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Risk Factors for Paternal Depression and Anxiety in the Perinatal Period

Thesis submitted by

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in March 2022

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in the Department of Psychology, College of Healthcare Sciences,

James Cook University

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Statement of Contribution by Others

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A Note on Format of this Thesis

I have adopted a “thesis with publications” format. Chapters that have been published as journal articles are presented in their manuscript format (in compliance with the self-archiving policies of respective journal publishers). Accordingly, the content of the manuscript chapters is nearly identical to that of published articles, although some minor formatting changes have been made for inclusion in the thesis (e.g., page and table numbering, positioning of tables, etc.). British spelling is used in the traditional thesis chapters, while American spelling is used in some of the manuscript chapters (reflecting the house style of respective journals).

Abstract

The thesis aims to explore (i) the risk factors associated with paternal perinatal mental distress, and (ii) the role of masculinity, in particular, masculine gender role stress on the mental health of fathers in the perinatal period. Over the last few years, studies have identified that a significant proportion of fathers experience mental distress within the perinatal period. The rates of mental distress in men during the perinatal period are higher than the rates of mental distress amongst the general adult male population. Moreover, the impact of a mentally distressed father is not only limited to himself but may also impact the mental health of his partner and his children. Thus, to limit the impact of paternal perinatal mental distress, identifying its risk factors is a step toward intervention. Further, research suggests that strong adherence to traditional masculine ideology may influence the expression of mental distress in men. If men do not perform the traditional masculine gender roles (e.g., breadwinner), they are likely to experience stress known as masculine gender role stress from the fear of being ostracised from their peer group which may ultimately cause them mental distress.

The current study consisted of three stages. The first stage, a systematic review and meta-analysis (Chapter 4) comprised of an extensive review of the literature to identify the risk factors associated with paternal perinatal depression and anxiety in the current literature. In total 84 studies were included in the systematic review, and 31,310 participants from 45 studies were included in the final meta-analysis. The results suggested that while some risk factors for perinatal mental distress are similar in both fathers and mothers (e.g., marital distress, low income, low education status), some risk factors are unique to fathers only (e.g., masculine gender role stress). Maternal depression was identified as the most commonly reported risk factor for paternal perinatal mental distress in the literature increasing the risk by three-fold ($OR = 3.51$, 95% CI [2.63-4.68]). Marital distress was identified as the second

most common risk factor for paternal perinatal mental distress, and it increased the risk by more than two-fold ($OR = 2.16$, 95% CI [1.47-3.19]). Masculine gender role stress was identified as a unique risk factor for paternal perinatal mental distress. It increased the risk by more than four-fold ($OR = 4.66$, 95% CI [2.14-10.15]).

The second stage, an exploratory sequential mixed methods study (Chapter 5) aimed to identify the risk factors associated with perinatal mental distress in a sample of Australian fathers. Thirteen fathers volunteered to participate in the qualitative phase of the study while 525 fathers were recruited from the general population to participate in the quantitative phase of the study. The qualitative data was analysed using thematic analysis and six themes were identified. Hierarchical multiple regression analysis was then used to confirm the findings from the qualitative phase of the study. Integration was done at the results and interpretation level. Results suggested that masculine gender role stress was the strongest predictor of perinatal mental distress in a sample of Australian fathers. Further, sleep disturbance as a risk factor was a novel finding in this study. It was the second most significant predictor of perinatal mental distress in fathers in this study.

The third stage consisted of an in-depth re-analysis of the qualitative and quantitative data used in the mixed methods study. By using this approach, a researcher can make full use of the dataset to provide a more meaningful assessment of the primary results while also addressing potentially important new research questions. The qualitative data were analysed using interpretative phenomenological analysis (Chapter 6). The study aimed to explore how fathers in Australia are reconstructing masculine gender roles to portray fatherhood which is psychologically gratifying to them. The in-depth analysis of qualitative data suggested that while masculinity still plays an integral part in the lives of men, fathers are now adopting a combination of both traditional masculine and egalitarian gender roles to reduce their mental distress during the perinatal period. Moreover, this study also highlighted the role of culture

and the different acculturation strategies adopted by immigrant fathers in Australia to reconstruct their masculine gender roles in a way that was psychologically gratifying to them. The restructuring of the gender roles acted as a protective factor for paternal perinatal mental health. Finally, the quantitative data was analysed in-depth using mediation analysis (Chapter 7). The overall aim of the study was to understand the underlying mechanisms that influence the relationship between masculine gender role stress and paternal perinatal mental distress. The results suggested that both family-work conflict and sleep disturbances experienced by fathers during the perinatal period mediated the relationship between masculine gender role stress and paternal perinatal mental distress.

Overall, the findings of this thesis extend the knowledge about the mental health of fathers in the perinatal period. Both mothers and fathers experience mental distress in the perinatal period. However, the way fathers express and experience mental distress may have a gendered context. Although both fathers and mothers share certain risk factors, certain risk factors are unique to fathers only. Masculine gender role stress was identified as a unique and significant risk factor to the mental health of fathers in the perinatal period followed by sleep disturbances. To cope with psychological distress caused by masculine gender role stress during the perinatal period, fathers may reconstruct their gender roles. Further, both family-work conflict and sleep disturbances experienced by fathers during the perinatal period may provide an understanding of the underlying mechanisms that influence the relationship between masculine gender role stress and perinatal mental distress. The result of this thesis has a translational reach from research to clinical practice as it suggests that future screening for symptoms of depression and anxiety in fathers should use a gendered context. Further, the results from this thesis can be used to develop interventions that are specific for fathers who are experiencing mental distress during their partner's pregnancy and following the birth of their child.

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CHAPTER 1: Introduction

Fatherhood is an important event in men's lives. It is often rewarding but can sometimes be a challenging experience. Feelings of excitement and happiness can be overshadowed by the changes in lifestyle due to increasing responsibilities such as caring for the new baby, financial concerns, changes in marital lifestyle, lack of sleep, and uncertainty in the new role as a father. Also, the arrival of a second or subsequent child can add further to the abovementioned stressors (Helbig et al., 2006). While most men can adjust to these and other stressors comfortably, some men may experience debilitating emotional and psychological distress during the perinatal period (Chhabra et al., 2020; Chhabra et al., 2022; Paulson & Bazemore, 2010).

The perinatal period refers to the period from the first trimester of pregnancy up to 12 months after childbirth (American Psychiatric Association [APA], 2018). During the perinatal period, both fathers and mothers are more susceptible to an extensive range of mental health disorders such as depression, anxiety, stress disorder, panic attacks, bipolar disorder, adjustment disorder and post-traumatic stress disorder (PTSD) and psychosis (Cameron et al., 2016; Paulson & Bazemore, 2010). Among these disorders, depression and anxiety are the most common perinatal mental health disorders and represent a significant public health concern (APA, 2018). Both perinatal depression and anxiety in fathers will be the focus of this thesis. Depression is defined as a mood disorder and is a serious mental health concern characterised by low mood, anhedonia, loss of appetite, sleep disturbance, low energy, and typical cognitions such as hopelessness (APA, 2018). The symptoms of depression can be precipitated by major life events such as pregnancy and childbirth (Gavin et al., 2005; Gaynes et al., 2005; Leathers & Kelley, 2000). Here, it is important to point out that depression and anxiety are highly comorbid psychiatric conditions (Leach et al., 2016) and thus, should be concurrently evaluated. Anxiety is defined as a mood disorder with signs

of nervousness or feeling of worry or unease about certain situations and is characterised by palpitations, sweating, trembling and fear. Studies have also found a positive relationship between elevated symptoms of anxiety, pregnancy, and childbirth (Leach et al., 2016; Leach et al., 2017; Wynter et al., 2013). Thus, depression and anxiety experienced in the perinatal period are referred to as perinatal depression and perinatal anxiety, respectively.

As mentioned earlier, both depression and anxiety are highly comorbid, and this comorbidity has been conceptualised in a tripartite model by L. A. Clarke and Watson (1991). The tripartite model suggests that depression and anxiety have distinct symptoms. For example, anhedonia and hyperarousal are distinct symptoms of depression and anxiety respectively, but they share a central “distress” component or negative affectivity which may manifest as general affective distress (L. A. Clarke & Watson, 1991; H. Li et al., 2021). The shared general distress component also referred to as mental distress may manifest both as a transient state and as a stable trait and is in line with the internalising factor in depression and generalised anxiety disorder (H. Li et al., 2021). Since this thesis focuses on both depression and anxiety and their comorbid expression in men during the perinatal period, the expression of both perinatal anxiety and depression together in men will be referred to as paternal perinatal mental distress.

An important note to mention here is that the studies in this thesis have exclusively investigated paternal perinatal mental distress in heterosexual fathers. Gay fathers can experience fatherhood through various routes such as being a father from a previous heterosexual relationship, adoption, shared parenting in agreement with a woman, and surrogacy (Carneiro et al., 2017; Tasker & Patterson, 2008). Existing limited research suggests that gay fathers are likely to experience similar stressful situations such as financial stress and contending with stressful birth events in the postnatal period as heterosexual fathers (Shenkman et al., 2022) but they are often excluded from the research focus due to

significant hard-to-reach population access barriers experienced by researchers (*See Chapter 8: Limitations*). Mindful of the time constraints associated with doctoral studies and the lengthy processes involved with accessing hard-to-reach populations, including gay fathers as participants were beyond the scope of this PhD.

The existing research into perinatal anxiety and depression has focussed heavily on mothers. Between 4-64% of mothers experience perinatal depression globally (Arifin et al., 2018; Dadi et al., 2020) while between 4-25% of mothers experience perinatal anxiety globally (Dennis et al., 2018). The broad estimate ranges could be a result of various screening or diagnostic methods used, the sociodemographic characteristics of population samples that are being investigated, and the time point/s during the perinatal period at which the study was conducted (Cameron et al., 2016; O'Hara & McCabe, 2013). During pregnancy and childbirth, a mother not only undergoes physical changes but can also experience emotional and hormonal changes which may impact her mental health (Fransson et al., 2020; Kramer et al., 2009). Mothers are also often the primary carer of their infants. If a mother is experiencing anxiety or depression during pregnancy, her chances of delivering a pre-term baby increase by 1.5 times (Kramer et al., 2009) which can be dangerous for the infant (e.g., low birth weight, low APGAR score). Infants with depressed or anxious mothers may develop insecure attachments to their mothers (L. J. Hayes et al., 2013) which can be detrimental to their development. Mothers with postnatal depression and anxiety are less likely to be attuned to the needs of their infant and their responses may be more negating and less affirming of their infant's experience (Koutra et al., 2013; Murray & Cooper, 1996). This may result in their infants portraying avoidance behaviour, sadness, and unresponsiveness towards other family members (Fransson et al., 2020; Suess et al., 1992). Infants with such insecure attachment may grow up to be less goal-oriented, have strained relationships with

their families, are less outgoing and are less friendly towards their peers compared to their counterparts (Karavasilis et al., 2003).

Apart from infants, maternal perinatal anxiety and depression may also impact the mental health of their partner. Research suggests that if a mother is depressed during the perinatal period, the chances of her partner experiencing perinatal depression and anxiety increase by more than threefold (Chhabra et al., 2020). A likely explanation of this may be due to heterosexual couples co-existing in a shared environment and sharing stressors such as finances and lifestyle. Therefore, within this shared environment, it is likely that a stressor may impact both partners and ultimately contribute to the development of their depressive symptoms (Thiel et al., 2020).

Moreover, maternal depression may also result in marital conflict due to lapse in communication, and lack of interest in their relationship and infant. Marital conflict suggests the conflict experienced by a married couple in their relationship but in the current literature, it is sometimes used as a synonym for relationship distress experienced by couples in a married/de facto relationship (Thiel et al., 2020). Thus, to reflect the terminology used in current literature, marital distress has been used to suggest relationship distress experienced by a couple in this thesis.

More often, when a mother is experiencing perinatal depression or anxiety, fathers may have to step in and provide caregiving to their infant. Fathers with no prior experience in caregiving to an infant may find this situation stressful and may experience perinatal depression and/or anxiety (D. Wang et al., 2021). Further, paternal perinatal depression and anxiety in fathers have been linked to slow cognitive, behavioural, and mental development in their children (Ramchandani et al., 2008). Given the bi-directional relationship between the mental health of mothers and fathers during the perinatal period along with the negative

impact it has on the infant and the family, it is surprising to find that the research surrounding the mental health of fathers has not been a research focus compared to that of maternal mental health.

Although men do not undergo the extensive physical and hormonal changes as their partners during the perinatal period, pregnancy and childbirth can still be emotionally and psychologically demanding of them. Fear for their partner's health during pregnancy, and new commitments and responsibilities can be stressful for some fathers (Paredes & Parchment, 2021). The existing research on the impact of pregnancy and childbirth on fathers is not as vast as compared the mothers with existing research suggesting that the rate of paternal perinatal depression is 8.75% (Rao et al., 2020) and the rate of paternal perinatal anxiety is 18% (Leach et al., 2016). The reported prevalence is lower than that of maternal perinatal depression and anxiety, but higher than the rate of depression in men in the general population (3.6%; World Health Organisation [WHO], 2017) and thus, a significant public health concern.

The difference between the prevalence of perinatal depression and anxiety in men and women could be due to gender differences. Research suggests that depression manifests differently in men and women (Addis, 2008; Rice, 2011; Seidler et al., 2021). Individual differences in the way men express, experience, and respond to depression can be theoretically linked to gender role socialisation (Cochran, 2005, 2010; Rochlen et al., 2005). Gender role socialisation (*See Chapter 2*) begins at an early stage with boys being socialised to create restrictive norms (also known as traditional masculine gender norms) on how men should think, feel, and behave (Mahalik et al., 2005; O'Neil, 2008; Seidler et al., 2021). Some of these restrictive norms include emotional restriction, self-reliance, physical toughness, financial independence and success, and power over women (Addis & Cohane, 2005). These norms are assumed to influence how men respond to psychological distress such as

depression. For example, men who strongly adhere to traditional masculine norms such as emotional restrictiveness may have difficulty in identifying or relating to symptoms of depression such as grief, sadness, and low mood (Levant, 2011; O'Neil, 2015). However, they are more likely to relate to symptoms of anger, violence, and substance abuse which align with the traditional masculine gender norms. Hence, some men are hypothesised to exhibit more externalising symptoms of depression (e.g., substance abuse, violence, anger) and experience masculine depression, a phenotypic variant of depression (Addis, 2008; Chhabra et al., 2020). The masculine depression phenomenon may also be the reason that the prevalence rates of depression in men are underestimated as the screening and diagnostic tools for depression do not consider the role of gender socialisation (Addis, 2008; Chhabra et al., 2022).

The undiagnosed and/or untreated depression in men is not only harmful to themselves but may also impact their partner and infant. As mentioned earlier, there is a bi-directional relationship between the mental health of co-existent partners. Therefore, it is likely that if a man is experiencing mental distress, it may also impact his partner (Thiel et al., 2020). Moreover, paternal care is important for a child's cognitive, emotional, and social development (Ramchandani et al., 2005; Sethna et al., 2015). Paternal perinatal depression and anxiety have also been linked with attention-deficit and hyperactivity disorder (ADHD), conduct disorders, oppositional defiant disorder (ODD), anxiety, and depression in their infant (Angelini et al., 2016; Ramchandani et al., 2008). Paternal mental health is also negatively associated with the richness of the child's expressive vocabulary at 24 months of life (Paulson et al., 2009). A non-depressed father is more likely to engage in play, reading and day-to-day activities with his infant which is instrumental for their cognitive and social skills development (Ramchandani et al., 2008). Finally, paternal postnatal depression has been identified as a risk factor for child neglect and maltreatment (Bruno et al., 2020; Lee et

al., 2012). A recent study further confirms these findings by suggesting that if the father is experiencing perinatal mental distress, their children are 4.72 times more likely to be off-track (e.g., stunted nutritional status and poor vocabulary; Saptarini et al., 2021). To negate the negative impact of paternal perinatal anxiety and depression on their partner and infant, prevention of this disorder is important. Hence, identifying risk factors associated with paternal perinatal depression and anxiety is instrumental in the designing and developing of intervention and treatment programs.

Low SES such as unemployment, low education level and low income have been found as risk factors for paternal perinatal mental health. Fathers who have lower education status such as finishing middle school or high school only may have reduced chances of gaining well-paying employment (Cheung et al., 2019; Gao et al., 2009). This may also be reflected in their employment status. The arrival of a new baby may financially strain fathers, especially those who are unemployed, underpaid or working part-time (Bergström, 2013). Moreover, being a single or divorced father is considered a risk factor for developing perinatal depression and/or anxiety (Nath et al., 2016). A possible explanation is that if the child is not living with the father, single or divorced fathers may not be able to spend much time with their infant and may miss the important milestones occurring in their child's first year as compared to married men or those in a de facto relationship. Also, without the support of a partner, it may be hard for new fathers to navigate fatherhood alone. This may contribute to their low mood and elevate the symptoms of anxiety and depression in the perinatal period.

Unplanned pregnancy is another risk factor associated with paternal perinatal mental distress. Where pregnancies have been planned, fathers have had the chance to save financially for the expenses associated with pregnancy and childbirth and thus, are more likely to be socioeconomically secure than their counterparts (Boyce et al., 2007; Buist et al., 2003; Cheung et al., 2019; Gao et al., 2009; Leathers & Kelley, 2000; Nishimura & Ohashi,

2010). Also, in a planned pregnancy situation fathers are more likely to attend prenatal classes and parenting classes which may build their confidence in their parenting capabilities (Top et al., 2016). As a result, some fathers may feel more prepared for fatherhood and have lower parenting stress unlike where an unplanned pregnancy exists.

Maternal postnatal anxiety and depression have been identified as influential risk factors associated with paternal perinatal mental distress. A significant correlation between maternal perinatal depression and paternal perinatal mental distress exists, with correlations ranging between 0.2 and 0.76 (Bielawska-Batorowicz, & Kossakowska-Petrycka, 2006). Similarly, research in Australia and Brazil suggests that the risk of fathers experiencing perinatal mental distress increases by 2.5 times and 8.4 times respectively, if their partner is also experiencing postnatal mental distress (Matthey et al., 2000; Pinheiro et al., 2006).

Several factors contribute to the negative impact of maternal postnatal mental distress on paternal perinatal mental health. First, new fathers with no previous experience in parenting may become uncertain of their tasks and look for support from their partners. If his partner is depressed, he is unlikely to receive full support. Instead, the father is expected to provide the mother with demanding support, which may cause additional stress to the new father. Fathers may also have to single-handedly provide financial and emotional support to the family and take care of the infant if the mother is suffering from depression and/or anxiety. This may lead to dissatisfaction with the paternal role and may result in increased anxiety and/or depression (Bielawska-Batorowicz & Kossakowska-Petrycka, 2006). Second, fathers with depressed partners are more likely to suffer from higher levels of mid-pregnancy gender role stress and postpartum anxiety compared to partners of non-depressed women (Morse et al., 2000). The gender role stresses include fear of emotional expression, physical inadequacy, intellectual inferiority, subordination to women and performance failure (Eisler & Blalock, 1991). The emphasis on man's role as the breadwinner may be increased due to

the financial strain after the birth of the infant and may in turn prevent the father from being actively involved in parenting. Lack of parenting skills and knowledge may cause a father to feel inferior intellectually to his partner. Similarly, the fear of failing in performance in both work and sex is significantly related to psychological distress among fathers, as it is considered a part of emphasised male gender role (Buist et al., 2003; Morse et al., 2000).

Lack of social support from family and friends is also an important risk factor, which can make it more difficult for men to adapt to fatherhood during the postnatal period (Kim & Swain, 2007). The most effective emotional support for fathers is likely to come from their partner, however, support and acknowledgments from other family members, friends and colleagues about the father's role and understanding their difficulties may have a positive effect on fathers (Kim & Swain, 2007). Mothers may provide support by sharing and providing information about parenting that new fathers may lack, and help the fathers interact with their newborns. Family members and friends can provide support by sharing positive experiences of fatherhood and giving advice to the new father based on their experiences. But, if this support is lacking, it may precipitate the symptoms of an already anxious father into depression (Gao et al., 2009). Boyce et al. (2007) also support the finding by reporting that Australian fathers were at high risk for emotional distress (anxiety and depression) during the perinatal period if they were dissatisfied with their social support from their partner and family members and had heard negative experiences of becoming a father from other men.

In addition, cultural issues specific to the country in which the family live may also influence paternal mental health. In a study of Chinese parents, Mao et al. (2011) showed that preference for a male child was a significant predictor of postnatal distress (anxiety and depression). According to traditional Chinese culture, only a male child can provide for their parents in old age and participate in important aspects of their traditions. This stress was also

compounded by the one-child policy in mainland China. In another parenting study that examined the effect of the infant's gender on a father's well-being in a sample of Kenyan parents, Kohler et al. (2005) found that while having children increased fathers' overall level of happiness, the positive effect of having a first-born son on happiness was 75% greater than the effect on happiness associated with a first-born daughter.

To summarise, the risk factors for fathers' perinatal mental health include maternal postnatal anxiety and depression, SES factors such as unemployment, low education, low income, being single or divorced, unplanned pregnancy, and cultural preferences. The risk factors are similar to those associated with maternal perinatal mental distress. However, there has been a paucity of research in identifying the risk factors which are unique to fathers only. Further, risk factors such as financial stress and parenting stress associated with paternal perinatal mental distress seem to have an underlying gendered context. For example, if a father is unable to perform the traditional masculine gender roles (e.g., breadwinner) he is more likely to experience perinatal mental distress from the fear of being ostracised by his peers. But again, there is a dearth of research that has aimed to examine the undercurrent of masculinity associated with the risk factors. Thus, the overall aim of this thesis is to explore (i) the unique risk factors associated with paternal perinatal mental distress, and (ii) the role of masculinity, in particular, masculine gender role stress on the mental health of fathers in the perinatal period. The next section of the chapter will give the reader an outline of the aims and approach of this research.

Research Goals and Thesis Structure

The remainder of this chapter outlines the goals and structure of the thesis. The work follows a "thesis by publication" format, consisting of a combination of traditional thesis chapters (Chapters 1, 2, 3, and 8), and manuscripts of published/in press/submitted journal articles (Chapters 4, 5, 6,7).

The current thesis focuses on investigating the risk factors of perinatal mental distress in men. There are three reasons for this. First, there is a great deal of evidence suggesting that a significant proportion of men experience depression and anxiety during the perinatal period (Cameron et al., 2016; Rao et al., 2020). Despite the prevalence, there is a lack of research on the risk factors of perinatal depression and anxiety in men, with research mostly focusing on the prevalence and symptomatology of postnatal depression in men. Second, the dearth of studies investigating risk factors of paternal perinatal mental distress has only focused on investigating risk factors that are known in the maternal perinatal research area. For example, there is a heavy focus on exploring the impact of marital distress, socio-economic conditions, age, and income (risk factors common to mothers) in fathers during the perinatal period. However, the research is deficient when it comes to determining if men have any unique risk factors. Finally, the relative lack of research on gender and depression in men is of great public health concern. As discussed earlier, men express depression differently than women which may produce an underestimate of the true rates at which men suffer depression (Addis, 2008; Chhabra et al., 2020). Also, the negative consequence of perinatal mental distress not only impacts men but has a wider impact on their partner, children, and community. For all these reasons, there is a pressing need to explore the impact of gender on paternal perinatal mental health as well as investigate likely risk factors.

Chapter 2 provides an overview of the theoretical literature relevant to the expression of depression and anxiety in men. This chapter focuses on providing a theoretical rationale as to how socio-cultural norms influence the expression of gender in men. This chapter also provides an insight into how gender roles and gender norms may influence an individual's expression of psychological disorders such as depression and anxiety.

Chapter 3 provides general methodological details of the thesis. The methods used in each study (interviews and surveys) are also discussed in this chapter.

Chapter 4, uses systematic review and meta-analysis to answer two research questions, (a) what are the risk factors associated with paternal perinatal depression and anxiety? and (b) what are the unique risk factors for fathers' perinatal depression and anxiety compared with those for mothers?

Chapter 5 uses sequential mixed methods to corroborate the findings from Chapter 4 in a sample of Australian fathers. The chapter also identifies any new risk factors for paternal perinatal mental distress in Australian fathers which were not identified in Chapter 4.

Chapter 6 uses interpretative phenomenological analysis to explore how Australian fathers are reconstructing their gender roles in fatherhood to psychologically satisfy them.

Chapter 7 examines the mediating role of family-work conflict and sleep disturbances experienced by fathers on the relationship between their masculine gender role stress and perinatal mental distress.

Chapter 8 provides a summary and synthesis of findings. The implications of findings, limitations, and recommendations for future research are also discussed.

CHAPTER 2: Theoretical Framework and Literature Review

Academics and clinicians argue that the way women express their mental distress makes it easier for the health professionals to give diagnosis such as outward expression of sadness (Emslie et al., 2007) and grief (J. Scott et al., 2018). Easier diagnosis may lead to a higher prevalence of mental health disorders such as depression and anxiety in women (Cole, 2013). The estimated global prevalence of depression and anxiety in women is 5.1% and 4.6%, respectively (WHO, 2017). Compared to this, the global prevalence of depression and anxiety in men is 3.6% and 2.6%, respectively (WHO, 2017). The reason for a lower prevalence in men is because health professionals struggle to screen or diagnose men because of the way they articulate or express their emotional and psychological distress (J. A. Smith et al., 2018). Research suggests that gender may play an integral role in how men and women express and experience depression and anxiety which may impact their prevalence rates (Emslie et al., 2007; Hawton, 2000). For example, research suggests that while women often present with internalising symptoms of depression (e.g., sadness), men may express depression with externalising symptoms (e.g., anger) to adhere to the norms of the masculine gender role (Albert, 2015). Further, these externalising symptoms are not recognised by DSM-V as specifiers for either depression or anxiety, making it harder for clinicians to diagnose men. Although these differences in the prevalence rate of mental health disorders in men and women have led to increased attention on the role of gender on mental health issues, there are limited studies that have focussed on the impact of the masculine gender role on perinatal depression and anxiety in men. To understand how adhering to masculine gender norms can impact the mental health of fathers in the perinatal period, it is important to review the traditional masculine gender roles and understand if they have changed over the period. Thus, the current chapter will review the competing viewpoints and theoretical

understandings that have informed traditional masculine identity, as well as examine the impact of masculine gender norms on the mental health of men during the perinatal period.

Gender Role Theory

Gender differences have been examined in psychology dating back to the late 1800's. Prior to the 1970's, the construct of masculinity and femininity was largely understood through an essentialist-based approach (Banos, 2019; Helgeson, 2015). The essentialist approach also known as the sex differences approach posited that there were largely innate biological differences between males and females such as genes, anatomy, hormones, and gonads (Addis & Mahalik, 2003; Juster et al., 2011; Lin et al., 2021). Within this approach, researchers suggested that individuals either possessed masculine traits or feminine traits, but not both. The essentialist approach further focused on identifying the traits that were naturally aligned with being a male and differentiated from one being a female. These included looking manly, muscular, having facial hair, sexually engaging with the opposite sex, and engaging in behaviours which promoted strength and risk (Addis & Mahalik, 2003). While sex differences in human behaviour have been well documented, the aetiology of these differences remains a matter of debate (Webster & Rashotte, 2009). Research over decades and within different age cohorts indicated that a male typically endorsed personality characteristics that were broadly categorised as masculine (e.g., agentic, assertive, and competent), while a female typically endorsed personality characteristics broadly categorised as feminine (e.g., communal, responsive, and expressive; Bem, 1974). Despite this evidence, there has been an ongoing debate if these personality characteristics were a result of biology (e.g., sex), socialisation (e.g., gender), or an interaction of the two.

The debate between sex and gender has also given rise to the constructionist approach. Although often referred to interchangeably, sex and gender refer to different concepts (Bem, 1993). Sex refers to one's biological designation as either male (e.g., XY

chromosome) or female (e.g., XX chromosome), based on the inheritance of sex chromosomes from birth parents (Wood & Eagly, 2002). In contrast, gender refers to the cultural and social meaning attached to being a man or a woman and incorporates cognitions and attitudes associated with these meanings (Rice, 2011). While one's sex is a characteristic ascribed at birth, gender involves the process of learning from one's environment about how maleness and femaleness are enacted (Lin et al., 2021). Today, more and more researchers engaged in gender studies are adopting the constructionist approach as they believe that gender roles (masculinity and femininity) and gender norms are not inherent but learnt through the surrounding environment (Hoffman, 2001; Lin et al., 2021; Wong & Rochlen, 2008).

The constructionist approach argues that masculinity or femininity is not a trait rooted in biology or an inherent trait but instead is a choice to either express or suppress emotions and feelings based on the societal expectation of the norms in a situation (Wong & Rochlen, 2008). Constructionist researchers state that through gender socialisation paradigms consisting of reinforcements, punishments, and observational learning, boys and men learn to endorse and conform to the masculine gender roles (Addis & Mahalik, 2003; Connolly et al., 2016; Cournoyer & Mahalik, 1995; Levant & Wimer, 2014). Gender role theory refers to the ways by which men enact culturally desirable traits such as stoicism, independence, avoidance of emotional expression, and suppression of emotional pain (Garfield et al., 2008; A. A. Rogers et al., 2020; Wilhelm et al., 2006). Such idealised images guide sex-appropriate activities and behavioural repertoires (Bem, 1981). Further, the gender role schema model also supports the view of constructionist researchers (Bem, 1981). The model suggests that one's idea of maleness or femaleness is due to the role of cultural forces and is a direct result of normative experiences placed on an individual that arises from the belief that there are innate and natural differences among the sexes (Bem, 1981). The constructionist model of

understanding implies that the values and beliefs associated with manhood are strategically chosen to ensure and preserve dominance (Addis & Mahalik, 2003; Banos, 2019; Gill et al., 2014) as opposed to being just an expression of natural differences.

Using a constructionist approach Bem (1981) also argues that healthy men and women can possess similar characteristics, conceptualised as psychological androgyny (e.g., high in both masculine and feminine traits). The emphasised androgyny, having both masculine and feminine qualities, is considered optimal for psychological well-being (Banos, 2019; Zosuls et al., 2011). However, for an individual to adopt an androgynous gender role they must in part violate certain gender norms of their sex. Gender norms are defined as roles an individual plays according to the requirement of a specific situation (Levant, 2011; West & Zimmerman, 1987). Further, contextual factors may also influence a man's view of situational norms on emotions and emotional behaviour (Wong et al., 2010). These factors work on the micro and macro levels of masculinity. At the micro-level, masculinity varies across societal interactions and at the macro level, across historical, cultural, socio-economic, and societal factors (Wong & Rochlen, 2008). For example, an androgynous male may be either emotionally expressive (consistent with the feminine gender role), or emotionally restrained (consistent with the masculine gender role), depending on the situational context. The development of the psychological androgyny framework further confirms the belief that sex, and gender are separate concepts. Sex is then defined as the biological and physical attributes that accompany being a male or female while gender is then defined as a complex array of psychological, sociocultural relations and practices associated with sex (e.g., masculinity and femininity) that are based on biology and shaped by environment and experiences (Banos, 2019; Lin et al., 2021). This definition of gender creates a view in which masculinity is seen as a social role shaped by gender norms that men attempt to perform and

actively maintain. Thus, masculinity is a continuous process that is always being constructed and challenged.

Traditional Masculine Identity

Past and traditional definitions of masculinity and gender identity were often limited to the physical appearance and sexual preferences of an individual (Freund et al., 1974; McConaghy & Armstrong, 1983). According to these definitions, a man was considered masculine if he dressed in a masculine way, behaved like a man (strong, risk-taker, aggressive), and engaged in sexual relationships with females. Pleck (1995) further added to this definition by stating that masculine identity was based on how strongly a man adhered to the culturally and socially defined standards of masculinity. Hence, traditional masculinity was then defined as sets of behaviour, interests and traits that were associated with the male gender role that emphasised bravado, emotional invulnerability, and posturing for social dominance (Banos, 2019; Helgeson, 2015). It was particularly manifested in restricting the expression of feminine-type emotions (e.g., sadness, fear, and compassion) and displaying aggression when threatened (A. A. Rogers et al., 2020). These norms have been historically and symbolically salient in most Western societies (hence the term “traditional”), and recent work indicates many men subscribe to these norms with increasing rigidity as a response to social pressures (L.O. Rogers et al., 2019) and a felt need to maintain social status (A. A. Rogers et al., 2020).

The concept of “Blueprint for Manhood” (David & Brannon, 1976) provides an insight into the set standards of traditional masculinity. This blueprint has four dimensions. The first dimension, no sissy stuff refers to the stigma men feel while doing anything remotely feminine (David & Brannon, 1976; O’Neil, 2008). Displaying emotions and feelings is often characterised as a feminine trait while being a male is often portrayed as being restricted to no display of emotion. If men display any remotely feminine trait, they are

often shamed or ridiculed by their peers (Chhabra et al., 2020). While restricted emotionality may make men appear more masculine, it can also have negative consequences. For example, a lack of engagement in emotions and feelings by men may hinder their ability to engage in meaningful relationships (Pollack, 2005). The second dimension, the big wheel refers to men's obsession with success, status, and the need to be looked up to (David & Brannon 1976; Fahey 2007; O'Neil, 2008, 2015). This drive towards success and status most often manifests in the form of one's work. Within the traditional masculinity paradigm, a man's work is a set standard against which his success and his status in society are measured (Levant, 2011). If a man is unemployed and unable to provide for his family, he may be viewed as being on the lower rung of the success ladder and may be ostracised by his peers (Addis & Mahalik, 2003). The third dimension, the sturdy oak refers to the belief that a man should portray toughness, confidence, self-reliance, strength, independence, determination, and unflappability (David & Brannon, 1976; O'Neil, 2008). The fourth dimension, give 'em hell refers to aggression, violence, and risk-taking behaviour that men are expected to portray when following the traditional masculine ideology (David & Brannon, 1976; O'Neil, 2008, 2015). The use of actual or threatened violence, contact sports and enlisting in war are some of the avenues men may utilise to attain societal approval and measure up to the standards of this dimension (Addis & Mahalik, 2003). Thus, achieving the status of a "real man" may motivate men to strongly adhere to the cultural and social standards of traditional masculinity.

