	197	None	X	X	X	X	X	X	X	Employment; family structure; social class; life events; quality of partner relationship; physical illness; history of depression; reproductive history (including infant sex, birth experience).
Chien 2012 <i>Taiwan</i>	CS <i>China, Vietnam</i>	Depression <i>PP</i>	27.1 (4.31)	190	Native Taiwanese women			X	X	X			Employment; country of birth; perceived family income sufficiency; migration-birth interval; domestic decision-making power; adherence to cultural post-partum practices; infant gender; marital satisfaction; history of depression; local language ability.
Chen 2013 <i>Taiwan</i>	Cohort <i>China, Vietnam</i>	Depression <i>PP</i>	27 (4.2)	203	None				X				Acculturation, local language ability, duration of living in Taiwan, social assimilation, social attitude.
Fan 2008 <i>USA</i>	CS <i>Taiwan</i>	Depression <i>PP</i>	31.5 (2.84)	81	Women living in Taiwan				X				Adherence to cultural post-partum practices; mother-in-law relationship; marital relationship.
Gonidakis 2012 <i>Greece</i>	CS <i>Albania</i>	Depression <i>PP</i>	NR	78	Native Greek women	X				X			Time in destination; years of marriage; socio-economic status; maternity blues; anxiety.
Hung 2012 <i>Taiwan</i>	CS <i>Southeast Asia, China</i>	Depression <i>PP</i>	25.9 (4.4)	340	None	X		X	X	X	X	X	Household income; employment; birth experience; stress; key helper during post-partum period; length of marriage; birth experience; infant gender.

Table continued overleaf

Table 9 continued. Table of study characteristics: risk factor studies

Study & setting	Study design & participant origin	Outcome & timing	Mean age (sd)	N	Comparison group	Factors assessed							
						Age	Marital status	Parity	Social support	Education	Infant feeding	Mode of delivery	Other
John 2008 <i>USA</i>	CS <i>Latin America</i>	Depression <i>Preg</i>	25.9 (5.7)	60	US-born African-American women			X	X	X			Discrimination; stress; interpersonal violence; income; acculturation; coping
Lara 2009 <i>USA</i>	CS <i>Latin America</i>	Depression <i>Preg</i>	25.9 (5.5)	108	Mexican women living in Mexico	X	X	X		X			Trimester of pregnancy; history of mental illness
Matthey 1999 <i>Australia</i>	CS <i>Cambodia</i>	Depression, Anxiety PTSD <i>PP</i>	28.3 (4.6)	31	None				X				Traumatic events; refugee camp experience; birth experience, time in destination country.
Small 2003 <i>Australia</i>	CS <i>Philippines, Turkey, Vietnam</i>	Depression <i>PP</i>	NR	318	None	X	X	X	X	X	X	X	Income; birth experience, physical health; local language ability; time in destination country; infant health.
Stewart 2008 <i>Canada</i>	CS <i>NR</i>	Depression <i>PP</i>	29.3 (5.3)	268	Native Canadian women				X				Time in destination country; co-habitation status, education, parity, attendance at antenatal clinic, income, infant gender, history of physical/sexual abuse, visible minority status.
Stuchbery 1998 <i>Australia</i>	Cohort <i>Vietnam</i>	Depression <i>PP</i>	28.0	113	Native Australian women				X				Quality of partner relationship

Abbreviations: CS cross-sectional; NR not reported; PP post-partum; Preg pregnancy; PTSD post-traumatic stress disorder

Table 10 Table of study characteristics: intervention studies

Study & setting	Study design & participant origin	Mean age (sd)	Intervention & participants	Intervention group		Control group	
				N	Results	N	Results
Le 2011* USA	RCT Central America	25.8 (4.4)	Intervention: 8-week version of <i>Mamás y Bebés</i> course (see below). Delivered as weekly 2-hour sessions throughout pregnancy with boosters at 6 weeks, 4 months and 12 months post-partum. Control group received usual care. Participants: Latina women ≤ 24 weeks pregnant at high risk of depression (CES-D ≥ 16 or self-reported personal or family history of depression)	112	<u>BDI-II mean (sd):</u> Baseline: 15.71 (10.00) Late pregnancy: 10.63 (7.16) 6w post-partum: 10.16 (7.52) 4m post-partum: 9.70 (7.73) 12m post-partum: 7.72 (5.91) <u>Proportion (%) BDI-II ≥ 14:</u> Baseline: 59/112 (52.7%) 12m post-partum: 15/76 (19.7%)	102	<u>BDI-II mean (sd):</u> Baseline: 14.95 (9.38) Late pregnancy: 12.64 (9.55) 6w post-partum: 9.08 (8.27) 4m post-partum: 8.51 (7.59) 12m post-partum: 6.56 (5.63) <u>Proportion (%) BDI-II ≥ 14:</u> Baseline: 48/103 (46.6%) 12m post-partum: 9/72 (12.5%)
Muñoz 2007* USA	RCT Central America	25.0 (4.4)	<i>Mamás y Bebés</i> course: 12-week group intervention. Weekly 2-hour CBT and psycho-educational sessions throughout pregnancy with boosters at 1, 3, 6 and 12 months post-partum. Control group received usual care. Latina women ≤ 24 weeks pregnant at high risk of depression (CES-D ≥ 16 or self-reported personal or family history of depression)	17	<u>CES-D mean (sd):</u> Baseline: 16.41 (7.93) 1m post-partum: 12.56 (9.59) 3m post-partum: 15.82 (8.30) 6m post-partum: 16.88 (11.70) 12m post-partum: 13.29 (9.74) <u>Proportion (%) CES-D ≥ 16:</u> Baseline: 8/17 (47.1%) 1m post-partum: 6/16 (37.6%) 3m post-partum: 8/17 (47.1%) 6m post-partum: 9/16 (56.3%) 12m post-partum: 6/17 (35.3%)	16	<u>CES-D mean (sd):</u> Baseline: 12.43 (8.22) 1m post-partum: 12.58 (7.77) 3m post-partum: 15.92 (12.66) 6m post-partum: 17.94 (12.48) 12m post-partum: 15.42 (12.56) <u>Proportion (%) CES-D ≥ 16:</u> Baseline: 6/16 (37.5%) 1m post-partum: 5/16 (31.25%) 3m post-partum: 6/16 (37.5%) 6m post-partum: 8/16 (50.0%) 12m post-partum: 7/16 (43.75%)

*Additional data received from authors; results pertain to individuals eligible for inclusion in our review and may differ from those reported in original paper

Abbreviations: BDI Beck Depression Inventory; CBT cognitive behavioural therapy; CES-D Center for Epidemiologic Studies-Depression Scale; m months; RCT randomised control trial; w weeks

2.4.3 *Quality of included studies*

Quality scores for prevalence, risk factor and intervention studies are summarised in **Table 11**, **Table 12** and **Table 13**, respectively. Quality scores for prevalence studies ranged from four to eleven out of a maximum possible score of fourteen. The majority of prevalence studies had low scores, with only eight studies scoring ten or above. Studies with the lowest quality tended to have poor definitions of pregnancy and migration status, a small sample size and poor representativeness of participants. The quality of risk factor studies was slightly higher: scores ranged from eight to fourteen out of a maximum possible score of 18, and nine out of twelve studies scored ten or above. Intervention studies scored poorly overall: apart from low risks of selection and attrition bias, all other aspects were at 'high' or 'unclear' risk of bias.

Table 11 Quality assessment scores of prevalence studies

	Selection					Comparability	Outcome			Total (maximum score 14)
	Pregnancy status (maximum score 2)	Migration status (maximum score 2)	Sample size (maximum score 1)	Representativeness (maximum score 2)	Non-respondents (maximum score 2)	Participants are comparable (maximum score 1)	Assessment (maximum score 1)	Measurement tool (maximum score 2)	Statistical analysis (maximum score 1)	
Abbott 2006	2	0	1	2	1	1	1	1	1	10
Alati 2004	1	1	0	1	0	1	1	1	1	7
Bennett 2007	0	1	0	2	1	1	1	1	1	8
Bjerke 2008	1	0	0	0	1	0	1	1	1	5
Chen 2013	2	1	0	1	2	1	1	2	1	11
Cheng 2009	1	1	0	0	0	1	1	2	1	7
Chien 2012	1	1	1	2	1	0	1	2	1	10
Choi 2012	1	0	1	0	1	1	1	1	1	7
Dankner 2000	2	1	0	1	1	1	1	1	1	9
Davey 2011	1	1	1	2	1	1	1	1	1	10
Davila 2009	1	1	0	0	1	1	1	2	1	8
Fabian 2008	1	1	0	1	1	1	1	1	1	8
Fan 2007	1	1	0	0	0	1	1	2	1	7
Gagnon 2013	2	2	0	0	2	1	1	1	1	10
Gannan 2012	2	1	1	1	0	0	1	1	1	8
Goyal 2005	1	1	0	0	0	0	1	1	0	4
Gonidakis 2012	2	1	0	2	1	1	1	2	0	10
Hassert 2011	1	1	0	0	0	0	1	2	0	5
Hesselink 2011	1	1	1	1	1	1	1	1	1	9
Huang 2008	1	1	0	1	1	0	1	1	0	6
Hung 2012	1	1	0	0	1	0	1	1	1	6
John 2008	1	1	1	1	0	1	1	2	1	9
Kieffer 2013	2	1	0	1	1	0	1	1	1	8
Lara 2009	1	1	0	0	0	1	1	2	1	7
Lee 2009	1	0	0	0	0	0	1	2	1	5
Lucero 2012	1	0	0	0	0	1	1	2	1	6
Luecken 2013	1	1	0	0	0	1	1	2	1	7
Manber 2013	1	0	0	1	1	1	1	2	1	8
Matthey 1997	2	1	0	0	0	0	1	1	1	6
Matthey 1999	1	1	0	1	0	0	1	1	1	6
Miszkurka 2010	2	1	0	1	0	1	1	1	1	8
Ruiz 2012	2	1	0	0	0	0	1	1	1	6
Shafiei 2011	2	1	0	0	0	0	1	1	0	5
Small 2003	1	1	0	2	2	1	1	1	1	10
Stewart 2008	2	2	0	2	0	1	1	1	1	10

Table continued overleaf

Table 11 cont. Quality assessment scores of prevalence studies

	Selection					Comparability	Outcome			Total (maximum score 14)
	Pregnancy status (maximum score 2)	Migration status (maximum score 2)	Sample size (maximum score 1)	Representativeness (maximum score 2)	Non-respondents (maximum score 2)	Participants are comparable (maximum score 1)	Assessment (maximum score 1)	Measurement tool (maximum score 2)	Statistical analysis (maximum score 1)	
Turella 2010	2	1	0	2	0	1	1	1	1	9
Valentine 2011	1	1	0	0	0	1	1	1	1	6
Watson 1986	2	1	0	2	1	0	1	1	0	8

Table 12 Quality assessment scores of risk factor studies

	Selection						Comp	Outcome						Total (maximum score 18)
	Definition of pregnancy status (maximum score 2)	Definition of migration status (maximum score 2)	Sample size (maximum score 1)	Representative sample (maximum score 2)	Representative controls (maximum score 1)	Non-respondents (maximum score 2)	Participants comparable (maximum score 1)	Outcome assessment (maximum score 1)	Risk factor assessment (maximum score 1)	Outcome measurement tool (maximum score 2)	Risk factor measurement (maximum score 1)	Statistical analysis (maximum score 1)	Statistical analysis of risk factors (maximum score 1)	
Bjerke 2008	1	0	0	0	1	1	0	1	1	1	0	1	1	8
Chien 2012	1	1	1	2	1	1	0	1	1	2	0	1	1	13
Chen 2013	2	1	0	1	1	2	1	1	1	2	1	1	0	14
Fan 2008	1	1	0	0	0	0	1	1	1	2	1	1	0	9
Gonidakis 2012	2	1	0	2	1	1	1	1	1	2	1	0	0	13
Hung 2012	1	1	0	0	1	1	0	1	1	1	1	1	1	10
John 2008	1	1	1	1	1	0	1	1	1	2	1	1	0	12
Lara 2009	1	1	0	0	1	0	1	1	1	2	0	1	1	10
Matthey 1999	1	1	0	1	1	0	0	1	1	1	1	1	1	10
Small 2003	1	1	0	2	1	2	1	1	1	1	0	1	1	13
Stewart 2008	2	2	0	2	1	0	1	1	0	1	1	1	1	13
Stuchbery 1998	2	1	0	0	1	0	0	1	1	1	0	1	0	8

Abbreviations: Comp Comparability

Table 13 Quality assessment scores of intervention studies

	Random sequence generation (selection bias)	Allocation concealment (selection bias)	Blinding participants and staff (performance bias)	Blinding of outcome assessment (detection bias)	Incomplete outcome data (attrition bias)	Selective reporting (reporting bias)	Other sources of bias
Le 2011	Low	Unclear	High	High	Low	Unclear	Unclear
Muñoz 2007	Low	Unclear	High	Unclear	Low	Unclear	Unclear

2.4.4 Prevalence of perinatal mental disorders

Prevalence of perinatal depression

Thirty-eight studies assessed the prevalence of perinatal depression. Funnel plots of 16 studies which assessed moderate-severe depression using comparable measurement tools (**Figure 4**) and of 17 studies which assessed severe depression showed asymmetry (**Figure 5**). The greater number of studies with high prevalence estimates in the funnel plot suggest that studies reporting low prevalence rates may be less likely to be published, indicating a possible publication bias.

Figure 4 Funnel plot: prevalence of symptoms of severe perinatal depression

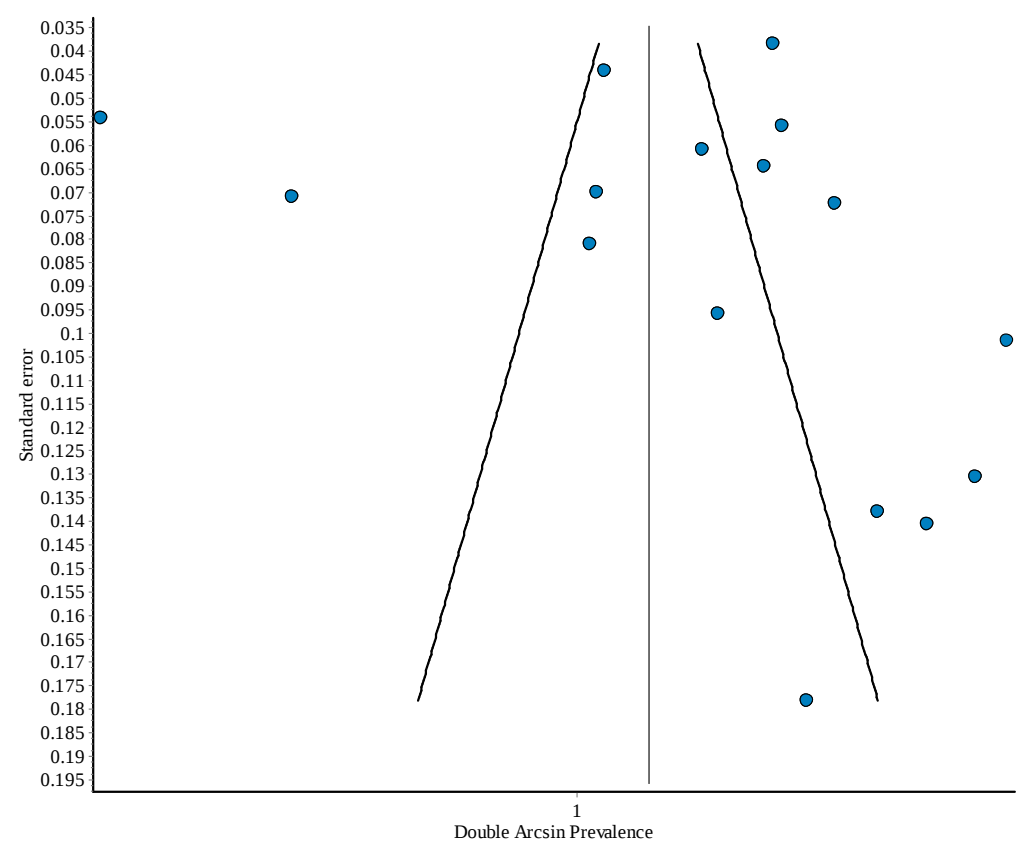
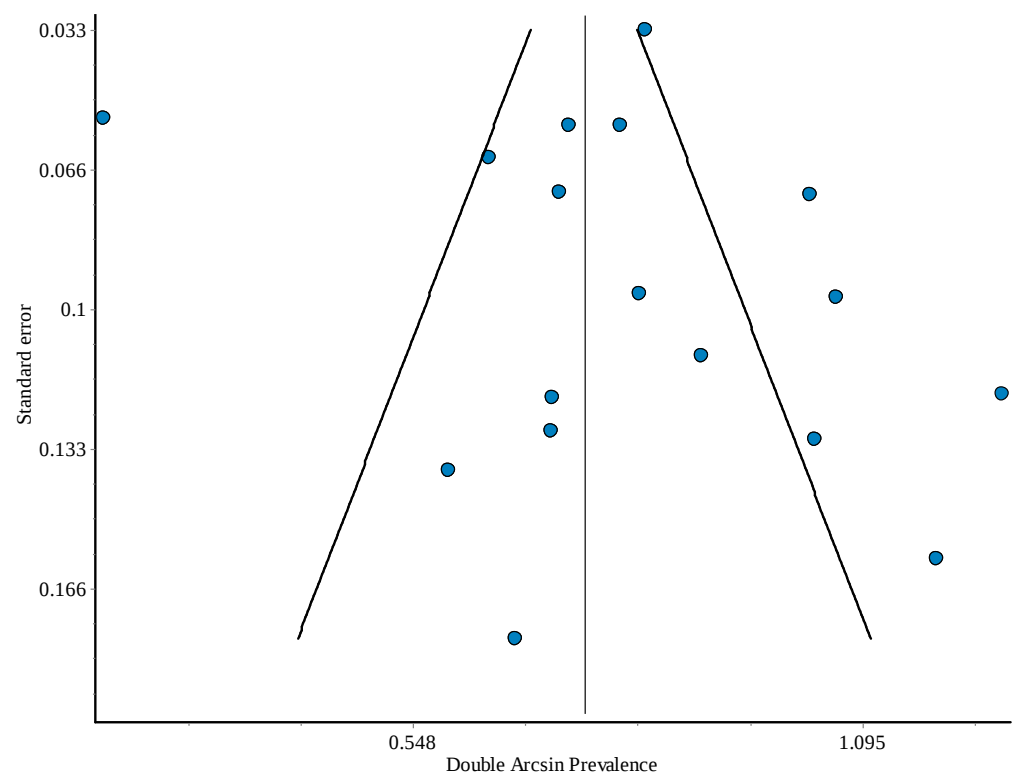


Figure 5 Funnel plot: prevalence of symptoms of moderate-severe perinatal depression



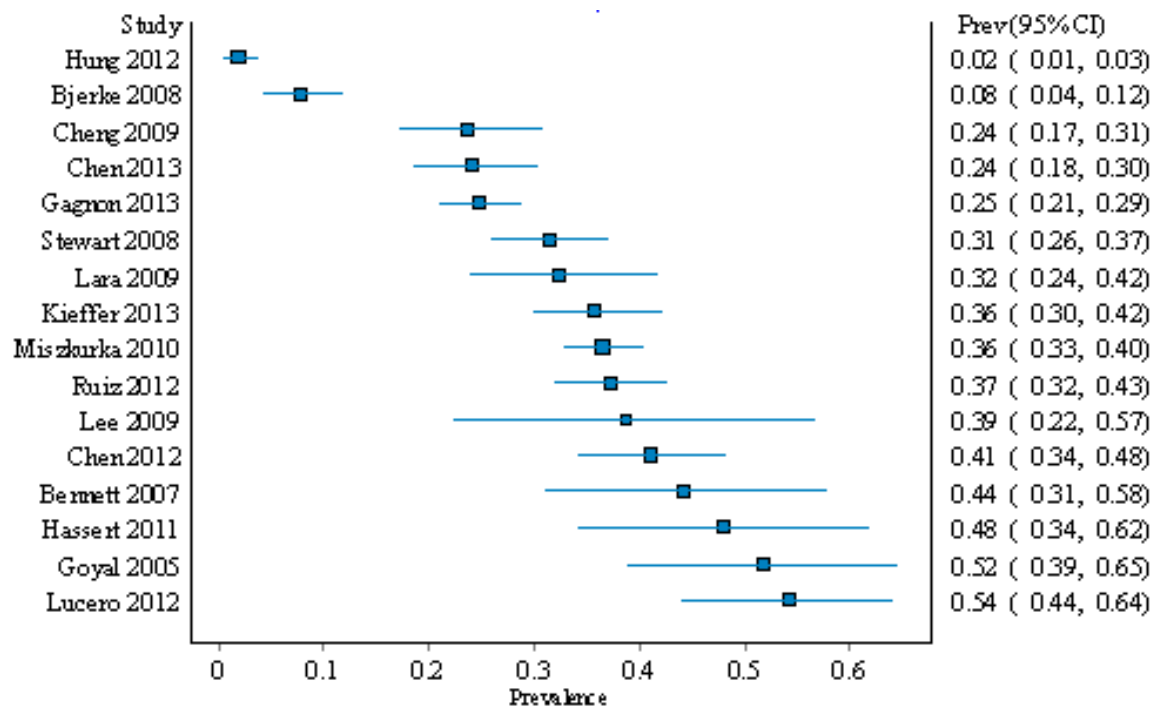
Ten studies reported mean EPDS scores. Mean scores among these studies ranged from 4.0 in Chen *et al.*'s (2013) study of post-partum migrant Chinese and Vietnamese women living in Taiwan to 11.4 in Matthey *et al.*'s (1999) study of post-partum Cambodian women in Australia.¹ Among six studies which reported mean CES-D scores, the means ranged between 11.1 in Chen *et al.*'s (2009) study of post-partum Chinese women in the USA, and 16.7 in Hesselink *et al.*'s (2011) study of Turkish women living in the Netherlands.²

The prevalence of symptoms of moderate-severe depression – the combined categories of minor and major depressive disorders – was reported in sixteen studies. The median prevalence of moderate-severe depression symptoms was 36.5%, with estimates ranging from 1.8% (Hung et al, 2012) to 54.2% (Lucero et al, 2012) (**Figure 6**). The lowest prevalence was found in a study of postpartum Chinese and Southeast Asian migrant women living in Taiwan (Hung et al, 2012). The highest prevalence was found in a study of post-partum Latin American women living in the USA (Lucero et al, 2012).

¹ The range of possible scores on the EPDS is 0–30. Scores ≥ 10 and ≥ 13 are indicative of minor and major depressive disorder, respectively.

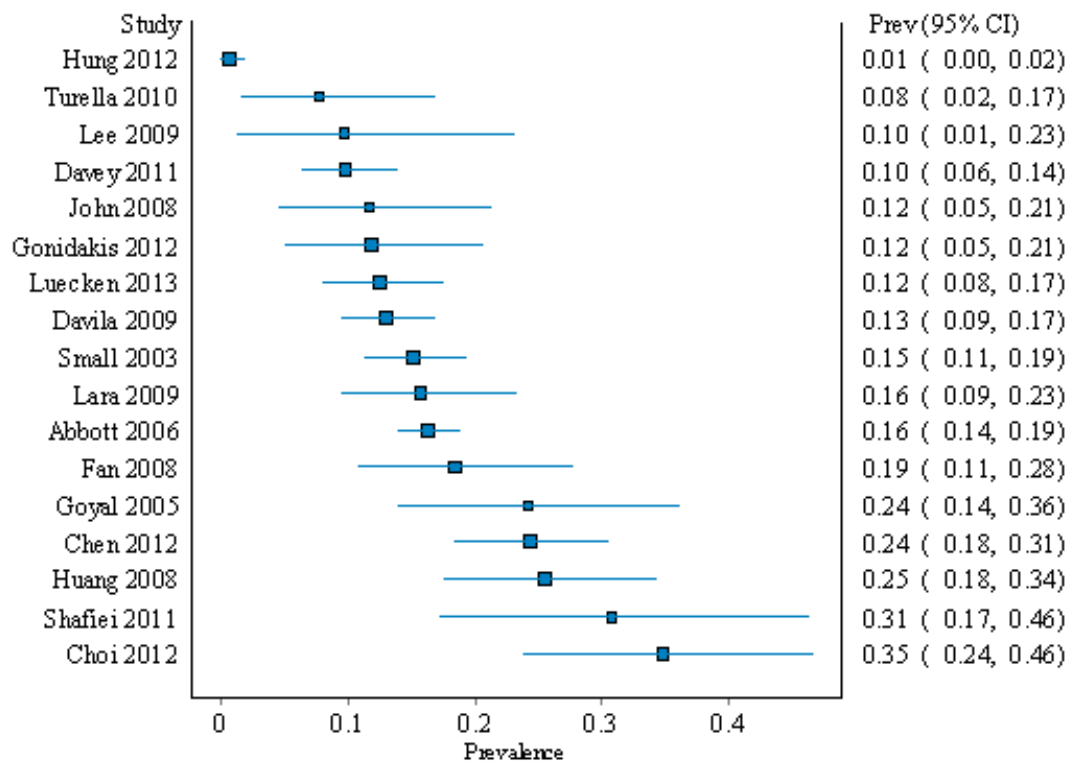
² The range of possible scores on the CES-D is 0–60. Scores ≥ 16 and ≥ 24 are indicative of minor and major depressive disorders, respectively.

Figure 6 Forest plot: prevalence of symptoms of moderate-severe perinatal depression



The prevalence of symptoms of severe depression was reported in seventeen studies. The median prevalence was 15.5%, with estimates ranging from 0.6% (Hung et al, 2012) to 34.3% (Choi et al, 2012) (**Figure 7**). The lowest prevalence was found among Chinese and Southeast Asian women in Taiwan, while the highest prevalence was found in Vietnamese migrant women in South Korea (Choi et al, 2012; Hung et al, 2012).

Figure 7. Forest plot: prevalence of symptoms of severe perinatal depression



Fifteen prevalence studies included a non-migrant comparison group. Of these, ten (67%) reported significantly higher rates of perinatal depression among migrants (Alati et al, 2004; Chien et al, 2012; Choi et al, 2012; Fabian et al, 2008; Gagnon et al, 2013; Ganann et al, 2012; Matthey et al, 1997; Miskurka et al, 2010; Stewart et al, 2008; Turella et al, 2010), while four studies found no significant difference between migrant and controls (Fan, 2008; Gonidakis, 2012; Lara et al, 2009; Watson & Evans, 1986). One remaining study reported higher rates of perinatal depression among control groups. This study, by Davila *et al.* (2009), compared Mexican-born women living in the USA to USA-born Latina women in the USA and found higher rates in the latter (prevalence of any depression 17.9% vs. 28.1%; $p=0.02$) (Davila et al, 2009).

Prevalence of anxiety in the perinatal period

Three studies assessed the prevalence of anxiety (Alati et al, 2004; Gagnon et al, 2013; Matthey et al, 1999). Alati *et al.* (2004) studied anxiety in pregnancy in 78 Philippines-born women living in Australia (Alati et al, 2004). After adjustment for maternal age and years of education, the mean number of reported anxiety symptoms on the Delusions-Symptoms-States-Inventory: States of Anxiety and Depression (DSSI-SAD) scale was 2.42 in women from the Philippines compared to 1.47 in native Australian women ($p < 0.001$) (Alati et al, 2004). Matthey *et al.* (1999) examined anxiety in Cambodian mothers in Australia in the first year post-partum (Matthey et al, 1999). Forty-eight percent of women reported symptoms consistent with anxiety as assessed on the Hopkins Symptoms Checklist (HSCL-25) (Matthey et al, 1999). In a third study, Gagnon *et al.* (2013) found that 20.9% of immigrant women, 37.3% of refugee women and 41.8% of asylum-seeking women living in Canada experienced symptoms of depression, somatisation or anxiety on the HSCL-25 (Gagnon et al, 2013). Neither Matthey *et al.* (1999) nor Gagnon *et al.* (2013) included a non-migrant comparison group.

Prevalence of post-traumatic stress disorder in the perinatal period

Two studies measured the prevalence of post-traumatic stress disorder using the Harvard Trauma Questionnaire (HTQ) (Gagnon et al, 2013; Matthey et al, 1999). Matthey *et al.* (1999) found that 16% of their sample of Cambodian women living in Australia reported symptoms of PTSD (Matthey et al, 1999). Gagnon *et al.* (2013) found rates of post-traumatic stress disorder of 15.0%, 33.8% and 48.2% in immigrant, refugee and asylum-seeking women, respectively (Gagnon et al, 2013). Neither of these two studies included a non-migrant comparison group.

2.4.5 Risk factors for perinatal mental disorders

Risk factors for perinatal depression

Twelve studies assessed factors associated with perinatal depression. Maternal age was identified as a risk factor in two studies: one study found women aged over 30 years to be at greater risk (Bjerke et al, 2008) while another found women aged under 25 years to be at greater risk (Small et al, 2003). Four studies explored the effect of marital status: Bjerke *et al.* (2008) found that Pakistani women in Norway were significantly more likely to be depressed if they were single (Bjerke et al, 2008), while three other studies found no association between marital status and depression (Lara et al, 2009; Small et al, 2003; Stewart et al, 2008). A close relationship with partners was protective against perinatal depression in three studies (Bjerke et al, 2008; Fan, 2008; Stuchbery et al, 1998). Ability to speak the local language and a longer duration of residence in the destination country were also identified as protective factors in three studies (Chen et al, 2013; Chien et al, 2012; Small et al, 2003). A higher number of significant adverse life events experienced or witnessed was associated with higher levels of depression in two studies (Bjerke et al, 2008; Matthey et al, 1999). One study found that adherence to traditional post-partum practices was protective against postpartum depression by empowering women and enhancing family integration (Chien et al, 2012). Primiparity (Bjerke et al, 2008; Small et al, 2003), operative delivery (Bjerke et al, 2008), formula feeding of infants (Bjerke et al, 2008), and poor satisfaction with the birth experience (Matthey et al, 1997) were identified as obstetric risk factors associated with higher rates of depression in individual studies.

A personal or family history of depression greatly and significantly increased the risk of postpartum depression in three studies (Bjerke et al, 2008; Hung et al, 2012; Lara et al, 2009) with odds ratios as high as 24.9 (Lara et al, 2009) and 29.7 (Bjerke et al, 2008). Women with more anxious personality traits were also more likely to develop postpartum depression (Hung et al, 2012). Significantly, women with a history of psychiatric morbidity had lower levels of social support, highlighting the complex and likely bi-directional association between these variables (Hung et al, 2012). Social support was defined and measured using a wide range of methods. The most common approach was an assessment of emotional, practical and informational support received from partners, family, friends and the community. Ten studies assessed social support and all found that higher levels of support were protective against the development of postpartum depression (Bjerke et al, 2008; Chen et al, 2013; Chien et al, 2012; Fan, 2008; Hung et al, 2012; John, 2008; Matthey et al, 1999; Small et al, 2003; Stewart et al, 2008; Stuchbery et al, 1998).

Effect sizes and the trends of effect for the five studies which reported odds ratios are summarised in **Table 14** (Bjerke et al, 2008; Chien et al, 2012; Hung et al, 2012; Lara et al, 2009; Small et al, 2003). A history of depression and levels of social support were the only exposure variables for which the direction of effect was consistent across studies.

Table 14 Factors associated with perinatal depression: magnitudes of association

Variable	Study (N)	OR (95% CI)	Effect size [†]	Trend of effect
Maternal age (older)	Bjerke 2008 (197) Lara 2009 (108) Small 2003 (318)	4.6 (1.4–15.0) 4.5 (0.3–75.8) 0.7 (0.2–2.8)	++ ++ –	No consistent effect
Relationship status (single)	Bjerke 2008 (197) Lara 2009 (108) Small 2003 (318)	22.5 (3.4–147.8) 1.7 (0.3–11.3) 0.7 (0.1–3.3)	+++ + –	No consistent effect
Education (higher levels)	Bjerke 2008 (197) Hung 2012 (340) Lara 2009 (108) Small 2003 (318)	1.3 (0.4–3.9) 0.9 (p=0.75) 5.4 (1.3–22.6) 0.5 (0.2–1.0)	+ – +++ –	No consistent effect
Physical illness (yes)	Bjerke 2008 (197) Small 2003 (318)	0.3 (0.0–2.2) 3.7 (1.6–8.5)	– – ++	No consistent effect
Parity (primiparous)	Bjerke 2008 (197) Hung 2012 (340) Lara 2009 (108) Small 2003 (318)	3.0 (0.6–13.6) 1.1 (p=0.69) 0.3 (0.05–1.85) 2.4 (1.2–4.8)	++ + – – +	No consistent effect
Mode of delivery (operative)	Bjerke 2008 (197) Hung 2012 (340) Small 2003 (318)	3.1 (0.9–11.0) 0.79 (p=0.46) 1.5 (0.7–3.1)	++ – +	No consistent effect
Infant feeding (breastfeeding)	Bjerke 2008 (197) Hung 2012 (340) Small 2003 (318)	0.2 (0.4–12.0) 1.6 (p=0.19) 1.1 (0.3–3.6)	– – – + +	No consistent effect
Prior depression (yes)	Bjerke 2008 (197) Lara 2009 (108)	29.7 (7.1–124.1) 3.8 (0.4–36.7)	+++ ++	Prior depression positively associated with perinatal depression
Social support (higher levels)	Bjerke 2008 (197) Chien 2012 (190) Small 2003 (318)	0.3 (0.6–1.6) 0.9 (0.9–1.0) 0.3 (0.2–0.7)	– – – – –	Social support negatively associated with perinatal depression

Bold denotes statistical significance at $p < 0.05$ level

[†] Effect sizes assessed using Cohen's d values: + (small positive); ++ (medium positive); +++ (large positive); – (small negative); – – (medium negative); – – – (large negative)

Risk factors for anxiety in the perinatal period

One study measured factors associated with anxiety (Matthey et al, 1999). Matthey *et al.* (1999) found statistically significant associations between anxiety and the number of pre-migration traumatic events experienced or witnessed. History of living in a refugee camp prior to resettlement, the number of support people available and the length of time in the host community were not significantly associated with perinatal anxiety (Matthey et al, 1999).

Risk factors for post-traumatic stress disorder in the perinatal period

Only one study assessed risk factors associated with PTSD. Matthey *et al.* (1999) found statistically significant associations between PTSD and the number of traumatic events experienced or witnessed. As with anxiety, PTSD was not statistically significantly associated with having lived in a refugee camp, the number of support people or length of time in Australia (Matthey et al, 1999).

2.4.6 Interventions for perinatal mental disorders

Two intervention studies were identified. Both studies were randomised controlled studies of an intervention called *Mamás y Bebés/Mothers and Babies* to treat perinatal depression (Le et al, 2011; Munoz et al, 2007). The intervention consisted of group-based cognitive behaviour therapy and psychoeducational sessions. In both studies, participants were pregnant Latin American women in the USA who had CES-D scores ≥ 16 and/or a self-reported history of depression. Muñoz *et al.* (2007) provided 12 weekly 2-hour sessions during pregnancy and booster sessions at one, three, six and 12 months post-partum (Munoz et al, 2007). Le *et al.* (2011) evaluated an eight-week version of the

programme, consisting of eight weekly two-hour sessions in pregnancy with booster sessions at six weeks, four months and 12 months post-partum (Le et al, 2011). In each study, control groups received usual care. Muñoz *et al.*'s (2007) study found no statistically significant differences in mean CES-D scores between intervention and control groups. However, the difference in cumulative incidence of depression was significantly lower in the intervention group (14%) than in the control group (25%), suggesting a small beneficial effect of the intervention. In Le *et al.*'s (2011) study, women in the intervention group had significantly lower symptoms of depression than those in the control group, but the cumulative incidence of depression did not differ significantly between groups (Le et al, 2011).

2.5 Discussion

2.5.1 Summary of main findings

This systematic review aimed to summarise existing research around the prevalence, risk factors and interventions for perinatal mental disorders among migrant women originating from low- and middle-income countries and to identify gaps in the evidence. The review highlights a number of important issues. Firstly, perinatal depression and anxiety are significant problems among migrant women from low- and middle-income countries. Of the fifteen studies that included a non-migrant comparison group, ten found significantly higher rates of perinatal depression among migrant women. Secondly, risk factors for perinatal mental disorders are complex and likely to vary according to context. A history of depression and poor social support were consistently associated with perinatal depression – a finding consistent with evidence from non-migrant populations (Howard et al, 2014). Finally, the review highlights a number of significant evidence

gaps. No studies were identified that had been conducted in a low-income country setting; all studies assessed the perinatal mental health status of migrants who had resettled to high- or middle-income destination countries. None used a diagnostic interview to assess the outcome, all studies relying instead on screening instruments. No studies assessed psychotic or bipolar disorders, and evidence on interventions to prevent or treat perinatal mental disorders in migrant groups was similarly scarce. Refugee and asylum-seeking women were under-represented.

2.5.2 *Prevalence of perinatal depression*

The prevalence of perinatal depression varied greatly across studies. The median prevalence was 36.5% for moderate-severe depression and 15.5% for severe depression, with estimates from individual studies ranging from under 1% to over 50%. This range highlights the significant heterogeneity among migrant populations as well as methodological differences between studies. Hung *et al.*'s (2012) study of post-partum Chinese and Southeast Asian women in Taiwan was a striking outlier, reporting prevalence rates of moderate-severe depression and severe depression of 1.8% and 0.6%, respectively (Hung et al, 2012). The reason for these low estimates are unclear as the study does not differ significantly from other studies in terms of participant characteristics or methodology. Bjerke *et al.*'s (2008) study of Pakistani women in Norway also found a low prevalence of depression (Bjerke et al, 2008). The authors suggest cultural differences in perceptions of mental illness and the use of Norwegian rather than origin-country (Urdu) assessment instruments, which may have missed culturally-diverse manifestations of depression, as possible explanations for their findings (Bjerke et al, 2008).

At the high end of the range of estimates were studies by Goyal *et al.* (2005) and Lucero *et al.* (2012), with estimates of moderate-severe depressive disorder of 51.7% and 54.2%, respectively (Goyal *et al.*, 2006; Lucero *et al.*, 2012). Both of these studies were conducted in the USA and both used the PDSS as a measurement tool. Lucero *et al.*'s (2012) participants were low-income, Spanish-speaking women from Latin America living in Utah. The low-income status of this group and the possible inclusion of non-English speakers (as assessments were conducted in Spanish and English language proficiency was not a requirement) may partially explain the high rates (Lucero *et al.*, 2012). However, Goyal *et al.* (2005) found similarly high rates in their sample of Indian migrant women in the USA who could speak and write in English (Goyal *et al.*, 2006). The authors suggest that South Asian women may be more likely than other ethnic groups to experience perinatal depression, contradicting the conclusions drawn by Bjerke *et al.* (2008) (Bjerke *et al.*, 2008).

The majority of studies that included non-migrant controls reported higher rates of perinatal mental disorders among migrant groups. However, there were a number of exceptions. Lara *et al.* (2009) compared Latin American women in the USA with Mexican women living in Mexico and found no significant difference in prevalence (Lara *et al.*, 2009). Watson *et al.* (1986) found no differences between native British women, non-English-speaking migrants from Bangladesh, and English-speaking migrants from a range of other countries (Watson & Evans, 1986). Fan *et al.* (2008) found no difference between Taiwanese migrant women in the US and Taiwanese women in Taiwan (Fan, 2008). Gonidakis (2012) found no difference between Albanian migrant women in Greece and native Greek women, which the author attributed to the Albanian community being the largest and most assimilated migrant group in Greece

with strong support networks that may protect against depression (Gonidakis, 2012). These exceptions to the general trend further highlight the substantial heterogeneity between migrant communities.

A notable proportion of studies included in this review focused on Latin American women living in the USA. As the largest migrant group in the USA, it is conceivable that Latinas in the USA may have social networks that are stronger than those among US-born counterparts. It is conceivable that support networks might also be stronger among those who have arrived more recently, compared to those who have been in the destination country for longer and assimilated into the host society. Though this goes against the findings of many other studies, which show a decline in depression prevalence with time since migration, it may be that among large migrant communities such as Latin American groups in the USA, there are strong protective forces in place. This may help to explain in part Davila *et al.*'s (2009) findings of higher depression rates among second generation (US-born) versus first-generation (Mexican-born) Latinas in the USA (Davila et al, 2009).

Miszkurka *et al.* (2010) found participants' region of origin to be a strong predictor of depressive symptoms (Miszkurka et al, 2010). The results of the systematic review are unable to confirm this, as no trends could be discerned on the basis of country (or region) of origin nor destination. It was also not possible to identify differences in prevalence rates according to stage of pregnancy or category of migrant due to the diversity in study methods as well as participant characteristics.

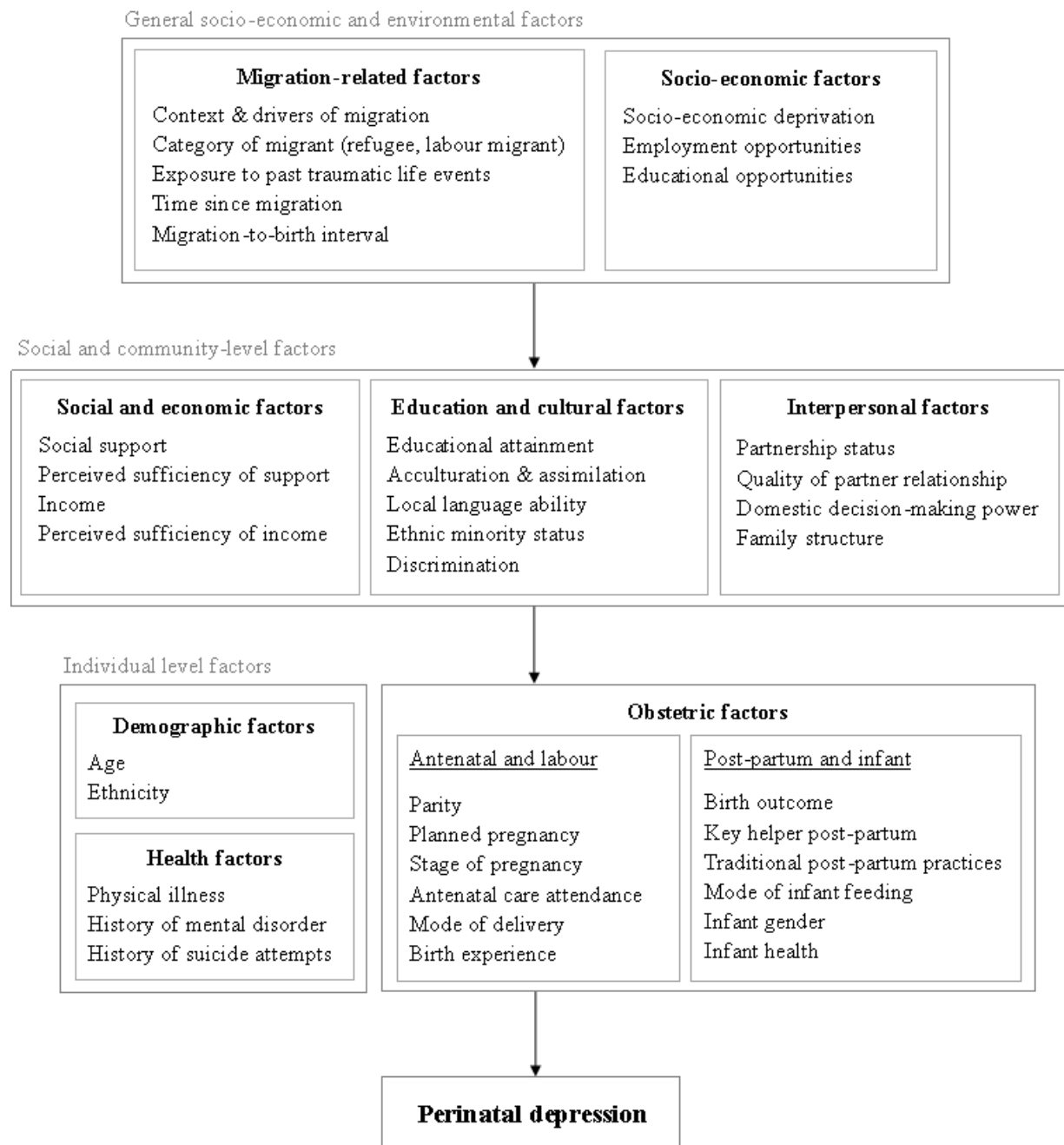
The results of this review provide a wider range of prevalence estimates than reported in a previous review by Collins *et al.* (2011). Collins *et al.* (2011) found rates of postnatal depression symptoms ranging between 24% and 42%, although this range excluded one study which reported prevalence rates of under 10% because it was considered discordant. Collins *et al.*'s (2011) study was based on eight studies and limited to postnatal depression in migrant women living in high-income countries (Collins *et al.*, 2011). A meta-analysis by Fisher *et al.* (2012) focussed on common perinatal mental disorders among a general (non-migrant) sample of women in low- and middle-income countries and found a combined pooled estimate of depressive, anxiety, adjustment and somatic disorders of 15.9% in pregnancy and 19.8% post-partum (Fisher *et al.*, 2012). These pooled estimates contain significant heterogeneity ($I^2 > 95\%$) and must be interpreted with caution.

2.5.3 *Factors associated with perinatal depression*

Several exposures were associated with perinatal depression. These exposures included broad socio-economic and environmental factors as well as at the community-level and individual-level factors. **Figure 8** summarises all the variables identified in individual studies within the systematic review, classified using Dahlgren and Whitehead's (1991) framework of the social determinants of health (Dahlgren & Whitehead, 1991). Within the systematic review, the most convincing evidence was for a history of depression and a lack of social support, both of which were consistently associated with a higher risk of perinatal depression. The protective effect of social support on mental health is well-known among general populations, and the association is therefore not unique to migrant women (Biaggi *et al.*, 2016; Howard *et al.*, 2014). However, the intensity and frequency with which social isolation is experienced by migrants – often exacerbated by language

and cultural barriers – may place migrant women at greater risk than others. The inter-associations between previous mental disorders and levels of social support further highlight the complex and often self-perpetuating life challenges many women face. These findings emphasise the need to ensure that migrant women, who may not have had a chance to develop social networks and systems in their destination country, are sufficiently supported through personal and community networks. Given that pregnancy is for many women a time of increased contact with health services, the perinatal period offers a valuable opportunity for women with mental disorders or at risk of developing mental disorders to be identified and support to be offered from an early stage (Lancaster et al, 2010).

Figure 8 Factors associated with perinatal mental disorders identified by systematic review



2.5.4 Interventions for perinatal depression

Two intervention studies showed weak evidence of effectiveness in the treatment of perinatal depression. The scarcity of high-quality evidence on interventions to prevent or treat perinatal mental disorders among migrant women was notable. Evidence from other settings has shown that evidence-based psychological and psychosocial interventions can improve maternal as well as child physical and mental health (Dennis & Hodnett, 2007; Thornicroft & Patel, 2014). In several low-income settings, trained non-specialists including community health workers have effectively delivered talking therapies, relying on a central point of referral with specialist support for severe cases when needed (Rahman et al, 2013; van Ginneken et al, 2013). Identifying effective and culturally-appropriate interventions for migrant populations is an urgent research priority, given that this group – especially those who are also new mothers – may face additional challenges and have specific needs.

2.5.5 Evidence gaps

Evidence gaps highlighted by this review are significant. Studies were conducted exclusively in high- and middle-income countries, reducing the generalizability of findings to low-income country settings, especially given the variability between migrant populations across different regions. The lack of studies conducted with migrant populations living in low-income destination countries is also striking given that the majority of global migration flows occur within low- and middle-income regions (IOM, 2013). The review confirms previous findings that migrant and mental health research from these areas, where the burden of mental disorders is high, is heavily under-represented (Patel & Kim, 2007; Sumathipala et al, 2004). The experiences,

circumstances and mental health needs of migrant women relocating to high-income regions is likely to differ significantly from those relocating to low- or middle-income regions, where existing mental health services may be scarce, over-stretched and less accessible to marginalised groups (IOM, 2013; Stein et al, 2014).

Studies relied heavily on screening instruments rather than diagnostic interviews for assessing mental health status, which may have led to over-estimates of true disease prevalence. One systematic review of perinatal depression found that after adjusting for the impact of other covariates, estimates of perinatal depression derived from screening tools were significantly higher than those derived from diagnostic tools (OR 1.6; 95% CI 1.3–2.0) (Woody et al, 2017). Another review found that the prevalence of postpartum depression across international settings was significantly lower among studies using the SCID as compared with studies using self-report checklists (Norhayati et al, 2015). Results from studies based on screening tools may therefore tend to over-estimate the true burden of mental disorders, and care should be taken to report results accurately as estimates of *symptoms* of the illness, rather than the illness itself. Finally, there is an urgent need for research on severe perinatal mental disorders such as psychosis in migrant populations.

2.5.6 *Strengths and limitations*

This is the first systematic review of perinatal mental disorders in migrant women from low- and middle-income countries. It builds upon a previous review by Collins *et al.* (2011) which was limited to eight studies of postnatal depression in migrants in high-income settings (Collins et al, 2011). The present review includes data from a large and diverse group of women from low- and middle-income settings who migrated to four

continents and provides a comprehensive overview of prevalence, associated factors and interventions. The focus on women from low- and middle-income countries of origin reflects the large migration flows occurring in these regions and the fact that the needs of these women are likely to differ significantly from those migrants who originate from high-income countries (IOM, 2013).

There are a number of limitations to the review, many of which reflect shortcomings of included studies. Firstly, studies used screening tools rather than diagnostic interviews to assess mental health status and therefore only provide evidence on the prevalence of symptoms indicative of mental disorders, rather than the prevalence of the mental disorder itself. Secondly, the range of psychometric tools used make comparisons between studies challenging. Even when the same instrument was used, cut-offs varied between studies as did the degree to which these cut-offs had been validated in a given setting. Thirdly, inconsistent terminology may have obscured differences between migrant categories. For example, Shafiei *et al.* (2011) describe their sample of women from Afghanistan living in Australia as ‘immigrants’ when they are likely to have met the definition for refugees (Shafiei et al, 2011). Observational studies are by design prone to bias and confounding, either because confounders have not been assessed or because residual confounding from unmeasurable confounding variables remains (Egger et al, 1998; Norgaard et al, 2017; Stroup et al, 2000). Cross-sectional studies are further limited in that they cannot provide evidence on causality between exposures and outcomes (Gonidakis, 2012).

The poor quality of most studies was another limitation. Many studies had a high risk of selection bias due to poor definitions of participants’ migration and/or pregnancy status,

and a high risk of measurement bias due to the use of screening tools that had not been validated (or not been validated rigorously enough) in the local setting. Finally, cultural differences in the manifestation of mental disorders must be considered. The benefits conferred by standardised tools and assessment methods should be balanced against the need for tools that are sensitive to culturally-specific expressions of illness. Although it was beyond the scope and focus of this review, more diverse methods of data collection – including the use of locally-developed or adapted instruments and qualitative or mixed-methods approaches – may generate more meaningful, insightful and in-depth understandings of mental health status than can be achieved through more conventional scales and study designs. Eliciting somatic symptoms, which have been correlated with depression in pregnant and post-partum women and can be more common in low- and middle-income countries, could also improve detection of mental disorders (Kirmayer, 2001; Nylen et al, 2013; Shidhaye et al, 2013).

2.5.7 Implications of findings

The results of this systematic review have a number of implications for policy and future research. These are described in the final Discussion chapter alongside findings of the other study components. The systematic review results also directly informed the development and design of the remaining study components. Firstly, the review confirmed the need for research on perinatal mental disorders among migrants in low-income destination countries – a severe gap in the current literature which is concentrated on selected high-income destination countries. Secondly, the review informed the decision to select two distinct screening instruments for piloting and validation on the Thai-Myanmar border. It was decided that the first instrument should be a commonly-used and standardised tool which would facilitate comparison with other studies, while a

second instrument that bore specific cultural relevance to the local context should also be tested. While the former instrument would offer an opportunity to assess depression from an external or *etic* perspective, the latter would provide insight from an insider, culturally-based or *emic* perspective (Brislin & Thondike, 1973; Patel & Mann, 1997).

Thirdly, the heterogeneity of migrant populations and the context-specific nature of risk factors for perinatal depression highlighted by the review suggested that a mixed-methods approach might be beneficial. It was felt that a qualitative component would facilitate a more in-depth and more accurate understanding of the true burden of perinatal depression in this setting. Fourthly, the selection of exposure variables within the prospective cohort study was informed by risk factors identified by the systematic review. The risk factors summarised in **Figure 8** formed a guiding contextual framework for the cohort component. Finally, the lack of intervention studies influenced the decision to incorporate an exploration of stakeholders' views. Though it was beyond the scope of the research to conduct an intervention study, the stakeholder analysis serves as a starting point for discussions and provides a backdrop that can form the basis of future implementation-focused intervention studies.

2.6 Chapter summary

This chapter presents the methods and findings of a systematic review of perinatal mental disorders among migrant women from low- and middle-income countries. Results indicate that migrant women tend to experience higher rates of perinatal depression than non-migrant women. Risk factors for perinatal depression acted at the socio-economic, environmental, community and individual level. A history of mental disorder and lack of social support were consistently associated with perinatal depression, highlighting the

importance of prioritising the development and maintenance of support networks to ensure that migrant women are sufficiently supported. The lack of evidence from low-income destination countries emphasises the urgent need for research on migrant populations in these regions.

Chapter 3.

Measurement tools and their validity

3.1 Chapter overview

This chapter describes the measurement tools that were used to ascertain the presence of exposure and outcome variables. A number of tools were considered for the assessment of perinatal depression. Of a number of instruments piloted and validated, the *Structured Clinical Interview for the Diagnosis of DSM-IV Disorders* emerged as the most accepted and appropriate in this setting and was selected for use in this research. The rationale for the exposure variables collected and the scales used to measure complex constructs such as social support and trauma history are also provided.

3.2 Assessment of outcome: measuring perinatal depression

3.2.1 Screening tests and diagnostic tests: an overview

The selection of a valid and culturally-appropriate measurement tool is key to the reliable and accurate ascertainment of perinatal depression (Ali et al, 2016). Many instruments are available to establish the presence either of symptoms of perinatal depression or of the condition itself. These instruments fall into two broad categories: diagnostic tests and screening tests. Diagnostic tests aim to provide a comprehensive clinical picture and establish a definitive diagnosis. They rely on standard diagnostic criteria such as those outlined by the American Psychiatric Association's *Diagnostic and Statistical Manual of*

Mental Disorders (DSM) or the World Health Organisation's *International Classification of Diseases Diagnostic Criteria* (ICD) (American Psychiatric Association, 2000; WHO, 1992). Diagnostic tests are commonly administered by trained experts or healthcare professionals. By standardising the terminology, question sequence and response assessment, diagnostic interviews reduce inter-rater variability and improve diagnostic accuracy (Mestre et al, 2013).

Screening tests tend to be briefer and narrower in scope, providing a rapid means of assessing an individual's risk of having a condition by establishing the presence of symptoms indicative of the condition. Those scoring above a pre-specified threshold are considered to have an elevated risk of the condition of interest and these individuals require further assessment, usually in the form of a diagnostic interview (Aboraya et al, 2016). Screening tests can be self-completed or administered by non-specialists with minimal training. In low-resource settings, where mental health expertise is often lacking or over-stretched, the scope for non-specialists to conduct mental health assessments is an important consideration.

The performance of depression screening tools varies across languages and settings, and validity must be assessed prior to use within different cultural groups (Boyd et al, 2005). Validation studies assess the accuracy of a screening tool compared with a gold standard and identify the optimal cut-off score within a given setting or population group. For the current study, validation of the assessment tool was important for several reasons. Firstly, perinatal depression has not previously been studied in this cultural or geographic setting or in the local languages. Secondly, validation of screening tools for mental disorders is important in low- and middle-income settings more broadly as manifestations of

depression may differ from symptoms encountered in high-income settings, where most screening tools are developed (Ali et al, 2016; Tandon et al, 2012). Finally, validation was important specifically for this low-literacy population (Carrara et al, 2011). It was necessary to ensure that measurement tools were acceptable, appropriate and user-friendly to participants as well as to local staff carrying out the assessments.

The selection of a tool for this study was an iterative process. The aim was to identify a valid, culturally-appropriate and practical instrument to identify women with perinatal depression on the Thai-Myanmar border. The systematic literature review described in the previous chapter highlighted the benefits of using a standardised tool but also raised the importance of ensuring tools are relevant to the local culture. The review also found an absence of studies using diagnostic rather than screening tests, which constituted an important short-coming. These findings underpinned the selection of screening tools for piloting as well as later decisions around the use of a diagnostic test.

3.2.2 Selection of the diagnostic tool

The *Structured Clinical Interview for the Diagnosis of DSM-IV Disorders (Research version)* (SCID) was selected as the ‘gold standard’ diagnostic tool. The SCID is a semi-structured interview structured around the DSM-IV diagnostic criteria (American Psychiatric Association, 2000; First et al, 2007). The presence of depressive disorder is established on the basis of responses to nine open questions relating to affective, cognitive and social symptoms of depression (First et al, 2007). No distinction is made between perinatal depressive disorder and depressive disorder at other stages of life other than the timing of occurrence (American Psychiatric Association, 2000).

The SCID is one of the most widely-used ‘gold standard’ comparators in validation and epidemiological studies globally. It was selected over other diagnostic instruments for use in this study for a number of reasons. The semi-structured design facilitates its administration and requires less extensive expertise from interviewers than some other diagnostic tests. This was an advantage in this low-resource setting where mental health expertise is severely lacking. The structure of the SCID also facilitates the interpretation of results and limits scope for variability in interpretation (Aboraya et al, 2016). Finally, training on the administration of the SCID, provided by the *American Psychiatric Association*, consisted of self-directed, computerised learning and was significantly more accessible than training for other diagnostic tools, many of which required face-to-face attendance at courses in locations that were not viable for the author or counselling team.

The DSM-IV categories of depression included as outcomes in this study were: Major Depressive Disorder, Minor Depressive Disorder and Depressive Disorder ‘Not Otherwise Specified’ (NOS). Criteria for these disorders, and the nine SCID items used to assess the presence of relevant symptoms, are listed in **Table 15** and **Table 16**, respectively. A tenth item was added to determine participants’ ability to cope – an additional criteria stipulated by DSM-IV and defined as the extent to which symptoms of depression impair social, occupational or other important areas of functioning.

Table 15 Definitions of depressive disorders according to DSM-IV (American Psychiatric Association, 2000)

Major Depressive Episode	Five or more of the symptoms listed in Table 16 have been present during the same two-week period and represent a change from previous functioning. At least one of the symptoms must be either (1) depressed mood or (2) loss of interest or pleasure. Symptoms must cause clinically significant distress or impairment in social, occupational or other important areas of functioning. Symptoms must not be due to the direct effects of a general medical condition or substance use.
Minor Depressive Disorder	At least two (but less than five) of the symptoms listed in Table 16 have been present during the same two-week period and represent a change from previous functioning. At least one of the symptoms must be either (1) depressed mood or (2) loss of interest or pleasure. Symptoms must cause clinically significant distress or impairment in social, occupational or other important areas of functioning. Symptoms must not be due to the direct effects of a general medical condition or substance use.
Depressive Disorder 'Not Otherwise Specified' (NOS)	Clinically significant depressive symptoms that do not meet the criteria for Major or Minor Depressive Disorder. For this study, Depressive Disorder NOS was defined as having four or more of the symptoms listed below at a severity that does not meet the DSM-IV threshold. One of the symptoms must be either (1) depressed mood or (2) loss of interest or pleasure. Examples of symptoms include low mood often but not nearly every day, or significant feelings of worthlessness that impact on social functioning but do not occur nearly every day.

Table 16 SCID items relating to DSM-IV criteria for depressive disorders (First et al, 2007)

- | |
|--|
| <ol style="list-style-type: none">1. Depressed mood most of the day, nearly every day, as indicated either by subjective report (e.g., feels sad or empty) or observation made by others (e.g., appears tearful)2. Markedly diminished interest or pleasure in all, or almost all, activities most of the day, nearly every day (as indicated either by subjective account or observation made by others)3. Significant weight loss when not dieting, or weight gain (e.g., a change of 5% of body weight in a month) or decrease or increase in appetite nearly every day4. Insomnia or hypersomnia nearly every day5. Psychomotor agitation or retardation nearly every day (observable by others; not merely subjective feelings of restlessness or being slowed down)6. Fatigue or loss of energy nearly every day7. Feelings of worthlessness or excessive or inappropriate guilt (which may be delusional) nearly every day (not merely self-reproach or guilt about being sick)8. Diminished ability to think or concentrate, or indecisiveness, nearly every day (either by subjective account or as observed by others)9. Recurrent thoughts of death (not just fear of dying), recurrent suicidal ideation without a specific plan, or a suicide attempt or a specific plan for committing suicide |
|--|

SCID items were translated from English into Burmese and Sgaw Karen. Poe Karen, the third most common language among migrant communities in this region, is a spoken language only and does not exist in written form. Due to the lack of mental health expertise in this setting, no psychiatrist was available locally to conduct translations. Instead, translations were done by two senior midwives with extensive experience in clinical practice and research in this setting and fluent in English, Burmese and Karen languages. Back-translations were conducted by a senior midwife (Sgaw Karen version) and a physician (Burmese version) who had not seen the original English version. Original and back-translated versions were compared and confirmed to have semantic equivalence.

Due to the nature of the Burmese and particularly Sgaw Karen languages, it was necessary for some of the individual SCID items to be broken down into a series of questions. For example, the first question was phrased, “Do you ever feel very sad?” Affirmative responses were followed-up with questions to establish whether feelings occurred “most of the day, nearly every day” and to elicit further details about the nature and context of these feelings. The final Sgaw Karen and Burmese SCID interview schedules are presented in **Appendices 9 and 10**.

SCID results were scored using the procedure prescribed by the SCID (First et al, 2007). Responses to each of the SCID items were assessed against the DSM-IV criteria and scored ‘1’ if the criteria were not met; ‘2’ if the criteria were partially (but not fully) met; ‘3’ if criteria were fully met; or ‘?’ if the information provided was insufficient (**Table 17**).

Table 17 Definition and interpretation of scores for individual SCID items (First et al, 2007)

Score	Definition	Interpretation
3	Threshold or true	Criteria fully met; definite ‘yes’
2	Sub-threshold	Criteria partially met, but not fully meeting threshold
1	Absent or false	Criteria absent; definite ‘no’
?	Inadequate information	Insufficient information to score the item

3.2.3 *Selection of the screening tool*

A number of screening tools were considered for testing against the SCID in this study. The Edinburgh Postnatal Depression Scale (EPDS) was formally validated in a separate study prior to this research and found not to be appropriate for use in this setting, as described in more detail below. Two further screening tools were therefore selected for piloting. Guided by the results of the systematic review, one standardised, commonly-

used instrument and one instrument that was considered more specific to this particular setting, culture and population were selected. The rationale for selecting these tools and results of their piloting are presented below.

Edinburgh Postnatal Depression Scale

The Edinburgh Postnatal Depression Scale (EPDS) is a ten-item questionnaire which asks respondents to rate how they have felt during the previous week. Each item is scored 0–3 with total scores in the range of 0–30 and higher scores representing a higher likelihood of depression (**Appendix 11**). The EPDS is the most widely-used screening tool for perinatal depression and has demonstrated good validity and reliability across diverse languages, settings and populations globally, including in many low- and middle-income countries (Ali et al, 2016; Chorwe-Sungani & Chipps, 2017; Cox et al, 1987; Fellmeth et al, 2016a; Gibson et al, 2009; Tandon et al, 2012). The EPDS has the advantage of being specifically designed to screen for depression in pregnancy and post-partum. Its focus on cognitive and affective symptoms avoids conflation of some of the physical symptoms associated with pregnancy – such as fatigue and loss of appetite – with symptoms of perinatal depression. These characteristics make the EPDS an attractive and one of the most obvious choices of tools.

In a previous study, the EPDS was validated among post-partum women on the Thai-Myanmar border (Ing et al, 2017). Burmese and Sgaw Karen translations of the EPDS were administered to 670 post-partum women attending SMRU clinics between February 2014 and April 2015. Using the SCID as the gold standard comparator, the EPDS demonstrated good psychometric properties with high accuracy (area under the curve 0.99) in both Burmese and Sgaw Karen. Internal consistency was good for the Burmese

version but poorer for the Sgaw Karen version (Cronbach's alpha 0.82 and 0.59, respectively). In both languages, a cut-off of ≥ 10 provided the optimal threshold, yielding a sensitivity of 100% and specificity of 96.7% (95% CI 93.6–99.9) in Burmese, and a sensitivity of 100% and specificity of 98.7% (95% CI 97.7–99.7) in Sgaw Karen (Ing et al, 2017).

However, despite reasonable psychometrics, local staff conducting the interviews expressed many concerns about the EPDS, describing the EPDS language as cumbersome and difficult to understand. Unfamiliarity with Likert-type response categories, changing directionality of response options and subtlety between options such as 'most of the time' and 'some of the time' – terms that are not easily distinguishable or translatable into the local languages, particularly Sgaw Karen – presented challenges for staff and participants alike and rendered it difficult for questions to be answered accurately. A number of participants became distressed as a result of being unable to complete the questionnaire. The overwhelming view among study staff was that the EPDS was inappropriate and had limited utility in this setting. Given this feedback and the staff aversion to the EPDS, it was necessary to identify an alternative, more acceptable screening tool.

Patient Health Questionnaire

The *Patient Health Questionnaire* (PHQ-9) is a nine-item questionnaire which evaluates the presence of criteria for depressive disorder in the previous two-week period (Kroenke et al, 2001). Items cover psychological and cognitive symptoms and assess social, functional and occupational impairment. For each item, respondents select the response option that best describes the frequency of symptoms experienced, from 'not at all' (0) to

‘nearly every day’ (3). Each item is scored 0–3 with total scores ranging from 0-27 and higher scores representing increased severity of symptoms (**Appendix 12**).

The reason for selecting the PHQ-9 for piloting was that, similar to the EPDS, it provides another commonly-used screening tool that has been validated across diverse settings including low-income regions (Ali et al, 2016; Azale et al, 2016; Fekadu et al, 2017; Kohrt et al, 2016). Though not designed specifically for use in the perinatal period, it has been found to be reliable in pregnant and post-partum women (Fekadu et al, 2017; Gjerdingen et al, 2009; Sidebottom et al, 2012). The PHQ-9 also holds a number of advantages over the EPDS. Questions on the PHQ-9 are aligned with the nine SCID items, which had performed well during the previous EPDS validation study. The PHQ-9 therefore offered a means of testing SCID questions using a Likert-response type format. Furthermore, the response options on the PHQ-9 are simpler and more consistent than those of the EPDS: the options themselves are more straightforward and they remain constant for all questions. The PHQ-9 therefore offered an opportunity to test a simpler Likert-like response scale.

Refugee Health Screener

The *Refugee Health Screener-15* (RHS-15) is a fifteen-item screen for psychological and somatic symptoms of depression, anxiety and post-traumatic stress disorder (PTSD). It was developed in consultation with refugees from Myanmar, Bhutan and Iraq who had resettled in the United States (Hollifield et al, 2013; Pathways to Wellness, 2012). The first fourteen items ask respondents to rate the frequency of psychological and somatic symptoms on a 5-point Likert scale scored 0 (not at all) to 4 (extremely). The 5-point scale is diagrammatically annotated with a beaker filled to varying degrees to facilitate

understanding. The fifteenth item consists of a visual analogue scale in the form of a ‘distress thermometer’: respondents rate their level of distress from zero (no distress) to ten (extreme distress) on a diagram of a thermometer. A total score ≥ 12 on items 1–14 and/or ≥ 5 on the distress thermometer constitute a positive screen requiring further, in-depth assessment. Sgaw Karen and Burmese versions were obtained from the RHS-15 authors (**Appendix 13**) (Hollifield et al, 2013).

The reason for selecting the RHS-15 for piloting was its specific migrant focus, which offered an alternative approach to the more widely-used and mainstream instruments. The fact that resettled Karen and Burmese refugees were involved in its design rendered it particularly relevant. The visual analogue (distress thermometer) component of the RHS-15 was also considered to be advantageous in a low-literacy population setting. The RHS-15 has not previously been used in Burmese or Karen communities *prior to* resettlement, and it has not been used among pregnant or postpartum women.

3.2.4 *Piloting of the PHQ-9 and RHS-15*

The PHQ-9 and RHS-15 were piloted on a convenience sample of 128 SMRU staff members (n=29 at Mawker Tai, n=38 at Maela, n=61 at Wang Pha). Participating staff members came from a range of clinical departments and seniority. Staff were asked to complete both questionnaires and provide feedback on each. Across all three clinic sites there was a marked preference for the RHS-15 over the PHQ-9. Many felt that some of the PHQ-9 questions were not clear. For example, it was felt that the first question – having “little interest or pleasure in doing things” – could not be easily answered as interest and pleasure are different concepts and should therefore be separated into two questions. Others commented that it felt like “reading a textbook” and would not be easy

for patients to understand. With very few exceptions staff felt that the RHS-15 was clearer, easier to understand and easier to complete. Based on this feedback, it was decided to proceed with a formal validation of the RHS-15.

3.2.5 Validation of the RHS-15

Procedure

The validity of the RHS-15 was assessed in Burmese and Sgaw Karen. Methods of the validation component are summarised briefly here and described in more detail in Chapter 4. Validation of the RHS-15 occurred concurrently with the baseline assessment of the cohort study component. All participants completed both the RHS-15 and the SCID at their baseline assessment in the first trimester of pregnancy. Study staff read RHS-15 items verbatim to participants and recorded responses. This method of verbal administration is considered acceptable by RHS-15 authors, and was used in this setting due to low literacy rates within the migrant community and limited comprehension of written health information, even among those able to read fluently (Carrara et al, 2011; Pathways to Wellness, 2012). After completing the RHS-15, participants were interviewed using the SCID. At Mawker Tai, the SCID was conducted by a different member of the study team who was blinded to the results of the RHS-15. At Maela and Wang Pha, staffing constraints meant that the RHS-15 and SCID were administered consecutively by the same study team member. At Maela and Wang Pha the RHS-15 was always administered first, and followed by the SCID. At Mawker Tai, efforts were made to maintain this same ordering but at times due to different availability of the two staff members involved in conducting the interviews, the SCID was conducted first.

Sample size

The target sample size was 200 Sgaw Karen-speaking and 200 Burmese-speaking women. This was based on validation study guidelines suggesting that 200 participants is considered a ‘fair’ sample size (Comrey & Lee, 1992).

Statistical methods

For the validation component only, depression status was defined as a SCID diagnosis of major or minor depression (i.e., excluding depression NOS), in order to be aligned with and comparable to validation studies from other settings. Mean RHS-15 scores of women with and without depression were compared to test the construct validity of the RHS-15 (Devellis, 2003). Sensitivity, specificity, positive likelihood ratio (LR+), negative likelihood ratio (LR–) and the proportion of cases correctly identified were calculated for each cut-off value of the RHS-15. The LR+ represents the probability of participants with depression scoring positive, divided by the probability of participants without depression scoring positive; the higher the value, the more convincingly the RHS-15 score is able to detect depression.

Accuracy was evaluated using receiver operating characteristic (ROC) curves, which plot the sensitivity versus 1 minus the specificity of a measure (see **Figure 9** and **Figure 10**). An area under the ROC curve (AUC) greater than 0.5 suggests that the measure identifies cases better than by chance and an AUC greater than 0.8 is generally considered to suggest an accurate test (Hanley & McNeil, 1982). Youden’s Index, the value at which $[(\text{sensitivity} + \text{specificity}) - 1]$ is maximised, was used to identify the point of optimal balance between sensitivity and specificity. Reliability was assessed using Cronbach’s

alpha. Separate analyses were conducted for items 1–14 and the distress thermometer (item 15) because scores above the threshold of either of these components could constitute a positive screen. Statistical analyses were conducted using *STATA 14 SE* (StataCorp, 2015) and *SPSS 23.0* (IBM SPSS, 2013).

Results

Of 630 eligible women attending ANC during the study period, 569 (90.2%) participated in the baseline assessment. Complete SCID and RHS-15 results were obtained for 510 (235 Burmese-speaking and 275 Sgaw Karen-speaking) women. Overall, 48.5% (114/235) of Burmese-speaking and 42.4% (116/275) of Sgaw Karen-speaking women screened positive on the RHS-15. Screening results for women with and without depression are shown in **Table 18**. Median scores and the proportion of participants scoring positive on the RHS-15 were significantly higher among women with depression compared to women without depression in both Burmese and Sgaw Karen, except for the distress thermometer, which did not significantly differentiate between depressed and non-depressed women in Sgaw Karen.

Table 18 Results of RHS-15 screening by language and depression status

RHS-15 component	Burmese			Sgaw Karen		
	Depressed (n=22)	Not depressed (n=213)	p-value	Depressed (n=17)	Not depressed (n=258)	p-value
Items 1-14						
Positive (≥ 12), % (n)	81.8 (18)	34.3 (73)	<0.01	94.1 (16)	31.4 (81)	<0.01
Median [range] [†]	18.5 [8-49]	9 [0-40]	<0.01	22 [10-38]	9 [0-27]	<0.01
Distress thermometer						
Positive (≥ 5), % (n)	59.1 (13)	22.4 (47)	<0.01	41.2 (7)	22.9 (58)	0.09
Median [range] [†]	5 [1-10]	2 [0-10]	<0.01	4 [0-10]	2 [0-10]	0.02
Overall						
Positive, % (n)	86.4 (19)	44.6 (95)	<0.01	94.1 (16)	38.8 (100)	<0.01

Bold denotes statistical significance at $p < 0.05$ level.

[†] p-values calculated using Mann-Whitney U test. All other p-values calculated using Chi-squared test

- Burmese RHS-15

The reliability of the Burmese RHS-15 as determined using Cronbach's alpha was 0.63.

Omitting unhelpful individual items of the RHS-15 did not improve the reliability significantly, producing a range of alpha values between 0.56 and 0.66. The sensitivity, specificity and likelihood ratios for each cut-off of items 1-14 of the Burmese RHS-15 are shown in **Table 19**. For items 1-14, the AUC was 0.84 (95% CI 0.76–0.93) (**Figure 9**). The optimal cut-off for items 1-14 was ≥ 14 , which yielded a sensitivity of 81.8% (95% CI 61.5–92.7%), specificity of 76.1% (95% CI 69.9–81.3%) and correctly identified 76.6% of participants.

The sensitivity, specificity and likelihood ratios for each cut-off of the distress thermometer (item 15) are shown in **Table 20**. The ROC curve for the distress thermometer is shown in **Figure 10**. The AUC for the distress thermometer was 0.79

(95% CI 0.70–0.88). The optimal cut-off was ≥ 4 , which yielded 77.3% (95% CI 56.5–89.9%) sensitivity, 66.7% (95% CI 60.1–72.7%) specificity and correctly identified 68.5% of participants. Overall, applying the optimal thresholds of ≥ 14 for items 1-14 and ≥ 4 resulted in almost half (47.7%) of all women screening positive.

Table 19 Sensitivity, specificity, likelihood ratios and proportion correctly classified:
Burmese RHS-15 items 11–14 (n=235)

RHS-15 cut-off	Sensitivity (%)	Specificity (%)	Correctly classified (%)	Positive likelihood ratio	Negative likelihood ratio
≥0	100.0	0.0	9.4	1.00	-
≥1	100.0	0.9	10.2	1.01	0.00
≥2	100.0	2.8	11.9	1.03	0.00
≥3	100.0	6.1	14.9	1.07	0.00
≥4	100.0	8.0	16.6	1.09	0.00
≥5	100.0	14.6	22.6	1.17	0.00
≥6	100.0	20.2	27.7	1.25	0.00
≥7	100.0	29.1	35.7	1.41	0.00
≥8	100.0	36.2	42.1	1.57	0.00
≥9	90.9	43.2	47.7	1.60	0.21
≥10	90.9	50.2	54.0	1.83	0.18
≥11	86.4	57.3	60.0	2.02	0.24
≥12	81.8	65.7	67.2	2.39	0.28
≥13	81.8	71.8	72.8	2.90	0.25
≥14	81.8	76.1	76.6	3.42	0.24
≥15	77.3	80.3	80.0	3.92	0.28
≥16	59.1	85.9	83.4	4.20	0.48
≥17	59.1	89.2	86.4	5.47	0.46
≥18	54.6	90.1	86.8	5.53	0.50
≥19	50.0	92.5	88.5	6.66	0.54
≥20	31.8	94.4	88.5	5.65	0.72
≥21	31.8	95.3	89.4	6.78	0.72
≥22	31.8	96.2	90.2	8.47	0.71
≥23	27.3	97.2	90.6	9.68	0.75
≥24	27.3	97.6	91.1	11.62	0.74
≥25	27.3	98.6	91.9	19.36	0.74
≥26	22.7	98.6	91.5	16.14	0.78
≥27	22.7	99.1	91.9	24.20	0.78
≥28	13.6	99.1	91.1	14.52	0.87
≥29	9.1	99.1	90.6	9.68	0.92
≥32	9.1	99.5	91.1	19.36	0.91
≥40	4.6	99.5	90.6	9.68	0.96
≥49	4.6	100.0	91.1	-	0.96
>49	0.0	100.0	90.6	-	1.00

Table 20 Sensitivity, specificity, likelihood ratios and proportion correctly classified:
Burmese RHS-15 distress thermometer (n=232)

RHS-15 cut-off	Sensitivity (%)	Specificity (%)	Correctly classified (%)	Positive likelihood ratio	Negative likelihood ratio
≥0	100.0	0.0	9.5	1.00	-
≥1	100.0	17.1	25.0	1.21	0.00
≥2	95.5	34.8	40.5	1.46	0.13
≥3	90.9	50.5	54.3	1.84	0.18
≥4	77.3	66.7	68.5	2.39	0.34
≥5	59.1	77.6	75.9	2.64	0.53
≥6	40.9	93.3	88.4	6.14	0.63
≥7	36.4	95.2	89.7	7.64	0.67
≥8	18.2	96.2	88.8	4.77	0.85
≥9	9.1	97.6	89.2	3.82	0.93
≥10	4.6	99.1	90.1	4.77	0.96

Figure 9 Receiver operating characteristic curve: Burmese RHS-15: items 1-14

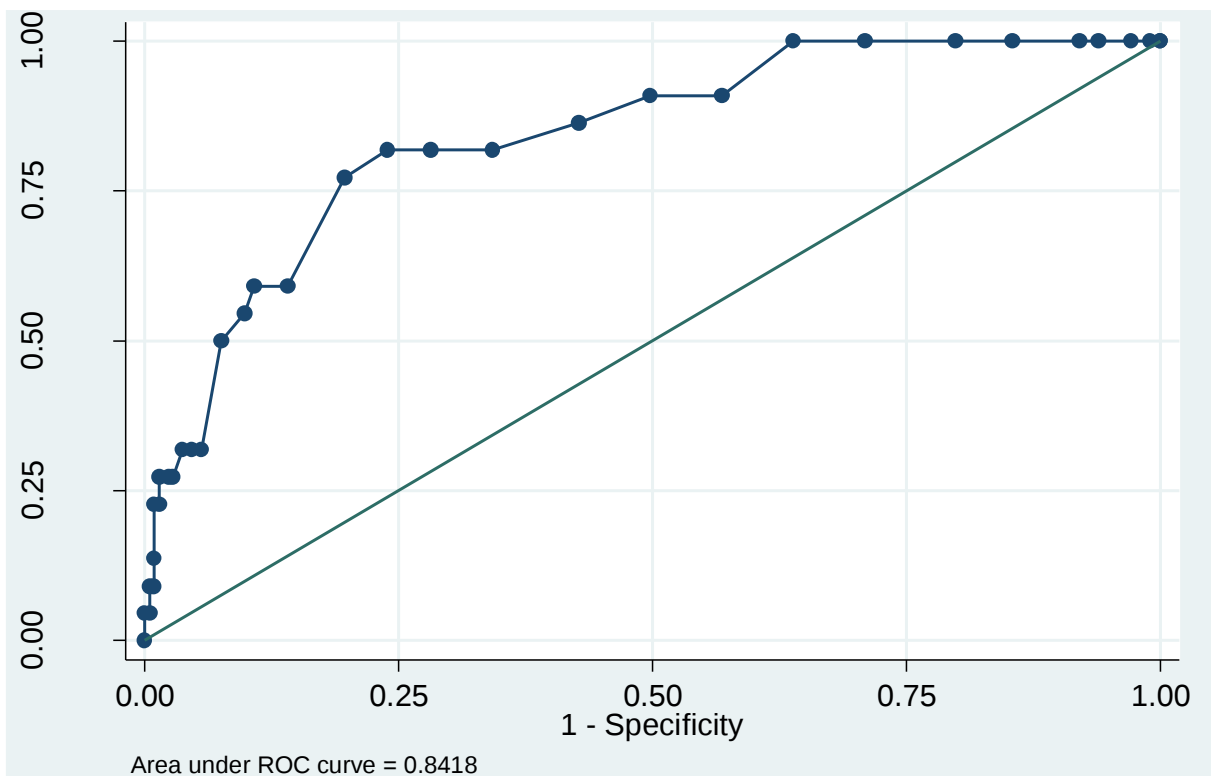
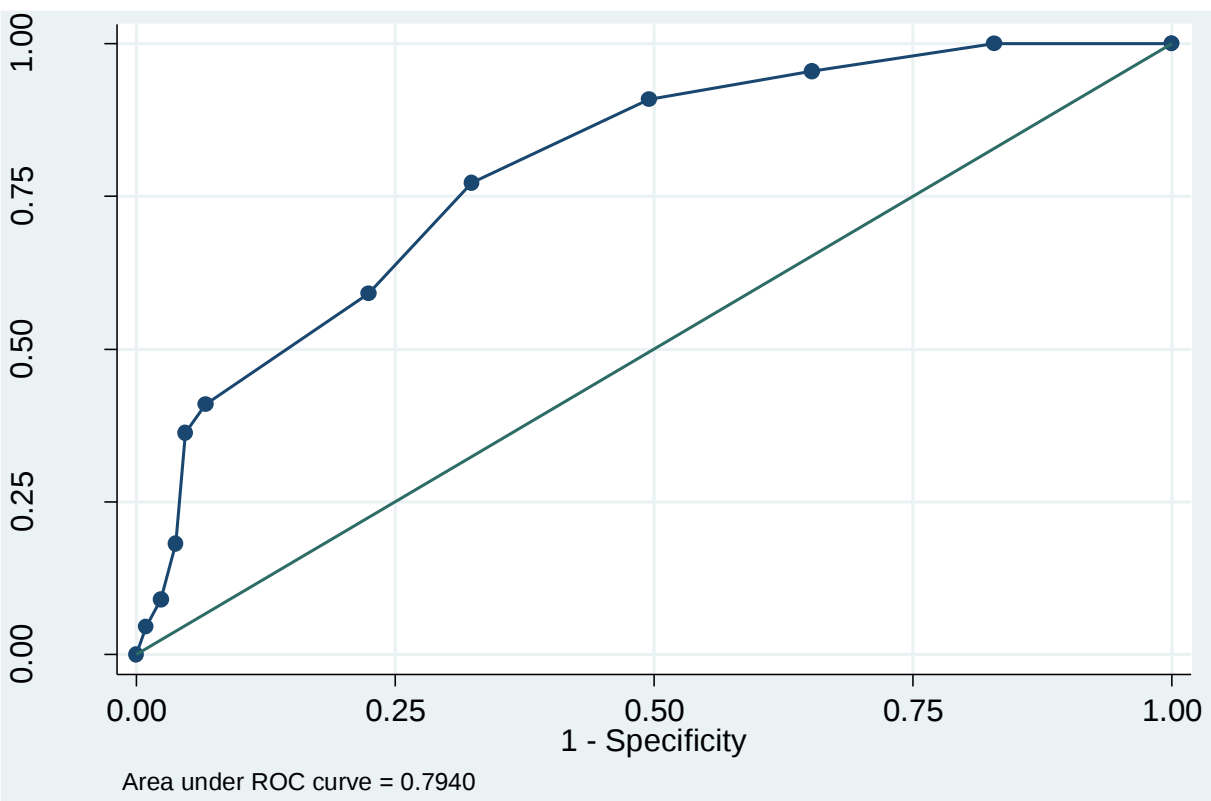


Figure 10 Receiver operating characteristic curve: Burmese RHS-15: distress thermometer



- Sgaw Karen RHS-15

The reliability of the Sgaw Karen RHS-15 as determined using Cronbach's alpha was 0.56, with a range of 0.48–0.52 upon omitting individual items. The sensitivity, specificity and likelihood ratios for each cut-off of items 1-14 of the Sgaw Karen RHS-15 are shown in **Table 21**. The ROC curve for items 1-14 is shown in **Figure 11**. The AUC for items 1-14 was 0.92 (95% CI 0.86–0.98). The optimal cut-off for items 1-14 was ≥ 15 , yielding sensitivity of 88.2% (95% CI 65.7–96.7%), specificity of 81.0% (95% CI 75.8–85.3%) and correctly identifying 81.5% of women.

The sensitivity, specificity and likelihood ratios for the Sgaw Karen distress thermometer are shown in **Table 22**. The ROC curve for the distress thermometer is shown in **Figure 12**. The AUC for the distress thermometer was 0.67 (95% CI 0.53–0.78). The optimal cut-off was ≥ 4 , which yielded a sensitivity of 52.9% (95% CI 31.0–73.8%), specificity of 69.2% (95% CI 63.2–74.5%) and correctly identified 68.2% of participants. Overall, using the optimal thresholds resulted in 41.1% of women screening positive.

Table 21 Sensitivity, specificity, likelihood ratios and proportion correctly classified:
Sgaw Karen RHS-15 items 1-14 (n=275)

RHS-15 cut-off	Sensitivity (%)	Specificity (%)	Correctly classified (%)	Positive likelihood ratio	Negative likelihood ratio
≥0	100	0.0	6.2	1.00	-
≥1	100	1.6	7.6	1.01	0.00
≥2	100	3.1	9.1	1.03	0.00
≥3	100	13.2	18.6	1.15	0.00
≥4	100	14.3	19.6	1.137	0.00
≥5	100	19.8	24.7	1.25	0.00
≥6	100	26.0	30.6	1.35	0.00
≥7	100	36.8	40.7	1.58	0.00
≥8	100	40.7	44.4	1.69	0.00
≥9	100	46.9	50.2	1.88	0.00
≥10	100	54.7	57.5	2.21	0.00
≥11	94.1	62.8	64.7	2.53	0.09
≥12	94.1	68.6	70.2	3.00	0.09
≥13	88.2	72.9	73.8	3.25	0.16
≥14	88.2	76.4	77.1	3.73	0.15
≥15	88.2	81.0	81.5	4.65	0.15
≥16	82.4	86.4	86.2	6.07	0.20
≥17	76.5	87.6	86.9	6.17	0.27
≥18	76.5	90.3	89.5	7.89	0.26
≥19	70.6	91.1	89.8	7.92	0.32
≥20	70.6	92.6	91.3	9.59	0.32
≥21	64.7	95.0	93.1	12.84	0.37
≥22	52.9	96.5	93.8	15.18	0.49
≥23	47.1	97.7	94.6	20.24	0.54
≥24	41.2	98.5	94.9	26.56	0.60
≥25	23.5	99.2	94.6	30.35	0.77
≥27	17.7	99.6	94.6	45.53	0.83
≥29	17.7	100.0	94.9	-	0.82
≥32	11.8	100.0	94.6	-	0.88
≥38	5.9	100.0	94.2	-	0.94
>38	0.0	100.0	93.8	-	1.00

Table 22 Sensitivity, specificity, likelihood ratios and proportion correctly classified:
Sgaw Karen RHS-15 distress thermometer (n=270)

RHS-15 cut-off	Sensitivity (%)	Specificity (%)	Correctly classified (%)	Positive likelihood ratio	Negative likelihood ratio
≥0	100.0	0.0	6.3	1.00	-
≥1	94.1	21.0	25.6	1.19	0.28
≥2	82.4	39.1	41.9	1.35	0.45
≥3	64.7	56.1	56.7	1.47	0.63
≥4	52.9	69.2	68.2	1.72	0.68
≥5	41.2	77.1	74.8	1.80	0.76
≥6	23.5	93.3	88.9	3.50	0.82
≥7	23.5	96.4	91.9	6.61	0.79
≥8	11.8	97.6	92.2	4.96	0.90
≥9	5.9	98.0	92.2	2.98	0.96
≥10	5.9	98.8	93.0	4.96	0.95
>10	0.0	100.0	93.7	-	1.00

Figure 11 Receiver operating characteristic curve: Sgaw Karen RHS-15: items 1-14

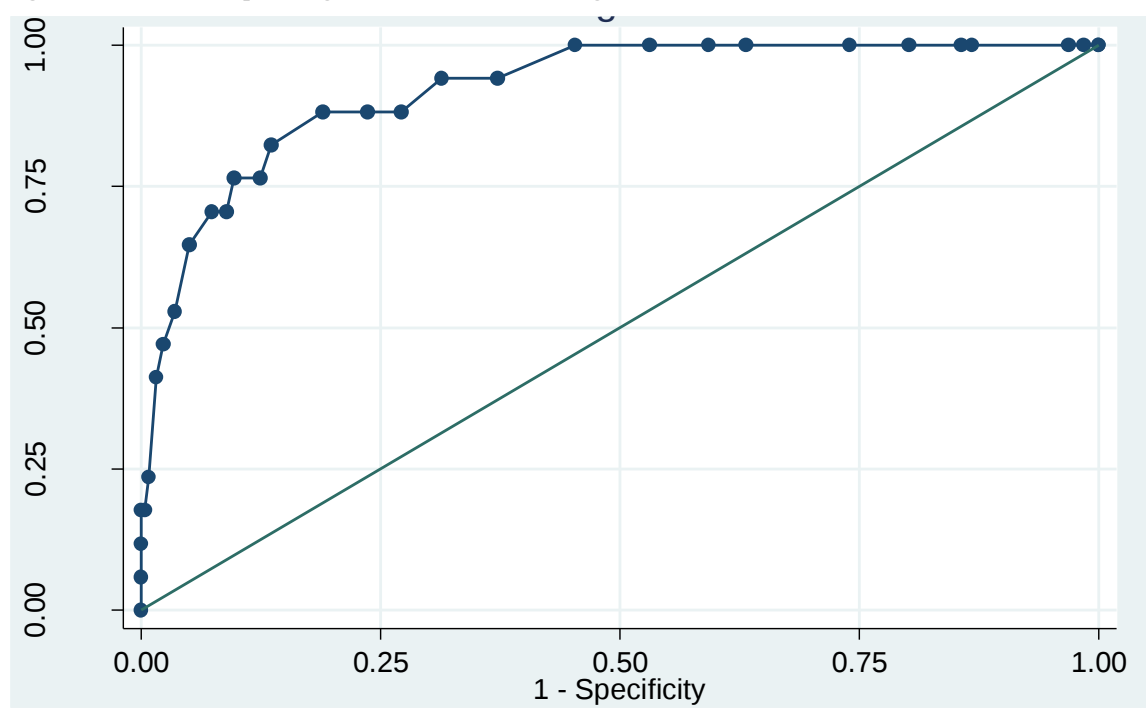
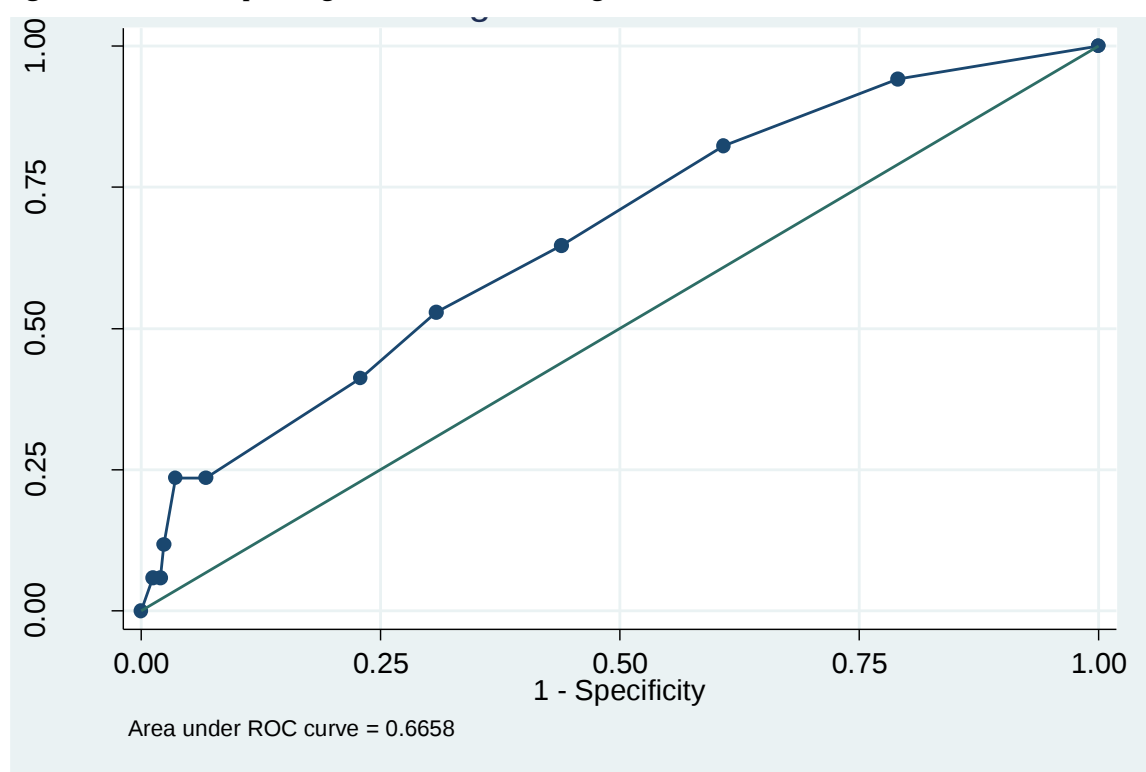


Figure 12 Receiver operating characteristic curve: Sgaw Karen RHS-15: distress thermometer



Discussion

Overall, the RHS-15 performed adequately, displaying reasonable sensitivity and specificity in Burmese and Sgaw Karen. However, there were a number of considerations that outweighed these good psychometric properties and limited the utility of the RHS-15 in this setting. Firstly, almost half of all women screened positive on the RHS-15 using the optimal thresholds identified for this population. This issue of large proportions of respondents screening positive on the RHS-15 has been highlighted in other settings (Stingl et al, 2017). This is problematic given that each screen-positive woman requires further assessment, ideally in the form of a diagnostic interview. In-depth assessment of almost one in every two women attending ANC – many of whom will have falsely screened positive on the RHS-15 – is unfeasible in a resource-constrained setting such as the Thai-Myanmar border with numerous competing health service priorities.

Secondly, the Likert-scale remained problematic despite the simplification through use of pictorial representations of response options (beakers filled to varying degrees). Many participants found it difficult to select the appropriate response option, and lengthy discussions were often required to differentiate between categories such as ‘a little bit’, ‘moderately’ and ‘quite a bit’, none of which translate directly into Burmese or Sgaw Karen. Sgaw Karen in particular has a limited scope for nuanced questioning and linguistic precision, and a single concept can often require round-about explanation.

Figure 13 illustrates visually the extent to which an English sentence is lengthened in Burmese and Sgaw Karen translation. Previous studies have described the challenges of using Likert scales in low-literacy populations (Bernal et al, 1997; Chachamovich et al, 2009; D'Alonzo, 2011). Poor reading ability has been associated with a loss of discriminant power of five-category response scales such as the RHS-15 scale, and

simpler, three-point scales have been proposed as an alternative among low-literacy groups (Chachamovich et al, 2009). It is unclear why the distress thermometer, despite being one of the least literacy-dependent items, was a poorer discriminator of depression status than items 1-14.

Figure 13. Illustration of the lengthening of a sentence from English into Burmese and Sgaw Karen

English: Have you had feelings of worthlessness, or feelings that you were a burden to others?
Burmese: ရဲ့သင့်ကိုယ်သင်တန်ဖိုးမရှိသူ/အသုံးမကျသူ(သို့)သင်သည်အခြားသူများအားဝန်ထုပ် ဝန်ပိုးဖြစ်စေသည်ဟုခံစားဖူးပါသလားခံစားဖူးပါကမည်သည့်အရာကသင်အား ခံစားမှုကိုဖြစ်စေသလဲ။ ဘယ်လောက်ကြာကြာတခါဖြစ်သလဲ။
Sgaw Karen: မုၢ်နတူၢ်ဘၣ်လၢနလုၢ်နပူၤတအိၣ်နီၣ်တမံၤ(မ့တမ့ၢ်)နကဲထီၣ်တၢ်ဝံတၢ်ယိးဃၢလၢပုၤဂၤအဂီၢ်အိၣ်တဘျီဘျီစ့ၢ်ကိးခါ. မုၢ်တူၢ်ဘၣ်တခါ,မုၢ်မနုၤအယိနတူၢ်ဘၣ်ဒ်အံၤလဲၣ်.ကဲထီၣ်အသးအဆၢကတီၢ်အခါဖဲလဲၣ်(ပွဲၤဘျီလဲၣ်).

Finally, it became apparent during the study that the SCID – selected originally purely to serve as a ‘gold standard’ comparator – had a number of strengths over the RHS-15. The SCID proved not only the more straight-forward to administer, but also able to elicit greater detail and depth than the RHS-15. The open questions allowed women to describe their feelings in their own words, and often, valuable additional information around their personal and social circumstances emerged which helped to understand and contextualise their psychological state. The SCID thus added a breadth and depth to the clinical history that far exceeded what was elicited by the RHS-15. Furthermore, on average, the SCID saved time. For non-depressed women, the SCID took less time to administer than the RHS-15. For depressed women, the SCID took longer to administer, but remained faster than the alternative of administering the RHS-15 first followed by the SCID, as would be

required by a screen-positive RHS-15. Together, these factors led to a decision to pursue only with the SCID for subsequent stages of the cohort study.

3.3 Selection and assessment of exposure variables

3.3.1 Selection of variables

The selection of exposures to include in this research was based on findings from the systematic review. A number of additional variables were also included as they were considered to be important on the Thai-Myanmar border. Exposure variables collected are summarised in **Table 23**, and the rationales for their selection are discussed below.

Table 23 Exposure variables collected in the cohort study component

Domain	Variables
Demographic	Age, ethnicity, language, religion, marital status
Education and language	Years of education, type of school, reason stopped school, literacy, language of interview, languages spoken
Economic	Employment, wage frequency, household size, household members working, remittances sent & received, telephone ownership
Migration	Country of birth, country of residence, reason for migration, duration in current location, identification card, future plans
Lifestyle	Alcohol, smoking, chewing tobacco, chewing betel nut
Psychosocial	Self-reported history of depression, social support, interpersonal violence, trauma
Medical	Maternal BMI, hypertension, diabetes, dengue
Obstetric	Parity, gravida, number of children, planned pregnancy, mode of delivery, EGA at delivery
Infant	Neonatal death, foetal distress, gender, birthweight, birth length, head circumference

Demographic factors

Age, ethnicity and marital status were included as they were identified by the systematic review as risk factors for perinatal depression in certain settings. Religion was added because it plays an important role among the local migrant community. Although religion is closely aligned with ethnicity, there are also differences between religion and ethnicity in this setting, such as among ethnic Karen, the majority of whom are Buddhist but a significant proportion of whom are Christian. Buddhist practices such as meditation have been reported to protect against depression in certain settings and more widely, some evidence suggests religiosity may play a positive role in maternal coping strategies (Cowchock et al, 2011; Kasai et al, 2017).

Education and language factors

Educational background was identified in the systematic review as being associated with perinatal depression. Due to the fragmented school attendance of many migrants in this setting, information on educational attainment was sought in a number of ways, including the total years of education received, the type of school attended and reasons for stopping school attendance. Literacy and the number of languages spoken were included because an ability to read and a fluency in other languages (especially Thai, the host country language) were considered important indicators of educational levels. They were also considered to be potential proxy measures of degree of assimilation into Thai culture, which may impact the likelihood of experiencing perinatal depression.

Economic factors

Socio-economic deprivation is a well-known risk factor for perinatal depression. Variability in wages in this setting rendered it difficult to elicit a standardised measure of income. Payment frequency was used instead as a proxy for income security. Daily wages, the most common form of payment within the agricultural sector, tend to be irregular and represent a less stable income than monthly salaries received in other sectors. Remittances sent and received were included as they might represent a more regular and reliable income available to women and their families. The presence of other working household members and telephone ownership were further proxy measures of household wealth and wealth security in this setting. Telephone ownership was also hypothesised to indicate a greater degree of social connectedness. In this setting, online social media platforms are frequently used by those with mobile telephones to contact resettled or repatriated family, constituting a form of social support.

Migration-related factors

Information on participants' reasons for leaving Myanmar was felt to be important in this setting, as women fleeing war or violence might conceivably have higher trauma profiles and thus a greater risk of perinatal depression than those driven primarily by the prospect of higher wages in Thailand. Identification status was included as an indicator of participants' legal status in Thailand. Undocumented or illegal status not only potentially acts as a psychological stressor but also limits individuals' access to Thai government health services, which might further exacerbate health. Country of current residence and duration of residence in the current location were included as indicators of mobility and stability. Plans for the future were also considered of interest as a labour migrant

planning to return to family in Myanmar in the short-term future may experience a different level of psychological well-being compared to a refugee whose hopes are pinned on resettlement at an unknown time in the future, for instance.

Lifestyle factors

Alcohol consumption and smoking have been identified previously as risk factors for perinatal depression (Biaggi et al, 2016), though they did not arise in the systematic review of migrant women. Chewing tobacco and betel nut, which produce a stimulant response similar to the effects of caffeine or nicotine and also suppress hunger, are more common than smoking or drinking alcohol in this setting and were therefore also included.

Psychosocial factors

A history of depression, levels of social support, interpersonal violence and trauma were identified in the systematic review as being significantly associated with perinatal depression. The relevance of interpersonal violence to mental health in conflict-affected populations in particular is well-described (Devries et al, 2011). Both absolute amount of social support (received support) and the perceived sufficiency of this support (perceived support) have independently been associated with perinatal depression, and information was sought on both of these aspects of social support, as explained in further detail below (Melrose et al, 2015).

Medical, obstetric and infant factors

Medical, obstetric and infant factors included in this study were selected on the basis of systematic review findings. Chronic illness and poor physical health including maternal underweight and overweight have been identified in other Asian settings as risk factors for perinatal depression (Klainin & Arthur, 2009). Maternal overweight and obesity, hypertension and diabetes are the most common non-communicable diseases in this population. Dengue is common in this setting and can be associated with post-infectious depression-like symptoms (Hashmi et al, 2012). Premature birth, low and high infant birthweight, unplanned pregnancy, instrumental delivery and adverse infant outcomes have all been associated with perinatal depression, and in Asia, infant gender has also been associated with postnatal depression (Ecklund-Flores et al, 2017; Klainin & Arthur, 2009).

Excluded factors

It was not possible to collect information for all of the risk factors identified in the literature review. Data on the following factors was not included in this research: acculturation and assimilation; discrimination; domestic decision-making power; socio-economic status; perceived sufficiency of income; family structure; adherence to traditional birth practices; birth experience; and key helper during the postpartum period. These variables were excluded either because they were complex concepts that were difficult to capture accurately (e.g. acculturation and socio-economic status), because they were not considered to be relevant in this setting (e.g. adherence to traditional birth practices), or because proxy measures were used instead (e.g. household size was measured rather than family structure).

3.3.2 Selection of assessment tools

A number of risk factors included in this research were complex constructs, ascertainment of which required the use of a scale. Existing scales were reviewed and the one considered most relevant and best suited to the local setting was selected and adapted as necessary.

Social support

Social support was assessed using an adaptation of the *Social Support in the Postpartum Period Scale* developed by Chen *et al.* (2011) (Chen et al, 2011). This scale was chosen because of its breadth – covering informational and emotional as well as practical household activity support – and its previous use in a similar population of post-partum migrant women in Taiwan. A number of changes were made to the scale in order to render it suitable for use in this setting. The language was simplified in order to make items more readily understandable to the local population. The original Likert-type response scale was replaced with binary (yes or no) response options to simplify the format and to reduce the time required to administer the scale. Four items from the original scale were removed. Three of these were removed because the concepts were difficult to translate, not easily conveyed or not easily distinguishable from other included items in Burmese and Sgaw Karen languages. One item about ways of saving money was not deemed applicable in this very low-income group.

Two items were added to the scale. One of these asked whether women felt supported and cared for by their partner. This item was added as a means of gauging the quality of a

woman's relationship with her partner – a factor identified as being associated with perinatal depression in the systematic review. The second added item asked whether women felt the support available to them was sufficient. This concept of perceived sufficiency of support was identified in the literature review as being associated with perinatal depression independently of the absolute amount of support available. Important differences between received and perceived support and their respective associations with depression have also been described in general populations (Melrose et al, 2015). The final adapted version of the social support scale included ten items with possible scores ranging between 0–10 and higher scores indicating higher levels of support. The final items included in the adapted scale as well as the removed and added items are summarised in **Table 24**.

Table 24 Social support in the post-partum period: original scale by Chen *et al.* (2011) and adapted scale

Original scale	Adapted scale
1. When I encountered difficulties and frustrations, there was someone whom I could talk to.	1. When you feel sad, is there someone you can talk to?
2. When I was depressed, there was someone who could cheer me up.	2. When you feel sad, is there someone who makes you feel better?
3. There was someone who could understand what I was experiencing.	3. When you feel sad, is there someone who understands you?
4. There was someone who appreciated and affirmed what I was doing.	<i>Item removed due to difficulty in translation and differentiation from previous items</i>
5. There was someone who helped clean my home.	4. Does anyone help you with cleaning your home?
6. There was someone who helped prepare the meals.	5. Does anyone help you with the cooking?
7. There was someone who helped with the grocery shopping.	6. Does anyone help you with shopping (buying food)?
8. There was someone who helped with child care.	7. Does anyone help you take care of your children?
9. There was someone who provided essential information for taking care of the child.	8. Does anyone give you information about caring for your baby?
10. There was someone who suggested money-saving ways during the postpartum and neonatal care period.	<i>Item removed as not deemed relevant in this setting</i>
11. There was someone who provided information about self-care during the post-partum period	<i>Item removed due to difficulty in translation and conveying of meaning</i>
12. There was someone who provided suggestions for my daily life	<i>Item removed due to difficulty in translation and differentiation from previous items</i>
	Additional item: Does your husband support, care for and understand you?
	Additional item: Do you feel you have enough support?

Trauma history

A history of trauma was assessed using an adapted version of the *Trauma History Screen* (Carlson et al, 2011). This scale was selected over other existing scales as the events it included were the most relevant to the Thai-Myanmar border setting. Some adaptations were made to the original scale. The language was simplified in order to facilitate understanding. Two pairs of items were combined into single items in order to reduce the total number of questions and time of administration. Three items were removed because they were not considered relevant in this setting or because they were deemed unnecessary (i.e. the concept had been addressed by other items) or because they were deemed to go beyond the scope of this study. Questions were answered ‘yes’ or ‘no’, and in the case of affirmative answers, further details of the event were recorded. The range of possible scores on the adapted version was 0–9, with higher scores representing a greater number of traumatic events experienced. The original and adapted items are summarised in **Table 25**.

Table 25 Trauma history: original and adapted scale (Carlson et al, 2011)

Original scale	Adapted scale
A. A really bad car, boat, train, or airplane accident	1. Bad car, motorcycle, bicycle, truck accident
B. A really bad accident at work or home	2. Bad accident at work or home
C. A hurricane, flood, earthquake, tornado or fire	3. Flooding, earthquake, fire
D. Hit or kicked hard enough to injure – as a child	4. Somebody hit or kicked you
E. Hit or kicked hard enough to injure – as an adult	<i>Included with the above item</i>
F. Forced or made to have sexual contact – as a child	Forced to have sexual contact
G. Forced or made to have sexual contact – as an adult	<i>Included with the above item</i>
H. Attack with a gun, knife or weapon	Attacked with a gun, knife, weapon
I. During military service – seeing something horrible or being badly scared	<i>Removed: concept considered to be covered by other items</i>
J. Sudden death of close family or friend	<i>Removed: concept considered to be included in item K</i>
K. Seeing someone die suddenly or get badly hurt or killed	Seeing someone die, badly hurt or killed
L. Some other sudden event that made you feel very scared, helpless or horrified	<i>Removed: concept considered to be covered by other items</i>
M. Sudden move or loss of home or possessions	Suddenly moving house
N. Suddenly abandoned by spouse, partner, parent, or family	Sudden separation from family
O. Did any of these things really bother you emotionally?	<i>Removed; deemed beyond the remit of this study to asses impact of trauma</i>

Interpersonal violence

Interpersonal violence was assessed using the following abuse screening question which forms part of standardised screening for domestic violence and abuse in the USA: “*Does a partner, or anyone at home, hurt, hit or threaten you?*” (Stanford Medicine, 2017). If participants answered yes, further details were recorded as free text. This item was given

a binary score, with 0 representing no interpersonal violence and 1 representing the presence of any form of interpersonal violence.

3.4 Discussion

The objective of the validation study component was to identify and establish the validity of a culturally-acceptable and appropriate screening tool for perinatal depression on the Thai-Myanmar border. The PHQ-9 and RHS-15 were considered for use in this population. Local staff found the PHQ-9 cumbersome: the meaning of questions was difficult to convey in Sgaw Karen and Burmese, and individual response categories were not easy to differentiate from each other. In a previous study, the EPDS suffered from similar issues (Ing et al, 2017). The RHS-15 fared better than the EPDS but despite good psychometric properties, performed less well than the SCID.

Perhaps because of the strong oral tradition within this particular low-literacy group and the social nature of the Karen and Burmese cultures, the SCID was better received by participants and staff and elicited more information than the screening tools tested in a similar amount of time. The Likert response scales of the PHQ-9 and RHS-15 were problematic: response options were difficult to translate precisely and the local community is not accustomed to selecting responses from a limited range of options. The open question format of the SCID allowed for a more natural dialogue and enabled better rapport to be developed. When women described their experiences in their own words, emphasis was placed on the severity of symptoms, the social context within which symptoms occurred and the impact of symptoms on everyday lives. The frequency with which symptoms occurred – a predominant focus of screening tools and diagnostic criteria – was rarely mentioned by women. These differences in what is perceived as the

most important markers of an illness perhaps constitute another reason behind the limited success of the screening tools tested.

3.5 Chapter summary

This chapter has outlined the rationale for using the SCID as a diagnostic tool to identify individuals with perinatal depression on the Thai-Myanmar border. The RHS-15, a screening tool designed for use among refugee populations, was validated but despite good psychometric properties, the SCID elicited more detailed and culturally-relevant information in the same amount of time, rendering the SCID the tool of choice in this setting. The selection of exposure variables was informed largely by findings of the systematic literature review. Key potential risk factors which were deemed relevant in this context were added. Existing scales and screening questions to assess levels of social support, exposure to past trauma and interpersonal violence were adapted to maximise relevance to the local context.

Chapter 4.

Study methods

4.1 Chapter overview

This chapter describes the methods used in the cohort study component and the qualitative study of women's experiences of living with depression. The cohort study prospectively followed up women from the first trimester of pregnancy to one month post-partum. Questionnaires and structured interviews were used to determine the prevalence of and risk factors for depression among migrant women in this setting. The qualitative study used in-depth interviews to explore the experiences of women with severe depression.

4.2 Study design

This study used a mixed-method, exploratory sequential design. Following a systematic review of the literature (Chapter 2) and the selection of an appropriate instrument to detect depression in this setting (Chapter 3), a prospective cohort study of migrant women on the Thai-Myanmar border was conducted. This quantitative component was followed by a qualitative study involving in-depth interviews with a selected group of women to further understand women's experiences of living with depression in this setting.

4.3 Setting and participants

Participants were migrant women attending SMRU's three antenatal clinics (ANC) at Maela, Mawker Tai and Wang Pha. Migrant women included labour migrants seeking

care at Mawker Tai and Wang Pha ANC, and refugee women seeking care at Maela ANC. In this border region, over 90% of migrant women access antenatal care during pregnancy, and women who attend SMRU clinics are believed to be representative of the general migrant population in this setting (Thielemans et al, 2017). Recruitment ran between October 2015 and April 2016. Follow-up was completed in March 2017.

4.4 Quantitative study methods: prospective cohort study

4.4.1 Aims

The prospective cohort study aimed to establish the prevalence of perinatal depression during pregnancy and the first month post-partum and to identify socio-demographic and clinical risk factors associated with perinatal depression among migrant women on the Thai-Myanmar border.

4.4.2 Recruitment

Eligible women were approached by a member of the study team in ANC waiting areas at each of the three sites. Due to low literacy rates in this population, eligible women were provided with a verbal explanation of the study and what it entailed as well as a written participant information sheet available in Burmese and Sgaw Karen (**Appendices 14–16**). Women were given time to consider whether they wanted to participate and to ask questions about the study. Follow-up was conducted at subsequent routine ANC and postnatal visits when women entered their second and third trimesters and again after delivery. If participants did not attend follow-up appointments, attempts were made to contact them where possible either by telephone or through a visit to their home address by the community health visitor team. Any known reasons for losses to follow-up were recorded.

4.4.3 *Inclusion criteria*

Women were eligible if they met the following inclusion criteria:

- Aged 18 years or over
- Estimated gestational age (EGA) as determined by ultrasound dating scan was less than 14 weeks
- Viable pregnancy
- Planning to deliver at SMRU
- Willing and able to participate

4.4.4 *Procedure*

The study team included the author (a physician) and eight SMRU staff. SMRU staff working on the study were based across the three ANC sites as follows: at Wang Pha one senior midwife and two counsellors; at Mawker Tai, one dually-qualified senior midwife-medic and one counsellor; and at Maela, three counsellors. The author underwent training by the *American Psychiatry Association* in conducting the SCID prior to the study. All other study team members received training from the author on how to administer the SCID and practiced individually and with colleagues before the start of the study. SMRU study staff were fluent in Burmese, Karen and English and were themselves representatives of the local migrant community with extensive experience of working with the local population.

The study was rolled out stepwise across the three ANC sites, enabling the author to be present for all interviews during the first two to three weeks at each site. For the remainder of the study, the author rotated between the three sites, spending one day a

week at Wang Pha, one day a week at Mawker Tai and two days a week at Maela.