Similar to the concept of "Blueprint for Manhood", the concept of "The Masculine Mystique" (O'Neil, 1981) is also regularly referenced within the traditional masculine ideology. This concept encourages men to promote sexism and embrace the masculine ideology which is based on a set of values and beliefs that promotes rigid gender stereotypes and beliefs about men and masculinity. The values and beliefs arising from this concept are:

(i) men are innately superior to women; (ii) masculinity is superior to femininity; (iii) power, the dominance of others, competition and control are essential to proving masculinity; (iv) vulnerability, feelings and emotions are feminine and should be avoided; (v) rational and logical thought and communication is masculine, whereas communication and thought that emphasises emotion, feelings, and intuition are inherently feminine and should be avoided; (vi) while sex is a means for providing masculinity, affection and intimate behaviour are feminine; (vii) vulnerability and affection toward other men should be avoided to avoid perceptions of homosexuality; work and career success are measures of masculinity, and (viii) men are superior employees, the man should be the provider and the woman should be the caretaker of the home (O'Neil, 1981). These values and beliefs promote fear of femininity and encourage men to devalue feminine values and behaviours, ultimately promoting sexism (O'Neil, 1981).

On closer inspection, there are underlying commonalities between “Blueprint for Manhood” (David & Brannon, 1976) and “The Masculine Mystique” (O'Neil, 1981). These concepts have a common denominator of fear of feminine values, attitudes, and behaviours. If a man adheres to the rules and beliefs of the above-mentioned concepts, only then he is considered as being masculine or an epitome of masculinity in the past. Displaying any feminine behaviours (emotions, feelings) is associated with shame and fear of dismissal within traditional masculine ideology. However, with the changing roles of men in society, researchers are re-examining the traditional masculine identity and gender issues. Today, men are working but at the same time helping in the household chores, getting involved in the rearing of their children and being involved in other activities which were considered purely feminine in the past. If the concepts introduced by David and Brannon (1976) and O'Neil (1981) are applied to men in present times, it may bring them psychological and emotional distress.

Pleck (1981) theorised that a male faces more severe consequences than a female when he violates gender norms (OliFFE et al., 2016). Since masculinity is a continuous process that is always being constructed and challenged, men must “perform” their gender to label themselves as masculine (Addis & Cohane, 2005; Banos, 2019). When a man “performs” or “plays gender”, they portray behaviour that may have positive or negative consequences according to the societal norms. If the portrayed behaviour does not live up to society’s expectation of gender norms, it may lead to that man being viewed as less masculine (Levant, 2011; West & Zimmerman, 1987). In comparison to females, males experience more ridicule and are punished more severely when they engage in non-traditional or non-stereotypical masculine behaviours such as showing emotions, seeking help, or expressing hurt (Courtney, 2003). For example, young boys are encouraged to suppress their emotions and certain activities begin to be gendered (e.g., playing with dolls, dressing up, playing with trucks, and wrestling; Banos, 2019). Another study found that males who are studying social sciences such as psychology and sociology in American universities are perceived more negatively than females studying natural sciences such as mathematics and engineering (Sakalh-Ugurlu, 2010). Further, males who undertake occupations typically reserved for women (e.g., nursing) frequently experience negative sanctions such as being questioned about their sexuality and prohibited from working in specific clinical areas (Rice, 2011). Hence, in comparison to females, males are less likely to experience behaviour flexibility in the enactment of non-traditional gender role behaviours (Hughes & Seta, 2003; Rice, 2011).

To promote their masculine status in society, men may also engage in heterosexual masculine scripts when they “play gender” (Mahalik et al., 2003). There are eight such scripts associated with societal gender norms. The “tough guy” script is associated with teaching men to be tough and assertive by suppressing their emotions. Men are taught not to display any signs of vulnerability and to avoid the expression of sadness. Similarly, the “strong and

silent” script promotes boys and men to appear unemotional and stoic by constricting and restricting their emotional expression. The “give em’ hell” script further promotes aggression and violence in boys and men to promote their power, status and prestige. The “playboy” script emphasises suppression of intimacy and connection with the other person but instead promotes lust. The “homophobic script” promotes masculine behaviour while encouraging avoiding feminine behaviour or behaviour which would promote the expression of emotion. The “winner” script encourages men to be competitive and successful. Last, the “independent” script promotes independence, strict adherence to self-sufficiency and a lack of significant attachments in relationships (Mahalik et al., 2003).

Although enacting the above-mentioned scripts may promote masculinity in men, rigid adherence to these scripts may also promote interpersonal violence, difficult interpersonal relationships, and risk-taking behaviours. For example, the “tough guy” script encourages men to avoid emotional expression. This may cause men to find alternative ways to cope with psychological distress such as destroying things, self-medication, or risk-taking behaviour resulting in harming themselves or others (Courtenay, 2000; Eisler, 1995).

Similarly, men who engage in the “give em’ hell” script are more likely to portray aggressive or violent behaviour. Thus, they are more likely to engage in abusive behaviour such as domestic violence to maintain their power over their partner in a relationship (Bernard et al., 1985; Mahalik et al., 2003; Vass & Gold, 1995). Men engaging in the “playboy” script are less likely to have a long-lasting or stable relationship with their partner as they are likely to be afraid of intimacy and preference for inequality in a romantic relationship (Brooks, 1998; Good & Sherrod, 1987; Mahalik et al., 2003).

Gender Role Strain

One of the most important conceptual advances in understanding how gender-related constructs influence men’s mental health has been Pleck’s (1981, 1995) gender role strain

paradigm (GRSP). The GRSP suggests that men experience psychological strain when they attempt to live up to the expected standards of the male role, and how restrictive gender roles may be detrimental to the mental health of men. There are several beliefs and values which are central to GRSP. These beliefs are: (i) gender roles are derived from the stereotypes that are very much kept alive by traditional masculine ideology; (ii) a high percentage of people in fact violate or deviate from these norms which elicit condemnation and negative psychological consequences; (iii) the thought of an actual or imagined violation of gender roles motivates people to make every attempt to conform to the established norms; (iv) males experience very severe consequences than females for violating these norms and minimal reinforcement exists to support doing so; (v) certain prescribed behaviours such as male aggression are often dysfunctional; (vi) both males and females experience gender role strain in its paid work and family roles; and (vii) this strain is linked to historical change concerning gender-role expectations (Fahey, 2007; Levant, 2011; O'Neil, 2015; Pleck, 1981, 1995). GRSP frames masculine gender roles in terms of stereotypes, norms, and expectations such as success, power, dominance, competitiveness, toughness, self-reliance, independence, restrictive affection and emotionality, and avoidance of feminine-type behaviour (Levant & Richmond, 2016).

In an update to GRSP, Pleck (1995) put forward three types of strains associated with the male gender role. The three strains are i) discrepancy strain is the strain that results when a man fails to conform to his internalised manhood ideal eliciting negative judgements from others and leading to devaluing of one's self (Levant, 2011; Pleck, 1995); ii) trauma strain applies to certain groups of men whose experiences with gender role has been psychologically traumatic such as men of colour, gay and bisexual men (Levant, 2011; Pleck, 1995), and iii) dysfunction strain results from the negative consequences one experiences when engaging in behaviours that promote masculinity such as aggression/violence,

emotional inexpressiveness, the pursuit of power and prestige (Levant, 2011; O'Neil, 2015; Pleck, 1995).

The introduction of GRSP was an important departure from the essentialist-based approach to the construct of masculinity, with this framework still being a part of the current research on gender roles (Generali, 2002). GRSP reinforced the idea that either consciously or subconsciously, some of the beliefs about masculinity may be less informed by nature but instead more by an interest that enables men to preserve their dominant, hegemonic status in society (Levant & Wimer, 2014).

Masculine Gender Role Stress

Using Pleck's (1981,1995) gender role strain paradigm and specifically, discrepancy strain, Eisler and colleagues (1988) developed the masculine gender role stress (MGRS) construct. Anxiety, stress, depression, and men's gender roles have been conceptually linked because fears about meeting masculinity norms can be stressful. Thus, MGRS is a theoretical construct that describes the stress men go through when they are not living up to the demands of the male role (e.g., not being in control, not attaining success at work; Eisler et al., 1988; Paredes & Parchment, 2021). There are significant gender differences in situations that men and women appraise as stressful. The socio-cultural incidents that reward masculine attitudes and behaviours, while punishing feminine behaviour result in the development of masculine gender role schemata in the majority of men (Arrindell, 2005; Paredes & Parchment, 2021). These masculine schemata are then used by men to produce a coping response in case of potential threats in the environment (Arrindell et al., 2003). However, strong adherence to masculine gender norms may lead to restrictive coping strategies in particular situations. For example, men may feel stressed in situations that require emotional support (traditional feminine behaviour) because they do not have the necessary skills or male norms prohibit them from engaging in such "unmanly" behaviour. Hence, MGRS is based on the paradigm

that gender-related differences in the way men appraise environmental, behavioural, and perceptual events are directly related to the way they experience stress, which may increase vulnerability to physical and psychiatric dysfunctions (Arrindell, 2005; Paredes & Parchment, 2021). These dysfunctions may include depression, anxiety, alcohol abuse, domestic abuse, sexual dysfunction, Type A behaviour patterns, poor self-disclosure, psychosomatic health problems and inability to give or receive social support to/from others (Jakupcak et al., 2014). As MGRS may lead to a variety of physical and psychological disorders, it is very important to quantitatively measure it and address the issue using screening and treatment.

Masculine Gender Role Stress Scale

The masculine gender role stress scale was developed by Eisler and Skidmore (1987) to explore the relationships between MGRS and dysfunctional behaviour patterns in men. MGRS scale is a self-report questionnaire. The preliminary version of the MGRS scale included 66 items. Some examples include “being too tired for sex when your lover initiates it” and “admitting to your friends that you do housework”. Items were rated by respondents on a 7-point Likert scale ranging from “not at all stressful” to “extremely stressful”.

Factor analysis of the MGRS scale by Eisler and Skidmore (1987) resulted in a 40-item scale with five interpretable factors (Appendix D). Each of the factors contained seven to nine items, with loadings ranging from 0.33 to 0.70, implying that the factors were related to each other but were separate entities (Moradi et al., 2000). Factor 1 was defined as physical inadequacy and contained nine items. The items were concerned with the stress of not being in good physical condition, being unable to find or satisfy a sexual partner, losing in sports competitions, and being unable to hold one’s liquor. Examples of items are “being perceived as having feminine traits” and “being compared unfavourably to other men”. Factor 2 was defined as emotional inexpressiveness and contained seven items. The items for this factor included expressions of love, fear and hurt feelings, as well as being seen crying.

This factor also contained items in which one had to provide or receive emotional support from both sexes. Examples of the items are “talking with a woman who is crying” and “comforting a male friend who is upset”. Factor 3 was defined as the subordination of women and contained nine items. Items for this factor constituted situations where a man was being outperformed by a woman, having a female boss, letting a woman take control, or being with women who are more successful or who make more money. Examples of items are “admitting to your friends that you do housework” and “letting a woman take control of the situation”. Factor 4 labelled as intellectual inferiority contained seven items. The items contained situations that question one’s rational abilities or demonstrate uncertainty, lack of ambition, and indecisiveness. Sample items are “having people say that you are too emotional” and “staying home during the day with a sick child”. Factor 5 labelled as performance failure contained eight items concerning failure in two different spheres, work and sex. Sample example items include “getting passed over for a promotion” and “being unable to perform sexually”. The MGRS scale reported an internal consistency (Cronbach’s α) for the full scale of .93 (Swartout et al., 2015) and test-retest reliability of .93 (Eisler et al., 1988).

The construct validity of the MGRS scale has been based on studies showing a) men evidence higher MGRS than women (Eisler & Skidmore, 1987), b) MGRS scores effectively identify men who are more or less vulnerable to perceiving and reacting negatively to threats to their masculinity (Moore & Stuart, 2004), and c) MGRS scores in men are uniquely related to certain negative physical and psychological health relative to women (Eisler et al., 1988; Lash et al., 1990; McDermott et al., 2010). MGRS scores have also been continuously linked to violence and aggression (Eisler et al., 1988; Jakupcak et al., 2002; Jakupcak, 2003; Moore et al., 2010; Parrott et al., 2011), alcohol abuse (Eisler, 1995; Eisler et al., 1988; Lash et al., 1998; Monk & Ricciardelli, 2003), stress and anxiety (Eisler & Blalock, 1991), masculinity

adherence (Gallagher & Parrott, 2011; Mahalik et al., 2003), and perinatal depression and anxiety in fathers (Buist et al., 2003; Chhabra et al., 2020; Morse et al., 2000).

MGRS scale is a widespread tool and has been used extensively for the past 30 years. However, it is important to note that the role of men in today's society is changing from just being the breadwinner of the family to a family man who takes equal responsibilities for household chores and the rearing of the children. Along with men, the role of women is also changing with more and more women employed and working full-time jobs. The changing gender roles are also likely to impact traditional masculine ideology, with more men deviating from it. It is also likely that not all men are likely to adhere to the traditional ideology and may not have the same levels of masculine gender role stress (Eisler & Skidmore, 1987). Thus, it may be possible that the current version of the MGRS scale is not ideal for the current gender roles portrayed by men and thus, there is a requirement for an updated version of the scale. Also, using the MGRS for women seems inappropriate. Swartout and colleagues (2015) have developed an abbreviated version of the MGRS scale. However, the scale still requires replication. Further research is needed to predict its reliability, theoretical consistency, and predictive validity. In this thesis, the original 40-item MGRS scale is used due to its established validity and reliability.

As mentioned before, MGRS scores have been linked to anxiety, depression and perinatal depression and anxiety. The next section of the chapter will provide an overview of depression and anxiety in men, as well as expand on the relationships between masculinity, depression, and fathering.

Masculinity, Mental Distress, and Fatherhood

At a global level, approximately 3.6% and 2.6% of males experience depression and anxiety each year, respectively (WHO, 2017). While women are more likely to attempt

suicide due to depression and/or anxiety, men are four times as likely to commit suicide (Levin & Sanacora, 2007; Siedler et al., 2021). Despite the alarming prevalence and suicide rates, it has been suggested that these rates are under-reported. Gender differences in the diagnosis of depression may not indicate a true prevalence with studies suggesting that depression may manifest differently for men (Addis, 2008; Cochran, 2005; Levin & Sanacora, 2007). Although the rates of anxiety are as alarming as depression, the focus of gender studies on the mental health of men has mostly focused on depression. Due to the comorbidity of depression and anxiety (APA, 2018), it is assumed that an individual with depression is likely to exhibit symptoms of anxiety and vice-versa. Hence, from here on depression in men will be explored and it is assumed that the aetiology for anxiety will be similar to that of depression.

So, what does it mean to suggest that depression may be “different” in men? The existing clinical and research literature on depression in men has led to the conclusion that there is currently no unifying conceptual or theoretical framework guiding research (Addis & Cohane, 2005). However, four different frameworks have been used consistently to lead research in this area: the sex differences framework, the masked depression framework, the gendered responding framework, and the masculine depression framework.

Sex Difference Framework

The sex differences framework assumes that both men and women experience depression similarly with minor differences. For example, men may experience more somatic symptoms (anger) and are less likely to experience sadness (Pollack, 2005). Within this framework, gender is not a central theoretical construct but rather is a synonym for sex (Cleare et al., 2015; Stewart, 2020). The sex difference framework has been often used in clinical research, with studies suggesting that the prevalence of depression in men has been underestimated because men express depression in a way that does not correspond to the

symptoms listed by the Diagnostic and Statistical Manual of Mental Disorder (DSM; Cochran & Rabinowitz, 2000; Leimkühler et al., 2007). For example, a greater prevalence of substance abuse may indeed be a reflection of underlying depression. Factors such as biological factors, gender socialisation, coping, and response styles have accounted for this sex difference framework (Cyranowski et al., 2000; Nolen-Hoeksema, 2002). The sex differences framework has been criticised for its lack of consistent results. Particularly studies using the sex differences framework continue to find conflicting results in the severity, mean number of symptoms, duration, and prevalence of depression (Hildebrandt et al., 2003; Nolen-Hoeksema, 2002; van Loo et al., 2018).

Masked Depression Framework

The masked depression framework suggests that men suffer from conventional depression, but the way men express and respond to depression can be theoretically linked to gender socialisation. Gender socialisation practices are thought to create restrictive norms defining how men should think, feel, and behave (Stewart, 2020). The restrictive masculine norms of traditional masculinity are physical toughness, emotional restriction, competitiveness, financial independence, and power over women (Mahalik et al., 2003). The restrictive norms are assumed to impact how men respond to depression. For example, men who strongly adhere to emotional restriction may have difficulty relating to symptoms of grief, sadness, or depressed mood (Addis & Cohane, 2005; Levant, 2011). Under this framework, men's depression is seen as a "private experience, unshared with others and possibly also hidden from others, that men attempt to alleviate or remove by their own efforts without external help...because the experience of depression is incompatible with the male sex role and masculine socialization" (L. W. Warren, 1983, p. 147). The emphasis of masked depression is twofold: first, it focuses on how men repress – by hiding, denying, and avoiding – camouflage, reframe, and distract from prototypical symptoms, allowing them to conform

more closely to or avoid violating traditional masculine norms (Cochran & Rabinowitz, 2000; Stewart, 2020). Second, it emphasises that conventional depression symptoms are for many men unmasculine, unfamiliar, or unrecognised (Stewart, 2020). As a result, men tend to interpret, express, and manage negative affect through a set of externalising symptoms that are incongruent with both popular stereotypes and the diagnostic criteria of conventional depression. The externalising symptoms are, however, consistent with and even confirmatory of traditional masculine gender norms (Genuchi & Mitsunaga, 2015; Herbst et al., 2014; Stewart, 2020).

Despite assertions to the contrary (e.g., Addis, 2008), results from multiple research projects provide ample illustrations of masked depression. For example, Rabinowitz & Cochran (2008) provide a detailed discussion of a case of masked depression, as well as numerous short case vignettes (Cochran & Rabinowitz, 2000). Additionally, multiple studies both quantitative (e.g., Herbst et al., 2014; Latalova et al., 2014; Nadeau et al., 2016) and qualitative (e.g., Galasinski, 2008; Heifner, 1997; Hudson et al., 2018; R. O'Brien et al., 2005), offer clear examples of masked depression.

Several studies have provided indirect evidence that further supports this framework. Men are much less likely to seek help for medical (Hale et al., 2010) or mental health problems (Addis & Mahalik, 2003; Galdas et al., 2005), ask questions of their clinician and have those questions answered fully (Pendleton & Bochner, 1980), disclose depression symptoms (Courtenay et al., 2002), and have their depression symptoms recognized by their clinician (Potts et al., 1991). Men's depression may, in some senses, also be masked from themselves. Men who report greater conformity to traditional masculine norms, for example, are more likely to use immature or neurotic defences, e.g., projection (Mahalik et al., 1998), score higher on assessments of alexithymia (Levant et al., 2003), and have greater difficulty

in identifying or describing affective symptoms (Levant, 2011) or depressed moods (Brownhill et al., 2005).

However, while masked may be an accurate description of how some researchers and clinicians perceive men's depression, the masked depression framework has several limitations. Perhaps most seriously, as a theoretical construct it is diagnostically problematic (Addis, 2008). The current system for diagnosing psychopathology, embodied in the DSM-5, is descriptive and categorical, defining disorders by the presence or absence of signs and symptoms rather than by underlying pathology or aetiology (Hyman, 2010). This process makes it impossible to diagnose depression without observed or self-reported symptoms that meet DSM criteria. Masked depression's focus on underlying symptoms is a crucial limitation given the evidence that men's depression is underdiagnosed and particularly given the association of externalising symptoms with increased suicidality (Olfiffe, et al., 2019; Rice et al., 2018). The masked depression framework may also be unnecessarily complex, subsuming three more parsimonious constructs under a single concept: conventional depression, externalising depression, and stigma. The latter construct has substantial research support, particularly in the context of men's help-seeking (Hammer & Vogel, 2010; Latalova et al., 2014; Magovcevic & Addis, 2005; Olfiffe et al., 2016; Pederson & Vogel, 2007) and connects logically with substantial theorising and empirical research on shame as a moderator of men's depression (Krugman, 1995; Osherson & Krugman, 1990; Rice et al., 2017; Shepard & Rabinowitz, 2013). A framework that examines men's depressive symptom patterns separately from the stigma and shame associated with such a disorder could resolve the methodological and diagnostic issues, allowing researchers to focus on men's depression symptoms.

Gendered Depression Framework

The gendered depression framework rests on the assumption that masculinity not only plays a role in how men respond to depression but also how they generally respond to negative affect such as low mood, grief, and sadness (Addis, 2008). The framework closely follows response styles theory and suggests that the way an individual responds to low mood and sadness directly correlates to their development of depressive episodes and the length and the severity of the episode (Morrow & Nolen-Hoeksema, 1990). Thus, individuals such as women and children who are likely to ruminate in response to depressed mood are more likely to experience a severe depressive episode. In contrast, men are more likely to distract themselves from their low mood and are less likely to develop an episode of depression (Thayer et al., 2003). Although using a gendered depression framework has contributed to the understanding of depression in girls and women, it has not led to a corresponding body of theory and research focused specifically on boys and men. Some of the reasons are: first, the framework was designed to account for sex differences in the prevalence and incidence of depression. The framework did not consider how gender may influence men's experience, expression, and response to depression. Second, there is a lack of use of standardised clinical interviews to examine the responses of men to depression. The use of self-report measures may not fully capture the gendered nuances experienced by men when they are feeling sad or grief.

Masculine Depression Framework

The masculine depression framework suggests that socialisation according to restrictive masculine norms can create developmental and intrapsychic strain, as boys and men struggle to meet unattainable and contradictory standards of masculinity (Pleck, 1981, 1995). Such strains are assumed to put men at risk for emotional difficulties (e.g., depression and anxiety) and may create significant barriers to coping effectively with problems. Since

masculine gender norms encourage action and discourage brooding, men who are depressed are hypothesised to show more externalising symptoms. As a result, some men may experience “masculine depression”, a phenotypic variant of depression (Addis, 2008). Rather than functioning to conceal conventional depression as the masked depression framework suggests, these externalising indicators reflect “integral aspects of men’s distress...[and] exist as symptoms in their own right” (Nadeau et al., 2016, p.7). Men who conform to traditional masculine norms have been shown to experience more severe externalising symptoms (Rice et al., 2013; Stewart, 2020). Simultaneously, these same norms inhibit men’s help-seeking as a result of stigma-related processes (Latalova et al., 2014).

Evidence supporting the masculine depression framework comes from a variety of sources. Qualitative studies of men’s depression consistently report externalising symptoms (Chhabra et al., 2022; Oliffe et al., 2010; Rochlen et al., 2010), and multiple quantitative studies have found increased rates of externalising symptoms among conventionally depressed men (Cavanagh et al., 2016; Chhabra et al., 2022). Men and women with recent negative life events have shown elevated internalising and externalising symptoms over time (15 weeks), although men’s levels of externalising symptoms were substantially higher than women’s (Rice et al., 2014). Similarly, a meta-analysis by Cavanagh and colleagues (2017) found that conventionally depressed men are likely to exhibit substance misuse, risk-taking, and impaired impulse control both more frequently and more intensely than conventionally depressed women. Multiple quantitative studies have found that measures of masculine norm conformity predict both self-reported conventional depression (Iwamoto et al., 2018; Latalova et al., 2014) and externalising symptoms (Rice et al., 2013). Conventionally depressed men who score higher on conformity to traditional masculine norms are more likely to exhibit externalising symptoms, while men who score lower are more likely to exhibit conventional depression symptoms (Rice et al., 2013). Additionally, the presence of

greater externalising symptoms was associated with clinically significant levels of depression, more negative life events, and recent suicidal behaviour (Rice et al., 2016; Rice et al., 2017). More indirectly, studies show that discrepancies in rates of depression diagnosis between men and women are reduced in cultural groups that are intolerant of antisocial or risk-taking behaviour, e.g., among the Amish or Orthodox Jews (Egeland & Hostetter, 1983; Loewenthal et al., 1995). Men's externalising depression symptoms (e.g., stress, irritability, aggression, risky behaviours, hyperactivity, and substance abuse), unlike conventional symptoms, failed to increase the odds of seeking help for depression or other mental health concerns (Call & Shafer, 2018).

Over the past few decades, several studies on depression have demonstrated correlations between gender role strain, MGRS and self-report depression measures using this framework (Eisler & Blalock, 1991; Eisler & Skidmore, 1987; Eisler et al., 1988; Juan et al., 2017; Moore & Stuart, 2004). However, there are a few drawbacks related to this framework. First, the vast majority of the research has been conducted with convenience samples of largely Caucasian undergraduate males. There has been less attention given to the role of masculinity in depression in men of varying ethnic backgrounds. Second, there is a lack of studies that have looked at the relationship between masculinity and depression using interviews that can probe and clarify men's experiences. Third, the possible presence of comorbid externalising symptoms in men who show clinically significant subthreshold symptoms of depression has not been explored. Fourth, externalising symptoms such as depression and anxiety are not given greater diagnostic significance which can be particularly important in cases of men who strongly adhere to traditional masculine gender norms. Finally, the existing research has not focused on the role of gender in emotional processes that may underlie or precede the development of depression. Although the masculine depression framework comes with its potential drawbacks, it has been the basis for the

development of theories such as MGRS. Furthermore, it has been integral to expanding understanding of the relationships between masculinity, anxiety, and depression (Addis, 2008; Eisler & Skidmore, 1987).

Fatherhood and Masculinity

Fatherhood is one of the ways in which men acquire and enact their masculine identity. A good father has traditionally been defined as a good provider who focused on achieving success by providing material resources for the family, unknowingly satisfying traditional masculine gender norms of being a breadwinner and being successful (Kings et al., 2017; Silverstein et al., 2002). Thus, according to the past definitions, a man is considered a good father if he displays the qualities of a traditionally masculine man or the “real” man. Thus, a traditional father maintains emotional distance (no sissy stuff) from his children and focuses on disciplining them (the sturdy oak) because childcare traditionally has been defined as feminine behaviour. He will measure his success through financially and materialistically providing for his family (the big sturdy oak) and may encourage his children to engage in physical sports (give em’ hell).

Portraying traditional masculinity during fatherhood has positive aspects such as fathers being responsible providers, being role model who is calm and physically strong in the face of danger and, being a disciplinarian who instils a sense of morality in their children (Silverstein et al., 2002). However, the historical context within which these rules evolved was where men dominated the workforce and women were predominantly housewives. Now, with changes in the socio-political culture, both men and women routinely engage in paid work. Men are now expected to participate in household chores and child caregiving, to be more emotionally involved with their family, and share their power over the family with their wives. But the definition of a good father (a traditional father) presents men with contrasting demands. In the context of these competing expectations, men must be the financial provider

of the family but also make time to be available for the family. Attempting to enact these contrasting expectations may result in MGRS in some fathers, and ultimately contribute to the symptoms of depression and anxiety (Chhabra et al., 2020; Chhabra et al., 2022).

Mental Distress in Fathers

Depressive symptoms associated with parenthood were first formally diagnosed by Brice Pitt (1968). Pitt (1968) reported that about 10.8% of mothers report significant depressive symptoms such as sadness, tearfulness, anxiety over a perceived inability to cope with their new baby, and feelings of guilt over not loving or caring for their infant in the year following the birth. These findings accelerated the research on mental distress associated with parenthood. The primary focus was on mothers' mental health during the prenatal and the postnatal period (Pitt, 1968). However, the transition to parenthood or the arrival of subsequent children can be stressful for both parents. Just as some mothers experience mental distress during the perinatal period, some fathers may also experience symptoms of mental distress within this period. The chances of fathers experiencing mental distress within the perinatal period increase by more than three-fold if their partner is also experiencing depression during this period (Chhabra et al., 2020). Moreover, the prevalence rates of depression and anxiety are higher in fathers than compared in adult males in the general population (Kessler, 2012; Paulson & Bazemore, 2010). Also, compared to maternal depression, paternal depression usually has a longer duration and slower remission or recovery (van den Berg et al., 2009). Hence, it is likely that fathers who are depressed are going to have a longer and stronger impact on themselves and their family unit. Despite these alarming statistics and slower recovery rates, the mental health of fathers has received much less attention compared to mothers in the perinatal period (Tuszyńska-Bogucka & Nawra, 2014).

Prevalence of Paternal Perinatal Depression and Anxiety

In Australia, the prevalence rates of perinatal depression in fathers have varied between 8-10%. For example, Giallo and colleagues (2012) reported a postnatal depression prevalence of 10% while Matthey and colleagues (2020) reported a prevalence of 8.4%. Above-stated rates are similar to the rates reported in countries such as the USA (10%; Paulson & Bazemore, 2010) and Germany (9.8% and 7.8% for pre and postnatal depression respectively; Gawlik et al., 2014). The results were further replicated in a recent meta-analysis that estimated the prevalence of paternal prenatal depression at 9.76% and 8.75% for postnatal depression (Rao et al., 2020). Most of the research into perinatal depression in fathers has been conducted in Western countries, while the studies involving non-Western fathers have been relatively scarce (Roubinov et al., 2014). However, those studies that have examined perinatal depression in non-Western fathers have reported that their prevalence rates are similar to studies involving Western fathers. For example, Pinheiro et al. (2006) reported a prevalence of 11.9% in Brazilian fathers. In Japan, Nishimura and Ohashi (2010) reported a prevalence of 11.6%. In China, Mao and colleagues (2011) reported the prevalence rates of 12.5% and 10.8% in South-Eastern China and Guangzhou, respectively.

In Australia, the estimated prevalence rates of prenatal anxiety are 12% (Quinlivan & Condon, 2005) and 2.4% for postnatal anxiety (Tohotoa et al., 2012). The rates are similar to the prenatal anxiety rates reported in Portugal (10%; Figueiredo & Conde 2011) and postnatal anxiety rates reported in New Zealand (3%; Carter et al., 2005). The above-mentioned rates are reflected in the systematic review by Leach and colleagues (2016) that estimated the prevalence of paternal perinatal anxiety as between 2-18%. Similar to the studies in Western countries, Koh et al. (2015) estimated a prevalence of 3.4% for postnatal anxiety in 622 Chinese fathers and 2.6% for prenatal anxiety. The high variance in anxiety rates reflects the different types of

anxiety disorders measured, the time of measurement, the cross-study methodological differences in measurement, and the variability in the screening questionnaire cut-off scores.

Assessment of Paternal Perinatal Depression and Anxiety

The current edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-V; APA, 2018) does not recognise perinatal depression and anxiety as distinct disorders. Perinatal depression is listed as a specifier for the major depressive disorder during pregnancy or within four-week post-birth, but perinatal anxiety is not listed in DSM-V (Pawluski et al., 2017). Although perinatal anxiety can occur in various forms of anxiety disorders (e.g., panic disorder, separation anxiety disorder, generalised anxiety disorder, posttraumatic anxiety disorder, and illness anxiety disorder), generalised anxiety disorder is the most commonly occurring anxiety disorder within the perinatal period (Misri et al., 2015; Pawluski et al., 2017) and the focus of this thesis. Despite the frequent occurrence of generalised anxiety disorder during the perinatal period, the DSM-V specifier “with peripartum onset” is presently designated only for mood disorders but not for anxiety disorders (APA, 2018). Hence, to diagnose perinatal depression and anxiety in fathers, the diagnostic criteria for major depressive disorder and generalised anxiety disorder in DSM-V are referred to.

The symptoms of major depressive disorder as listed in DSM-V are:

A. Five or more of the following symptoms have been present during the same two-week period and represent a change from previous functioning: at least one of the symptoms is either (1) depressed mood or (2) loss of interest or pleasure.

1. Depressed mood most of the day, nearly every day, as indicated by either subjective report (e.g., feels sad, empty, hopeless) 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 by either subjective count or observation).

3. Significant weight loss when not dieting or weight gain (e.g., a change of more than 5% of body weight in a month) or decrease or increase in appetite nearly every day.

4. Insomnia or hypersomnia nearly every day.

5. 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 day

7. 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.

B. The symptoms cause clinically significant distress or impairment in social, occupational, or other important areas of functioning.

C. The episode is not attributable to the physiological effects of a substance or another medical condition.

The symptoms of generalised anxiety disorder as listed in DSM-V are:

A. Excessive anxiety and worry (apprehensive expectation), occurring more days than not for at least 6 months, about several events or activities (such as work or school performance).