Interviews were conducted by the study team and the author. By rotating between study sites, the author was able to co-conduct approximately one third of all interviews. The remaining interviews were carried out by study staff alone. Interviews took place in a private room adjacent to the ANC waiting area. Women with perinatal depression were offered counselling and followed-up by the study team. If deemed appropriate by the author and the supervising clinician, anti-depressant medication was also offered after careful weighing up of benefits versus risks on a case-by-case basis. Follow-up of women with depression was conducted on a weekly, two-weekly or monthly basis, depending on symptom severity and women's availability and preference. Women with severe symptoms and those considered by the study team to be at risk of harming themselves or others were admitted to SMRU for treatment and observation. Women diagnosed with severe depression were invited to participate in the qualitative study component, as described below.

4.4.5 Data collection

Perinatal depression

Perinatal depression status was assessed using Sgaw Karen and Burmese versions of the SCID. At the baseline assessment, the RHS-15 was administered alongside the SCID as part of the validation study component described in Chapter 3. SCID responses were used to give each participant a diagnosis of major depressive disorder, minor depressive disorder, depressive disorder 'not otherwise specified' (NOS) or no depression. The decision to include three depression categories was made in order to capture as wide a spectrum of depression as possible in this population. It also became apparent at an early

stage of the study that a significant proportion of women had symptoms which were severe enough to cause significant distress and impairment in social or occupational functioning, but did not meet the DSM-IV criteria for major or minor depressive disorder. In order to capture these ‘sub-threshold’ but nevertheless significant cases of depression, it was deemed important to include the category of depression NOS.

In the analysis, two alternative definitions of depression were applied: *moderate-severe depression* was defined as major or minor depressive disorders and was used to facilitate comparison with evidence from other settings which largely focuses on these two diagnostic categories, as evidenced by the systematic literature review. Additionally, *any depression* was defined as major depression, minor depression or depression NOS and used to highlight the total burden of all depressive disorders in this setting.

SCID responses were independently scored by the author and an independent physician not involved in the study. SCID items relating to changes in appetite and weight (item 3) and changes in sleep patterns (item 4) were considered positive only if they were not associated with pregnancy status. For example, poor appetite caused by morning sickness was coded as negative, while poor appetite caused by feelings of sadness was coded as positive. If there was insufficient information provided to establish causality of symptoms, the item was coded as negative in order to avoid falsely attributing these symptoms – which can be a normal manifestation of pregnancy – to depression. Any discrepancies in diagnoses between the two scoring physicians were resolved by discussion with a member of the supervisory team (a psychiatrist) and in consultation with a senior research officer in psychiatry.

Exposure variables

Exposure variables were informed by findings of the systematic review and covered demographic, education and language, economic, migration, lifestyle and psychosocial (hereafter socio-demographic) as well as medical, obstetric and infant (hereafter clinical) factors, as described in Chapter 3. Socio-demographic information was elicited using a questionnaire administered at baseline (**Appendix 17**) as well as through a more detailed social history conducted during the third trimester assessment (**Appendix 18**). Social support, exposure to trauma and domestic violence were elicited using scales described in Chapter 3. Data on medical, obstetric and infant variables were obtained after delivery from participants' electronic medical records held by SMRU.

Timing

Data collection occurred at four time points: in the first (T1), second (T2) and third (T3) trimesters of pregnancy, and at one month post-partum (T4). Depression status was elicited at each of these times and exposure variables were collected at T1, T3 and T4 (**Table 26**).

Table 26 Timeline of data collection

Time	Outcome		Exposures	
	SCID	RHS-15	Socio-demographic factors	Clinical factors
T1: 1 st trimester (EGA<14)	•	•	•	
T2: 2 nd trimester (EGA 18-26)	•			
T3: 3 rd trimester (EGA 28-38)	•		•	
T4: 1 month post-partum	•			•

4.4.6 *Consent*

At recruitment, study staff provided eligible women with verbal and written explanations of the study. It was explained that participation was entirely voluntary, that non-participation would not affect care and that consent could be withdrawn at any time. It was also explained that data would be held confidentially. Women were given the opportunity to ask questions about the study and about the implications of participation before deciding to participate. Those who chose to participate provided consent in the form of a signature or thumbprint depending on their level of literacy (**Appendices 19–21**). Participating women were offered a small gift in the form of baby clothing, cotton muslin sheets or soaps, as is customary within SMRU research studies (approximate value THB 50-100 or £1-2) at each visit as a token of thanks and in compensation for their time and inconvenience. Interviews were mostly conducted during participants' routine ANC visits, and travel costs for these visits are routinely reimbursed by SMRU. Any participant who made additional visits to the clinic solely for the purpose of this study had their travel costs fully reimbursed by the study team.

4.4.7 *Data security and management*

Data entry was conducted daily by the author. De-identified data was entered into a password-protected Microsoft Excel database accessible only to the author and made available to other members of the study team upon request. Original paper questionnaires were stored securely at ANC sites until follow-up was complete, whereupon they were transported to SMRU's head office in Mae Sot for storage. Data cleaning was conducted by the author in Microsoft Excel.

4.4.8 *Sample size*

The target sample size for this study was based on the aims of the prospective cohort component, which aimed to establish the prevalence of perinatal depression and identify associated risk factors. The assumed prevalence of perinatal depression was estimated conservatively at 15%, based on findings from the systematic literature review and from non-migrant groups in other low-income settings (Fisher et al, 2012; Gelaye et al, 2016; Woody et al, 2017). Based on previous studies in this setting, a high participation rate was assumed and loss to follow-up was estimated at 20% over the course of one year (Thielemans et al, 2017). Combined with a desired power of 80% and precision of 95% to detect associations of approximately 2.5-fold in magnitude, these estimates provided a target sample size of 500 women (Tabachnick & Fidell, 2013).

4.4.9 *Statistical methods*

Characteristics of the sample

Socio-demographic and clinical characteristics of participating women were collected as continuous, binary or categorical variables as summarised in **Table 27**. For continuous variables, histograms were used to examine the distribution of data and identify any outliers. The mean and standard deviation were calculated for normally distributed data and the median and range for non-normally distributed data. For binary and categorical variables, frequencies and percentages were calculated. The frequency of missing data was calculated for each variable. Differences in characteristics between refugees and labour migrants were assessed using Students' T, Mann-Whitney U and Chi-square tests for normally distributed continuous, non-parametric continuous and categorical variables, respectively.

Table 27 Categorisation of exposure variables collected

Variable	Type	Categories or units of measurement
Demographic factors		
Age	Continuous	Age in years
Ethnicity	Categorical	Burman; Sgaw Karen; Poe Karen; Burman Muslim; Other
Language	Categorical	Burmese; Sgaw Karen; Poe Karen; Other
Religion	Categorical	Buddhist; Christian; Muslim
Marital status	Binary	Married or co-habiting; single
Education and language factors		
Education (years)	Continuous Categorical	Years of education Under 3 years; 3-6 years; 7-10 years; Over 10 years
Type of school	Categorical	Myanmar school; Thai school; NGO or faith-based school
Reason stopped school	Categorical	Employment; Disinterest; Marriage; Conflict and war; No local school
Literacy (self-report)	Binary	Literate; Non-literate
Languages spoken	Categorical	1 language; 2-3 languages; 4 or more languages
Economic factors		
Employment status	Binary	Employed; Unemployed
Employment sector	Categorical	Agriculture; NGO; Selling; Other; Homemaker (unpaid)
Income security	Binary	Wages paid daily; Wages paid monthly
Household size	Continuous	Number of household members
Other household member works	Binary	Yes; No
Remittances sent	Binary	Yes; No
Remittances received	Binary	Yes; No
Telephone ownership	Binary	Yes; No
Migration factors		
Country of birth	Categorical	Myanmar; Thailand; Other
Country of residence	Binary	Myanmar; Thailand
Reason for migration	Categorical	Seek employment; Family reunification; Flee war and conflict; Seek health, education or resettlement
Duration in current location	Continuous Categorical	Years in current location One year or less; More than one year
ID card (any)	Binary	Yes; No
ID card type	Categorical	Myanmar ID; Thai ID; UN card; None
Future plans	Categorical	Return to Myanmar; Remain in Thailand; Resettle in third country

Table continued overleaf

Table 27 cont. Exposure variables collected and their categorisation

Variable	Type	Categorisation
Lifestyle factors		
Alcohol	Binary	Yes; No
Smoking	Binary	Yes; No
Chewing tobacco	Binary	Yes; No
Chewing betel nut	Binary	Yes; No
Psychosocial factors		
Self-reported history of depression	Binary	Yes; No
Social support	Continuous	Social Support Scale (modified) score
Sufficient support	Binary	Yes; No
Trauma	Continuous Binary	Trauma history (modified) score Experienced no traumatic events; Experienced one or more traumatic events
Interpersonal violence	Binary	Yes; No
Medical factors		
Maternal BMI	Categorical	Normal; Underweight; Overweight or obese
Hypertension	Binary	Yes; No
Diabetes	Binary	Yes; No
Dengue	Binary	Yes; No
Obstetric		
Parity	Continuous	Parity
Gravida	Continuous Binary	Gravida Primigravida; Multigravida
Pregnancy planned	Binary	Yes; No
Number of children	Continuous	Number of children
Instrumental delivery	Binary	Yes; No
Estimated gestational age (EGA) at delivery	Continuous	Estimated gestational age in weeks
Infant factors		
Neonatal death	Binary	Yes; No
Foetal distress	Binary	Yes; No
Gender	Binary	Male; Female
Birthweight	Continuous	Birthweight in grams
Birth length	Continuous	Birth length in centimetres
Head circumference	Continuous	Head circumference at birth in centimetres

Prevalence, incidence and persistence of perinatal depression

Prevalence, incidence and persistence of perinatal depression were calculated as follows:

- *Point prevalence* rates at T1, T2, T3 and T4 were calculated by dividing the number of cases at each observation time by the total number of participants with non-missing outcome data at that time point.
- *Period prevalence* was estimated by dividing the number of participants who had depression at least once during the study period by the total number of participants for whom outcome data was available at least once during the study period.
- *Incidence* at each time point was determined by dividing the number of new cases of perinatal depression since the preceding observation time by the number “at risk” of the condition: in this case, those not depressed at the preceding assessment and with non-missing outcome data at all previous as well as the current assessment times.
- *Overall incidence* was calculated by dividing all new cases (observed at least once amongst the 4 observation times) by all those who did not have depression at baseline. Only those who attended all four observation times were included in this calculation.

- *Cumulative prevalence* was calculated as the point prevalence of perinatal depression at baseline plus the incident number of cases at each subsequent assessment.
- *Persistence* of perinatal depression over time was calculated as the proportion of participants with depression at baseline who remained depressed at each subsequent assessment.

Each of these measures of disease frequency was calculated twice: once for moderate-severe perinatal depression and once for any perinatal depression.

Risk factors for perinatal depression

In order to identify risk factors for perinatal depression, univariable analysis was first used to examine the odds ratios of association between socio-demographic and clinical exposure variables and depression status. Individual exposure variables and depression status were cross-tabulated and logistic regression was used to generate unadjusted odds ratios and corresponding 95% confidence intervals for each variable. For binary and categorical variables, either the largest category or the category considered to carry the lowest risk of having the outcome was used as the reference group. Variables with $p < 0.10$ were considered significant in the univariable analysis.

Next, multivariable analysis was used to generate odds ratios of association between socio-demographic and clinical exposure variables and depression adjusted for confounding factors. Pairwise correlations between each pair of independent variables were conducted. When a pair of variables was significantly ($p < 0.05$) and strongly (correlation coefficient ≥ 0.8) correlated, only one of the pair - the variable with the

greater magnitude of association in univariate analysis – was retained for inclusion in the multivariable logistic regression model. Variables which were significantly associated with the outcome in the univariable analysis, and any other variables considered to be clinically or epidemiologically important in this setting, were entered into a multivariable logistic regression model using a forward stepwise approach. Covariates that improved the fit of the model on likelihood ratio testing were retained while those that did not improve the fit of the model were discarded. Factors with a p-value of <0.05 within the final model were considered statistically significantly associated with depression. Complete case analysis was used rather than multiple imputation. All quantitative analyses were carried out using SPSS.

To assess whether antenatal depression was a risk factor for postnatal depression, the odds of association between depression in pregnancy (at T1, T2 or T3) and depression post-partum (at T4) was calculated. First, univariable logistic regression analysis was used to identify any socio-demographic and clinical variables significantly associated with post-partum depression. Variables with $p < 0.10$ in the univariable analysis – including the variable ‘antenatal depression’ – were entered into the multivariable model in order to examine the association between antenatal and postnatal depression after controlling for all other potential determinants of postnatal depression.

Suicidal ideation

Because of the emerging finding early during the study that suicidal ideation, which was assessed as part of the SCID, was very common, the prevalence and risk of suicidal ideation was examined independently of overall depression status. Participants who answered ‘yes’ to ever thinking about suicide were asked about the context of their

suicidal ideation, the frequency and intensity of thoughts, previous attempts and current active intent. Responses were used to categorise participants as having either no, mild or severe suicidal ideation using the DSM-IV criteria listed in **Table 28**. Point and period prevalence of any suicidal ideation and severe suicidal ideation were calculated as described for the main outcome of perinatal depression. Associations between suicidal ideation and depression status were examined by calculating the proportion of women in each depression category with suicidal ideation, and by presenting the breakdown of depression categories among women with suicidal ideation. Risk factors for suicidal ideation were established by univariable followed by multivariable logistic regression, using the same methods as for the outcome of perinatal depression.

Table 28 Scoring and categorisation of SCID item on suicidal ideation (American Psychiatric Association, 2000)

Score	Severity	Description
0	None	No suicidal ideation
1	Mild	Some suicidal ideation. Occasional or frequent thoughts about suicide but no specific plan and no active intent.
2	Severe	Significant and active intent or a recent serious past attempt.

Treatment for perinatal depression

The proportion of participants who received treatment for perinatal depression and their categories of depression were calculated. In order to assess the effect of treatment the percentage of women who improved, remained the same and deteriorated were calculated.

4.5 Qualitative study methods

4.5.1 Aims

The aims of the qualitative study component were to to gain a deeper understanding of the lived experiences of perinatal depression in this setting and to explore the challenges faced by women with severe perinatal depression.

4.5.2 Study design

The qualitative component took the form of in-depth interviews with an interview guide with a selected subgroup of study participants who had been diagnosed with severe depression during the prospective cohort study component. An interview guide listed key questions but participants were encouraged to elaborate on any other topics that arose and that they perceived as being relevant to their experiences of depression.

4.5.3 Sampling and eligibility

A purposive sample of participants was included. An attempt was made to use maximum variation sampling with the aim of including women from a wide range of socio-demographic backgrounds. Women were eligible to participate in in-depth interviews if they were already participating in the prospective cohort study, had been identified as part of this study as having severe (major) depression and were willing and able to participate.

4.5.4 *Recruitment*

All women already participating in the cohort study and who had been diagnosed with severe depression were identified. All eligible women whom it was possible to contact were contacted by telephone or approached in person during routine ANC or follow-up appointments. In an attempt to achieve maximum variation in the sample of women included, women from the most under-represented minority backgrounds were prioritised and approached first. Women were asked if they were willing to participate in in-depth interviews about their experiences of living with depression. It was explained that this was an optional, more detailed interview that complemented but was distinct from the SCID interviews and follow-up for the cohort study component. Women were provided with a verbal and written description of what the interview would entail and were told that there was no obligation to take part and that participation or non-participation would bear no effect on their involvement in the remainder of the study or on their regular care.

If women agreed to take part, a mutually convenient time for the interview to take place was arranged. Interviews were conducted at ANC sites and whenever possible occurred in succession to women's routine ANC appointments in order to avoid additional travel to and from the clinic. Women who took part in in-depth interviews were given a small gift of an approximate value of THB 100 (£2) as a token of appreciation.

4.5.5 *Interview topic guide*

An interview topic guide was devised which allowed women to describe their experiences of living with depression (**Appendix 22**). The interview topic guide listed a series of questions which served as prompts for more structured questioning on certain aspects rather than an exhaustive list to be covered. It ensured that participants as much

as possible covered the same broad topic areas without being too prescriptive. The interview topic guide was developed by the author and reviewed by the supervisory team and a senior staff member at SMRU with a background in social sciences. Topics of interest included current and past life experiences; social support including relationships with partners and family; experiences of living with depression and its impact on social and occupational functioning; and what women felt might support them through difficult times.

4.5.6 Socio-demographic details

With participants' consent, socio-demographic data relating to participants' age, ethnicity, religion, educational background and migrant status were extracted from the data already collected as part of the cohort study. This data was used to provide an overview of characteristics of the subgroup of women participating in the in-depth interviews.

4.5.7 Data collection and data handling

In-depth interviews were conducted by the author and a social scientist who is herself a member of the Karen community, fluent in Sgaw Karen, Pohn Karen, Burmese, Thai and English and highly experienced in interviewing in this local setting. Interviews were conducted at ANCs in private rooms adjacent to the clinic waiting areas in the language of women's choice. The purpose and content of the interviews was explained again and participants were reminded that they could leave the interview at any point. In order to put women at ease and create an informal atmosphere, the in-depth interviews began with the interviewers engaging the participant in general conversation around topics such as

where the participant came from, their childhood, how they had travelled to the clinic that day, their occupation and what they enjoyed doing in their free time. Once a good rapport had been established, the interview moved towards the main questions around depression.

The author asked questions in English which the social scientist interpreted into the interview language. Participants' responses were interpreted back into English for the author. Follow-up questions were asked by the author or directly by the social scientist, so that the social scientist was acting as much as an interviewer as the author. Interviews therefore became more of a three-way conversation rather than a two-way questioning-and-answering via an interpreter.

Interviews were audio-recorded using a digital voice recorder. Immediately following the interview, both interviewers discussed and noted any impressions gained during the interview that might be relevant, for instance on participants' affect and demeanour and any non-verbal communication observed. Interviews were transcribed into English by an experienced transcriber and interpreter. Due to resource constraints it was not possible to use a two-step process of first transcribing the recordings verbatim in the original language and then translating the transcribed text into English. The social scientist interviewer compared a random selection of transcripts to original audio recordings to ensure accuracy. Any ambiguous or unclear language was discussed and clarified. Final versions of the transcripts were imported into *NVivo 11* for analysis (QSR International, 2015).

4.5.8 Analysis

Data analysis occurred after all data collection had been completed. A thematic analysis of the data was conducted using the six consecutive phases described by Braun and Clarke (2006) (**Table 29**) (Braun & Clarke, 2006). First, the author read and re-read transcripts several times until thorough familiarity with each participant's account was achieved. Then, features of note emerging from the data were coded and collated into potential themes. Each broader theme comprised several sub-themes. Themes were reviewed and refined until clearly defined themes were established that worked in relation to each of the coded extracts as well as to the entire data set (Braun & Clarke, 2006).

In order to maximise reliability of the coding and enhance the consistency and quality of data interpretation, a sample of three full interview transcripts were coded independently by one member of the author's supervisory team (Pope & Mays, 2006). The themes identified by the author and supervisor were then compared, and the ways in which subthemes might be grouped together were discussed. Concurrently with the coding of data, the 'one sheet of paper' (OSOP) method of analysis was used to help with the grouping of issues arising from the data into broader themes (Ziebland & McPherson, 2006). This OSOP method was also used to highlight similarities and discrepancies between participants and in particular to highlight any examples of deviant narratives.

Self-reflection

In qualitative research the perspectives of the researchers inevitably influence data analysis and interpretation. The author is a medically-qualified public health researcher.

Having grown up in Thailand, she is familiar with the local context though not able to speak the Karen or Burmese languages. The second interviewer, a social scientist by background, is of Karen ethnicity, spent her childhood on the Thai side of the border and as an adult has lived and studied in Europe. Both researchers have experienced migration first-hand in the sense of having lived mostly outside of their places of origin. Familiarity with the local context, especially on the part of the social scientist, enabled a high level of cultural sensitivity. The interviewers' experiences of life as 'outsiders' as well as their both being mothers are likely to have created a sympathetic leaning towards this population of pregnant migrant women. At the same time, detachment was possible as a result of neither of the interviewers being fully immersed within the local culture, allowing for a greater degree of objectivity.

Table 29 Phases of thematic analysis (Braun & Clarke, 2006)

Phase	Description of the process
1. Familiarising yourself with your data	Transcribing data, reading and re-reading data, noting down initial ideas
2. Generating initial codes	Coding interesting features of the data in a systematic fashion across the entire dataset, collating data relevant to each code
3. Searching for themes	Collating codes into potential themes, gathering all data relevant to each potential theme
4. Reviewing the themes	Checking if the themes work in relation to the coded extracts and the entire data set, generating a thematic map of the analysis
5. Defining and naming themes	Ongoing analysis to refine the specifics of each theme and the overall story the analysis tells, generating clear definitions and names for each theme
6. Producing the report	Selecting vivid and compelling extract examples, final analysis of selected extracts, relating back to the research question and literature, producing a scholarly report of the analysis

4.5.9 *Presentation of results*

Quotations taken from women's interview transcripts were used to highlight themes in the final report. Often in qualitative research such quotes are contextualised by providing a number of key socio-demographic characteristics of the participant. Because of the small number of women interviewed for this component and the sensitive nature of discussions, only a numeric identifier of individual women is provided alongside each quote in order to avoid compromising anonymity.

4.6 **Stakeholder study methods**

A small stakeholder study was conducted to explore selected experts' views around the main issues pertaining to perinatal mental health in this setting, current mental health service provision, gaps in services and priorities for action. This study component included a focus group discussion with SMRU study staff as well as semi-structured interviews with policy-makers, healthcare providers and mental health researchers working with migrant populations on the Thai-Myanmar border.

The staff focus group discussion was led by the author and conducted in English and Burmese, with a SMRU social scientist acting as interpreter. Semi-structured interviews were conducted individually by the author in English. Although the content of discussions varied according to the backgrounds of individual stakeholders, an interview topic guide was used in order to elicit different stakeholders' views around the same set of issues (**Appendix 23**). The focus group discussion and interviews were audio-recorded and transcribed in English by the author. Due to time constraints, the small number of stakeholders working on mental health in this setting and the diversity of stakeholders'

viewpoints and backgrounds, results of this study component were not formally analysed. Instead, the content of these discussions was used to inform the final discussion (Chapter 8). In particular, results of the stakeholder study were used as a basis for implications for policy and practice and recommendations on how the mental health needs of the local population might best be addressed.

4.7 Chapter summary

This chapter outlines the methods used in the quantitative, qualitative and stakeholder study components. In the prospective cohort study, the prevalence and incidence of perinatal depression were calculated and univariable and multivariable logistic regression analyses were conducted to identify significant socio-demographic and clinical risk factors for perinatal depression. In the qualitative component, a selected sample of women with severe depression were interviewed in depth in order to gain a deeper understanding of these women's experiences of living with depression in this setting. Interviews were transcribed and analysed using thematic analysis to identify themes emerging from the data. Stakeholder interviews were not formally analysed but the views of experts working with Thai-Myanmar border populations informed recommendations for policy and practice made in the final Discussion (Chapter 8).

Chapter 5.

Prospective cohort study results: participant characteristics and prevalence of perinatal depression

5.1 Chapter overview

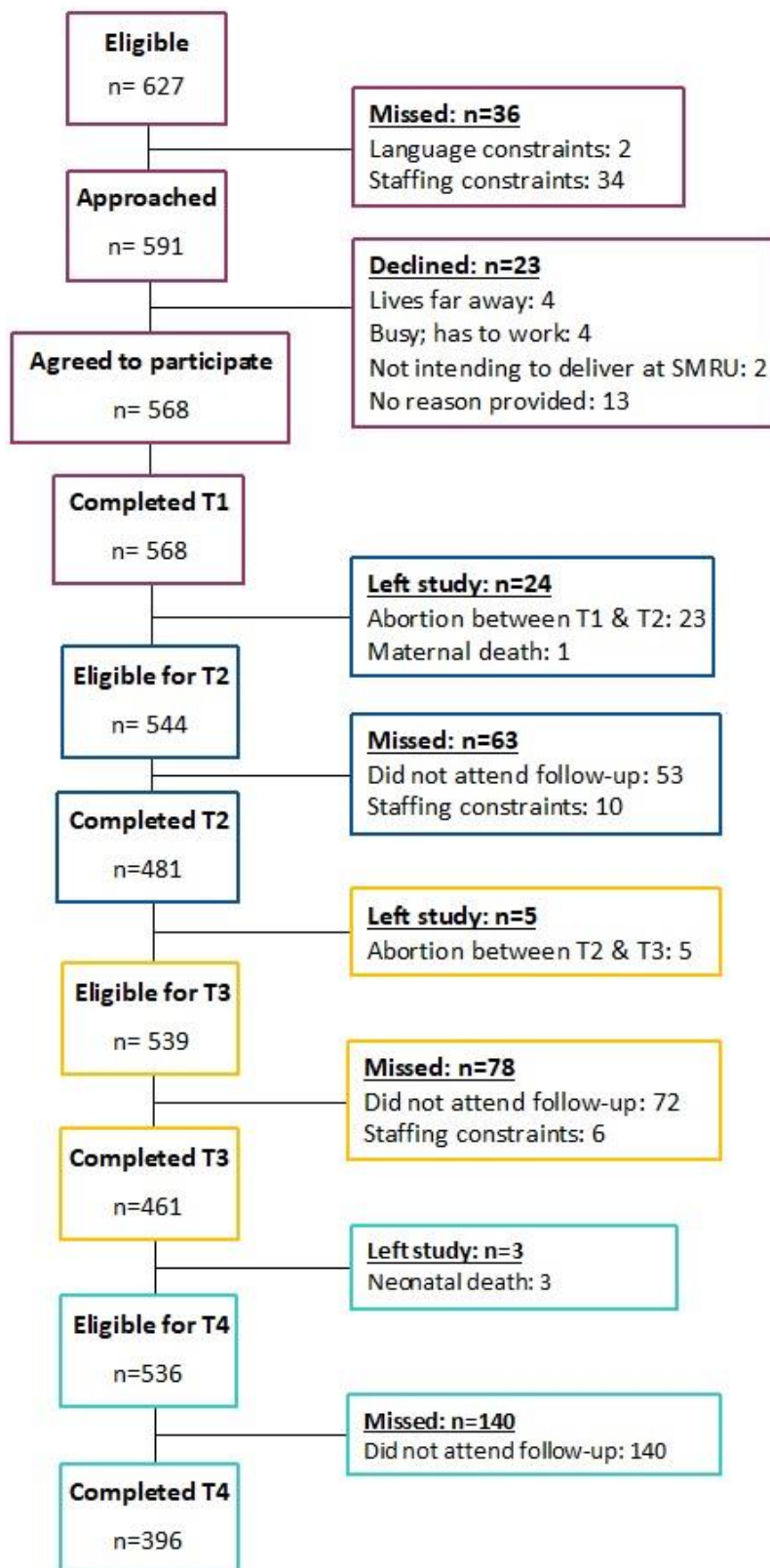
This chapter presents the first part of the prospective cohort study results. An overview of study participants' characteristics, including losses to follow-up and differences between women who attended all assessments and those who missed one or more assessments, is provided. The socio-demographic and clinical characteristics of participating women are presented and differences according to migrant category are highlighted. After these baseline descriptive characteristics, the prevalence, incidence and persistence of perinatal depression are examined. The prevalence of suicidal ideation is assessed independently and its correlation with depression status summarised. Finally, a subgroup of participants who received treatment for perinatal depression is described.

5.2 Loss to follow-up

Between October 2015 and April 2016, 627 eligible women attended SMRU ANC. Of these, 591 were approached and 568 (90.6% of all eligible; 96.1% of those approached) women agreed to participate. **Figure 14** shows the flow of participants through the study from recruitment (T1) through to completion (T4). The 36 women (5.7% of total eligible) who were eligible but not approached were missed either inadvertently (e.g. as a result of

staffing constraints which led to women not being recognised as eligible until after they had left) or due to language limitations (e.g. when eligible women spoke a dialect that no available staff member was proficient in). There were no differences according to age, ethnicity, migrant category or literacy between women who participated and women who were missed or who declined. Of the 568 women who enrolled in the study, 88.4% (481/544) attended in the second trimester (T2), 85.5% (461/539) attended in the third trimester (T3), and 73.9% (396/536) attended at one month post-partum (T4). These figures exclude women who had abortions (n=28) or neonatal deaths (n=3) and one maternal death (see section 5.2.1), as these women were no longer eligible to attend in subsequent waves.

Figure 14. Flow of participants through study



A total of 372 women completed all four assessments, and sociodemographic characteristics between these women and those who missed one or more assessments are summarised in **Table 30**. Refugees were significantly more likely than labour migrants to have attended all four assessments (79.6% of refugees vs. 54.4% of labour migrants; $p<0.001$). Women who completed all four assessments were also more likely to be of Sgaw Karen, Poe Karen or Burman Muslim ethnicity (69.1% of Sgaw Karen, 69.7% of Poe Karen and 90.9% of Burman Muslim women vs. 51.5% of Burman women completed all four assessments; $p<0.01$) and of Christian or Muslim religious background (73.9% of Christian and 91.1% of Muslim women vs. 60.3% of Buddhist women completed all four assessments; $p<0.01$). These ethnic and religious differences can be accounted for by women's refugee (as opposed to labour migrant) status. No significant differences were seen between those who completed all four assessments and those who missed one or more assessments in terms of age, marital status, education, literacy, employment, identification status or parity. The systematic differences between complete and incomplete study outcomes according to migrant status suggests the data are 'missing at random', conditional on migrant category, rather than 'missing completely at random' (Bhaskaran & Smeeth, 2014; Sterne et al, 2009).

Table 30 Selected socio-demographic characteristics of women who completed vs. those who did not complete all four assessments

	Completed all assessments (n=372)	Missed ≥ 1 assessment (n=196)	p-value
	n (%)	n (%)	
Age (years)[†]	26 [18-50]	25 [18-45]	0.60
Ethnicity			<0.01
Burman	83 (51.5)	78 (48.5)	
Sgaw Karen	192 (69.1)	86 (30.9)	
Poe Karen	46 (69.7)	20 (30.3)	
Burman Muslim	40 (90.9)	4 (9.1)	
Other	11 (57.9)	8 (42.1)	
Interview language			0.05
Burmese	142 (59.4)	97 (40.6)	
Sgaw Karen	193 (68.9)	87 (31.1)	
Poe Karen	33 (76.7)	10 (23.3)	
Other	4 (66.7)	2 (33.3)	
Religion			<0.01
Buddhist	246 (60.3)	162 (39.7)	
Christian	85 (73.9)	30 (26.1)	
Muslim	41 (91.1)	4 (8.9)	
Married (yes)	371 (65.5)	195 (34.5)	0.17
Education			0.56
Under 3 years	165 (64.7)	90 (35.3)	
3 to 6 years	103 (62.8)	61 (37.2)	
7 to 10 years	84 (70.6)	35 (29.4)	
Over 10 years	15 (62.5)	9 (37.5)	
Literate (yes)	265 (67.6)	127 (32.4)	0.12 [†]
Languages spoken			0.13
1 language	168 (79.6)	43 (20.4)	
2-3 languages	151 (78.6)	41 (21.4)	
4 or more languages	49 (90.7)	5 (9.3)	
Employment (yes)	229 (65.8)	119 (34.2)	0.33
Site			<0.01
Maela	199 (79.6)	51 (20.4)	
Mawker Tai	86 (52.8)	77 (47.2)	
Wang Pha	87 (56.1)	68 (43.9)	
Migrant category			<0.01
Labour migrant	173 (54.4)	145 (45.6)	
Refugee	199 (79.6)	51 (20.4)	
ID card (yes)	222 (81.0)	52 (19.0)	0.83
Parity[†]	1 [0-9]	1 [0-8]	0.82

Bold denotes statistical significance at $p < 0.05$ level

[†] Results reported as median [range]

5.2.1 *Adverse events: maternal death*

One maternal death occurred during the course of the study. A 19-year-old refugee woman who was pregnant for the first time committed suicide together with her husband in her first trimester of pregnancy. The woman had completed the baseline assessment shortly before her death. She reported mild symptoms of depression and occasional passive suicidal ideation with no active intent. Although details of the circumstances around the suicide remain uncertain, an argument between the young couple and the husband's parents the day prior to the event may have been a trigger factor. Following this event, a meeting of all staff at Maela ANC was held to discuss the case, provide support to staff and identify learning points. A case report and a reflective piece were also published (Fellmeth, 2017; Fellmeth et al, 2016b).

5.3 Participant characteristics

5.3.1 *All women*

Descriptive analyses were conducted on the 568 women who participated in the study. The sample consisted of 318 labour migrant women (163 from Mawker Tai and 155 from Wang Pha) and 250 refugee women. Socio-demographic and clinical characteristics are summarised in **Table 31** and **Table 32**, respectively. The median age of study participants was 25 years. Across the whole sample, Sgaw Karen was the predominant ethnicity (48.9%) and Buddhism the predominant religious background (71.8%). The median years of education received was four years. Of those who attended school, the most common reason for leaving school early was needing to work, either by engaging in paid labour or by taking on caring responsibilities within the home. Most participants were born in Myanmar (87.8%) and currently lived on the Thai side of the border

(75.5%). The prevalence of smoking and alcohol consumption was low although almost half (44.2%) of all women chewed betel nut regularly. Forty percent of women had no formal means of identification. Levels of social support varied greatly, with scores ranging from 0–10. However, overall, 70% of women felt the support they received was sufficient. Almost six percent of all women had experienced domestic violence. Over half (57.9%) of women had experienced at least one past traumatic event. Most women (68.3%) had planned their pregnancy, and almost one third (28.2%) were pregnant for the first time. Almost a fifth of women were underweight and almost a third were overweight or obese. Nine percent of women had hypertension, 6.7% had diabetes, and 1.6% experienced dengue during the perinatal period. One in ten women had an instrumental delivery. There were six stillbirths and neonatal deaths.

5.3.2 Difference between labour migrants and refugees

There were a number of socio-demographic differences between refugees and labour migrants (**Table 31**). Among refugees, Sgaw Karen was the predominant ethnicity (70.4%), Sgaw Karen was the main language (69.6%), and most women held Buddhist (43.6%) or Christian (38.8%) beliefs. Among labour migrants, by contrast, half (50.0%) were of Burman ethnicity, Burmese was the predominant language (59.1%) and Buddhism was the predominant religion (94.0%). Burman Muslim women represented a minority group in both settings, making up 17.2% of refugees and only 0.3% of labour migrants.

Refugees had higher rates of self-reported literacy than labour migrants (75.2% vs. 64.2%, $p < 0.01$), and were more likely to have attended school for longer. Almost half (45.5%) of refugee women had attended an NGO school or faith-based school. The

majority of labour migrants were engaged in paid labour (81.1%), compared with significantly fewer refugee women. Labour migrants worked predominantly in the agricultural sector (65.9%), receiving daily wages. When refugee women worked, they tended to be employed by NGOs within the camp and be paid monthly salaries. Labour migrant households were more likely than refugees to send regular remittances, usually to left-behind children or parents in Myanmar, while refugees were more likely to receive remittances from family members resettled overseas. Almost half (45.5%) of the labour migrant women lived on the Myanmar side of the border.

There were also significant differences in refugees' and labour migrants' reasons for leaving Myanmar. Among labour migrants, by far the most common driver of migration was to seek employment and higher wages (75.3%). Refugees cited a wider range of reasons for leaving their homes: though a third (33.7%) had left in order to seek employment, other reasons were also common including reunification with family members already in the camp (33.7%), fleeing conflict (19.1%) and seeking opportunities for education, healthcare or resettlement (13.5%). Most labour migrants (84.3%) aspired to one day return to live in Myanmar. By contrast, the majority of refugees (65.1%) hoped to resettle in 'third countries' such as Australia and the USA, and only 2.8% wished to return to Myanmar.

Refugees were significantly more likely than labour migrants to have a self-reported history of depression (48.0% vs. 8.5%; $p < 0.01$). Refugees were also more likely to have experienced at least one traumatic event (64.0% vs. 53.1%; $p < 0.01$). Labour migrants were more likely to report sufficient levels of social support (89.1% vs. 49.1%; $p < 0.01$). However, a greater proportion of labour migrants had experienced interpersonal violence

(8.0% vs 3.7%; $p=0.05$). Other than the number of children, parity, gravida and birthweight, there were no significant clinical differences between labour migrant and refugee women (**Table 32**).

Table 31. Socio-demographic characteristics of study participants (n=568)

	All (n=568) n (%)	Missing values^a	Labour migrants (n=318) n (%)	Refugees (n=250) n (%)	p-value
Demographic factors					
Age (yrs)[†]	25 (18-50)	0	25 [18-45]	25 [18-50]	0.98
Ethnicity		0			<0.01
Burman	161 (28.4)		159 (50.0)	2 (0.8)	
Sgaw Karen	278 (48.9)		102 (32.1)	176 (70.4)	
Poe Karen	66 (11.6)		43 (13.5)	23 (9.2)	
Burman Muslim	44 (7.8)		1 (0.3)	43 (17.2)	
Other	19 (3.4)		13 (4.1)	6 (2.4)	
Language		0			<0.01
Burmese	239 (42.1)		188 (59.1)	51 (20.4)	
Sgaw Karen	280 (49.3)		106 (33.3)	174 (69.6)	
Poe Karen	43 (7.6)		20 (6.3)	23 (9.2)	
Other	6 (1.1)		4 (1.3)	2 (0.8)	
Religion		0			<0.01
Buddhist	408 (71.8)		299 (94.0)	109 (43.6)	
Christian	115 (20.3)		18 (5.7)	97 (38.8)	
Muslim	45 (7.9)		1 (0.3)	44 (17.6)	
Married	566 (99.6)	0	317 (99.7)	249 (99.6)	1.00
Education and language factors					
Education (yrs)[†]	4 [0-18]	78	4 [0-15]	5 (0-18)	0.02
Education					<0.01
Under 3 years	255 (45.4)		160 (50.3)	95 (38.6)	
3 to 6 years	164 (29.2)	6	96 (30.2)	68 (27.6)	
7 to 10 years	119 (21.2)		49 (15.4)	70 (28.5)	
Over 10 years	24 (4.3)		11 (3.5)	13 (5.3)	
Type of school					<0.01
Myanmar	245 (53.4)	80	155 (64.6)	90 (41.1)	
Thai	9 (2.0)		7 (2.9)	2 (0.9)	
NGO or faith-based	89 (19.4)		12 (5.0)	77 (35.2)	
No school	116 (25.3)		66 (27.5)	50 (22.8)	
Reason stopped school^b					<0.01
Employment	255 (62.2)	101	151 (68.3)	104 (55.0)	
Disinterest	75 (18.3)		42 (19.0)	33 (17.5)	
Marriage	49 (12.0)		14 (6.3)	35 (18.5)	
Conflict and war	10 (2.4)		5 (2.3)	5 (2.7)	
No local school	21 (5.1)		9 (4.1)	12 (6.4)	
Literate (self-reported)	392 (69.0)	0	204 (64.2)	188 (75.2)	<0.01
Languages spoken					
1 language	211 (46.2)	82	111 (46.4)	100 (45.9)	0.99
2-3 languages	192 (42.0)		100 (41.8)	92 (42.2)	
4 or more languages	54 (11.8)		28 (11.7)	26 (11.9)	

Table continued overleaf

Table 31 (continued). Socio-demographic characteristics of study participants (n=568)

	All (n=568) n (%)	Missing values^a	Labour migrants (n=318) n (%)	Refugees (n=250) n (%)	p- value
Economic factors					
Employed	348 (64.3)	2	240 (81.1)	108 (44.1)	<0.01
Employment sector					
Agriculture	212 (39.2)	2	195 (65.9)	17 (6.9)	<0.01
NGO	59 (10.9)		7 (2.4)	52 (21.2)	
Selling	50 (9.2)		29 (9.8)	21 (8.6)	
Other	27 (5.0)		9 (3.0)	18 (7.4)	
Homemaker (unpaid)	193 (35.7)		56 (18.9)	137 (55.9)	
Income security^c					
Wages paid daily	150 (53.2)	286	108 (61.7)	42 (39.3)	<0.01
Wages paid monthly	132 (46.8)		67 (38.3)	65 (60.7)	
Household size [†]	4 [1-14]	4	3 [1-14]	5 [1-13]	<0.01
Other household member works	369 (80.0)	78	225 (93.0)	144 (65.7)	<0.01
Remittances					
Sends remittances	52 (11.3)	78	40 (16.5)	12 (5.5)	<0.01
Receives remittances	46 (10.0)	79	8 (3.3)	38 (17.4)	<0.01
Telephone ownership	329 (57.9)	0	158 (49.7)	171 (68.4)	<0.01
Migration factors					
Country of birth					
Myanmar	401 (87.8)	82	228 (94.6)	173 (80.1)	<0.01
Thailand	55 (12.0)		12 (5.0)	43 (19.9)	
Other	1 (0.2)		1 (0.4)	0 (0)	
Country of residence					
Myanmar	113 (24.5)	78	110 (45.5)	3 (1.4)	<0.01
Thailand	348 (75.5)		132 (54.6)	216 (98.6)	
Reason for migration					
Seek employment	225 (56.7)	118	165 (75.3)	60 (33.7)	<0.01
Family reunification	95 (23.9)		35 (16.0)	60 (33.7)	
Flee war and conflict	49 (12.3)		15 (6.9)	34 (19.1)	
Health, education, resettle	28 (7.1)		4 (1.8)	24 (13.5)	
Duration in current location					
Duration (yrs) [†]	8.5 (1-39)	85	5 [1-39]	10 [1-30]	<0.01
Proportion ≤1 year	64 (14.9)		55 (24.6)	9 (4.4)	<0.01
ID card (any)	274 (59.4)	79	155 (64.0)	119 (54.4)	
ID card type					
Myanmar ID	166 (36.0)	79	124 (51.2)	42 (19.2)	<0.01
Thai ID	33 (7.1)		30 (12.4)	3 (1.4)	
UN card	75 (16.3)		1 (0.4)	74 (33.8)	
None	187 (40.6)		87 (36.0)	100 (45.7)	

Table continued overleaf

Table 31 (continued). Socio-demographic characteristics of study participants (n=568)

	All (n=568) n (%)	Missing values ^a	Labour migrants (n=318) n (%)	Refugees (n=250) n (%)	p- value
Migration factors (continued)					
Future plans					
Return to Myanmar	204 (45.3)	89	198 (84.3)	6 (2.8)	<0.01
Remain in Thailand	105 (23.3)		36 (15.3)	69 (32.1)	
Resettle in 3 rd country	141 (31.3)		1 (0.4)	140 (65.1)	
Lifestyle factors					
Alcohol	25 (4.4)	0	19 (6.0)	6 (2.4)	0.04
Smoking	56 (9.9)	0	27 (8.5)	29 (11.6)	0.22
Tobacco (chewing)	27 (4.8)	0	23 (7.23)	4 (1.6)	<0.01
Betel nut (chewing)	251 (44.2)	0	119 (37.4)	132 (52.8)	<0.01
Psychosocial factors					
Self-reported history of depression	147 (26.0)	2	27 (8.5)	120 (48.0)	<0.01
Social support					
Social support score ^{†c}	7 [0-10]	81	10 [0-10]	5 [0-10]	<0.01
Sufficient support	320 (70.0)	82	213 (89.1)	107 (49.1)	<0.01
Trauma					
Trauma score ^{†d}	0 [0-6]	81	0 [0-5]	1 [0-6]	<0.01
Proportion ≥1 traumatic event	329 (57.9)	81	169 (53.1)	160 (64.0)	<0.01
Interpersonal violence	27 (5.9)	82	19 (8.0)	8 (3.7)	0.05

Bold denotes statistical significance at p<0.05 level

[†] Results reported as median [range]

^a Missing values exclude abortions (n=28) and maternal death (n=1)

^b Of those who attended but did not complete school

^c Adapted Social Support Scale; range 0 (minimum) to 10 (maximum support)

^d Adapted Trauma History Screen; range 0 (minimum) to 9 (maximum trauma)

Table 32 Clinical characteristics of study participants (n=568)

	All (n=568) n (%)	Missing values^a	Labour migrants (n=318) n (%)	Refugees (n=250) n (%)	p- value
Medical factors					
Maternal BMI					
Normal	296 (52.1)	0	163 (51.3)	133 (53.2)	0.14
Underweight	99 (17.4)		64 (20.1)	35 (14.0)	
Overweight or obese	173 (30.5)		91 (28.6)	82 (32.8)	
Hypertension	53 (9.3)	0	30 (9.4)	23 (9.2)	0.92
Diabetes	38 (6.7)	0	17 (5.4)	21 (8.4)	0.15
Dengue	9 (1.6)	0	5 (1.6)	4 (1.6)	0.15
Obstetric factors					
Parity [†]	1 [0-9]	0	1 [0-9]	1 [0-8]	<0.01
Gravida [†]	2 [1-12]	0	3 [1-10]	2 [1-12]	<0.01
Proportion primgravid	160 (28.2)	0	108 (34.0)	52 (20.8)	<0.01
Pregnancy planned	310 (68.3)	85	156 (66.1)	154 (70.6)	0.30
Number of children ^{b†}	2 [1-8]	0	1 [1-8]	2 [1-7]	<0.01
Instrumental delivery	44 (9.7)	0	20 (8.4)	24 (11.1)	0.34
EGA at delivery ^{††}	39.2 (1.47)	0	39.2 (1.39)	39.2 (1.55)	0.84
Infant factors					
Neonatal death or stillbirth	6 (1.1)	0	5 (1.6)	1 (0.4)	0.34
Foetal distress	21 (5.3)	0	10 (5.3)	11 (5.3)	0.99
Gender (male)	200 (49.3)	0	91 (47.2)	109 (51.2)	0.42
Birthweight (g) ^{††}	3070 (470)	0	3000 (430)	3130 (500)	<0.01
Birth length (cm) ^{††}	49.86 (2.75)	0	49.78 (2.63)	49.93 (2.86)	0.58
Head circumference (cm) ^{††}	31.75 (3.87)	0	31.60 (3.17)	31.88 (4.40)	0.46

Bold denotes statistical significance at p<0.05 level

[†] Results reported as median [range]

^{††} Results reported as mean (sd)

^a Missing values exclude abortions (n=28) and maternal death (n=1)

^b Of those with at least one child

5.4 Prevalence, incidence and persistence of perinatal depression

5.4.1 Prevalence of perinatal depression

The prevalence of perinatal depression by depression category is presented in **Table 33**.

The point prevalence of major depression was 1.6%, 1.7%, 0.7% and 1.0% in the first, second and third trimesters of pregnancy and at one month post-partum, respectively.

The period prevalence of major depression was 3.0% (95% CI 1.8–4.8). The remaining analyses focus on the outcomes of moderate-severe (major or minor) depression and any (major, minor or NOS) depression.

Table 33 Point prevalence of major depression, minor depression and depression NOS during the perinatal period

	1st trimester (N=567) n (%)	2nd trimester (N=481) n (%)	3rd trimester (N=460) n (%)	1m post- partum (N=396) n (%)	Period prevalence (N=567) n (%)
Major depression	9 (1.6)	8 (1.7)	3 (0.7)	4 (1.0)	17 (3.0)
Minor depression	37 (6.5)	29 (6.0)	20 (4.3)	29 (7.3)	77 (13.6)
Depression NOS	100 (17.6)	66 (13.7)	68 (14.8)	45 (11.4)	171 (30.2)
Negative	421 (74.3)	378 (78.6)	369 (80.2)	318 (80.3)	-

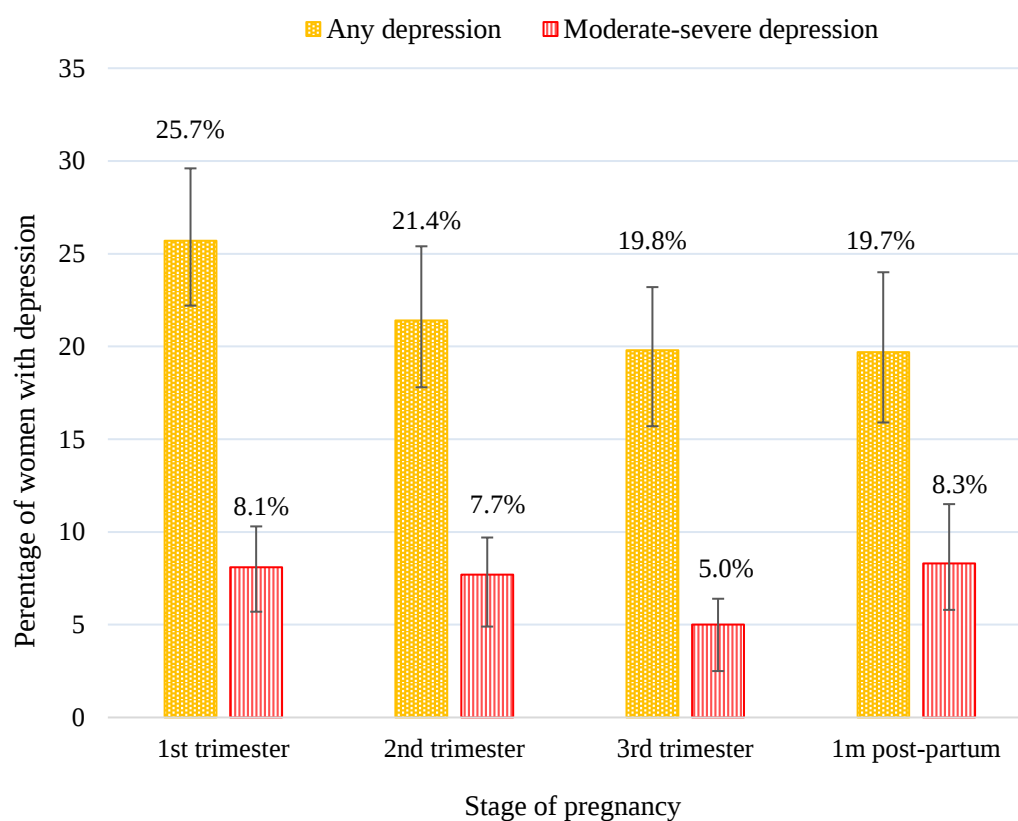
The period prevalence of moderate-severe perinatal depression was 18.5% (95% CI 15.4–21.9%). When mild depression was added, the period prevalence of any depression was 39.8% (95% CI 35.7–43.9%) (**Table 34**). Point prevalence rates of moderate-severe depression were 8.1% in the first trimester, declining to 7.7% in the second trimester and 5.0% in the third trimester and rising again to 8.3% at one month post-partum. The point prevalence of any depression was 25.7% in the first trimester, declining to 21.4% in the second trimester and 19.8% in the third trimester and remaining stable at 19.7% at one

month post-partum (Table 34). Figure 15 shows the trends in prevalence of moderate-severe and any depression over time.

Table 34 Prevalence of perinatal depression by stage of pregnancy

	Any depression		Moderate-severe depression	
	No. of cases	Proportion (95% CI)	No. of cases	Proportion (95% CI)
Point prevalence				
1st trimester	146/567	25.7 (22.2-29.6)	46/567	8.1 (6.0-10.7)
2 nd trimester	103/481	21.4 (17.8-25.4)	37/481	7.7 (5.5-10.4)
3 rd trimester	91/460	19.8 (16.2-23.7)	23/460	5.0 (3.2-7.4)
1m post-partum	78/396	19.7 (15.9-24.0)	33/396	8.3 (5.8-11.5)
Period prevalence	226/568	39.8 (35.7-43.9)	105/568	18.5 (15.4-21.9)

Figure 15 Prevalence of any and moderate-severe perinatal depression



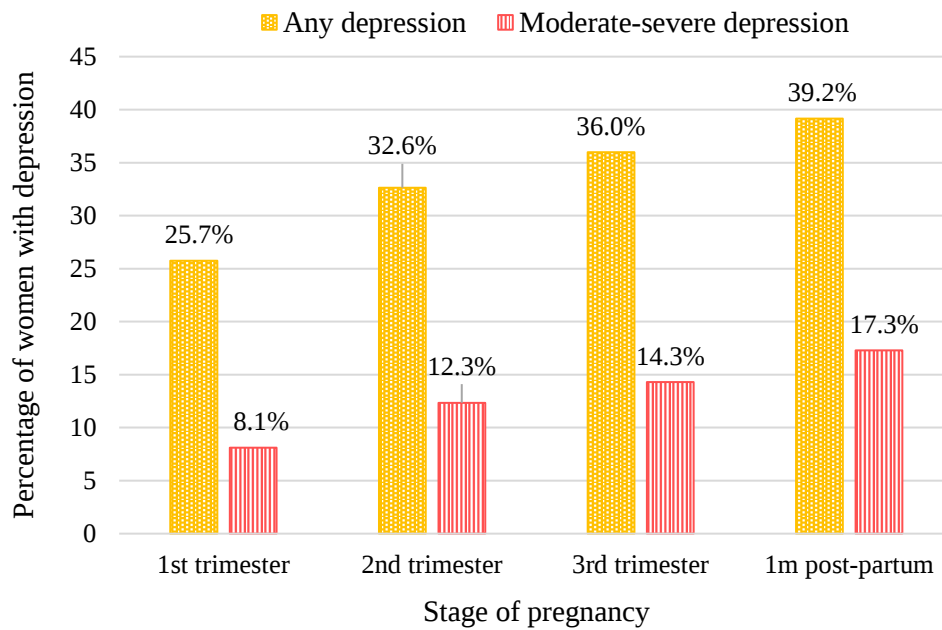
5.4.2 Incidence of perinatal depression

Among women who completed all four assessments, 350 women were not depressed at baseline (T1). Of these 350 women, 15.4% (95% CI 11.8–19.6%) developed new onset moderate-severe depression and 28.5% (95% CI 23.3–34.2%) developed new onset depression of any severity during the course of the study period (**Table 35**). The incidence of moderate-severe depression was 5.3% between the first and second trimesters, 2.8% between the second and third trimesters and 5.4% between the third trimester and one month post-partum. **Figure 16** shows the cumulative prevalence of any depression and moderate-severe depression over time.

Table 35 Incidence of perinatal depression by stage of pregnancy

	Any depression		Moderate-severe depression	
	No. of cases	Proportion (95% CI)	No. of cases	Proportion (95% CI)
Incidence				
2 nd trimester	39/360	10.8 (7.8-14.5)	24/449	5.3 (3.5-7.8)
3 rd trimester	19/293	6.8 (4.2-10.3)	11/392	2.8 (1.4-5.0)
1m post-partum	18/224	8.0 (4.8-12.4)	17/317	5.4 (3.2-8.4)
Overall incidence	79/277	28.5 (23.3-34.2)	54/350	15.4 (11.8-19.6)

Figure 16 Cumulative prevalence of perinatal depression over time



5.4.3 Persistence of perinatal depression

Of the 46 women with moderate-severe depression in the first trimester, 22.7% (10/46; 95% CI 10.9–36.4%) remained depressed in the second trimester, 4.3% (2/46; 95% CI 0.5–14.8%) remained depressed in the third trimester, and none remained depressed at one month post-partum. Of the 146 women with any depression in the first trimester, 43.8% (64/146; 95% CI 35.6–52.3%) remained depressed in the second trimester, 21.9% (32/146; 95% CI 15.5–29.5%) remained depressed in the third trimester and 11.0% (16/146; 95% CI 6.4–17.2%) remained depressed at one month post-partum. (**Table 36**).

Table 36 Persistence of perinatal depression from the first trimester to 1 month post-partum

1 st trimester	Women with persisting depression [†]					
	2 nd trimester		3 rd trimester		1m post-partum	
	n	Proportion (95% CI)	n	Proportion (95% CI)	n	Proportion (95% CI)
Any depression (n=146)	64	43.8 (35.6-52.3)	32	21.9 (15.5-29.5)	16	11.0 (6.4-17.2)
Moderate-severe depression (n=46)	10	21.7 (10.9-36.4)	2	4.3 (0.5-14.8)	0	0.0 (0.0-7.7)*

[†] Women with persisting depression as a proportion of those depressed in 1st trimester

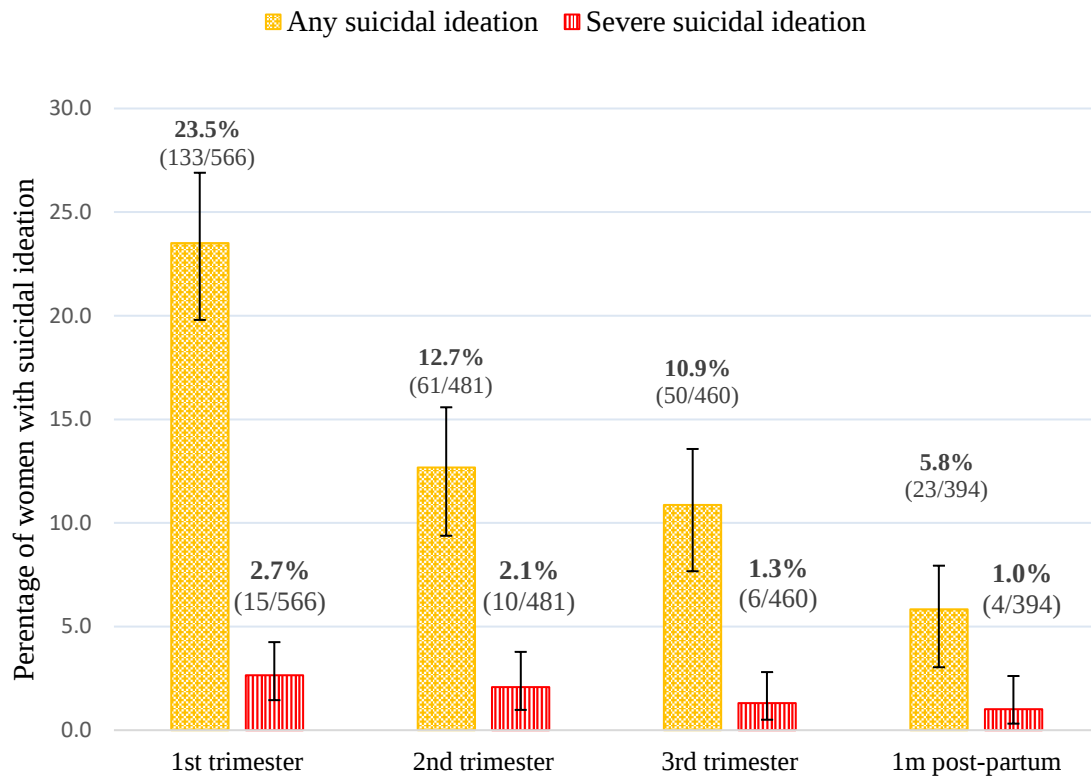
* One-sided (97.5%) confidence interval

5.5 Suicidal ideation

5.5.1 Prevalence of suicidal ideation

Overall, 29.0% (165/568) of women experienced some degree of suicidal ideation at one or more points during the study period. The prevalence of any suicidal ideation was 20.8% (118/566) in the first trimester, 10.6% (51/481) in the second trimester, 9.6% (44/460) in the third trimester and 4.8% (19/394) at one month post-partum (**Figure 17**). Severe suicidal ideation was less common, with prevalence rates of 2.7% (15/566) in the first trimester, 2.1% (10/481) in the second trimester, 1.3% (6/460) in the third trimester and 1.0% (4/394) at one month post-partum. Overall, 5.3% (30/568) of women experienced severe suicidal ideation at one or more times during the study. Women with severe suicidal ideation represented 18.5% (30/165) of all women with suicidal ideation.

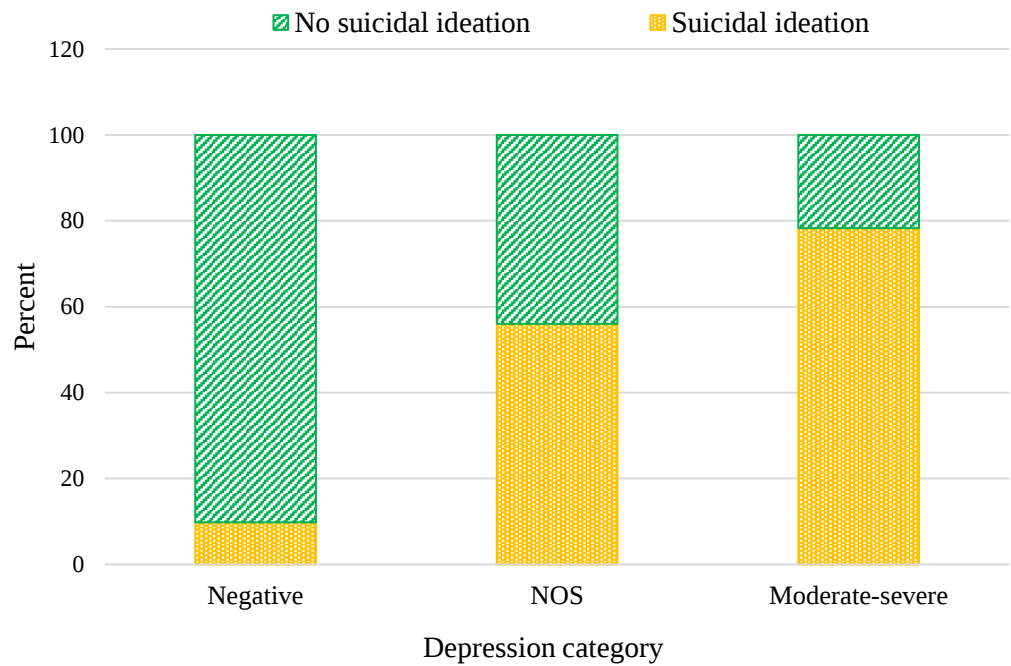
Figure 17 Prevalence of any and severe suicidal ideation during the perinatal period



5.5.2 Suicidal ideation and depression status

Suicidal ideation was significantly associated with severity of depression: the more severe the depression category, the greater the proportion of women experiencing any suicidal ideation (χ^2 267.3; $p < 0.01$) (**Figure 18**).

Figure 18 Proportion of women experiencing any suicidal ideation by depression category at baseline (n=566)



However, among the 165 women with suicidal ideation at any time during the study, over half had either no diagnosis of depression (21.2%; 35/165) or had depression NOS (33.3%; 55/165) (**Figure 19**).

Figure 19 Depression category of women who ever experienced suicidal ideation during the perinatal period (n=165)

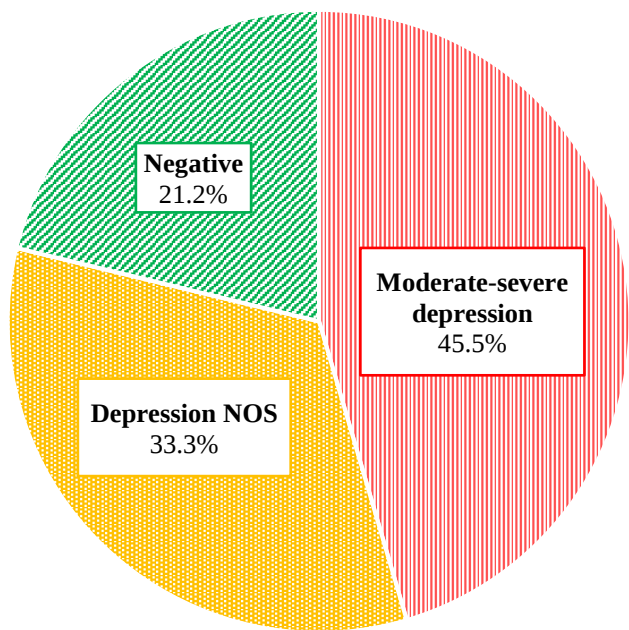
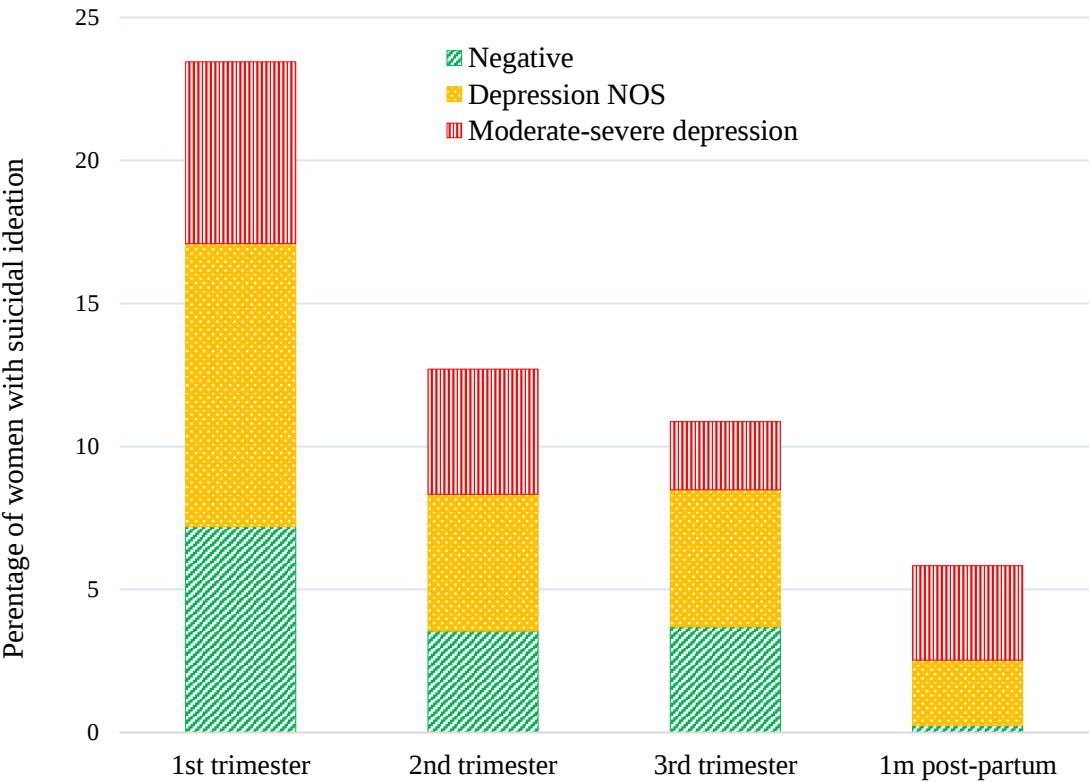


Figure 20 shows the proportion of women with suicidal ideation who had moderate-severe depression, depression NOS or were negative for depression, by stage of pregnancy.

Figure 20 Proportion of women with suicidal ideation according to depression status and stage of pregnancy (n=165)



5.6 Treatment for perinatal depression

During the course of the study, 42 participants were treated for depression. The decision to treat was based on a combination of SCID interview findings, clinical impression and discussion with participants and the supervising clinician. Treatment and follow-up was led by the author and study team. Treatment of perinatal depression was largely the direct

result of women's participation in the study: it is unlikely that these women's symptoms would have been picked up through routine ANC care.

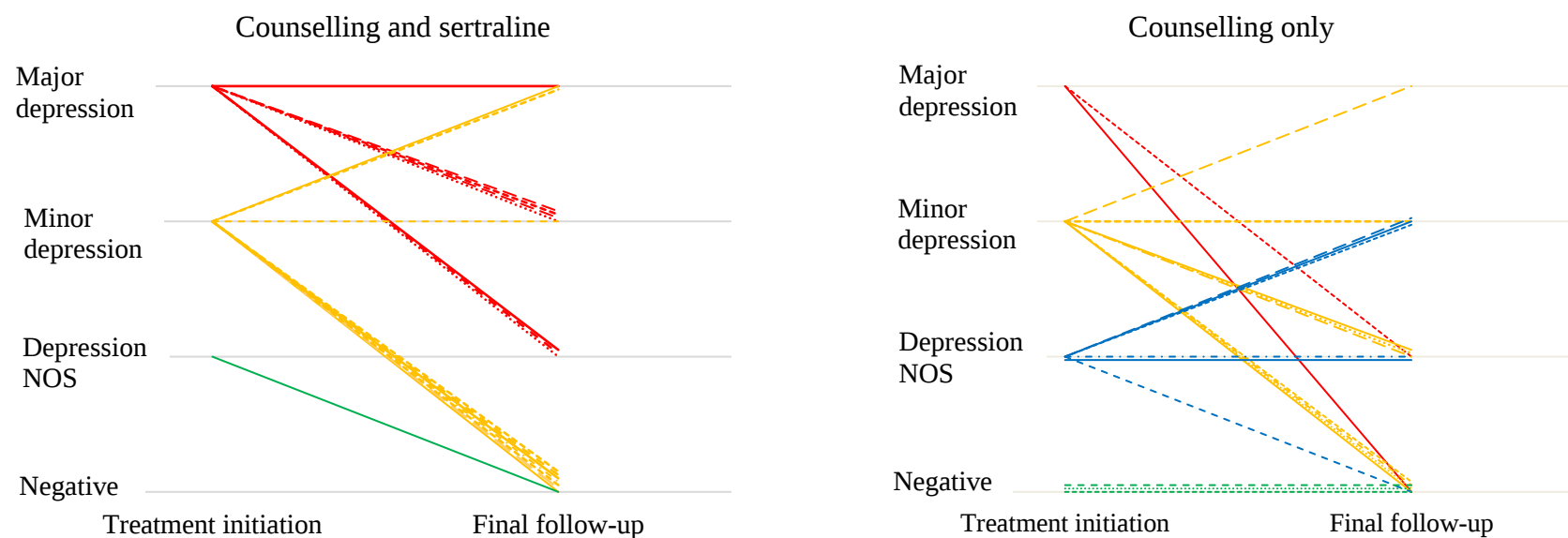
Twenty-two women received sertraline and counselling, and most women in this group had a diagnosis of major or minor depression. An additional 20 women received counselling alone, and most women in this group had a diagnosis of minor depression or depression NOS. Three women received counselling although they had a no current symptoms of depression. Two of these women had been started on treatment for depression by another medical provider within the refugee camp. One woman's symptoms had improved with anti-depressant treatment and she wished to stop taking her medication. The study team offered to provide counselling sessions to this woman in order to ensure her symptoms did not deteriorate while she stopped her medical treatment. The one remaining woman had expressed intermittent symptoms of depression and suicidal ideation but did not meet the criteria for any of the three categories of depression. This woman was experiencing domestic violence at home and faced a number of complex social challenges which led to the decision by the study team to offer counselling. **Table 37** summarises the depression categories of women who were treated.

Table 37 Severity of depression at time of treatment initiation among those treated for perinatal depression (n=42)

	Depression severity at treatment initiation				
	No depression n (%)	Depression NOS n (%)	Minor depression n (%)	Major depression n (%)	Total n (%)
Counselling only	3 (15.0)	6 (30.0)	9 (45.0)	2 (20.0)	20 (100.0)
Counselling & sertraline	0 (0.0)	1 (4.5)	11 (50.0)	10 (50.0)	22 (45.5)

Figure 21 plots the trajectories of women treated for perinatal depression with counselling only, or with counselling and medication. Women who did not return for follow-up after starting treatment were excluded from this figure. In the counselling only group, of the 20 women with depressive symptoms, ten (50.0%) improved, six (30.0%) remained the same (but of these, three started with a ‘negative’ diagnosis and therefore could not have improved) and four (20.0%) deteriorated. In the counselling and sertraline group, of the 19 women who were followed-up, 15 (79.0%) improved, two (10.5%) remained the same and two (10.5%) deteriorated).

Figure 21 Depression severity at treatment initiation and at final contact among women receiving treatment for perinatal depression



Note: Three women from the counselling and sertraline group who only attended one assessment and were subsequently lost to follow-up were excluded from analyses

5.7 Discussion

5.7.1 *Socio-demographic characteristics*

The baseline characteristics of participating women raise a number of interesting differences between labour migrants and refugees. Ethnic, religious and linguistic differences result primarily from the self-selection of individuals of certain backgrounds into either refugee camps or labour migrant villages. On the whole, Karen groups are more likely to suffer persecution and seek refuge in camps, while Burman groups are more likely to migrate for economic reasons and seek employment in rural villages along the border. Differences in employment and educational status reflect the environmental contexts and opportunities offered within each of these settings. Burman Muslim women represent a minority group, particularly within the labour migrant context. Across Myanmar, Muslim groups have experienced long-standing and severe discrimination and persecution. Discrimination continues along the border area, and the higher proportion of Burman Muslim women in the refugee camp as compared to labour migrant villages may reflect the higher levels of protection they can secure in the enclosed camp setting.

Almost half (45.5%) of the labour migrant women live on the Myanmar side of the border, highlighting the mobility of this group, many of whom cross into Thailand daily for work. Forty-one percent of women had no formal means of identification, meaning that they have undocumented and therefore illegal status in Thailand. This represents an important potential psychological stressor, particularly for labour migrants who are vulnerable to exploitation in the workplace as well as to fines, arrest and deportation by the Thai authorities (Meyer et al, 2016). Healthcare options are also extremely limited for labour migrants who as a group are not eligible to use Thai government health services and therefore fall into a service void.

Future aspirations also differ significantly: while 84.3% of labour migrants plan to return to Myanmar, 65.1% of refugees hope to resettle to high-income countries. The latter figure is notable given that only a small minority of those who apply for resettlement are actually resettled. Furthermore, following Myanmar's return to democracy at the end of 2016, UNHCR brought a closure to what has been the largest refugee relocation programme ever: only those with first-degree relatives overseas and vulnerable groups now remain eligible for relocation. The high proportion of refugees wishing to resettle therefore reflects a high level of demand that is unlikely to be met. Thus while labour migrants face constant uncertainty around daily work opportunities and the risk of deportation, refugees experience uncertainty around their futures, over which they have little control.

Labour migrants report higher levels of both received support (median social support score of 10 among labour migrants vs. 5 among refugees; $p < 0.01$) and perceived sufficiency of support (proportion reporting sufficient support 89.1% among labour migrants vs. 49.1% among refugees; $p < 0.01$). This is surprising for a number of reasons. Firstly, structural support mechanisms including NGOs and community-based organisations are much more established within the refugee camp. Secondly, it is surprising given the demanding daily lives of labour migrant women who juggle paid manual work with household and childcare responsibilities and arguably might therefore require more support. Among refugees, the demand for support on a day-to-day basis is generally less acute. Finally, labour migrants constitute a more geographically dispersed community, and one might expect support networks to be weaker than among refugees who live in closer proximity to each other.

The reasons behind this finding are not clear. One possible explanation might be that labour migrants have a greater sense of independence and agency over their lives, which perhaps confers upon them a greater resilience to take on burdens and responsibilities. Within the refugee camp setting, a degree of institutionalisation has arisen as a result of long-standing dependence on external aid. Perhaps this has created among refugees lower levels of self-reliance in comparison with their labour migrant counterparts, and the perception of needing more support as a result of feelings of helplessness. This speculation might explain the higher levels of perceived sufficiency of support among labour migrants but does not provide a rationale for higher levels of received support in this group. Given the high number of labour migrant women with the maximum social support scale score, it is also possible that the results are an artefact. For example, interviewers at the labour migrant sites may have placed less emphasis on differentiating between the individual items of the social support scale, perhaps in an effort to save time. This may have led to all ten items being recorded as 'positive' if women gave the impression that they had adequate levels of support, for instance, rather than asking about the different forms of social support received in detail. Though efforts were made through training and observation of interviewers to ensure accuracy, this possibility cannot be ruled out.

Sixty-four percent of refugees compared with 53.1% of labour migrants had experienced one or more traumatic event, perhaps reflecting the predominantly Karen ethnicity of refugees who may be more likely than ethnic Burman (the majority ethnicity in Myanmar) to have experienced direct ethnic-related conflict or persecution. Interpersonal violence was reported by 5.9% of women. A study of adult women in three refugee camps (not including Maela) on the Thai-Myanmar border found a similar rate of 7.9%

(Falb et al, 2013b). In the present study, interpersonal violence was more common among labour migrants, an important consideration given the scarcity of support services for this group of women in particular.

Lower losses to follow-up among refugees are unsurprising in light of this group's limited mobility and greater ease of access to the clinic. Labour migrants have longer and more arduous journeys to ANC and especially during the busy seasons of the agricultural year, clinic attendance represents missed work and income opportunities. Furthermore, some labour migrant women migrate specifically in order to access antenatal services, and many move on after delivery. For these reasons, the differential losses to follow-up are likely to be a consequence of women's migrant category rather than a study effect.

5.7.2 Prevalence, persistence and treatment of perinatal depression

Overall, 39.8% of women in the study experienced depression of any severity and 18.5% of women experienced moderate-severe depression during the course of the study. These figures represent a significant disease burden within this vulnerable population with little in the way of mental health service provision. The prevalence of major depression was consistently low, with point prevalence estimates ranging between 0.7% and 1.6%. The prevalence of minor depression was slightly higher, ranging between 4.3% and 7.3% at various assessment times. Depression NOS was the most prevalent category, accounting for up to 17.6% of women at any one time and highlighting the importance of capturing symptoms at the milder end of the spectrum. Although depression NOS is not commonly used in clinical settings, the large proportion of women within this category, the persistence of symptoms over time and the impact of symptoms on everyday functioning

suggest that depression NOS represents a clinically important state of psychological distress.

The period prevalence of moderate-severe depression of 18.5% is in line with studies of perinatal depression among non-migrant women in low-income settings, which report estimates between 15.6% (Fisher et al, 2012) and 25.3% (Gelaye et al, 2016). However, our systematic review, which assessed prevalence among migrant women from low- and middle-income countries of origin, found a significantly higher median prevalence of 36.5%. Moreover, among studies that assessed severe (major) depression alone, the systematic review found a median prevalence of 15.5%, with estimates ranging widely between 0.6% and 48.1%. Compared to these figures, the prevalence of major perinatal depression on the Thai-Myanmar border was strikingly low. It is unclear whether this discrepancy reflects truly low rates among this population, or whether culturally-specific manifestations of depression were missed leading to an under-diagnosis of major depression. Alternatively, studies included in the systematic review may have over-reported prevalence as a result of their reliance on screening rather than diagnostic instruments. This again underscores the importance of acknowledging the great heterogeneity among migrant communities, considering context-specific factors and using culturally valid assessment tools.

A slight decline in the prevalence of depression was seen during the course of the perinatal period. This reduction in prevalence from early pregnancy through to the early post-partum period has been reported elsewhere (Canario & Figueiredo, 2017). However, trends in prevalence and persistence of perinatal depression in the current study must be interpreted with caution. Many depressed women in this cohort received treatment, and

even among those who were not treated, repeated interviews may have had a therapeutic effect by offering women an opportunity to talk about their feelings (Andrighetti et al, 2017). Conclusions cannot therefore be drawn around the natural progression of perinatal depression in this setting.

Nevertheless, a number of patterns are evident. Among women with depression of any severity, symptoms were more persistent than among those with moderate-severe depression. Also, while the majority (79.0%) of the counselling and sertraline group – which consisted mostly of moderate-severely depressed women – saw an improvement in symptoms, only half (52.8%) of those in the counselling-only group – which included women with milder symptoms – improved. This may reflect a greater effectiveness of medication over counselling alone. It is also possible that moderate-severe depression is more amenable to treatment than depression NOS. Depression NOS may reflect a non-pathological level of distress – in effect, a ‘normal’ reaction to difficult life circumstances – which is more resistant to medical or psychosocial intervention. Addressing the symptoms among this group of women with milder forms of depression perhaps requires the wider societal, socio-economic and political determinants of health to be tackled. The need to address these underlying determinants is explored further in the final discussion (Chapter 8).

5.7.3 *Suicidal ideation*

One maternal death due to suicide along with a high proportion of women reporting suicidal ideation prompted suicidal ideation to be examined independently of depression status. Twenty-nine percent of women experienced suicidal thoughts during the study period. Of these women, almost a fifth (18.5%) experienced severe symptoms. Falb *et*

al.' (2013) found a significantly lower prevalence of suicidal ideation of 7.4% among (non-perinatal) refugee women in three other camps on the Thai-Myanmar border (Falb et al, 2013a). High rates of suicide and suicidal ideation have been reported among general migrant populations resettled in high-income countries, though no published estimates are as high as those found in the current study (Deckert et al, 2015; Hagaman et al, 2016).

Few studies have assessed suicidal ideation specifically among perinatal women. Kim *et al.* (2015) found rates of suicidal ideation of 3.8% among a large population of unselected (non-migrant) pregnant and post-partum women in the USA (Kim et al, 2015). Only 1.1% of these women with suicidal ideation were considered to be at high risk. Compared to these figures, both the prevalence of suicidal ideation and the proportion of those who are at high risk were significantly higher on the Thai-Myanmar border.

It was striking that over half of women who experienced suicidal ideation had either no depression or depression NOS, placing the greatest burden of suicidal ideation upon those at the mildest end of the spectrum of depression. Kim *et al.* (2015) report similar findings in their sample of perinatal women in the USA, in whom over half of suicidal ideation occurred in women who screened negative for depression using the EPDS (Kim et al, 2015). Another interesting finding was the steady decline in suicidal ideation over time, from 20.8% in the first trimester to 4.8% post-partum. It is unclear why this decline occurred, especially against the backdrop of a very stable prevalence of depression throughout the study period. To the author's knowledge, no comparative longitudinal data on suicidal ideation through the perinatal period exists.

The participant who committed suicide had been diagnosed with depression NOS (Fellmeth et al, 2016b). The circumstances of this suicide were unusual (couple suicides are rare, representing less than 1% of all suicides), and undue inferences should not be drawn from an isolated event. Nevertheless, the case highlights the importance of taking symptoms of depression or suicidal ideation seriously, regardless of severity. Local clinic staff need to be alert to this and able to follow up symptoms with appropriate questions that can identify women at high risk of perinatal depression and provide them with care.

5.7.4 Strengths and limitations

To our knowledge, this is the first prospective cohort study of perinatal depression among migrant women in a low-income setting. It is also one of the few studies to offer a direct comparison of depression status between labour migrants and refugees in the same destination setting. The use of a diagnostic rather than screening instrument to establish the presence of perinatal depression was a further strength, enabling greater accuracy and addressing a significant gap in the current evidence.

There were also a number of limitations to this study component. Use of the SCID – an instrument developed in a high-income, Western setting – may have resulted in culturally-specific manifestations of depression being missed. Working across different languages and with interpreters introduces the possibility of meaning being lost or misinterpreted. A number of biases may have affected the reliability of results. Social desirability bias and a stigma around mental disorders may have influenced the extent to which women disclosed their symptoms (Andrighetti et al, 2017). Recall bias may have influenced factors such as the number of traumatic events experienced. The natural progression of perinatal depression could not be assessed because of the treatment

offered to women with depression. It is also not possible to attribute the improvement symptoms among those treated to the treatment itself: symptoms may have resolved of their own accord and the duration of follow-up was insufficient to enable long-term treatment effectiveness to be assessed. Perhaps most importantly, the lack of a control group makes it difficult to establish the extent to which depression is due to women's migrant status rather than a result of the general socio-economic conditions women in this setting experience. These limitations are explored further in the final discussion (Chapter 8).

5.8 Chapter summary

A total of 568 women participated in the study, of whom 73.9% were present at the final assessment at 1 month post-partum. Refugees were more likely to attend all four assessments, reflecting the greater ease of access to ANC within the camp setting. There were significant socio-economic differences between labour migrant and refugee women, including higher levels of self-reported history of depression, lower levels of received and perceived social support and higher levels of trauma among refugees. Labour migrants reported higher rates of interpersonal violence. The period prevalence of perinatal depression was 18.5% for moderate-severe depression and 39.8% for any depression. Almost a third of women experienced suicidal ideation, the majority of whom had either no or mild depression. Forty-two women received treatment for depression: half of those who received counselling alone and the majority of those who received counselling and sertraline experienced an improvement in symptoms.

Chapter 6.

Prospective cohort study results: factors associated with perinatal depression

6.1 Chapter overview

This chapter presents the second part of the prospective cohort study results. The associations between socio-demographic and clinical exposure variables and perinatal depression are explored. The first set of analyses quantify the associations between socio-demographic and clinical factors and perinatal depression of moderate-severe and any severity. The next set of analyses examine whether depression during pregnancy is significantly associated with depression at one month post-partum, after controlling for other risk factors for postnatal depression. Finally, factors associated with suicidal ideation are explored.

6.2 Factors associated with perinatal depression

This section examines the associations between socio-demographic, clinical factors and infant factors and perinatal depression. First, the period prevalence of moderate-severe (major or minor) perinatal depression is used as the outcome. Analyses are then repeated using the period prevalence of any (major, minor or NOS) perinatal depression as the outcome.

6.2.1 *Factors associated with moderate-severe perinatal depression*

Univariable analysis

Univariable (unadjusted) associations between socio-demographic, clinical and infant exposure variables and the period prevalence of moderate-severe depression are presented in **Table 38** (socio-demographic factors) and **Table 39** (clinical factors). The likelihood of experiencing moderate-severe perinatal depression was significantly higher among women who were older, had lower educational levels, did not own a telephone and chewed tobacco or betel nut. Women with an unplanned pregnancy, a greater number of living children and higher parity and gravidity were also more likely to have moderate-severe depression.

When refugees were compared to all labour migrants, the difference in prevalence of moderate-severe depression was not statistically significant (19.6% among refugees vs. 17.6% among labour migrants; OR 0.88; 95% CI 0.57–1.34; $p=0.55$). However, when broken down according to site, differences were more notable. The high prevalence of 25.2% at Wang Pha contrasted with the lower prevalence of 10.4% at Mawker Tai, though this difference did not reach clinical significance. The prevalence at Mawker Tai was statistically significantly lower than at Maela (OR 4.8; 95% CI 0.26–0.86; $p<0.01$).

Significant associations were also seen between psychosocial factors and perinatal depression. A self-reported history of depression increased the odds of perinatal depression by 2.83 (95% CI 1.82–4.43; $p<0.01$). Women who felt the support they received was insufficient had increased odds of 2.02 (95% CI 1.25–3.27; $p<0.01$), and for every one-point increase in women's social support score, their odds of perinatal

depression decreased by 0.86 (95% CI 0.79-0.93; $p<0.01$). A history of trauma was also a risk factor: each one-point increase in the trauma score increased the odds of perinatal depression by 2.16 (95% CI 1.75–2.66; $p<0.01$), and women who had experienced at least one traumatic event had a 2.59 (95% CI 1.60-4.18; $p<0.01$) higher odds of moderate-severe depression than those with no history of trauma. The strongest association was seen with a history of interpersonal violence, which increased the odds of perinatal depression by 6.01 (95% CI 2.70-13.37). Associations between all other socio-demographic variables and perinatal depression did not reach statistical significance.

Table 38 Univariable associations between socio-demographic factors and moderate-severe perinatal depression

	Moderate-severe depression n/N (%)	No depression n/N (%)	Unadj. OR (95% CI)	p-value
Demographic factors				
Age (yrs)†	28 [18-45]	25 [18-50]	1.06 (1.03-1.09)	<0.01
Ethnicity				0.45
Burman	35/161 (21.7)	126/161 (78.3)	1.00	
Sgaw Karen	43/278 (15.5)	235/278 (84.5)	0.66 (0.40-1.08)	
Poe Karen	13/66 (19.7)	53/66 (80.3)	0.88 (0.43-1.80)	
Burman Muslim	9/44 (20.5)	35/44 (79.5)	0.93 (0.41-2.11)	
Other	5/19 (26.3)	14/19 (73.7)	1.29 (0.43-3.81)	
Language				0.10
Burmese	51/239 (21.3)	188/239 (78.7)	1.00	
Sgaw Karen	43/280 (15.4)	237/280 (84.6)	0.67 (0.43-1.05)	
Poe Karen	8/43 (18.6)	35/43 (81.4)	0.84 (0.39-0.93)	
Other	3/6 (50.0)	3/6 (50.0)	3.69 (0.72-18.8)	
Religion				0.81
Buddhist	77/408 (18.9)	331/408 (81.1)	1.00	
Christian	19/115 (16.5)	96/115 (83.5)	0.85 (0.49-1.48)	
Muslim	9/45 (20.0)	36/45 (80.0)	1.07 (0.50-2.32)	
Education and language factors				
Education (yrs)†	4 [0-18]	4 [0-18]	0.96 (0.91-1.02)	0.18
Education				0.22
Under 3 years	53/255 (20.8)	202/255 (79.2)	1.00	
3 to 6 years	32/164 (19.5)	132/164 (80.5)	0.92 (0.57-1.51)	
7 to 10 years	17/119 (14.3)	102/119 (85.7)	0.64 (0.35-1.15)	
Over 10 years	2/24 (8.3)	22/24 (91.7)	0.35 (0.08-1.52)	
Type of school				0.72
Myanmar school	52/245 (21.2)	193/245 (78.8)	1.00	
Thai school	1/9 (11.1)	8/9 (88.9)	0.46 (0.06-3.79)	
NGO or faith-based	15/89 (16.9)	74/89 (83.1)	0.75 (0.40-1.42)	
No school	22/116 (19.0)	94/116 (81.0)	0.87 (0.50-1.51)	
Reason stopped school ^a				0.11
Employment	60/255 (23.5)	195/255 (76.5)	1.00	
Disinterest	9/75 (12.0)	66/75 (88.0)	0.44 (0.21-0.94)	
Marriage	7/49 (14.3)	42/49 (85.7)	0.54 (0.23-1.27)	
Conflict and war	1/10 (10.0)	9/10 (90.0)	0.36 (0.04-2.91)	
No local school	3/21 (14.3)	18/21 (85.7)	0.54 (0.15-1.90)	
Literate (self-reported)				0.42
Yes	69/392 (17.6)	323/392 (82.4)	1.00	
No	36/176 (20.5)	140/176 (79.5)	1.20 (0.77-1.89)	
Languages spoken				0.42
1 language	40/211 (19.0)	171/211 (81.0)	1.00	
2-3 languages	34/192 (17.7)	158/192 (82.3)	0.92 (0.55-1.53)	
4 or more languages	14/54 (25.9)	40/54 (74.1)	1.50 (0.74-3.01)	

Table continued overleaf

Table 38 continued. Univariable associations between socio-demographic factors and moderate-severe perinatal depression

	Moderate-severe depression n/N (%)	No depression n/N (%)	Unadj. OR (95% CI)	p-value
Economic factors				
Employment status Employed Unemployed	69/348 (19.8) 36/193 (18.7)	279/348 (80.2) 157/193 (81.3)	1.00 0.93 (0.59-1.45)	0.74
Employment sector Agriculture NGO Selling Other Homemaker (unpaid)	42/212 (19.8) 13/59 (22.0) 11/50 (22.0) 3/27 (11.1) 36/193 (18.7)	170/212 (80.2) 46/59 (78.0) 39/50 (78.0) 24/27 (88.9) 157/193 (81.4)	1.00 1.14 (0.57-2.31) 1.14 (0.54-2.42) 0.51 (0.15-1.76) 0.93 (0.57-1.52)	0.75
Income security ^b Wages paid daily Wages paid monthly	32/150 (21.3) 25/132 (18.9)	118/150 (78.7) 107/132 (81.1)	1.00 0.86 (0.47-1.58)	0.88
Household size [†]	4.5 [2-12]	4 [1-14]	1.01 (0.92-1.11)	0.79
Other household member works Yes No	70/369 (19.0) 20/92 (21.7)	299/369 (81.0) 72/92 (78.3)	1.00 1.19 (0.18-0.30)	0.55
Sends remittances Yes No	11/52 (21.2) 79/409 (19.3)	41/52 (78.8) 330/409 (80.7)	1.00 0.89 (0.44-1.81)	0.75
Receives remittances Yes No	9/46 (19.6) 81/414 (19.6)	37/46 (80.4) 333/414 (80.4)	1.00 1.00 (0.46-2.16)	1.00
Telephone ownership Yes No	51/329 (15.5) 54/239 (22.6)	278/329 (84.5) 185/239 (77.4)	1.00 1.59 (1.04-2.43)	0.03
Migration factors				
Site Maela camp Wang Pha Mawker Tai	49/250 (19.6) 39/155 (25.2) 17/163 (10.4)	201/250 (80.1) 116/155 (74.8) 146/163 (89.6)	1.00 1.38 (0.85-2.23) 0.48 (0.26-0.86)	<0.01
Migrant category Refugee Migrant	49/250 (19.6) 56/318 (17.6)	201/250 (80.4) 262/318 (82.4)	1.00 0.88 (0.57-1.34)	0.55
Country of birth Myanmar Thailand	78/401 (19/5) 10/55 (18.2)	323/401 (80.5) 45/55 (81.8)	1.00 0.92 (0.44-1.91)	0.82
Country of residence Myanmar Thailand	23/113 (20.4) 67/348 (19.3)	90/113 (79.6) 281/348 (80.7)	1.00 0.933 (0.55-1.58)	0.80

Table continued overleaf

Table 38 continued. Univariable associations between socio-demographic factors and moderate-severe perinatal depression

	Moderate-severe depression n/N (%)	No depression n/N (%)	Unadj. OR (95% CI)	p-value
Reason moved				
Seek employment	49/225 (21.8)	176/225 (78.2)	1.00	0.92
Family reunification	18/95 (19.0)	77/95 (81.0)	0.84 (0.46-1.53)	
Flee war and conflict	10/49 (20.4)	39/49 (79.6)	0.92 (0.43-1.98)	
Seek healthcare or education	5/28 (17.9)	23/28 (82.1)	0.78 (0.28-2.16)	
Time since migration[†]	8 [1-37]	9 [1-39]	1.00 (0.98-1.04)	0.70
Duration ≤ 1 year				
≤ 1 year in current location	18/64 (28.1)	46/64 (71.9)	1.00	0.01
> 1 year in current location	18/138 (13.0)	120/138 (87.0)	0.38 (0.18-0.80)	
ID card (any)				
Yes	52/274 (19.0)	222/274 (81.0)	1.00	0.72
No	38/187 (20.3)	149/187 (79.7)	1.09 (0.68-1.74)	
ID card type				
Myanmar ID	31/166 (18.7)	135/166 (81.3)	1.00	0.32
Thai ID	10/33 (30.3)	23/33 (69.7)	1.89 (0.82-4.38)	
UN card	11/75 (14.7)	64/75 (85.3)	0.75 (0.35-1.58)	
None	38/187 (20.3)	149/187 (79.7)	1.11 (0.65-1.88)	
Future plans				
Return to Myanmar	39/204 (19.1)	165/204 (80.9)	1.00	0.94
Remain in Thailand	21/105 (20.0)	84/105 (80.0)	1.06 (0.59-1.91)	
Resettle in 3 rd country	29/141 (20/6)	112/141 (79.4)	1.10 (0.64-1.87)	
Lifestyle factors				
Alcohol				
No	99/543 (18.2)	444/543 (81.8)	1.00	0.48
Yes	6/25 (24.0)	19/25 (76.0)	1.42 (0.55-3.64)	
Smoking				
No	90/512 (17.6)	422/512 (82.4)	1.00	0.11
Yes	15/56 (26.8)	41/56 (73.2)	1.72 (0.91-3.23)	
Tobacco (chewing)				
No	104/541 (19.2)	437/541 (80.8)	1.00	0.02
Yes	26/27 (96.3)	1/27 (3.7)	0.16 (0.02-1.20)	
Betel nut (chewing)				
No	46/317 (14.5)	271/317 (85.5)	1.00	<0.01
Yes	59/251 (23.5)	192/251 (76.5)	1.81 (1.18-2.78)	
Psychosocial factors				
Self-reported history of depression				
No	58/419 (13.8)	361/419 (86.2)	1.00	<0.01
Yes	46/147 (31.3)	101/147 (68.7)	2.83 (1.82-4.43)	
Social support score[†]	6 [0-10]	8 [0-10]	0.86 (0.79-0.93)	<0.01
Sufficient support				
Yes	51/320 (15.9)	269/320 (84.1)	1.00	<0.01
No	38/137 (27.7)	99/137 (72.3)	2.02 (1.25-3.27)	

Table continued overleaf

Table 38 continued. Univariable associations between socio-demographic factors and moderate-severe perinatal depression

	Moderate-severe depression n/N (%)	No depression n/N (%)	Unadj. OR (95% CI)	p-value
Trauma score[†]	1 [0-6]	0 [0-4]	2.16 (1.75-2.66)	<0.01
Proportion ≥ 1 trauma				
No traumatic event	26/239 (10.9)	213/239 (89.1)	1.00	<0.01
≥ 1 traumatic event	79/329 (24.0)	250/329 (76.0)	2.59 (1.60-4.18)	
Domestic violence				
No	74/430 (17.2)	356/430 (82.8)	1.00	<0.01
Yes	15/27 (55.6)	12/27 (44.4)	6.01 (2.70-13.37)	

Bold denotes statistical significance at p<0.10 level

[†] Results presented as median [range]

^a Of those who attended but did not complete school

^b Of those in paid employment

Abbreviations: OR odds ratio; Unadj unadjusted

Table 39 Univariable associations between clinical factors and moderate-severe perinatal depression

	Moderate-severe depression n/N (%)	No depression n/N (%)	Unadj. OR (95% CI)	p-value
Medical factors				
Maternal BMI Normal Underweight Overweight or obese	56/296 (18.9) 18/99 (18.2) 31/173 (17.9)	240/296 (81.1) 81/99 (81.8) 142/173 (82.1)	1.00 0.95 (0.53-1.71) 0.94 (0.58-1.52)	0.96
Hypertension No Yes	95/515 (18.5) 10/53 (18.9)	420/515 (81.5) 43/53 (81.1)	1.00 1.03 (0.50-2.12)	0.94
Diabetes No Yes	96/530 (18.1) 9/38 (23.7)	434/530 (81.9) 29/38 (76.3)	1.00 1.40 (0.64-3.06)	0.41
Dengue No Yes	102/559 (18.3) 3/9 (33.3)	457/559 (81.8) 6/9 (66.7)	1.00 2.24 (0.55-9.11)	0.28
Obstetric factors				
Parity [†]	2 [0-9]	1 [0-8]	1.31 (1.17-1.48)	<0.01
Gravida [†]	3 [1-12]	2 [1-10]	1.29 (1.16-1.43)	<0.01
Proportion primigravid Primigravida Multigravida	19/160 (11.9) 86/408 (21.1)	141/160 (88.1) 322/408 (78.9)	1.00 1.98 (1.16-3.38)	<0.01
Pregnancy planned Planned Unplanned	49/310 (15.8) 38/144 (26.4)	261/310 (84.2) 106/144 (73.6)	1.00 1.91 (1.18-3.09)	<0.01
Number of children [†]	2 [1-8]	2 [1-7]	1.31 (1.13-1.52)	<0.01
Instrumental delivery No Yes	81/411 (19.7) 9/44 (20.5)	330/411 (80.3) 35/44 (79.5)	1.00 1.05 (0.48-2.27)	0.91
EGA at delivery (wks) ^{††}	39.4 [29.0-42.4]	39.3 [34.4-42.1]	0.92 (0.79-1.07)	0.27
Infant factors				
Baby death No Yes	105/562 (18.7) 0/2 (0.0)	457/562 (81.3) 2/2 (100.0)	1.00 -	-
Foetal distress No Yes	80/375 (21.3) 6/21 (28.6)	295/375 (78.7) 15/21 (71.4)	1.00 1.48 (0.55-3.92)	0.45
Gender Male Female	45/200 (22.5) 41/206 (19.9)	155/200 (77.5) 165/206 (80.1)	1.00 0.86 (0.53-1.38)	0.52
Birth weight (g) ^{††}	3000 [1280-4140]	3050 [680-5950]	0.73 (0.43-1.24)	0.24
Birth length (cm) ^{††}	50.0 [36.5-58.0]	50.0 [30.2-57.0]	1.01 (0.93-1.10)	0.81
Head circumference (cm) ^{††}	32 [10.2-38]	32.0 [9.8-53.0]	0.99 (0.93-1.05)	0.71

Bold denotes statistical significance at p<0.10 level

[†] Results presented as median [range]^{††} Results reported as mean (sd)**Abbreviations:** OR odds ratio; Unadj unadjusted

Multivariable analysis

Variables associated with moderate-severe depression at the $p < 0.10$ level in the univariable analysis were selected for inclusion in the multivariable analysis, with the following exceptions:

- **Social support:** the variable *sufficient support* was a component of the *social support score*. To avoid duplication of variables only one measure of social support was included in the multivariable model. *Sufficient support* was selected because of its stronger association with perinatal depression.
- **Parity:** the variables *parity*, *gravida*, *number of children* and *proportion primigravid* were strongly correlated with each other and therefore only one was included in the multivariable model. *Proportion primigravid* was selected as it was considered to be the most clinically relevant, was potentially more reliable than other measures and had the strongest association with perinatal depression.
- **Trauma:** the categorical measure of the *proportion experiencing one or more traumatic events* was selected over *trauma score*, a continuous measure of the number of traumatic events experienced, because of its stronger association with perinatal depression.

The variable *migrant category* was included despite not being statistically significant in the univariable analysis. This was because migrant category was a key factor of interest within this research.

Table 40 lists the exposure variables that were significant in the univariable analysis and their inclusion or exclusion from the multivariable analysis for moderate-severe perinatal depression.

Table 40. Variables significant in univariable analysis: inclusion and exclusion from multivariable model for moderate-severe perinatal depression

Included in multivariable analysis	Excluded from multivariable analysis & reason	
Age Education level Telephone ownership Study site Migrant category Tobacco (chewing) Betel nut (chewing) Planned pregnancy ≤1 year in current location Self-reported history of depression Sufficient support Proportion experiencing ≥1 traumatic event Domestic violence Proportion primigravid	Social support score	Sufficient support is a component of social support score
	No. of children Gravidity Parity	Correlated with proportion primigravid
	Trauma score	Proportion experiencing ≥1 traumatic event is a categorisation of trauma score

The variables age, education level, telephone ownership, study site, migrant category, tobacco chewing, betel nut chewing, planned pregnancy, less than one year in current location, self-reported history of depression, sufficient support, proportion experiencing one or more trauma, domestic violence and proportion primigravid were entered into the multivariable logistic regression model. Six variables remained statistically significantly ($p<0.05$) associated with moderate-severe depression after adjustment for all other variables in the model: age (OR 1.05; 95% CI 1.01–1.09; $p=0.02$), labour migrant status (OR 2.08 relative to refugees; 95% CI 1.09–4.00; $p=0.03$), a self-reported history of depression (OR 2.25; 95% CI 1.21–4.17; $p=0.01$), domestic violence (OR 4.54 (95% CI 1.86–11.11; $p<0.01$), experience of one or more traumatic events (OR 2.43; 95% CI

1.38–4.30; $p < 0.01$) and insufficient social support (OR 2.07; 95% CI 1.14–3.73; $p = 0.02$)

(Table 41).

Table 41. Multivariable logistic regression: variables significantly associated with moderate-severe depression (n=444)

	Unadjusted odds ratio		Adjusted odds ratio	
	OR (95% CI)	p-value	OR (95% CI)	p-value
Age (yrs)	1.06 (1.03-1.09)	<0.01	1.05 (1.01-1.09)	0.02
Migrant category				
Refugee	1.00	0.55	1.00	0.03
Labour migrant	0.88 (0.57-1.34)		2.08 (1.09-4.00)	
Self-reported history of depression				
No	1.00	<0.01	1.00	0.01
Yes	2.83 (1.82-4.26)		2.25 (1.21-4.17)	
Interpersonal violence				
No	1.00		1.00	<0.01
Yes	6.01 (2.70-13.37)	<0.01	4.54 (1.86-11.11)	
Proportion ≥ 1 trauma				
No traumatic event	1.00	<0.01	1.00	<0.01
≥ 1 traumatic event	2.59 (1.60-4.18)		2.43 (1.38-4.30)	
Sufficient support				
Yes	1.00	<0.01	1.00	0.02
No	2.02 (1.25-3.27)		2.07 (1.14-3.73)	

Bold denotes statistical significance of unadjusted OR at $p < 0.10$ level or adjusted OR at $p < 0.05$ level

6.2.2 Any perinatal depression

Univariable analysis

Analyses were repeated using the period prevalence of any (major, minor or NOS) depression as the outcome. Results of the univariable logistic regression for socio-demographic and clinical factors are summarised in **Table 42** and **Table 43**, respectively. Women who were of a higher age, of Burman Muslim ethnicity (as compared to Burman ethnicity), had no other household member working, did not own a telephone and chewed betel nut were at increased risk of depression. The prevalence of any perinatal depression was lower among labour migrants compared with refugees (35.2% vs 45.6%;

OR 0.46; 95% CI 0.46–0.91; $p=0.01$). The prevalence at Mawker Tai (a labour migrant site) was significantly lower than at Maela (refugees) (28.2% vs. 45.6%; OR 0.47; 95% CI 0.31–0.72, $p<0.01$). The difference between Wang Pha (labour migrants) and Maela (refugees) did not reach statistical significance. A self-reported history of depression, lower levels of social support, perceived insufficiency of support, past trauma and domestic violence also significantly increased the odds of any perinatal depression. Finally, a number of obstetric factors were important: higher parity and gravida and unplanned pregnancy increased the odds of any perinatal depression.

Table 42 Univariable associations between socio-demographic factors and any perinatal depression

	Any depression n/N (%)	No depression n/N (%)	Unadj. OR (95% CI)	p-value
Demographic factors				
Age (yrs)[†]	26 [18-50]	25 [18-45]	1.04 (1.01-1.07)	<0.01
Ethnicity				0.06
Burman	63/161 (39.1)	98/161 (60.9)	1.00	
Sgaw Karen	100/278 (36.0)	178/278 (64.0)	0.87 (0.59-1.30)	
Poe Karen	29/66 (43.9)	37/66 (56.1)	0.22 (0.68-2.18)	
Burman Muslim	26/44 (59.1)	18/44 (40.9)	2.25 (1.14-4.43)	
Other	8/19 (42.1)	11/19 (57.9)	1.13 (0.43-2.97)	
Language				0.10
Burmese	103/239 (43.1)	136/239 (56.9)	1.00	
Sgaw Karen	98/280 (35.0)	182/280 (65.0)	0.71 (0.50-1.01)	
Poe Karen	22/43 (51.2)	21/43 (48.8)	1.38 (0.72-2.65)	
Other	3/6 (50.0)	3/3 (50.0)	1.32 (0.26-6.68)	
Religion				0.02
Buddhist	154/408 (37.8)	254/408 (62.2)	1.00	
Christian	45/115 (39.1)	70/115 (60.9)	1.06 (0.69-1.62)	
Muslim	27/45 (60.0)	18/45 (40.0)	2.47 (0.32-4.64)	
Education and language factors				
Education (yrs)[†]	4 [0-18]	4 [0-18]	0.99 (0.95-1.04)	0.79
Education				0.66
Under 3 years	107/255 (42.0)	148/255 (58.0)	1.00	
3 to 6 years	65/164 (39.6)	99/164 (60.4)	0.91 (0.61-1.35)	
7 to 10 years	43/119 (36.1)	76/119 (63.8)	0.78 (0.50-1.23)	
Over 10 years	8/24 (33.3)	16/24 (66.7)	0.69 (0.29-1.67)	
Type of school				0.14
Myanmar school	111/245 (45.3)	134/245 (54.7)	1.00	
Thai school	1/9 (11.1)	9/9 (88.9)	0.15 (0.02-1.22)	
NGO or faith-based	38/89 (42.7)	51/89 (57.3)	0.90 (0.55-1.47)	
No school	70/116 (60.3)	46/116 (39.7)	0.79 (0.51-1.24)	
Reason stopped school^a				0.01
Employment	120/255 (47.1)	135/255 (52.9)	1.00	
Disinterest	20/75 (26.7)	55/75 (73.3)	0.41 (0.23-0.72)	
Marriage	18/49 (36.7)	31/49 (63.3)	0.65 (0.35-1.23)	
Conflict and war	4/10 (40.0)	6/10 (60.0)	0.75 (0.21-2.72)	
No local school	13/21 (61.9)	8/21 (38.1)	1.83 (0.73-4.56)	
Literate (self-reported)				0.86
Yes	155/392 (39.5)	237/392 (60.5)	1.00	
No	71/176 (40.3)	105/176 (59.7)	1.03 (0.72-1.49)	
Languages spoken				0.79
1 language	92/211 (43.6)	119/211 (56.4)	1.00	
2-3 languages	78/192 (40.6)	114/192 (59.3)	0.89 (0.60-1.32)	
4 or more languages	24/54 (44.4)	30/54 (55.6)	1.03 (0.57-1.89)	

Table continued overleaf

Table 42 continued Univariable associations between socio-demographic factors and any perinatal depression

	Any depression n/N (%)	No depression n/N (%)	Unadj. OR (95% CI)	p-value
Economic factors				
Employment status				
Employed	139/348 (39.9)	209/348 (60.1)	1.00	0.42
Unemployed	84/193 (43.5)	109/193 (56.5)	1.16 (0.81-1.65)	
Employment sector				
Agriculture	82/212 (36.7)	130/212 (61.3)	1.00	0.80
NGO	23/59 (39.0)	36/59 (61.0)	1.01 (0.56-1.83)	
Selling	21/50 (42.0)	29/50 (58.0)	1.15 (0.61-2.15)	
Other	13/27 (48.2)	14/27 (51.8)	1.47 (0.66-3.29)	
Homemaker (unpaid)	84/193 (43.5)	109/193 (56.5)	1.22 (0.82-1.82)	
Income security ^b				
Wages paid daily	63/150 (42.0)	87/150 (58.0)	1.00	0.95
Wages paid monthly	58/132 (43.9)	74/132 (56.1)	1.08 (0.66-1.77)	
Household size [†]	4 [2-13]	4 [1-14]	1.04 (0.97-1.12)	0.25
Other household member working				
Yes	148/369 (40.1)	221/369 (59.9)	1.00	0.02
No	49/92 (53.3)	43/92 (46.7)	1.70 (0.07-2.69)	
Sends remittances				
Yes	24/52 (46.2)	28/52 (53.8)	1.00	0.60
No	173/409 (42.3)	236/409 (57.7)	0.86 (0.48-1.53)	
Receives remittances				
Yes	17/46 (37.0)	29/46 (63.0)	1.00	0.41
No	179/414 (43.2)	235/414 (56.8)	1.30 (0.69-2.44)	
Telephone ownership				
Yes	121/329 (36.8)	208/329 (63.2)	1.00	0.09
No	105/239 (43.9)	134/239 (56.1)	1.35 (0.96-1.89)	
Migration factors				
Site				
Maela camp	114/250 (45.6)	136/250 (54.4)	1.00	<0.01
Wang Pha	66/155 (42.6)	89/155 (57.4)	0.88 (0.59-1.33)	
Mawker Tai	46/163 (28.2)	117/163 (71.8)	0.47 (0.31-0.72)	
Migrant category				
Refugee	114/250 (45.6)	136/250 (54.4)	1.00	0.01
Labour migrant	112/318 (35.2)	206/318 (64/8)	0.65 (0.46-0.91)	
Country of birth				
Myanmar	175/401 (43.6)	226/401 (56.4)	1.00	0.20
Thailand	19/55 (34.6)	36/55 (65.5)	0.68 (0.38-1.23)	
Country of residence				
Myanmar	44/113 (38.9)	69/113 (61.1)	1.00	0.35
Thailand	153/348 (44.0)	195/348 (56.0)	1.23 (0.80-1.90)	

Table continued overleaf

Table 42 continued. Univariable associations between socio-demographic factors and any perinatal depression

	Any depression n/N (%)	No depression n/N (%)	Unadj. OR (95% CI)	p-value
Reason for migration				
Seek employment	101/225 (44.9)	124/225 (55.1)	1.00	0.94
Family reunification	42/95 (44.2)	53/95 (55.8)	0.97 (0.60-1.58)	
Flee war and conflict	21/49 (42.9)	28/49 (57.1)	0.92 (0.49-1.72)	
Seek healthcare or education	14/28 (50.0)	14/28 (50.0)	1.23 (0.56-2.69)	
Time since migration[†]	8 [1-37]	9 [1-39]	1.00 (0.98-1.03)	0.75
Duration ≤ 1 year				
≤ 1 year in current location	32/64 (50.0)	32/64 (50.0)	1.00	< 0.01
> 1 year in current location	35/138 (25.4)	103/138 (74.6)	0.34 (0.18-0.63)	
ID card (any)				
Yes	115/274 (42.0)	159/274 (58.0)	1.00	0.69
No	82/187 (43.9)	105/187 (56.1)	1.08 (0.74-1.57)	
ID card type				
Myanmar ID	70/166 (42.2)	96/166 (57.8)	1.00	0.98
Thai ID	14/33 (42.4)	19/33 (57.6)	1.01 (0.47-2.15)	
UN card	31/75 41.3)	44/75 (58.7)	0.97 (0.56-1.68)	
None	82/187 (43.9)	105/187 (56.1)	1.07 (0.70-1.63)	
Future plans				
Return to Myanmar	80/204 (39.2)	124/204 (60.8)	1.00	0.20
Remain in Thailand	45/105 (42.9)	60/105 (57.1)	1.16 (0.72-1.87)	
Resettle in 3 rd country	69/141 (48.9)	72/141 (51.1)	1.49 (0.96-2.29)	
Lifestyle factors				
Alcohol				
No	215/543 (39.6)	328/543 (60.4)	1.00	0.66
Yes	11/25 (44.0)	14/25 (56.0)	1.20 (0.53-2.69)	
Smoking				
No	202/512 (39.5)	310/512 (60.5)	1.00	0.62
Yes	24/56 (42.9)	32/56 (57.1)	1.15 (0.66-2.01)	
Tobacco (chewing)				
No	220/541 (40.7)	321/541 (59.3)	1.00	0.05
Yes	6/27 (22.2)	21/27 (77.8)	0.42 (0.17-1.05)	
Betel nut (chewing)				
No	116/317 (36.6)	201/317 (63.4)	1.00	0.08
Yes	110/251 (43.8)	141/251 (56.2)	1.35 (0.96-1.90)	
Psychosocial factors				
Self-reported history of depression				
No	130/419 (31.0)	289/419 (69.0)	1.00	< 0.01
Yes	95/147 (64.6)	52/147 (35.4)	4.06 (2.73-6.04)	
Social support score[†]	6 [0-10]	8 [0-10]	0.89 (0.83-0.96)	< 0.01
Sufficient support				
Yes	120/320 (37.5)	200/320 (37.5)	1.00	< 0.01
No	76/137 (55.5)	61/137 (44.5)	2.08 (1.37-3.12)	

Table continued overleaf

Table 42 continued Univariable associations between socio-demographic factors and any perinatal depression

	Any depression n/N (%)	No depression n/N (%)	Unadj. OR (95% CI)	p-value
Trauma score[†]	1 [0-6]	0 [0-4]	1.97 (1.61-2.41)	<0.01
Proportion ≥ 1 trauma				
No traumatic event	69/239 (28.9)	170/239 (71.1)	1.00	<0.01
≥ 1 traumatic event	157/329 (47.7)	172/329 (52.3)	2.25 (1.58-3.20)	
Domestic violence				
No	174/430 (40.5)	256/430 (59.5)	1.00	<0.01
Yes	22/27 (81.5)	5/27 (18.5)	6.47 (2.41-17.42)	

Bold denotes statistical significant at p<0.10 level

[†] Results presented as median [range]

^a Of those who attended but did not complete school

^b Of those in paid employment

Abbreviations: OR odds ratio; Unadj unadjusted

Table 43 Univariable associations between clinical and infant factors and any perinatal depression

	Any depression n/N (%)	No depression n/N (%)	Unadj. OR (95% CI)	p-value
Medical factors				
Maternal BMI Normal Underweight Overweight or obese	121/296 (40.9) 38/99 (38.4) 67/173 (38.7)	175/296 (59.1) 61/99 (61.6) 106/173 (61.3)	1.00 0.90 (0.56-1.44) 0.91 (0.62-1.34)	0.86
Hypertension No Yes	203/515 (39.4) 23/53 (43.4)	312/515 (60.6) 30/53 (56.6)	1.00 1.18 (0.67-2.09)	0.57
Diabetes No Yes	205/530 (38.7) 21/38 (55.3)	325/530 (61.3) 17/38 (44.7)	1.00 1.96 (1.01-3.80)	0.05
Dengue No Yes	221/559 (39.5) 5/9 (55.6)	338/559 (60.5) 4/9 (44.4)	1.00 1.96 (1.01-3.80)	0.34
Obstetric factors				
Parity [†]	1 [0-9]	1 [0-8]	1.25 (1.12-1.39)	<0.01
Gravida [†]	3 [1-12]	2 [1-10]	1.20 (1.10-1.32)	<0.01
Proportion primigravid Primigravida Multigravida	48/160 (30.0) 178/408 (43.6)	112/160 (70.0) 230/408 (56.4)	1.00 1.81 (1.22-2.67)	<0.01
Pregnancy planned Planned Unplanned	115/310 (37.1) 77/144 (53.5)	195/310 (62.9) 67/144 (46.5)	1.00 1.95 (1.31-2.91)	<0.01
Number of children [†]	1 [0-8]	1 [0-7]	1.25 (1.10-1.43)	<0.01
Instrumental delivery No Yes	178/411 (43.4) 17/44 (38.6)	233/411 (56.7) 27/44 (61.4)	1.00 0.82 (0.43-1.56)	0.55
EGA at delivery (wks) ^{††}	39.3 [29.0-42.4]	39.3 (34.4-41.5)	1.01 (0.88-1.15)	0.93
Infant factors				
Baby death No Yes	224/562 (39.9) 2/6 (33.3)	338/562 (60.1) 4/6 (66.7)	1.00 1.51 (0.21-10.79)	0.68
Foetal distress No Yes	171/375 (45.6) 11/21 (52.4)	204/375 (54.5) 10/21 (47.6)	1.00 1.31 (0.54-3.16)	0.54
Gender Male Female	92/200 (46.0) 92/206 (44.7)	108/200 (54.0) 114/206 (55.3)	1.00 0.95 (0.64-1.40)	0.79
Birth weight (kg) ^{††}	3.0 [1.3-4.1]	3.06 [1.7-5.6]	0.77 (0.50-1.17)	0.22
Birth length (cm) ^{††}	50.0 [36.5-58.0]	50.0 [30.2-57.0]	0.98 (0.92-1.06)	0.66
Head circumference (cm) ^{††}	32.0 [10.0-53.0]	32.0 [9.8-52.0]	0.98 (0.93-1.03)	0.37

Bold denotes statistical significant at p<0.10 level

[†] Results presented as median [range]^{††} Results reported as mean (sd)

Multivariable analysis

Variables associated with any perinatal depression at the $p < 0.10$ level in the univariable analysis were selected for inclusion in the multivariable analysis, with the following exceptions:

- **Social support:** the variable *sufficient support* was a component of the *social support score*. *Sufficient support* was selected because of its stronger association with perinatal depression.
- **Parity:** the variables *parity*, *gravida*, *number of children* and *proportion primigravid* were strongly correlated with each other. *Proportion primigravid* was selected as it was considered to be the most clinically relevant, was potentially more reliable than other measures and had the strongest association with perinatal depression
- **Trauma:** the categorical measure of the *proportion experiencing one or more traumatic events* was selected over *trauma score*, a continuous measure of the number of traumatic events experienced, because of its stronger association with perinatal depression.