B. The individual finds it difficult to control the worry.

C. The anxiety and worry are associated with three or more of the following six symptoms (with at least some symptoms having been present for more days than not for the past 6 months):

1. Restlessness or feeling keyed up or on edge.

2. Being easily fatigued.

3. Difficulty concentrating or mind going blank.

4. Irritability.

5. Muscle tension.

6. Sleep disturbances (difficulty falling or staying asleep, or restless, unsatisfying sleep).

D. The anxiety, worry, or physical symptoms cause clinically significant distress or impairment in social, occupational, or other important areas of functioning.

E. The disturbance is not attributable to the physiological effects of a substance (e.g., drug of abuse, a medication) or another medical condition (e.g., hyperthyroidism).

F. The disturbance is not better explained by another mental disorder (e.g., panic disorder, social anxiety, social phobia, separation anxiety, etc.).

The “with peripartum onset” specifier may also be applied to bipolar disorders or psychotic episodes that occur in the perinatal period; however, these disorders are much rarer than depression and anxiety. Also, while DSM-V used the -partum suffix, this thesis will use the -natal suffix when referring to the pregnancy and post-birth period. The -partum and the -

natal suffixes are synonymous and can be used interchangeably; however, the -natal suffix is more commonly used in Australian clinical settings.

While the inclusion of perinatal mood disorders in the DSM-V has been considered a significant step toward the acknowledgment of perinatal disorders, it has also received criticism. The timeframe of 4-weeks post-birth which is used to define the onset of depression in the postnatal period has been claimed as being restrictive by researchers (Sharma & Mazmanian, 2014). During the development of DSM-V, it was recommended that the timeframe for perinatal depression should be extended to 6 months, however, it was not implemented (APA, 2018; Jones & Cantwell, 2010). For example, research suggests that if a mother is experiencing perinatal depression, the risk of her being admitted for psychiatric reasons increases threefold between weeks 4 and 8 compared to any other time in the perinatal period (Munk-Olsen et al., 2006). To accommodate the long-term impact of perinatal mental health and especially the slow recovery in men, researchers measure postnatal depression and anxiety up to 12 months after childbirth. Another criticism has been the non-inclusion of the “with peripartum onset” specifier for anxiety disorders. Despite the frequent manifestation of anxiety and its co-morbidity with depression within the perinatal period, the specifier for anxiety is not included (Misri et al., 2015). Furthermore, if researchers in the future are defining their research based on the DSM-V criteria, the inclusion of the perinatal anxiety specifier may allow for a more specific study of the aetiology of mental health issues associated with new parenthood (Sharma & Mazmanian, 2014). Despite the criticism, DSM-V is an improvement over DSM-IV-TR which only recognised postnatal depression symptoms (APA, 2018). The DSM-V also notes that many women may also experience severe anxiety and panic attacks concurrent with the perinatal onset of depression.

While the diagnostic notes in DSM-V that accompany the “with peripartum onset” specifier for depression only refer to women, it does not state that fathers cannot receive a diagnosis of perinatal depression from a qualified health professional. The most reliable way to diagnose an individual with depression and anxiety is through a clinical interview (Cameron et al., 2016). However, diagnostic interviews are lengthy, costly, and require a qualified professional as an interviewer. Also, in busy healthcare settings such as maternity wards, child health centres, and clinics, it is not feasible for every new parent to undergo a time-consuming diagnostic interview. Thus, for reasons of cost-effectiveness and efficiency several brief self-report psychometric instruments have been developed to screen new parents for the symptoms of depression and anxiety in the perinatal period. One of the most frequently used self-report screening measures is the Edinburgh Postnatal Depression Scale (EPDS; Cox et al., 1987).

Edinburgh Postnatal Depression Scale

EPDS was developed to quickly and easily identify parents who are at risk of mental distress within the perinatal period and who should be referred for specialist care (Glavin, 2012). It is a 10-item self-report scale concerning the respondent’s mood in the past seven days. The total score can range from 0-to 30, with higher scores indicating poorer mental health. EPDS was originally developed by Cox and colleagues (1987) to assess perinatal anxiety and depression in mothers. Since then, the scale has been adopted throughout the world. The Clinical Practice Guidelines for perinatal care developed by the Australian mental health advocacy group Beyondblue have recommended that EPDS be used as a part of the ongoing assessment for depression and co-occurring anxiety in all women during pregnancy and in the postnatal period (Beyondblue, 2011). The advantage of using EPDS over other depression screening measures (e.g., Centre for Epidemiological Studies Depression Scale [CES-D]; Radloff, 1977, or the Beck Depression Inventory [BDI]; Beck et al., 1961), which

are also commonly used in perinatal research) is that it does not consider symptoms such as sudden changes in weight and appetite and increased fatigue. These symptoms are expected as normal experiences of being a new mother but may be indicators of a decrease in well-being in the general population (Matthey et al., 2001).

A further advantage of EPDS not assessing the somatic symptoms normally experienced post-childbirth and amongst new parents is that can be used effectively to screen for perinatal depression and anxiety symptoms in fathers. For example, loss of interest in sex, fatigue, weight changes, or disturbed sleep may be symptoms of concern in the adult male population. However, a new father may experience these symptoms as part of early parenthood and not necessarily as an indicator of mood disturbances (Matthey et al., 2001). The use of EPDS for men at 6-7 weeks post-birth has been validated by Matthey and colleagues (2001) by comparing it against the Diagnostic Interview Schedule. The internal consistency and split-half reliability of the EPDS in Matthey et al.'s (2020) male sample are comparable to the female sample that the EPDS developers originally used. However, the reliability improved when cut-off scores used to determine at-risk cases for perinatal depression were two points lower for fathers than for mothers. At a cut-off score of 10, EPDS showed a sensitivity of 71.4% and a specificity of 93.8%. These findings were replicated by Edmondson et al. (2010), who calculated the sensitivity and specificity of the EPDS at 77.3% and 92.9%, respectively, in a sample of British fathers. EPDS has also been validated for Swedish fathers with a sensitivity of 100% and specificity of 87.4% (Massoudi et al., 2013). Although for women there is evidence that the score on the commonly found three-item anxiety subscale of the EPDS (item 3,4, and 5; EPDS-3A) can also be used to screen for anxiety disorders (Matthey, 2008), the factor structure for men is different, with no clear anxiety subscale being found (Loscalzo et al., 2015; Matthey et al., 2001; Matthey et al., 2020). The overlapping of symptoms between depression and anxiety (“anxious depression”;

Matthey et al., 2008) in men further makes it harder to distinguish between the two disorders on the EPDS scale (Matthey et al., 2020). Hence, the EPDS total score of 6 or more is considered optimum to screen for symptoms of depression and anxiety (mental distress) in Australian men (Matthey et al., 2001; Matthey et al., 2008; Matthey et al., 2020). At a cut-off score of 6 or more, EPDS shows a sensitivity of 75% and a specificity of 69.8%. These findings were further replicated in British and Italian men where the optimal total EPDS score of 9 or more (Edmondson et al., 2010) and 6 or more (Currò et al., 2009), respectively, were validated to screen for perinatal mental distress in men. The internal consistency for EPDS (Cronbach's α) has been calculated at 0.81 (Edmondson et al., 2010; Massoudi et al., 2013; Matthey et al., 2001).

The EPDS has also been validated for screening of fathers in non-Western and non-English speaking backgrounds (Areias et al., 1996; Figueiredo et al., 2007; Lai et al., 2010; Lane et al., 1997; Massoudi et al., 2013; Tran et al., 2012; Vivilaki et al., 2009). Further, the evaluation between the EPDS, BDI, and the Patient Health Questionnaire – Depression Module (PHQ-9; Kroenke & Spitzer, 2002) as a screening scale for perinatal depression in a non-western population of men has shown that EPDS is a superior screening measure over BDI and PHQ-9. EPDS scored a sensitivity of 97% and specificity of 91% over other screening measures (Lanes et al., 2011; Matthey et al., 2020).

As discussed previously, the symptoms of depression and anxiety are highly co-morbid (APA, 2018; Chhabra et al., 2020) and hence, should be screened together. Screening for only perinatal depression in fathers may result in underscreening of perinatal distress in fathers. Further, undiagnosed, and untreated anxious fathers are going to be at a higher risk of developing depression than non-depressed fathers (Matthey et al., 2020). This will negatively impact not only the fathers but their immediate family members as well (partner and infant).

Thus, to understand the extent to which the perinatal mental health of a father and his family are impacted, depression and anxiety (mental distress) should be screened together.

Consequences of paternal perinatal mental distress

The impact of paternal perinatal mental distress is not only limited to fathers' internal state of mind but also impacts their ability to fulfil the idealised role of modern fathers. The concept of "being there" is an important aspect of modern fatherhood. Men's parenting practices and their identity and role as fathers have changed over the past few years (Dempsey & Hewitt, 2012). Many fathers report now that they want to take a more hands-on role as parents. They are determined to "be there" for their children and avoid being an absent father that they perceived their fathers and grandfathers to be (Chhabra et al., 2022; Kings et al., 2017). The concept of "being there" not only means supporting the mother but also being involved in the day-to-day childcaring. However, if the father is experiencing perinatal mental distress, he is less likely to be involved in the hands-on approach with his children. Lack of enriching father-child interactions such as reading, singing nursery rhymes, and telling stories may impact the cognitive development of their infant (Paulson et al., 2009; Ramchandani et al., 2008). Moreover, perinatally depressed fathers are more likely to smack their children and engage in substance abuse (Davis et al., 2011). Paternal mood not only impacts the cognitive development of their infants but also impacts their behavioural development. The low paternal mood at 4-6 weeks postnatal is significantly and positively associated with infant temperament problems at 6 months post-birth (Davé et al., 2005). Further, at 24 months, children are more likely to show negative affect and mood displays (screaming and yelling) if their fathers were depressed during the perinatal period (Hanington et al., 2012).

Perinatal mental distress experienced by fathers may also impact the mental health of their children. At the age of seven, a child is more likely to display signs and symptoms of

psychiatric disorder if their father experienced perinatal depression (Ramchandani et al., 2008). The disorders that are of significant concern in children are oppositional defiant and conduct disorders and increases in the rates of hyperactivity (ADD/ADHD), peer problems, and prosocial difficulties (which are deficiencies in thinking about other people and expressing empathy; Schulz, 2016). These results were also replicated in the Australian cohort where clinically significant depressive symptoms were found in young children aged five or less if their fathers experienced perinatal mental distress (Fletcher et al., 2011). Children of this age who experience prosocial difficulties and low mood are more likely to have problems such as delinquency and underachievement in adolescence, and unemployment in adulthood (Woodward & Fergusson, 2001). Also, children of parents with mood disorders are more likely to develop depression, phobias, panic disorders and alcohol dependence in later life compared to children with non-depressed fathers (Schulz, 2016).

Paternal perinatal mental distress not only impacts the ongoing development of the infant but also impacts the relationship between the partners (Ansari et al., 2021; J. H. Goodman, 2004). Individuals who experience depression and anxiety often report withdrawal from regular contact with friends and family as they may not have the energy to socialise or do not find enjoyment in socialising. This applies to fathers as well who are experiencing perinatal mental distress. Research suggests that when fathers are depressed, they are less likely to engage with their partner and infant and often report lower levels of affection and overall relationship satisfaction with their partner (Ramchandani et al., 2008). Moreover, if the father is experiencing mental distress, he is also likely to impact the mental health of his partner. There appears to be a bi-directional relationship between the mental health of co-existent partners. An explanation of this relationship may be that because couples co-exist in a shared environment, they are also likely to share stressors (finances, relationships). Therefore, within the shared environment, it is likely that a stressor may impact both partners

and ultimately contribute to the development of their depressive symptoms (Thiel et al., 2020). Thus, if a father is experiencing depression and/or anxiety, it may also impact his partner.

Within romantic relationships, traditional masculinity may also present some challenges to navigating disagreements which may further cause distress to the couple in the perinatal period. Traditional masculinity places emphasis on interpersonal dominance (Reigeluth & Addis, 2016; A. A. Rogers et al., 2020). Thus, men who are inclined towards more traditionally masculine attitudes are more likely to endorse the “heterosexual script” (Tolman et al., 2016). These men are also more likely to hold beliefs that the relationship between the sexes is adversarial in nature (A. A. Rogers et al., 2020). In their own relationship, highly masculine men are more likely to be confrontational with their romantic partners (Reidy et al., 2015), an effect that is exacerbated when there is a perceived threat to the relationship (e.g., stressors associated with the perinatal period; Reidy et al., 2014). In addition, traditional masculinity also encourages the restriction of feminine-typed emotions (e.g., sadness, empathy; Chhabra et al., 2022) to project an image of invulnerability. However, this stoic posturing is believed to be fundamentally linked with greater depressive symptoms and underuse of psychological and coping resources by men (Gupta et al., 2013; L. O. Rogers et al., 2019).

Looking at the severe impact of paternal perinatal mental distress on the father, his partner and child, it is imperative that early diagnosis and timely treatment must occur. The identification of risk factors is an essential step in developing screening tools and intervention plans specifically for men.

Risk factors of paternal perinatal depression and anxiety in the perinatal period

A risk factor is defined as any characteristic or attributes that increases the likelihood of developing a disease or injury (WHO, 2018). A large body of literature has reviewed the risk factors associated with maternal depression and anxiety in the perinatal period. Marital distress, history of depression, lack of social support, lower income, lower education, smoking, single status, and poor relationship quality have been identified as risk factors for maternal prenatal depression (Lancaster et al., 2010). In the postnatal period, a history of depression, unintended pregnancy, lower education, single status, lower income, and lower education were found to be risk factors associated with maternal postnatal depression (Azad et al., 2019; Fiala et al., 2017). However, similar to the research into the prevalence of perinatal mental health disorders, research into risk factors associated with paternal perinatal mental health has received less attention compared to mothers. The research into risk factors associated with paternal perinatal distress still uses the research lens of maternal perinatal health. The most commonly reported risk factors for paternal perinatal mental distress are having a concurrently depressed partner, the strength of the relationship between the mother and father, the perceived level of social support available to the father, and socioeconomic factors (e.g., low income, low education, and single status). However, there is a lack of research that has focussed on identifying risk factors that are unique to men. In Chapter 4, a systematic review and meta-analyses of the existent literature are conducted to identify and examine the risk factors which are associated with paternal perinatal mental distress.

Summary

As demonstrated in the literature review here, the research into paternal perinatal mental distress is still in its infancy compared to that of mothers. While a significant proportion of fathers experience perinatal mental distress (~10%; Rao et al., 2020), it is thought that these rates are underreported. It is believed that masculinity plays an important

role in influencing the way men express and experience perinatal mental distress. Using the constructionist approach, researchers have identified that masculinity is not an inherent trait but is learnt through socialisation. Rigidly socialised young boys and men are more likely to strongly adhere to traditional masculine gender norms. Hence, to meet the masculinity stereotype, men often engage in “playing gender” (Mahalik et al., 2003). “Playing gender” includes displaying traits of independence, self-sufficiency, lack of significant relationships, emotional restrictiveness, and promotion of aggression and violence (Mahalik et al., 2003). However, if a man fails to promote and express the above-mentioned traits while not upholding the stereotype of masculinity, he may experience feelings of anxiety and stereotype threat, which in turn may promote ridicule from others. But the strong adherence to traditional masculine ideology has been linked to significant stress, anxiety, and depression in men (O’Neil, 2008). The GRSP by Pleck (1981, 1995) further explains that men experience psychological strain when they attempt to live up to the expected standards of the male role, and how restrictive gender roles may be detrimental to the mental health of men. As masculinity is not a fixed trait, the historical and continuous changes to gender-role expectations can be detrimental for men who conform to traditional masculine ideology (Fahey, 2007; Levant, 2011; Pleck, 1981, 1995). Thus, men who strongly adhere to traditional masculine gender norms are likely to experience MGRS when they are unable to portray their masculine gender roles in the ever-changing socio-economic environment (Eisler & Blalock, 1991). This may ultimately lead to the development of depression and anxiety in men.

While strong adherence to masculinity may have a negative psychological impact on men, it may also alter the way men express and experience psychological disorders. For example, the masculine depression framework and the masked depression frameworks suggest that men who strongly adhere to traditional masculine norms may express “masked”

symptoms of depression (e.g., substance abuse, violence, and anger) which are not listed in the current DSM-V. Due to the expression of these “masked” symptoms by some men, they may remain undiagnosed (Addis, 2008). This is also reflected in the prevalence rates of paternal perinatal mental distress which are lower than that of maternal perinatal distress. Although lower than the mothers’ rates, they still have significant consequences for the health and wellbeing of the father and his family. Over the past few years, Beyondblue and Post and Antenatal Depression Association (PANDA) have included fathers in their perinatal awareness and education campaigns to increase public recognition and encourage screening of fathers who are having difficulties (Price-Robertson et al., 2015). This is an encouraging step; however, service providers are still facing difficulties in engaging fathers or providing services that are father specific. Over the last few years, only four studies have been published that evaluated interventions or the treatment of perinatal mental distress in fathers (Wee et al., 2013). The lack of published intervention studies demonstrates that there is still a gap in the literature and further research is needed into perinatal mental health using a father-specific research lens. Furthermore, the aim of any research into perinatal mental health disorders should be to help develop a potential intervention framework for the treatment or prevention of perinatal mental distress in fathers. To achieve this, the first step toward developing such an intervention is the identification of father-specific risk factors. Also, establishing and employing an underlying theoretical framework can further provide insight into the aetiology of paternal perinatal mental distress and explain the underlying mechanisms that may influence the relationship between risk factors and paternal perinatal mental distress.

CHAPTER 3: Methodology

As was mentioned in Chapter 1, Chapters 4-7 present the findings of a systematic review and meta-analysis and the findings of a mixed method study. The purpose of this chapter is to give the reader an outline of the overall methodology of the thesis with a particular focus on the foundations of the mixed methods research. The findings from the systematic review and meta-analysis are presented in Chapter 4 while the findings from the mixed methods study are discussed in Chapters 5-7. Methodological considerations unique to each study, particularly those which had to be excluded from manuscript chapters for space are also discussed in the current chapter.

Research Design of the Thesis

The overall aim of this thesis was to explore (i) the unique risk factors associated with paternal perinatal mental distress, and (ii) the role of masculinity, in particular, masculine gender role stress on the mental health of fathers in the perinatal period. To fulfil the aims of the current thesis, this PhD project was designed in three stages.

The first stage included a systematic review and meta-analysis (Chapter 4). A systematic review is defined as a specific methodology that identifies existing research about a well-defined topic of investigation. It is not a traditional literature review but a self-contained research project that explores a clearly defined research problem using existing studies. The design involves selecting and critically evaluating the contributions of each identified study using stringent inclusion and exclusion criteria, analysing, and carefully synthesising the data, and reporting the evidence (Denyer & Tranfield, 2009). Further, meta-analysis is an analytical methodology designed to systematically evaluate and summarise the results from several individual studies, thereby, increasing the overall sample size and the ability of the researcher to study the effects of interest (Denyer & Tranfield, 2009). The main objective of a meta-analysis is to include differences in the results among studies and increase

the precision by which the effects are estimated. By using the systematic review and meta-analysis design, the author critically explored, evaluated, and identified the risk factors associated with paternal perinatal mental distress. The systematic review and meta-analysis were further used to generate new research questions which were used to guide the next phases of the current research.

The second stage included an exploratory sequential mixed methods design (Chapter 5). An exploratory design was of choice because of the lack of previous studies investigating (i) the unique risk factors of paternal perinatal mental distress, and (ii) the role of masculinity on the mental health of fathers in the perinatal period. The focus of an exploratory design is on gaining insights and familiarity with the research problem. The exploratory design is often used to develop more precise research problems (Chapters 6 & 7) and helps establish research priorities and where resources should be allocated (Creswell & Plano Clark, 2018). The foundations of mixed methods research methodology and exploratory sequential design are discussed in the following sections in this chapter.

The third stage consisted of an in-depth further analysis of the qualitative and quantitative data used in the mixed methods study. By using this approach, a researcher can make full use of the dataset to provide a more meaningful assessment of the primary results while also addressing potentially important new research questions. The qualitative data was analysed using interpretative phenomenological analysis (Chapter 6) and the quantitative data was further analysed using mediation analysis (Chapter 7). The advantages of this approach are discussed later in this chapter.

The Foundations of Mixed Methods Research

Historical Foundations

The beginning of mixed methods has been dated to the late 1980s when several authors from around the world (UK, USA, Australia, France) came together to focus on describing and defining what is now known as mixed methods. This resulted in a multitude of books, editorials, and journal articles on different approaches to link or combine both qualitative and quantitative data with a serious discussion about integration or mixing of the data to produce a mixed methods result. However, research suggested that the antecedents to the procedural and philosophical developments in mixed methods took form much earlier than the late 1980s (Creswell, 2011b). As early as 1959, Campbell and Fiske discussed the inclusion of multiple sources of quantitative information in the validation of psychological traits. Denzin (1978) advocated the use of multiple data sources – both quantitative and qualitative, and Campbell (1974) and Cronbach (1975) advocated for the inclusion of qualitative data in quantitative experimental studies.

Further delving into research about mixed methods suggests that several factors have contributed to the evolution of mixed methods research to what is known today. First, the complexity of the current research problem calls for answers beyond the simple numbers in a quantitative sense or words in a qualitative sense (Creswell & Plano Clark, 2018; Denzin & Lincoln, 2011). A combination of both forms of data provides the most complete analysis of complex problems. As mentioned earlier, within the research area of masculinity, there has been a heavy focus on quantitative studies. But by focusing on only numbers, one loses the multi-faceted dimension of masculinity. Second, the aim to conduct and publish research is not for the researchers themselves, but to benefit a wider audience. Audiences such as policymakers, practitioners, and others in applied areas need multiple forms of evidence to document and inform research problems. A call for increased sophistication of evidence has

led to the collection of both quantitative and qualitative data. The combination and use of both quantitative and qualitative data together have also been used to develop successful intervention strategies for maternal perinatal mental distress which is a significant public health concern. Finally, mixed methods research provides an opportunity for collaboration between experts from both quantitative and qualitative fields who have experienced some type of mutual alienation from each other's respective fields (Kelle, 2015).

The mixed methods research, which is used by researchers today has evolved through years of contribution by academics from both quantitative and qualitative fields. Mainly, the evolution of mixed methods research is seen through the following five periods:

Formative Period. The formative period began in the 1950s and continued up until the 1980s in the history of mixed methods. The period found momentum within psychology in the 1950s where researchers (i) combined multiple quantitative methods in a study (Campbell & Fiske, 1959), (ii) used surveys and fieldwork (Sieber, 1973), (iii) combined multiple methods (quantitative and qualitative; Denzin, 1978), and (iv) triangulated both qualitative and quantitative approaches (Patton, 1980). The ways in which researchers combined and triangulated the different methods albeit only in psychology, were the early antecedents of mixed methods as known today (Creswell, 2011a).

Paradigm Debate Period. The paradigm debate period originated during the 1970s and 1980s within the history of mixed methods. During this period, the qualitative researchers were adamant about the different assumptions for quantitative and qualitative research (e.g., Bryman, 1988; J. K. Smith, 1983). This meant, that during this period scholars argued if qualitative and quantitative data could be combined as they both were linked to different philosophical assumptions (Creswell & Plano Clark, 2018). The researchers argued that mixed methods were unattainable because it asked for paradigms to be combined which

was impossible (J. K. Smith, 1983). These researchers and scholars were also known as purists.

However, in today's research, it is noticed that the links between methods of data collection and the larger philosophical assumptions are not as tightly drawn as envisioned in the 1980s. For example, researchers have now advanced the idea that different types of methods can be associated with different types of world views (Denzin & Lincoln, 2005; Mertens & Tarsilla, 2015). Although the issue of reconciling paradigms is still apparent (Giddings, 2006; Holmes, 2006), the paradigm debate period has begun subsiding as scholars and researchers are embracing pragmatism as a philosophical foundation for mixed methods research (Creswell & Plano Clark, 2018).

Early Procedural Development Period. During the 1980s, attention began to shift towards the early procedural development period from the paradigm debate period within the history of mixed methods. Within this period, the researchers shifted their focus onto developing and identifying different types of mixed methods designs (e.g., a combination of different quantitative or qualitative methods, and a combination of quantitative and qualitative methods). For example, Greene and colleagues (1989) laid the foundation for mixed methods research designs. This was closely followed by Brewer and Hunter (1989) who contributed to the discussion by linking multimethod research to the steps in the process of research. Further, Bryman (1988) discussed the advantages of combining both qualitative and quantitative data which was furthered by Creswell in 1994 who created a parsimonious set of three types of mixed methods design.

Expanded Procedural Development Period. The expanded procedural development period started in the early 2000s in the history of mixed methods. Within this period, the field of mixed methods became formalised through major publications (e.g., Creswell, 2011a,

2011b; Hesse-Biber & Johnson, 2015; Tashakkori & Teddlie, 2003, 2010), increased funding initiatives (e.g., Creswell et al., 2011; Plano Clark, 2010; Ragin et al., 2004), expanded journal publications (more than 60 articles in the social and human sciences using mixed methods research were published between 1995 and 2005) of empirical mixed methods studies, and the extension of the use of mixed methods into diverse disciplines.

Reflection and Refinement Period. The reflection and refinement period began in 2003 and is continuing. The period is characterised by reflected controversies and issues of concern about mixed methods, followed by refinements in methods and perspectives. For example, within the field of education, Howe (2004) addressed whether mixed methods privileged postpositivist thinking and marginalised qualitative interpretative approaches. Similarly, Giddings (2006) challenged the claims by mixed method writers about how including both qualitative and quantitative methods would produce the best of both worlds. Further, Freshwater (2007) critiqued that the interpretation of mixed methods results was largely influenced by the academic discipline or field of study in mixed methods. The critical examination of mixed methods during this period helped strengthen and develop new philosophies and methodological advances.

Philosophical Foundations

Philosophical assumptions in mixed methods research consist of a basic set of beliefs or assumptions that guide inquiries (Guba & Lincoln, 2005). Worldview or paradigm is the term that can be used to describe these assumptions (Kuhn, 1970). The mixed methods research uses a pragmatic paradigm. The pragmatic paradigm arose among the philosophers who argue that there is a need for a worldview that will provide methods of research that are seen to be most appropriate for studying the phenomenon at hand. Through a combination of methods (both qualitative and quantitative), a researcher can shed light on the actual behaviour of participants, the beliefs that stand behind these behaviours and the consequences

that were likely to follow from different behaviours (Alise & Teddlie, 2010; Tashakkori & Teddlie, 2003). The focus within the pragmatic paradigm is on the consequences of research, on the primary importance of the question asked rather than the methods, and on the use of multiple methods of data collection to inform the problems under study. Hence, this worldview is considered pluralistic and oriented toward “what works” and real-world practice using diverse approaches and valuing both objective and subjective knowledge (Creswell & Plano Clark, 2018).

A paradigm comprises four elements, namely epistemology, ontology, methodology, and axiology.

Epistemology of a Paradigm. Epistemology arises from the Greek word episteme which means knowledge (Kivunja & Kuyini, 2017). In research, it is used to describe “how we know what we know” or what counts as knowledge within the world. Epistemology is concerned with the very bases of knowledge – its nature, forms and how it can be acquired, and how it can be communicated to other human beings (Kivunja & Kuyini, 2017). It focuses on the nature of human knowledge and comprehension that a researcher can acquire to extend, broaden, and deepen their understanding of their field of research. The way the researcher collects knowledge/information forms the epistemological basis of their research. For example, if a researcher relies on forms of knowledge such as beliefs, faith, and intuition, then the epistemological basis of their research is intuitive knowledge. If the researcher relies on data gathered from people, institutions, and organisations, then their epistemology is grounded on authoritative knowledge (Davidson, 2000). Hence, epistemology is important as it helps the researcher establish the way they will uncover the knowledge in the social context. The pragmatic paradigm advocates a relational epistemology that assumes that the relationships in research are best determined by what the researcher deems appropriate to that particular study (Kivunja & Kuyini, 2017).

Ontology of a Paradigm. Ontology is a branch of philosophy concerned with the assumptions a researcher makes to believe that something makes sense or is real, or the very nature or essence of the social phenomenon the researcher is investigating (Scotland, 2012). In research, ontology is the philosophical study of the nature of existence or reality, of being or becoming, as well as the basic categories of things that exist and their relations. Ontology helps the researcher to conceptualise the form and nature of reality and what they believe can be known about reality. Philosophical assumptions about the nature of reality are crucial as they help the researcher to gain an understanding of the data they are collecting. These assumptions, concepts or propositions help to orientate the researcher's thinking about the research problem and how a researcher might approach it to contribute to its solution (D. Scott & Usher, 2011). Ontology seeks to determine the real nature or the foundational concepts which constitute themes that one analyses to make sense of the meaning embedded in research data (Kivunja & Kuyini, 2017). The pragmatic paradigm advocates the non-singular reality ontology which assumes that there is no single reality and that all individuals have their own unique interpretations of reality (Kivunja & Kuyini, 2017).

Methodology of a Paradigm. Methodology is the broad term used to refer to the research design, methods, approaches, and procedures used in an investigation that is well planned to find out something (Creswell, 2009). For example, participants, instruments used, data collection and data analysis fall under the umbrella term of methodology. In sum, methodology articulates the logic and flow of the systematic processes followed in conducting a research project, to gain knowledge about a research problem. It includes assumptions made, limitations encountered and how they were mitigated or minimised (Creswell, 2009). The pragmatic paradigm uses the "mixed methods" methodology which assumes a combination of quantitative and qualitative research methods (Kivunja & Kuyini, 2017).

Axiology of a Paradigm. Axiology refers to the ethical issues that need to be considered when planning a research proposal. It considers the philosophical approach to making decisions of value or the right decisions. Axiology involves defining, evaluating, and understanding concepts of right and wrong behaviour relating to research (Creswell, 2009; Kivunja & Kuyini, 2017). The pragmatic paradigm advocates the “value-laden” axiology which assumes that conducting mixed methods research will benefit people (Kivunja & Kuyini, 2017).

Some of the other paradigms which have been proposed by researchers are positivism/post-positivism (quantitative) and constructivism/interpretivism (qualitative). As the current mixed methods study involves a qualitative phase and a quantitative phase, both post-positivist and constructivist paradigms are discussed below.

Positivism/Post-positivism Paradigm. The positivist paradigm defines a worldview to research that is grounded in research methods as the scientific method of investigation (Fadhel, 2002). Positivism was first proposed by the French philosopher Auguste Comte (1856) who postulated that experimentation, observation, and reason based on experience should be the basis for understanding human behaviour. The research located in this paradigm relies on deductive logic, formulation of hypotheses, testing those hypotheses, offering operational definitions and mathematical equations, calculations, extrapolations, and expressions to derive conclusions. It aims to provide explanations and make predictions based on measurable outcomes (Creswell & Plano Clark, 2018).

The post-positivist paradigm represents the thinking after positivism, challenging the traditional notion of the absolute truth of knowledge (D. C. Phillips et al., 2000) and recognising that one cannot be “positive” about one’s claims of knowledge when studying the behaviour and actions of humans. Post-positivists hold a deterministic philosophy in which

causes probably determine effects or outcomes. Using this paradigm, researchers make claims for knowledge based on (i) determinism or cause-and-effect thinking; (ii) reductionism, by narrowing and focusing on select variables to interrelate; (iii) detailed observations and measures of variables; and (iv) testing theories that are continually refined (Crewell & Plano Clark, 2018; Slife & Williams, 1995). Hence, a post-positivist researcher should be able to observe occurrences in the particular phenomenon studied and be able to generalise what can be expected elsewhere in the world. Because of these assumptions, this paradigm advocates the use of quantitative research methods.

The four fundamental elements or assumptions of the positivist/post-positivist paradigm are: its epistemology is objectivist, its ontology is naïve realism, its methodology is experimental, and its axiology is beneficence. This objectivist epistemology means that human understanding is gained through the application of reason (Fadhel, 2002). The naïve realist ontology means the acceptance of the following five beliefs (i) there exists a world of material objects; (ii) some statements about these objects can be known to be true through sense-experience; (iii) these objects exist whether they are perceived or even when they are not perceived. These objects of perception are assumed to be largely perception independent; (iv) these objects are also able to retain properties of the types we perceive them as having, even when they are not being perceived. Their properties are perception independent; and (v) using one's senses, the world is perceived directly, and pretty much as it is (Putnam, 2015; Searle, 2015). The experimental methodology means that the research will involve the manipulation of one variable to determine whether changes in that variable cause changes in another variable (Burns, 2000). The beneficence axiology refers to the requirement that all research should aim at maximising good outcomes for the research project, for humanity in general, and the research participants (Mertens, 2009, 2015).

Interpretivist/Constructivist Paradigm. The constructivist paradigm aims to understand the subjective world of human experiences. Emphasis is placed on understanding the individual and their interpretation of the world around them (Denzin & Lincoln, 2011). The interpretations by the individuals are varied and multiple, leading the researcher to look for the complexity of views rather than narrowing meanings into a few categories or ideas. Within this paradigm, the research is shaped “from the bottom up” – from individual perspective to broad patterns, and ultimately, to broad understanding (Creswell & Plano Clark, 2018). The goal of the research using this paradigm is to rely as much as possible on the participants’ views of the situations being studied (Constantino et al., 2008). The questions asked of participants are generally broad and open-ended so that the participants can construct the meaning of the situation, typically forged in discussions or interactions with other persons. The constructivist researchers focus on the historical, cultural, and personal experiences of their participants and value the environment in which people live and work to shape their interpretations and give context to the interviews. This paradigm is often adopted by qualitative researchers.