The variables *migrant category* and *study site* were both significantly associated with any depression in the univariable analysis. Despite their correlation with each other, both were considered important to include in the multivariable model, which was tested with each of these variables in turn.

Table 44 lists the exposure variables that were significant in the univariable analysis and whether they were included in or excluded from the multivariable analysis for any perinatal depression.

Table 44. Variables significant in univariable analysis: inclusion and exclusion from multivariable model for any perinatal depression

Included in multivariable analysis	Excluded from multivariable analysis & reason
Age Ethnicity Language Religion Reason stopped school Other household member working Telephone ownership Study site Migrant category ≤1 year in current location Tobacco (chewing) Betel nut (chewing) Planned pregnancy Self-reported history of depression Sufficient support Proportion experiencing ≥1 traumatic event Domestic violence Proportion primigravid Diabetes	Social support score Sufficient support is a component of social support score No. of children Gravidity Parity Correlated with proportion primigravid Trauma score Proportion experiencing ≥1 traumatic event is a categorisation of trauma score

The variables age, ethnicity, language, religion, reason for stopping school, other household member working, telephone ownership, study site, migrant category, tobacco chewing, betel nut chewing, planned pregnancy, less than one year living in current location, self-reported history of depression, sufficient support, proportion experiencing one or more traumatic event, domestic violence, proportion primigravid and diabetes were entered into the multivariable logistic regression model. Five variables remained statistically significantly associated ($p < 0.05$) with any perinatal depression after adjustment for all other variables in the model. Not owning a telephone ownership (OR 1.6; 95% CI 1.0-2.5), a self-reported history of depression (OR 3.4; 95% CI 2.0-5.6),

domestic violence (OR 4.4 (95% CI 1.5–12.5) and experience of one or more traumatic events (OR 2.2; 95% CI 1.4–3.4) were associated with higher odds of any perinatal depression, while having another household member working significantly reduced the odds of any perinatal depression (OR 0.6; 95% CI 0.3–1.0) (**Table 45**).

Table 45 Multivariable logistic regression: variables significantly associated with any depression (n=400)

	Unadjusted odds ratio		Adjusted odds ratio	
	OR (95% CI)	p-value	aOR (95% CI)	p-value
Telephone ownership				
Yes	1.00	0.09	1.00	0.04
No	1.35 (0.96-1.89)		1.59 (1.01-2.48)	
Other household member working				
Yes	1.00	0.02	1.00	0.04
No	1.70 (0.07-2.69)		1.75 (1.02-3.03)	
Self-reported history of depression				
No	1.00	<0.01	1.00	<0.01
Yes	4.06 (2.73-6.04)		3.36 (2.01-5.61)	
Interpersonal violence				
No	1.00	<0.01	1.00	<0.01
Yes	6.47 (2.41-17.42)		4.36 (1.52-12.50)	
Proportion ≥ 1 trauma				
No traumatic event	1.00	<0.01	1.00	<0.01
≥ 1 traumatic event	2.25 (1.58-3.20)		2.17 (1.38-3.41)	

Bold denotes statistical significance of unadjusted OR at $p < 0.10$ level and adjusted OR at $p < 0.05$ level

6.3 Antenatal depression as a risk factor for postnatal depression

This section presents the results of the analysis to establish whether antenatal depression was independently associated with postnatal depression.

6.3.1 Moderate-severe postnatal depression

In the univariable analysis, moderate-severe depression in pregnancy was significantly associated with moderate-severe depression post-partum (OR 4.41; 95% CI 2.1–9.3; $p < 0.01$). **Table 46** lists exposure variables that were associated with moderate-severe postnatal depression at a level of $p < 0.10$ in univariable analysis.

Table 46 Univariable associations between socio-demographic and clinical factors and moderate-severe depression post-partum (n=396)

	Moderate-severe depression postnatally n/N (%)	No depression postnatally n/N (%)	Unadjusted OR (95% CI)	p-value
Remittances sent				
Yes	7/42 (16.7)	35/42 (83.3)	1.00	0.05
No	24/344 (7.0)	320/344 (93.0)	0.38 (0.15-0.93)	
Telephone ownership				
Yes	14/239 (5.9)	225/239 (94.1)	1.00	0.03
No	19/157 (12.1)	138/157 (87.9)	2.21 (1.07-4.56)	
Duration since migration	4 [1-32]	10 [1-37]	0.94 (0.89-1.00)	0.05
Pregnancy planned				
Planned	15/258 (5.8)	243/258 (94.2)	1.00	0.06
Unplanned	14/121 (11.6)	107/121 (88.4)	2.12 (0.99-4.55)	
Number of children	1 [0-8]	1 [0-7]	1.28 (1.03-1.57)	0.02
Parity	1 [0-9]	1 [0-8]	1.22 (1.02-1.46)	0.04
Gravida	3 [1-12]	2 [1-10]	1.20 (1.02-1.41)	0.04
Trauma score	2 [0-5]	0 [0-6]	1.65 (1.27-2.13)	<0.01
Proportion ≥ 1 trauma				
No traumatic event	11/198 (5.6)	187/198 (94.4)	1.00	0.04
≥ 1 traumatic event	22/198 (11.1)	176/198 (88.9)	2.13 (1.00-4.51)	
Antenatal depression				
No	19/330 (5.8)	311/330 (94.2)	1.00	<0.01
Yes	14/66 (21.2)	52/66 (78.8)	4.41 (2.08-9.33)	
Domestic violence				
No	26/361 (7.2)	335/361 (92.8)	1.00	0.07
Yes	4/22 (18.2)	18/22 (81.8)	2.86 (0.90-9.08)	
Birthweight (g)	2940 [1208-4090]	3070 [1680-5950]	0.40 (0.18-0.91)	0.03
Infant head circumference (cm)	31.75 [10.20-36.00]	32.00 [9.80-53.00]	0.93 (0.87-1.00)	0.04
Birth EGA (weeks)	39.4 [29.0-42.4]	39.4 [34.4-42.1]	0.73 (0.60-0.89)	<0.01

Bold denotes statistical significance at $p < 0.10$ level

Variables listed in **Table 46** were entered into a multivariable logistic regression model, with the exception of the number of children and gravida, which were strongly correlated with parity, and trauma score, which was strongly correlated with proportion experiencing one or more traumatic events. The variables parity and proportion experiencing one or more traumatic event were selected for inclusion in the multivariable model in order to maximise consistency with previous models. Two variables were retained in the final multivariable model: antenatal depression and infant head circumference. After controlling for infant head circumference, antenatal depression was associated with a significantly increased odds of postnatal depression (OR 5.0; 95% CI 2.1–12.3; $p<0.01$) (**Table 47**).

Table 47. Multivariable logistic regression analysis: variables significantly associated with moderate-severe postpartum depression

	Unadjusted odds ratio		Adjusted odds ratio	
	OR (95% CI)	p-value	aOR (95% CI)	p-value
Antenatal depression				
No	1.00	<0.01	1.00	<0.01
Yes	4.41 (2.08-9.33)		5.05 (2.07-12.27)	
Infant head circumference (cm)	0.93 (0.87-1.00)	0.04	0.92 (0.85-1.00)	0.05

Bold denotes statistical significance of unadjusted OR at $p<0.10$ level and adjusted OR at $p<0.05$ level

6.3.2 Any postnatal depression

In the univariable analysis, having any depression antenatally was significantly associated with any depression post-partum (OR 6.67; 95% CI 3.78–11.78; $p<0.01$).

Table 48 lists all variables that were associated with postnatal depression of any severity at a level of $p<0.10$.

Table 48. Univariable associations between socio-demographic and clinical factors and any depression post-partum (n=396)

	Any depression postnatally n/N (%)	No depression postnatally n/N (%)	Unadjusted OR (95% CI)	p- value
Age	27 [18-41]	25 [18-50]	1.04 (1.00-1.08)	0.05
Education (yrs) [†]	3 [0-14]	4 [0-18]	0.95 (0.89-1.01)	0.10
Reason stopped school				
Employment	53/214 (24.8)	161/214 (75.2)	1.00	0.08
Disinterest	7/55 (12.7)	48/55 (87.3)	0.44 (0.19-1.04)	
Marriage	5/45 (11.1)	40/45 (88.9)	0.38 (0.14-1.01)	
Conflict and war	1/9 (11.1)	8/9 (88.9)	1.08 (0.05-3.15)	
No local school	5/19 (26.3)	14/19 (73.7)	0.38 (0.05-3.11)	
Telephone ownership				
Yes	40/239 (16.7)	199/239 (83.3)	1.00	0.07
No	38/157 (24.2)	119/157 (75.8)	1.59 (0.96-2.62)	
Smoking				
No	66/364 (18.1)	298/364 (81.8)	1.00	0.01
Yes	12/32 (37.5)	20/32 (62.5)	2.71 (0.26-5.81)	
Self-reported history of depression				
No	42/280 (15.0)	238/280 (85.0)	1.00	<0.01
Yes	35/115 (30.4)	80/115 (69.6)	2.48 (1.48-4.15)	
Trauma score	1 [0-6]	0 [0-5]	1.60 (1.31-1.96)	<0.01
Proportion ≥ 1 trauma				
No traumatic event	29/198 (14.7)	169/198 (85.3)	1.00	0.01
≥ 1 traumatic event	49/198 (24.8)	149/198 (75.2)	1.92 (1.15-3.19)	
Domestic violence				
No	66/361 (18.3)	295/361 (81.7)	1.00	0.02
Yes	9/22 (40.9)	13/22 (59.1)	3.09 (1.27-7.54)	
Parity	2 [0-9]	1 [0-8]	1.28 (1.11-1.47)	<0.01
Gravida	3 [1-12]	2 [1-10]	1.24 (1.70-1.40)	<0.01
Proportion primigravid				
Primigravida	12/101 (11.9)	89/101 (88.1)	1.00	0.02
Multigravida	66/295 (22.4)	229/295 (77.6)	2.14 (1.10-4.14)	
Pregnancy planned				
Planned	41/258 (15.9)	217/258 (84.1)	1.00	0.02
Unplanned	32/121 (26.5)	89/121 (73.5)	1.90 (1.13-3.21)	
Number of children	1 [0-8]	1 [0-7]	1.32 (1.13-1.54)	<0.01
Antenatal depression				
No	19/236 (8.1)	217/236 (91.9)	1.00	<0.01
Yes	59/160 (36.9)	101/160 (63.1)	6.67 (3.78-11.78)	

Bold denotes statistical significance at p<0.10 level

Variables listed in **Table 48** were entered into a multivariable logistic regression model with the exception of parity, gravida and number of children, which were strongly correlated with the proportion of women who were primiparous, and trauma score, which was strongly correlated with proportion experiencing one or more traumatic events. The categorical variables of proportion of women who were primiparous and the proportion experiencing one or more traumatic event were selected for inclusion in the multivariable model in order to maximise consistency with previous models.

Two variables were retained in the final multivariable model: antenatal depression and the proportion experiencing one or more trauma. After controlling for trauma, any antenatal depression was associated with a significantly increased odds of any postnatal depression (OR 5.1; 95% CI 1.3–19.9; $p=0.02$) (**Table 49**).

Table 49. Multivariable logistic regression analysis: variables significantly associated with any postpartum depression

	Unadjusted odds ratio		Adjusted odds ratio	
	OR (95% CI)	p-value	aOR (95% CI)	p-value
Antenatal depression				
No	1.00	<0.01	1.00	0.02
Yes	6.67 (3.78-11.78)		5.13 (1.32-19.87)	
Proportion ≥ 1 trauma				
No traumatic event	1.00	0.01	1.00	0.04
≥ 1 traumatic event	1.92 (1.15-3.19)		4.16 (1.07-16.21)	

Bold denotes statistical significance of unadjusted OR at $p<0.10$ level and adjusted OR at $p<0.05$ level

6.4 Factors associated with suicidal ideation

Table 50 lists exposure variables that were associated with ever having had suicidal ideation during the perinatal period at the $p\leq 0.10$ level.

Table 50. Univariable associations between socio-demographic and clinical factors and any suicidal ideation (n=568)

	Any suicidal ideation n/N (%)	No suicidal ideation n/N (%)	Unadjusted OR (95% CI)	p-value
Ethnicity				
Burman	48/161 (29.8)	113/161 (70.2)	1.00	0.07
Sgaw Karen	72/278 (25.9)	206/278 (74.1)	0.82 (0.53-1.27)	
Poe Karen	29/66 (43.9)	37/66 (56.1)	1.85 (1.02-3.33)	
Burman Muslim	12/44 (27.3)	32/44 (72.7)	0.88 (0.42-0.86)	
Other	4/19 (21.1)	15/19 (78.9)	0.63 (0.20-1.99)	
Language				
Burmese	73/239 (30.5)	166/239 (69.5)	1.00	0.09
Sgaw Karen	71/280 (25.4)	209/280 (74.6)	0.77 (0.53-1.14)	
Poe Karen	18/43 (41.9)	25/43 (58.1)	1.64 (0.84-3.19)	
Other	3/6 (50.0)	3/6 (50.0)	2.27 (0.45-11.53)	
Languages spoken				
1 language	49/211 (23.2)	162/211 (76.8)	1.00	0.06
2-3 languages	64/192 (33.3)	128/192 (66.7)	1.65 (1.07-2.56)	
4 or more languages	18/54 (33.3)	36/54 (66.7)	1.65 (0.86-3.17)	
Reason stopped school				
Work	83/255 (32.6)	172/255 (67.4)	1.00	0.08
Didn't want to attend	14/75 (18.7)	61/75 (81.3)	0.48 (0.25-0.90)	
Marriage	13/49 (26.5)	36/49 (73.5)	0.75 (0.38-1.49)	
Conflict and war	1/10 (10.0)	9/10 (90.0)	0.23 (0.03-1.85)	
No local school	7/21 (33.3)	14/21 (66.7)	1.04 (0.40-2.66)	
Duration ≤ 1 year				
≤ 1 year in current location	24/64 (37.5)	40/64 (62.5)	1.00	0.10
> 1 year in current location	36/138 (26.1)	102/138 (73.9)	0.59 (0.31-1.11)	
Betel nut (chewing)				
No	82/317 (25.9)	235/317 (74.1)	1.00	<0.01
Yes	83/215 (33.1)	168/251 (66.9)	1.41 (0.98-2.04)	
Self-reported history of depression				
No	96/419 (22.9)	323/419 (77.1)	1.00	<0.01
Yes	68/147 (46.3)	79/147 (53.7)	2.90 (1.95-4.30)	
Sufficient support				
Yes	82/320 (25.6)	238/320 (74.4)	1.00	0.02
No	50/137 (36.5)	87/137 (63.5)	1.67 (1.09-2.56)	
Trauma score	1 [0-6]	0 [0-4]	1.74 (1.44-2.09)	<0.01
Proportion ≥ 1 trauma				
No traumatic event	45/239 (18.8)	194/239 (81.2)	1.00	<0.01
≥ 1 traumatic event	120/329 (36.5)	209/329 (63.5)	2.48 (1.67-3.67)	
Interpersonal violence				
No	116/430 (27.0)	314/430 (73.0)	1.00	<0.01
Yes	17/27 (63.0)	10/27 (37.0)	4.60 (2.05-10.34)	
Pregnancy planned				
Planned	72/310 (23.2)	238/310 (76.8)	1.00	<0.01
Unplanned	59/144 (41.0)	85/144 (59.0)	2.29 (1.50-3.51)	
Number of children			1.20 (1.05-1.37)	<0.01

Bold denotes statistical significance at p<0.10 level

Variables listed in **Table 50** were entered into a multivariable logistic regression model with the exception of language, which was strongly correlated with ethnicity, and trauma score, which was strongly correlated with proportion experiencing one or more traumatic events. Two variables were retained in the final multivariable model: a self-reported history of depression was associated with an increased odds of suicidal ideation (OR 5.6; 95% CI 1.1-27.8; p=0.04) and having lived in the current location for over a year was associated with a decreased odds of suicidal ideation (OR 0.24; 95% CI 0.06-0.93; p=0.04) (**Table 51**).

Table 51. Multivariable logistic regression analysis: variables significantly associated with suicidal ideation

	Unadjusted odds ratio		Adjusted odds ratio	
	OR (95% CI)	p-value	aOR (95% CI)	p-value
Self-reported history of depression				
No	1.00	<0.01	1.00	0.04
Yes	2.90 (1.95-4.30)		5.56 (1.11-27.85)	
Duration ≤ 1 year				
≤ 1 year in current location	1.00	0.10	1.00	0.04
> 1 year in current location	0.59 (0.31-1.11)		0.24 (0.06-0.93)	

Bold denotes statistical significance of unadjusted OR at p<0.10 level and adjusted OR at p<0.05 level

6.5 Discussion

6.5.1 *Factors associated with perinatal depression*

A number of risk factors for perinatal depression were identified. For moderate-severe perinatal depression, significant risk factors were interpersonal violence (OR 4.5), experience of one or more traumatic events (OR 2.4), a self-reported history of depression (OR 2.3), perceived insufficiency of social support (OR 2.1), labour migrant status (OR 2.1 relative to refugees) and older age (OR 1.1). For perinatal depression of any severity, risk factors were interpersonal violence (OR 4.4), a self-reported history of depression (OR 3.4), experience of one or more traumatic events (OR 2.2) and not owning a telephone (OR 1.6), while having another household member who worked was a significant protective factor (OR 0.6).

Across all analyses, psychosocial factors emerged as the strongest category of risk factor for depression. In particular, a self-reported history of depression, trauma and interpersonal violence were strongly associated with both any and moderate-severe perinatal depression. The importance of psychosocial factors in determining mental health outcomes is well-established and has been reported both from general and migrant populations elsewhere as well as among refugees in Northern Thailand (Lopes Cardozo et al, 2004). Perhaps more surprising is the lack of significance of many of the individual-level factors such as ethnicity, religious background, educational level and literacy, employment status – all of which have been reported to be associated with depression in other settings. Lopes-Cardozo *et al.* (2004) report similar findings among Karenni refugees in Northern Thailand: gender, age and educational level were not

significantly associated with symptoms of depression in their sample (Lopes Cardozo et al, 2004).

Telephone ownership and having another household member working both represent a form of household income security. As well as increasing household income security through an extra income, an additional working member of the household might also lessen the pressure for women to work during pregnancy, which might in turn decrease a woman's vulnerability to depression. Telephone ownership, besides representing a proxy of disposable income, might also facilitate greater connectedness with family members who are left behind or have resettled in third countries as well as acting as a safety net and means of accessing help in times of difficulty.

After controlling for all other variables in the multivariable model, labour migrants were twice as likely as refugees to experience moderate-severe depression (adjusted OR 2.08; 95% CI 1.09–4.00; $p=0.03$). However, in the analysis of depression of any severity, no statistically significant differences in prevalence were seen according to migrant category. The increased risk of moderate-severe depression among labour migrants could be explained by the more immediate stressors of daily life experienced by this group, including the daily search for work in order to be able to provide for the family, and the constant threats associated with their undocumented status. A study of labour migrant workers in the urban centre of Mae Sot found that experiences such as being forced to work overtime, verbal abuse and having documents or salaries withheld by employers were pervasive across all employment sectors (Meyer et al, 2016). The same study also found that security-related stressors – including arrest, deportation and police raids – were particularly common among agricultural workers and that these factors were

associated with depression (Meyer et al, 2016). Refugees – though they face a series of other psychological stressors – have many of their basic needs such as housing and food rations provided for, and thus be at less risk of moderate-severe depression relative to labour migrants. The fact that the prevalence of *any* depression was not significantly different between the two groups suggest that less severe manifestations of depression are more evenly distributed among labour migrants and refugees.

The difference in prevalence according to study site suggest a complex interplay between site-specific factors and migrant category. For example, in the univariable analysis, labour migrant women at Mawker Tai had a significantly lower risk of perinatal depression than refugees, but this effect reversed after adjusting for a self-reported history of depression, domestic violence, trauma and social support. Also, the prevalence of depression was strikingly higher at Wang Pha than at Mawker Tai – both of which are labour migrant sites – regardless of whether any depression or moderate-severe depression was used as the outcome. Though these differences did not reach statistical significance, they nevertheless remain important.

The socio-economic characteristics of labour migrant populations served by Wang Pha and Mawker Tai have never been formally compared, but the general consensus among local staff is that the Mawker Tai population is the more deprived. This makes the higher prevalence of perinatal depression in Wang Pha surprising. Geographically, Wang Pha is located 30km away from the border town of Mae Sot. Directly opposite Wang Pha, on the Myanmar side of the border, the town of Ko Ko is undergoing rapid change following foreign investment with the establishment of casinos and other entertainment and tourism infrastructure. This may provide labour migrants living in this setting with more

employment opportunities as well as increased access to facilities and services and a greater connectedness. In comparison, Mawker Tai, located 60km away from Mae Sot, is more remote and more rural. Further research is required for a better understanding of these differences in perinatal depression prevalence by site.

Both the absolute amount of support received and the perceived sufficiency of support were associated with perinatal depression – a finding that has been reported widely in the general mental health literature (Melrose et al, 2015). This has important implications for practice. Firstly, the fact that a single-item to assess perceived sufficiency of support was as valid as a predictor of perinatal depression as a ten-item composite score of total support received suggests that the former can provide a faster assessment without losing discriminatory power. A wider implication is that efforts to promote well-being of migrant communities should focus not only on developing or expanding support networks, but also on enhancing the quality of individual relationships. A small number of strong relationships which the individual perceives as being reliable and responsive to their needs may be more meaningful than a larger number of more superficial relationships, though further work is required to support this.

Having experienced at least one traumatic event was significantly associated with perinatal depression. Experiencing a greater number of traumatic events did not appear to further increase risk, contradicting findings from other settings. However, this lack of dose-response relationship may have been the result of the insufficient power within the study to detect a difference, as few women had experienced more than one traumatic event. A study of Karenni refugees in Northern Thailand found a dose-response association between the number of previous traumatic events experienced and symptoms

of depression, with odds ratios increasing gradually from 1.5 for four to seven events experienced to 6.4 for over 17 events experienced (Lopes Cardozo et al, 2004).

6.5.2 Factors associated with postnatal depression

Antenatal depression was one of the few exposure factors that significantly predicted postnatal depression. This association between antenatal and postnatal depression is reported from diverse settings (Canario & Figueiredo, 2017; Gelaye et al, 2016; Howard et al, 2014). The magnitude of the association was striking, with an odds ratio of 5.05 for moderate-severe depression and 5.13 for any severity of depression. The relatively small number of cases of postnatal depression resulted in wide confidence intervals and results must therefore be interpreted with caution. Nevertheless, the finding – along with the fact that the majority of women improved with treatment – emphasises the importance of identifying and supporting pregnant women with depression as early as possible to avoid persistence of the condition postnatally.

Other risk factors for postnatal depression were infant head circumference and having experienced one or more traumatic events. Infant head circumference was included as an indicator of an unhealthy baby, which has been found to be a risk factor for postnatal depression (Norhayati et al, 2015). In this study, none of the other indicators of an unhealthy baby (including birthweight, EGA at birth and foetal distress at delivery) were significant in any of the other analyses. The non-significance of these and other infant, medical and obstetric variables from all other multivariable models suggests this finding may have occurred by chance, as a result of a large number of variables being included in the model.

6.5.3 *Factors associated with suicidal ideation*

Two factors were identified as significantly associated with suicidal ideation. A self-reported history of depression increased the odds of suicidal ideation by 5.6, while having lived in the current location for over one year reduced the odds by 0.24 relative to those who had moved more recently. Duration of residence in the host country has been found to be protective against depression in other settings, perhaps representing relatively greater levels of stability compared to those who have only recently resettled. In a study of (non-migrant) perinatal women in the USA, Kim *et al.* (2015) found that marital status, language spoken and EPDS scores were significantly associated with suicidal ideation (Kim et al, 2015). A study by Falb *et al.* (2013) found that among refugee women on the Thai-Myanmar border, suicidal ideation was significantly associated with intimate partner violence: after controlling for demographic factors, women who had experienced interpersonal violence in the past year were almost ten times more likely to report past-month suicide ideation compared with women who had not experienced violence (Falb et al, 2013a).

6.5.4 *Strengths and limitations*

The breadth of exposure variables assessed in this cohort study component represents a strength. The inclusion of a wide range of socio-demographic variables – spanning individual-level factors such as age and educational background to migration-specific and psychosocial factors – as well as clinical variables enabled the effects of many potential risk factors to be assessed simultaneously. Using both moderate-severe depression and any depression as outcomes enabled differences in the risk factors associated with these two different levels of perinatal depression severity to be

compared. A benefit of the longitudinal design of the study is that it allowed the associations between antenatal depression and postnatal depression to be examined. Though the treatment of women with depression makes interpretation less clear, the finding that antenatal depression is significantly associated with postnatal depression serves as a powerful argument for the early identification and management of perinatal depression in this setting.

Limitations described at the end of the previous chapter – including the possibility of under-diagnosis, under-reporting of symptoms and recall bias – also apply to the exploration of risk factors. The small number of cases of severe depression meant that more complex statistical analysis such as ordinal logistic regression was not possible. The large number of exposure variables included in the multivariable logistic regression model may have diminished the power to detect significant associations and increased the probability of type II errors. Variables were selected for inclusion based on their clinical and statistical significance, following Hosmer and Lemeshow's method of purposeful selection of covariates (Hosmer & Lemeshow, 2000). One of the strengths of this method is that it enables important confounders to be retained, resulting in potentially richer final regression models (Bursac et al, 2008). The risk factors identified in this study are highly plausible and well-aligned with findings from other settings, which in itself lends credence to the validity of the methods and the final model. However, the possibility that true associations were missed due the inclusion of a large number of co-variables cannot be excluded.

6.6 Chapter summary

This chapter explored socio-demographic and clinical variables associated with perinatal depression. Psychosocial variables were the predominant risk factors. Interpersonal violence increased the odds of moderate-severe depression and any depression by 4.5 and 4.4, respectively. Experience of trauma, perceived insufficiency of social support and a self-reported history of depression were further risk factors. Labour migrants were twice as likely to experience moderate-severe depression compared with refugees, though there were also site-specific differences between the two labour migrant sites. A self-reported history of depression was the single strongest predictor of suicidal ideation, increasing the odds by a factor of 5.6. Antenatal depression was significantly associated with postnatal depression, emphasising the need to identify and treat women with perinatal depression at an early stage.

Chapter 7.

Experiences of depression: a qualitative exploration

7.1 Chapter overview

This chapter presents the findings of the qualitative study component. A selected subgroup of participants with severe perinatal depression was interviewed in-depth to gain a deeper understanding of experiences of depression in this context and to elucidate women's own views around the drivers for depression. The main themes emerging from interviews included symptoms of depression, challenging socio-economic circumstances, difficult relationships with partners, alcohol use, interpersonal violence, past traumas and coping mechanisms.

7.2 Aims

The aims of the qualitative study component were to gain a deeper understanding of the lived experiences of perinatal depression in this setting; to explore the challenges faced by women with severe perinatal depression; and to identify potential options for supporting women with depression.

7.3 Participants

7.3.1 Interviews

Recruitment for in-depth interviews ran from March to July 2016. The sampling frame consisted of a list of all women with severe depression diagnosed within the cohort study component. Although attempts were made to contact all eligible women, the final sample consisted of a convenience sample of women who could be contacted either by phone or face-to-face, agreed to be interviewed and were able to attend at a time when the interviewers were also available. Of a total of 20 women who experienced severe (major) depression during the study period, thirteen could be contacted. Of these, one declined to be interviewed because she had moved far away from the clinic, and one agreed to participate but did not attend at the arranged time. The remaining eleven agreed to participate and completed in-depth interviews. Contacting women and arranging mutually convenient interview times was considerably easier at Maela, and as a result, refugee women are over-represented in this study component. Interviews were carried out between May and July 2016. Interviews were conducted at SMRU ANC and ranged in length from 45 minutes to one and a half hours, with an average duration of just over one hour.

7.2.2 Participant characteristics

Eleven women with severe depression participated in in-depth interviews. The socio-demographic characteristics of participating women are summarised in **Table 51**. Despite attempts to include women from a diverse range of backgrounds, refugee (82%), Sgaw Karen (73%) and Buddhist (55%) women were over-represented. However, there was

variation in participants' ages, educational backgrounds, parity and duration of living in Thailand. Most women were interviewed in their third trimester of pregnancy.

Table 52. Characteristics of participants of qualitative study component

Characteristic	No. of participants (n=11)
Age	
20-24	2
25-29	3
30-34	1
35-39	3
40-44	2
Migrant status	
Refugee	9
Labour migrant	2
Ethnicity	
Sgaw Karen	8
Burman	2
Burman Muslim	1
Religion	
Buddhist	6
Christian	4
Muslim	1
Education	
< 3 years	4
3-6 years	3
7-10 years	4
Parity	
1	2
2-4	5
≥5	4
EGA	
2 nd trimester	2
3 rd trimester	6
Post-partum	3
Duration in Thailand	
≤5 years	2
6-10 years	4
>10 years	5

7.4 Themes

A number of themes and subthemes emerged from the interviews. The main themes were: symptoms of depression; relationships with partners; alcohol use among partners; interpersonal violence; difficult life situations; past traumas; and coping strategies. There was significant overlap between themes. In particular, relationships with partners,

alcohol use and interpersonal violence were strongly interlinked. Each theme consisted of a number of subthemes. Findings for each of these themes and subthemes and their associations with each other are described below.

7.5 Symptoms of depression

Women's emotional and physical manifestations of depression represented a prominent theme during in-depth interviews. Women experienced feelings of sadness and crying, worry and fear, "thinking too much" and somatic symptoms including pain, numbness, fatigue and loss of appetite.

7.5.1 Sadness and crying

Sadness and crying were the most commonly described symptoms among this group of severely depressed women. Sadness was experienced as an intense, all-consuming state that took over many aspects of women's daily lives, limiting their ability to cope with everyday tasks. When asked to describe their sadness, women used words such as "deep" and "painful". For some, the state of sadness was so constant and long-standing as to have become perceived as the normal state of being. One woman, when asked how frequently she felt sad, replied:

"It's not even worth asking... I'm always sad." (Participant 7)

Another woman described having felt sad her entire life:

"I have [lived] with sadness since my childhood. Going through all these troubles with my husband, my father, and my family... I have been very unhappy. You could say that just to gain one minute of happiness, I have to pass five minutes of unhappiness." (Participant 3)

Feelings of sadness made it difficult for women to face and engage in tasks normally expected of them in this setting, including taking care of the family, managing the household and participating in paid work to bring in an income. One woman described how she perceived even an act as seemingly simple as having a conversation as a chore:

“I felt like my mind was somewhere else... I couldn’t even have a simple conversation like I am doing at this current state.” (Participant 11)

The intensity and pervasiveness of the sadness often led to women socially isolating themselves and not wanting to “*face anyone*”. Within the context of a social and tightly-knit community, the desire to be alone and exclude oneself from activities is regarded as worrying; a sign that something is not right. Women described how once they were perceived by friends or family to be reclusive they were often teased, became the subject of “*gossip*” and were ostracised as a result of their spending more time alone.

Tearfulness was also common, and occurred alongside or synonymously with sadness. Women described themselves as crying “*easily*”, crying “*hard*”, crying “*continuously*” and crying “*all the time*”.

“I cried so much that the mosquito net, blanket and pillow were all wet. I cried so much; I felt like I was dying.” (Participant 7)

This sense of inconsolable crying was often accompanied by a sense of loss of control over their own emotions.

“The tears dropped by themselves. I couldn’t control my emotions.”
(Participant 4)

“Sometimes I try to control my emotions and try not to cry but my tears will start dropping.” (Participant 6)

This feeling of loss of control occurred against a backdrop of strong societal and cultural pressure to remain collected and present a composed appearance in public. The tensions between the public image women felt compelled to portray of themselves and their true underlying emotional state was a challenge for a number of women.

“In front of [others] you have to be smiling and supportive. Nobody notices what I go through inside. That’s kind of tough for me.” (Participant 3)

One woman described her efforts to conceal her sadness and despair through her physical appearance:

*“When I tell others that I haven’t eaten for days they don’t believe me because I dress nicely and always put thanaka on my face.”*³ (Participant 5)

7.5.2 Worry and fear

Feelings of worry and anxiety were also prominent. Women experienced these symptoms in the context of a number of inter-related life challenges. The term “*difficult life*” – a theme of its own described in further detail below – was often referred to when describing the wide array of challenging life situations women faced, from socio-economic deprivation and financial insecurity to difficult relationships with partners and families as well as concerns over uncertain futures for themselves and their children. For many women, it was an accumulation of these chronic and all-encompassing life challenges that underpinned their feelings of worry.

³ Thanaka, a yellowish powder made from ground bark, is mixed with water to form a paste and applied as a form of cosmetic and sun protection to women’s and children’s faces across many parts of Myanmar.

Worry and sadness were closely associated with each other, and many women experienced both states concurrently. Often, women used the terms *sadness*, *worry* and *feeling upset* almost interchangeably. The wide-ranging hardships faced by these women and the complexity of the resulting emotional state are exemplified by the following quotes:

“I was upset because my husband drinks alcohol and at the same time I was upset because the father of my nieces and nephew abandoned them. My mother also faced difficulties with my younger siblings... I could not sleep at night and I started to get sick because of it... I felt like I had a lot to be concerned and worried about. Even if I myself was happy, if my relatives were not, then I could not be happy... I had so many worries.” (Participant 2)

“I am always thinking about my difficult living conditions, as well as worrying about the children... Sometimes I have minor problems in the household; sometimes I am tired of being a household worker. But when I talk about this, my family treat me badly. When I have financial difficulties, I borrow money from others... When they come to collect the debt, I feel disappointed that I can’t pay. Also, the children fight... Everything [around me], from every side, makes me feel sad. Day and night I am filled with worries. I carry these worries like a backpack.” (Participant 5)

“It’s both a bit of worriedness and a bit of sadness... Everything rests upon me: clothing, shelter, food and water. The house in which we are currently living is rented; we pay for it with rent as well as my children’s health and our own, too.” (Participant 10)

Many women experienced a state of “*thinking too much*” or “*overthinking*” – terms used to describe a state of excessive worry, inner unrest and sadness. For some women, overthinking affected their sleep, their thoughts and worries keeping them awake through the night.

“I have trouble sleeping...I am always awake. I am worried; I am always thinking, even when I am sleeping.” (Participant 5)

Feelings of fear were described by several women. Fear manifested itself particularly at night time and in the form of nightmares, leading to further inability to sleep.

“I get scared at night. Even when there is nothing to be scared of, I get scared. I do not know why. I am scared to look outside, of...someone coming into my house. I just stay under the blanket. I don’t get scared when my husband is home but whenever I am home alone with my son, I get scared. I can’t sleep until dawn when I hear people around.” (Participant 2)

“Sometimes it’s images of something chasing me, to kill me... A human-like thing was chasing me and terrifying me. Then, I wake up screaming.” (Participant 11)

7.5.3 Wanting to escape

Though less common than other psychological symptoms, several women described a desire to “*escape*” or “*walk away*” from their current lives, and wanting to leave their worries and challenging lives behind. The multiple roles expected of them – caring for the family, managing the household, earning an income and often dealing with difficult, unsupportive relationships with partners – represented heavy burdens on women, and many expressed a wish to be able to “*run away very far*”, and to “*be on my own and worry-free*”.

“Something inside me told me I just needed to run away, get away.”
(Participant 1)

“I feel like running away very much. I have so many children and I feel unwell ... it’s all bad. I don’t want to feel any more pain. I want to run away freely and live independently.” (Participant 5)

7.5.4 Physical symptoms

As well as psychological symptoms, women experienced a range of physical symptoms related to depression. These included head, chest and abdominal pain as well as generalised aches and pains, muscle stiffness and painful joints. Women also described their *“heart beating strongly”*, fatigue, numbness and tingling, having *“cold hands and feet, even in the hot season”*, a sensation of *“feeling heavy all the time”*, loss of energy and loss of appetite. Several women spoke about feeling constantly *“exhausted”*, *“too tired to work”* and that they had *“lost all energy”*. Though at times these symptoms were regarded as normal and expected aspects of pregnancy, more commonly, women ascribed their feelings of tiredness to their depression.

“When I think [a lot], I cannot eat well. I cannot swallow my meals and feel like I’m already full inside.” (Participant 3)

Physical symptoms limited women’s ability to work and provide care, and several women felt concerned by the implications of their not being able to carry out their normal roles. One woman worried she had let her family down because *“I cannot fulfil my duty”*. Another woman felt despair over the changes she had perceived in herself and the sense that she had little control over this: *“I don’t know how to get my old self back”*.

7.6 Suicidal ideation

Suicidal ideation and past attempts at self-harm were common among this high-risk, severely depressed group of women. Suicidal ideation occurred alongside symptoms of depression described above, yet was discussed frequently enough in and of its own right to constitute its own, independent theme. Perhaps surprisingly given the stigma around

mental illness in general, experiences of suicidal ideation were discussed openly and without any sense of shame or embarrassment.

Suicidal thoughts and ideation ranged in severity. At the mildest end of the spectrum were hypothetical thoughts about suicide: women imagined passively and in abstract terms the impact their own suicide might have on those left behind, for instance. Women with mild levels of suicidal ideation tended not to have any active intent of self-harm. Other women experienced more intense suicidal ideation. These women described more prominent and concrete thoughts around suicide, including considering the means they might use and how they would access the means.

A number of women had previously attempted suicide. Attempted suicide methods included overdosing on medication, drinking toxic weed-killer, hanging and drowning. Some of these attempted suicides occurred in response to an acute event – a specific ‘trigger’, such as hearing that a debt collector was on their way to collect money, or an argument with a partner or parent. The following accounts illustrate these more reactive decisions to attempt suicide:

“The other day, I tried to jump out of my house. I had nothing to eat and all the children were crying in hunger. My husband was still asleep at noon. He doesn’t wake up early and work hard for our family. We had an argument and I was worried that he could hit me or hit my children. That’s why I tried to jump out of my house. It’s very high [up]. A neighbour saw me and dragged me down.”
(Participant 5)

“I thought of suicide, just like that... I was having a fight with my husband. I [had] told him not to drink, and we had a fight. I was disappointed, crying and feeling upset, and I thought I would jump into the river. I went there. I was positive I would do it. I was already in the water and I can’t swim. But my mother and my husband dragged me back. ‘Why did you do that?’ my mother said. ‘Your husband is not beating you; it’s just a small husband-and-wife quarrel’. My mind led me to follow the action. I couldn’t control my mind.” (Participant 11)

Other women who had attempted suicide described deeper and more long-standing suicidal thoughts. These women regarded suicide as a considered and reflected response to chronic hardships and difficult lives. Suicide was regarded almost philosophically as a practical means of bringing an end to a life wrought with difficulty and with little prospect of improvement. For many of these women, it was concern for their children that stopped them from acting upon their thoughts.

“I thought about taking drugs to kill myself. But if I didn’t die then I would have to suffer. If I just took drugs and died easily then it would be fine. I saw a couple who took insecticide and they both died easily and happily without having to suffer. I would be happy to die...like that. But my son, I do not know what would happen to him. [My husband] does not treat my son well when he gets drunk.” (Participant 2)

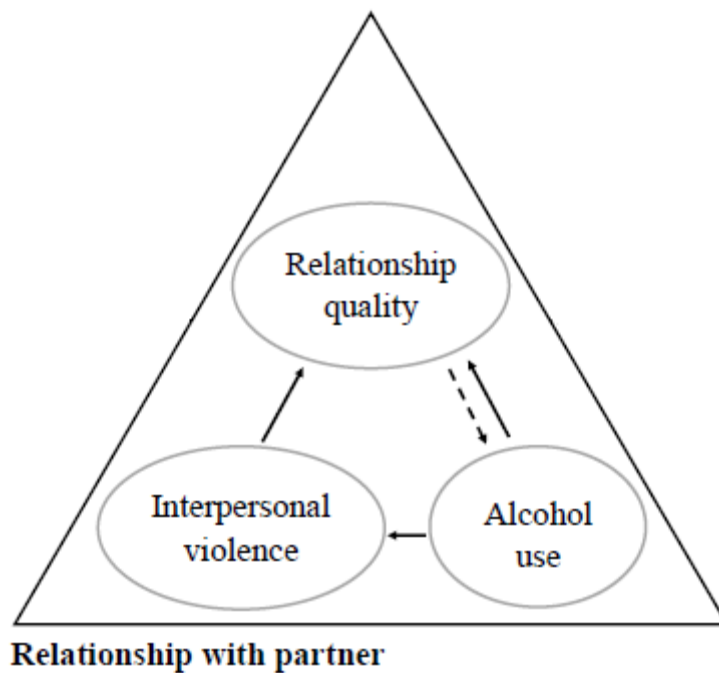
“I have thought about committing suicide before. My husband drank alcohol and I couldn’t talk to him. My child was very sick and my family had many difficulties. I kept thinking about these problems, over and over. I felt a lack of support for myself. So, I tied up a rope from a hammock and stood on a stool. The sound of moving the stool woke my husband... My suicide plan was cancelled.” (Participant 10)

7.7 Partner relationships, alcohol use and interpersonal violence

Besides symptoms of depression and suicidal ideation, women’s relationships with partners were one of the most pronounced themes to emerge from interviews. A strong inter-relationship was seen between three aspects of relationships: the nature and quality

of relationships with partners, alcohol use among partners and interpersonal violence. Alcohol use and interpersonal violence both directly affected relationship quality. In addition, alcohol use also impacted upon interpersonal violence (**Figure 22**).

Figure 22. Associations between relationship quality, alcohol use and interpersonal violence



7.7.1 Quality of relationship with partner

A minority of women described having a positive and supportive relationship with their partners. These women felt “*looked after very well*” and “*cared for*”. The emotional support they received from their partners provided them with strength and resilience to confront many life challenges. For instance, one participant described how a caring relationship with her husband enabled her to overcome a lack support from her family:

“We were in love with each other... Nobody [in our family] supported us to go to school. We both went to work as daily labourers and supported each other in school.” (Participant 2)

Much more frequently, however, women described being unhappy in their relationships with their partners. Negative relationships were characterised by a lack of connectedness and support, and often exacerbated by partners' alcohol use and interpersonal violence. Women in unhappy relationships felt a lack of attention, empathy and understanding from partners. These women described their partners as being "*the self-centred type*" and "*not listening most of the time*". One woman gave an example of a time when she spoke to her partner about how she was feeling, but rather than comforting her, he made her feel worse:

"I felt really sad, so I told my husband about it. But you know what he said? He asked me, 'What happened?' Just this one word he asked. I told him how I feel, but... he said, 'You [feel] like this because you are not supporting your family.' He never comforts me, only blames [me]." (Participant 10)

The absence of caring from husbands created among women a feeling of loneliness and isolation, and a sense of having "*nobody to talk to*". One woman described having "*no one who can give me encouragement in my life*", while another said:

"I have no one to talk my worries out of my chest... There is no one who will listen to me patiently. There isn't anyone who will come to me and ask what I am going through. Every worry I feel is kept only inside my chest." (Participant 5)

Poor-quality relationships caused much sadness and distress among women. Many women blamed negative characteristics, attributes and behaviours of their husbands, such as alcohol and substance use and theft, for their poor relationships.

"When I think about my husband, it makes me feel unhappy and heavy hearted. He makes himself known for the wrong reasons... He is famous for his bad ways, such as stealing things that fall under people's houses to sell them." (Participant 9)

A further characteristic of poor relationships was a lack of practical support and insufficient financial contributions women received from their partners. This was commonly attributed to what women described as men's inherent lack of motivation: many women described their partners as lacking in willpower and "lazy". As well as women disliking this attribute in their partners, the lack of responsibility taken by partnership resulted in women bearing the brunt of the caring and household responsibilities alone, creating further stresses for women and strains on their relationships.

"He doesn't like to work. If he were a hard worker, there [would] be an income. If you just go and find a job and get hired, you can get an income... But he is too lazy." (Participant 9)

"He...gives me nothing, no income, nothing. He [doesn't] look after me well." (Participant 10)

"Once he finishes with his work, he would go and play volleyball and he comes home at 6 pm. I have to wait for him for dinner and I would get upset at him... When I get home and there is unfinished housework or an empty water bucket, I have to finish doing the work and fill the water buckets myself." (Participant 2)

"Only I am active around here... I am managing everything for our living." (Participant 5)

In contrast, one woman, despite having a difficult relationship with her husband, wanted her husband to stay at home rather than move away in search of work. She experienced a sense of shame for being financially dependent on her husband:

"I told my husband that whether we have money or not, I want to stay with him, together, as a family. But he didn't want to. He wanted to make more money, so he went away to work. He sends some money [from Bangkok]... I am not happy, but I have to eat, and so I swallow my meal with tears because I am using his money for my food." (Participant 3)

7.7.2 Alcohol use

Alcohol use in men was common. Women described how alcohol use among their partners, fathers and step-fathers impacted upon relationships and their lives in general. Alcohol use in partners had a negative impact on relationships. Immediate, short-term effects of alcohol such as drunkenness and inappropriate behaviour were regarded by women as shameful and embarrassing, while longer-term implications, including the wasting of household income on alcohol, brought about feelings of sadness, stress and “*overthinking*” in women.

“I am depressed when he drinks alcohol and then I [start] overthinking. I would cry every time he drank alcohol. I am already preoccupied enough taking care of just one child.” (Participant 2)

“My father is always getting drunk and looking for trouble... I am very stressed because of him.” (Participant 3)

Alcohol was regarded often as something that could damage an otherwise “*good man*”. Women described their husbands as being “*seduced by alcohol*”, alcohol being their “*only weakness*”, and men becoming a “*burden*” when they drank.

“He loves and cares for me very well except for when he is drinking. His only weakness is that he drinks alcohol. Everything else is good about him except for that one thing.” (Participant 2)

Drunkenness and social disruption caused by drunkenness were an issue for many women who felt frustrated and embarrassed by husbands “*coming home drunk and very loud*”.

“Each time [my husband] drinks I just want to die. He becomes very loud and it is humiliating.” (Participant 2)

“When he got drunk and came back home, he broke things like mirrors and pots, anything he saw. I am fed up buying new things again and again.” (Participant 6)

“Others don’t look for trouble when they’re drunk. But my husband is different. He sleeps by the side of the street and when people help him up, he fights. Sometimes he throws stones to any directions. Well, people and children are going elsewhere on the street, right? If he is throwing stones on the street, others could get hit and hurt. If they do, he could get arrested. Then, troubles would come onto me.” (Participant 6)

Negative peer influences worsened men’s alcohol consumption. According to many women, their husbands tended to drink more when they were out socialising with friends, who would offer free drinks or tease men who did not drink.

“He drinks only when his friends treat him and get him free drinks.” (Participant 6)

“He sometimes uses drugs and alcohol because his friends make him.” (Participant 5)

“He drinks once or two times a week. When he meets his friends he would drink a lot more.” (Participant 2)

“His friends made him drink... [They] told him he is afraid of his wife. So, he drank the alcohol to show them that he is not afraid.” (Participant 11)

Women were critical of their husbands’ inability to stop drinking, which they blamed on social pressure from peers as well as men’s own lack of willpower. Most women had tried – usually unsuccessfully – to persuade their husbands to stop drinking and break their “will to drink”.

“I told him to not drink alcohol – not harshly; I just told him normally. I let him drink one to two cups, that’s okay... But for him, every time he has a chance, he keeps on drinking more. Then he can’t wake up for 2-3 days; he’s completely drunk. For me, as a housewife, I always have to manage everything and it’s difficult for me.” (Participant 6)

Some women, however, did manage to stop their husbands’ drinking habits. One woman threatened to commit suicide following a quarrel around that arose when her husband came home drunk. The following day, he responded:

“He said, ‘Don’t do that next time... I will never have a fight with you and I won’t drink with my friends.’ This he promised me.” (Participant 11)

“Since he [found out] that I have been seeing the doctor for breathing difficulties and that whenever he drinks it has an effect on me, he learnt that he needs to reduce his drinking and [his drinking] has improved.” (Participant 2)

“I kept telling him to stop and whenever I told him we always had arguments and fights. So, I stopped talking to him completely for a few days and then he also stopped drinking alcohol. When his friends came to call him to drink, he told them that he was not drinking anymore.” (Participant 8)

In some cases, women’s pregnancies were what motivated husbands to stop drinking. One husband stopped drinking *“after [his wife] conceived this pregnancy”*, while another husband stopped near the baby’s expected delivery date:

“My mother...told him not to drink alcohol and that I was about to deliver and that he should look after me well. My mother scolded him very hard. That’s why he came back to me. Before, he didn’t care and was always drinking alcohol. He’s like that... Near the time of delivery he quits drinking. Before, he always drank one bottle after another.” (Participant 10)

7.7.3 Interpersonal violence and abuse

Interpersonal violence was closely associated with alcohol use and significantly affected the quality of relationships. Women were exposed to verbal, physical and sexual abuse from partners.

Verbal abuse

“Hurtful words” and *“accusations”* from partners were common, and led to feelings of sadness, loneliness and worthlessness among women.

“[My husband] says that I am not a good mother and I am hurt by that. When he says that, it hurts me so much that I would cry.” (Participant 2)

My husband’s words hurt me a lot. He doesn’t trust me... [It] gives me the heavy pain that I am feeling inside right now. It burns and hurts so that I can’t bear it. I don’t want to live like that. (Participant 3)

“He threatens to cut my throat... He also shouts at me with anger and some abusive words and I feel very frightened and shocked because I just delivered the baby and [the baby] is very young. He has no sense of understanding that at this time women need to keep warm and avoid shocks.” (Participant 3)

Physical abuse

Physical violence by partners was widespread. Forms of physical violence included being kicked, hit, punched and strangled, and attacks were commonly severe enough to cause serious injury and require hospitalisation.

“At the beginning of my pregnancy, he physically abused me twice. The first time, he did not know I was pregnant. He hit my head with a bamboo stick and he kicked me. The [second] time he already knew that I was pregnant... He was coming home after going to get the wood and I forgot to cook and he got angry and kicked me which left me unconscious.” (Participant 7)

“He beat me up and squeezed my neck. That time, my eldest daughter ran to the section-leader’s house and reported to call for help. After the fighting ended, I was not feeling well for four days so I went to the clinic.” (Participant 6)

Partners at times also directed violence at their children. When this occurred, women felt a sense of shame and guilt at being unable to protect their children.

“He...beat the children with the bamboo sticks. They were crying hard.”
(Participant 6)

“Sometimes I feel worthless... When my husband shouts at [the children] I think it’s all my fault... [Because] I am not good, my children are being scolded and beaten by their step-father. I don’t blame my children; I blame myself.”
(Participant 5)

Sexual abuse

Sexual violence was reported less frequently than verbal or physical abuse but remained an important issue. One woman felt pressured into marrying her husband after he kissed her in public – an act deemed in this cultural setting to be appropriate only among

married couples. This woman described feeling vulnerable as well as “*angry*” at the situation she was placed in, which left her with no choice other than to marry.

He was kissing me in front of people... I hit him and told him, ‘What are you thinking...?’ I was 18 or 19 years old. He was kissing and hugging me in front of people and I was afraid that people will gossip about me so I decided to marry him. I feared that he would tell others that he has touched and kissed me and I felt embarrassed about it. (Participant 7)

Violence by women

Though much less common than male-perpetrated violence, there were occasions when women acted violently towards their partners. Within this culture, the expectation is the women do not talk back. One woman remembered how, after being physically abused by her husband, her mother-in-law reminded her to be “*humble as a girl*”. Despite this, a number of women had spoken out against their partners when they could no longer refrain from doing so. Women often laughed while recollecting the occasions when this had occurred, conveying a sense of embarrassment but also of achievement for having stood up for themselves. The act of releasing pent-up anger and frustrations brought a sense of relief and empowerment.

“I feel so irritated. Right now, I can’t just be silent, you know ... I have to speak out to him! I felt great and empty in my chest when I called him a dog!”
(Participant 6)

“When I get upset and stressed, I have to speak about it, otherwise I would feel like it was burning inside. I would feel better afterwards.” (Participant 2)

Sometimes women went beyond this and became physically violent towards their partners. Most commonly this was in direct self-defence against husbands’ abuse, but at

other times it was in reaction to behaviours such as repeated drunkenness which women felt were irritating and unacceptable.

“When [my husband] came back, I told him not to come upstairs... I [made] him stay downstairs until he wasn’t drunk anymore... But he came upstairs. I couldn’t bear his smell and got angry when he didn’t listen. I threw things...at him. If I had not been held back by other people, my husband would have been hit pretty hard... I [insulted] him by calling him: ‘Dog! You animal!’ ... People say that my husband is going to die from the things I throw at him.” (Participant 6)

“My husband and I had an argument one day. I said, ‘I wish I could kill you and take your heart out,’ and I punched him in the eye because I [was] very angry... Since then, he is very terrified of me and apologized [to] me. He said to me: ‘My wife, please don’t kill me!’” (Participant 7)

“I did not fight him back before, but now I do. As I defend myself, I tell him, ‘I am not afraid of you anymore. If you are going to kill me, just do it and I’ll do the same to you!’” (Participant 7)

7.8 Life difficulties: past, present and future

All women referred in one way or another to their lives being “hard”, “difficult” or “tough”. This concept of a ‘difficult life’ was highlighted previously in association with women’s feelings of worry. Life difficulties encompassed challenges in various aspects of women’s present living situations but also concerned traumatic events from the past as well as concerns regarding the future.