The constructivist paradigm assumes a subjective epistemology that helps the researcher make meaning of their data through their thinking and cognitive processing of data, informed by their interactions with the participants. It is assumed that the researcher’s personal beliefs and experiences of the natural world will help construct the knowledge (Punch, 2005). The assumption of a realist ontology means that the situation studied has multiple realities, and those realities can be explored, and meanings made of them or reconstructed due to the interaction between the researcher and the subjects of the research (Chalmers et al., 2009). The naturalist methodology assumes that the researcher utilises data gathered through interviews, discourses, text messages and reflective sessions with the researcher acting as an observer. Balanced axiology assumes that the outcome of the research

will reflect the values of the researcher, trying to present a balanced report (Kivunja & Kuyini, 2017)

Philosophical foundation of the current mixed methods study. The current mixed methods study began with a qualitative component. Hence, constructivist principles were applied during the first phase of the study to value multiple perspectives and obtain a deeper understanding of the views and experiences of the participants. Using the naturalist methodology, the qualitative data was collected using face-to-face and telephone interviews. By engaging in subjective epistemology, the author made meaning of the data through their cognitive processing of data and by their interactions with the participants. The realist ontology element of this paradigm shed light on the multiple realities. For example, it is not necessary that two men may portray or display their masculinity exactly like each other. Personal nuances, cultural differences, and societal expectations may influence a man's expression of masculinity. Finally, engaging in balanced axiology meant the presentation of a balanced report that not only reflected the values of the researcher but the participants as well.

During the later phase of the study where the emphasis was on the quantitative component of the study, the underlying assumptions shifted from a constructivist to those of a postpositivist philosophical stance to guide the need for identifying and measuring variables and statistical trends. By engaging in an experimental methodology, various statistical analyses (hierarchical multiple regression, mediation analysis) were used to manipulate different variables and understand their relationships with each other. By using the objectivist epistemology and naïve realist ontology, attempts were made to gain an understanding of the impact of risk factors and the role of MGRS on the mental health of fathers by applying the theoretical framework and by developing research questions and hypotheses. Through beneficence axiology, the results of the quantitative studies added to the researcher's

understanding of paternal perinatal mental distress. This was beneficial as it may help in the development of intervention strategies and policies.

Finally, during the interpretation phase of the current study, the results were based on the dialectical perspectives involving both stances. Hence, instead of focusing on either a constructivist or post-positivist view, the author adopted a pragmatic paradigm to interpret the results. The pragmatic paradigm focused on the consequences of research and on answering the primary questions using multiple methods. The pragmatic worldview which was pluralistic and oriented towards “what works” and real-world practice used diverse approaches and valued both objective and subjective knowledge (Creswell & Plano Clark, 2018). Using the mixed methods methodology, both qualitative and quantitative research methods were used to answer the main aims of this study (*See Chapter 1*). By engaging in relational epistemology, the author presented the interplay between the risk factors and their impact on paternal perinatal mental health in the results. By engaging in the non-singular reality ontology which assumed that there was no single reality, the author was able to present the different ways in which participants expressed and experienced mental distress during the perinatal period. Finally, through the value-laden axiology, the author aspired that the results of the current study would provide important insight to the clinicians and other healthcare workers into the mental health of fathers during the perinatal period. Further, the results from the current study would provide an insight to policymakers to develop interventions that were specific to men while considering the role of masculinity on their mental health.

Rationale for Sequential Mixed Methods Research Design

A common lament throughout the research on paternal perinatal mental health and masculinity is that most of the existing research, particularly with respect to the concept of MGRS in fathers during the perinatal period, is overwhelmingly done from a quantitative

point of view (Chhabra et al., 2022; Levant & Wimer, 2014). The quantitative point of view also referred to as a postpositivist view uses a reductionist approach to reduce an idea into small sets of ideas to test, such as the use of variables to test hypotheses and research questions (Creswell & Plano Clark, 2018). By solely engaging in a quantitative approach, it is possible that the within-person lived experiences of fathers who are going through perinatal mental distress will be missed. Moreover, postpositivist researchers may not consider that gender is performative and gender identities may be constructed and re-constructed within the context of fatherhood (Chhabra et al., 2022; Thompson et al., 2013). Even when compared in terms of severity of MGRS, some fathers may be at a lower risk of mental distress than others during the perinatal period depending on their construction or reconstruction of fatherhood. There has been an increasing demand to explore the concept of MGRS during fatherhood in the perinatal period through a qualitative viewpoint. The qualitative viewpoint is adopted by constructivist researchers who rely on participants' views of the situations being studied. Constructivist researchers look for the complexity of participants' views rather than narrowing meanings into a few categories or ideas (Creswell & Plano Clark, 2018). A common disadvantage of a purely qualitative approach is that the interpretation of the participants' views is influenced by the researcher's own judgements, experiences, and background (Creswell & Plano Clark, 2018; Thompson et al., 2013). For example, a researcher with a feminist methodological orientation may not capture or focus on the nuances of masculinity expressed by fathers that may be a factor responsible for their mental distress. Thus, the conflicting dynamics of both quantitative and qualitative research have led to the use of a mixed methods approach that honours both quantitative and qualitative traditions to explore (i) the risk factors associated with mental distress in fathers during the perinatal period, and (ii) the role of masculinity, especially MGRS on the paternal perinatal mental health.

A mixed methods research design is the choice for the current thesis to honour the multi-faceted nature of masculinity and fatherhood. The very premise of a mixed methods approach is that “the use of quantitative and qualitative approaches, in combination, provide a better understanding of the research problems than either approach alone” (Creswell & Plano Clark, 2018, p.5). Specifically, mixed methods design has increasingly been used in research where there is suspicion that only single data and research method may be insufficient in gleaming a true understanding of the problem of interest. Mixed methods research is rooted in the pragmatic philosophical perspective. The pragmatic approach draws heavily on inductive and deductive reasoning (Saunders et al., 2009). To fully analyse a phenomenon such as the current research, it is vital to support the inductive approach with deductive thinking. More importantly, it is felt that using only a quantitative or qualitative approach is insufficient to answer the research questions and fulfil the aims of this research. By using only quantitative data, it is difficult to understand the flexible nature of masculinity. If only qualitative data is collected, it will be extremely hard to determine the underlying mechanisms that influence the relationship between risk factors and paternal perinatal mental distress. However, the pragmatic approach provides for the use of both qualitative and quantitative research methodologies to collect information and inquiry into complex phenomena such as paternal perinatal mental distress and masculinity (Chhabra et al., 2022; Creswell, 2009; D. L. Morgan, 2007). Furthermore, a pragmatic approach provides a better grounding to fully explore the complex phenomenon instead of using a single method approach in the research. The pragmatic approach is a better process for answering “what”, “why”, and “how” research questions (Saunders et al., 2009). Therefore, considering the unique features of this pragmatic perspective and critically deducing from the above, this research will adopt a pragmatic stance in research inquiries.

Exploratory Sequential Mixed Methods Design

The exploratory sequential design is a three-phase mixed methods design in which the researchers start with the collection and analysis of qualitative data. This is then followed by a development phase of translating the qualitative findings into an approach or tool that is tested quantitatively (Creswell & Plano Clark, 2018). Alternatively, researchers may design a new variable, new measures (or a survey), new experimental activities, or a digital tool or an app. The most common exploratory sequential design is interviewing (one-on-one or focus group) followed by a survey (Creswell & Plano Clark, 2018). In the current thesis, qualitative data (one-on-one interviews) was collected and analysed first. The results from the qualitative phase were then used to design a quantitative survey.

The specific intent of the exploratory sequential design is to develop and apply a quantitative measure, survey, intervention, etc., that is grounded in the participants' views and experiences (D. L. Morgan, 2014). Using this approach is beneficial as the quantitative tool is based on the culture or setting of the participants rather than being pulled "off the shelf" for use (Creswell & Plano Clark, 2018). Using this approach can also be beneficial in certain scenarios when (i) measures, instruments, or experimental activities are not available; (ii) the variables are unknown; (iii) there is no guiding theory, or framework; or (iv) there is a need to make an existing quantitative measure or instrument as specific to the participants or culture as possible (Creswell, 1999; Creswell et al., 2004).

Within the mixed methods design, this project was best suited to the exploratory sequential design. Due to a lack of significant research within the paternal perinatal mental health area, especially using MGRS as a theoretical framework, conducting a primarily qualitative study was advantageous. Through the analysis of the qualitative data, the author was able to identify the variables of interest for the quantitative study (e.g., MGRS, sleep disturbances). Thus, the qualitative study informed the quantitative study. Furthermore, the

in-depth exploration of the qualitative data led to the identification of new emergent research questions (e.g., the impact of sleep disturbances) which were further tested in a large quantitative sample.

Integration in the Exploratory Sequential Design. The integration in this design involves using initial qualitative results to build a new quantitative feature. Hence, the actual integration is from the qualitative results to the development of the quantitative entity that followed the initial qualitative phase (Bryman, 2017; Creswell & Plano Clark, 2018). In the current study, the qualitative data was collected and analysed first. Using a deductive approach initially, the qualitative data was categorised under themes and sub-themes which reflected the risk factors reported in the wider literature and the systematic review and meta-analysis in Chapter 4. The themes which emerged from the qualitative data were used to choose appropriate measures and questions for the survey. Once the final quantitative phase of the data analysis had finished, the two sets of connected results were integrated to draw conclusions about paternal perinatal mental health. The integrated findings were further used to suggest recommendations for future studies in Chapter 8.

Advantages of Exploratory Sequential Design. The exploratory sequential design has several advantages which made it an ideal design choice for this thesis. The advantages are (i) since there are separate distinct phases involved in this design, it is easier to implement, describe, and report; (ii) the primary qualitative phase allowed for in-depth exploration of participants' narratives and inductively apply the theoretical framework (MGRS) throughout the project (iii) having both qualitative and quantitative components, it has a wider reach to various audiences (e.g., policymakers and clinicians); (iv) the qualitative phase allowed for the identification of variables of interest to be used in the quantitative phase; and (v) using this approach increased the potential of publishing multiple journal articles.

Disadvantages of Sequential Exploratory Design. Using exploratory sequential design also has several challenges associated with it. It (i) can be time-consuming; (ii) requires multiple ethics applications; (iii) involves recruitment of two different samples – a small, purposeful sample for the qualitative phase and a larger sample for the quantitative phase; and (iv) identifies which qualitative results to be used to develop quantitative tools. To overcome these disadvantages, several contingency plans were developed throughout the candidature, such as: (i) developing and regularly updating Gantt Chart to stay within the timeframe; (ii) developing the survey instrument while analysing qualitative data and applying ethics for the quantitative phase while writing results for the qualitative phase; (iii) using a snowballing technique and active advertising to recruit participants for both qualitative and quantitative phases; and (iv) conducting an in-depth exploration of qualitative data to design research questions for the quantitative phase and developing any other emergent research questions.

Additional Information of Method Section of Chapters 5-7

The purpose of this section is to give the reader a brief outline of the method section of Chapters 5-7, with a particular focus on details that had to be excluded from manuscript chapters for space.

Participants and Procedure

Qualitative Phase. A volunteer sampling approach was utilised to interview 13 participants for the qualitative phase of the study. The participants were recruited through an advertisement, personal and professional contacts, and by applying a snowballing technique. Snowballing technique is a sampling technique in which existing participants provide a referral to recruit samples required for a research study (Baltar & Brunet, 2012; Heckathorn, 1997). To avoid any coercion, the potential participants were contacted through emails or private messages. An information sheet and a consent form (Appendix B) containing details

of the primary investigator were sent to the potential participants in the first email. Once signed consent forms were received, participants were contacted to schedule the interview day and time. It was important that potential participants felt free to participate or not, as well as to refuse continued participation at any point during the data collection phase (Baez, 2002; Gall et al., 2010). The criteria for selection required that participants were:

1. at least 18 years of age
2. with either a pregnant partner and/or had a child under the age of 12 months
3. able to speak basic English, and
4. living in Australia during the data collection

The participants were invited for two interviews at an interval of six weeks. The second interview was to assess any changes in views and experiences of fathers during the interval. After the first interview, participants were invited for a second interview. Only few participants agreed to participate in the second interview. During the transcription process, it is sometimes advised to share transcribed interviews with the participants. One of the reasons the transcripts are shared with the participants is to ensure the validity of the transcript (Polit & Beck, 2007) and to avoid significant errors that may impact the quality of the transcript and, as a result on the quality of the research (Mero-Jaffe, 2011). However, some qualitative academics suggest that sharing transcripts with participants often causes them more harm than good (*See Chapter 8: Limitations*). Due to contrasting effects of sharing transcripts with the participants in the literature, both first and second interview transcripts were not shared with the participants. The two-interview structure also helped to check if the narratives were consistent across two interviews (W. Li, 2013) and to maintain methodological reflexivity (*See Chapter 3: Methodological Reflexivity*). Once both interviews were transcribed, the transcripts were checked to see if the risk factors changed across the six weeks. Although

participants expressed becoming more secure in their role as fathers, their experiences of the perinatal period remained consistent. The participants were also given an AU\$20 gift card as a token of appreciation at the end of the interview.

Distress Protocols used in Qualitative Phase. Researching sensitive topics can raise several ethical issues. Interview topics that require participants to disclose unwanted experiences or revisit trauma might be labelled as sensitive as participants are more likely to become distressed and may experience anxiety, depression, embarrassment, or acute stress reactions (Jorm et al., 2007; Orr et al., 2021). To minimise emotional distress, researchers must develop strategies or distress protocols. In the current study, the modified version of Draucker et al's (2009) distress protocols were adopted and applied at various stages of the interview process (Wright et al., 2020; Appendix H). For example, if a participant expressed distress or showed signs of distress (e.g., trembling, fidgeting, sweating), then the primary investigator stopped the interview and immediate support was offered to the participant (e.g., time out, water). After a few minutes, the primary investigator asked the participant about their feelings, thoughts, and if they felt safe continuing. Only if the participant provided consent, then the interview would resume. If the participant was unable to carry on then the interview was discontinued, and the participant was encouraged to see support from the helplines (Lifeline and Beyondblue). The contact details of the helplines were provided to the participant prior to and during the interview.

Quantitative Phase. The participants for the quantitative phase were recruited through two methods. First, the online survey was advertised on James Cook University's social media, the research team's network, and other social media sites such as Facebook and Twitter. Second, the Online-Access-Panel-based survey was distributed through the Qualtrics platform (Callegaro et al., 2014; Matthijsse et al., 2015). An online access panel is a pool of people who have agreed to take part in web surveys (Gritz, 2004). Data collection using an

online access panel has been noticed in academic journals since the late 1990's (H. Li et al., 1999, as cited in Gortiz, 2007). Despite utilising regular advertisements and the snowballing technique, the participant pool was limited to a regional town in Australia (Gleibs, 2017; J. K. Goodman & Paolacci, 2017). However, engaging with an online access panel provided an opportunity to recruit participants from all over Australia. To ensure that the participants met the specific requirements of the survey (inclusion criteria), Qualtrics employed internal checks such as asking additional questions prior to survey entry (e.g., demographics, location, etc.). If the participant did not meet the specified survey criteria, the response was not recorded (ESOMAR, 2019). Also, researchers have previously been highly supported in using online access pools to recruit hard-to-reach/specific segments of a population – for example, fathers with a pregnant partner and/or an infant under the age of 12 months (N. A. Smith et al., 2015). Furthermore, research suggested that online access panel data has similar psychometric properties and produced criterion validities like conventionally sourced data (Behrend et al., 2011; Blom et al., 2015; Walter et al., 2019).

Again, a volunteer sampling approach was applied. The selection criteria for participants were:

1. At least 18 years of age
2. With either a pregnant partner and/or had a child under the age of 12 months
3. Able to speak basic English, and
4. Living in Australia during the data collection

Although the survey was available to men only, participants were still asked to confirm their gender and age on the informed consent page of the study. Those who indicated that they were female and under the age of 18 years, were thanked and automatically exited

from the survey. The information sheet and consent form associated with the online survey are in Appendix B.

Reflexivity in Qualitative Research

Qualitative research has often been criticised for establishing the validity of research findings. Difficulty in replicating the process, issues around generalisability of findings and lack of scientific and methodological rigour are some of the criticisms that mark many evaluations of qualitative work (Patnaik, 2013; A-M. Reid et al., 2018). In response to these criticisms, the practice of incorporating the researcher's perspective in the design and interpretation of data has now gained currency in the field of psychology, medical and psychiatric research, and psychotherapeutic case study research.

Qualitative research has often been labelled as impressionistic, anecdotal, and influenced by researcher bias (Buckner, 2005; Dodgson, 2019). The subjective interpretation of the data and focus on the researcher rather than the process of research were criticisms that led to a closer examination of the researcher's reflexivity and its role in analysis (A-M. Reid et al., 2018). Qualitative writing is socially constructed, situated in the researcher's use of varied interpretative lenses. Reflexivity calls for turning this investigative lens towards the researcher. At a very basic level, reflexivity is an attempt to find answers to questions. "What do I know?" and "How do I know it?" (Carolan, 2003; Patnaik, 2013). Qualitative research seeks to draw out the richness of interaction between the researcher and the participant by making it central to the process in contrast to quantitative research which reduces this inter-subjectivity (Patnaik, 2013).

Nature of Reflexivity. Reflexivity acknowledges the role of the researcher as a participant in the process of knowledge construction and not merely an outsider-observer of a phenomenon. Reflexivity is merely not a process of reflection, introspection or self-

awareness but demands that the researcher engages in the study of self as subject and object (J. Anderson, 2012; Carolan, 2003). Thus, reflexivity intentions may be understood as:

Introspective reflexivity – Introspective reflexivity involves consciousness of the self by the researcher to understand how one's own experiential location might influence the choice of subject, methodology and themes. The researcher is both, the documenter of events as well as co-constructor on account of being present at the creation of reality. Introspective reflexivity acknowledges that the researcher's experiences, attitudes, and emotions will impact their engagement with the participants and the subsequent analysis of data (Carolan, 2003; Dowling, 2006). Introspective reflexivity is an attempt to maintain research focus by bracketing biases and attitudes of the researcher to minimise their influence on the research process.

To minimise the influence of biases and attitudes on the research process, the primary investigator maintained a reflective journal during the qualitative research phase of this PhD. Throughout the research process, the primary investigator made regular entries in the journal to ensure reflection was a continuous process. Observational notes were made during the interview process and entered into the journal with as much detail as possible. For example, the observation notes and journal entries included information such as the mood and context of the interview, the body language of the participant, and any subtle nuances noticed during the interview (e.g., change in tone, facial expression). The journal entries provided an opportunity to shed light on the motivations, values, and assumptions made by the primary investigator. The reflective journal further prompted the primary investigator to reflect if her being of different gender (woman with no children) was impacting the interview process as the participants were men who were discussing topics such as masculinity and perinatal mental health. Reflecting on researcher positionality (Hill & Dao, 2020; Mason-Bish, 2018) is a vital step of the reflexive process, as it influences the construction of data (Trainor &

Bundon, 2020). Reflecting on researcher positionality aided the research process as it meant that the primary investigator had to constantly adapt her behaviour, for example being aware of what was being highlighted and silenced in the interviews and allowing the participants to take reigns and discuss personally significant experiences. Keeping a journal helped the primary investigator to cultivate an understanding of how she fits into and was intertwined with the participants in the process of this research. As a result of reflection on researcher positionality, the primary investigator was able to highlight a few limitations of the qualitative research (*See Chapters 5, 6, and 8*).

Methodological Reflexivity – Methodological reflexivity strives to ensure that the standardised procedures have been followed in conducting the research. Reflexivity in this instance identifies and examines the ethical, social, and political considerations that govern the field of enquiry. Delineating the scope and institutional context of the research and strengthening the research rigour are methodological goals achieved through this process (Trainor & Bundon, 2020).

A researcher strives for methodological reflexivity during the data analysis process. Within the qualitative phase of this PhD, the primary investigator incorporated methodological reflexivity by bringing in previous reflexive pieces (reflective journal and observational notes) into the analyses so as to draw further interpretations of the data and to aid in the production of robust qualitative research. The first step of qualitative analysis (thematic analysis and IPA) is to familiarise oneself with the data (V. Clarke & Braun, 2016). The primary investigator transcribed the interviews verbatim using NVivo software to familiarise herself with the data (B. Smith & Sparkes, 2016). The primary investigator re-read each transcript and actively made reflective notes to consider potential meanings and patterns. The next step of data analysis involved generating codes. Coding was both theory-driven (deductive) and data-driven (inductive), depending on the type of analysis. Coding

was done in NVivo, and the primary investigator examined the corresponding observational notes and reflective journal to provide more context and make additional notes to aid understanding. For example, during transcription observational notes such as participants' silences, vulnerability, and facial expressions were taken into account when making initial codes. This process continued throughout the remaining steps of the analysis process (themes and sub-themes generation, reporting) with the goal to build depth and detail through the analytic account (Braun et al., 2016). To maintain methodological reflexivity, the two-interview structure was adopted to check if the narratives were consistent across the perinatal period. The transcribed interviews were checked by the supervisory team to achieve two main objectives: to overcome the primary researcher's views and assumptions and to achieve quality transcriptions that accurately reflect participants' views and experiences (Grundy et al., 2013). As a result, extracts and justification of each theme were intertwined to capture the story of the data, and the analytical narrative went beyond description to provide interpretation of participants' experiences.

Using the Edinburgh Postnatal Depression Scale for men

The EPDS (Cox et al., 1987) is one of the most widely used self-report measures to screen or assess for possible depression, anxiety, and distress in the perinatal population (Matthey & Agostini, 2017). Since its publication in 1987, it has gained increasing usage in both English-speaking countries (e.g., UK, New Zealand, Australia, North America) and non-English speaking countries such as France (Guedeney & Fermanian, 1998), Italy (Benvenuti et al., 1999), and Taiwan (Huang & Mathers, 2008). EPDS is used within routine clinical practice in many public health services in Australia to screen for possible depression in women during the perinatal period (e.g., Buist et al., 2008; Matthey et al., 2004). However more recently, the scale has also been used to screen for possible depression, anxiety, or distress in men during the perinatal period. It has been validated to screen men for possible

depression in the perinatal period in Europe, Australia, and Southeast Asia (Edmondson et al., 2010; Escribe-Aguir & Artazcoz 2011; Gawlik et al., 2014; Lai et al., 2010; Massoudi et al., 2013; Matthey et al., 2020; Ramchandani et al., 2005; Tran et al., 2012). In addition, the scale has also been tested for its ability to screen men for anxiety (cut-off score on items 3, 4, and 5 of EPDS) and mental distress (Matthey et al., 2008, Matthey et al., 2013; Matthey et al., 2020; J. Phillips et al., 2009; Swalm et al., 2010). Despite EPDS being used to screen depression, anxiety, and mental distress in men during the perinatal period, it is important to stress that this measure is **not** a diagnostic instrument. To positively diagnose an individual with the presence or absence of depression, anxiety, and mental distress, it is imperative to administer a diagnostic interview to them (Matthey & Agostini, 2017). Although EPDS is an extremely valuable tool for both researchers and clinicians and has aided the cause of highlighting the need to consider men's perinatal mental health, it is important to consider some problems and limitations unique to this measure. In this section, EPDS is critically evaluated, and its possible limitations are discussed below.

Multiple cut-off scores: gender, timing, and diagnosis. Unlike studies involving women, there have been limited studies that have used EPDS to screen for possible depression, anxiety, and mental distress in men. However, these studies report a great variation in the optimal cut-off scores. For depression (major or minor), the cut-off scores vary from 5 or more in Vietnam (Tran et al., 2012), 9 or more in Sweden (minor depression: Massoudi et al., 2013), 10 or more in Australia (Matthey et al., 2001), 11 or more in England (Edmondson et al., 2010) and Hong Kong (Lai et al., 2010), 12 or more in Sweden (major depression: Massoudi et al., 2013), and 13 or more in Italy (Loscalzo et al., 2015; Matthey et al., 2020). For mental distress (depression and anxiety), the cut-off scores vary from 6 or more in Australia (Matthey et al., 2001; Matthey et al., 2020) and Sweden (Massoudi et al., 2013), and 9 or more in England (Edmondson et al., 2010). In some studies, researchers have

simply used the same validated cut-off scores that apply to women (even if it is not validated for men) to allow for a comparison of rates between the two genders (e.g., Ramchandani et al., 2005). This further adds to the confusion in the field and negates the empirical evidence that different genders have different validated cut-off scores, possibly because men and women express mental distress differently or demonstrate the same distress through different symptoms (Brownhill et al., 2005; Melrose, 2010).

It is also important to consider that a father's socially and culturally accepted masculine gender role may also come into play while expressing mental distress. It is possible that in some social and cultural settings displaying symptoms of grief, sadness, and tearfulness may be considered signs of weakness. Hence, it is possible that to maintain their masculine status in society, some fathers may express externalising symptoms that are more acceptable (e.g., substance abuse, violence, anger; Addis, 2008; Chhabra et al., 2020). Therefore, it may be harder to determine an appropriate cut-off score for fathers as EPDS does not consider the permutations based on gender, the timing of administration of the measure (antenatal, three trimesters, and postnatal), culture, and diagnosis (major or minor depression, anxiety, or mental distress; Matthey & Agostini, 2017). While within Australia there has been a push to routinely screen fathers in the perinatal period, there is a lack of consideration given to these permutations (Beyondblue, 2011), especially with Australia being a multicultural country. Often a pragmatic approach is taken to use one cut-off score for all men, regardless of their cultural background or perinatal stage. This knowingly results in the misclassification of men with and without significant levels of distress (Matthey & Agostini, 2017).

Cut-off scores and COVID-19. It is also important to consider if the suggested Australian cut-off score of 10 or more (depression) and 6 or more (mental distress) are appropriate to screen fathers for perinatal mental distress during a public health crisis such as

the Coronavirus pandemic (COVID-19). The first case of the newly identified novel COVID-19 in Australia was reported in January 2020 in Victoria (health.gov.au). Since then, the virus has rapidly spread across the country leading to many infected people and multiple deaths (C. Wang et al., 2020). Due to the limited knowledge about the infectious disease, its progression and outcomes, and multiple strains (e.g., Delta, Omicron), individuals tend to feel anxious and unsafe in the rapidly changing environment (Alyami et al., 2021). While efforts to control and limit the spread of the pandemic in the country have led to multiple lockdowns and strict border rules, these strict rules have also impacted the mental health of the people due to social isolation. Further, social isolation during COVID-19 has also been identified as a contributing factor to perinatal depression in women (J. Li, 2022). Hence, the combination of public fear due to sudden shutdown of services (e.g., health, entertainment), lockdowns, social isolation, lack of social support from family and friends due to restrictions during COVID-19, and the fear of infection and losing loved ones may collectively contribute to mental distress or exacerbate symptoms of anxiety and depression in fathers during the perinatal period. Therefore, using the above-stated cut-off scores researchers may identify a high prevalence of depression and mental distress in fathers in the perinatal period during a public health crisis such as COVID-19. The current pandemic thus sheds light on the need to re-evaluate the measure and its cut-off scores.

A high rate of false positives. A screening test is optimal if it correctly identifies people with a condition (sensitivity) and those without the condition (specificity). In addition, to ensure that clinical services are not overburdened, EPDS needs to be reasonably accurate in classifying individuals as being likely to have the condition (positive predictive value (ppv)) and those not having the condition (negative predictive value (npv)). Unfortunately, EPDS has been found to have a low ppv, with it being only around 20-30% (Edmondson et al., 2010; Massoudi et al., 2013; Matthey et al., 2001). The low ppv values mean that around

70-80% of men who score high on EPDS, **do not**, in fact, have the diagnosed disorder the cut-off score was validated against.

Transient vs enduring mental distress. Within the field of maternal perinatal mental health, research has suggested that clinical services should be cautious in not over-pathologizing women who have an initial high score on the EPDS (Matthey & Agostini, 2017). A re-test after a few weeks (e.g., 2-4 weeks) of the initial test is recommended for women. Studies have shown that around half of the women scoring high on the initial test and then scoring within the normal range on the second test are experiencing transient distress (Matthey, 2016). This finding should also be factored into research studies reporting on the prevalence of paternal perinatal mental distress. In some Australian services recommendations are being made to re-test high scoring women on EPDS following an initial screening (NSW Department of Health, 2009). This recommendation should also be applied to fathers when they score high on the initial EPDS screening test.

EPDS has been used extensively within perinatal screening contexts for women and is increasingly being used for men. However, researchers and clinicians should be aware of the above-mentioned possible limitations of this measure. While there may be some strategies to overcome some of these limitations when using EPDS to screen fathers for perinatal mental distress (e.g., repeat testing of 'screen positive' fathers to reduce the incorrect interpretation, screen for a variety of negative emotions, use categorical scoring format rather than continuous scoring format), most are unlikely to be practical or particularly successful within clinical and research settings. For example, while using an online anonymous survey to measure the prevalence of paternal perinatal mental distress, it would be harder for a researcher to re-test the participants if they scored high on the initial screening test. Further, EPDS is unable to capture the externalising symptoms of depression and anxiety as exhibited by some hypermasculine men. Hence, there is a possibility that it may under-report the

prevalence rates. Hence, to overcome these barriers, there is a particular need for the development of a new measure designed to overcome these possible limitations. Despite these possible weaknesses, it is important to reiterate that EPDS has been an excellent tool that has helped in the cause of understanding perinatal mental health problems in women over the past 35 years and in men over the past decade. As Alderdice et al. (2013) concluded, “we...run the risk of using a measure because it has a high profile rather than necessarily being the best measure of psychological health” (p. 436).

Further Data Analysis of Mixed Methods Data in Chapters 6 and 7

Further data analysis refers to the use of existing data to find answers to research questions or develop new hypotheses that were different from the original work (Fielding & Fielding, 2003). The analysis of existing data sets is routine in disciplines such as economics, health sciences, political sciences, and sociology, and now is being widely embraced as a tool for psychological research (Donnellan & Lucas, 2014; Mroczek et al., 2011).

Utilising further analysis of existing data has advantages. First, analysing an existing data set is time-conserving and reduces costs associated with data collection. Since the data is already collected and professionally cleaned, it is ready to be analysed (Hofferth, 2005). Further, since the data is already collected, it saves the researcher time associated with the preparation of multiple ethics applications. This is a great advantage for a PhD mixed methods research project which is often set to be completed within a certain time duration. Second, further analysis can provide an in-depth investigation of existing data which can be used to complement the results of the primary study or used to develop new research questions and hypotheses (Donnellan & Lucas, 2014). For example, in Chapter 6, the further analysis of qualitative data from the current mixed methods study was able to provide an in-depth insight into the experiences of fathers during the perinatal period. While this further analysis helped answer newer research questions, the results also complimented the results

from the primary study (Chapter 5). Another advantage of further data analysis is that it forces researchers to adopt an open and transparent approach to their research because the data is publicly available (Freese, 2007). Despite the many advantages of the further analysis of existing data, there can be some disadvantages if the primary data was collected by another researcher such as lack of familiarity with the data and measures, can be time consuming initially if the data is not familiar, and missing data in the existing data (Donnellan & Lucas, 2014). Furthermore, the researcher's choice in the selection of measures that may be more recently validated cannot be included in the dataset. As the primary investigator and collector of the primary data, there was already familiar with the data, missing data, and the measures during the further analysis, hence, overcoming the disadvantages associated with further analysis of existing data.

Summary

This chapter included an overview of the methodology adhered to for this research. An exploratory sequential mixed methods approach was used to explore the (i) risk factors associated with paternal perinatal mental distress and (ii) the role of masculinity, especially MGRS on the mental health of fathers in the perinatal period. Further, this chapter provided an overview of the chapter specific methods which could not be included in the published chapters due to word limits specified by different journals.

CHAPTER 4: Risk Factors for Paternal Perinatal Depression and Anxiety: A Systematic Review and Meta-Analysis

In Chapter 2, factors such as maternal depression, marital distress, and low income were discussed as a risk to paternal perinatal mental health. However, the chapter concluded by noting that there was a lack of research that focussed on identifying risk factors that are father specific or unique to fathers. In the following chapter, the existent literature is systematically reviewed to shed a light on risk factors of perinatal mental distress which are unique to men. Further, a meta-analysis is conducted to determine which risk factor has the strongest impact on paternal mental health during the perinatal period.

This chapter is based on the peer-reviewed paper published in *Psychology of Men and Masculinities*.

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Abstract

This article aims to identify the risk factors associated with paternal perinatal depression and anxiety. Studies published between January 1950 to December 2017 which report paternal depression and anxiety in the perinatal period were obtained from five different databases. In total 84 studies were included in the systematic review, and 31,310 participants from 45 studies were included in the final meta-analysis. Risk factors obtained were classified based on the frequency of distribution of factors. Maternal depression is an important risk factor for fathers in the postnatal period ($OR= 3.34$, 95% CI [2.51-4.46]). Marital distress was also linked to a two-fold increase in the likelihood of paternal depression in the postnatal period ($OR=2.16$, 95% CI [1.47-3.19]). Parenting stress as a risk factor was strongly and significantly associated with paternal anxiety in the perinatal period ($OR= 14.38$, 95% CI [7.39-27.97]). The findings suggest that maternal depression, marital distress, and parental stress are important risk factors for fathers' mental health in the perinatal period. The current meta-analysis also identifies gender role stress, domestic violence, and mismatched expectancies from pregnancy and childbirth as the risk factors which are unique to fathers only in the perinatal period. Future intervention programs should screen and target fathers with no previous children, a depressed partner, and aim to enhance relationship satisfaction.