7.8.1 Past experiences

Difficult childhood

Women's pasts were marked by difficult childhoods and traumatic events. Childhood was remembered as being fraught with poverty, family separation, violence and death of close family members. Women described having "*suffered a lot*" during their childhood and not wanting to "*think or talk about the past*".

"If I think about [my childhood] I don't even want to live... There were so many hardships. (Participant 1)

"I had been through a lot of difficulties in my childhood." (Participant 6)

Poverty was a key component of difficult childhoods.

In [our] small village my mother was tending a small farm all by herself. My father drank alcohol... We had difficult lives and we suffered a lot... I was unhappy and I felt sorry for my mother for what she was enduring. (Participant 2)

In my childhood I didn't even get to wear shoes. (Participant 4)

One woman had a step-father who was physically violent and sexually abusive. When he touched her inappropriately as a child, she found herself unable to find support or share her distress.

"[My step-father] ...got drunk and he physically abused [my mother]... I was hit by a bundle of bamboo strips... It was not just me; my mother and my other siblings were all hit at the same time. There was one time, I was hit with piece of the house floor that was made from bamboo. He was drunk and we could not stop him and he was very aggressive." (Participant 2)

“He attempted to rape me once. He touched me inappropriately... I do not like to sleep with blanket on and whenever he came over to put the blanket on me he would touch my breasts and my lower body part and [when] I opened my eyes he walked away. I was upset with what happened. My mother did not let me report [what my step-father did] to the soldiers, so I did not, so that she would not lose face.” (Participant 2)

Death among parents and siblings was common, and many women’s childhoods were shaped by the absence of a mother or father. As young children, these women had taken on adult responsibilities such as looking after younger siblings and carrying out household chores.

“After our mother passed away, I had to take on my mother’s [role] of taking care of my younger sister and my father.” (Participant 5)

“Other children had their fathers and mothers who brought snacks for them children. I didn’t have anyone like that in my childhood... I felt very sad.” (Participant 3)

“Since I was young, I had to cook for the whole family. I was very young and I couldn’t handle the cooking and the boiling rice-pot knocked over me. I got burned this side.” (Participant 5)

As children, many women had been sent as far away as Bangkok to work in factories or as domestic helpers.

“I was sent [to Bangkok] as a house-maid. I was 12 years old at that time.” (Participant 10)

“I went to Bangkok with other people. I started working there at 9 years old. I did the cleaning and ironing... I was there for one year.” (Participant 3)

Being sent to work meant that the majority of women did not attend school, or if they did, only for brief periods. Often, family finances were insufficient to cover the costs of tuition, uniforms and textbooks. In addition to saving the family money, not enrolling a child in school meant the child was available to help at home and earn an income.

“I was only able to go to school for the first grade post-kindergarten. My family had to struggle very hard. They could not afford for my school fees easily. I enjoyed school. I [tried] my best when I was in school.” (Participant 5)

One woman stopped going to school because she married young. Along with many others, she spoke about not having attended school with regret, regarding it a valuable life opportunity missed.

“I was never able to complete my schooling because my mother made me go to work. Then my mother wanted me to marry this man. I did not want to marry him. I wanted to pursue my studies.” (Participant 7)

Conflict, war and displacement

Conflict and war in Myanmar and the resulting displacement to the Thai border represented a further past trauma. Living under constant threat of violence from both Myanmar government soldiers and armed ethnic forces was a significant stressor. Women had experienced and witnessed multiple forms of violence, including forced labour, portering and minesweeping, land confiscation and killings.

“They came to collect people for portering services for the government army. When the soldiers came into the village, we all had to run away – women and men.” (Participant 5)

“In my area, the Burmese soldiers came and collected people as their porters. As they were going in and out of our village day and night, we did not dare to go work so that our living conditions started to become unstable and poor.”
(Participant 8)

“We had many problems, including safety issues when the military came to our village.” (Participant 6)

Families were forced to flee their homes and villages, often very suddenly, taking nothing but *“the one set of clothing on my body”*. Women remembered their arduous journeys to the Thai border in detail, despite events having occurred many years earlier.

“There was an attack in which we had to flee from the Myanmar soldiers. There was an exchange of fire and I had to flee with my two younger siblings. My mother was carrying another sibling and my brother was asked to carry clothes. I carried the cooking pot and some kitchen accessories and some rice... There were many other items which we could not carry.” (Participant 2)

“We left because of the civil war. We had to stay in the bunker... Fighting broke out and my mother was three months pregnant at that time. We crossed the border on foot.” (Participant 3)

“It probably took about 4-5 days on the way because we had the financial difficulty and my father was not well on our journey. After our mother passed away, I had to take the substitution of my mother’s position for taking care of my younger sister and my father. So, we hitchhiked and walked and begged for food.” (Participant 5)

It was common for children to make these journeys alone. Women described travelling with siblings and cousins, and with *“no one to take care of us”*.

“When I came here, my parents did not come. I came with my female cousin. There were four or five of us. We travelled on foot for two days.” (Participant 4)

7.8.2 Present life challenges

Poverty and financial insecurity

Much of the present and on-going life challenges were the result of long-standing poverty and income insecurity. Women worried about not having enough food to feed the family and many were unable to afford school fees.

“Even with our income and monthly ration, we don’t have enough for my family. I have to buy one sack of rice once every two months and two sacks of charcoal every month.” (Participant 4)

One woman described feeling sad because she could not afford to buy her children small treats. It was common for families to take out loans from friends or informal moneylenders in attempts to make ends meet. Often these loans would set off a downward spiral of mounting debts that they were unable to repay.

Many women felt that the responsibility of taking care of the family rested solely upon them, and this created resentment towards partners as well as a constant psychological stressor.

“I am the only person providing for the family. I also have to provide for my parents because there is no one else. When I can, I send money to my parents but when I do not earn enough I could not send them any.” (Participant 4)

“I work every day... With a bit of money that I...earn at work I have to pay for the babysitter. My father, when he comes around, he asks me for some money to buy alcohol. If I refuse, he starts to become violent and destroys what he sees around. I get some money from my husband but I feel mistrusted by him at the same time. They are putting me under many pressures.” (Participant 3)

A sense of insecurity was also conveyed by many women. The majority of women did not have the necessary documentation to reside or work in Thailand and lived in constant fear of the Thai police.

Family separation

Family separation characterised many women's lives. It was common for women to have lost contact with close family members including siblings, parents, former partners and even their own children who had remained behind in Myanmar, left in search of work opportunities or resettled to third countries.

"I look after three of my nieces and nephews. Their father was left behind and their mother is having difficulties getting a job so we have to help look after them." (Participant 2)

"The eldest daughter lives with me. The other four children are with my previous husband. He does not care where they go or what happens to them. He lets them go to school but he dislikes them visiting me, so he beats them and makes them stay with his sister. I am uncertain how well they look after my children." (Participant 8)

"I have many relatives – uncles and aunts – who resettled, but we have not been in communication for a long time and we do not know each other anymore. I do not know which country they went to. I looked after the children of one of my aunts and uncles and I do not know which country the parents went to... We lost contact." (Participant 7)

'Difficult life'

The concept of a difficult life is perhaps best captured by the following two quotes.

These women's accounts give insight into the challenges women perceive in every aspect of their lives.

“My life situation is [similar to] that of the fruit of the Devil’s Trumpet: if you swallow it, it will sting you; if you smell it, it will make you dizzy; and if you eat it, it will make you mad. My life is like this: I have no direction I can go, nowhere to run away or escape this trouble. Sometimes I think I want to choose the path of suicide.” (Participant 5)⁴

“Everyone has their limit and if the burden is too much then you would no longer be able to tolerate it. There’s no need to say it: I have so much burden in this life... Even though I have made a lot of good merit and deeds I have never been lucky. I am carrying this very heavy burden. Sometimes it feels like I cannot take it anymore.” (Participant 7)

7.8.3 Uncertain futures

Among this group of women, mostly of refugee background, most wished to resettle to a third country if given the opportunity. However, none of the women had a clear sense of how likely it was for their applications to be successful. Those who had not been registered with the UNHCR’s resettlement scheme expressed doubts as to whether they would ever be allowed to move to another country. But even among those who were on the resettlement register, there was great uncertainty. Some women had been waiting for several years, with no indication of whether or when they might move. Others had complicated scenarios whereby only some family members were registered for resettlement, creating difficult choices for women who had to choose between resettling alone or remaining in the camp with family.

“I wish to resettle if I could. I want to go to another country because all my parents and siblings are there. Here, I am not healthy. I am overwhelmed and worried about the future. I wish to go to my parents so that they can also help take care of their grandchildren.” (Participant 5)

⁴ Devil’s Trumpet (also known as datura or jimsonweed) is a highly toxic genus plant belonging to the vespertine flowering plants species.

For this selected group of severely depressed women, most of whom were of refugee status, repatriation was not seen as an attractive option due to ongoing conflict and difficult living situations in Myanmar:

“I haven’t thought about going back to Burma and I don’t want to. I will get some land here if I live here. Wars are still breaking out in my old village and we [would] have no place to go.” (Participant 6)

“I don’t want to go back [to Karen State]. I do not like living there. I would have to work hard if I moved back. It is better to live here.” (Participant 7)

7.9 Coping mechanisms

Women resorted to a variety of mechanisms to help them cope with symptoms of depression. These included seeking emotional support from friends and family, engaging in work and hobbies, consulting traditional healers and taking up counselling and medical treatment.

7.9.1 Friends and family

A few women found emotional support from friends, neighbours and work colleagues. These women felt better after discussing their feelings with friends. One woman received support from her neighbour who could relate to and empathise with her situation.

“She is like a sister and a mother [to me]. Like me, she is also feeling unwell with sadness. When I talk about my problems, she feels sad for me, and I feel the same when she tells me her problems. There is nothing I can do. Besides her, there is no one I could talk to.” (Participant 5)

However, more women felt that they lacked close friendships. Commonly, women said that although they had friends and co-workers whom they talked to regularly, they felt that there was nobody with whom they could share their most personal feelings. One woman found that the emotional bond she had with her son served as a source of comfort and support:

“My son is sensitive and he feels sorry for people... Whenever I am facing difficulties, he comforts me. One time...I was crying. He [comforted] me and cried with me. He was about two years old... He was crying a lot. He cares for me when I am upset.” (Participant 2)

7.9.2 Hobbies, work and religion

Hobbies including weaving, embroidery and gardening were used as a means to momentarily escape worries and sadness. Work, on the whole, was considered by women as a necessity rather than an enjoyable activity. However, two women considered their work as a welcome distraction.

“I seem to forget about my worries when I concentrate on work that I enjoy.” (Participant 5)

“I forget [my symptoms] ...while I am in work. Honestly speaking, I didn't want to come home from there. I wanted to live but there wasn't a room for me. Sometimes, I called my co-worker to ask whether or not I could sleep there because I didn't want to go back.” (Participant 10)

On the whole, there was a striking absence of coping strategies based on religious or faith-based activities. For a small number of women, religious activities such as reading the Bible and visiting the church, temple or mosque were perceived as helpful ways of managing symptoms of depression.

“When I am home, I am not very happy but when I go to church and hear about God’s words I feel happy. When I come home, the devil comes to my heart all the time. Whenever my friend invites me to join her to church, I would go but if I refused the invitation and did not go, the devil would come then.” (Participant 7)

More commonly, however, acts such as merit making and attending religious ceremonies were mentioned in passing when discussing other issues, rather than being regarded explicitly as coping strategies.

7.9.3 Traditional healing

Although not a widespread theme, a couple of women had consulted traditional healers with regards to their symptoms of depression. These women felt that the treatment had helped them to feel more positive and balanced, and given them a more positive perspective on their lives.

“A traditional healer made this necklace for me to protect further bad deeds and evil spirits causing me [to be] unwell. The necklace holds a small piece of scroll that is written in traditional magic words to cast evils away and protect me. While I am wearing this necklace, I mustn’t go to places that are unclean and I mustn’t eat anything that is unclean.” (Participant 5)

“When I felt sad I went to the clinic and had an injection to help with stress. I always pray to lose this symptom of feeling sad when I meet with a good healer because I have been feeling really bad.” (Participant 11)

7.9.4 Counselling and medication

The counselling that women received from SMRU was generally viewed as positive and well received. For many women, it provided a rare opportunity to talk about aspects of

their lives that they did not frequently speak about. Women felt it particularly beneficial to speak to the same counsellor regularly over several months, which allowed them to build up rapport and trust. Women felt “*thankful*” and “*grateful*” towards counsellors. One woman talked about how she had gained back her patience since talking about her problems. It was not only the counselling *per se* that women found helpful, but spontaneous conversations that arose with other women while they were waiting for counselling.

“This morning, some women were talking about their problems. Sometimes you see that some of them are going through the same problems as [me]. The person I talked to this morning, her husband [gets himself into] trouble...and my husband also steals money... I realise that I am not alone going through the burden of these difficulties, but that there are more people like me.” (Participant 6)

Women in this high-risk group had all been offered anti-depressant medication for their severe depression. Most of those who had taken the medication found it helpful: women experienced an improvement in their symptoms and felt “*more active*” and less worried following treatment.

“Since taking the medicine I can sleep well and eat well. I now think less about my worries. I suddenly feel good. I have a good appetite and I can eat well. I also do not worry about my children like before. The thoughts do not stick in my mind for too long.” (Participant 8)

“When I take the medicine, I feel better. I feel less tired. It could be other things that have helped me feel better, but personally I think it’s because of the medicine. I can laugh...now. Before I took the medicine, I couldn’t.”
(Participant 11)

One woman felt better when she took the medicine “*but when I stop taking it the thinking creeps back in*”. Side effects including feeling “*uncomfortable*”, “*woozy*” and

“numbness” were experienced by a small number of women. A small number of women stopped their medication because of these side effects.

7.10 Pregnancy and motherhood

On the whole, the themes of pregnancy and motherhood were noticeable by their absence. Few women spoke of their depression status in relation to their pregnancy, and none commented on whether they thought their depressive symptoms might be attributable to or connected in any way to their pregnancy. The quotes below are the exceptions to this. One woman expressed her happiness at being pregnant:

Whether it's a girl or a boy – I'll take it. I want a baby, and my husband also wants a baby. (Participant 11)

Two other women expressed worry and concern because the pregnancy was not wanted, or because of fears over the well-being of their child.

I feel heavy hearted to be pregnant... I'm not happy to be having this baby. I worry he will take up his father's behaviour. (Participant 9)

I'm worried that I will transmit my sadness to my baby. (Participant 3)

7.11 Discussion

This qualitative study was conducted in order to gain a deeper understanding of experiences of depression from the perspective of affected women and to elicit women's own explanations for their depressive symptoms. Women provided extensive insight into their lived experiences of severe perinatal depression, including thoughts around the

ways depression manifests itself, the impacts of depression and some of the possible causes of their symptoms. Though women spoke less about options for managing depression, coping mechanisms that women referred to offer a valuable starting point for discussions around potential interventions.

Women highlighted a wide array of complex, overlapping and inter-connected issues shaping their experiences of depression. Many of the themes were inter-related and mutually reinforced each other to create a complex web of factors affecting women's lives. The thematic map pictured in **Figure 23** offers one way of conceptualising the associations between the various themes and sub-themes that emerged from women's narratives.

One of the central issues in women's lives was the concept of a "difficult life", which encompassed a variety of on-going but also historical social, economic and interpersonal challenges as well as anxieties around the future. Women's lives were also very much shaped by past events including difficult childhoods, family separation, conflict and often dangerous journeys to the Thai border area. As adults, these difficult life circumstances persisted in the form of economic hardship, insecurity and poor support from partners.

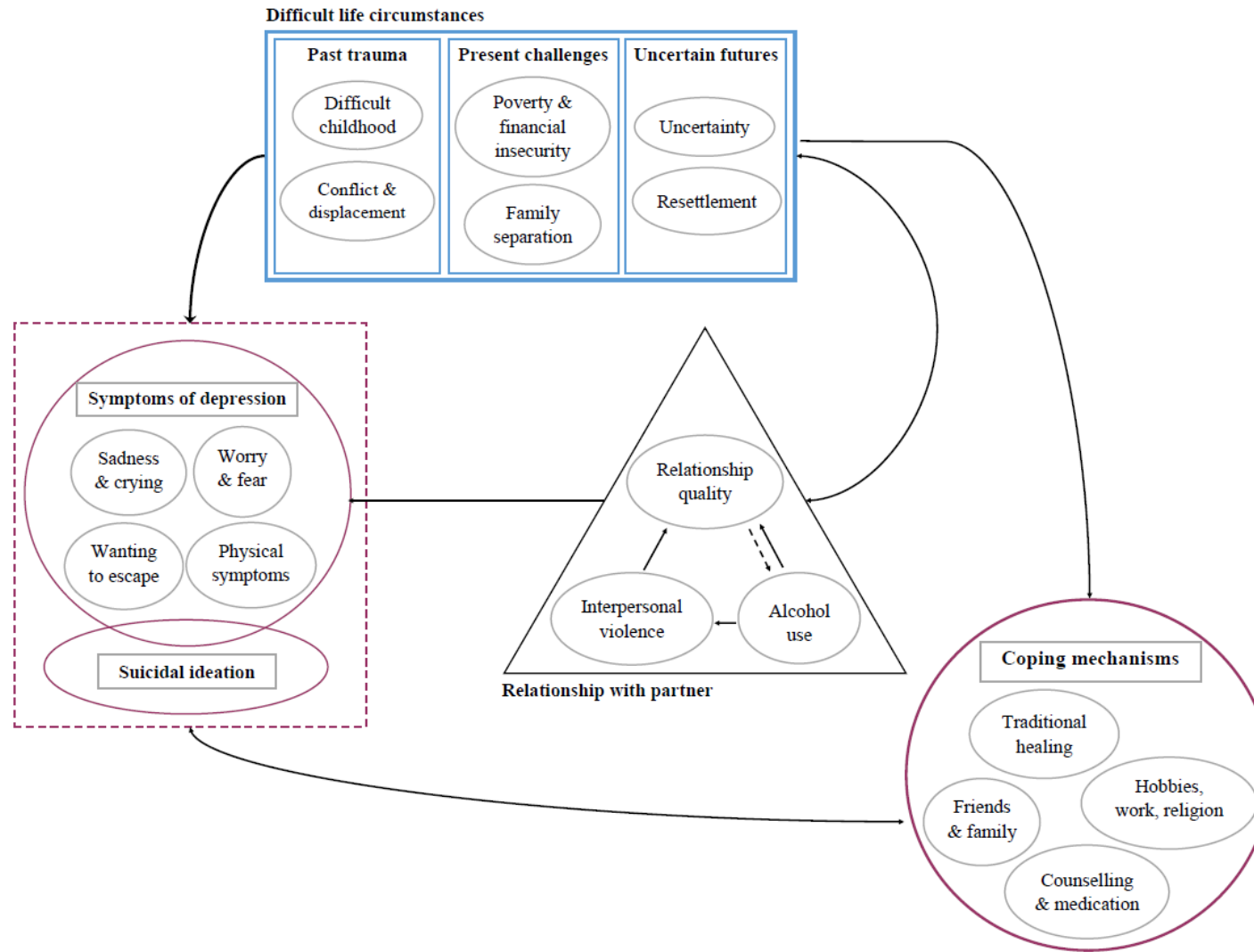
Another central tenet of the experiences of this group of women was a triad of difficult relationships with partners; alcohol use among men; and interpersonal violence.

Relationships with partners for most of these severely depressed women were difficult. Strained relationships were attributed to a number of factors, but alcohol consumption by men was one of the main frustrations women mentioned. Alcohol use was regarded as one of the main causes of inappropriate behaviours in men, ranging from being

unsupportive emotionally and financially to bringing shame on the family through drunken behaviour in public. Women were also exposed to interpersonal violence in the form of verbal and physical abuse and, to a lesser extent, sexual abuse, and violence was closely intertwined with men's alcohol use. Difficult relationships with partners, characterised by violence and alcohol use, added another component to women's "difficult lives". Though less explicit, an association running in the opposite direction is also possible: the daily life challenges faced by individuals in this setting may place strain on relationships, as well as cause frustration among men who may then turn to alcohol as an escape from their worries.

Difficult lives and troubled relationships with partners were associated with various symptoms of depression including sadness, crying, worry, fear, wanting to escape and a number of physical manifestations. Sadness, crying and tearfulness were by far the most commonly described symptoms, and women used powerful words to describe feelings of deep and overwhelming sadness and the need to cry. Suicidal ideation was experienced as another symptom of perinatal depression by some, but it also existed independently of depressive symptoms for other women who saw it as a practical means of bringing an end to a difficult life. Coping mechanisms included talking to friends and family. Some turned to work, hobbies, religious activities and traditional healing. These coping strategies provided a means of diminishing symptoms of severe depression. In these ways, the many themes women spoke about in relation to perinatal depression formed a cyclical and interrelated constellation of problems (Meyer et al, 2013).

Figure 23. Theamtic map of themes emerging from in-depth interviews with women with severe depression



Findings of the qualitative study component mirror those of other studies. In a survey of pregnant women in Maela camp, almost a quarter of women reported high levels of alcohol use by their partners (Ezard et al, 2012). Similarly, in a different refugee camp on the Thai-Myanmar border, alcohol use and fighting within married couples emerged as predominant life stressors (Meyer et al, 2013). Paralleling the findings of the current study, Meyer *et al.*'s (2013) respondents attributed relationship discord to multiple, inter-related problems including a lack of income, having nothing to eat, alcohol use and frustrations with general conditions within the refugee camp. Worryingly, Meyer *et al.* (2013) also found that children experienced feelings of fear, shyness, depression and a "wish to suicide" as a result of parents' arguing, highlighting not only the significant impact of poor parental relationships upon children but also the perpetuation of psychological distress – including a culture of resorting to suicide as a means of escape – into the next generation.

The focus on psychosocial factors parallels the findings from the quantitative analyses. For example, the significant impact of interpersonal violence that emerged from women's narratives echoes the results of the multivariable logistic regression model, which identified violence as one of the strongest predictors of perinatal depression. A lack of social support was another significant risk factor identified in the quantitative component. This aligns with the great emphasis placed by women on relationships with partners and the lack of emotional but also practical and financial support they received as a result of being in unhappy relationships. Suicidal ideation also featured strongly in both the qualitative and quantitative components. During in-depth interviews, suicidal ideation occurred as a symptom of long-standing depression but also as a separate and

independent construct. This reinforces the quantitative results which suggest that risk factors for suicidal ideation differ from the risk factors for perinatal depression.

It was notable that pregnancy status per se did not feature more prominently in women's discussions. One might have hypothesised that pregnancy would impact women's emotional state, either positively, perhaps by offering an opportunity for hope and something to look forward to, or negatively, by highlighting the difficulties of life continuing into the next generation. Instead, pregnancy status was rarely referred to. The fact that women were interviewed during pregnancy, rather than after delivery, may have impacted upon this finding, as women may have felt differently once their children had been born. Nevertheless, the little reference to pregnancy status raises questions with regards to the extent to which symptoms of depression among this group of severely depressed women – as well as among the wider group of participants – are related to pregnancy status, or whether they would have occurred regardless. This question ultimately leads back to the issue around the definition of perinatal depression, and whether it should imply an attribution of causality or merely describe symptoms occurring during the perinatal period.

Also notable by its absence was the lack of reference to religion. This was surprising in a context where religion is so engrained within the social fabric. It is perhaps the case that religion plays such a central role within individuals' daily lives as to be almost unnoticeable.

Findings of this study indicate that these migrant women with severe depression face a wide range of chronic stressors at the household and community levels that are likely to have both short- and longer-term effects on their mental well-being and day-to-day

functioning. The study also finds that the women themselves are aware of the complex web of factors contributing to their plight and highlights the difficulty of addressing any one issue in isolation.

7.12 Strengths and limitations

7.12.1 Strengths

To the author's knowledge, this qualitative study represents the first in-depth exploration of migrant women's experiences of severe perinatal depression in a low-income setting. A number of ethnographic studies of perinatal depression among migrant women exist but a recent review suggests that to date all have been conducted in high-income settings (Schmied et al, 2017). Structuring the in-depth interview guide around factors emerging from the quantitative component offered a further strength. Another strength of this component was the particular skills of the social scientist co-conducting the interviews: a trusted member of the migrant community with valuable insider knowledge of the cultural context and extensive experience of working with this population. The interviewer was able to establish strong rapport with women, placing women at ease and enabling rich and flowing conversations to ensue. Finally, analysis was conducted using a rigorous methodological approach. Thematic analysis was conducted by the author, and in addition, one member of the author's supervisory team independently coded a third of interview transcripts in order to enhance reliability of coding. Themes identified by the author and supervisor were compared and found to be similar. Grouping of sub-themes into themes and the inter-relationship of themes with each other for the diagrammatic representation was conducted in consultation and collaboration with the entire supervisory team.

7.12.2 *Limitations*

Findings of this qualitative study component are constrained by a number of limitations. Firstly, results are based on a limited number of interviews with a selected group of severely depressed women, and findings may therefore not be generalisable to other women with perinatal depression in this setting. In particular, women interviewed did not reflect the diversity within the migrant community as a whole. A larger sample may have enabled differences in experiences of perinatal depression according to factors such as ethnicity, religious background and migrant category to be discerned. However, the small overall number of severely depressed women from which our participants were drawn along with the difficulty in contacting many of the women limited the ability to select women from a range of backgrounds.

In order to participate, women had to be contactable, willing to participate, and available and able to attend the clinic for interview. Just over half of all women with severe perinatal depression agreed and were able to attend for interview. This process may have introduced elements of recruitment and/or self-selection bias. Importantly, women whom it was not possible to contact may have been among the most vulnerable or the most severely depressed. The limited number of participants also meant that data saturation was not achieved, and important factors contributing to experiences of depression may therefore have been missed.

A further limitation relates to language. Interviews were conducted in a combination of English, Karen and Burmese. Compared with English, both Karen and Burmese languages have a limited vocabulary for describing emotional states. It is possible that

despite best efforts to minimise losses in translation, inconsistencies across languages or misinterpretation of descriptions of depressive experiences occurred. Furthermore, analyses were conducted in English rather than in the language the participants used, which may have led to subthemes being missed or misplaced.

Lastly, the thematic diagram offers only one of many possible representations of the information and insight provided by women. The constellation of themes and subthemes and how they relate to each other can be construed in myriad ways, and the diagram presented should be interpreted with this in mind. The figure also does not claim to state any causality between themes.

7.13 Chapter summary

This chapter has explored themes emerging from the narratives of migrant women living with severe perinatal depression on the Thai-Myanmar border. Women provided considerable insight into their lived experiences of depression and linked their symptoms to a wide range of social factors. Predominant themes included challenging life situations, difficult relationships with partners, interpersonal violence, alcohol use in men, psychological and somatic symptoms of depression, suicidal ideation and mechanisms for coping with depression. The themes align with and reinforce findings from the quantitative study component.

Chapter 8.

Discussion

8.1 Chapter overview

This final chapter presents a discussion which brings together findings from across the individual study components. After a reminder of the aims and objectives of the research, the following themes are explored: the prevalence of perinatal depression; psychosocial factors associated with perinatal depression; differential experiences of labour migrants and refugees; suicidal ideation; and the significance and conceptual implications of depression NOS as a category. Strengths and limitations of the research are presented and finally, findings from stakeholder interviews are drawn upon to make recommendations for policy, practice and future research.

8.2 Introduction

The overarching aim of this research was to provide evidence to contribute to the understanding of perinatal depression within a low-income migrant setting, thereby facilitating the better detection of women suffering from perinatal depression in these settings and improving the care these women receive.

The objectives of the research were to:

1. Review the existing evidence around perinatal depression among migrant women from low- and middle-income settings;
2. Identify an appropriate tool with which to identify perinatal depression among labour migrant and refugee women on the Thai-Myanmar border;
3. Determine the prevalence of perinatal depression at different stages of the perinatal period in this setting;
4. Identify socio-demographic and clinical factors associated with perinatal depression;
5. Explore women's experiences of perinatal depression in this socio-economic and cultural context; and
6. Explore options for managing perinatal depression and develop recommendations for policy and practice in this setting.

These objectives were addressed through a number of individual study components. This chapter presents a comprehensive and integrated discussion of the main themes emerging across the research as a whole.

8.3 Discussion of main themes

8.3.1 Prevalence of perinatal depression

Findings of this study confirm that perinatal depression represents a significant burden of illness among women on the Thai-Myanmar border. In the first trimester of pregnancy, 1.6% of women had major depression, 6.5% had minor depression, and 17.6% had depression NOS. During the course of the perinatal period, three percent of women experienced severe depression, almost one in five (18.5%) experienced moderate-severe depression, and 39.8% experienced depression of any severity. The fact that over one in three pregnant or post-partum women in this setting experiences depression of some degree is concerning and warrants further attention.

The point prevalence estimates of perinatal depression showed a slight downward trend during pregnancy, followed by a small increase in moderate-severe depression post-partum. This decline may be an artefact of treatment effect rather than reflecting the natural progression of perinatal depression in this cohort, and trends over time should be interpreted with caution.

The overall prevalence of moderate-severe perinatal depression of 18.5% represents a significant burden of distress within this migrant population. Specific risk factors are discussed further below, but the high proportion of women affected is likely to reflect the difficult living conditions, generalised socio-economic disadvantage and other on-going stressors experienced by migrant women in this region. The prevalence of severe perinatal depression, however, was remarkably low compared with estimates from other settings. Given the sensitivity and stigma surrounding mental illness, it is possible that

symptoms of severe depression were under-reported, or that the severity of symptoms was under-played. Culture-specific manifestations and expressions of severe perinatal depression may also have been missed and led to a misclassification of women into less severe categories.

Alternatively, the low prevalence might reflect a high level of resilience to severe depression within this community. Migrant women in this setting identify strongly with their ethnic, religious and cultural backgrounds. This strong sense of community and belonging is so instilled in the local population as to be almost undiscernible to individuals, but was striking to an outsider such as the author. Perhaps this strong sense of belonging and social cohesion act as buffers against the most severe forms of perinatal depression in this setting. Such associations between social cohesion and depression have been reported in displaced communities in the USA (Le et al, 2013). The relevance of this speculative association to the Thai-Myanmar border context needs to be confirmed through further qualitative exploration.

The period prevalence of moderate-severe depression of 18.5% lies considerably below the systematic review's median estimate of 36.5%. The difference in the prevalence of severe depression – three percent in the cohort study compared with a median prevalence of 15.5% in the systematic review – is even more striking. There are a number of possible explanations for these discrepancies. First, as described above, the cohort study may have under-estimated the true burden of perinatal depression. Alternatively, studies in the systematic review may have over-estimated the prevalence, for example as a result of their reliance on screening instruments rather than diagnostic tools (Norhayati et al, 2015; Woody et al, 2017).

The ranges in prevalence estimates in the systematic review – 1.8% to 54.2% for moderate-severe depression and 0.6% to 34.3% for severe depression – were significant and the median estimates must be interpreted with caution. While differences between migrant populations are expected, the extent of variation between studies is concerning. If these estimates reflect true differences in prevalence then they raise important questions around how perinatal depression can be almost absent in some settings yet affect so many in others. The high degree of variability also brings into question the reliability of estimates, the validity of the instruments used and the ways in which perinatal depression is conceptualized. The DSM-IV defines major depression as a severely debilitating condition that significantly impairs an individual's ability to cope with everyday life (American Psychiatric Association, 2000). The highest estimates from studies in the systematic review suggest that in certain contexts, over a third of all migrant women suffer from this most severe and debilitating form of perinatal depression (Choi et al, 2012). Though these figures are devastating if true, the possibility of methodological shortcomings – including limitations in the validity, sensitivity and cultural relevance of the tool – should not be dismissed.

A recent systematic review by Anderson *et al.* (2017) provides another source with which to compare findings from the Thai-Myanmar border. Anderson *et al.* (2017) found median prevalence rates of moderate-severe perinatal depression among migrants living in high-income countries of 28% antenatally and 19% postnatally (Anderson et al, 2017). Prevalence estimates from non-migrant populations in other low- and middle-income settings range between 15.6% (Fisher et al, 2012) and 25.3% (Gelaye et al, 2016). The most accurate estimate of perinatal depression in non-migrant, low-income settings stems

perhaps from a meta-analysis by Woody *et al.* (2017), in which the pooled prevalence rates of 19.2% antenatally and 18.7% postnatally were adjusted for factors that contributed to heterogeneity between studies (Woody et al, 2017).

These latter estimates are the most closely aligned with findings from the Thai-Myanmar border migrant population. This suggests that in terms of the risk of perinatal depression, migrant women on the Thai-Myanmar border might bear greater similarity to non-migrant women across other low-income countries than to migrant women in high-income countries. Perhaps it is the case that in low-income countries, migrant-specific risks are overshadowed by relatively more acute or prominent generalised socio-economic disadvantage, such that migrant status in itself does not confer an additional risk for depression. Anderson *et al.*'s review lends some support to this notion in high-income settings, finding no evidence of an overall higher risk of perinatal depression among migrant compared to non-migrant women in high-income countries (Anderson et al, 2017). In the review carried out for this thesis, however, ten out of fifteen studies that included a control group found a higher prevalence of perinatal depression in migrants. Given the range of additional stressors migrant women face over and above socio-economic disadvantage – including social isolation, language and cultural barriers, family separation and exposure to trauma – it would seem surprising if migrant women were indeed not at increased risk compared to their non-migrant counterparts in. Future research should consider including local, non-migrant control groups wherever possible to provide robust comparator data.

8.3.2 *Psychosocial factors and perinatal depression*

This research identified a number of psychosocial factors associated with perinatal depression. Although the systematic review illustrated the variability in risk factors in different settings, a number of common factors were nevertheless identified across the systematic review, prospective cohort and qualitative study components. Psycho-social factors were consistently the most prominent and most strongly associated risk factors for perinatal depression. The systematic review found that low levels of social support and a previous history of depression were associated with perinatal depression. The prospective cohort study identified a self-reported history of depression, perceived insufficiency of social support, experiences of trauma and interpersonal violence as risk factors. In-depth interviews identified poor quality relationships with partners, alcohol use among partners, interpersonal violence and a chronically “difficult life” as some of the defining experiences of severe perinatal depression.

Social support has repeatedly been shown to be one of the strongest predictors of perinatal depression across both migrant and non-migrant settings (Anderson et al, 2017; Norhayati et al, 2015; Shishehgar et al, 2017). In the cohort study component, insufficient support was associated with a two-fold increase in the odds of moderate-severe perinatal depression (adjusted OR 2.1), while in the systematic review higher levels of support were consistently associated with lower odds of perinatal depression.

Social support is thought to act as a buffer against the psychological stresses of adverse environments and life events, but there is debate around which aspects of social support are most important (Melrose et al, 2015; Stewart et al, 2014). While the absolute amount of emotional, practical and structural support women receive is instructive, it has also

been found that it is the amount of support relative to need – in other words, the *extent* to which an individual perceives this support to be sufficient in times of need – that is most closely correlated with depression status (Melrose et al, 2015). Brugha *et al.* (1998) describes the risk of depression being greatest among women who “do not receive support without having to ask for it”, opening up the discussion around the importance of support that is accessible and responsive to women’s needs (Brugha et al, 1998). On the Thai-Myanmar border, both total support and perceived sufficiency of support were significantly associated with perinatal depression in the univariable analysis. These findings emphasize the need to take into account not only the social networks within which migrant women live but also the quality of social ties and their responsiveness in times of need.

Pregnant and postnatal women are at increased risk of interpersonal violence, and associations between interpersonal violence and perinatal depression in low- and middle-income countries are well-documented (Connelly et al, 2013; Halim et al, 2017). In the current study, interpersonal violence increased the odds of perinatal depression four-fold (adjusted OR 4.5 for moderate-severe depression; 4.4 for any depression). Interpersonal violence was also a key factor in interviews with severely depressed women. The inter-associations between alcohol use, interpersonal violence and partner relationships that featured so prominently during in-depth interviews has also been reported in other settings, including elsewhere along the Thai-Myanmar border (Connelly et al, 2013; Falb et al, 2013b; Meyer et al, 2013). For example, Meyer *et al.* (2013) identified alcohol use and arguments within parental couples as the greatest stressors in a different refugee camp on the border, with significant negative psychological impacts on couples and on

their children, perpetuating the cycle of distress into the next generation (Meyer et al, 2013).

Trauma experiences are common among migrant populations, and migrant women in particular are at risk of gender-based trauma (Hossain et al, 2014; Kalt et al, 2013).

Women in the current cohort study reported few instances of sexual violence, and there may have been a reluctance to discuss this sensitive topic. However, overall, 53.1% of labour migrants and 64.1% of refugees had been exposed to at least one traumatic event. These figures contrast with a recent study among internally displaced persons in Karen State, which found that ten percent of households had been exposed to human rights abuses (Parmar et al, 2015). In the current study, having experienced one or more traumatic event doubled the odds of perinatal depression (adjusted OR 2.4 for moderate-severe depression; 2.2 for any depression). Similar associations between trauma and depression have been reported in Karenni refugees in northern Thailand (Lopes Cardozo et al, 2004).

A self-reported history of depression was also significantly associated with perinatal depression, with adjusted odds ratios of 2.3 and 3.4 for moderate-severe depression and any depression, respectively. In the systematic review, prior depression was also identified as a risk factor, with one study reporting an odds ratio of almost thirty (Bjerke et al, 2008). In the context of the Thai-Myanmar border, where mental disorders are rarely formally diagnosed or managed by health professionals, a history of depression is elicited based on women's own perceptions around whether or not they have previously experienced symptoms of depression. Prior to the study, this question was considered potentially problematic given the vastly different ways in which individual women might

interpret the concept of past depression. The strong association serves as a powerful reminder that subjective, individual experiences should be taken seriously. It also suggests that asking about past depression might be useful as part of a wider programme to detect perinatal depression in this setting, though further exploration is required to confirm this.

Findings of both the quantitative and qualitative study components suggest that there are a group of women who are likely to be particularly vulnerable as a result of exposure to a host of co-existing and mutually-reinforcing psychosocial challenges. The reality for many migrant women in this setting is that life is strenuous, and challenges across every aspect of life create a continuous cycle of adversity. The example has already been discussed of men's alcohol use exacerbating interpersonal violence which in turn places strain on relationships. In turn, strained relationships may be one of the contributors to men's drinking habits. In a Malawian study, Stewart *et al.* (2014) found that a lack of support from partners was perceived by pregnant women as a generalized insufficiency of support in their lives, which in turn was associated both with depression and intimate partner violence (Stewart et al, 2014). There is also evidence that depressed women are more likely to feel dissatisfied with any given level of support received, creating a bi-directional association between depression and social support (Dennis, 2014). The issues of difficult partner relationships, alcohol use, interpersonal violence and perinatal depression are thus inextricably intertwined.

The concept of a "difficult life" is similarly complex. This concept, which in the context of the Thai-Myanmar border encompassed past trauma, present challenges of every day life and future uncertainties, has been described in several other settings. For example,

Fernando *et al.* (2010), working with conflict-affected Sri Lankan youth, ascribed depression to a “host of enduring stressful conditions of daily life” (Fernando *et al.*, 2010). Anderson *et al.* (2017) refer to migrant women’s vulnerability “on the basis of their migrant status in combination with social isolation, minority ethnicity, low socioeconomic status, insecure legal status, poor language proficiency and many other factors” (Anderson *et al.*, 2017).

The fact that this complex array of social adversity exists and that it is an important determinant of migrant women’s depression status is not in itself surprising. It is noteworthy, however, that migration-specific factors that have been associated with perinatal depression in other settings – including duration since migration, lack of host language proficiency and precarious legal status – were not prominent risk factors on the Thai-Myanmar border. If migrant women have a higher risk of perinatal depression than non-migrant women in this setting, then perhaps this is not the result of migrant-specific risk factors *per se* but rather a results of their higher likelihood of experiencing multiple psychosocial adversities simultaneously (Anderson *et al.*, 2017; Howard *et al.*, 2014). This issue warrants further exploration.

8.3.3 *Differences between refugee and labour migrant women*

Labour migrants and refugees share many similarities but each group faces unique stressors that might potentially impact upon their risk of perinatal depression. In the cohort study, univariable analysis found that labour migrants had a lower risk of perinatal depression than refugees, though the association was only statistically significant for any depression (OR 0.65; 95% CI 0.46–0.91). However, after adjusting for age, self-reported history of depression, interpersonal violence, trauma and social support in the

multivariable model, this association reversed, and labour migrants became twice as likely to experience moderate-severe perinatal depression (adjusted OR 2.08; 95% CI 1.09–4.00). The association between migrant category and depression may have been obscured by differences between the two labour migrant sites: though the difference failed to reach statistical significance, prevalence of moderate-severe perinatal depression appeared to be higher at Wang Pha (25.2%) than at Mawker Tai (10.4%).

The higher risk of perinatal depression among labour migrants might be explained by the fact that compared with the refugee community, they have more acutely precarious day-to-day lives. The need to find work often on a daily basis, the lack of long-term income security, poor access to health and social support services including schooling for their children and their undocumented status all make for an intense and challenging existence. Yet at the same time, there are other aspects of life in which labour migrants might be perceived as ‘better off’ than refugees. For example, labour migrants’ reasons for moving to the border region were largely economic, and the majority planned to return to their home towns and villages in the future. Working on the Thai-Myanmar border for higher wages is regarded by many as a ‘temporary’ rather than a permanent move. In contrast, refugees mostly hoped to be resettled to high-income countries. These represent very different life situations and may have a psychological impact on individuals. Labour migrants arguably have made a somewhat more active decision to migrate temporarily, thus perhaps exhibiting a greater degree of agency over their lives and destinies. Refugees, on the other hand, remain in limbo, trapped “between the tiger and the crocodile” – not wanting to return to Myanmar, where they feel unsafe, and with little prospect of being resettled to ‘third’ countries or allowed to remain in Thailand (Human Rights Watch, 2010). Indeed, much of the rhetoric around migrant mental health

assumes that ‘forcibly’ displaced populations such as refugees – with their greater exposure to trauma – are at greater risk than labour migrants. The systematic review found that surprisingly few studies including a direct comparison of different migrant categories. Results from the Thai-Myanmar border suggest that the dichotomy of refugees and labour migrants and their respective risks of mental disorder may not be so clear-cut.

Experiences of discrimination may also contribute to differences in the prevalence of perinatal depression. Minority ethnic status and discrimination are known risk factors for perinatal depression (Anderson et al, 2017). Labour migrants, whose homes and working lives are embedded in rural Thai villages, represent a minority group exposed to discrimination from employers, authorities and Thai society in general. Refugees’ experiences are somewhat different, especially for the Karen who constitute an established majority within the confines of the camp. However, discrimination is evident even within the migrant community, both in the refugee camp and in rural villages. Discrimination is discernible between many ethnic groups but is perhaps most apparent against the Burman Muslim minority who are barred from settling in certain areas along the border by various armed ethnic minority groups. In Maela camp, Christian, Buddhist and Muslim communities reside in different sections, partly reflecting historical boundaries between precursor camps but partly also in effort to avoid conflict between groups. Research focusing on the specific circumstances and mental health needs of Burman Muslim women is much-needed, particularly in light of the current humanitarian crisis in Rakhine State in northeastern Myanmar.

8.3.4 *Suicidal ideation during the perinatal period*

Suicide is a leading cause of maternal death across many settings (Fuhr et al, 2014; Knight et al, 2016; Palladino et al, 2011). Although few studies have examined the risk of maternal suicide in migrant populations specifically, migrant populations in general are known to carry a high risk of suicide (Vijayakumar, 2016). Between 1998 and 2015, suicide accounted for 9% (6/65) of maternal deaths at SMRU (Fellmeth et al, 2016c). Because suicides are commonly under-reported or misclassified in low- and middle-income countries, the true contribution of suicide to maternal death in these settings is likely to be higher than current estimates suggest (Fuhr et al, 2014).

Both quantitative and qualitative study components of this research highlighted the significance of suicidal ideation in this setting. Almost a third (29.0%) of women reported suicidal ideation during the perinatal period. This was significantly higher than the prevalence of 7.4% among (non-perinatal) Karenni refugee women in northern Thailand (Falb et al, 2013a) and the prevalence of 3.8% among perinatal women in the USA (Kim et al, 2015). Lower rates were also found in a worldwide systematic review of suicidal ideation in post-partum women, which reported prevalence estimates ranging from 4% in Finland to 15% in India (Lindahl et al, 2005).

Suicidal ideation was correlated with perinatal depression in the cohort study: as the severity of depression increased, so did the prevalence of suicidal ideation. Yet over half of women with suicidal ideation had mild or no depression. This distribution of suicidal ideation across the entire spectrum of depression has a number of implications. Firstly, it serves as a reminder that from a population perspective, the majority of suicides occur in low-risk populations, and that prevention efforts must therefore not focus solely on high-

risk individuals (Kim et al, 2015). Secondly, it perhaps gives further credence to the importance and relevance of the depression NOS category, as discussed further below. Finally, it suggests there may be alternative mechanisms and risk factors for suicide in this setting that work independently of depression status.

Haroz *et al.* (2016) worked with trauma-affected populations across eight diverse settings globally and found that among Burmese refugees in Thailand, suicidal thoughts were a poorer indicator of depression than in any other setting (Haroz et al, 2016). Interestingly, the authors speculate whether among the Burmese refugee population, suicidal ideation is not being driven by depression but by a separate construct (Haroz et al, 2016). A global study of suicidal ideation supports this notion, reporting that while depression is a risk factor for suicide ideation in high-income countries, in low-income countries thoughts of death and suicide appear to be more closely related to impulse control disorders (Nock et al, 2008). Beck *et al.* (1993) assessed the respective associations of hopelessness and depression with suicidal ideation and concluded that that hopelessness was a better predictor of suicidal ideation than depression (Beck et al, 1993).

The experiences of severely depressed migrant women on the Thai-Myanmar border suggest that there may be a variety of contributors to suicidal ideation. Many of the women interviewed had made previous attempts at suicide. For some, the act bore the characteristics of impulsivity, being carried out in response to an acute trigger event. For others, suicide was tied to long-standing frustration around chronic hardships and a deep sense of hopelessness with regards to the future. Evidence suggests that of those with suicidal ideation, approximately a third will make a suicide attempt (Nock et al, 2008),

though adults of childbearing age may have a lower threshold for acting on suicidal ideation (Kim et al, 2015).

Within the cohort component, a self-reported history of depression was associated with a five-fold increase in suicidal ideation (adjusted OR 5.56), while having lived in the current duration for over a year was protective. The prevalence of suicidal ideation did not differ significantly according to migrant status, ethnicity, religion or language. The high rates of suicidal ideation, the significant number of completed maternal suicides on the Thai-Myanmar border and the severe consequences of maternal suicide on families, children and wider society make an urgent case for efforts to prevent suicide (Kim et al, 2015).

8.3.5 Depression NOS: conceptual implications

A significant proportion of migrant women were diagnosed as having depression NOS. As a category, depression NOS is not commonly used in clinical contexts nor in epidemiological studies, as emphasis has been predominantly on major and minor depressive disorders. When minor depression was introduced as a diagnostic category in the DSM-IV, it was initially met with similar resistance by those who argued that its symptoms were not severe enough to warrant medical attention or treatment (Fils et al, 2010). With time, however, minor depression has become well-established within the epidemiological literature. Whether depression NOS will follow suit remains to be established, but for the time-being it remains regarded by many as a sub-threshold condition with little clinical relevance (Fils et al, 2010). Another criticism of the NOS category is that it might risk pathologising ‘normal’ levels of human distress. Labelling mild symptoms of depression as a medical disorder could lead to the medicalisation of

emotional and behavioural responses that could fact be regarded as appropriate within the context of displacement, trauma and extreme and continued adversity.

While these factors might support discounting depression NOS altogether, there are several important counter-arguments which highlight the importance of this category and its particular relevance in the current setting. Firstly, the proportion of women who fell into the depression NOS category was significant. More women fell into this category than into any other depression category. These women experienced levels of distress that were clinically significant and impacted upon their social and/or occupational functioning. Such levels of distress and impact upon daily lives occurring across such a substantial percentage of the population represent a significant public health burden.

Secondly, women with depression NOS differed clinically from women without depression. Although these women did not meet the requirements for minor or major depression, nor did they meet the criteria for an *absence* of symptoms that would have placed them into the negative category. The difference between women with depression NOS and those negative for depression was clear to study team members and provides a further justification for retaining the NOS category. Similar observations have been reported with regards to minor depression: Wagner *et al.* (2000) illustrated the importance of minor depression with his findings that patients with minor depression were more impaired than those without depressive symptoms and were qualitatively similar to patients with major depression (Wagner et al, 2000).

A third argument for the inclusion of depression NOS pertains to differences in what is perceived as important within a structured diagnostic tool. The SCID and other Western-

derived assessment tools place importance on the number of symptoms experienced and the frequency with which they are experienced. This emphasis on timeframes and frequencies did not sit easily with participants on the Thai-Myanmar border, who often found it difficult to give precise answers around timing of symptoms. It may be that in this culture greater weight is given to the symptoms in and of themselves, and to the extent to which they affect everyday lives. Limitation in functioning, a key DSM criterion for both major and minor depression, was experienced by many of the women in the NOS category. Elsewhere it has been reported that depressive symptoms can result in impairment even without a diagnosis of major depression, and that many individuals who seek help for depressive symptoms do not formally meet the DSM criteria for major depression (Fils et al, 2010). The NOS category allows for greater leniency in deciding what constitutes clinically ‘significant’ symptoms.

Fourth, little is currently known about depression NOS as a category as data is rarely collected. Minor depression is now known to be a predictor of major depression, and it is conceivable that depression NOS may similarly be a predictor of more severe depression. Mild forms of depression might even be amenable to certain preventive interventions, which would prevent progression to more severe forms of depression (Patel, 2017). Kessler *et al.* advocate for the retention of mild mental disorders in the new DSM-5 nosology in light of evidence that even mild depressive symptoms may be associated with later comorbidity (Kessler et al, 2003). In order to better understand the relationship of different depressive categories to each other, the category of depression NOS needs to be incorporated into future epidemiological studies.

Finally, given the limited knowledge around perinatal depression on the Thai-Myanmar border, and the limited research around mental disorders in general in the Burmese and Karen cultures, there was a risk of missing important, culturally-bound manifestations of depression if the scope was too narrow or the criteria overly stringent. The depression NOS group may have represented women who according to a different set of items and criteria may have been diagnosed with a more severe form of depression. Discounting this category risks ignoring significant levels of distress present within a population. It risks falsely labelling women with non-severe symptoms as being psychologically unaffected by their circumstances, leaving these women undiagnosed and less able to access support (Fils et al, 2010).

An alternative approach to the psychiatric diagnoses of depression has been proposed which involves replacing the current binary categorisation system (i.e. ‘case’ vs ‘non-case’) with a dimensional approach (Patel, 2017). For instance, an ordinal scale ranging from wellness to severe depressive disorder could be applied, with increasing levels of severity and/or chronicity of symptoms (Jacob & Patel, 2014; Patel, 2017). Such an ordinal approach recognises that the phenomenon of depression occurs on a continuum and that no single line can clearly “discriminate the miseries of daily life from a disorder” (Patel, 2017). It also acknowledges that individuals experience distress in a number of ways and that deviations from the standard criteria of depressive disorder do not imply lesser clinical significance. Such an approach would enable mild depression to be mapped, retained as a diagnostic category, taken seriously and treated according to its severity status whilst recognising its low grade relative to other categories.

Overall, this study highlights the utility of depression NOS as a diagnostic category. Depression NOS allows the epidemiological burden of distress within a population to be determined, highlighting the significant proportion of women who experience distress but would go undocumented if the diagnostic focus remained narrowly on minor and major depression. From the individual as well as the public health perspective, it is vital that individuals who are distressed but do not reach diagnostic criteria for a severe depressive disorder are not dismissed: as well as the individual suffering caused, this group contributes a significant proportion of the overall population-level burden of impairment associated with depressive symptoms (Patel, 2017).

8.4 Strengths and limitations

8.4.1 Strengths

To the author's knowledge, this is the first research to assess the prevalence, risk and experiences of perinatal depression among migrant women who have resettled from one low-income country setting to another. The study sheds light on the psychological well-being of this vulnerable group of women who are severely under-represented in the current literature, despite the fact that the vast majority of global migration flows occur entirely within low- and middle-income contexts. Though some previous studies have assessed the mental health status of general migrant and internally displaced persons in this region, none have looked specifically at women nor at perinatal depression.

The use of a mixed-methods design is one of the greatest strengths of this research. Multiple study components including a systematic literature review, a validation study, a prospective cohort study, in-depth interviews and a stakeholder analysis were used to

establish a comprehensive body of evidence around this topic. A mixed-methods approach enabled an in-depth exploration of issues pertinent to perinatal depression in this context. Particularly in low- and middle-income countries, combining quantitative and qualitative components can enhance understanding of social, economic and cultural contexts surrounding health (Ozawa & Pongpirul, 2014). Quantitative methods provided information on the extent of perinatal depression and quantified associations with risk factors, whereas qualitative methods provided a more holistic and ethnocentric view (Ozawa & Pongpirul, 2014).

The systematic review represents the first review to consolidate existing research around perinatal mental disorders among migrant women from low-income countries. The review was comprehensive, including prevalence, risk factor and intervention studies, and identified significant gaps in the existing evidence.

The validation study component formally assessed the Refugee Health Screener, selected for its direct relevance to refugee populations, for use in this setting. Strengths of the validation component include the large number of participants for each language and the fact that views of local staff administering the screen were also collected. The views of local staff were considered central to the sustainability of screening for the duration of the research and beyond. To the author's knowledge, this study component represents the first time the Refugee Health Screener was tested among migrants in a low-income setting.

The prospective cohort study allowed depression prevalence to be assessed and compared at different stages of pregnancy and post-partum. The sample size of 568

women is a strength, as is the extensive follow-up of participants from the first trimester of pregnancy through to one month post-partum. The use of a diagnostic interview rather than a screening tool was another asset, particularly in light of the systematic review findings that studies to date have tended to rely on screening tools. Although self-report measures may be fairly accurate and can facilitate the identification of depression in certain contexts, they are prone to over-estimating the true burden of disease.

The qualitative component significantly enhanced understanding of the lived experiences of perinatal depression in this setting from the perspectives of a sample of severely depressed women. Assessing mental health status in cross-cultural settings is complex, especially when multiple cultural groups are included in a single setting. Symptoms and experiences of perinatal depression and the way in which they are reported are shaped by social, cultural and linguistic dynamics, and the in-depth interviews helped to ensure that these manifestations of distress were captured (Meyer et al, 2013). Women provided a wealth of insight into their conditions, their perceived causes, the complex array of challenges they face on a daily basis and ways of coping with symptoms. In-depth interviews allowed results emerging from the quantitative component to be explored in more detail, and provided greater insight by presenting women's own perspectives (Cresswell, 2009; Ozawa & Pongpirul, 2014).

By including labour migrant and refugee women from the same region, this research was able to directly compare the prevalence of perinatal depression in these two groups which have similarities but also differences. Few previous studies have compared different categories of migrants, and those few that have did not always conduct comparative analyses (Shishehgar et al, 2017). The systematic review found that refugees are

generally under-represented within migrant perinatal mental health research, and few studies have examined mental disorders in migrant populations prior to resettlement (Meyer et al, 2013). In the current study, although all women have resettled from their place of origin to the Thai-Myanmar border, many refugee women consider themselves to be pre-resettlement to higher-income destinations. The importance of including hard-to-reach groups of migrants such as those with insecure legal status and those who do not speak the host country language has also been emphasized (Anderson et al, 2017). The current study includes a significant proportion of such women. Overall, the cohort study thus addresses a large number of gaps in the current evidence base.

The Thai-Myanmar border represents an area of protracted displacement, and the local migrant community is a melting pot of cultures and ethnicities. Drivers for migration in this region are multi-faceted and complex, and while some have been displaced for decades, others have only recently arrived. This complexity has created a blurring of the distinction between labour migrants and refugees. As global migration crises across the world are dragged out by on-going conflicts and persistent poverty without easy resolution, such protracted migration will become increasingly common. Unless international-level immigration policies change, low- and middle-income countries will likely continue to absorb the majority of displaced migrant communities. The findings of this research will therefore be highly pertinent to migrant situations across multiple settings.

A final strength of this research is its comprehensive and holistic approach to perinatal depression. Work around prevalence encompassed minor and major depression as well as the less-commonly used category of depression NOS, in order to capture the widest

possible range of symptoms. Risk factors considered across the systematic review, cohort study and in-depth interviews encompassed demographic, migration-related, psychosocial and clinical factors. This broad focus enabled a wide variety of potential determinants of health to be assessed (Meyer et al, 2013).

8.4.2 Limitations

There were a number of limitations to this research. With regards to the systematic review, high heterogeneity between studies which persisted in pre-determined subgroup analyses meant that meta-analysis was not appropriate. The search strategy was originally conducted in January 2015 and requires updating in order to capture recent and emerging evidence.

During the validation component, staffing constraints meant that the same assessor consecutively administered the SCID and the RHS at two out of the three study sites. The only site where blinding was possible (Mawker Tai) had a lower overall prevalence of depression, making it difficult to test for any association between blinding status and depression. Verbal administration of the RHS may have influenced results through social desirability bias or a reluctance to disclose sensitive information face-to-face (Bowling, 2005). However, the low literacy status of many participants and previous experience of asking women to self-complete questionnaires precluded self-assessment (Bowling, 2005). There may in fact have been advantages to the verbal administration, as a sensitive interviewer can encourage the disclosure of information as well as provide or seek clarification when necessary (Cook et al, 2015).