Keywords: depression, anxiety, fathers, pregnancy, childbirth, perinatal

Public Significance Statement: Like women, men also show signs and symptoms of depression and anxiety in the perinatal period. Meta-analysis revealed that partner's depression, marital distress, and parenting stress are significant risk factors for fathers' mental health in the perinatal period. Counteracting these risk factors may reduce the risk of depression and anxiety in fathers in the perinatal period.

Author Note: Some of the data and ideas in the manuscript were presented at the Australian Psychological Association and Asian Association of Social Psychology conferences in 2019.

Introduction

Depression is a common but serious mental health concern (World Health Organisation [WHO], 2017). Depression is a type of mood disorder characterised by anhedonia, loss of appetite, sleep disturbance, low energy, and typical cognitions such as hopelessness (American Psychiatric Association [APA], 2018). According to the WHO (2017) 322 million people suffered from depression in 2015. Between 2005 and 2015, the total estimated prevalence of depression had increased by 18.4%. In most cases, depression co-occurs with anxiety. Anxiety is defined as a feeling of excessive fear and worry, with anticipation of a future threat and is characterised by somatic symptoms such as palpitations, sweating, and trembling (APA, 2018). The global prevalence of anxiety in 2015 was about 264 million or 3.6% of the world population (WHO, 2017).

The symptoms of depression and anxiety can be elevated by stressful situations such as trauma and major life events (e.g., pregnancy and childbirth). Several studies have established a relationship between pregnancy and childbirth and elevated depressive and anxiety symptoms (Gavin et al., 2005; Gaynes et al., 2005; J. H. Goodman, 2004). Depression or anxiety experienced during pregnancy (first trimester until the third trimester) is known as prenatal depression or anxiety. Postnatal anxiety or depression occurs after childbirth and up to one year after the birth of the infant. Thus, depression or anxiety that occurs from the first trimester of pregnancy up to 12 months after childbirth is collectively termed perinatal depression or anxiety (APA, 2018).

The impact of depression and anxiety on mental health during the perinatal period has been studied extensively among mothers but has received much less attention in relation to fathers (Dudley et al., 2001). Although fathers' mental health has only received more focus over the past decade, studies have found that a significant portion of fathers also suffer from

depression and anxiety in the perinatal period (Centre of Perinatal Excellence [COPE], 2017; Wee et al., 2013).

Giallo and colleagues (2012) reported a postnatal depression prevalence of 10% in 3,219 Australian fathers. Gawlik et al. (2014) reported similar results in their study of new fathers in a community sample of 320 German fathers, among whom 9.8% experienced prenatal depression and 7.8% of fathers were depressed postnatally. These results were replicated in a meta-analysis that estimated the prevalence of paternal perinatal depression at 8.4% (Cameron et al., 2016). Research has shown that the prevalence rates of non-Western perinatal depressed fathers are similar to those in Western countries. Mao and colleagues (2011) reported that 12.5% of Chinese fathers in their sample reported perinatal depression. Similarly, Nishamura and Ohashi (2010) reported that 11.6% of Japanese fathers suffered from perinatal depression. This rate closely aligns with the 10% prevalence of depressed fathers in the perinatal period in samples from the USA and Australia (Giallo et al., 2012; Paulson & Bazemore, 2010).

Although the rates of perinatal depression are significant, it is likely that these rates underrepresent the true prevalence in fathers given there may be a gendered context in men underreporting depressive symptoms, leading to underdiagnoses (A. P. O'Brien et al., 2017). Although both men and women express depression as low mood with reduced activity, depression in men may be “masked” with externalised behaviour and disorders such as substance abuse, avoidance behaviour, and anger (Addis, 2008; Cochran & Rabinowitz, 2000). This masked phenomenon is termed as *masked depression* or *masculine depression* (Addis, 2008). It has been hypothesised that due to gender norms some depressive men may display the aforementioned behaviours and disorders instead of overt, typical depressive symptoms because these men may feel uncomfortable or even fearful about displaying a depressive affect. Moreover, many men have negative attitudes toward help-seeking, and therefore are less likely

to seek professional help as a result of the negative attitudes (Addis, 2008; Good & Sherrod, 1987) influenced by masculine gender norms (Addis, 2008). Possible masculine gender norms include the traditional societally held view of the man as the main provider or the breadwinner for the family, along with societal expectations of emotional inexpressiveness, toughness, competitiveness, and holding power over women (Addis & Cohane, 2005). These masculine gender norms discourage help-seeking when men experience depression and/or anxiety.

Similar to the frequencies for perinatal depression, studies have also estimated the prevalence of anxiety in the perinatal period. Quinlivan and Condon (2005) and Tohotoa and colleagues (2012) estimated a prevalence of 12% of 50 fathers experiencing prenatal anxiety and 2.4% of 244 fathers experiencing postnatal anxiety, respectively, in Australia. Figueiredo and Conde (2011) reported a prevalence of 10% for prenatal anxiety among 260 Portuguese fathers. These results closely align with the estimated 3% prevalence of paternal postnatal anxiety in 89 New Zealand fathers by Carter et al. (2005). In their recent systematic review, Leach et al. (2016) estimated the prevalence of paternal perinatal anxiety between 2-18%. Similar to the studies in Western countries, Koh et al. (2015) estimated a prevalence of 3.4% for postnatal anxiety in 622 Chinese fathers and 2.6% for prenatal anxiety.

The significant prevalence of paternal perinatal depression and anxiety in both Western and non-Western countries suggests that the mental health of fathers is a significant public health concern. The affected population is most likely to incur the increased cost of healthcare services associated with increased contact with general practitioners, psychologists, and psychiatrists (Edoka et al., 2011). Additionally, paternal perinatal anxiety and depression can have a negative impact on an infant and child's behaviour, mental health, and learning capabilities. For example, Ramchandani et al. (2005) reported in their study that a depressed father had a 109% higher risk of having children with psychiatric disturbances. Moreover, depressed fathers are less likely to be engaging with their toddlers which may affect a child's

cognitive development (McLearn et al., 2006). Furthermore, hidden or masked depression, resulting in externalising symptoms such as physical illness, alcohol and drug abuse, and domestic violence, may delay treatments of depression. Research has reported that hidden depression appears to be a contributing factor to suicide in men (Marcus et al., 2012).

Prevention has been identified as the key to reducing healthcare costs in relation to paternal depression and anxiety, and the negative impacts on children (COPE, 2017). To facilitate the design of prevention programs for paternal perinatal depression and anxiety, identifying risk factors is imperative (Edoka et al., 2011).

A risk factor is defined as any characteristic or attribute that increases the likelihood of developing a disease or injury (WHO, 2017). A large body of literature has reviewed the risk factors associated with maternal depression and anxiety in the perinatal period. In their systematic review, Lancaster et al. (2010) reported history of depression, lack of social support, lower income, lower education, smoking, single status, and poor relationship quality as risk factors for maternal prenatal depression. In the postnatal period, a history of depression, unintended pregnancy, lower education, single status, lower income, and lower education were found to be risk factors associated with maternal postnatal depression (Azad et al., 2019; Fiala et al., 2017). However, similar to the research into the prevalence of perinatal mental health disorders, research into risk factors associated with paternal perinatal mental health has received less attention compared to mothers.

Several studies into risk factors associated with perinatal depression and anxiety in fathers have identified factors that are similar to risk factors identified in mothers during the perinatal period. Maternal depression has been found to be significantly correlated to paternal perinatal mental health; with published correlations ranging between 0.2-0.76 (Bielawska-Batorowicz & Kossakowska-Petrycka, 2006; Matthey et al., 2000). Fathers are 2.5 times more

likely to be depressed six weeks postnatally if their partner is also suffering from postnatal depression (Matthey et al., 2000). Low socioeconomic status has also been reported to be associated with paternal perinatal mental health disorders. Fathers with lower education status may have reduced chances of gaining well-paying employment (Gao et al., 2009) and the arrival of a new baby may financially strain fathers who are not employed full-time (Bergström, 2013). Marital distress is another risk factor reported in the literature. Distress in the marital relationship is likely to add to the stress related to the arrival of a new baby and may cause significant distress in fathers during the perinatal period (Bergström, 2013; Nishimura et al., 2015). Fathers with a history of previous psychiatric illness are reported to be more likely to suffer depression or anxiety during the perinatal period (Nishimura & Ohashi, 2010; Pinheiro et al., 2011; Ramchandani et al., 2008; Suto et al., 2016). Furthermore, the lack of social support is also likely to affect the mental health of fathers in the perinatal period. Boyce and colleagues (2007) suggest that in their sample of Australian fathers, fathers were at a higher risk for emotional distress if they were dissatisfied with the social support from their partner, family, and friends.

Apart from those risk factors, unplanned pregnancy (Gao et al., 2009; Nishimura & Ohashi, 2010), lack of parenting skills (Bradley et al., 2008; Zhang et al., 2016), and substance abuse (Bronte-Tinkew et al., 2007) are also identified as risk factors for paternal perinatal depression and anxiety. The relationship between age and new fathers' depression and anxiety is inconclusive. Contradictory results have been found with some studies suggesting that younger age (<30 years) is a risk factor for paternal perinatal mental health disorder (Bergström, 2013; Bielawska-Batorowicz, & Kossakowska-Petrycka, 2006) while other studies suggest that older age is more likely to be a risk factor for fathers in the perinatal period (Bronte-Tinkew et al., 2007; Ramchandani et al., 2008; Stramrood et al., 2013).

The above risk factors for paternal perinatal depression and anxiety have been reported in individual studies. To the authors' knowledge, there is no published systematic review in this field that includes clearly defined inclusion and exclusion review criteria, and assessments of methodologic qualities of the reviewed studies with explicit criteria of the methodological quality (Hoogendoorn et al., 2000). In this article, a strict systematic approach has been employed to identify and summarise the risk factors for paternal perinatal depression and anxiety in the literature, followed by a meta-analysis to estimate the effects of the risk factors on paternal perinatal depression or anxiety. These methods are comparable with those in the literature with regard to the prevalence of paternal perinatal mental illness (Cameron et al., 2016). The current study aims to answer the following research questions: (a) What are the risk factors associated with paternal perinatal depression and anxiety; and (b) What are the unique risk factors for fathers' perinatal depression and anxiety compared to those for mothers.

Methods

A systematic review and meta-analysis on paternal perinatal depression and anxiety were conducted to identify risk factors in peer-reviewed articles. Methodological considerations included the time of assessment of depression and anxiety, and the measures used to assess depression and anxiety. Risk factors were ranked based on the frequency of the distribution of factors identified through the review. Preferred Reporting Items for Systematic Review and Meta-Analysis (PRISMA; Figure 4.1) guidelines were followed (Hutton et al., 2015; Moher et al., 2015).

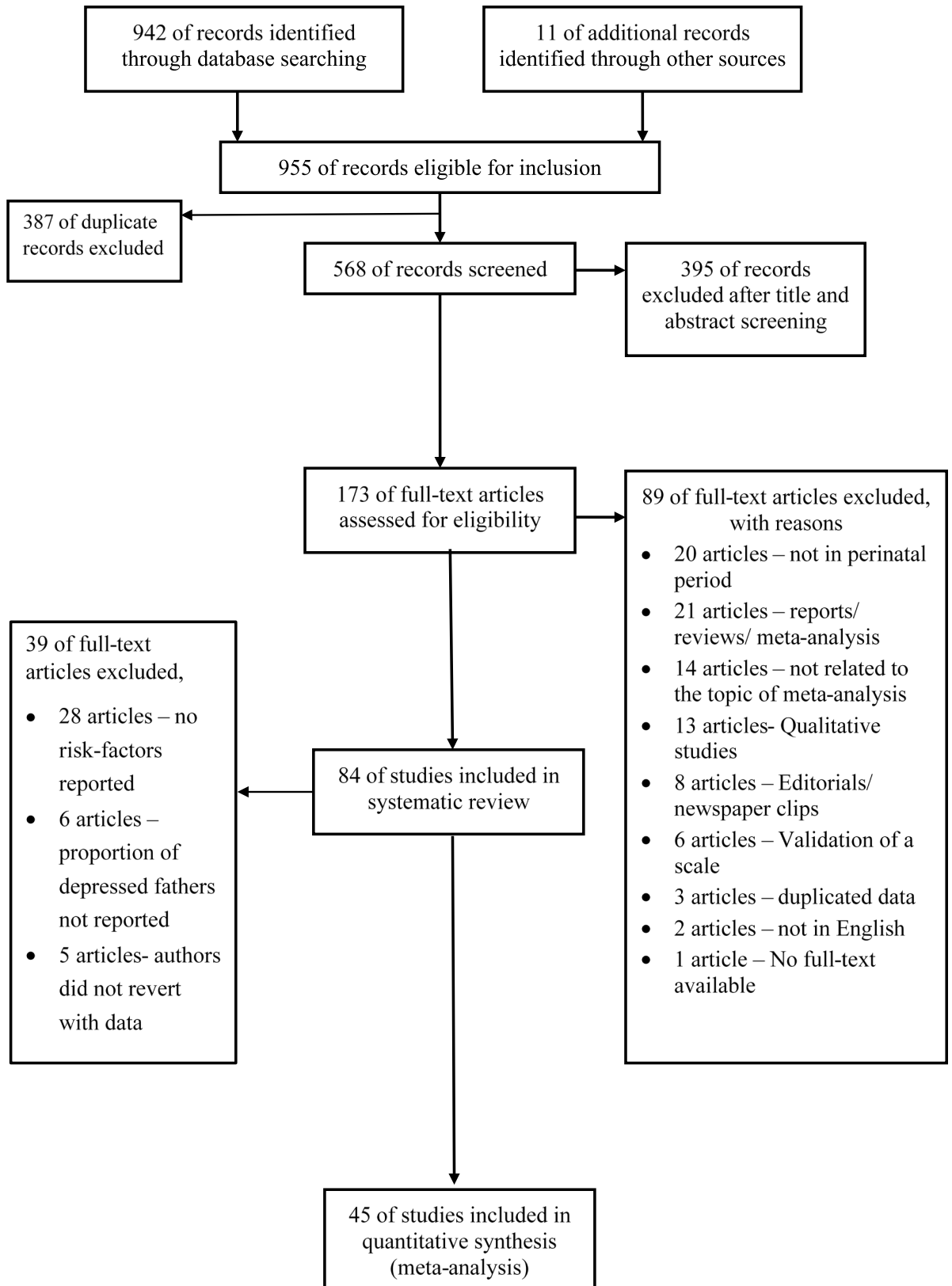


Figure 4.1. PRISMA flow of result of systematic review and meta-analysis

Search Strategy

Five electronic databases – CINAHL, Medline, PubMed, PsychInfo, and Scopus were searched for articles from January 1950 to December 2017 using Medical Subject Headings (MeSH) terms of fathers, dad, fatherhood, men, male, paternal, prenatal, antenatal, pregnancy, postnatal, postpartum, childbirth, perinatal, depression, anxiety, mental health disorder. The first author performed searches of all databases using these keywords and their several combinations (e.g., *fathers or dad or fatherhood and postnatal and depression and anxiety*). The search was limited to papers published in English, in peer-reviewed journals, composed of MeSH terms within the title or abstract of the article, and contained male participants over the age of 18 years.

Inclusion and Exclusion Criteria

Inclusion and exclusion criteria were applied multiple times throughout the entire process. Exclusion criteria included studies not being in English, studies that did not have keywords in either their title or abstract, studies that did not include male participants, participants below the age of 18 years, and studies with a focus on unhealthy infants. When full-texts were being reviewed, articles were excluded if studies were not in the perinatal period; and reviews, editorials, systematic reviews, meta-analyses, comments, replies, animal studies, and qualitative studies were also excluded. Studies were also excluded if they used data from shared databases in order to avoid duplication of data. Studies that reported validation of various depression scales were also excluded. Lastly, inclusion-exclusion criteria were applied when the studies were being catalogued according to the risk factors. The exclusion criteria included studies that did not report any risk factors associated with paternal perinatal depression and anxiety. Studies that did not report an estimated prevalence of perinatal depression and/or anxiety in their sample were also excluded. Studies were excluded if they reported the prevalence of depression and/or anxiety in their sample in mean

and standard deviation, but not enough information was provided to determine the estimated prevalence. Longitudinal studies had multiple time points when data was collected. To compare with cross-sectional studies, the largest sample size reported in longitudinal studies was included in the review. If the longitudinal studies had a consistent sample size throughout the study, then the first reported sample size was included.

Study Selection

All three authors independently assessed the eligibility of the retrieved studies. Disagreement about the inclusion of a study was resolved through discussion among the three authors. The titles and abstracts of the articles were coded as either “yes”, “no” or “maybe” to determine eligibility. The studies marked as “no” were removed and studies marked as “yes” or “maybe” were included to be reviewed thoroughly for inclusion. If the articles did not meet the inclusion and exclusion criteria, then they were removed from the review.

Quality Assessment

Eligible studies were assessed for methodological quality using the Mixed Methods Appraisal Tool (MMAT), which facilitates the appraisal of studies using common methods and methodologies with few generic quality criteria (Pace et al., 2012). The checklist has five specific sets of criteria and has been shown to be a valid and reliable tool for methodological quality assessment (Pace et al., 2012). A study was scored out of 100 and higher scores represent higher overall methodological quality. The first two authors independently scored the studies. The third author resolved any discrepancies noted. The MMAT checklist is provided at the end of the article (Appendix C).

Data Extraction

Jasleen Chhabra independently coded the author and year of the study, country of the study, sample size, time points of assessment of depression and anxiety, methods used to

assess depression and anxiety, the prevalence rate of depression and anxiety in fathers, and the associated risk factors. Brett McDermott and Wendy Li independently reviewed the table for accuracy and completeness. If a study used multiple methods to measure the symptoms of depression and anxiety at the same time, the symptoms reported by clinical interviews were given priority over self-report measures such as Edinburgh Postnatal Depression Scale (EPDS; Cox et al., 1987).

Statistical Analysis

ProMeta, version, 3.0.0. (Internovi, 2015) was used to perform all major statistical analyses given the program's ability to input data in various formats and create summary forest plots, z -value and p -value. Outcomes were reported as odds ratios (*OR*). *OR* was selected as the reported measure of strength between variables given *ORs* were the most commonly reported statistic in the included studies and are easily interpretable, as well as ProMeta has the functionality to convert other outcomes to *ORs*. If the included article reported insufficient data to calculate an *OR*, then the relevant authors were contacted to provide the data. Separate meta-analyses were conducted for each risk factor for depression and anxiety respectively and data pertaining to prenatal and postnatal timeframes. A random effects model was used for all analyses as considerable heterogeneity (inconsistency due to variation in study results rather than inconsistency compatible with a chance) was expected. Heterogeneity was assessed using I^2 statistics (Higgins & Thompson, 2002).

Results

Characteristics of studies

Database (i.e. CINAHL, Medline, PsychInfo, PubMed, and SCOPUS) and hand-searching resulted in a total of 995 potentially eligible studies between 1950 and 2017. An initial screening of the title and abstract resulted in 173 articles, of which 89 were excluded after a full-text assessment of the studies. The agreement rate of the inclusion of a study

between authors was measured by Cohen's kappa (κ ; Marston, 2010). The initial agreement between authors was moderate ($\kappa = 0.62$). Further screening of the remaining 84 articles resulted in the exclusion of 39 articles, leaving a final 45 articles which are included in the meta-analysis (Figure 4.1).

Of the 45 studies included in this meta-analysis, the majority were conducted in the United States of America ($n = 8$), followed by Australia ($n = 6$) and the United Kingdom ($n = 5$). The remaining studies were conducted in Finland, Norway, Sweden, Japan, China, Turkey, Iran, and Italy. Sample size of the individual studies varied considerably ($n = 12-10,975$). The total number of participants was 31,310 fathers across the 45 studies. 38 studies used self-report measures such as Edinburgh Postnatal Depression Scale (Cox et al., 1987); and seven studies employed diagnostic interviews. A total of 30 studies were cross-sectional, and 15 studies were longitudinal. Participants were mainly recruited from maternity hospitals/clinics while prenatal classes were also used to recruit participants. Summaries of each study and their main findings are presented in Tables 4.1 & 4.2.

Table 4.1. Major Characteristics of studies, prevalence and risk factors for paternal depression in the perinatal period

ID	Author and Year	Country	Time of Assessment	Measure	Sample size	Cases (%)	Risk Factors
1.	Ahlqvist-Björkorth et al., 2016	Finland	20 weeks gestation	EPDS \geq 10	153	15 (9.8)	Marital distress
2.	Anding et al., 2016	Germany	2 weeks postpartum	EPDS \geq 10	276	15 (5.4)	Marital distress, maternal depression, & parental stress
3.	Areias et al., 1996	Portugal	24 weeks gestation	SADS	42	2 (4.8)	
			3 months postnatal		12	2 (16.7)	
			12 months postnatal		42	10 (53.7)	Maternal depression, & history of depression in men
4.	Ballard et al., 1994	U.K.	6 weeks postnatal	EPDS \geq 13	178	16 (9.0)	Maternal depression
			6 months postnatal		148	8 (5.4)	Maternal depression, unemployment
5.	Bergström, 2013	Sweden	3 months postnatal	EPDS \geq 11	812	83 (10.3)	Maternal depression, low socio-economic condition, marital distress
6.	Bielawska-Batorowicz & Kossakowska-Petrycka, 2006	Poland	3.5 months postnatal	EPDS \geq 13	80	22 (27.5%)	Maternal depression, marital distress, high discrepancies between prenatal expectations and

7.	Bronte-Tinkew et al., 2007	USA	12 months postnatal	CIDI-SF	2,137	115 (5.4)	experience related to family and social life Unemployment, and substance abuse
8.	Buist et al., 2003	USA	26 weeks gestation	EPDS \geq 10	197	27 (12.0)	Marital distress
9.	Carlberg et al., 2018	Sweden	4 months postnatal		143	9 (5.8)	Gender role stress, marital distress
			3-6 months postnatal	EPDS \geq 10	3,656	485 (13.3)	Low socio-economic condition
				EPDS \geq 12	3,656	295 (8.1)	Low socio-economic condition
				GMDS \geq 13	3,656	315	Low socio-economic condition
10.	Carro et al., 1993	USA	1 month postnatal	BDI >9	70	7 (10.0)	Maternal depression
11.	Cattaneo et al., 2015	Italy	2-5 days postnatal	EPDS \geq 10	122	8 (6.65)	Maternal depression
			2 months postnatal		114	3 (2.63)	History of anxiety and/or panic attacks, maternal depression
			6 months postnatal		119	3 (2.59)	History of anxiety and/or panic attacks, maternal depression,

12. Condon et al., 2004	Australia	23 weeks gestation	EPDS>12 GHQ-28>5 MHI<17	312	16 (5.2) 14 (4.6) 57 (8.2)	thoughts of arrival of the baby Marital distress, alcohol abuse
		3 months postnatal	EPDS>12 GHQ-28>5 MHI<17	276	5 (1.9) 4 (1.5) 31 (11.3)	
		6 months postnatal	EPDS>12 GHQ-28>5 MHI<17	241	5 (2.1) 4 (1.7) 27 (11.2)	
		12 months postnatal	EPDS>12 GHQ-28>5 MHI<17	222	5 (2.3) 7 (3.1) 23 (10.4)	
13. deMontigny et al., 2013	Canada	8-11 months postnatal	EPDS≥10	76	6 (7.9)	Marital distress, high level of parenting distress, lower parenting efficacy
14. Dudley et al., 2001	Australia	1-6 months postnatal	EPDS≥12	93	11 (11.8)	Marital distress
			GHQ≥5	93	43 (46.2)	
15. Escribà-Agüir & Artacoiz, 2011	Spain	3 rd trimester	BDI≥10	92	16 (17.4)	Marital distress, maternal depression, prenatal depression
			EPDS≥11	623	43 (6.5)	
			3 month postnatal		409	
16. Field et al., 2006	USA	12 month postnatal		409	24 (5.9)	Maternal depression
		20 weeks gestation	CES-D≥16	156	50 (32.1)	

17.	Fisher et al., 2012	Vietnam	3 rd trimester-6 week postnatal	SCID	231	12 (5.2)	Domestic violence, unplanned pregnancy
18.	Gao et al., 2009	China	6-8 week postnatal	EPDS \geq 13	130	14 (10.8)	Perceived stress, maternal depression, unplanned pregnancy, having a female baby, low social support
19.	Gawlik et al., 2014	Germany	Between 2 nd and 3 rd trimesters	EPDS $>$ 9	102	10 (9.8)	Prenatal depression, marital distress
20.	Goodman, 2008	USA	6 weeks postnatal			8 (7.8)	
21.	Greenhalgh et al., 2000	UK	2-3 months postnatal	EPDS \geq 10	128	17 (13.3)	Maternal depression
			6 days postnatal	EPDS $>$ 12	78	5 (6.4)	Marital distress
22.	Hall & Long, 2007	Canada	6 months postnatal		64	4 (6.25)	
			20-40 weeks gestation	CES-D $>$ 16	98	11 (11.22)	Work-family conflict
23.	Kamalifard et al., 2014	Iran	8-10 weeks postnatal			21 (21.4)	Role Disparity
			6-12 weeks postnatal	EPDS \geq 12	205	24 (11.7)	Perceived stress
24.	Koh et al., 2014	China	12 weeks gestation	EPDS \geq 13	451	15 (3.3)	Marital distress, work-family conflict
			36 weeks gestation		337	14 (4.1)	Poor social support and work-family conflict

			6 weeks postnatal		187	10 (5.2)	Prenatal depression, high work-family conflict
25.	Leathers & Kelley, 2000	USA	3 rd trimester	CES-D>16	124	9 (7.3)	Unplanned pregnancy, marital distress
26.	Mao et al., 2011	China	4 month postnatal 6- weeks postnatal	EPDS \geq 13	376	8 (6.5) 47 (12.5)	Perceived Stress, low social support, maternal depression, and preference for male baby
27.	Matthey et al., 2000	Australia	20-24 weeks gestation	BDI>9 and GHQ>7	152	8 (5.3)	
			6 weeks postnatal		141	4 (2.8)	Maternal depression, prenatal depression,
			4 months postnatal		125	4 (3.2)	Prenatal depression
			12 months postnatal		128	6 (4.7)	Prenatal depression
28.	Matthey et al., 2003	Australia	6 weeks postnatal	DIS	356	8 (2.3)	Maternal depression, prenatal depression
29.	Morse et al., 2000	Australia	24-26 weeks gestation	EPDS \geq 10	251	30 (12.0)	Low social support, gender roles stress, marital distress

			36 weeks gestation		204	18 (8.7)	
			4 weeks postnatal		166	10 (6.0)	
30.	Nath et al., 2016	UK	4 months postnatal		151	9 (5.8)	
			9 months postnatal	Rutter's 9-item ≥ 13	5220	188 (3.6)	Maternal depression, marital distress, paternal unemployment, low socio-economic condition
31.	Ngai & Ngu, 2015	China	Gestation	GHQ >4	200	14 (7.0)	Prenatal family sense of coherence,
			6 months postnatal		200	21 (10.5)	prenatal depression, maternal depression
32.	Nishimura & Ohashi, 2010	Japan	1 month postnatal	CES-D ≥ 16	146	11 (7.5)	Unemployment, unplanned pregnancy, and history of psychiatric treatment
				EPDS ≥ 8	146	17 (11.6)	
33.	Nishimura et al., 2015	Japan	4 month postnatal	EPDS ≥ 8	807	110 (13.6)	Maternal depression, marital distress, history of psychiatric illness, economic anxiety
34.	Pinheiro et al., 2006	Brazil	6-12 week postnatal	BDI >10	386	46 (11.9)	Alcohol abuse, maternal depression
35.	Ramchandani et al., 2008	UK	18 weeks gestation	EPDS ≥ 12	10,975	426 (3.9)	History of depression, prenatal depression, maternal depression
			8 weeks postnatal			399 (3.6)	
			8 month postnatal			378 (3.4)	

36.	Roubinov et al., 2014	USA	15 weeks postnatal	EPDS \geq 10	92	8 (9.0)	Unemployment, Marital distress
37.	Soliday et al., 1999	USA	20 weeks postnatal 3 weeks postnatal	CES-D \geq 16	92 51	8 (9.0) 13 (25.5)	Unemployment, Marital distress, Parenting stress, maternal depression
38.	Suto et al., 2016	Japan	5-7 days postnatal 2 weeks postnatal 1 month postnatal 2 months postnatal	EPDS \geq 8	207 109 191 195	18 (8.7) 4 (3.7) 12 (6.3) 17 (8.7)	Prenatal depressive symptoms, history of psychiatric illness
39.	Thorpe et al., 1992	Greece and UK	3 months postnatal 4-6 weeks postnatal	EPDS \geq 12	185 267	13 (7.0) 2 (0.7)	Maternal depression (UK cohort), maternal emotional stability (Greece)
40.	Top et al., 2016	Turkey	3 rd trimester 4-6 weeks postnatal	EPDS \geq 12	92 84	4 (4.3) 6 (7.1)	Unplanned pregnancy, marital distress, work-family conflict
41.	Vismara et al., 2016	Italy	3 months postnatal	EPDS $>$ 13	181	12 (6.6)	Work-family conflict, marital distress Parenting stress

42.	Wang & Chen, 2006	Taiwan	6 months postnatal			4 (2.2)	Parenting stress Low social support
43.	Wee et al., 2013	Australia	6 weeks postnatal	BDI \geq 10	83	26 (31.3)	
			18 weeks gestation	DASS-21 $>$ 9	150	6 (4.0)	
			26 weeks gestation			6 (4.0)	
			34 weeks gestation			7 (4.7)	Prenatal depression at 26 weeks gestation Parental self-efficacy, maternal depression, unemployment, low socio-economic status
44.	Zhang et al., 2016	China	3 days postnatal	EPDS $>$ 9	166	35 (20.4)	
			2 weeks postnatal		148	32 (20.4)	
			6 weeks postnatal		144	20 (13.6)	

Abbreviations: EPDS, Edinburgh Postnatal Depression Scale; SADS, Schedule for Affective Disorders; BDI, Beck Depression Inventory; CES-D, Centre for Epidemiological Studies Depression Scale; CIDI-SF, Composite International Diagnostic Interview-Short Form; GHQ, General Health Questionnaire; HADS, Hospital Anxiety and Depression Scale; SCID, Structured Clinical Interview for Diagnostic and Statistical Manual of Mental Disorders; GMDS, Gotland Male Depression Scale; DIS, Diagnostic Interview Schedule, DASS, Depression Anxiety Stress Scales

Table 4.2. Major characteristics of studies, prevalence and risk factors for paternal anxiety in the perinatal period

ID	Author and Year	Country	Time of Assessment	Measure	Sample size	Case (%)	Risk factors
1.	Fisher et al., 2012	Vietnam	3 rd trimester to 6 weeks postnatal	SCID	231	10 (4.3)	Domestic violence, unplanned pregnancy
2.	Koh et al., 2015	China	Early pregnancy	HADS \geq 7	622	72 (11.6)	Maternal depression, marital distress, social support and work-family conflict
			36 weeks gestation		337	45 (13.4)	
			6 weeks postnatal		187	27 (14.2)	
3.	Matthey et al., 2003	Aus	6 week postnatal	DIS	356	26 (14.1)	Maternal depression
4.	Vismara et al., 2016	Italy	3 months postnatal	STAI-S \geq 40	181	46 (25.4)	Parenting stress
				STAI-T \geq 40		47 (26)	
			6 months postnatal	STAI-S \geq 40		42 (23.2)	Parenting stress
				STAI-T \geq 40		26 (19.9)	

Abbreviations: SCID, Structured Clinical Interview for Diagnostic and Statistical Manual of Mental Disorders; HADS, Hospital Anxiety and Depression Scale; DIS, Diagnostic Interview Schedule; STAI-S, State-Trait Anxiety Inventory-State Anxiety Scale; STAI-T, State-Trait Anxiety Inventory-Trait Anxiety Scale

Associations between paternal perinatal depression and risk factors

The socioeconomic factor of low income was positively associated with paternal postnatal depression. In four studies that investigated this relationship, fathers categorised as having a low income were approximately two times more likely to experience postnatal depression ($OR = 2.03$, 95% CI [1.83-2.25]) (Bergström, 2013; Carlberg et al., 2018; Nath et al., 2016; Zhang et al., 2016 with zero heterogeneity ($I^2 = 0\%$)).