A number of limitations centre upon the use of the SCID as a diagnostic tool. Ideally, all SCID interviews would have been conducted by a physician. This was not possible due to limitations in resources and the study being carried out across three sites simultaneously. There may also have been variation between interviewers across sites. These shortcomings are common across many resource-constrained settings (Office & Myanmar, 2006; Zaw, 1997). In order to maximise accuracy and consistency, the author rotated between sites and co-conducted as many of the interviews as possible. Study staff received training prior to the start of the study by the author who had participated in *American Psychiatric Association* training. In many ways, local staff may in fact be better equipped to establish trust and to understand, recognise and respond to culturally-bound manifestations of mental disorders than less locally-experienced medical experts (Marley et al, 2017). In resource-constrained settings it is also neither desirable nor sustainable to rely on specialists to manage mental disorders (Marley et al, 2017). Training and engaging local staff to conduct this study built up experience and expertise within the community and ensured that screening procedures and management patterns were sustainable.

Importantly, the SCID itself has not been formally validated in this setting. The SCID was initially selected for use as a ‘gold standard’ comparator within the validation study component. Because it performed better than a number of screening tools tested, the decision was made to proceed solely with the SCID. Ideally, however, the SCID would have undergone a formal validation process against the clinical judgement of a psychiatrist with culturally-specific expertise in order to ensure that it was functioning with a high degree of sensitivity and specificity. The absence of psychiatric expertise in this region meant this was not a viable option. Statistical methods to adjust for “imperfect

gold standard bias” in validation studies exist, but it was beyond the scope of this research to apply this Bayesian statistical approach (Gelaye et al, 2014).

As is the case for most measurement instruments in global mental health research, the SCID was developed according to a Western-centric model of psychopathology (Haroz et al, 2016; Schweitzer et al, 2011). Although the applicability of the SCID to other populations has been demonstrated, its use in Karen or Burmese languages has not previously been documented and the possibility that culturally-specific symptoms of perinatal depression were missed cannot be ruled out. For example, somatic symptoms of perinatal depression are common in Asian cultures but may not have been picked up by the SCID which focuses primarily on psychological symptoms (Fisher et al, 2012; Klainin & Arthur, 2009; Patel & Sumathipala, 2005). In a study exploring pregnant women’s perceptions of mental illness on the Thai-Myanmar border, women described a ‘heavy head’, tingling and numbness as characteristic of depression (Fellmeth et al, 2015). A study of Karenni refugees in Northern Thailand identified similar somatic symptoms including numbness, thinking too much, and feeling hot under the skin (Lopes Cardozo et al, 2004). Women who presented with only these symptoms may not have met the DSM-IV criteria and this could have led to an under-estimation of the true prevalence of perinatal depression.

The SCID items on changes in sleep and appetite, both of which can be normal manifestations of pregnancy, also posed a limitation. Attempts were made to avoid the misattribution of these symptoms to depression by coding responses as negative unless they were clearly attributed by participants to their depression status. Nevertheless, the miscoding of these items cannot be ruled out. Overall, however, the SCID was selected

for use because it was superior to a number of screening tools identified and was the tool of choice for local staff. The open questions brought to light an array of more nuanced expressions of distress that screening tools are unlikely to have elicited (Schweitzer et al, 2011). The SCID, delivered by appropriately trained and locally-sensitive clinicians, therefore offered the best possible assessment of depression in this setting.

Within the cohort component, a number of women were treated and the natural progression of perinatal depression therefore cannot be established. Excluding women who received treatment from statistical analyses was considered. However, even among untreated women, the repeated SCID interviews in themselves may have had an inadvertent therapeutic effect by providing women with an opportunity to voice their feelings. A study of newly resettled Karen refugees in the USA which asked about experiences of torture found that participants reported feeling “as if a heavy load had been lifted” following their interviews (Cook et al, 2015). A treatment effect would have resulted in an under-estimation of the true prevalence of perinatal depression at all stages except for the baseline assessment.

The lack of a non-migrant control group constitutes another shortcoming. This meant it was not possible to assess the extent to which perinatal depression was attributable to migrant status *per se*. A number of options were considered with regards to a control group, none of which were straightforward. Using a group of Thai, perinatal women from the local area as a comparison would have been problematic given the substantial socio-economic differences between Thai nationals and the migrant community. Non-migrant women living in Myanmar may have been more suitable, and the possibility of including pregnant women living in Myawaddy, a border town located directly opposite Mae Sot

on the Myanmar side, was explored. However, logistical constraints and limited collaborations with institutions in Myanmar meant that ultimately this was not possible.

Further interesting insights would have been provided by the inclusion of a control group of non-perinatal women. The results of the research are unable to attribute perinatal depression to pregnancy status. Indeed, the lack of mention of pregnancy status during in-depth interviews would suggest that depressive symptoms in this group of women may be unrelated to their pregnant or post-partum status. Future research might compare rates of depression between perinatal and non-perinatal migrant women in this setting.

In-depth interviews were conducted with a small group of women who may not have been representative of all severely depression migrant women in this setting. A particular short-coming was the under-representation of labour migrants, Burman Muslim women and those who came from a linguistic minority group. Time constraints of the interviewers as well as difficulty contacting women underlay these issues. Labour migrant women in particular were difficult to contact due to their mobility and frequent change of address and phone numbers, and it was also more difficult for labour migrant than for refugee women to attend ANC for interview. Women who could not be contacted may have represented a particularly vulnerable group of depressed women. Although rigorous qualitative methods of analysis were applied, the conclusions drawn from in-depth interviews are only one of many possible interpretations of women's narratives and they should be understood as indicative rather than definitive or absolute. Given the prevalence of depression NOS in this setting, in-depth interviews with women in this category would have helped better elucidate the experiences of this particular group.

Finally, language and linguistic issues may have influenced results of quantitative and qualitative study components. There is no exact Sgaw Karen term for depression, though words exist for conditions similar to depression. The Karen and Burmese languages lack the precision typical of a language such as English with a more extensive vocabulary. This created difficulty especially when establishing the frequency with which certain symptoms occurred, but there may also have been other areas in which meanings were lost in translation. More comprehensive methods of translation of tools for use in cross-cultural contexts may have helped to address some of these issues (Sumathipala & Murray, 2000). Stigma, recall bias and a social desirability bias may have led to an under-reporting of depressive symptoms, interpersonal violence and experiences of trauma.

8.5 Implications for policy, practice and research

8.5.1 Implications for policy and practice

As a final component of this research, a sounding was made of stakeholders engaged in mental health or psychosocial work along the Thai-Myanmar border. Stakeholders included a Bangkok-based psychiatrist; two social workers from an NGO working on psychosocial and educational issues on the Thai-Myanmar border; a psychologist working for a medical NGO within a refugee camp on the Thai-Myanmar border; a mental health researcher working with labour migrants in Mae Sot and five SMRU staff working on the present study. Stakeholders uniformly confirmed that perinatal depression is under-recognised and under-treated in this region. Their views around

priorities for action are incorporated into this section on implications for policy and practice.

Results of this research have several implications for practice. Efforts to address the significant burden of perinatal depression in this setting should incorporate primary, secondary and tertiary forms of prevention (Klainin & Arthur, 2009). The Thai-Myanmar border region is a resource-constrained area with a large number of different health priorities, and it is important that recommendations for practice remain feasible and realistic within the context of this environment.

Primary interventions aim to prevent the onset of perinatal depression. In the local context, primary prevention might include interventions for women at increased risk of developing perinatal depression. Women who have experienced trauma or interpersonal violence, those with low levels of social support and those with a previous history of depression constitute risk groups in this setting and might benefit from supportive interventions to prevent the occurrence of perinatal depression. Interventions should focus on addressing the underlying drivers of perinatal depression in this setting, such as the building up of strong and responsive social support networks, promoting women's empowerment and providing support to those experiencing interpersonal violence.

Evidence from high-income settings has shown mixed results in the evaluation of psychological, psychosocial and psycho-educational interventions to prevent perinatal depression (Dennis, 2014; Werner et al, 2015). These preventive initiatives can be based on a number of underlying approaches including interpersonal therapy and cognitive behavioural therapy and be delivered in a variety of formats, ranging from community-

based group sessions to hospital-based individual or couples-based therapies (Clarke et al, 2013; Dennis, 2014; Werner et al, 2015). The most appropriate modality for any given context would be determined according to the characteristics and needs of the local community (Dennis, 2014).

Preventive interventions are well-suited to community settings. In Maela camp, strong leadership from camp committees, religious leaders and other community representatives could help in the establishment of community-based activities. Among labour migrant communities which are much more dispersed geographically, such interventions are significantly harder to organise. For these populations, efforts might be concentrated in health facilities, though activities would not necessarily need to be led by healthcare staff.

Specific efforts to address suicidal ideation and prevent suicide are also indicated.

Following the suicide of a study participant, a workshop on suicide was held at SMRU with multiple stakeholders including SMRU counsellors and midwives, counselling staff from other medical providers, the refugee camp committee and IOM. This was followed by a suicide awareness day at Maela and more recently by a training event for camp leaders and health workers around suicide run by an IOM psychiatrist. Such events and efforts need to be continuous in order to be effective and sustained and for messages around suicide to be effectively heard across the migrant community. The significant proportion of women with suicidal ideation who did not fall into any of the depression categories underscores the importance of community-level programmes to reduce suicide ideation at the population level (Kim et al, 2015).

Alongside community-based primary prevention programmes, secondary prevention efforts for the early detection and treatment of perinatal depression are recommended (Klainin & Arthur, 2009). A lack of knowledge and an element of shame that persists around perinatal depression means that women may be reluctant to volunteer symptoms, and that the conversation could therefore be facilitated if initiated by health workers (Cook et al, 2015; Klainin & Arthur, 2009).

The perinatal period offers a valuable window of opportunity of frequent contact between women and health providers, and in many high-income settings pregnancy women are now asked about symptoms of depression at their antenatal visits. At SMRU, findings of this research have led to the introduction of screening in ANC. All pregnant women are asked about low mood, loss of pleasure and suicidal ideation at their first ANC attendance. Those who respond positively to any one of the items are assessed more comprehensively using the full SCID. The validity and effectiveness of this case identification initiative requires systematic evaluation. In an effort to improve primary prevention efforts, some have also advocated screening for psychosocial risk factors such as interpersonal violence, and this might be a future consideration for SMRU (Connelly et al, 2013).

It is important that screening programmes are complemented by regular staff training (Klainin & Arthur, 2009). At SMRU, all staff received training from a local mental health NGO in June 2016, but such training needs to be on-going. Emotional support for staff including regular debriefing sessions are also required in order to maintain motivation and prevent ‘burnout’ (Munodawafa et al, 2017). Without strong local leadership, mental health issues can fall by the wayside as other health challenges which

are deemed more urgent, and which staff perhaps feel more comfortable dealing with, take priority. Overcoming these challenges requires resources in the form of continuous and on-going training for staff and dedicated and long-term staff with expertise in mental health.

Screening efforts must also be accompanied by adequate capacity for treatment and referral mechanisms. These constitute tertiary prevention efforts to appropriately manage symptoms perinatal depression among women suffering with the condition. The evidence base around effective interventions in low-income settings is growing. For instance, in a study by Atif *et al.* (2017), women from local communities in rural India and Pakistan received training and effectively delivered a psychosocial intervention for depressed mothers (Atif *et al.*, 2017). As with the primary prevention schemes discussed above, delivery of intervention programmes by community peers has been well-received across many low- and middle-income countries (Atif *et al.*, 2017; Atif *et al.*, 2016). Regular follow-up of depressed women by community health visitors during pregnancy and postnatally has also been shown to be effective in reducing women's symptoms (Klainin & Arthur, 2009).

During in-depth interviews, women with severe depression described a number of coping mechanisms including speaking to friends, seeking hobbies and religious activities. These might serve as starting points around which to base potential treatment initiatives. Women also welcomed the idea of group counselling sessions, feeling they could “*learn from other women's experiences*”. Sessions organised around a common activity such as weaving or gardening could bring together women with similar experiences, enabling support networks to be established while simultaneously building women's confidence

and skills (Salt et al, 2017). Holding such sessions in community settings could reduce the stigma of attending. Further discussions with affected women and relevant stakeholders are required to develop an appropriate intervention that might be piloted.

The lack of resources is a limitation on the Thai-Myanmar border and across most low-income settings (Atif et al, 2017). However, interventions do not necessarily need to be led by specialists, and much evidence has emerged around the effectiveness of psychosocial interventions delivered by non-specialists (Clarke et al, 2013; Patel, 2017). Peer support and self-help groups can also provide much-needed support (Dennis, 2014), and in low- and middle-income settings in particular, community peers who share the same cultural background and experiences as participants can be a powerful resource (Munodawafa et al, 2017). With appropriate training and on-going supervision and support, women from the migrant community could be trained to lead and deliver psychosocial programmes to the benefit of other women. Run well, peer-led groups also have the benefits empowering the local community, increasing women's sense of ownership, building capacity and promoting long-term sustainability of interventions (Atif et al, 2016).

Despite the stigma surrounding mental disorders, migrant women in this study talked openly about their feelings in a supportive, sensitive and confidential setting. Other studies of Karen populations have reported a similar willingness to discuss sensitive topics (Cook et al, 2015). This is promising, but nevertheless more work is required to further reduce stigma within the general community and increase awareness of mental illness. Conversations around mental illness and awareness-raising activities need to

occur across all sectors of the community including schools, workplaces and the media as well as in healthcare settings (Patel, 2017).

The role of partners in interventions for perinatal depression has received little attention. Partners are an important potential source of both practical and emotional support for women (Dennis, 2014). In this context where much of women's distress is based upon difficult partner relationships, women's views on involving partners in interventions needs to be elicited with care and sensitivity. Provided women agree to it, involving their partners in intervention activities might instil upon partners a greater sense of involvement and responsibility. Engaging men in community-level discussions around alcohol use and domestic violence may also be an effective additional means of shifting perceptions (Meyer et al, 2013). Given the prominence of alcohol use among men in this community, the prevention of alcohol-related morbidity might also have a larger public health impact.

Finally, much of the burden of perinatal depression in this setting appears to be associated with the wider socio-economic conditions of poverty and adversity. Tackling these complex issues requires long-term, multi-sectoral collaboration at national, regional and community levels and should encompass the many sectors impacting on health, including education, employment and access to services (Bambra et al, 2010).

Programmes addressing interpersonal violence, helping women come to terms with past trauma and promoting social networks are needed alongside the primary, secondary and tertiary efforts listed above. The Thai-Myanmar border continues to be a region of social adversity and political tension for migrant populations, and the on-going recent humanitarian crisis within Myanmar has shown that for many displaced communities, a

return to their homeland remains unsafe (BBC News, 2017). Urgent efforts are required by all agents working along the border to meet the significant mental health needs of migrant women in this region. Ultimately, it is the tackling of these broad, social determinants of health that will enable meaningful and sustained improvements in mental well-being to be achieved (Anderson et al, 2017).

8.5.2 *Implications for research*

This study has highlighted a number of priorities for future research. Firstly, future studies of migrant perinatal mental health in low-income countries should include a control group of non-migrant women who are comparable to the migrant group. Depending on the context, the control group might be nationals of the destination country, or women in migrants' country of origin who have not migrated. Control groups are vital in furthering knowledge around whether migrant status confers additional risk to migrant women in low-income settings. Secondly, along similar lines, the lack of reference to pregnancy status in this research led to the speculation that symptoms of perinatal depression in this group may not be related to perinatal status *per se*. Qualitative studies, and studies that include non-perinatal women from the same setting might be helpful to better understand this issue.

Thirdly, while the prevalence of perinatal depression in migrant women has been studied extensively in high-income countries, conditions such as anxiety, post-traumatic stress disorder and psychotic disorders have received scant attention. Given the high co-morbidity between mental disorders, future work would benefit from including a wider range of diagnoses. The inclusion of conditions that might be relevant in low-income settings such as depression NOS and somatoform disorders should also be considered.

Importantly, an additional and specific focus on suicidal ideation independently of depression status should also be considered.

Fourthly, while studies to establish the prevalence and risk are important to better understand the epidemiology of perinatal depression in migrant communities, it is also essential that the research agenda moves beyond this to incorporate the design, piloting and implementation of interventions, along with rigorous evaluations thereof. In this way, changes can occur on the ground that will greatly enhance the experiences of migrant women through the perinatal period.

Finally, qualitative work provides great insight into culture-specific experiences and drivers of perinatal depression. Future qualitative studies might focus also on protective factors including the concept of resilience – an overlooked area within migrant research (Shishehgar et al, 2017). Understanding the factors that help women to cope with and adapt to stressful situations might be able to inform interventions by highlighting helpful activities or behaviours.

8.6 Conclusion

This research highlights the importance of perinatal depression in migrant women in low- and middle-income settings, and emphasises the need to prioritise the mental health needs of this vulnerable group. Perinatal depression represents a significant burden carried by labour migrant and refugee women living on the Thai-Myanmar border, to the detriment of their own health, the well-being of their children and families, and to society in general. Psychosocial factors including interpersonal violence, past trauma and difficult relationships with partners account for much of the risk of perinatal depression,

alongside the difficult life circumstances experienced by migrant women on a daily basis in this setting.

Much work lies ahead. In a world where the drivers of migration show no signs of calming, sustainable and effective methods to identify and treat perinatal depression in migrant populations are urgently needed. The focus of research on migrant mental health must shift from high-income destination countries to low- and middle-income countries, where the bulk of global migration flows occur. Future research should take care to assess mental health status in ways that are culturally sensitive and appropriate.

Improvements in the recognition treatment of perinatal depression require long-term collaborative and cross-sectoral working – a hard task in low-income, migrant situations where political tensions and instability are the norm. The direct involvement of migrant women in the design and implementation of future strategies to prevent and address perinatal depression is core to the success of such programmes. Efforts to better manage perinatal depression must be accompanied by preventative measures to promote mental health and address the wider, social determinants of health. It is only by tackling the complex array of factors impacting upon women's mental health – from experiences of trauma through generalised poverty and unemployment to abusive relationships – that the plight of migrant communities might be improved.

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Appendices

Appendix 1. International media coverage of research

Available from: <http://www.bbc.co.uk/news/magazine-38423451>

Losing hope in Mae La

By Gracia Fellmeth



Image copyright James Connor

On Thailand's border with Myanmar, also known as Burma, more than 100,000 people live in a string of refugee camps. Many fled ethnic conflict in their homeland decades ago, and have brought up their children here. Gracia Fellmeth arrived in one of the camps a year ago to study depression in women before and after childbirth.

After an hour's bus journey through forest from the town of Mae Sot, Mae La appears suddenly, seemingly out of nowhere. In the morning mist, thousands of bamboo huts cling to steep limestone crags.

It is the largest of nine refugee camps along the Thai-Myanmar border, and home to almost 40,000 people. Many residents have spent their entire lives in this isolated place, unable to work and dependent on outside aid. The majority are Karen, one of Myanmar's largest ethnic minorities. It is a Wednesday morning, three months after my arrival, and the dusty waiting room is full. Pregnant women wait patiently to be seen by nurses, midwives and medics. They will have their bellies examined, their blood pressure monitored and their blood screened.



Image copyright Getty Images

Since my arrival, women are also offered a depression screen - a series of 10 questions to look for symptoms of depression, which is common in pregnancy. Our first patient today is 18-year-old Myo Myo. She is nine weeks pregnant. She enters the room, smiling. Lar Paw, a Karen counsellor and midwife I am working with, explains what the interview involves. Myo Myo agrees to take part. We sit down on the bamboo floor and begin.

"In the past month, have you ever felt sad or down for long periods of time?" I ask.

"Sometimes," Myo Myo replies. "We have some family problems. And not enough money."



Image copyright James Connor

Gracia Fellmeth screened many young pregnant women for signs of depression. Calm and composed, she continues her story - a story by now familiar to me. She describes a happy relationship with her husband. Despite his alcohol dependency, he is good to her, she says, and she loves him. They are both happy about the pregnancy. However, there are tensions with her

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mother-in-law, who disapproves of Myo Myo and rebukes her for not contributing to household expenditure.

Suicide is too common in Mae La - last year it accounted for half of all deaths among pregnant women and new mothers

I want to know more about her symptoms. She tells us that the episodes of sadness are short-lived, occurring only once or twice a month and lasting an hour or so.

"Do you ever think about hurting yourself, or about suicide?" I probe.

Myo Myo hesitates.

"Sometimes I think about it, if we have been arguing with my mother-in-law," she admits. She has never attempted suicide though, and assures us she is not planning to.

A quarter of all women we speak to think about suicide at least occasionally. A smaller proportion - about 3% - have made attempts. We lack the resources to follow up all of these patients, so we focus only on those with pronounced thoughts of suicide or severe symptoms of depression.

Myo Myo has other symptoms, too - low energy and "thinking too much" - but they occur only once in a while and do not seem to be out of the ordinary. We don't arrange a follow-up but we tell her to come and talk to us any time, if she wants to share her worries with anyone.



Image copyright Getty Images

Two days later I am on the bus to Mae La when a colleague asks me: "Did you hear about the suicide? A young girl. She was pregnant."

My heart pounds. Was it someone I had interviewed? Someone we had been following up? Or worse, someone we hadn't followed up?

Lar Paw stands outside the clinic waiting for me.

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"Doctor! We have a suicide. Do you remember this patient?" She hands me a file. It is Myo Myo's. I feel shaky. I remember her, and I remember that we had not considered her to be high-risk. Among the hundreds of women we had spoken to, Myo Myo, tragically, had not stood out. "Her husband also. They did it together," Lar Paw continues softly.

A double suicide? I couldn't think straight. We had seen Myo Myo only two days ago. How could this have happened? Had we given her the idea of taking her own life? Was this all my fault?



Image copyright Getty Images

Later that day we go to Myo Myo's home to pay our respects. The family sits quietly. The two bodies lie in the middle of the room under a sheet, surrounded by candles. Two cups wrapped in plastic are lined with a fluorescent blue liquid - remnants of the toxic weed-killer that led the couple to their death.

We sit in silence until Myo Myo's mother-in-law stumbles in, drunk. Myo Myo's sister-in-law shouts at her. "This is all your fault," she sobs.

Later we find out about an altercation that had taken place earlier in the week between Myo Myo's husband and his mother, during which she had slapped him in the face.

The death of this young couple left us deeply saddened, but also troubled. Should we have done more to encourage Myo Myo to put aside her thoughts of suicide? Could we have stopped her?

Had it been the impulsive act of an adolescent in response to a family feud? Had a Buddhist belief in rebirth enticed the couple to leave this world and start a new, better, life together? We will never know.

What we do know is that suicide is too common in Mae La - last year it accounted for half of all deaths among pregnant women and new mothers. What is the explanation? There could be many factors - including chronic uncertainty, hopelessness, boredom, and the legacy of the conflict that led these families to Mae La in the first place.

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Image copyright AFP

The names of the people in this story have been changed

Read [Gracia Fellmeth's report for BMJ Case Reports](#)

BBC
STORIES

Appendix 2. National media coverage of research

Available from <http://www.bangkokpost.com/business/news/1284359/portraits-of-despair>

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with the Mekong Region – EEP Mekong

8th Call for Proposals (CfP8)

EXTENSION OF SUBMISSION DEADLINE

Clean Energy Promotion in the Mekong Region

BUSINESS > BUSINESS NEWS

Portraits of despair

Study sheds light on alarming rise in suicides at Mae La refugee camp on Thai-Myanmar border.

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NEWSPAPER SECTION: ASIA FOCUS | WRITER: ALEXI DEMETRIADI



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The suicide rate at the Mae La camp is more than three times that of the rest of Tak province and five times the average for all of Thailand. Photos Courtesy of the International Organization for Migration

A year ago, Gracia Fellmeth, a public health doctor studying for a PhD at the University of Oxford, was researching depression in women before and after childbirth in Mae La, the largest of the nine refugee camps along the Thailand-Myanmar border.



As part of her research, she asked a number of women whether they had ever had suicidal thoughts, or had attempted suicide in the past. It was an attempt to shed light on an issue that has not received widespread attention, but new revelations of a dramatic upturn in suicides are prompting calls for both understanding and action.

During her time in Mae La, recounted in a report for the British Medical Journal (BMJ), Dr Fellmeth recalls the tragedy of a paired suicide of a young, newly married, pregnant wife and husband in the camp.

The young woman was 18 years old and had described to Dr Fellmeth "episodes of depressed mood and occasional suicidal ideation", but had never previously attempted suicide. Like a growing number within the camp, her husband was "known to use alcohol and drugs".

Not long after the young woman spoke to Dr Fellmeth, she and her husband consumed herbicide, and were found lying together in bed, struggling to breathe and frothing at the mouth. "They were driven to the camp medical clinic, but were pronounced dead on arrival," notes the report.

Exactly what could have caused the suicide of the young couple, and many young refugees in Mae La like them? Dr Fellmeth wrote of the underlying factors plaguing the couple: "Feelings of hopelessness, despair and uncertainty over the future, exacerbated by family conflict, substance abuse and long-term financial insecurity, may have become unbearable for this newlywed, recently pregnant couple at a time in their lives which should have been full of hope and opportunity."

Paired attempts are very rare, but the rising numbers of suicides in Mae La over the last two years has quickly become alarming.

Mae La, established in 1984 in Tak province, is home to about 50,000 refugees, mainly of Karen ethnicity, fleeing religious and ethnic violence in Myanmar. Despite the election of a civilian government led by Aung San Suu Kyi, the road to peace in Myanmar remains a long and difficult one. The Thai and Myanmar governments have expressed hope that as conditions improve in Myanmar, more people can be repatriated from the camps, but emptying them could take years or even decades.

A recent report by the International Organization for Migration (IOM) illustrated the worsening suicide situation in Mae La. In 2014, successful suicides in the camp worked out to 2.31 for every 100,000 people. Last year the ratio jumped to 36.63 per 100,000 people. That compares with just under 11 per 100,000 people in Tak province and a rate of 6.5 in Thailand as a whole, according to figures from the Public Health Ministry.

Such is the sensitivity and complexity of the issue that only recently have in-depth studies taken place to try and document the rise of, and reasons behind, suicides in refugee camps, starting with Mae La.

"It is a longstanding issue and something we know very little about," admits Dana Graber Ladek, chief of mission at IOM Thailand.

The IOM report not only details the suicide rates within the camp, but also seeks to attempt to explain how, and why. Researchers conducted "postmortem interviews", discussions with the family members of someone who has committed or attempted suicide, said Guglielmo Schinina, head of mental health at the IOM. As well, interviews with people who had attempted suicide were used to understand what were the factors, who is most at risk, and how to respond.

It quickly becomes apparent that one common motivation behind the increasing suicides in Mae La doesn't exist. Rather, as IOM psychiatrist Pramod Mohan Shyangwa explains, "distant and proximal factors" -- an underlying cause and then a sudden trigger -- are commonly seen.

It is the underlying long-term themes that set the foundations for further triggers to result in the tragedy of suicide. Sally Thompson, executive director at The Border Consortium (TBC), explains that past traumatic experiences contribute to the underlying causes for suicide. "Every household has witnessed some traumatic events. There are a lot of stories that have been pushed deep down."

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The Mae La camp in Tak province, established in 1984, is home to about 50,000 refugees. International Organization for Migration

Ms Thompson recalled interviewing one woman who said that as a child she witnessed her uncle being thrown off a cliff by the Myanmar army, while her other uncle was arrested and killed in detention. Her husband died of injuries sustained while on the front line and her eldest son was killed by a property developer when he returned home to find land. "She carries that very deep," said Ms Thompson.

The loss of hope exhibited by many refugees in the camp in response to the worsening external situation also contributes to the dramatic increase in suicides. "Hope is very important for life and if there is no hope, there is no enthusiasm for life," said Dr Shyangwa.

Leena Zieger, the co-founder of Burma Link, says new factors are also emerging. "There is an increasing pressure on refugees to return, but the conditions are not there to go back in safety," she told Asia Focus.

A decline in support for the refugees in general has further eroded hope within the camp, she added. "Food ration reductions have been happening constantly since 2012 but also in all kinds of services. Education and health services have been cut down significantly."

The loss of ownership and uncertainty about the future has also contributed to the worsening underlying mood for many of the refugees in Mae La.

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"It was definitely a big factor, it came up a lot in the discussions with the refugees," Dr Fellmeth said. "Not knowing what the future holds. The issues surrounding the refugees are unclear. Some say, 'I just don't know what is happening, not next year or in five years' time.' They have no choice over what is going happen. They find themselves in a state of limbo."

What both the IOM report and Dr Fellmeth's research finds is the importance of understanding the impulsive "triggers" which, on top of the underlying factors, have contributed to the rise of suicides within Mae La.

A rise in alcoholism and substance abuse, which can be attributed also to Mae La's close proximity to Mae Sot, can be understood as an important trigger.

"Substance abuse is a constant element within the suicidal population in Mae La," said Dr Schinina. A large number of individuals in Mae La have turned to easily available drugs and alcohol, which can lead to the proximal factors that cause suicides.

Dr Fellmeth also believes many turn to alcohol and drugs as a support mechanism. "Easy access to drugs and alcohol, easy access to the means of suicide such as toxic herbicides has meant there are a lot of successful attempts."

Family conflict is also significant, says Harry Smith, lead coordinator of the IOM report. "Family conflict was an important factor. Almost half of those who complete suicide had experienced some form of family conflict leading up to it."

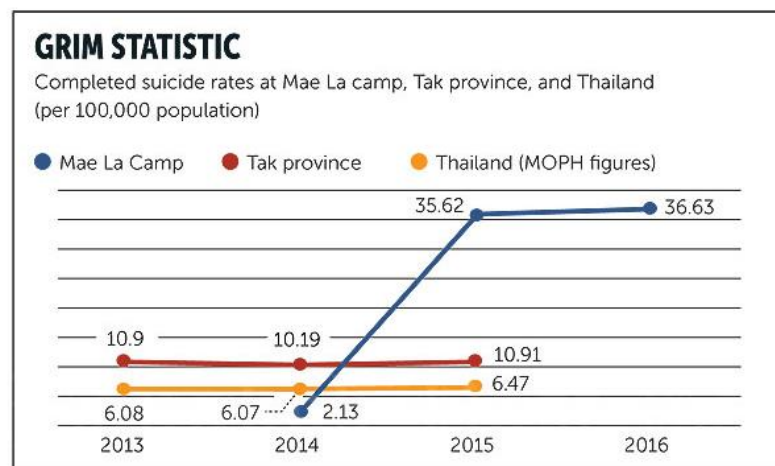
For many, he said, "family makes life worth living", and when this can appear to break down, it can prove to be the trigger cause.

"A strong theme of shame is involved in suicide," said Dr Fellmeth, who elaborated in her report for the BMC Pregnancy and Childbirth Journal.

"One girl I knew killed herself because she had lost some expensive jewellery and felt ashamed when her family was angry with her," she quoted one unnamed refugee as saying.

Dr Fellmeth told Asia Focus of a similar case. A father had borrowed some money he could not repay. "The father heard that the man he owed money to was on his way to his house to collect the money," she recalls. The father did not have the money and, fearful of bringing shame on the family, suddenly hanged himself.

The rise in suicides at Mae La is as saddening as it is complex. The IOM report goes far in explaining the underlying reasons for the spike since 2014, but much more can be learned.



Source: International Organization for Migration,
Thai Ministry of Public Health

BANGKOK POST GRAPHICS

Appendix 3 Regional media coverage of research

Available from: <http://www.refinery29.uk/suicide-myanmar-support-for-women>

Why Refugee Mothers Are Committing Suicide On The Thai-Myanmar Border

Ali McAllister 09 July 2017, 07:25



PHOTO: ALI MCALLISTER
Wang Pha waiting room

Let's play word association. I say, 'epidemic'. You say: Cholera? Malaria? Bubonic plague?

'Suicide' probably hasn't come to mind but that's how Shoklo Malaria Research Unit's (SMRU) professor of tropical maternal and child health, Rose McGready, is describing the situation in Mae La, a 30-year-standing refugee camp on the Thai-Myanmar border.

Last year, 57 cases of suicide and attempted suicide were reported here. The reasons, says McGready, are obvious: psychosocial and socioeconomic pressures and an uncertain future over which people feel they have no control. Mae La's 40,000 inhabitants live with no citizen status, no social security and minimal basic resources. With limited access to education and meaningful employment, they must rely on aid for basic needs.

The situation is troubling for the border's several aid organisations, which are struggling to provide prevention and intervention programmes where human and financial resources are already scant. The challenge is compounded by the fact that mental health is an area of public health little understood by the local community, and a low priority for policymakers. The 'big solution', says McGready, is to talk about it. "We must generate a culture in which people feel comfortable to come forward and [talk about suicide] but currently, we are struggling to meet the target audience of young people."

I spoke to a group of students at a migrant school in the Thai border town of Mae Sot about why they think the epidemic is sweeping the camp, and why prevention programmes are struggling to have an impact. Four of them – Karen refugees from Myanmar's troubled southeastern Kayin state, home to the country's largest ethnic minority and battleground of a 50-year conflict between government and resistance armies – admit to knowing one or more people who have tried to take or have taken their own life inside Mae La refugee camp.

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“She only spoke with me about it after the first time she tried [to commit suicide],” explains 20-year-old Linanna about her friend. “She’d drunk pesticide. I asked her why she’d done it. She said it was because her boyfriend had another girlfriend.”



PHOTO: ALI MCALLISTER

Students from Mae La gather watercress. All of them know someone who has attempted suicide.

Laura, 21, another Mae La inhabitant, talked about a friend who was there one day and gone the next. “I wondered why she was not in the school dormitory – nobody mentioned any reason. Only before the funeral ceremony my mother told me that she’d committed suicide. That was it. She said nothing more. Why was nothing said in school? Where there was potential to offer help to other young people who may be suffering suicidal thoughts?”

Min Min, a Burmese man of 23, offered one reason: “As our grandfathers and mothers felt [suicide] to be shameful, so do we. Also, Burmese people are very shy. We don’t share our problems. Especially mistakes...”

San Thi Dar, a migrant from Myanmar’s capital, Yangon, took a different standpoint, telling me: “There are just so many rules and stigmas in our religion and society that lead people to commit suicide. Especially for women. We feel inferior. For example, pregnancy outside of marriage – think of the shame that our culture imposes on that.” At the base of this complex soup of socioeconomic pressures, stigmatisation, psychosocial trauma and uncertainty, the group of students describe deep-seated cultural mores, such as shame, that make suicide prevention programmes and mental health intervention so difficult to implement among Mae La’s vulnerable population.

There is also talk of the cultural expectations put upon women, such as chastity and domesticity, and how they feel disempowered and ashamed when they don’t live up to them. Which, when combined with the hormonal changes and psychosocial pressures of pregnancy, is causing a shocking ripple effect of pre- and postnatal suicides in Mae La. Last year, suicide accounted for half of all deaths among pregnant women and new mothers.

“During pregnancy and the postnatal period, women deal with biological changes in their bodies that put them at greater risk of developing anxiety or depression,” explains Gracia Fellmeth, DPhil student at Oxford University’s Nuffield Department of Health, who has been researching perinatal mental health in Mae La since 2015. Her study reveals that 17% of perinatal women in Mae La have at one

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point been affected by a common mental disorder. While similar to the UK's 15-20%, the concerning difference lies in their impact. Fellmeth cites the UK's rate of maternal suicide at 0.80 per 100,000 maternal deliveries. Mae La's maternal suicide rate is 20 times that, at 16.4%. Confronted with this fact, SMRU has placed maternity at the heart of suicide prevention efforts on the border.

According to a 2009 World Health Organization literature review, post-mortems of female suicide deaths do not always include an examination of the woman's pregnancy status, meaning that data on exactly how many female suicides are maternity-related is largely unavailable. What numbers do reveal is that in south and east Asia, suicide rates among younger women are up to 25% higher than among their male counterparts. The report claims these are largely setting-related: limited education opportunities, less access to financial resources, restricted autonomy and greater likelihood of being threatened with violence.

As for suicide during pregnancy, the review presumes its causes by comparing the reproductive choices of women in south and east Asia with those of women in the West, where the number of antenatal suicides has greatly declined in the last 50 years, "a change attributed to the increased availability of contraception, affordable and accessible services for termination of pregnancy and reduction in the stigma associated with births to unmarried women."

These speculations and the statistics behind them (or lack thereof) are no surprise. It is in the make-up of our history as women that we are condemned to less choice, less opportunity, less freedom, and it is in matters of sex and reproduction where our voices have been most suppressed. Yet across all cultures, you cannot produce happy and healthy children, and hence a happy and healthy society, if mothers are subjected to emotional and psychological adversity without any hope of access to support. In addition, the best way for the next generation to learn to talk about their feelings is to be raised by mothers who appreciate the importance of mental health.

"Maternal mental health has widespread consequences beyond an individual depression," argues Fellmeth. "Impact on infants includes behavioural difficulties that continue into adulthood." This domino social effect is currently reflected in Mae La, where the question remains ever urgent: how do we prevent more suicides? Intervention will require a non-judgemental environment in which there is no shame attached to attending mental health clinics or therapy sessions – and which does not make demands on already scarce medical resources.

There are just two SMRU antenatal clinics catering for thousands of women in the area. Women arrive at the clinics on mopeds, in the back of pick-up trucks and in long wooden boats where no one asks for visas. Beyond the fast-filling waiting room, wards are partitioned by curtains, containing the hard wooden beds and lino sheets ubiquitous across Myanmar and Thailand. Women young and old sit cross-legged on the benches, some nursing colourfully wrapped bundles, others caressing swollen bellies. The atmosphere is one of a family day out – boxes of food are opened and shared, and gossip exchanged.

I'm allowed to enter a closed-off room where 26-year-old mental health counsellor Aye Mi sits on the floor with a 19-year-old woman and her new baby. Aye Mi translates questions from the standard psychology questionnaire Fellmeth trained her to use, and the young woman answers each question at length without hesitating – not even towards the end, when she is asked, "Have you ever had suicidal thoughts?" When the session is over, the young mother walks out, smiling to herself.

"All the women who come are very open to talk," explains Aye Mi. A migrant herself, she has been working at the clinic for three years, first as a TB counsellor before transferring to mental health last year with Fellmeth's programme. "The work makes me feel happy, but it's hard," she admits, "and not perfect. I need more training and supervision to help diagnose the illnesses."

Continued overleaf

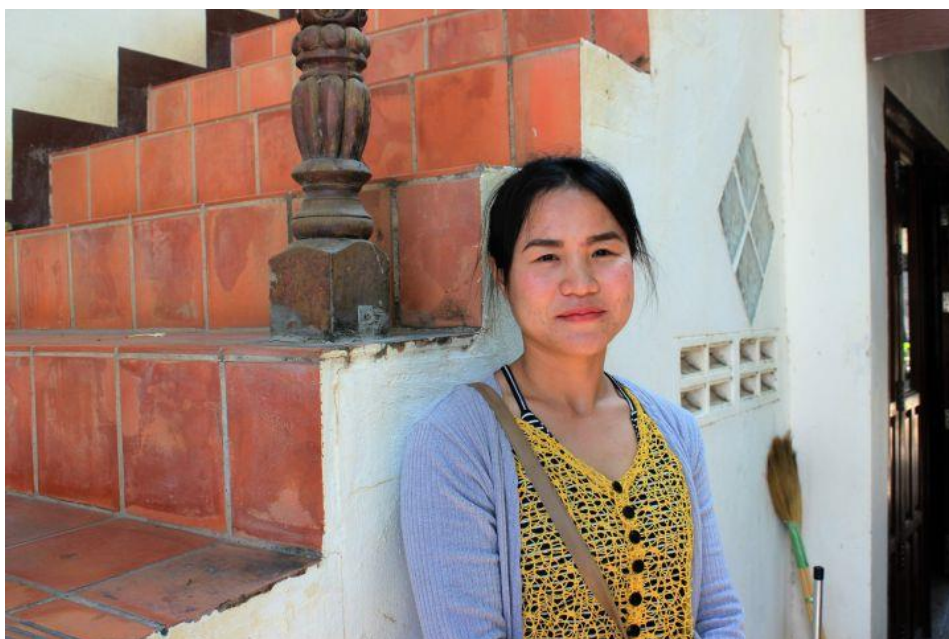


PHOTO: ALI MCALLISTER

Htay Htay, Mae La's only maternal mental health counsellor

This lack of support is a criticism I hear from other maternal mental health counsellors in the programme. 30-year-old Htay Htay, a Karen refugee, who has lived in Mae La for the last 10 years and began her career as a maternal nutritionist, provides the only maternal mental health counselling in the camp. Every day, she sees up to 12 women, each for an hour minimum.

“To give good counselling takes time and I wish I could give it to everyone. If I could train others who wanted to help, I would, but at the moment I don't feel confident.”

The supervision and training deficit is clear. In the past, multiple organisations have offered mental health programming on the border (Mae Tao clinic, Burma Border Projects, Première Urgence – Aide Médicale Internationale) but most of these efforts have been cut significantly or discontinued, due to cultural barriers and lack of funding. As the global humanitarian purse has contracted over the past decade, clinical mental health programmes, including training, have been hard to finance (Fellmeth's work was largely unfunded). The result is that local providers survive on low salaries and face limited opportunities for professional development.

Despite her misgivings, the benefits of Htay Htay's work for the local community are obvious. Six months on from her initial training with Fellmeth, she has widened her remit from the 250 women who participated in Fellmeth's study to include women in general and even their husbands, if they wish. Word is spreading that there is someone who will listen without judgement, and who will understand.

Herein lies the strength of Fellmeth's maternal mental health programme. It is not just about providing psychological screenings and diagnosis but also access to mental healthcare for local people by local people. In this way, the communication barriers that have hindered aid organisations' attempts to intervene can slowly be broken down. Not only is mental health intervention in Mae La and along the border encouraging ordinary people to care for others, it's also empowering the community's women to look after themselves under the most challenging conditions.

Furthermore, the situation presents an important lesson for the society as a whole: that the mental wellbeing of its young mothers is the most obvious indicator of the wellbeing of future generations.

Continued overleaf



PHOTO: ALI MCALLISTER

Karen women cross the river to attend Wang Pha antenatal clinic

Appendix 4. Systematic review data extraction form: prevalence studies

Data Extraction Sheet			
Study reference no.			
Author(s)			
Date of publication			
Title			
Journal			
Methods			
Study design			
Participant selection			
Study dates (duration)			
Study location			
Participants			
Definition of participants			
Definition of comparison group			
Country of origin			
Time since migration			
Assessment tool			
Instrument(s)			
Adequately described?			
Range of possible scores			
Outcome			
Outcomes assessed			
Results			
Participants included	<u>Invited:</u> <u>Participated:</u>	Response rate	
Age			
Time of assessment			
Results			
Adjustment for potential confounders?			
Other factors considered			
Miscellaneous			
Study Conclusions			
Comments from authors			
Funding			
Further references identified			

Appendix 5. Systematic review data extraction form: risk factor studies

Data Extraction Sheet	
Authors	
Date	
Title	
Journal	
Participants	
Setting	
Country of origin	
Definition of participants	
Definition of comparison group	
Time since migration	
Methods	
Methods used	
Associated factors examined	
Results	

Appendix 6. Systematic review data extraction form: intervention studies

Data Extraction Sheet	
Authors	
Date	
Title	
Journal	
Participants	
Setting	
Country of origin	
Definition of participants	
Time since migration	
Intervention	
Description	
Duration / number of sessions	
Method of allocation to intervention / control groups	
Control	
Description	
Outcome assessment	
Outcome(s) assessed	
Instruments used Validated?	
Timing of outcome assessment	
Associated factors examined	
Results	
Participants	<u>Invited:</u> <u>Participated:</u> <u>Response rate:</u> <u>Intervention group:</u> <u>Control group:</u>
Age	
<u>Intervention group:</u> <u>Control group:</u>	

Appendix 7. Systematic review quality assessment: scoring sheet for prevalence and risk factors studies

Authors (Date)			
SELECTION (Maximum 9 stars)		Stars	Comments
1. Definition of pregnancy or PP status	a) Clear definition and all participants assessed at similar stage (**) b) Broad range of pregnancy or PP stages included (*) c) Unclear or no description of pregnancy or PP status (0)		
2. Definition of migration status	a) Clear definition including category and time since migration (**) b) Wide range of migration times included (*) c) No description of migration status (0)		
3. Sample size	a) Justified and satisfactory (*) b) Not justified (0)		
4. Representative sample	a) Truly representative of the average in the target population (all subjects or random sampling) (**) b) Somewhat representative of the average in the target population (non-random sampling) (*) c) Selected group of users or no/unclear description of the sampling strategy (0)		
5. Representative controls	a) Comparable to cases (drawn from same population as cases) (*) b) Not comparable to cases (drawn from different population) (0)		
6. Non-respondents	a) Response rate satisfactory and comparability between respondents/non-respondents established (**) b) Response rate satisfactory but comparability between respondents/non-respondents unclear (*) c) Response rate unsatisfactory/unclear and comparability unclear (0)		
COMPARABILITY (Maximum 1 star)			
7. Participants are comparable	a) Study controls for age and socio-economic factors (or a proxy thereof, e.g. income, education) (*) b) Study does not control for any confounding factors (0)		
OUTCOME (Maximum 4 stars)			
8. Assessment of outcome	a) Objective (e.g. tool, structured interview) (*) b) Subjective (e.g. self-report, unstructured interview) or unclear (0)		
9. Assessment of risk factors	a) Clearly described (*) b) Not described or unclear (0)		
10. Outcome measurement tool	a) Tool validated in this study population (**) b) Tool not validated in this study population but available and/or adequately described (*) c) No description of measurement tool (0)		
11. Risk factor measurement tool	a) Validated tool (*) b) Non-validated tool (0)		

Table continued overleaf

12. Statistical analysis (prev)	a) Clear, appropriate results complete with CI/p-value (*) b) Unclear, inappropriate or incomplete (0)		
13. Statistical analysis (RFs)	a) Clear, appropriate results (odds ratios or proportions for each group) with CI/p-value (*) b) Unclear, inappropriate or incomplete results (0)		
TOTAL SCORE			
Additional comments			

Note: red denotes additional scoring for case-control studies

Appendix 8. Systematic review quality assessment: scoring criteria for prevalence and risk factor studies

Domain	Score	Explanation
SELECTION		
1. Definition of pregnancy or post-partum status	**	Clear definition with all participants assessed at same time point (e.g. all women interviewed 6-8 weeks post-partum)
	*	Definition provided but broad range of timing (e.g. women included if they were between 0 and 12 months post-partum)
	0	No description of pregnancy or post-partum status provided
2. Definition of migration status	**	Clear definition of migration categories (e.g. asylum seekers, refugees, immigrants) and time since migration (e.g. time in host country less than 5 years)
	*	Definition provided but broad time period (e.g. migration time ranged between 1 and 20 years; mix of 1 st and 2 nd generation migrants)
	0	No clear definition of migration status or time since migration
3. Sample size	*	Power analysis calculation carried out
	0	No power analysis calculation
4. Representativeness of participants	**	Participants are truly representative of migrant community as a whole (e.g. from a range of migration categories and background characteristics)
	*	Participants represent a certain group within the migrant community (e.g. asylum-seekers from one particular country only)
	0	Participants are atypical of the migrant community
5. Non-respondents	**	Response rate >60% and no significant differences in characteristics of respondents and non-respondents
	*	Response rate >60% but unclear if the characteristics of respondents and non-respondents are the same
	0	Response rate <60% or unclear and unclear if characteristics of respondents and non-responders are the same
Comparability		
6. Comparable participants	*	Study controls for age and socio-economic factors or a proxy thereof, e.g. income, education, occupation
	0	No controlling factors considered
Outcome		
7. Were outcomes assessed appropriately?	*	Objective measurement (e.g. structured interview or diagnostic tool)
	0	Subjective measurement (e.g. self-report, unstructured interview) or unclear
8. Measurement tool used	**	Validated and widely accepted tool used (e.g. EPDS, SF-36, CES-D)
	*	Tool that has had limited/small-scale validation study (e.g. authors' own scale); tool not validated in this study population but available or adequately described
	0	Non-validated tool (e.g. authors' own unstructured questions) or no description
9. Was the statistical analysis clear, appropriate and complete?	*	Statistical test clearly described and appropriate, and measurement of association presented with CI or p-values
	0	Statistical test not appropriate, not described or incomplete

Appendix 9. Structured Clinical Interview for the Diagnosis of DSM-IV Disorders (SCID): Burmese



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Thailand, Tel: +66 55 545 021

MLA ☐ / MKT ☐ / WPA ☐ _____
Study Code __ - ____

Mental Health Study: 2nd Trimester Structured Clinical Interview (SCID)

1. In the last month, have you felt depressed, sad, low mood?

If yes, why? How often? How long did it last?

၁. ပြီးခဲ့တဲ့လမှာ စိတ်ဝင်တက်ခြင်း၊ ဝမ်းနည်းခြင်း၊ မပျော်မရွှင်ခြင်းများ သင်ခံစားရပါသလား။ အကယ်၍ ခံစားရတယ်ဆိုပါက၊ ဘာကြောင့်ဖြစ်သလဲ။ ဘယ်လောက်ခံစားရသလဲ။ တစ်ခါဖြစ်ရင် ဘယ်လောက်ကြာသလဲ။

2. Have you felt that you lost interest or pleasure?

If yes, why? How often did it happen? How long did it last?

၂. စိတ်ဝင်စားမှု (သို့) ပျော်ရွှင်ကြည်နူးမှု ပျောက်ဆုံးခြင်းကို သင်ခံစားရပါသလား။ ခံစားရတယ်ဆိုပါက၊ ဘာကြောင့်ဖြစ်သလဲ။ ဘယ်လောက်တစ်ခါဖြစ်သလဲ။ တစ်ခါဖြစ်ရင် ဘယ်လောက်ကြာသလဲ။

3. How was your appetite?

Are you eating more or less than normal? How long has it been for? Any weight loss/gain?

၃. သင်၏အစားအသောက်အခြေအနေ ဘယ်လိုရှိသလဲ။ အစားအစာကို ပုံမှန်ထက်ပို၍ (သို့) လျော့နည်း၍ စားနေသလား။ အဲဒီလိုဖြစ်နေတာ ဘယ်လောက်ကြာနေပြီလဲ။ နွေ့ကိုယ်အလေးချိန် ကျဆင်းလာသလား / တိုးလာသလား။

4. How was your sleeping?

Do you have any problems falling asleep? Do you wake up in the night? Are you sleeping more than normal?

၄. သင်၏အိပ်စက်ခြင်းကော ဘယ်လိုနေပါသလဲ။ အိပ်မောကျရန်အတွက် မည်သည့်အခက်အခဲ/ပြဿနာများရှိပါသလဲ။ ညဘက်တွင် အိပ်ယာနိုးလာသလား။ ပုံမှန်ထက်ပို၍ သင် အိပ် စက်ပါသလား။

Continued overleaf

5. Did you ever feel restless or unable to sit still?

If yes, how often does this happen?

၅. သင်သည်လက်မချိတ်ခြင်း(သို့) အငြိမ်မနေနိုင်ခြင်းများခံစားရပါသလား။ ခံစားရတယ်ဆိုပါက ဘယ်လောက်ကြာကြာတစ်ကြိမ်သလဲ။

6. What was your energy like?

Did you feel tired all the time? How often and how long did it last?

၆. အားအင်ပြည့်ဝတယ်လို့ခံစားရပါသလား။

တချိန်လုံးမော့ပန်းနွမ်းနယ်မှုကို ခံစားနေရသလား။ ဘယ်လောက်တစ်ကြိမ်သလဲ။ တစ်ခါဖြစ်လျှင် ဘယ်လောက်ကြာသလဲ။

7. Did you ever feel worthless or that you were a burden to other people?

If yes, what made you feel like this? How often did it happen?

၇. သင့်ကိုယ်သင်တန်ဖိုးမရှိသူ/အသုံးမကျသူ(သို့)သင်သည်အခြားသူများအားဝန်ထုပ်

ဝန်ပိုးဖြစ်စေသည်ဟုခံစားဖူးပါသလား။ခံစားဖူးပါကမည်သည့်အရာကသင်အား ခံစားမှုကိုဖြစ်စေသလဲ။ ဘယ်လောက်ကြာကြာတစ်ကြိမ်သလဲ။

8. Did you ever have difficulty concentrating?

If yes, how often did it happen? How long did it last?

၈. သင်သည်အာရုံစိုက်မှုတွင်အခက်အခဲရှိခဲ့ပါသလား။ရှိခဲ့သည်ဆိုပါကဘယ်လောက်ကြာကြာတစ်ကြိမ်သလဲ။တစ်ခါဖြစ်လျှင် ဘယ်လောက်ကြာသလဲ။

9. Do you ever think about suicide?

If yes, when do you think about it? How often? Did you ever try to do it? What stops you?

၉. ကိုယ့်ကိုယ်ကိုသတ်သေရန်စဉ်းစားဖူးပါသလား။စဉ်းစားဖူးပါကမည်သည့်အချိန်တွင်

စဉ်းစားသလဲ။ဘယ်လောက်ကြာကြာတစ်ကြိမ်စဉ်းစားသလဲ။လုပ်ဖို့ကြိုးစားခဲ့ဖူးသလား။ မလုပ်ခြင်းအောင် မည်သည့်အရာက သင့်အား တားဆီးသလဲ။

10. Did you feel you could cope with your normal work and take care of things at home?

If no, what can you not cope with? How often does it happen?

၁၀. သင်၏ပုံမှန်အလုပ်နှင့်သင့်အိမ်ရှိအရာဝတ္ထုပစ္စည်းများကိုထိန်းသိမ်းစောင့်ရှောက်ခြင်း

လုပ်နိုင်သေးတယ်ဟုခံစားခဲ့ဖူးသလား။မလုပ်နိုင်ဟုခံစားရပါကဘယ်အရာကိုသင်မလုပ်နိုင်တာလဲ။ ဘယ်လောက်ကြာကြာတစ်ကြိမ်သလဲ။

Thailand. Tel: +66 55 545 021

MLA ☐ MKT ☐ WPA ☐ _____ Study Code _-____ Date __/__/__ EGA __/__/__

[illegible][illegible][illegible][illegible]

နယ်တိုင်းတစ်ခုတည်းအားလုံးတို့အသေးအမွေးကတိုအခါခါလွန်(ပေးတို့လွန်)

မုန့်တုတ်တုတ်လေးနုလေးတုံးလေးတုံးထိတိမီ၊ တစ်အံ့ကဲထိတိ အသားအစေးကတိတိအခါဖဲလဲဉ် (ပဲလှော်) ဒီးယံဉ်ဖဲထဲလဲဉ်.

မူဆရာတော်လေးနဲ့ပတ်သက်တဲ့အကြောင်းအရာများကိုအသိအမြင်အားဖြည့်ဆည်းပေးရန်အတွက် နေ့စဉ်အသံထွက်နေပါမည်။

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8. Did you ever have difficulty concentrating?

If yes, how often did it happen? How long did it last?

လေးနှလေးကစားဝေး၊လေးတင်တင်မင်းအင်္ဂါမှန်အိပ်နိုးတင်ကတိဝဲတင်တိုတိုစွဲကီးခါ၊

နတင်ကတိဝဲမှန်အိပ်တင်ဖူး၊တင်အင်္ဂါတိုအလေးအဝေးကတိဝဲအခါဝဲလဲလဲ(ပွဲတိုလဲလဲ)နီးယပ်ဝဲလဲလဲလဲ.

9. Do you ever think about suicide?

If yes, when do you think about it? How often? Did you ever try to do it? What stops you?

မှန်တင်စိကမိပ်ပဲအိပ်တိုလေးနကမလဲလဲလေးနှလေးအိပ်တင်တိုစွဲကီးခါ၊

မှန်အိပ်နွှပ်၊နစိကမိပ်တင်ယတင်ဂါအင်္ဂါအဝေးကတိဝဲလဲလဲ.ပွဲတိုလဲလဲ.မှန်ကရူးစားမကွဲတင်တိုစွဲကီးခါ.တင်မနုလေးအမလတင်ကွဲနလဲလဲ.

10. Did you feel you could cope with your normal work and take care of things at home?

If no, what can you not cope with? How often does it happen?

မှန်စိကမိပ်လေးနမနတင်ဖဲတင်မနဲညီနီအမိးနီးကွဲလဲပဲလဲယတင်ဖဲတင်မလေးပဲလဲလဲ,နီစွဲကီးခါ.

မှန်တလဲတင်တင်,တင်မနုလေးနမတလဲတင်နွှပ်လဲလဲ.ကဲတိုအလေးအဝေးကတိဝဲအခါဝဲလဲလဲ(ပွဲတို).

Appendix 11. Edinburgh Postnatal Depression Scale (EPDS)

Edinburgh Postnatal Depression Scale¹ (EPDS)

Name: _____ Address: _____

Your Date of Birth: _____

Baby's Date of Birth: _____ Phone: _____

As you are pregnant or have recently had a baby, we would like to know how you are feeling. Please check the answer that comes closest to how you have felt **IN THE PAST 7 DAYS**, not just how you feel today.

Here is an example, already completed.