Maternal depression and paternal depression in the postnatal period were found to be positively associated. This association was examined in 22 studies (Anding et al., 2016, Areias et al., 1996; Ballard et al., 1994; Bergström, 2013; Bielawska-Batorowicz & Kossakowska-Petrycka, 2006; Carro et al., 1993; Cattaneo et al., 2015; Escribà-Agüir & Artacoiz, 2011; Field et al., 2006; Gao et al., 2009; Goodman, 2004; Mao et al., 2011; Matthey et al., 2000; Matthey et al., 2003; Nath et al., 2016; Ngai & Ngu, 2015; Nishimura et al., 2015; Pinheiro et al., 2006; Ramchandani et al., 2008; Soliday et al., 1999; Thorpe et al., 1992; Zhang et al., 2016). Maternal depression increased the likelihood of paternal postnatal depression more than three-fold ($OR = 3.51$, 95% CI [2.63-4.68], Fig. 4.2) with substantial heterogeneity of results ($I^2 = 82.74\%$). Maternal depression was also found to be positively associated with fathers' depression in the prenatal period. This association was examined in two studies (Ballard et al., 1994; Matthey et al., 2000) ($OR = 1.86$, 95% CI [1.24-2.77]), with zero heterogeneity.

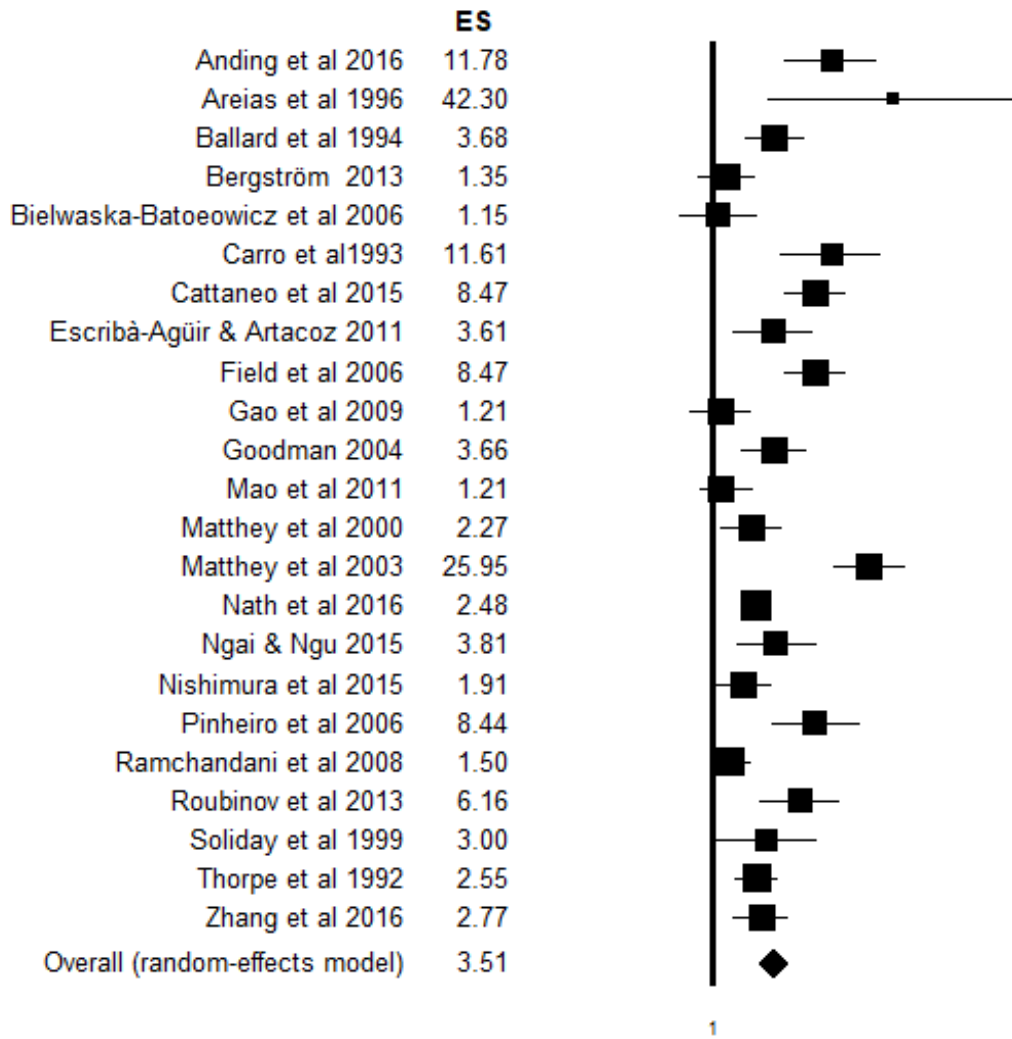


Figure 4.2 Forest plot of the meta-analysis of maternal depression as a risk factor for paternal postnatal depression

Positive associations were found between paternal postnatal depression and marital distress and lack of social support. Marital distress was associated with a two-fold increase in the likelihood of paternal depression and this association was examined by 15 studies ($OR = 2.16$, 95% CI [1.47-3.19], Fig. 4.3) with substantial heterogeneity ($I^2=97.78\%$); (Anding et al., 2016; Bergström, 2013; Bielawska-Batorowicz & Kossakowska-Petrycka, 2006; Buist et al., 2003; Condon et al., 2004; deMontigny et al., 2013; Dudley et al., 2001; Escribà-Agüir & Artacoz, 2011; Gawlik et al., 2014; Greenhalgh et al., 2000; Leathers & Kelley, 2000; Nath et al., 2016; Nishimura et al., 2015; Roubinov et al., 2014, Top et al., 2016). Lack of social support increased the likelihood of paternal postnatal depression more than four-fold ($OR = 4.76$, 95% CI [1.04-21.73]) with substantial heterogeneity ($I^2=91.33\%$); Gao et al., 2009; Mao et al., 2011; S. Y. Wang & Chen, 2006). Compared to marital distress, lack of social support had a larger effect size. Marital distress and lack of social support were also positively associated with fathers' depression in the prenatal period: marital distress ($OR = 3.32$, 95% CI [2.19-5.02]), with low heterogeneity ($I^2=46.30\%$); (Ahlqvist –Björkorth et al., 2016; Koh et al., 2014; Leathers & Kelley, 2000; Morse et al., 2000; Top et al., 2016); and lack of social support ($OR = 3.71$, 95% CI [2.19-6.28] with zero heterogeneity; Koh et al., 2014; Wee et al., 2013).

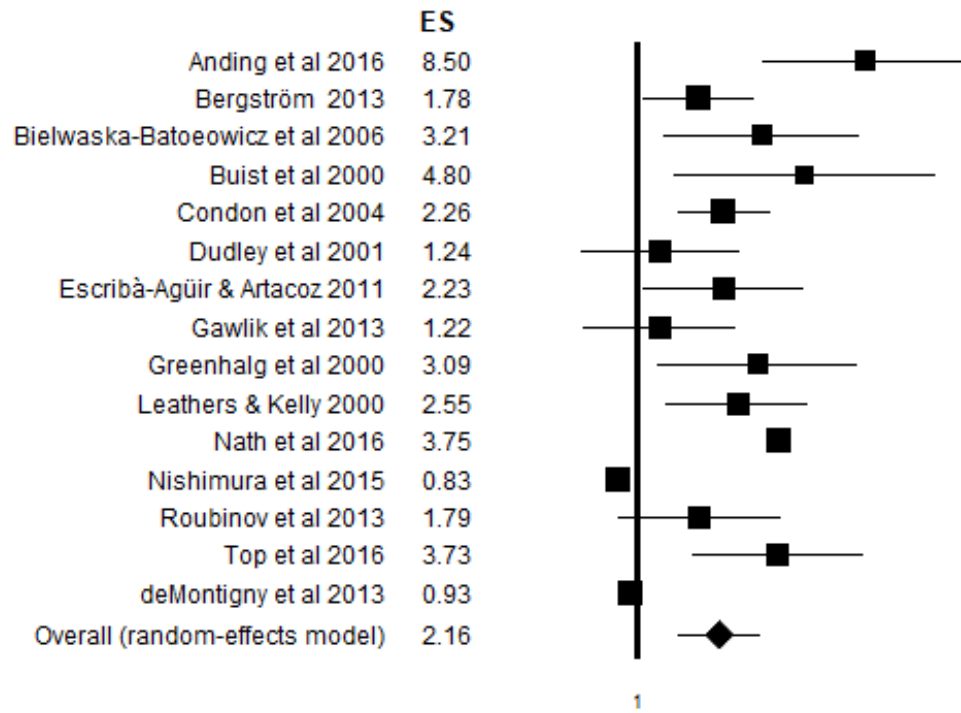


Figure 4.3. Forest plot of the meta-analysis of risk factor marital distress for paternal postnatal depression

Paternal postnatal depression and prenatal depression, history of psychiatric illness, and alcohol abuse were positively associated. Prenatal depression was associated with a five-fold increase in the likelihood of paternal depression ($OR = 5.20$, 95% CI [3.13-8.65] with substantial heterogeneity ($I^2=75.07\%$); (Escribà-Agiür & Artaco, 2011; Gawlik et al., 2014; Hall & Long, 2007; Koh et al., 2014; Matthey et al., 2000; Ngai & Ngu, 2015; Ramchandani et al., 2008; Soliday et al., 1999; Suto et al., 2016). History of psychiatric illness was associated with a more than three-fold increase in the likelihood of paternal depression ($OR = 3.30$, 95% CI [1.95-5.57] with substantial heterogeneity ($I^2=87.36\%$); (Areias, 1996; Bronte-Tinkew et al., 2007; Cattaneo et al., 2015; Nishimura & Ohashi, 2010; Nishimura et al., 2015; Ramchandani et al., 2008; Suto et al., 2016). Alcohol abuse was associated with a more than two-fold increase in the likelihood of paternal depression ($OR = 2.40$, 95% CI [1.86-3.29] with zero heterogeneity; Bronte-Tinkew et al., 2007; Condon et al., 2004; Pinheiro et al., 2006).

Moreover, paternal postnatal depression and unplanned pregnancy, parenting stress, and preference for a male baby were positively associated with each other in the current meta-analysis. Unplanned pregnancy was associated with a more than three-fold increase in the likelihood of paternal depression ($OR = 3.34$, 95% CI [2.13-5.23], with low heterogeneity ($I^2=30\%$); (Fisher et al., 2012; Gao et al., 2009; Nishimura & Ohashi, 2010; Top et al., 2016). Parenting stress was associated with a three-fold increase in the likelihood of paternal depression ($OR = 3.04$, 95% CI [1.07-8.64], with substantial heterogeneity ($I^2=92.88\%$); (Anding et al., 2016; deMontigny et al., 2013; Soliday et al., 1999; Vismara et al., 2016; Zhang et al., 2016). Preference for a male baby was associated with a one and a half times increase in the likelihood of paternal depression ($OR = 1.5$, 95% CI [1.04-2.38], with zero heterogeneity; (Gao et al., 2009; Mao et al., 2011). The positive association between unplanned pregnancy and paternal prenatal depression was also found in one study (Top et

al., 2016). The risk factor increased the likelihood of paternal prenatal depression by more than two-fold ($OR = 2.68$, 95% CI [1.10-6.55]).

Furthermore, work-family conflict (WFC) and perceived stress were associated with paternal depression in the postnatal period. WFC was associated with a more than four-fold increase in the likelihood of paternal depression ($OR = 4.85$, 95% CI [1.51-15.59], Koh et al., 2014). Perceived stress ($OR = 7.51$, 95% CI [1.14-49.52], with substantial heterogeneity ($I^2=95.92\%$); (Gao et al., 2009; Kamalifard et al., 2014; Mao et al., 2011) was a larger effect. WFC was also positively associated with fathers' depression in the prenatal period with an $OR = 3.53$, 95% CI [2.01-6.23], with low heterogeneity ($I^2=27.89\%$). This association was examined in three studies (Hall & Long, 2007; Koh et al., 2014; Top et al., 2016).

Associations between paternal perinatal anxiety and the relevant factors

Maternal depression and paternal postnatal anxiety were found to be positively associated in three studies (Koh et al., 2015; Matthey et al., 2003; Vismara et al., 2016). Maternal depression increased the likelihood of paternal postnatal anxiety more than three-fold ($OR = 3.86$, 95% CI [2.54-5.89], Fig. 4.4) with zero heterogeneity. The positive association between paternal prenatal anxiety and maternal depression was also examined in one study (Koh et al., 2015). The factor had an $OR = 1.61$, 95% CI [1.18-2.19].

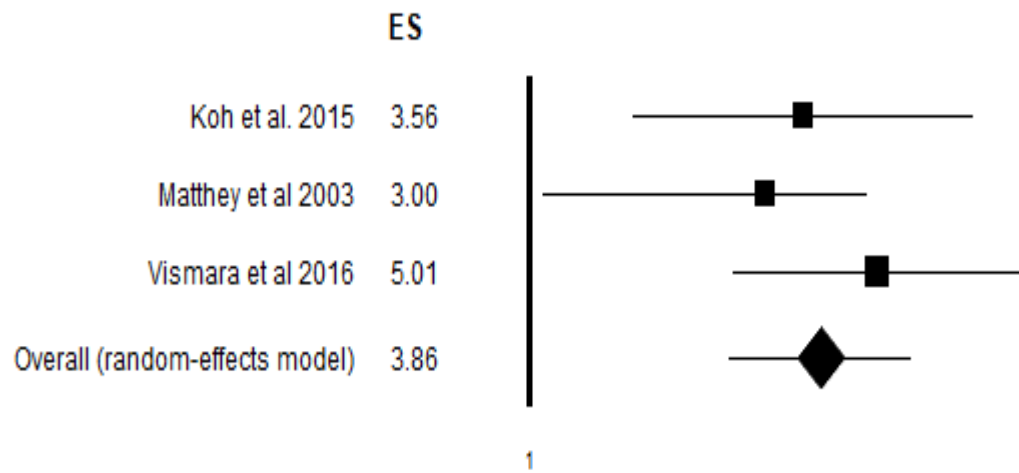


Figure 4.4. Forest plot of the meta-analysis of maternal depression as a risk factor for paternal postnatal anxiety

Marital distress and social support were found to be positively associated with paternal perinatal anxiety. One study (Koh et al., 2015) examined the association between marital distress and paternal anxiety in the perinatal period. In the postnatal and prenatal period marital distress increased the likelihood of paternal anxiety more than four-fold with an $OR = 4.69$, 95% CI [1.73-12.72] and $OR = 4.17$, 95% CI [2.45-7.10], respectively. Social support and paternal prenatal anxiety were also found to be positively associated and the association was examined in one study (Koh et al., 2015). The factor had an $OR = 1.80$, 95% CI [1.34-2.42].

Parenting Stress and WFC were also positively associated with paternal prenatal anxiety in the current meta-analysis. Parenting stress increased the likelihood of paternal anxiety in the perinatal period by more than 14-fold ($OR = 14.38$, 95% CI [7.39-27.97], Vismara et al., 2016). WFC increased the likelihood of paternal prenatal anxiety by more than three-fold ($OR = 3.55$, 95% CI [2.59-4.8], Koh et al., 2015).

Associations between paternal perinatal anxiety and depression and unique factors

Gender role related stress was found to be a unique factor for, and was positively associated with, paternal depression in the perinatal period. According to Eisler & Skidmore (1987), gender role stress has five factors: physical inadequacy (stress in males related to fears of not being competitive physically); emotional expression (stress in males related to difficulties expressing feelings of affection, fear or pain); intellectual inferiority (stress in males related to their coping abilities); subordination to women (stress in males due to perceived competitive threat from women); and performance failure (stress in males related to potential failure to perform up to masculine standards in the areas of work and sexual adequacy) (Eisler & Skidmore, 1987). In the current meta-analysis, aspects of gender roles were only reported by Buist et al. (2003), finding positive associations between paternal postnatal depression and perceived physical inadequacy ($OR = 3.55$, 95% CI [2.59-4.87]),

emotional expression ($OR=10.33$, 95% CI [2.96-36.04]), and intellectual inferiority ($OR = 5.29$, 95% CI [1.54-18.22]). The gender role related stress was also positively associated with paternal depression in the prenatal period. This positive association was examined in two studies (Buist et al., 2003; Morse et al., 2000). Reported associations included emotional expression ($OR = 3.04$, 95% CI [1.21-7.64], with substantial heterogeneity ($I^2= 64.33\%$)); subordination to women ($OR = 2.03$, 95% CI [1.02-4.02], with low heterogeneity ($I^2=37\%$)); intellectual inferiority ($OR = 3.33$, 95% CI [1.31-8.49], with substantial heterogeneity ($I^2=65.31\%$)); and performance failure ($OR = 4.59$, 95% CI [1.60-13.20], with substantial heterogeneity ($I^2=72.54\%$)). An overall meta-analysis of all the factors of gender role stress estimated that postnatally the risk of paternal depression increased more than four-fold ($OR= 4.66$, 95% CI [2.14-10.15], Fig. 4.5). Meanwhile, the risk of prenatal paternal depression increased more than three-fold ($OR= 3.12$, 95% CI [2.07-4.69], Fig. 4.6) with medium heterogeneity ($I^2= 54.80\%$).

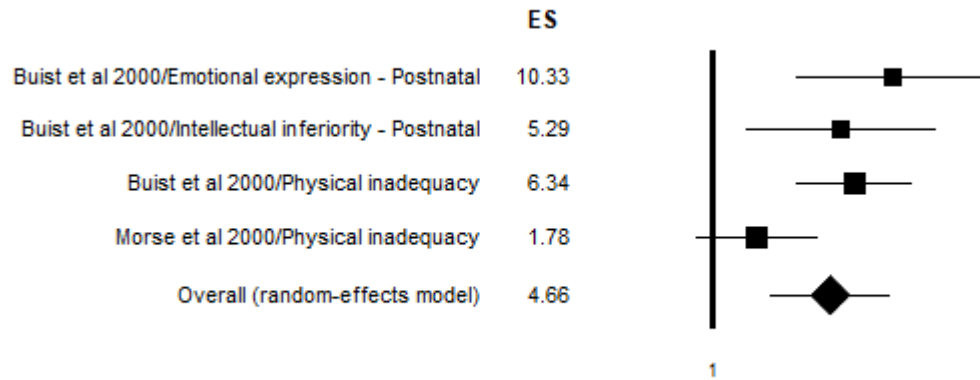


Figure 4.5. Forest plot of the meta-analysis of risk factor gender role stress for paternal postnatal depression

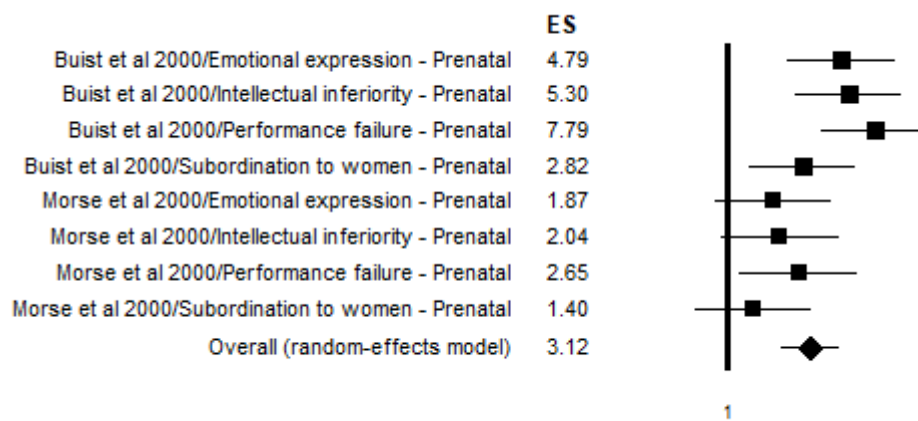


Figure 4.6. Forest plot of the meta-analysis of risk factor gender role stress for paternal prenatal depression

Mismatched expectations from pregnancy and childbirth were also found to be positively associated with paternal postnatal depression (Greenhalgh et al., 2000). This factor increased the likelihood of paternal postnatal depression three-fold ($OR = 3.71$, 95% CI [1.55-8.89]).

Domestic abuse experienced by fathers and paternal perinatal depression and anxiety were also positively associated in the current meta-analysis. This factor increased the likelihood of paternal perinatal depression and anxiety nine-fold ($OR = 9.64$, 95% CI [3.50-26.30]). This association was examined by one study (Fisher et al., 2015).

Summaries of the findings from the meta-analysis of risk factors are presented in Table 4.3.

Table 4.3. Summary of meta-analysis of risk factors for paternal anxiety and depression in both prenatal and postnatal period

I.D.	Risk Factor	Prenatal Anxiety	Postnatal Anxiety	Prenatal Depression	Postnatal Depression
1.	Socioeconomic Factors				
	Low Income	-	-	-	2.03, 95% CI [1.83-2.25], $I^2 = 0\%$ (Bergström, 2013; Carlberg et al., 2018; Nath et al., 2016; Zhang et al., 2016)
2.	Maternal Depression	1.61, 95% CI [1.18-2.19] (Koh et al., 2015)	3.86, 95% CI [2.54-5.89], $I^2 = 0\%$ (Koh et al., 2015; Matthey et al., 2003; Vismara et al., 2016)	1.86, 95% CI [1.24-2.77], $I^2 = 0\%$ (Ballard et al., 1994; Matthey et al., 2000)	3.34, 95% CI [2.51-4.46], $I^2 = 82.74\%$ (Anding et al., 2016; Areias et al., 1996; Ballard et al., 1994; Bergström, 2013; Bielawska-Batorowicz & Kossakowska-Petrycka, 2006; Carro et al., 1993; Cattaneo et al., 2015; Escribà Agüir & Artacoiz, 2011; Field et al., 2006; Gao et al., 2009; Goodman, 2004; Mao et al., 2011; Matthey et al., 2000; Matthey et al., 2003; Nath et al., 2016; Ngai & Ngu, 2015; Nishimura et al., 2015; Pinheiro et al., 2006; Ramchandani et al., 2008; Soliday et al., 1999; Thorpe et al., 1992; Zhang et al., 2016)

3.	Marital Distress	4.17, 95%CI [2.45-7.10] (Koh et al., 2015)	4.69, 95% CI [1.73-12.72] (Koh et al., 2015)	3.32, 95% CI [2.19-5.02], $I^2 = 46.30%$ (Ahlqvist –Björkorth et al., 2016; Koh et al., 2014; Leathers & Kelley, 2000; Morse et al., 2000; Top et al., 2016)	2.16, 95% CI [1.47-3.19], $I^2 = 97.78%$ (Anding et al., 2016; Bergström, 2013; Bielawska-Batorowicz & Kossakowska-Petrycka, 2006; Buist et al., 2003; Condon et al., 2004; deMontigny et al., 2013; Dudley et al., 2001; Escribà -Agüir & Artacoz, 2011; Gawlik et al., 2014; Greenhalgh et al., 2000; Leathers & Kelley, 2000; Nath et al., 2016; Nishimura et al., 2015; Roubinov et al., 2014, Top et al., 2016)
4.	Social Support	1.80, 95% CI [1.34-2.42] (Koh et al., 2015)	-	3.71, 95% CI [2.19-6.28], $I^2 = 0%$ (Koh et al., 2014; Wee et al., 2013)	4.76, 95% CI [1.04-21.73], $I^2 = 91.33%$ (Gao et al., 2009; Mao et al., 2011; Wang & Chen, 2006)
5.	Prenatal Depression	-	-	-	5.20, 95% CI [3.13-8.65], $I^2 = 75.07%$ (Escribà-Agüir & Artacoz, 2011; Gawlik et al., 2014; Hall & Long, 2007; Koh et al., 2014; Matthey et al., 2000; Ngai & Ngu, 2015; Ramchandani et al., 2008; Soliday et al., 1999; Suto et al., 2016)
6.	History of Psychiatric Illness	-	-	-	3.30, 95% CI [1.95-5.57], $I^2 = 87.36%$ (Areias, 1996; Bronte-Tinkew et al., 2007; Cattaneo et al., 2015;

7.	Alcohol Abuse	-	-	-	Nishimura & Ohashi, 2010; Nishimura et al., 2015; Ramchandani et al., 2008; Suto et al, 2016)
					2.40, 95% CI [1.86-3.29], $I^2 = 0\%$ (Bronte-Tinkew et al., 2007; Condon et al., 2004; Pinheiro et al., 2006)
8.	Unplanned Pregnancy	4.22, 95% CI [1.6-11.3] (Fisher et al., 2012)	-	2.68, 95% CI [1.10-6.55] (Top et al., 2016)	3.34, 95% CI [2.13-5.23], $I^2 = 0\%$ (Fisher et al., 2012; Gao et al, 2009; Nishimura & Ohashi, 2010; Top et al., 2016)
9.	Parenting Stress	14.38, 95% CI [7.39-27.97] (Vismara et al., 2016)	-	-	3.04, 95% CI [1.07-8.64], $I^2 = 92.88\%$ (deMontigny et al., 2013; Soliday et al., 1999; Vismara et al., 2016; Zhang et al., 2016)
10.	Preference for a Male Baby	-	-	-	1.5, 95% CI [1.04-2.38], $I^2 = 0\%$ (Gao et al., 2009; Mao et al., 2011)
11.	Work-Family Conflict	3.55, 95% CI [2.59-4.87] (Koh et al., 2015)	-	3.53, 95% CI [2.01-6.23], $I^2 = 27.89\%$ (Hall & Long, 2007; Koh et al., 2014; Top et al., 2016)	4.85, 95% CI [1.51-15.59] (Koh et al., 2014)
12.	Perceived Stress	-	-	-	7.51, 95% CI [1.14-49.52], $I^2 = 95.92\%$ (Gao et al., 2009; Kamalifard et al., 2014; Mao et al., 2011)
13.	Gender Role Stress				

a. Physical Inadequacy	-	-	-	3.55, 95% CI [2.59-4.87] (Buist et al., 2003)
b. Emotional Expression	-	-	3.04, 95% CI [1.21-7.64], $I^2 = 64.33%$ (Buist et al., 2003; Morse et al., 2000)	10.33, 95% CI [2.96-36.04] (Buist et al., 2003)
c. Subordination to Women	-	-	2.03, 95% CI [1.02-4.02], $I^2 = 37%$ (Buist et al., 2003; Morse et al., 2000)	-
d. Intellectual Inferiority	-	-	3.33, 95% CI [1.31-8.49], $I^2 = 65.31%$ (Buist et al., 2003; Morse et al., 2000)	5.29, 95% CI [1.54-18.22] (Buist et al., 2003)
e. Performance Failure	-	-	4.59, 95% CI [1.60-13.20], $I^2 = 72.54%$ (Buist et al., 2003; Morse et al., 2000)	-
14. Mismatched Expectations from Pregnancy and Childbirth	-	-	-	3.71, 95% CI [1.55-8.89] (Greenhalgh et al., 2000)
15. Domestic Violence			9.64, 95% CI [3.5-26.3] (Fisher et al., 2012)	

Note: The estimated effect size is reported in Odds Ratio (OR); CI = Confidence Interval

Discussion

This article reports a systematic review of 45 studies with a combined sample size of 31,310 fathers. Twelve risk factors for paternal perinatal depression were identified: low income, maternal depression, marital conflict, social support, prenatal depression, history of psychiatric illness, alcohol abuse, unplanned pregnancy, parenting stress, preference for a male baby, WFC, and perceived stress. Five risk factors were reported for perinatal anxiety in fathers: maternal depression, marital conflict, social support, WFC, and parental stress. Three risk factors (gender role related stress, mismatched expectations from pregnancy and childbirth, and domestic violence) and their associations with paternal perinatal depression and anxiety were found to be unique to fathers only. Each risk factor and its associations were examined individually, and separate meta-analyses were conducted for each risk factor for depression and anxiety respectively.

Using *OR* to determine effect size, a large effect size ($OR > 5$) was observed for perceived stress and prenatal depression concurring with a higher risk of depression in the postnatal period amongst fathers. A medium effect size ($OR \geq 2$) was seen for the risk factors low income, maternal depression, marital distress, social support, history of psychiatric illness, alcohol abuse, parenting stress, and WFC in the postnatal period. In the prenatal period, marital distress, social support, unplanned pregnancy, and WFC had a medium effect size. A small effect size ($OR < 2$) was observed for the preference for a male baby in the postnatal period and maternal depression in the prenatal period.

Perceived stress is the feelings or thoughts of how much stress an individual is under at a given point in time or over a period of time (Cohen et al., 1983). Having a baby is most likely to add new responsibilities and stress to new fathers, such as financial stress and stress related to parenting. Along with the addition of new responsibilities, fathers may also experience changes in their lifestyle and habits which may further add to their experience of

stress. The continuous sense of stress within all sectors of a father's life may cause them to feel melancholic and lead to depression in the prenatal period (Mao et al., 2011).

Concurrently, if the father is feeling depressed in the prenatal period, the stressors related to childbirth and a new baby may aggravate the symptoms of depression in the postnatal period (Matthey et al., 2000). The result of the current meta-analysis supports the findings by Cohen et al. (1983) and Matthey et al. (2000), where a strong association between paternal postnatal depression and the risk factors of perceived stress and prenatal depression was seen.

Although perceived stress and prenatal depression had the largest effect size on paternal postnatal depression, studies examining the association between maternal depression ($n = 22$) and paternal postnatal depression, and marital distress/conflict ($n = 15$) and paternal postnatal depression were the statistical relationships most frequently reported. Maternal mental health during the perinatal period is an important risk factor for the mother and the mental health, physical health, and behaviour of the infant (Beydoun & Saftlas, 2008). Simultaneously, an interactive relationship between the mental health of the fathers and mothers has also been noted previously (Matthey et al., 2000; Pinheiro et al., 2006). Having a depressed partner increases the risk of fathers being depressed themselves in the perinatal period at a rate of 2.5 times or higher (Matthey et al., 2000; Pinheiro et al., 2006). Fathers with depressed partners are also likely to experience conflict or distress in their marital relationship. With their partner being depressed, it is possible that fathers are unable to communicate the difficulties and experiences they are facing to their partner. Many factors are likely to be interconnected. For example, depressed mothers might not be able to take care of their infant, which may further put new fathers under pressure and thus cause them stress. Maternal depression alone, and/or diminished care for the infant may also negatively contribute towards a worsening marital relationship between mother and father. This in turn may cause distress for fathers, which may lead to depression.

As previously mentioned, fathers may also suffer from financial stress after having a baby. This stress is more likely to occur in fathers belonging to a lower socio-economic group who earn a below average salary. An unplanned pregnancy may be stressful to the father because they did not have sufficient time to prepare for taking care of an infant. Lack of planning may occur across several emotional or financial domains, which may be independent or exacerbate each other leading to depression in the perinatal period. Financial stress may also interact with perceived gender roles. Fathers are often viewed as being the main provider of the family (Buist et al., 2003). Inability to fulfil this role may cause distress in fathers through a perception of their personal inadequacy or their perception that they are not meeting the expectations of other males. Similarly, to the stress related to finances, fathers may also experience parenting stress. If the father has no previous experience in parenting, he may become uncertain, stressed, and overwhelmed and may seek assistance and support from his partner. Men tend to have a poorer social support system compared to women because men tend to rely primarily on their partner for social support (Cronenwett & Kunst-Wilson, 1981). However, if the father is unable to receive this support from his partner because his partner is depressed, this may cause him distress and may cause depression in the father. Again, these risk factors are likely to be highly interactive: dissatisfaction from the paternal role may be related to increased parenting stress, both making paternal depression more likely. Another domain commonly affected is work. Demanding and strained situations and responsibilities at home and fathers' own mental health may also affect their work and interaction with their colleagues. Again, gender role stress may play a contributing factor to WFC. Masculine gender norms suggest that men are expected to be competitive and excel in their work (Good & Sherrod, 1987). However, the inability to achieve their best at work due to poor perinatal mental health may cause work-family conflict and further contribute towards the deteriorating mental state of the father (Koh et al., 2014).

Fathers may also experience depression in the perinatal period if they have a history of a psychiatric disorder. Life events such as pregnancy and childbirth may exacerbate the symptoms of previous psychiatric illness and affect the mental health of fathers during the perinatal period. Alcohol abuse and paternal postnatal depression were also found to be positively correlated in this meta-analysis. Research suggests that alcohol abuse and depression commonly co-exist in men (Zilberman et al., 2003) and that individuals with alcoholism are at a two-times higher risk for depression (National Institute of Mental Health [NIMH], 2003). The alcohol-depression interaction is complex. Possibilities include self-medication of depressive symptoms with alcohol or alcohol directly causing low mood. Alcohol abuse may have been used to mask the symptoms of depression (Cochran & Rabinowitz, 2000). In these scenarios, alcohol abuse may be considered as an underlying symptom of depression. Finally, fathers' mental health may also be affected by their cultural expectations. For example, in many Asian cultures there is a preference for a male baby as he is expected to carry the family name and care for his aged parents (Koh et al., 2014). If the fathers do not have a male baby, they may suffer from depression in these cultures. This was also noted in the results of the current meta-analysis as the factor of preference for a male baby had a small effect size on paternal perinatal depression. However, as mentioned previously, there is a lack of studies on paternal perinatal depression in non-Western countries and thus, this risk factor should be explored further.

When considering paternal anxiety, a large effect size was observed for parenting stress in the prenatal period for paternal anxiety. A medium effect size was observed for maternal depression, marital conflict, and social support in the postnatal period while WFC expressed a medium sized effect in the prenatal period for paternal anxiety. A small effect size was seen for maternal depression and social support in the prenatal period for paternal anxiety.

Similar to depression, fathers are more likely to develop anxiety during the perinatal period if they are new fathers and have not taken care of a baby previously. They are more likely to be uncertain, distressed, and unsure of how to take care of the baby and may seek assistance from their partner. If the father is not able to receive this guidance, it may cause them distress and possible anxiety in the perinatal period. Fathers are less likely to receive this guidance and support from their partner if their partner is suffering from depression themselves during the perinatal period (Koh et al., 2015). Moreover, this may also affect the social support system of the father. As mentioned earlier, men tend to rely heavily on their partner for social support (Cronenwett & Kunst-Wilson, 1981) and if this support is missing, it may lead to anxiety in the father. As with the previous discussion about paternal depression, these risk factors are likely to be interrelated. Lack of social support and a partner's depression may contribute to marital conflict and thus further deteriorate the father's mental health. Financial stress may require longer hours at work, a deterioration of work-family balance, and put fathers at higher risk of anxiety in the perinatal period. Also, similar to paternal depression, gender role conflict may contribute towards the above-mentioned risk factors and cause further distress leading to perinatal anxiety in fathers. It should be noted that the associations between perinatal anxiety and the factors mentioned were examined in only three studies and thus should be interpreted with caution and require further study.

This analysis reported some risk factors which were unique to fathers and were associated with fathers' depression and anxiety in the perinatal period. Unique risk factors such as low emotional expression in men had a large effect size and increased the likelihood of paternal postnatal depression. A medium effect size was seen for a father's perception of physical inadequacy. In the prenatal period, low emotional expression, feelings of subordination to women, intellectual inferiority, and performance failure factors had a

medium effect size. These factors clearly relate to the concept of masculine gender norms. Low emotional expression is often considered as the behaviour of a 'typical male'. Consequently, men may fear a negative response from their peers if they share their symptoms or experience of depression (Joiner et al., 1992). Physical toughness and the emphasis on power over women are consistent with masculine norms and may precipitate concerns of being unable to perform to masculine standards in the arenas of work and sexual adequacy. These masculine norms can offer an explanation of why perceptions of physical inadequacy, subordination to women, intellectual inferiority, and performance failure are unique risk factors for fathers' perinatal depression and anxiety (Buist et al., 2003). The findings add value to the existing literature where positive correlations have been demonstrated between masculine gender role conflict and elevated scores on self-report depression measures (Magovcevic & Addis, 2005; Shepard, 2002).

Domestic violence towards fathers was also identified as a factor unique to men and had a large effect size in paternal perinatal depression and anxiety. Domestic violence also known as Intimate Partner Violence (IPV) may be described as a pattern of abusive behaviours of one or both partners in an intimate relationship (Drijber et al., 2013). As mentioned before, one of the many masculine gender norms is power and control over women. The Duluth Model (Pence & Paymar, 1983) exemplifies this norm by stating domestic violence is a matter of power and control, of which only men in a system of patriarchy are capable (Hines & Douglas, 2009), which rules out the possibility of men experiencing domestic violence committed by their partners. Thus, men who experience domestic violence may feel embarrassed, fear of being ridiculed, and as a result are less likely to seek help (McNeely et al., 2001). Even if they overcome this internal barrier, an external barrier is the availability of limited resources that specifically cater to men (Hines & Douglas, 2009). Existing literature has reported that men who experience domestic violence also

experience greater levels of depression, stress, and other psychological and psychosomatic symptoms (Coker et al., 2002). This finding was replicated in the current meta-analysis where domestic violence against fathers correlated positively with perinatal depression. This risk factor challenges the common understanding that domestic violence is exclusively perpetrated by men against women.

A father's mismatched expectations from pregnancy and childbirth had a medium effect size and is a unique factor for paternal depression during the postnatal period. During pregnancy, women are the ones who experience changes in their hormones and physical bodies and are able to feel the movement of the baby (Donaldson-Myles, 2012). Fathers could be considered the 'outsiders' to this process and are perhaps unable to comprehend the complexity of pregnancy and childbirth. Furthermore, their expectations as a parent during the pregnancy period might not match the reality after their children are born. Also, current resources on pregnancy, childbirth, and parenting are mainly oriented toward mothers with a clear lack of information for fathers (Greenhalgh et al., 2000). However, during labour and after childbirth, fathers are expected to play a more active role in caring for and parenting the newborn (Greenhalgh et al., 2000). The lack of resources and experience in parenting may cause an inconsistency between the expectations from pregnancy and childbirth for fathers in the postnatal period. This also challenges the masculine gender norms as fathers may have to ask for help from their partner, and they may question their rational coping abilities, their decision-making capabilities, and their intellectual capability to handle a situation associated with parenting (Morse et al., 2000).

It is important to note that available data for comparison and evaluation of the above-mentioned unique factors is minimal and requires further study. Similar to anxiety, the unique risk factors included in this meta-analysis have been examined in one or two studies only.

This limits the interpretation and conclusions that can be drawn about these risk factors but at the same time highlights the areas that warrant further investigation.

This systematic review and meta-analysis provide empirical evidence about the risk factors associated with paternal perinatal mental health; however, there are limitations. First, studies used varying measuring methods and cut-off scores. This lack of standardisation of both risk factors and outcome variables associated with paternal perinatal mental health makes interpretation of results across studies difficult. Second, the review is populated by cross-sectional studies. The limited number of longitudinal studies included in this review restricts the ability to comment on causation or the relative strength of risk factors over time that is from prenatal to postnatal period. Third, the majority of the studies used self-report measures to quantify the risk factors associated with paternal perinatal mental health. This makes both over- and under-exaggeration of the symptoms and risk factors a possibility. Last, it should also be noted that a number of studies were excluded from the review due to stringent inclusion/exclusion criteria such as teen fathers, fathers with infants in the Natal Care Intensive Unit (NCIU), previous loss of an infant and fathers with an infant suffering from illness. Studies were also excluded if the information about the reported risk factors was insufficient or if the contacted authors failed to respond.

Despite the limitations, the systematic review and meta-analysis are strengthened by the clear use of gold standard PRISMA guidelines, providing a clear and transparent view into how the data was collected and analysed and allowing replication of the data for future studies. The results of multiple statistically significant associations between the risk factors and paternal depression and anxiety in the perinatal period suggest the need for further research. This study provides preliminary evidence of the importance of screening fathers, especially if their partner is diagnosed with depression and/or anxiety. This study also brings into focus the potential risk of masculine gender role stress for contributing to perinatal

mental health concerns for fathers. The interaction of this with some of the other risk factors identified also requires further study. Healthcare professionals should also be aware that fathers who adhere to traditional gender norms may have negative attitudes towards help-seeking and are at risk of being underdiagnosed or misdiagnosed. Interventions based on these risk factors may help reduce the prevalence of depression and anxiety in fathers in the perinatal period.

CHAPTER 5: Predictive Factors for Depression and Anxiety in Men During the Perinatal Period: A Mixed Methods Study

In Chapter 4, unique risk factors such as masculine gender role stress (MGRS) and domestic violence experienced by fathers were identified. To explore if these risk factors apply to Australian fathers, an exploratory sequential mixed methods study was designed. In the following chapter, the results of this study exploring the risk factors and their impact on the mental health of Australian fathers in the perinatal period are presented.

This chapter is based on the peer-reviewed published article in the *American Journal of Men's Health*

Chhabra, J., Li, W., & McDermott, B. (2022). Predictive factors for depression and anxiety in men during the perinatal period: A mixed methods study. *American Journal of Men's Health*, 16(1), <https://doi.org/10.1177/15579883221079489>

Abstract

The purpose of this study was to identify the risk factors associated with paternal perinatal mental distress in a sample of Australian men. A mixed methods design was used. The qualitative component ($N = 13$) using thematic analysis identified maternal depression, marital distress, masculine gender role stress, unplanned pregnancy, work-family conflict, and sleep disturbance as risk factors for paternal perinatal mental distress. The quantitative component ($N = 525$) expanded on the qualitative findings and examined the associations between the identified risk factors and the mental distress of fathers in the perinatal period measured by EPDS. Hierarchical multiple regression analysis revealed six significant predictors of paternal perinatal mental distress with masculine gender role stress being the most significant risk factor for paternal perinatal mental distress. The results from this study provide an insight into how masculine gender roles may impact the expression and experience of mental distress in fathers within the perinatal period. Implications of research findings are discussed.

Keywords: depression, anxiety, risk factors, fathers, mixed methods

Introduction

Perinatal period, the period from the first trimester of the pregnancy up to one year after childbirth (American Psychological Association [APA], 2018) can be a stressful period for some fathers. The arrival of a new baby may add to the responsibilities of parents and impact their finances and lifestyle. Although most men effectively deal with the new responsibilities and the stress associated with the arrival of a new baby, some men may not cope well. Unable to cope with the stress during the perinatal period may affect the mental health of fathers, leading to anxiety and/or depression (Paulson & Bazemore, 2010).

Perinatal depression and anxiety have been studied extensively in mothers but are under researched in fathers (Chhabra et al., 2020). The mental health of fathers has not garnered research attention until the past few decades. Studies have since identified that a significant proportion of fathers experience anxiety and depression in the perinatal period (Centre of Perinatal Excellence [COPE], 2017). Reports of the prevalence of paternal perinatal depression include 10% in Australia (Giallo et al., 2012), 9.8% in Germany (Gawlik et al., 2014), and 12.5% in China (Mao et al., 2011). In the meta-analysis on the prevalence of fathers' perinatal depression, Rao et al., (2020) identified an overall prevalence of 8.75%. A systematic review on the prevalence of fathers' perinatal anxiety reported that between 2% and 18% of fathers displayed perinatal anxiety symptoms (Leach et al., 2016). This anxiety rate reflected the prevalence of father's perinatal anxiety in Australia, Portugal and China is 2.4-12% (Tohotoa et al., 2012), 10% (Figueiredo & Conde, 2011), and 2-3.5% (Koh et al., 2015), respectively.

Paternal perinatal anxiety and depression have a substantial impact on the father's health and the mental health of his partner and newborn. For example, a depressed or anxious father may be unable to communicate his fears, anxieties, and stress associated with parenting to his partner. This may impact the relationship between partners and may contribute to the

development of depressive symptoms in both partners (Thiel et al., 2020). Anxious and/or depressed fathers are less likely to engage with their newborns, affecting the newborn's cognitive development (Davis et al., 2011). Children of perinatally depressed fathers have a high risk of developing behavioural and mental health problems, and poorer learning capabilities (Ramchandani et al., 2005). Paternal perinatal anxiety and depression are likely to incur higher costs associated with mental health services (Edoka et al., 2011). To mitigate the impact of perinatal anxiety and depression on fathers, their families, and the healthcare system, identifying risk factors is important because it can provide empirical evidence for the prediction and prevention of paternal perinatal anxiety and depression (Offord & Kraemer, 2000).

Previous research has identified a few risk factors for paternal perinatal depression and anxiety. Maternal depression has been reported as the most common risk factor for paternal perinatal depression and anxiety. The systematic review and meta-analysis by Chhabra et al. (2020) suggested that maternal depression increases the risk of paternal perinatal depression and anxiety by more than threefold. This finding is in line with the previous research which suggests that fathers are 2.5 times more likely to be depressed at six weeks postpartum if their partner is also suffering from depression (Matthey et al., 2000). Although the causal relationship between maternal and paternal depression is unclear, the mental health of each partner directly influences the other (J. H. Goodman, 2004; Ansari et al., 2021) because a couple shares an environment along with various interpersonal stressors (relationship, finances) that may contribute to the development of depressive symptoms for both partners (Thiel et al., 2020). It is also possible that a mother's mental distress in the perinatal period is not just a correlate of, but also a factor in the aetiology of depression and/or anxiety in the fathers. For example, depressed mothers may not be able to take care of their infant properly, leaving the task of infant care to fathers. This may be stressful and result

in depression for fathers if they are unfamiliar with the tasks of childcare and cannot cope with the associated stress (D. Wang et al., 2021).

Marital distress has also been commonly cited as a risk factor for paternal perinatal depression and anxiety (Ansari et al., 2021; Chhabra et al., 2020). It is often difficult to identify what comes first, depression or marital distress, with the causality being difficult to determine (Burke, 2003). Marital distress may precede depression and may cause significant distress and dysfunction. Alternatively, depression may precede marital distress and may appear as an activator of marital distress (Coyne & Benazon, 2001). Maternal depression may contribute to marital distress. If the mother is depressed, she may be non-communicative and the father may experience difficulties communicating their needs and experiences (D. Wang et al., 2021). Also, mothers are the first source of social support to the fathers (Bronte-Tinkew et al., 2007) and being unable to receive this support may impact their marital relationship and result in paternal perinatal depression and anxiety.

Other risk factors such as low income (Bergström, 2013), lack of parenting skills (Zhang et al., 2016), age (Bergström, 2013), history of psychiatric illness (Ramchandani et al., 2005) and substance abuse (Bronte-Tinkew et al., 2007) have been identified as risk factors for paternal postnatal depression. Unplanned pregnancy has also been found to increase the risk of paternal perinatal anxiety and depression by fourfold and threefold, respectively (Chhabra et al., 2020). An unplanned pregnancy can be stressful for the fathers due to the lack of preparation associated with taking care of an infant. The lack of preparation may occur across several domains such as emotions and finance. This can severely cause mental distress in fathers, especially those from low socioeconomic status (Fisher et al., 2012; Gao et al., 2009).

Theoretical Framework

Although the above-mentioned risk factors are important predictors of paternal perinatal mental distress, the research into these risk factors has been predominantly influenced by maternal perinatal depression research. Research into identifying risk factors for paternal perinatal mental distress using a gendered context is lacking, especially when existing research suggests that men and women may express and experience depression differently (Addis, 2008). Both men and women may display some symptoms of depression similarly such as low mood with reduced activity, but men are more likely to express depression through externalising symptoms such as anger, violence, and substance abuse. This phenomenon is also known as masculine depression (Addis, 2008). It has been suggested that men who strongly adhere to traditional masculine gender norms may feel uncomfortable in displaying depressive affect (sadness, guilt) as it challenges their masculinity and instead displays behaviours that showcase their masculinity (Chuick et al., 2009).

Significant gender differences have also been noticed in the way men and women appraise situations being stressful. The socio-cultural practises that reward masculine attitudes and behaviours (e.g., breadwinner, and hard worker) while punishing non-masculine attitudes and behaviours (e.g., caretaking) result in the development of masculine gender role cognitive schemas in the majority of men (Arrindell, 2005). Rigid masculine gender socialisation and strong adherence to traditional masculine gender norms may also result in the development of restrictive coping mechanisms in men. Men who find themselves in situations that threaten their culturally approved masculine schemata (e.g., being unemployed, being with a successful woman), may experience masculine gender role stress (MGRS; Eisler & Blalock, 1991; Eisler & Skidmore, 1987). Thus, MGRS is the stress men experience when they are unable to perform or display the masculine gender traits which are

culturally approved (Eisler & Blalock, 1991). The rigid adherence to masculine gender roles seen within MGRS may also increase the vulnerability of men to depression and anxiety (Arrindel, 2005; Paredes & Parchment, 2021). The impact of MGRS on the mental health of fathers has also been noticed with research suggesting the risk of perinatal depression and anxiety increases by fourfold and threefold, respectively (Chhabra et al., 2020). These rates imply the heavy impact of MGRS on fathers' mental health. However, it is important to mention that only a few studies have explored the role of masculinity, specifically MGRS as a risk factor for mental distress in fathers during the perinatal period.

Similarly, a work-family conflict which is the conflict due to incompatible demands from work, family or both domains' (Huffman et al., 2014) has been identified as a risk factor for paternal perinatal mental distress. But the existing research has not explored "how" this conflict is a risk factor for paternal perinatal mental distress using a gendered context. For example, an employed father with high levels of traditional gender role beliefs will identify his role as a breadwinner more than his role as a father. However, with changing gender roles, fathers are expected to share household and caregiving responsibilities (Bocchicchio, 2007). The inability to perform well in both, work and family life domains may be stressful for some men and impact their mental health negatively, resulting in depression (Kido et al., 2020).

Current study

The identification of risk factors associated with paternal perinatal depression and anxiety is crucial for the development of prevention programs. However, the majority of the studies investigating risk factors are quantitative studies. There is little attention given to a mixed methods approach that integrates quantitative and qualitative studies to build a strong and useful investigation into paternal perinatal depression and anxiety (O'Cathain et al., 2017). The available research has not explicitly explored the gendered context of risk factors

for paternal perinatal depression and anxiety. The current study uses an explanatory sequential mixed method design to examine the risk factors associated with perinatal depression and anxiety in Australian fathers. The emphasis of the mixed methods design is placed on seeking convergence, corroboration, and confirmation between the qualitative and quantitative data (Bryman, 2006; Denzin, 1978; Johnson et al., 2007). In doing so, the mixed methods design can compensate for the weakness of a single strategy, either quantitative or qualitative research and result in the richness of data, augmenting the interpretation and usefulness of findings (Creswell & Plano Clark, 2018; Johnson et al., 2007; Ramprogus, 2005). The current study integrated qualitative and quantitative phases at the level of interpretation and reporting and the final inferences were based on the results of both phases of the study (Johnson et al., 2007).

In the current study, the qualitative phase explored the risk factors for paternal perinatal depression and anxiety in a sample of Australian fathers. The results from the qualitative phase were used to design and develop measures used in the quantitative phase. The quantitative phase investigated which factors identified in the qualitative phase of the current study are predictive of perinatal depression and anxiety in a larger sample of Australian fathers. Accordingly, the purpose of this explanatory study was to (a) identify the risk factors associated with paternal perinatal depression and anxiety in a sample of Australian fathers; (b) quantitatively determine if the risk factors identified in the qualitative inquiry of the current study are predictive of perinatal depression and anxiety in the current sample of Australian fathers; and (c) examine the associations between depressive symptoms and the identified risk factors.

Method

Ethics

The qualitative phase took place following approval by the Human Research Ethics Committee, James Cook University, Australia (Ref: H7869). The quantitative phase took place following approval by the Human Research Ethics Committee, James Cook University, Australia (Ref: H8038).

Participants

The inclusion criteria for participants were men 18 years of age and older, with a pregnant partner and/or an infant under the age of 12 months, who spoke and comprehended Basic English and were currently residing in Australia.

Procedure

Qualitative Phase. The study was advertised using the James Cook University panel, social media and the research team's networks. Eligible potential participants were provided with an information sheet and a consent form. Once the first author received signed consent, the participants were contacted by the first author to discuss their queries and discuss the time and place for the interview. The participants were interviewed twice with an interval of 6 weeks between the two interviews. The second interview was to assess any changes in views and experiences of fathers during the interval. The two-interview structure also helped to check if the narratives were consistent across two interviews (W. Li, 2013). All interviews were digitally audio-recorded, with the interviews lasting between 45-60 minutes. The participants were also given an AU\$20 gift card as a token of appreciation at the end of the interview. A total of 13 participants took part in the first interview and five participated in the second interview. The main reason for not participating in the second interview was unavailability. The two interviews took place between September and December 2019. A

total of nine participants were recruited from a regional city in Queensland, and four participants were recruited from a capital city in Victoria.

Quantitative Phase. An online cross-sectional survey using Qualtrics (Qualtrics, 2020) was employed to collect data in Australia between March and October 2020. Participants were recruited through two methods, First, the online survey was advertised on James Cook University's social media, the research team's network and social media sites such as Facebook and Twitter. Second, the Online-Access-Panel-based survey was distributed through the Qualtrics platform (Callegaro et al., 2014; Matthijsse et al., 2015). An online access panel is a pool of people who have agreed to take part in web surveys (Gritz, 2004). Research suggests that online access panel data has similar psychometric properties and produced criterion validities similar to conventionally sourced data (Blom et al., 2015; Walter et al., 2019). To ensure that the participants meet the specific requirements of the survey (inclusion criteria), Qualtrics employs internal checks such as asking additional questions prior to survey entry (e.g., demographics, location, etc.). If the participant does not meet the specified survey criteria, the response is not recorded (ESOMAR, 2019). A total of 660 participants participated in the online survey. Participation in the study was voluntary. The first page of the survey included an information sheet and starting the survey meant informed consent was provided.

Measures

Interview guides. Interviews were semi-structured. All participants were asked the same stem questions, but the interview retained flexibility to explore the views and experiences of participants in detail. Examples of the stem questions included, 'What has been your day like since you brought your baby home?' and, 'How were you and your partner doing during and after pregnancy?' Prompts such as 'Can you tell me more about this

or that' or 'What do you mean by this?' were used to probe and explore participants' accounts more deeply.

Demographic variables. Demographic variables included age, the highest level of education, marital status, occupation, and annual income. This section also collected information about the participant's history of mental health, whether the pregnancy was planned, and if participants had any previous children.

Paternal perinatal mental distress. Paternal perinatal mental distress (anxiety and depression) was assessed using the 10-item Edinburgh postnatal depression scale (EPDS; Cox et al., 1987). EPDS is scored on a four-point (0-3) Likert scale from 0 (*yes, most of the time*) to 3 (*no, never*) and consists of items such as "I have blamed myself unnecessarily when things went wrong" and "I have felt sad or miserable", with higher scores indicating high levels of depression and anxiety. Although EPDS was originally developed to assess perinatal anxiety and depression in mothers (Cox & Holden, 2003), it has been validated by researchers to assess perinatal depression and anxiety in fathers as well (Edmondson et al., 2010; Matthey et al., 2001; Matthey et al., 2003; Matthey et al., 2020). A cut-off score of 10 and more has been suggested to screen for depression in Australian fathers (Matthey et al., 2020). Although a cut-off score of 4 from items 3, 4, and 5 on EPDS (EPDS-3A) has been suggested to screen for anxiety in fathers, further validation is recommended as anxiety factor structure in men may not be similar to women (Matthey et al., 2003; Matthey et al., 2007). Moreover, the overlapping of symptoms between depression and anxiety in men makes it harder to distinguish between the two disorders on the EPDS scale (Matthey et al., 2020). Hence, a cut-off score of 6 and more on EPDS has been suggested as an optimum score to screen for both depression and anxiety (mental distress) in Australian men (Edmondson et al., 2010; Massoudi et al., 2013; Matthey et al., 2003; Tran et al., 2012). Since the focus of the

study is on both anxiety and depression (mental distress) in men, a cut-off score of 6 and more on EPDS has been used in this study. In the current study, Cronbach's alpha was .87.

Maternal depression. Maternal depression was measured by a one-item father self-report scale 'Did your partner experience or was diagnosed with depression during the perinatal period?'

Marital distress. Marital distress was assessed using the 7-item dyadic adjustment scale (DAS-7; Hunsley et al., 2001). The first three items measure the approximate extent of agreement or disagreement between couples on a six-point Likert scale with responses ranging from 0 (*always disagree*) to 5 (*always agree*), with lower scores indicating marital distress. Items 4 to 6 measure the frequency of an event between couples on a six-point Likert scale with responses ranging from 0 (*never*) to 5 (*more often*). The last item measures the degree of happiness in the couple's relationship on a seven-point Likert scale with responses ranging from 0 (*extremely unhappy*) to 6 (*perfect*). Examples of sample items are "how often you and your partner work together on a project" and "rate the extent of agreement or disagreement between you and your partner on philosophy of life". In the current study, Cronbach's alpha was .83, which is similar to the .82 obtained by Hunsley et al. (2001).

Masculine gender role stress. MGRS was measured using a 40-item MGRS scale (Eisler & Skidmore, 1987). MGRS is scored on a six-point Likert scale with responses ranging from 0 (*not stressful*) to 5 (*extremely stressful*) with higher scores indicating physical and mental health difficulties (Buist et al., 2003). Examples of some of the items are "being compared unfavourably to other men" and "getting fired from your job". The scale shows a high level of reliability with Cronbach's alpha being .93 (Swartout et al., 2015). In the current study, Cronbach's alpha was .98.

Work-family conflict. Work-family conflict was measured by the 10-item work-family conflict scale (Haslam et al., 2015) which scores on a seven-point Likert scale from 1 (*strongly disagree*) to 7 (*strongly agree*). The scale has two subscales: work-family conflict (conflict due to work interfering with family) and family-work conflict (conflict due to family interfering with work). Sample items include, “Due to work-related duties, I have to make changes to my plans for family activities” and “The demands of my family or partner interfere with work-related activities”. The Cronbach’s alpha for work-family conflict and family-work conflict in the current study are .92 and .94 respectively. These values are similar to that obtained by Skoufi et al. (2017), that is .91 for work-family conflict and .90 for family-work conflict.

Global sleep assessment questionnaire. The global sleep assessment questionnaire (GSAQ; Roth et al., 2002) is an 11-item self-report scale used to assess sleep disturbances in the general population. The scale is a four-point Likert scale with responses ranging between 0 (*Never*) and 3 (*Always*) with higher scores indicating higher levels of difficulty in sleeping. Some of the items are “Did you have difficulty falling asleep, staying asleep, or feeling poorly rested in the morning?” and “Did you feel sad or anxious?”. In the current study, the scale displayed a Cronbach’s alpha of .92.

Data Cleaning

A total of 660 responses were received. Sixty responses had more than 10% missing data and were removed. A further 64 responses were removed due to incomplete GSAQ and EPDS scale, and infant’s age of over 12 months. Using Mahalanobis distance figures (using criterion $\alpha=.001$, critical $\chi^2=27.75$; Tabachnick & Fidell, 2013, p.99), 11 multivariate outliers were removed resulting in a total of 525 participants. Pairwise deletion method was used to deal with the missing data.

Multiple strategies were used to test the normality of the scales. Results showed that whilst the Kolmogorov-Smirnov test of all scales was significant ($p < .001$) (suggesting violation of the assumption of normality), histograms and Normal Q-Q plots for all scales suggested that the scales were reasonably normally distributed.

Data Analysis

Thematic analysis. Interviews were transcribed verbatim by the first author and then checked for accuracy by the second and third authors. A narrative thematic analysis was employed to analyse the data following five steps (Cao et al., 2020; W. Li et al., 2014) and NVivo (version 11) was used to organise and code data and develop themes. First, each participant's narrative was chronologically rearranged. The process produced 13 chronological biographical narratives which were transcribed verbatim. This resulted in the primary author getting familiarised with the data. Second, initial codes were generated in NVivo and a deductive approach was used. Third, analytic themes were developed by working with the chronological biographical narratives and the initial codes. Fourth, all themes were reviewed and refined by the authors to ensure the appropriateness of each theme and search for any deviant cases. Fifth, cases were selected to illustrate the themes and highlight key points.

Statistical Analysis. Data Analysis was performed using IBM's SPSS version 26. A six-step hierarchical multiple regression was conducted. The risk factors identified in the qualitative analysis were entered into the model. The order in which variables were entered is dummy-coded demographic factors, control variables (maternal depression and marital distress), and variables of interest (MGRS, work-family conflict and family-work conflict and sleep disturbances).

Results

Participants' characteristics

The participant characteristics for the qualitative phase are presented in Table 5.1. The participants have been referred using a pseudonym throughout the results section and Table 5.1. The participant characteristics for the quantitative phase are presented in Table 5.2.

Table 5.1. Father Characteristics (*N*=13) – Qualitative Phase

Pseudonym	Age	Ethnicity	Marital Status	Highest Education	Employment	Previous Children	Perinatal period at the time of interview	Unplanned pregnancy	Partner depression
Paul	21	Australian	Defacto	Undergraduate	Part-time	0	Postnatal	Yes	No
Jim	25	Australian	Married	Undergraduate	Part-time	0	Postnatal	No	No
Dave	27	Australian	Defacto	Postgraduate	Part-time	0	Postnatal	Yes	No
Raj	28	Indian	Married	Undergraduate	Full-time	0	Postnatal	Yes	Yes
Phil	30	African	Married	Postgraduate	Part-time	0	Postnatal	Yes	No
Mark	32	Australian	Married	Postgraduate	Full-time	0	Prenatal	No	No
Jax	35	Australian	Married	Undergraduate	Full-time	0	Postnatal	Yes	Yes
John	35	Australian	Separated	Undergraduate	Unemployed	0	Postnatal	Yes	No
Matt	35	Australian	Defacto	Undergraduate	Full-time	0	Prenatal	No	No
Chad	35	China	Married	Postgraduate	Full-time	1	Postnatal	No	No
Anand	38	Indian	Married	Undergraduate	Part-time	0	Postnatal	Yes	No
Alex	40	Brazilian	Married	Postgraduate	Full-time	0	Postnatal	Yes	No
Pablo	45	Portuguese	Married	Undergraduate	Full-time	0	Prenatal	Yes	No

Table 5.2. Father Characteristics (*N*=525) – Quantitative Phase

Characteristics	N (%)
Age	
18-25 years	82 (15.6)
26-35 years	199 (37.9)
36-45 years	122 (23.2)
46-55 years	35 (6.7)
>55 years	86 (16.4)
Missing	1 (0.2)
Marital Status	
Single	50 (9.5)
De facto	183 (35)
Married	262 (50)
Divorced/Separated	29 (5.5)
Education	

High School/Diploma	179 (34.1)
Undergraduate	227 (43.2)
Postgraduate	119 (22.5)
Ethnicity	
Caucasian	354 (67.4)
Aboriginal & Torres Strait Islander	17 (3.2)
Asian	96 (18.3)
South Asian	22 (4.2)
Latino/Hispanic	10 (1.9)
African	7 (1.3)
Other	19 (3.4)
Employment	
Casual	15 (3)
Part-time	79 (15)
Full-time	282 (53.7)
Missing data	149 (28.3)

Annual Income

AU\$0-\$18,200	88 (16.8)
AU\$18,201-\$37,000	92 (17.5)
AU\$37,001-\$80,000	173 (33)
AU\$80,000-\$120,000	90 (17.1)
AU>\$120,000	82 (15.6)

Unplanned Pregnancy

Yes	151 (28.8)
No	361 (68.8)
Missing data	9 (2.4)

Previous Children

Yes	241 (45.9)
No	283 (53.9)
Missing	1 (0.2)

History of Mental health

Yes	132 (25.1)
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No	393 (74.9)
Partner's (maternal) depression	
Yes	188 (35.8)
No	337 (64.2)

Qualitative Phase

Findings and interpretation. All participants in the current study expressed excitement in welcoming their new family members, particularly the first-time fathers ($N=11$). They also expressed worries and anxiety about their role as a future father or a father of a newborn. The following themes reflect the experiences of fathers during the perinatal period while highlighting the risk factors of sleep disturbances, unplanned pregnancy, work-family conflict, MGRS, marital distress, and maternal depression. The themes (risk factors) were organised according to their frequency.

Sleep Disturbance. Ten participants expressed that sleep disturbances caused them mental distress during the perinatal period. For instance, Dave stated, “You are not prepared for how often you have to get up...to feed the baby or change the baby. In the first two weeks I slept for only three to four hours a day and I was constantly irritable and angry”. This finding mirrors Saxbe et al.’s (2016) study which found that fathers with sleep disturbances at 6 months postpartum were more likely to develop depressive symptoms at 12 months postpartum. Sleep disturbance is one of the factors that result in mental distress as stated in the excerpt of Dave who was constantly irritable and angry. Another participant, Phil stated that,

I am not getting enough sleep at the moment. I wake up tired...when I come back home [from work], I am tired. I feel like because I am so exhausted throughout the day, I am not giving her [the baby] the attention she requires which makes me feel guilty.

Sleep disturbance often results in tiredness and fatigue, which is likely to disrupt day-to-day parent-child interactions and adversely impact the father’s well-being (J. H. Goodman, 2004). For instance, Phil felt guilty about his lack of interaction with his baby. Lack of interaction between the father and the infant may also impact the bonding between them and

negatively impact the behavioural, cognitive, and mental development of the infant (Ramchandani et al., 2005).

Unplanned Pregnancy. Unplanned pregnancy was noticed to cause mental distress to ten participants. Alex said that “I remember being more stressed than happy when she [partner] told me we were expecting [a child]. It was not planned, and we were not financially prepared”. John also shared his experience of an unplanned pregnancy, “It was completely unplanned. I got to know about pregnancy while I was being laid off from my work. I had no job to support us at that time. It was very stressful”.

Having a baby often leads to an increase in financial expenditure. An unplanned pregnancy can further add to the financial stress if fathers have not had the chance to prepare for the pregnancy, causing them stress and anxiety during the perinatal period. Moreover, financial stress is likely to be higher in individuals who are unemployed and/or belong to a low socio-economic group (Philpott et al., 2020). Both Alex and John felt that since they were not financially prepared for a baby, an unplanned pregnancy was the cause of mental distress to them during the perinatal period.

Work-Family Conflict. Eight participants experienced stress while juggling both work and family expectations. Matt stated that,

I am a shift worker... I have irregular shifts ...it can be challenging to spend quality time with her [partner]... She [partner] has already raised concerns about how my work is impacting our relationship...I feel like when the baby comes, it will be very hard for me to spend time with my family...if I don't strike a work-family balance.

Active involvement in both work and family is crucial for both well-being and quality of life (Zhao et al., 2020). Unable to strike a balance between work and family commitments can lead to work-family conflict which can be detrimental for some individuals and their

families (Allen et al., 2019; Nilsen et al., 2017). This was noticeable in Matt's narrative when he talked about the impact of his work on his romantic relationship. Moreover, he is fearful that the imbalance between his work and family will also impact his involvement with his baby.

Masculine Gender Role Stress. MGRS was experienced by six participants within the perinatal period. One participant, Raj shared that,

I was back at work a week later [after birth] ...I wanted to take some more time off, but I had no choice. During my off week, I was continuously reminded [by family] how I am the only one working...the typical conversation of how a man should make sure there is always food at home...so I went back [to work] a week early...I am unhappy... but I have to fulfil my financial responsibility to my family...like every man has to do.