I have felt happy:

- ☐ Yes, all the time
☒ Yes, most of the time This would mean: "I have felt happy most of the time" during the past week.
☐ No, not very often Please complete the other questions in the same way.
☐ No, not at all

In the past 7 days:

- | | |
|---|--|
| 1. I have been able to laugh and see the funny side of things
☐ As much as I always could
☐ Not quite so much now
☐ Definitely not so much now
☐ Not at all | *6. Things have been getting on top of me
☐ Yes, most of the time I haven't been able to cope at all
☐ Yes, sometimes I haven't been coping as well as usual
☐ No, most of the time I have coped quite well
☐ No, I have been coping as well as ever |
| 2. I have looked forward with enjoyment to things
☐ As much as I ever did
☐ Rather less than I used to
☐ Definitely less than I used to
☐ Hardly at all | *7. I have been so unhappy that I have had difficulty sleeping
☐ Yes, most of the time
☐ Yes, sometimes
☐ Not very often
☐ No, not at all |
| *3. I have blamed myself unnecessarily when things went wrong
☐ Yes, most of the time
☐ Yes, some of the time
☐ Not very often
☐ No, never | *8. I have felt sad or miserable
☐ Yes, most of the time
☐ Yes, quite often
☐ Not very often
☐ No, not at all |
| 4. I have been anxious or worried for no good reason
☐ No, not at all
☐ Hardly ever
☐ Yes, sometimes
☐ Yes, very often | *9. I have been so unhappy that I have been crying
☐ Yes, most of the time
☐ Yes, quite often
☐ Only occasionally
☐ No, never |
| *5. I have felt scared or panicky for no very good reason
☐ Yes, quite a lot
☐ Yes, sometimes
☐ No, not much
☐ No, not at all | *10. The thought of harming myself has occurred to me
☐ Yes, quite often
☐ Sometimes
☐ Hardly ever
☐ Never |

Appendix 12. Patient Health Questionnaire (PHQ-9)

PATIENT HEALTH QUESTIONNAIRE-9 (PHQ-9)				
Over the <u>last 2 weeks</u> , how often have you been bothered by any of the following problems? (Use "✓" to indicate your answer)	Not at all	Several days	More than half the days	Nearly every day
1. Little interest or pleasure in doing things	0	1	2	3
2. Feeling down, depressed, or hopeless	0	1	2	3
3. Trouble falling or staying asleep, or sleeping too much	0	1	2	3
4. Feeling tired or having little energy	0	1	2	3
5. Poor appetite or overeating	0	1	2	3
6. Feeling bad about yourself — or that you are a failure or have let yourself or your family down	0	1	2	3
7. Trouble concentrating on things, such as reading the newspaper or watching television	0	1	2	3
8. Moving or speaking so slowly that other people could have noticed? Or the opposite — being so fidgety or restless that you have been moving around a lot more than usual	0	1	2	3
9. Thoughts that you would be better off dead or of hurting yourself in some way	0	1	2	3

FOR OFFICE CODING 0 + _____ + _____ + _____
=Total Score: _____

If you checked off any problems, how difficult have these problems made it for you to do your work, take care of things at home, or get along with other people?

Not difficult at all	Somewhat difficult	Very difficult	Extremely difficult
☐	☐	☐	☐

Appendix 13. Refugee Health Screener (RHS-15): Burmese

ID# / နိုင်ငံသားမှတ်ပုံတင်နံပါတ်:

ဒုက္ခသည်ကျန်းမာရေးစစ်သပ်မှု- ၁၅
REFUGEE HEALTH SCREENER-15 (RHS-15)



DATE / ရက်စွဲ:

လမ်းညွှန်ချက်များ - ရောဂါပြုလက္ခဏာတစ်ခုစီ၏ဘေးတွင်ရှိသည့် ဇယားပြကော်လံကိုအသုံးပြုပြီးသင့်ကိုလွန်ခဲ့သည့်လတွင် မည်သည့် ရောဂါလက္ခဏာစုက မည်မျှအဆင့်အထိအနှောင့်အယှက်ပေးခဲ့သည်ကိုကျေးဇူးပြု၍တင်ပြပါ။ သင့်လျော်သောအကွက်ထဲတွင်အမှတ်ရေးခြစ်ပေးပါ။ သင့်ကိုသင့်ရောဂါပြုလက္ခဏာ ကလွန်ခဲ့သည့်လ တွင် အနှောင့်အယှက်မပေးခဲ့လျှင်၊ “လုံးဝမရှိ” ကိုဝိုင်းပါ။

INSTRUCTIONS: Using the scale beside each symptom, please indicate the degree to which the symptom has been bothersome to you over the past month. Place a mark in the appropriate column. If the symptom has not been bothersome to you during the past month, circle “NOT AT ALL.”

ရောဂါလက္ခဏာများ SYMPTOMS	လုံးဝမရှိ NOT AT ALL	အနည်းငယ် A LITTLE BIT	အသင့်အတင့် MODERATELY	နည်းနည်းများ QUITE A BIT	အလွန်များ EXTREMELY
၁။ ကြွက်သား၊ အရိုး၊ အဆစ် နာခြင်း 1. Muscle, bone, joint pains	၀ 0	၁ 1	၂ 2	၃ 3	၄ 4
၂။ စိတ်ဓါတ်ကျ၊ ဝမ်းနည်း၊ သို့မဟုတ် ဝမ်း နည်းကြေကွဲမှုများ အများအားဖြင့်စားရခြင်း။ 2. Feeling down, sad, or blue most of the time	၀ 0	၁ 1	၂ 2	၃ 3	၄ 4
၃။ အလွန်စဉ်းစားခြင်း သို့မဟုတ် အတွေးများခြင်း 3. Too much thinking or too many thoughts	၀ 0	၁ 1	၂ 2	၃ 3	၄ 4
၄။ ကူညီမှုမရှိတော့ဟုခံစားရခြင်း 4. Feeling helpless	၀ 0	၁ 1	၂ 2	၃ 3	၄ 4
၅။ အကြောင်းမရှိပဲရုတ်တရက်ကြောက်ရွံ့ထိတ်လန့်သည် 5. Suddenly scared for no reason	၀ 0	၁ 1	၂ 2	၃ 3	၄ 4
၆။ သတိမေ့မောခြင်း၊ မူးနှောက်ရီဝေခြင်း၊ သို့မဟုတ် အားနည်းခြင်း 6. Faintness, dizziness, or weakness	၀ 0	၁ 1	၂ 2	၃ 3	၄ 4
၇။ ထိတ်လန့်တုန်လှုပ်ချောက်ခြားခြင်း သို့မဟုတ် ကိုယ် တွင်း၌တုန်ရီခြင်း 7. Nervousness or shakiness inside	၀ 0	၁ 1	၂ 2	၃ 3	၄ 4
၈။ ကစားမပြိုင်သလိုခံစားရခြင်း၊ နေမထိထိုင်မသာဖြစ်ခြင်း 8. Feeling restless, can't sit still	၀ 0	၁ 1	၂ 2	၃ 3	၄ 4
၉။ အငိုလွယ်ခြင်း 9. Crying easily	၀ 0	၁ 1	၂ 2	၃ 3	၄ 4

Continued overleaf

အောက်ပါရောဂါလက္ခဏာများမှာ စစ်ပွဲများနှင့်ပြောင်းရွှေ့စဉ်ကရလာသော ကြောက်မက်ဖွယ်ရာ အတွေ့အကြုံများနှင့်ပတ်သက်သော အတွေ့အကြုံများ ဖြစ်သည်။ လွန်ခဲ့သည့်လတွင်-

The following symptoms may be related to traumatic experiences during war and migration. How much in the past month have you:

					
ရောဂါလက္ခဏာများ SYMPTOMS	လုံးဝမရှိ NOT AT ALL	အနည်းငယ် A LITTLE BIT	အသင့်အတင့် MODERATELY	နည်းနည်းများ QUITE A BIT	အလွန်များ EXTREMELY
၁၀။ သင့် ကိုယ်/စိတ်ကြောင့်ဖြစ်ပေါ်လာသောစိတ်ဖိစီးမှု ဖြစ် ရပ်များနှင့်ပတ်သက် သည့်အတွေ့အကြုံများကို ပြန်လည်ဖြစ်ပျက်သလိုမျိုးမြင်တွေ့ ရသလား သို့မဟုတ် ခံစားခဲ့ရပါသလား။	၀	၁	၂	၃	၄
10. Had the experience of reliving the trauma; acting or feeling as if it were happening again?					
၁၁။ သင် ကိုယ်/စိတ်ကြောင့်ဖြစ်ပေါ်လာသောစိတ်ဖိစီးမှုဖြ စ်ရပ်များ ပြန်တွေ့မိ သည့်အခါ သင့် ခန္ဓာကိုယ်တုံ့ပြန်မှု (ဥပမာ - ဇောရွေးပြန်၊ နှလုံးခုန်နှုန်းမြန်) တစ်ခုခုဖြစ်ခဲ့ပါသလား။	၀	၁	၂	၃	၄
11. Been having physical reactions (for example, break out in a sweat, heart beats fast) when reminded of the trauma?					
၁၂။ သင်ခံစားမှုမရှိသကဲ့သို့အရမ်းဝမ်းနည်းကြေကွဲ (ဥပမာ - ဝမ်းနည်းပေမယ့်ငိုလို မရ၊ ချစ်စိတ်မပေါ်လာ မှု) ရသလိုမျိုးခံစားမိခဲ့သလား။	၀	၁	၂	၃	၄
12. Felt emotionally numb (for example, feel sad but can't cry, unable to have loving feelings)?					
၁၃။ သင်လန့်ခုန် သို့မဟုတ် လန့်ဖျပ်လွယ်ခဲ့သလား။ (ဥပမာ၊ သင်လမ်းလျှောက်နေစဉ် တစ်ဦးဦး က သင့်နောက်ဘက်မှနေ၍ပုတ်လိုက်ခြင်း)	၀	၁	၂	၃	၄
13. Been jumpier, more easily startled (for example, when someone walks up behind you)?					

Continued overleaf

၁၄။ အောက်ပါအဖြေများမှ အကောင်းဆုံးအဖြေတစ်ခုကို ဝိုင်းထားပါ။ သင်အောက်ပါကဲ့သို့ခံစားရသည်-

14. Circle the one best response below. Do you feel that you are:

မည်သည့်အရာမဆိုကိုကိုင်တွယ်ဖြေရှင်း (ရင်ဆိုင်) နိုင်သည် Able to handle (cope with) anything	၀ 0
အများအားဖြင့်ကိုင်တွယ်ဖြေရှင်း (ရင်ဆိုင်) နိုင်သည် Able to handle (cope with) most things	၁ 1
ကျွန်ုပ်တို့သိသနားသောအရာတစ်ချို့ကိုကိုင်တွယ်ဖြေရှင်း (ရင်ဆိုင်) နိုင်ပေမယ့်အခြားအရာတစ်ချို့ကို မရင်ဆိုင်နိုင်ပါ။ Able to handle (cope with) some things, but not able to cope with other things	၂ 2
ကျွန်ုပ်တို့သိသနားသောအရာများကိုအများအားဖြင့်မရင်ဆိုင်နိုင်ပါ။ Unable to cope with most things	၃ 3
ကျွန်ုပ်တို့သိသနားသောမည်သည့်အရာမဆိုမရင်ဆိုင်နိုင်ပါ။ Unable to cope with anything	၄ 4

Add Total Score of items 1-14

၁၅။ စိတ်ဖိစီးမှုတိုင်းသာမီမီတာ ၁၅။

15. Distress Thermometer



လွန်ခဲ့သောအပတ်မှ ယနေ့အ တွင်း သင့်ခံစားခဲ့ရသော သင့်စိတ်သောက နှင့်အနီးစပ်ဆုံးကိုကညီသောနံပါတ်ကို ဖော် ပြပါအတိုင်း (၀ မှ ၁၀) အတွင်းဝိုင်းပေးပါ။

Please circle the number (0-10) that best describes how much distress you have been experiencing in the past week, including today.

SCORING SCREENING IS POSITIVE IF: ① ITEMS 1-14 IS ≥ 12 OR ② DISTRESS THERMOMETER IS ≥ 5

CHECK ONE: ☐ POSITIVE ☐ NEGATIVE

☐ SELF-ADMINISTERED ☐ NOT SELF-ADMINISTERED

Appendix 14. Participant Information Sheet: English version

Study Title: Depression in pregnant and post-partum migrant women on the Thai-Myanmar border: a validation, prevalence and risk factor study

Participant Information Sheet

09/12/2015

Purpose of the study

Thank you for agreeing to participate in this research. The purpose of the research is to test a questionnaire that looks for signs of depression, to find out how common depression is and to look for factors related to depression. These questionnaires we will use have never been used in pregnant migrant women living around Mae Sot on the Thai-Myanmar border. If we find that the questionnaire works well then it could be used on every pregnant woman attending antenatal clinics to find out whether she may have depression. If a woman has signs of depression, a doctor at Shoklo Malaria Research Unit (SMRU) can offer her treatment to make her feel better.

Content of the study

If you choose to participate, we will ask you to complete an interview about your mental health three times during pregnancy (1st, 2nd and 3rd trimester) and four times post-partum (4-6 weeks, 3 months, 6 months, 9 months and 12 months). This interview will ask in more detail about how you are feeling and your general well-being. This will take about 20-30 minutes. At the first visit only, we will also ask you to complete a questionnaire called the Refugee Health Screener-15 (RHS-15). The RHS-15 includes 15 questions about your mood, symptoms of depression and some questions about your physical health. This will take about 10 minutes to complete. We hope that the total time of the interviews will be no more than 30-40 minutes.

Following delivery, we would also like to follow-up your baby. At birth, we would like to measure their weight and length. At 3, 6, 9 and 12 months of age we would like to measure their weight and length again, and assess their physical, social and emotional development. This will involve asking you questions about your baby's behaviour and assessing whether your baby can do certain physical actions (e.g. lifting his/her head; rolling over; sitting upright). These actions will not be painful. Should your baby become distressed at any time we will terminate the assessment.

Confidentiality

We will speak to each participant individually in a private room near the ANC waiting room. We will not share information you have provided us with anyone else, unless you ask us to. We will not record your name on any of our study papers. Instead we will use numbers to identify each participant. In this way, everything you say will remain anonymous.

Participation

Your participation is entirely voluntary. You may decide now or at any time during the study that you no longer want to participate, or that you do not want your child to be included in the study. You and/or your child can leave the discussion at any time without providing a reason for leaving and with no consequences on your care. You will receive a package of soap, talcum powder and toothpaste at each visit to say thank you for taking part.

Complaints

If you wish to complain about any aspect of the way in which you have been approached or treated during the course of this study, please contact Dr Rose McGready (rose@shoklo-unit.com) or Dr Gracia Fellmeth (gracia.fellmeth@dph.ox.ac.uk; 096 752 2826).

Appendix 15. Participant Information Sheet: Burmese version



Shoklo Malaria Research Unit
P.O. Box 46, Mae Sot, Tak 63110
Thailand, Tel: +66 55 545021

MLA ☐ / MLA ☐ / WPA ☐ - -----

ပါဝင်သူများအား အသိပေးအကြောင်းကြားစာလွှာ (Participant Information Sheet)

အဓိကသုတေသီအမည်။ ။ Dr. Gracia Fellmeth
သုတေသနပြုမည့်နေရာများ။ ။ SMRU Antenatal Clinic at Mae La, Wang Pa, Mawker Thai
ငွေကြေးထောက်ပံ့သည့်အဖွဲ့အစည်း။ ။ University of Oxford
ကျင့်ဝတ်ပိုင်းဆိုင်ရာတာဝန်ရှိသည့်အဖွဲ့အစည်း။ ။ TCAB -6/2/2015, TMEC 15-045 OXTREC 28-15

၁- သုတေသနပြုမည့်စစ်ဆေးခြင်း

ထိုင်း-မြန်မာနယ်စပ် တွင်ရှိသောရွှေ့ပြောင်းကိုယ်ဝန်ဆောင်အမျိုးသမီးများအတွက် စိတ်ပိုင်းဆိုင်ရာ ကျန်းမာရေးစစ်တမ်းလွှာများ။

၂- ဧလုလာမူ၏နောက်ခံသတင်းအချက်အလက်များနှင့် သုတေသနပြုလုပ်ရခြင်း၏ရည်ရွယ်ချက်
စိတ်ဓါတ်ကျခြင်းသည် ကိုယ်ဝန်ဆောင်ချိန်တွင်အတွေ့ရများသောအခြေအနေတစ်ခုဖြစ်သည်။
စိတ်ကျရောဂါ ခံစားရသော အမျိုး သမီးများ ကြုံတွေ့ရသောလက္ခဏာများမှာ ဝမ်းနည်းကြေကွဲခြင်း၊
အချိန်တိုင်းငိုနေခြင်းနှင့်စားချင်သောကိစ္စစိတ်မရှိ ခြင်း တို့ဖြစ်ပါသည်။ ဤသုတေသန ဧလုလာမူ
ပြုလုပ်ရခြင်း၏ရည်ရွယ်ချက်မှာ စိတ်ကျရောဂါလက္ခဏာ ရှာဖွေ ရန် မေးခွန်းနှစ်စုံကို စမ်းသပ် အသုံးပြုခြင်း
ဖြစ်ပါသည်။ အကယ်၍ ဤမေးခွန်းများအသုံး ဝင်ခဲ့ပါက အနာဂါတိတွင် ဆေးခန်းသို့ကိုယ်ဝန်အပ်သော
အမျိုးသမီးများအားလုံးအား စိတ်ကျရောဂါရှိမရှိ စစ်ဆေးရန် အသုံးပြုပါမည်။၎င်းမေးခွန်းများသည် စိတ်ကျ
ရောဂါခံစားနေရသောအမျိုးသမီးများ (သို့) စိတ်ကျရောဂါ ဖြစ်နိုင်ချေရှိသော အမျိုးသမီးများအား ရှာဖွေ
ဖော်ထုတ်နိုင်ရန်အတွက်အထောက်အကူ ပြုနိုင်မည်ဖြစ်သည်။ သို့မှသာ စိတ်ကျရောဂါလက္ခဏာ များ
လျော့နည်းစေရန် (သို့) စိတ်ကျရောဂါမဖြစ်ပွားစေရန် ကြိုတင် ကာကွယ်ရန် ထောက်ပံ့မှုနှင့် ကုသမှု
ပေးနိုင်မည်ဖြစ်သည်။

SMRU သည် ဘန်ကောက်မြို့ရှိ Mahidol တက္ကသိုလ် နှင့် အင်္ဂလန်နိုင်ငံရှိ Oxford တက္ကသိုလ် တို့
အတူတကွ လုပ်ဆောင်ပါသည်။ SMRU တွင်ရှိသောဆရာဝန်များနှင့် သားဖွားဆရာမများသည် သင့်အား
ကူညီပါမည်။ သူတို့အားအချိန်မရွေးဆက်သွယ်နိုင်ပါသည်။

၃- ဘာကြောင့်ကျွန်ုပ်တို့ ဖိတ်ကြားခြင်းကို ခံရသနည်း။

အဘယ်ကြောင့်ဆိုသော် သင်သည် ကျန်းမာသောကိုယ်ဝန်ဆောင်အမျိုးသမီးတစ် ယောက်ဖြစ်ပြီး၊ SMRU
၏ကိုယ်ဝန်ဆောင်မိခင်စောင့်ရှောက်ရေးတွင် စောစောစီးစီးကိုယ်ဝန်အပ်ထားသည့်အပြင် SMRU တွင်
မွေးဖွားရန် အစီအစဉ်ရှိသော အသက် ၁၈နှစ်ကျော်ပြီး ဖြစ်သောကြောင့်ဖြစ်ပါသည်။ ကျွန်ုပ်တို့သည်
စုစုပေါင်း ကိုယ်ဝန်ဆောင် ၃၇၀ဦး ကို သုတေသန ဧလုလာမူတွင်ထည့်သွင်းပါမည်။

၄- ပါကို ပါဝင်ရမှာလား။

ဤ သုတေသန ဧလုလာ မူ တွင် သင်မပါဝင်လိုပါက မပါဝင်ဘဲနေနိုင်သည်။ သင်၏ ပါဝင်မှုသည်
မိမိသဘောဆန္ဒ အလျောက်ဖြစ်ပါသည်။ သင်မဆုံးဖြတ်မှီသိလိုသောအချက်အလက်များကို

Burmese Translation: Validation of PHQ-9 and RH5-15 in pregnant women on the Thai-Myanmar border v2.0 Burmese 17/08/15

Continued overleaf

ကြိုတင်မေးမြန်းနိုင်သည်။ ဤလေ့လာမှုထဲတွင် မပါဝင်လိုတော့ပါက ယခုချက်ချင်း (သို့) အချိန်မရွေးအကြောင်းပြချက် တစ်စုံတစ်ရာ မလိုအပ်ဘဲ၊ လေ့လာမှုမှ နှုတ်ထွက်ရန် သင်ဆုံးဖြတ်နိုင်သည်။ ဤကယ်၍လေ့လာမှုထဲတွင်သင်ပါဝင်ရန် သဘောတူပြီးနောက် နှုတ်ထွက်ချင်ပါကလည်း SMRU မှပေးသောကျန်းမာရေးစောင့်ရှောက်မှုများကို ပုံမှန် ပေးသွားမည်ဖြစ်ပါသည်။

၅။ ဤလေ့လာမှုတွင် မည်သည့်အရာများဖြစ်ပေါ်လာမည်နည်း။ (လုပ်ငန်းလုပ်ဆောင်ပုံအဆင့်ဆင့်) သုတေသန လေ့လာ မှု တွင် သင်ပါဝင်ရန်ရွေးချယ်ပါက သင့်ကို ခွင့်ပြုသဘောတူညီမှုစာထဲတွင် သဘောတူညီကြောင်း လက်မှတ်ရေးထိုးရမည်။ သင့်နှင့်ပတ်သက်သောသတင်းအချက်အလက်တစ်ချို့ကို မေးမြန်းမည်။ (နာမည်၊ ကိုယ်ဝန်အခြေအနေ၊ ပြောဆိုသည့်ဘာသာစကား) ပြီးလျှင် မေးခွန်းစာစောင်နှစ်စုံနှင့်တွေ့ဆုံမေး မြန်းမှုတစ်ခုပြုလုပ်မည်။ ပထမမေးလွှာသည် PHQ-9 (လူနာ၏ကျန်းမာရေးနှင့်ပတ်သက်သောကျန်းမာရေးအချက် အလက်မေးခွန်းများ) ဤမေးခွန်းလွှာတွင် မေးခွန်း ၉ ခုပါဝင်သည်။ ပါဝင်သည့်မေးခွန်း ၉ ခုမှာ စိတ်ပိုင်းဆိုင်ရာ ခံစားမှု၊ အစားအသောက်နှင့် အိပ်စက်ခြင်းဆိုင်ရာများ၏အချက်အလက်များ ပါဝင်သည်။ ၁၀ မိနစ်လောက်အချိန်ပေးရမည်ဖြစ်ပါသည်။ ဘုတ်ယမေးခွန်းစာလွှာသည် RHS-15 (ဘုတ်ယသည်များ၏ကျန်းမာရေးကြိုတင်စစ်ဆေးမှုဖြစ်သည်။) မေးခွန်း ၁၅ ချက်ပါဝင်ပြီး PHQ-9 နှင့်ဆင်တူရိုးမားဖြစ်ပြီး ကာယ ကျန်းမာရေးဆိုင်ရာ မေးခွန်းများပါဝင်မည်ဖြစ်သည်။ ဤအတွက်လည်း ၁၀ မိနစ်အချိန်ပေးရမည်ဖြစ်ပါ သည်။ နောက်ဆုံးအဆင့်တွင် သင်၏အတွေ့အထွေကျန်းမာရေးခံစားရမှုကို အသေးစိတ်တွေ့ ဆုံမေးမြန်းခြင်း ပြုလုပ်မည်ဖြစ်ပါသည်။ ဤလုပ်ဆောင်မှုအားလုံးသည် မိနစ် ၂၀-၃၀ အထိအချိန်ယူရမည်ဖြစ်ပါသည်။ အချိန်ပေါင်းအားလုံးသည် တစ်နာရီထက်မပိုပါ။ သင့်ကို နှစ်ပတ်အတွင်း နောက်ထပ်တစ်ကြိမ်ပြန်လည် တွေ့ဆုံပြီး ဤမေးခွန်းများကို ပြန်လည်မေးမြန်းရန် သင့်ထံမှ တောင်းဆိုမည်။ အကယ်၍ သင်ခွင့်ပြုပါက သင့်ကိုမေးခွန်းလွှာကိုသာဖြည့်စွက်ခိုင်းမည်ဖြစ်ပြီး (မေးမြန်းခြင်းအစီအစဉ်ကို ပြုလုပ်မည်မ ဟုတ်ပါ။)

၆။ လေ့လာမှုတွင် ပါဝင်ခြင်းဖြင့် ဘေးထွက်ဆိုးကျိုးများရှိပါသလား။

ဤ သုတေသန လေ့လာ မှု သည် ဘေးထွက်ဆိုးကျိုးမရှိသလောက်ဖြစ်သည်။ မေးခွန်းလွှာဖြည့်သည့်အချိန် သို့မဟုတ် တွေ့ဆုံမေးမြန်းခြင်းပြုလုပ်သောအခါ သင်စိတ်ပိုမိုစိတ်ဖြစ်ပါက ဆရာဝန်က သင့်ကို အကူအညီ ပေးလိမ့်မည်။ သင်သည်စိတ်ကျရောဂါခံစားရသည်ဟု အဖြေရရှိပါက ရောဂါသတ်မှတ်ချက်ကို သင့်နှင့်အတူပြု လုပ်မည် ဖြစ်ပြီး သင့်အားအကူအညီပေးမည်။ ဥပမာ နှစ်သိမ့်ဆွေးနွေးပညာပေးခြင်း (သို့)ဆေးဝါးပေးခြင်း။ သင် သည်ချက်ချင်းဆုံးဖြတ်ရန်မလိုအပ်ပါ။ သင်စဉ်းစားဆုံးဖြတ်ရန် (သို့) သင့်မိသားစုနှင့်ဆွေးနွေး ရန်အချိန်ပေး မည်ဖြစ်သည်။ အကယ်၍သင်စိတ်ပိုမိုအကြီးကြိုက် ပြင်းထန်စွာခံစားနေရပါက အသေးစိတ်သင့်အားထပ်မံမေး မြန်းပြီး ချက်ချင်းကုသမှုပေးမည်။

၇။ သုတေသနမှရရှိသောအချက်အလက်များကို ဘာတွေဆက်လုပ်သလဲ။

သင်တို့နှင့်သီးသန့်ခန်းထဲတွင် တစ်ဦးချင်းစီ တွေ့ဆုံမေးမြန်းမည်။ သင်ထံမှရရှိသော အချက်အလက်များကို သင်၏ခွင့်ပြုချက်မပါဘဲ မည်သူ့ကိုမှ ဝေငှမည်မဟုတ်ပါ။ သင်၏အမည်ကို သုတေသန လေ့လာ မှု စာစောင် ထဲတွင် ထည့် သွင်းခြင်းမပြုပါ။ သင်၏နာမည်အစား သင်၏အမည်ကို ထည့်သွင်းထားခြင်းဖြင့် သင့်အမည် မပေါ်ပြပါ။ သင့်နှင့် ပတ်သက်သောအချက်အလက်များကို ဆရာဝန်များ၊ သားဖွားဆရာမများနှင့် သုတေသနဝန်ထမ်းများသာ ကြည့်ရှုနိုင်ပါသည်။

၈- သုတေသန လေ့လာမှု နှင့်ပတ်သက်သည့်စာစောင်များဖြန့်ဝေမှုရှိပါသလား။

ဤလေ့လာမှုမှတွေ့ရှိချက်များအား စာစောင်များဖြန့်ဝေခြင်းအားဖြင့် အခြားသုတေသနပြုလုပ်သူများနှင့် သိပ္ပံပညာရှင်များကို ဝေငှမည်။ သင်နှင့်ပတ်သက်သောအချက်အလက်များကို အမည်ဖော်ပြခြင်းမပြု လုပ်ကြောင်း ထပ်မံအသိပေးလိုပါသည်။ သုတေသန လေ့လာမှု မှရရှိသောရလဒ်များ သိရှိရသောအခါတွင် ဤလေ့လာမှုမှရရှိလာသောအဖြေ၏အဓိပ္ပါယ်ကို လူတိုင်းနားလည်သဘောပေါက်ရန် ထိုင်း-မြန်မာနယ်စပ် ရှိဒုက္ခသည် နှင့် ရွှေ့ပြောင်းနေထိုင်သူများအတွက် လုပ်ဆောင်ပေးနေသောကျန်းမာရေးအဖွဲ့အစည်းများ၊ SMRU ဝန်ထမ်းများ၊ T-CAB ကိုယ်ဝန်ဆောင်အမျိုးသမီးများနှင့်အတူ အစည်းအဝေးပြုလုပ် သွားမည် ဖြစ်ပါသည်။

၉- ဤစီမံချက်ကို မည်သူစိစစ်မည်နည်း။

ကော်မတီသုံးဖွဲ့မှ စိစစ်ပေးသည်။

-The Tak Community Advisory Board,

-The Ethics Committee of the Faculty of Tropical Medicine and

-The University of Oxford Research Ethics Committee

၁၀- ရရှိမည့်အခွင့်အရေး။

လေ့လာမှုပြီးဆုံးသောအခါတွင် ကျေးဇူးတင်သောအားဖြင့် ဆပ်ပြာတစ်တုံးပေးမည်။ ထို့အပြင်နောက်နှစ် ပတ်အကြာပေးခွင့်များထပ်မံမေးမြန်းမည်ပြန်လာပါက လမ်းစရိတ်အားပေးအပ်မည်ဖြစ်သည်။

၁၁- ကျွန်ုပ်တို့သုတေသနနှင့်ပတ်သက်၍ စိုးရိမ်စရာ၊ မကျေနပ်စရာ (သို့မဟုတ်) ပြောလိုသောအကြောင်း အရာတစ်ခုခုရှိလျှင် မည်သူ့ကို ဆက်သွယ်မေးမြန်းရမည်နည်း။

အကယ်၍ ဆက်သွယ်လိုပါက Dr. Gracia Fellmeth သို့မဟုတ် Prof. Rose McGready ကိုဆက်သွယ် မေးမြန်းနိုင်ပါသည်။ သင်လိုချင်သောအဖြေကို ၁၀ ရက်အတွင်းအကောင်းဆုံးဖြေရှင်းပေးပါမည်။

အကယ်၍ အထက်ဖော်ပြပါအချက်အလက်များအတိုင်းဆက်ဆံမခံရလျှင်

(သို့)လေ့လာမှုထဲတွင်ပါဝင်သူများ၏အခွင့်အရေးများကို သိရှိလိုလျှင် ဆက်သွယ်နိုင်ပါ သည်။

ဆက်သွယ်ရန်လိပ်စာ။

Ethics Committee of the Faculty of Tropical Medicine, Mahidol University

c/o Research and Academic Services

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Appendix 16. Participant Information Sheet: Sgaw Karen version



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MLA □ / MLA □ / WPA □ - - - - -

လိပ်စာရင်းသစ်ပါအရာများနှင့်လီးဇာနယ်

စာအုပ်ဆိုင် : Dr. Gracia Fellmeth

တစ်ယထိထံအလံီ : SMRU တစ်ကွာလွှဲမီလီဒါ(Antenatal) တစ်ဝေါပတ်ဒ်လော,ဝါပတ်,မီကောလဲ

မှတ်စုအမှတ် : Oxford ၄၆၆၆

တရားရုံးဝင်ရောက်မှု (Ethics References): TCAB-6/2015; TMEC 15-045; OXTREC 28-15

[illegible]

၂- တစ်ယောက်တည်းနေထိုင်သူအား အခွန်အခမ်းအခတ်များကို လွှဲပြောင်းပေးရန်

[illegible]

ပ-တၢ်မနုၤလၢတၢ်ကွဲး မှီယာလၢတၢ်ဝဉ်သ့ၣ်မၤသကိၤလၢတၢ်သီဆံတခါအံၤလဲၣ်-

[illegible]

၄- ယကတၢ်န့ၣ်လီၤစ့ၣ်ဃုာ်မၤသကိၤလၢတၢ်ယိၣ်စံတခါအံၤစၢ်ကိၤစၢ်.

[illegible]

၅။ လေးတော်ယဇ်အကတော်နှစ်မနုဿေဉ်တမဉ်ကကဲတော်အစားလဲဉ်။

[illegible]

Karen Translation: Validation of PHQ-9 and RHS-15 in pregnant women on the Thai-Myanmar border v2.0 Karen 17/08/15

Continued overleaf

Appendix 17. Demographic questionnaire



Shoklo Malaria Research Unit
P.O.Box 46, Mae Sot, Tak 63110
Thailand, Tel: +66 55 545 021

Demographic Questionnaire

Mental Health Study (MHS)

Administrative Details

Study code - ANC code - PID
Phone no.

Language, Ethnicity & Religion

1. Language of interview ☐ Sgaw Karen ☐ Poe Karen ☐ Burmese ☐ Other
2. Ethnicity ☐ Sgaw Karen ☐ Poe Karen ☐ Burman ☐ Burman Muslim
☐ Other (Mon, PaOh, Rakhine, Kachin)
3. Religion ☐ Christian ☐ Buddhist ☐ Muslim ☐ Other

Social

4. Relationship ☐ Married ☐ Widowed ☐ Single
5. Work _____
6. How many people in household _____ people

Education

7. Education ☐ ≤ 3 years ☐ 3-6 years ☐ 7-10 years ☐ ≥ 10 years
8. Literacy ☐ Yes (able to read text fluently) ☐ No (not able to read text fluently)

Recreational Substances

9. Do you drink alcohol? ☐ Yes ☐ No
If yes, how much do you drink on average? glasses of per day / week / month / year
10. Do you smoke? ☐ Yes ☐ No
If yes, what do you smoke:
How much do you smoke on average? per day / week / month / year
11. Do you chew tobacco? ☐ Yes ☐ No
If yes, how often do you chew on average? times per day / week / month / year
12. Do you take betel nut? ☐ Yes ☐ No
If yes, how often do you take it on average? times per day / week / month / year

Mental Illness

13. Have you ever suffered from mental illness? ☐ Yes ☐ No

If yes: please provide details (type of illness, date, duration, any treatment):

Appendix 18. Social history



Mental Health Study: 3rd Trimester Social History

Shoklo Malaria Research Unit
P.O.Box 46, Mae Sot, Tak 63110
Thailand, Tel: +66 55 545 021

MLA ☐ / MKT ☐ / WPA ☐ _____	Study Code __ - __ - __ - __	Date ____ / ____ / ____	EGA ____ + ____
--	------------------------------	-------------------------	-----------------

Education

How many years did you go to school? _____ years

What type of school did you go to? ☐ Myanmar school ☐ Thai school ☐ Religious (e.g. monastery) ☐ NGO
☐ Adult education ☐ Other: _____

Why did you stop going to school? _____

Which languages can you speak? ☐ Sgaw Karen ☐ Poe Karen ☐ Burmese ☐ Thai ☐ Other

Employment and Income

What is your work?

What is your wage: _____ per day / month / year

Does anyone else in your house work? ☐ No ☐ Yes Who: _____

Do you send money to family in Myanmar? ☐ No ☐ Yes Amount: _____

Do you get money from family resettled in 3rd country? ☐ No ☐ Yes Amount: _____

Migration History

Where were you born? Village/town/province: _____

☐ Myanmar ☐ Thailand ☐ Other:

Where do you live now? Village/town/province: _____

☐ Myanmar ☐ Thailand ☐ Other:

How long have you lived in your current home?

Why did you leave your home town?

How many homes have you lived in?

Do you have ID card: ☐ Myanmar ID ☐ Thai ID ☐ Thai work permit ☐ UN card

☐ Other: _____

Plan (wish) for the future: ☐ Live in Myanmar ☐ Live in Thailand ☐ Go to 3rd country

☐ Other: _____

Continued overleaf

Children

Was this pregnancy planned? ☐ Planned ☐ Unplanned

	Sex	Age	Country of birth	Where do they live?	School	ID Card
1			☐ Myanmar ☐ Thailand ☐ Other: _____	☐ With you ☐ Other: _____	☐ Myanmar school ☐ Thai ☐ NGO school ☐ Religious ☐ Other: _____ ☐ None	☐ Thai ☐ Myanmar ☐ UN card ☐ None ☐ Other: _____
2			☐ Myanmar ☐ Thailand ☐ Other: _____	☐ With you ☐ Other: _____	☐ Myanmar school ☐ Thai ☐ NGO school ☐ Religious ☐ Other: _____ ☐ None	☐ Thai ☐ Myanmar ☐ UN card ☐ None ☐ Other: _____
3			☐ Myanmar ☐ Thailand ☐ Other: _____	☐ With you ☐ Other: _____	☐ Myanmar school ☐ Thai ☐ NGO school ☐ Religious ☐ Other: _____ ☐ None	☐ Thai ☐ Myanmar ☐ UN card ☐ None ☐ Other: _____
4			☐ Myanmar ☐ Thailand ☐ Other: _____	☐ With you ☐ Other: _____	☐ Myanmar school ☐ Thai ☐ NGO school ☐ Religious ☐ Other: _____ ☐ None	☐ Thai ☐ Myanmar ☐ UN card ☐ None ☐ Other: _____
5			☐ Myanmar ☐ Thailand ☐ Other: _____	☐ With you ☐ Other: _____	☐ Myanmar school ☐ Thai ☐ NGO school ☐ Religious ☐ Other: _____ ☐ None	☐ Thai ☐ Myanmar ☐ UN card ☐ None ☐ Other: _____

Social Support (Adapted Chen 2011)

If you feel sad, is there someone you can talk to? ☐ Yes ☐ No
 If you feel sad, is there someone who makes you feel better? ☐ Yes ☐ No
 If you feel sad, is there someone who understands you? ☐ Yes ☐ No
 Does your husband support, care and understand you? ☐ Yes ☐ No
 Does anyone help you clean your home? ☐ Yes ☐ No
 Does anyone help you cook? ☐ Yes ☐ No
 Does anyone help you buy food? ☐ Yes ☐ No
 Does anyone help you take care of your children? ☐ Yes ☐ No
 Does anyone give you information about caring for your baby? ☐ Yes ☐ No
 Do you feel you have enough support/help? ☐ Yes ☐ No

Interpersonal Violence

Does anyone at home hurt you, hit you, or threaten you? ☐ Yes ☐ No

If yes, details:

Trauma History Screen (Carlson 2005)

Have any of these events happened to you?

Car, motorcycle, bicycle, truck accident ☐ Details: _____
 Accident at work or home ☐ Details: _____
 Flooding, earthquake, fire ☐ Details: _____
 Somebody hit or kicked you ☐ Details: _____
 Forced to have sexual contact ☐ Details: _____
 Attacked with a gun, knife, weapon ☐ Details: _____
 Seeing someone die or killed ☐ Details: _____
 Suddenly moving house ☐ Details: _____
 Sudden separation from family ☐ Details: _____

Appendix 19. Informed Consent Form: English version

Study Title: Depression in pregnant and post-partum migrant women on the Thai-Myanmar border: a validation, prevalence and risk factor study **Participant Consent Form**

This page will be translated into Burmese and Karen. The information will be read out to participants with low literacy.

Participant identifier number: _____

I understand that with respect to the above study:

1. I have agreed to participate voluntarily and have not been coerced into participating
2. I have understood that participation will involve being asked to answer questions about my mental health in the 1st, 2nd and 3rd trimester of pregnancy and at 4-6 weeks, 3 months, 6 months, 9 months and 12 months postpartum, as summarised in the Participant Information Sheet
3. I understand that my child will be included in the study and assessed for height, weight and physical, social and behavioural development at birth and at 3, 6, 9 and 12 months of age
4. I have the right to refuse to answer questions or disclose information without providing a reason for doing so
5. I have the right to terminate a questionnaire or the interview at any time without providing a reason for doing so
6. My rights and access to care will not be affected in any way by my participation or non-participation in the study
7. Any information I choose to disclose will be recorded anonymously and held confidentially

Consent (circle as appropriate): Yes No

Signature or thumbprint of participant: _____

Signature of person taking consent: _____

Signature of witness: _____

Date: _____

Appendix 20. Informed Consent Form: Burmese version



Shoklo Malaria Research Unit
P.O. Box 46, Mae Sot, Tak 63110
Thailand, Tel: +66 55 545021

MLA ☐ / MLA ☐ / WPA ☐ - -----

Consent Form

လေ့လာခြင်းခေါင်းစဉ်။ ။ ထိုင်း-မြန်မာနယ်စပ်တွင် ရှိသောရွှေ့ပြောင်းကိုယ်ဝန်ဆောင်မိခင်များအတွက်
စိတ်ပိုင်းဆိုင်ရာ ကျန်းမာရေးစစ်တမ်းမေးခွန်း လွှာများ။

အဓိကတာဝန်ခံ ။ ။ Dr. Gracia Fellmeth

သုတေသနပြုရန်နေရာ ။ ။ SMRU Antenatal Clinic at Mae La, Wang Pa, Maw Ker Thai

ကူညီထောက်ပံ့သူ ။ ။ University of Oxford

ကိုယ်ကျင့်တရားကိစ္စကားချက် ။ ။ TCAB -6/2/2015, TMEC 15-045 OXTREC 28-15

ကျွန်တော်/ကျွန်မ ၏အမည်သည်------(ပါဝင်သူ၏အမည်)

၁။ ကျွန်တော်/ကျွန်မသည် သတင်းအချက်အလက်များကို ဖတ်ခဲ့ပြီး သို့မဟုတ် ဝန်ထမ်းမှပတ်ပြုခဲ့ပြီးနောက် မေးခွန်းမေးဖို့
ရသည့်အခွင့်အရေးနှင့်လုံလောက်သောစိတ်ကျေနပ်ဖွယ်အခြေကို ရရှိခဲ့ပါသည်။

၂။ ဤသုတေသန စီမံကိန်းကို the Tak Community Advisory Board , the Ethics Committee of the Faculty of
Tropical Medicine and the University of Oxford Research Ethics Committee
မှပြန်လည်စိစစ်ပြီးစီးကြောင်းနှင့်ကျန်းမာရေးဆိုင်ရာကျင့်ဝတ် အတည်ပြုချက်ရရှိပြီးကြောင်းနားလည်ပါသည်။

၃။ မိမိဆန္ဒအလျောက်ပါဝင်ရန်သဘောတူပါသည်။ ထို့ပြင်မေးခွန်းများအားဖြေဆိုရန် ငြင်းဆိုနိုင်သည်။ (သို့)
မေးခွန်းဆက်လက်မဖြေဆိုဘဲနေနိုင်သည်။ (သို့) အကြောင်းပြချက်တစ်စုံတစ်ရာမရှိဘဲ အချိန်မရွေးပြန်လှန်မေးခွန်းထုတ်နိုင်
သည်။

၄။ ပါဝင်သူသိရှိနားလည်ရန်အတွက် သတင်းအချက်အလက်စာမျက်နှာတွင်ဖော်ပြထားသည့်အတိုင်း ကျွန်တော်/မသည်
ဤပါဝင်လေ့လာမှုတွင် မေးခွန်းနှစ်စုံဖြေဆိုခြင်းနှင့် မေးမြန်းခြင်း (Interview) တစ်ခုပြုလုပ်ရမည်ကို သိရှိနားလည်ပါသည်။

၅။ ကျွန်တော်/မ၏အကြောင်းအရာအချက်အလက်များကို နာမည်မဖော်ဘဲ လျှို့ဝှက်ထိန်းသိမ်းထားပေးမည်ဖြစ်သည်။
တာဝန်ခံမှလွဲ၍ အခြားသောသူများကို မျှဝေမည်မဟုတ်ကြောင်းကို သိရှိနားလည်ပါသည်။

၆။ ဤသုတေသနပြုလုပ်ခြင်းမှရရှိလာသောတွေ့ရှိချက်အဖြေများကို အခြားသောသိပ္ပံပညာရှင်များနှင့် ကျန်းမာလုပ်သား
များကို ဝေငှသွားမည်ကိုနားလည်သိရှိပါသည်။

၇။ မည်ကဲ့သို့ မိမိ၏စိုးရိမ်ပူပန်မှုကို ဖော်ပြရမည်။ သို့ တိုင်ကြားရမည်ကို နားလည်သဘောပေါက်ပါသည်။

၈။ ဤသုတေသနတွင် ပါဝင်ရန်ကျွန်တော်/မ သဘောတူခွင့်ပြုပါသည်။

ပါဝင်သူ၏အမည် -----

ပါဝင်သူ၏လက်မှတ်-----နေ့စွဲ-----

သုတေသနပြုသူ၏အမည်-----

သုတေသနပြုသူ၏လက်မှတ်-----နေ့စွဲ-----

Burmese Translation: Validation of PHQ-9 and RHS-15 in pregnant women on the Thai-Myanmar border V2.0 Burmese 17/08/15

Continued overleaf

အကယ်၍ စာမရေးတတ်၊ မဖတ်တတ်ပါက

ကျွန်တော်/မ သည်----- (သက်သေခံအမည်) အထက်ပါ

ဖော်ပြသောအချက်အလက်များကို တာဝန်ရှိဝန်ထမ်းများထံမှ ပါဝင်သူကို ကောင်းမွန်ရှင်းလင်းစွာဖတ်ပြပေးပြီးကြောင်း၊
ပါဝင်မည့်သူအား ဖမ်းစွန်းများမေးနိုင်ရန်အခွင့်အရေးလည်းပေးခဲ့ပြီး၊ စိတ်ကျေနပ်မှုရသည်အထိဖြေဆိုခဲ့ပြီးဖြစ်ပါသည်။
ကာယကံရှင်မှမိမိဆန္ဒအလျောက်ပါဝင်ဆွေးနွေးနိုင်သည်။

ပါဝင်သူ၏လက်ဗွေ

သက်သေခံသူ၏လက်မှတ်----- နေ့စွဲ-----

သုတေသနပြုသူ၏အမည်-----

သုတေသနပြုသူ၏လက်မှတ်----- နေ့စွဲ-----

မိတ္တူ နှစ်စုံလိုအပ်သည်။ ပါဝင်သူအတွက်တစ်စုံနှင့် SMRU မှတ်တမ်းထားရှိရန်အတွက်တစ်စုံ

Appendix 21. Informed Consent Form: Sgaw Karen version



Shoklo Malaria Research Unit
P.O. Box 46, Mae Sot, Tak 63110
Thailand, Tel: +66 55 545021

MLA ☐ / MLA ☐ / WPA ☐ - -----

လိာ်အာ်လီာ်တူာ်လီာ်

တၢ်ယိထံနီၣ်တီၢ် : တၢ်သံကွၢ်ဘၣ်ယးဒီးသးတၢ်အိၣ်ဆူၣ်အိၣ်ချ့လၢပုၤမိၢ်အါလၢ အသးလီၢ်သးကွဲၤ
ဒီးအိၣ်ဆိးဝဲလၢကီၢ်ကွၢ်တၢ်တၢ်ဒီးကီၢ်ပယီၤကီၢ် ဆၢတဖၣ်အကီၢ်

ပုၤယိထံတၢ်မူဒါနီၣ် : Dr. Gracia Fellmeth

တၢ်ယိထံအလီၢ် : SMRU တၢ်ကွၢ်ဟံးသး (Antenatal) တၢ်ဆါဟံၣ်မဲၢ်လၢ,ဝါမၤ,မီၤကၢထံ

ပုၤအိၣ်ထွဲမၤစၢၤတၢ် : Oxford ပုၤမိမိၤ

တၢ်သကၢ်ပဝးသနီၣ်လၢတၢ်ဒီး သန့ၤသ့ၣ်တဖၣ် (Ethics References): TCAB-6/2/2015; TMEC 15-045; OXTREC 28-15

ယမံၤမ့ၢ်ဝဲ----- (ပုၤန့ၣ်လီၢ်တၢ်ယိထံအမံၤ)

၁- ယမးဘၣ်တၢ်ဂ့ၢ်တၢ်ကျိၤအလိာ်ကတၢၢ်သ့ၣ်တဖၣ်(မုတမ့ၢ် ပုၤမးန့ၣ်ယၢလံ)ဒီး ယဒီးန့ၣ်တၢ်ခွဲး
တၢ်ယၢလၢယသံကွၢ်တၢ်ဒီးန့ၣ်ဘၣ်ကွၢ်တၢ်ခဲးဆၢသ့ၣ်တဖၣ် လၢအန့ၣ်မံၤသးယၢလံန့ၣ်လီၢ်.

၂- ယန့ၣ်ပၢ်လၢတၢ်ယိထံမၤလိာ်တၢ်တၢ်ကျိၤအလိာ်န့ၣ်ဘၣ်တၢ်ကွၢ်ကၢဒါကွၢ်ဒီးဒီးန့ၣ်ဘၣ်တၢ်အာ်လီာ်တူာ်လီၢ်နီၣ်ဖျါလၢ the
Tak Community Advisory Board, the Ethics Committee of the Faculty of Tropical Medicine and the
University of Oxford Research Ethics Committee သ့ၣ်တဖၣ်န့ၣ်လီၢ်.

၃- ယန့ၣ်ပၢ်လၢတၢ်န့ၣ်လီၢ်ဆူၣ်တၢ်ယိထံအံၤ မ့ၢ်ယတၢ်သးအိၣ်ဒၣ်ယဲ တၢ်ချီၤလၢလၢထုးတီၢ်ကွၢ်ယသးဒီး တၢ်မၤနီၣ်မၤယါ
လၢအဘၣ်ထွဲဒီးယၢတဖၣ်သ့ၣ် လၢတၢ်လိာ်ယဘၣ်ပၢ်ဖျါတၢ်ဂ့ၢ်တၢ်ကျိၤနီၣ်တမံၤဘၣ်န့ၣ်လီၢ်. ယဟးတီၢ်တၢ်ယိထံအလီၢ် တၢ်မၤ
ဘၣ်ဒီးတၢ်ကွၢ်ထွဲကဟုကယၢလၢယဒီးန့ၣ်ဘၣ်တဖၣ်တအိၣ်ဘၣ်.

၄- ယန့ၣ်ပၢ်လၢတၢ်ပၣ်ယုာ်မၤသကိးန့ၣ် ကအိၣ်ဒီးတၢ်မၤပွၤတၢ်သံကွၢ်ခံကလုာ်ဒီးတၢ်ထံၣ်လိာ် ကတိၤမဲာ် သကိးမဲာ်န့ၣ်လီၢ်.
တၢ်လၢအဘၣ်ထွဲဒီးပုၤပၣ်ယုာ်မၤသကိးတၢ်အဂ့ၢ်အကျိၤသ့ၣ် တဖၣ်န့ၣ်ဘၣ်တၢ်မၤပုၤ လီၢ်အီၤနီၣ်လိာ်ကတၢၢ်သးအပူၤ အသိးန့ၣ်
လီၢ်.

၅- ယန့ၣ်ပၢ်လၢတၢ်ဂ့ၢ်တၢ်ကျိၤတၢ်ခါဂ့ၢ်တၢ်ခါဂ့ၢ်, ကဘၣ်တၢ်ပာ်ဘၣ်ပာ်ဘၣ်အီၤလၢအတအိၣ် ဒီးတၢ်မၤနီၣ်ပုၤအမံၤဘၣ်.
အိၣ်ဒီးတၢ်ပလီၢ်ပဒီၤလၢပုၤလၢန့ၣ်လီၢ်ကွၢ်ပုၤအဂ့ၢ်အကျိၤသ့ၣ်တဖၣ် အံၤစ့ၢ်ကိးလီၢ်.

၆- ယန့ၣ်ပၢ်လၢတၢ်ယိထံအစၢၤလၢပဒီးန့ၣ်ဘၣ်သ့ၣ်တဖၣ် တၢ်ကဟ့ၣ်နီၣ်ဟ့ၣ်နီၣ်လီၢ်အီၤဆူၣ် ပုၤမဲအုၣ်မိအဂ့ၢ်
အကၤဒီးဆူၣ်ချ့ပုၤမၤတၢ်မိသ့ၣ်တဖၣ်အအိၣ်န့ၣ်လီၢ်.

၇- ယန့ၣ်ပၢ်လၢယကဘၣ်ပာ်ဖျါယတၢ်ဘၣ်ယိာ် မုတမ့ၢ် တၢ်ပာ်တၢ်ကမၣ်သ့ၣ်တဖၣ်နီၣ်လဲၣ်နီၣ်လဲၣ်န့ၣ် လီၢ်.

၈- ယသးလီၢ်ပလီၢ်လၢတၢ်ပၣ်ယုာ်မၤသကိးလၢတၢ်ယိထံတၢ်ခါအံၤန့ၣ်လီၢ်.

Karen Translation: Validation of PHQ-9 and RHS-15 in pregnant women on the Thai-Myanmar border v2.0 Karen 17/08/15

Continued overleaf

ပျာနုလီတင်သိထံဆမ်း-----

ပွားစိုက်လီတက်သိထံဆဲးလီမံး-----မုၢ်နံး-----

၂၇။ မေးခွန်းအားဖြည့်ဖြတ်ပါ။

ပုဂ္ဂလိကအဖွဲ့အစည်းများ၏-----မူရင်း-----

၎င်းတို့သည် မာသကီးတပ်ဖွဲ့လေးလုံးလုံးကွဲလွဲစွာ တည်ဆောက်

သာ၊ -----(ပွဲအုပ်သားအမံ)

ယခုညီယသးလာတၢ်ဂ့ၢ်တၢ်ကျိၤလၢအဆိၣ်လၢ တၢ်သးလီၤပလိၢ်အလံာ်ဒိတက္ခီၣ်အိၤ ဘၣ်တၢ်မးအိၤ

ဒီးတဲာ်နီၤပာ်ဂ့ၢ်န့ၣ်လိာ်တံၢ်သးတဖၣ်လၢတံၢ်သးအံၤအဃူန့ၣ်လိာ်။ ပှၤပၣ်ဃုာ်မၤသကိးတံၢ်သးတဖၣ်

အိဉ်ဒီးတၢ်ခွဲးတၢ်ယၢ်လၢကသံကွၢ်တၢ်သံကွၢ်သ့ၣ်တဖၣ် ဒီးအဝဲသ့ၣ်ဒီးန့ၣ်ကဒါက့ၢ်တၢ်ဆံးဆၢတုၤ အနကဒါ

ကုတ်ဆံးဆာတူအန့်ဘဉ်တံသးမံတစုန့ၣ်လီၤ. တံသ့ၣ်မံသးမုၢ်တံလၢပှၢ်စံးဆာအဝဲသ့ၣ်တဖၣ်န့ၣ်လီၤ.

အဝဲပိတ်မုဉ်နှင့်လီမာသကိးတင်လာတင်ယိထံတခါအံ၊ လာအနီကစၢ်အတင်သးအံဉ်ဒီးအပူလီ၊

၎င်းနာမည်အရင်းအမြစ်ကောင်းကောင်းလေးနဲ့ပေါင်းစပ်ထားတာကို

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ပုဂ္ဂိုလ်သားဆေးလီမံ- မှန်နံ

မှူးမိတ်တင်အမည်-----

ပုဂံထိတံတံဆဲးလီမံတံပုဂံ-----မုနီ

လံာ်အံၤကတၢၢ်တၢ်ကွဲးဒီးအီၤခဲတၢၢ်. တတၢၢ်န့ၣ်မ့ၢ်ပုၤပၣ်ဃုာ်မၤသကိးတၢ်အဂီၢ်ဒီးအကတၢၢ်န့ၣ်လၢ SMRU တၢ်မၤနီၣ်မၤယၢအဂီၢ်န့ၣ်လီၤ.

Appendix 22. Qualitative study component: in-depth interview guide

Interview schedule

The following interview schedule will be used to guide the interview but we encourage participants to discuss any other aspects they feel are relevant to their experiences of depression.

Opening (to be used selectively, depending on conversation flow)

- Tell me a little bit about yourself. Where were you born? What was your childhood like? Why did you leave your home town, and how did you end up here?
- Who lives with you now?
- What are your hobbies?

Main questions

- How/in what way does low mood affect your everyday life?
- Can you tell me what it's like for you, living with depression?
- What do you think are the reasons for depression – for you, and for other women living here?
- What is the most difficult aspect of having low mood?
- What are the things you cannot do (or find difficult to do) when you experience low mood?
- Do you ever think about hurting yourself, or about ending your life? Are there particular times/events/thoughts that make you think about it?
- Is there anything that helps you when you are feeling very sad/unable to cope?
- When things are difficult, do you manage to do your normal work or take care of things?
- Who are the main sources of support in your life? Do you feel you get enough help? Is your partner supportive?
- Do you talk to friends/family about how you feel? Do you find it easy to talk to them about depression?
- Is there something SMRU could offer that you would find helpful when you are feeling very sad? Have you found counselling helpful?
- Would you find it helpful to speak to other women experiencing depression?

Close

- Are there any questions you would like to ask us?
- Anything we haven't covered?
- Give thanks

Appendix 23. Stakeholder interview guide

Stakeholder Interviews: Mental health providers, researchers, experts

- Please can you give a brief description of your background, position/role and the remit of the organization you work for?
- What do you think are the most common mental health problems faced by migrant and refugee populations along the Thai-Myanmar border?
- What are some of the challenges of working in the field of mental health in this region?
- What are the mental health services currently available in this area (that you are aware of) – either for migrant or refugee populations or both?
- Where do you feel are the most significant gaps in mental health services (or research)?
- What services or community resources do you think could help people with mental disorders?
- Is access to mental health care different for different population groups?
- What additional resources are needed, and what are the barriers to implementing them?
- In the coming years, how might we best meet the needs of:
 - the refugee community – given the planned closure of camps and repatriation or resettlement to third countries?
 - the migrant community – given the fluidity of this population and lack of entitlements to health and other social services in Thailand?
- Is there any additional information you would like to share?