Being financially responsible for one's own family aligns with the traditional masculine trait of 'breadwinner' (Addis, 2008). Unable to fulfil this role may lead to MGRS in some men through their perceptions of not meeting the expectations of society (Buist et al., 2003). Raj's narrative demonstrates his experience of MGRS when he found himself in a situation (becoming a father) where his culturally approved male schemata were being challenged (caregiving vs breadwinner) leading him to experience MGRS.

Marital Distress. Five participants experienced difficulties in their marital relationship during the perinatal period. For instance, Mark expressed, "Since the birth of our baby, our relationship has become a bit shaky. We have been constantly fighting and arguing. I feel like I walk on eggshells around her to not say anything which will upset her".

Mark's excerpt suggests that transition to parenthood comes with changes in marital relationships. As partners adjust to the addition of a new being in their dyadic relationship, it

is possible that partners may be unable to spend time together and communicate their difficulties. The gap in communication, lack of affection and reduced dyadic satisfaction is likely to result in marital distress (Darwiche et al., 2015). High levels of marital distress may lead to psychiatric distress (depression and/or anxiety) in fathers during the perinatal period (Mangialavori et al., 2021).

Maternal Depression. Two participants reported that their partners had been formally diagnosed with postnatal depression. For these two participants, the perinatal period was challenging. One participant, Jax stated that “She [partner] was diagnosed with postnatal depression...it has been very stressful...All of a sudden I had to take care of her and the baby... I couldn’t ask her to help me...[I] felt stressed, sad, and angry, all at the same time”.

Maternal perinatal depression has been reported as the most common predictor of paternal perinatal mental distress (Matthey et al., 2000; Philpott & Corcoran, 2018; Philpott et al., 2020). This connection between paternal and maternal mental health may be because a couple’s environment is intertwined. Hence, they are likely to share stressors including depressive symptoms (Kiecolt-Glaser & Wilson, 2017). Moreover, maternal depression has been linked with reduced involvement with childcare activities, which can result in fathers taking extra responsibilities for infant care and partner support (Ayinde & Lasebikan, 2017; H. Reid et al., 2017) and can be stressful for some men. Jax’s narrative indicates the stress of taking care of his depressed partner and the newborn led to his mental distress symptoms.

Quantitative Phase

Preliminary Analysis. There were significant differences in EPDS total score and of age, $F(4, 519) = 5.277, p = .000, \eta^2 = .04$; marital status, $F(4, 519) = 2.667, p = .032, \eta^2 = .02$; and income, $F(4, 520) = 2.971, p = .019, \eta^2 = .02$. A point biserial correlation was run to determine the relationship between EPDS and unplanned pregnancy, which was positive but not statistically significant, $r_{pb} = .024, N = 519, p = .525$. Similarly, point biserial correlation between EPDS and previous children was negative and not statistically significant, $r_{pb} = -.003, N = 524, p = .947$.

Table 5.3. shows intercorrelations between continuous variables. MGRS positively correlated with EPDS, work-family conflict, family-work conflict and sleep disturbance, but showed no correlations with marital distress. Marital distress negatively correlated with EPDS, but did not correlate with MGRS, family-work conflict, and sleep disturbance. Work-family conflict showed a significant positive correlation with EPDS, MGRS, marital distress, family-work conflict and sleep disturbance. Both family-work conflict and sleep disturbance showed a positive significant association with EPDS, MGRS, and work-family conflict. The point-biserial correlations between EPDS and maternal depression showed a significant positive association.

The prevalence of depression, anxiety, and mental distress was estimated and is presented in Table 5.4. The analysis indicated that more than half (63.6%) of the participants had been screened for depression. Similarly, a large proportion of the sample screened for anxiety (72%) and mental distress (81.9%).

Table 5.3. Zero Order Intercorrelations

Variable	1	2	3	4	5	6	7 ^a	M	SD	Theoretical range
1. EPDS	1	.57**	-.16**	.38**	.48**	.67**	.26**	11.97	6.46	0-30
2. MGRS		1	.08	.49**	.54**	.64**	.28**	72.53	47.80	0-200
3. DAS-7			1	.12**	.02	-.04	.08	31.62	6.47	0-36
4. WFC				1	.82**	.51**	.25**	18.95	7.60	5-35
5. FWC					1	.58**	.24**	17.71	7.93	5-35
6. GSAQ						1	.30**	10.48	7.25	0-45
7. Mat.Dep							1			

Note. SD = standard deviation; EPDS – Edinburgh Postnatal Depression Scale; MGRS – Masculine Gender Role Stress; DAS-7 – Dyadic Adjustment Scale; WFC – Work-Family Conflict; FWC – Family-Work Conflict; GSQ – Global Sleep Assessment Questionnaire; Mat.Dep – Maternal depression.

^aPoint-biserial correlations with no =0 and yes =1.

**p<.001 (two-tailed).

Table 5.4: Prevalence of depression, anxiety, and mental distress

Perinatal Disorder	N	%
Depression		
Normal	191	36.4
Depression	334	63.6
Anxiety*		
Normal	147	28.0
Anxiety	378	72.0
Mental Distress		
Normal	95	18.1
Mental Distress	430	81.9

Note. EPDS = Edinburgh postnatal depression scale

*Anxiety was screened using EPDS-3A (items 3,4, and 5)

Hierarchical Multiple Regression

Table 5.5. displays hierarchical multiple regression to test RQ2 and RQ3. Preliminary analysis was completed to ensure no violation of the assumptions of normality, linearity, multicollinearity, and homoscedasticity. When age, marital status and annual income were entered in step 1, the model was significant, explaining 8.3% of the variation in EPDS, $F(12,512) = 3.87, p = .000$. In step 2 of the model, maternal depression was entered. The model remained significant, explaining 13.2% of the variation in EPDS, $F(1,511) = 28.78, p = .000$, maternal depression accounted for 4.9% variation in EPDS. At step 3 of the model, DAS-7 was entered into the model. The model was significant and accounted for 15.9% of the variation in EPDS, $F(1,510) = 16.155, p = .000$. DAS-7 accounted for 2.7% of the variation in EPDS. MGRS was entered at step 4 of the model. The model remained significant, explaining 40.6% of the variation in EPDS, $F(1,509) = 212.169, p = .000$. MGRS accounted for 24.8% of the variation in EPDS. In step 5 of the model work-family conflict and family-work conflict were entered into the model. The model remained significant, explaining 43.4% of the variation in EPDS, $F(2,507) = 12.421, p = .000$. Work-family conflict and family-work conflict collectively accounted for 2.8% variation in EPDS with work-family conflict being a non-significant predictor for EPDS. GSAQ was entered into the model at step 6. The model was significant and explained 52.6% of the variation in EPDS, $F(1,506) = 98.096, p = .000$. GSAQ accounted for 9.2% of the variation in EPDS. The results from this quantitative inquiry were similar to that of the qualitative phase and indicated that maternal depression, marital distress, MGRS, family-work conflict, and sleep disturbances were significant risk factors for paternal perinatal mental distress.

*Table 5.5. Summary of hierarchical regression analysis for variables predicting EPDS

Model	Variable	Unstandardised Coefficients		Standardised Coefficients	R ²	ΔR ²
		<i>B</i>	<i>SEB</i>	<i>β</i>		
1	(Constant)	6.25	2.39**			
	Age					
	18-25 years	.07	.84	.00		
	26-35 years	.32	.66	.02		
	36-45 years	.01	.71	.75		
	46-55 years	.69	.92	.02		
	Marital Status					
	Single	1.24	2.10	.08		
	De Facto	1.64	2.12	.09		
	Married	.92	2.08	.07		
	Divorced	1.63	2.26	.05		
	Income					
	\$0-\$18,200	.44	.79	.02		

\$18,201-\$37,000	.65	.77	.03		
\$37,001-\$80,000	-.29	.67	-.02		
\$80,000-\$120,000	-.87	.72	-.05		
Maternal Depression	.80	.45	.06		
DAS-7	-.14	.03	-.14***		
MGRS	.03	.01	.26**		
WFC	-.05	.04	-.06		
FWC	.09	.04	.11		
GSAQ	.39	.04	.44***	.526	.092

Note: Age, marital status and income were represented as dummy variables with age>55 years, Widowed, and >\$120,000 serving as reference groups, respectively. SEB = Standard Error of B; EPDS – Edinburgh Postnatal Depression Scale; MGRS – Masculine Gender Role Stress; DAS-7 – Dyadic Adjustment Scale; WFC – Work-Family Conflict; FWC – Family Work Conflict; GSAQ – Global Sleep Assessment Questionnaire.

*p<.05, **p<.01, ***p<.001.

* Only the final model is listed here to accommodate the word limit of the journal. The hierarchical regression analysis is listed in Appendix G in its entirety.

Discussion

This mixed methods study aimed to first qualitatively examine the risk factors for paternal perinatal mental distress in Australian fathers. The quantitative phase was then used to investigate if the qualitative findings were supported in a sample of 525 Australian fathers. Maternal depression, marital distress, MGRS, and work-family conflict were identified as risk factors by both qualitative and quantitative studies. A novel finding in both qualitative and quantitative data is that sleep disturbance was identified as a risk factor for paternal perinatal depression and anxiety as it has been rarely discussed previously. Unplanned pregnancy was found as a risk factor only in the qualitative component of this study.

Consistent with previous research, the current study identified MGRS as a risk factor, with the quantitative analysis confirming MGRS is the greatest predictor for paternal perinatal depression and anxiety. Rigid adherence to traditional masculine gender roles and role conflict has been found to negatively influence a father's mental health (Paredes & Parchment, 2021). Men who strongly adhere to traditional gender norms are likely to experience MGRS when they are unable to display traditional masculine gender norms (Arrindell, 2005) and may perceive themselves to be a failure (Connell, 2005). Fatherhood has shifted over the past few decades from primarily being a breadwinner for the family to being a father who is more involved with their family and children (Marsiglio & Roy, 2012). Hence, the participants in the study who strongly adhered to traditional masculine norms may find it difficult to transition to egalitarian fatherhood and may experience high levels of MGRS.

The findings from the current study also suggested that sleep disturbances increased mental distress in fathers during the perinatal period. Sleep disturbance as a risk factor for paternal perinatal mental distress is unsurprising. During the first few weeks after birth, parents must adjust their sleep pattern to accommodate their baby and parents may

experience sleep disturbances such as poor sleep quality, interrupted sleep or no sleep at all which may result in potential mood disorders such as depression and anxiety (Saxbe et al., 2016). Low quality of sleep and fatigue in fathers has also been linked with postpartum depression (S. J. Hall et al., 2017; Saxbe et al., 2016). However, a dearth of studies has explored this link in fathers in the perinatal period. Including fathers in the field of postpartum sleep study is important as they are not only at the risk of developing depressive symptoms, but sleep disturbance may also adversely impact their day-to-day interactions with their families (Kalogeropoulos et al., 2021).

In concordance with previous research, maternal depression was identified as a risk factor for paternal perinatal distress in the current study (Ansari et al., 2021). Existing literature suggests that depression affects not only the person but also the people living with them (J. H. Goodman, 2004). When a mother suffers from anxiety or depression, the father is likely to be affected (Thiel et al., 2020). It is pertinent to point out that only two participants reported their partners as depressed in the qualitative phase of the current study. It is possible that other participants may have missed signs of anxiety and depression in their partners. Fathers' inability to recognise the signs and symptoms of maternal depression has been documented in the literature (Letourneau et al., 2011; Henshaw et al., 2016). Being oblivious to maternal mental health may result in worsening of the mothers' symptoms in future and contribute to mental distress of fathers during the perinatal period (Ng et al., 2021).

Both qualitative and quantitative analysis suggested that marital distress was identified as a risk factor for paternal perinatal depression and anxiety. Research suggests that the perinatal period is a very crucial period for new parents as many couples report a decline in their relationship following childbirth (Da Costa et al., 2019). The decline in the spousal relationship also means a decline in social support from the spouse which may be detrimental to fathers' mental health as often their primary social support is their partner or spouse

(Garfield et al., 2008). This decline in the marital relationship and social support can be exacerbated if the mother is depressed. The onset of maternal depression often leads to the transition of fathers taking more childcare and domestic duties in addition to maintaining their roles as breadwinners (Ierardi et al., 2019). A combination of all these factors may lead to fathers experiencing mental distress in the perinatal period.

The analysis of the qualitative data suggested that the conflict between work and family responsibilities is a contributing factor to paternal perinatal anxiety and depression. Interesting, when separating the conflict between work and family into work-family conflict (family conflict caused by work) and family-work conflict (work conflict caused by family responsibilities) in the quantitative analysis, only family-work conflict was a significant, positive predictor for paternal perinatal anxiety and depression. Although the changing socio-political environment of the world has seen an increase in the almost equal distribution of men and women in the workforce (Huffman et al., 2014), men are more likely to be engaged in paid work during the perinatal period. This reinforces the expectations of fathers being a breadwinner while shedding light on the gendered expectations related to work and family. According to traditional masculine gender norms, fathers who identify with traditional gender roles may place more expectations on their work responsibilities than their home responsibilities and often experience work-family conflict (Zhao et al., 2020). They might accept the family conflict caused by work responsibilities, but not the work conflict caused by family responsibilities. During the perinatal period, the increasing responsibilities for men are likely to lead to a reduction in their work responsibilities. This may challenge their masculine identity and make them feel unsuccessful or incompetent in their work domain, which in turn leads to their mental distress (Kido et al., 2020; Koh et al., 2014).

The qualitative but not the quantitative analysis of the data indicated that unplanned pregnancy was a risk factor for paternal perinatal depression and anxiety. A reason for this

could be that the sample size of qualitative data was very small and most of the participants had an unplanned pregnancy. Within the qualitative data, unplanned pregnancy as a risk to perinatal mental health was expressed in terms of financial distress due to unpreparedness by participants. An unplanned pregnancy can be stressful for fathers if they did not have sufficient time to prepare for an increase in expenses (Chhabra et al., 2020). The financial stress due to unpreparedness is likely to be experienced by fathers who are from low socioeconomic groups and do not have full-time jobs. The traditional gender roles which portray men as the main financial provider for the family may further cause distress in fathers with an unplanned pregnancy due to their perception of not meeting the expectations of other males (e.g., financially strong; Arrindell, 2005; Paredes & Parchment, 2021). Also, the pool of participants in the qualitative study consisted of five part-time working fathers and one unemployed father, accounting for 49% of the sample. Thus, it is possible that within this unequal presentation of low socio-economic fathers, the financial stress due to unplanned pregnancy was magnified. Whereas 54% of the participants in the quantitative study were working full-time and 65.7% of the participants were within the middle to high income bracket. Therefore, it is possible that even though some of these participants experienced stress associated with an unplanned pregnancy, their full-time job, and secure income provided them with financial reassurance.

It is also important to mention that the preliminary analysis suggested a high prevalence of depression, anxiety, and mental distress in the current sample when applying the cut-off scores of 10 and more for perinatal depression, 6 for mental distress, and 4 or more for anxiety (EPDS 3A) in Australian fathers (Massoudi et al., 2013; Matthey et al., 2001; Matthey et al., 2003; Matthey et al., 2020). Several factors may attribute to the higher prevalence of distressed fathers in the current study. First, applying the cut-off scores of depression and mental distress as suggested in Matthey et al.'s (2001) study to the current

study, there is a gap of more than 20 years between the studies. In the last 20 years, changes within the socio-economic environment such as higher levels of work demands, higher living costs, increased house pricing, etc., may contribute to a higher level of challenges for new fathers today. Second, the majority of the data collection for this study was during the period when Australia was going through its first and second wave of coronavirus disease 2019 (COVID-19) infections. The timing of the study may be an influencing factor as the psychological impact of the COVID-19 pandemic is likely to be more intense at the beginning of the pandemic due to the lack of information and knowledge about the disease (Alyami et al., 2021). Furthermore, social isolation during COVID-19 has also been identified as a contributing factor to perinatal depression in women (J. Li, 2021). The combination of public fear due to sudden shutdown of services (health, entertainment, etc.), lockdowns, social isolation, lack of social support from family and friends due to restrictions during COVID-19, and the fear of infection and losing loved ones may collectively contribute to mental distress or exacerbate symptoms of anxiety and depression in fathers during the perinatal period. Moreover, financial distress due to a loss of a job or reduced working hours during COVID-19 may also contribute to higher mental distress in fathers, especially those who strongly adhere to masculine gender roles (e.g., breadwinner). The high prevalence levels of depression, mental distress and anxiety suggest that the cut-off scores for fathers in the literature may not be applicable in the time of a public health crisis. Consequently, the generalization of the prevalence in the current study must be applied with a great level of caution.

In this mixed methods study, the qualitative and quantitative data provide convergent and discriminant results of risk factors for paternal perinatal mental health. This empirical study has valuable clinical implications. The current study demonstrated that fathers may not necessarily share the same risk factors for perinatal depression and anxiety as mothers. This

is of great clinical significance. If clinicians are unaware of the risk factors that are unique to the fathers, they may misdiagnose or underdiagnose fathers with perinatal depression and anxiety. This can be detrimental not only to the father himself but to his family as well. The results from this study present a unique opportunity to develop father specific diagnostic and intervention tools which will be the key to the early detection and treatment of paternal perinatal depression and anxiety.

This study has several limitations. First, the study was available only to male participants. Hence, maternal depression was assessed using participants' responses to the question related to their partner's mental health. Second, paternal perinatal depression and anxiety were assessed using EPDS. EPDS is the most common tool used to assess perinatal depression and anxiety in women (Philpott & Corcoran, 2018). Although it has been validated to measure depression and anxiety in men (Matthey et al., 2013), caution should be exercised when interpreting the results. Masculine gender norms may also come into play as to how men express depression (violence, anger, substance abuse; Chhabra et al., 2020) and thus, EPDS may not fully capture these symptoms. Last, the current study is a cross-sectional study that limits the understanding of how depressive symptoms change over time and is unable to test the causal relationship between the risk factors and EPDS. Despite these limitations, the findings from this study provide a foundation for future studies to engage in research about the risk factors for depression and anxiety in men during the perinatal period. The study should be replicated in future to determine whether these findings are generalisable to fathers outside Australia.

Conclusion

In conclusion, this mixed methods study fills an important gap in the literature and suggests that fathers during the perinatal period should be screened for anxiety and depression within a clinical setting. Fathers share certain risk factors such as maternal

depression, marital distress, and unplanned pregnancy with mothers during the perinatal period. Although the work-family conflict has been identified as a risk factor for maternal perinatal mental distress, in fathers it has been shown to impact their mental distress due to underlying gendered context. MGRS a unique risk factor for men during the perinatal period was found to be the most significant predictor of paternal perinatal anxiety and depression and hence, should be examined closely in future studies. Clinicians in medical and family settings should be made aware that men with dominant masculine norms may express depressive symptoms differently and are less likely to seek medical treatment and counselling (Chuick et al., 2009; Melrose, 2010). Finally, sleep disturbance was a novel risk factor identified in this study. But it was one of the most common risk factors reported by interview participants and showed significant associations with EPDS and thus, should be examined more closely in future research.

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Conflict of interest

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CHAPTER 6: Men's (Re)construction of Fatherhood: From Masculine Gender Roles to Egalitarian Gender Roles

In the following chapter, the results of an in-depth analysis of existing qualitative data which was primarily used in the mixed methods study. The in-depth examination of the existing qualitative data offered an opportunity to engage in a more meaningful assessment of the primary results while also addressing potentially important new research questions. The qualitative data was analysed using interpretative phenomenological analysis.

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Abstract

Traditionally, a good father was defined as the breadwinner and the protector of the family. However, within the current changing socio-political structure of the family, fathers are still rewarded for fulfilling their role of a breadwinner but are also expected to contribute to caregiving responsibilities which have been predominantly a feminine trait. But the juggling between the traditional masculine gender role and the egalitarian gender roles may be stressful for some fathers. To overcome this stress, some fathers may be reconstructing their masculine gender roles. Thus, the aim of this article is to explore whether men are reconstructing their traditional gender roles during fatherhood to promote current egalitarian gender roles. Repeated in-depth interviews with 13 fathers were analysed using interpretative phenomenological analysis. The results showed fathers disregarded purely traditional or egalitarian gender roles, but rather found a balance between traditional and egalitarian gender roles resulting in reconstructed fatherhood. This reconstructed fatherhood was found to be psychologically gratifying for the participants while impacting their perinatal mental health positively.

Keywords: father, masculinity, egalitarian, fatherhood, gender roles

Introduction

This study aims to explore how men (re)construct their gender roles in fatherhood during the perinatal period in times of changing cultural and social milieus. The traditional concept of fatherhood reflects the stereotypical masculine gender role, often referring to a father who is a biological parent to the child and a provider of the family, namely the “breadwinner” (Brandth & Kvande, 2009; Doucet, 2006). The traditional understanding of masculine identity and gender roles was often constructed based on the physical appearance and sexual preferences of the individual (Chivers & Bailey, 2005; Doucet, 2016). Thus, individuals were considered masculine if they were muscular, tough, had facial hair and were attracted to the female sex. Moreover, to be considered masculine, an individual had to perform a certain set of gender roles and norms associated with traditional masculine ideology (Addis, 2008).

One of the examples of gender roles associated with traditional masculine ideology is known as the “Blueprint for Manhood” (David & Brannon, 1976). The blueprint for manhood consists of four dimensions: 1) no sissy stuff (avoidance of feminine behaviour); 2) the big wheel (striving for success, achievement and need to be looked up to); 3) the sturdy oak (never showing weakness, the portrayal of toughness, self-reliance and unflappability); and 4) give em’ hell (aggression, violence and risk-taking behaviour). Thus, to maintain the status of masculinity, a man had to adhere to and portray the aforementioned gender roles. These masculine schemas were not limited to the man as a person but extended to other domains of his life such as fatherhood (Silverstein et al., 2002). To align with the masculine schema, a traditional father often maintained an emotional distance from his children and used harsh disciplinary measures in raising honest, hardworking, and responsible individuals (Stevens, 2015). The emotional aspect of parenting was often entrusted to mothers. If a father did not adhere to the masculine schemas, he would often be ostracised from society and not

considered a good father. This may lead him to experience masculine gender role stress (MGRS) caused by the failure to meet the ascribed masculine gender role (Eisler & Blalock, 1991).

MGRS is a psychological construct that refers to the stress men experience when they are not living up to the demands of the masculine role (Eisler & Blalock, 1991). The rigid masculine gender role socialisation can lead to the development of masculine gender role schemata in men (Arrindell, 2005). These masculine schemata (such as the blueprint of manhood) are then used by men to produce a coping response in case of potential threats (Arrindell et al., 2003). These threats can be an individual's own thoughts, behaviours, and environmental events (Paredes & Parchment, 2021). However, strong adherence to masculine gender roles may lead to restrictive coping strategies in particular situations. For example, a father strongly adhering to traditional masculine gender roles may feel stressed in situations that require emotional support or caregiving (traditional feminine behaviour) because they do not have the necessary skills or their perception of male norms prohibits them from engaging in such 'unmanly' behaviour. MGRS caused by situations such as this is likely to be associated with negative mental health outcomes in fathers during the perinatal period and may result in perinatal depression and anxiety (Chhabra et al., 2020).

Pleck (1995) argued that masculinity should also be understood as a social construct embedded in the social, economic, political, and cultural contexts. Hence, masculine gender roles are culturally and socially defined based on stereotypes rather than originating from an intrinsic biological masculine essence (Pleck, 1995; Silverstein et al., 2002). Although there are some positive aspects of being a traditional father such as being a responsible provider to the family and a strong role model in the face of a crisis (Silverstein et al., 2002), these traditional norms were developed during the era when there was a gendered division of work and labour. In much of today's world, both men and women engage in paid work. Women are

gaining more power in both personal and public spheres as compared to previous decades (Gerson, 2010; Taylor et al., 2013). Meanwhile, there are increasing expectations of men helping with household chores and childcare tasks. Thus, an egalitarian approach toward the partnership between a man and woman is being strived for rather than a dominance of one gender over the other (McGill, 2014).

Gender is often understood as a social structure that is embedded in individual, interpersonal, and institutional dynamics (Damingler, 2020). The changing social and cultural environments concerning gender promote a new understanding of gender egalitarianism in fatherhood, namely an egalitarian gender role. An egalitarian gender role features the existence of joint decision-making, co-parenting and equality in housework between fathers and mothers. This would suggest that men are actively taking part in forming an emotional bond with their infants, childcaring and performing household chores such as cooking and cleaning (Paredes & Parchment, 2021). Egalitarian fatherhood can be involved in both instrumental fathering and expressive fathering (Petts et al., 2018). Instrumental fathering is concerned with the aspects such as engagement with children through caregiving, play, and including children in routine activities; monitoring children's activities and communication; providing necessities for the care and development of children; and ensuring children's needs are being met. Expressive fathering consists of emotional, social, and psychological availability and support to children; and positive and warm fathering behaviours such as hugging and praise.

Extant literature suggests that the involvement of fathers with their children has been shown to reduce the chances of behavioural and mental health problems in children while improving their cognitive functioning (Ramchandani et al., 2008). Furthermore, both fathers and mothers share the economic and emotional responsibility of the family and practise co-parenting, challenging the stereotypical male schemas of masculinity. By shifting from a

traditional to egalitarian fatherhood, men would be accepting the traits considered stereotypically feminine and would be (re)constructing their masculinity, gender role and fatherhood. If achieved it would suggest that the construction of gender is a dynamic and changing process, with a diversity of flexible models of masculinity alternative to traditional masculinity (Connell, 2005; Connell & Messerschmidt, 2005; Gill et al., 2014; D. H. J. Morgan, 2001).

It is worth noting that egalitarian gender role does not necessarily suggest men's complete departure from the role of a traditional father. There are still certain traditional expectations attached to a father's role such as being a primary breadwinner. For example, a working father is often praised in society over a stay-at-home father (Brannen & Nilsen, 2006; Miller, 2010; Stevens, 2015). This is sometimes reinforced in the media, resulting in men consciously or unconsciously reinforcing masculine gender roles in their fatherhood (Kings et al., 2017). Consequently, the socialisation of the traditional masculine gender role combined with the socially and culturally newly promoted egalitarian gender role may create new stressful challenges for some fathers, potentially leading to MGRS (Paredes & Parchment, 2021; Rusten et al., 2019).

Even though fatherhood is a universal construct, fatherhood and gender roles are shaped by cultural beliefs, values and practices (Aumann et al., 2011) through gender role socialisation. Individuals often observe, imitate and internalise the attitudes which their culture defines as gender appropriate by using other males and females as role models (Doucet, 2016; Eagly, 1987). Therefore, in cultures such as Australia where gender equality is being advocated, it is likely the egalitarian approach toward fatherhood will be evident. Whereas, in cultures such as India or China where traditional masculinity is still a core cultural belief, a traditional approach toward fatherhood is likely to prevail (Burgher & Flood, 2019). However, when men who are traditionally socialised immigrate to a country

where egalitarian gender roles are promoted, such as Australia, they may (re)construct their gender role through the process of acculturation.

Acculturation is the process of cultural and psychological change that takes place because of contact between individuals from two or more cultural groups (Berry, 2005). Exposure from one culture to another is not always smooth and may cause mental distress such as depression and anxiety (Choy et al., 2021). However, coping, and cultural adaptation strategies have a key role in mitigating the adverse mental health consequences of migration (W. Li, 2013). Four acculturation strategies have been proposed by Berry (2005): integration (individuals maintain cultural beliefs and values of both, their culture, and the culture they have moved into); assimilation (individuals adopt the new culture while rejecting their own culture); separation (individuals retain their own culture while rejecting the new culture); and marginalisation (individuals reject both, their own culture and the new culture). Integration acculturation strategy has been linked with the least psychological distress in immigrants (Choy et al., 2021). According to W. Li (2013) immigrants adapting this strategy often (re)construct their self and cultural values to reduce the impact of acculturation stress.

Although recent research suggests that fathers are increasingly practising egalitarian fatherhood (Petts et al., 2018), there is also substantial evidence that fathers feel compelled to engage in traditional fatherhood (Aumann et al., 2011; Kings et al., 2017). However, there is a lack of research on how fathers are balancing their traditional gender roles along with the duties of an egalitarian father. Moreover, there is a gap in the literature exploring the effect of acculturation on immigrant fathers and how their notions of fatherhood are challenged. To address these gaps in the literature, the current qualitative study seeks to explore the experiences of fathers in the perinatal period and asks two research questions: (a) How are Australian men (re)constructing their gender roles in fatherhood?, and (b) How are immigrant fathers (re)constructing their gender roles in fatherhood within the Australian context?

Method

Participants and procedure

The study took place following approval by the Human Research Ethics Committee, James Cook University, Australia (Ref: H7869). The study was advertised using the James Cook University panel, social media and the research team's networks. The inclusion criteria were fathers with either a pregnant partner or an infant aged 12 months or under. Fathers participating in the narrative interviews were over 18 years of age, spoke and comprehended Basic English and had been living in Australia for the past 12 months. A purposive sampling approach was used to facilitate an in-depth study of the phenomenon and identification of important issues and concerns of the participants (Patton, 2002). Eligible potential participants were provided with an information sheet and a consent form. Once signed consent forms were received, the participants were contacted by the first author to discuss any concerns they had and to organize a time and place for the interview. Interviews were conducted between September and December 2019. The participants were interviewed twice with an interval of six weeks between the two interviews. The second interview was to assess any changes in views and experiences of fathers during the interval. The two-interview structure also helped to check if the narratives were consistent across two interviews (W. Li, 2013). All interviews were digitally audio-recorded, with the interviews lasting between 45-60 minutes. The participants were also given an AU\$20 gift card as a token of appreciation at the end of the interview. A total of 13 participants took part in the first interview and five participated in the second interview. The main reason for not participating in the second interview was unavailability.

Materials

Interviews were semi-structured. All participants were asked the same stem questions, but the interview retained flexibility to explore the views and experiences of participants in

detail. Examples of the questions were, “Have you noticed any changes in your lifestyle since you found out your partner was pregnant or had a baby?” and, “Did you and your partner attend any prenatal classes? Were these classes helpful? Why do you think they were helpful?”. Prompts such as “Can you tell me more about this or that” or “What do you mean by this?” were used to probe and explore participants’ accounts more deeply.

Data Analysis

This study is a further analysis of the existing qualitative data from Chhabra and colleagues (2022). Further analyses of existing data can dramatically increase the overall efficiency and allow in-depth analysis with a more intensive focus on a particular finding which was not undertaken as a part of the primary work (Cheng & Phillips, 2014).

Interviews were transcribed verbatim by the first author and then checked for accuracy by the second author. Data was managed by Nvivo 12 and analysed using interpretative phenomenological analysis (IPA; Larkin et al., 2006; K. Reid et al., 2005). IPA is a qualitative approach that involves a close examination of the experiences and meaning making activities of each participant. Most frequently the accounts are drawn from a small number of people (six has been suggested as a good number; K. Reid et al., 2005). The small sample size enables the micro-level reading of the participants’ accounts (J. A. Smith & Osborn, 2015). The analytic procedures for IPA as outlined by J. A. Smith & Osborn (2003) were used as a guide. Using an ideographic approach, each transcript was read again and again and then coded line by line before moving to the next transcript. Getting familiar with the data is necessary for IPA to capture the content and complexity of participant meanings which are central to this analysis (J. A. Smith & Osborn, 2015). While reading the transcripts, descriptive comments were often made which were then later transformed into more abstract, analytical, higher-level themes which were also documented. Next, connections between the themes were identified and similar themes were clustered together and arranged into possible

hierarchies. These emerging themes were regularly checked against the transcripts to ensure that they reflected the participants' experiences. The entire vigorous process was repeated for each transcript which resulted in a list of themes for each transcript. The coding and theme generation process was inductive. The main themes and sub-themes identified through IPA were first reviewed by the first author and then later by the other authors. To ensure the rigour of the analysis, all authors provided feedback on the appropriateness of each theme and searched for any deviant cases.

Results

Participant Characteristics

The participant characteristics are presented in Table 6.1. A pseudonym has been used for each of the participants.

Table 6.1. Participant Characteristics (*N*=13)

Pseudonym	Age	Ethnicity	Marital Status	Highest Education	Employment	Previous Children	Perinatal period at the time of interview	Unplanned pregnancy
Paul	21	Australian	Defacto	Undergraduate	Part-time	0	Postnatal	Yes
Jim	25	Australian	Married	Undergraduate	Part-time	0	Postnatal	No
Dave	27	Australian	Defacto	Postgraduate	Part-time	0	Postnatal	Yes
Amrit	28	Indian	Married	Undergraduate	Full-time	0	Postnatal	Yes
Phil	30	African	Married	Postgraduate	Part-time	0	Postnatal	Yes
Mark	32	Australian	Married	Postgraduate	Full-time	0	Prenatal	No
Jax	35	Australian	Married	Undergraduate	Full-time	0	Postnatal	Yes
John	35	Australian	Separated	Undergraduate	Unemployed	0	Postnatal	Yes
Matt	35	Australian	Defacto	Undergraduate	Full-time	0	Prenatal	No
David	35	Chinese	Married	Postgraduate	Full-time	1	Postnatal	No
Sri	38	Indian	Married	Undergraduate	Part-time	0	Postnatal	Yes
Alex	40	Brazilian	Married	Postgraduate	Full-time	0	Postnatal	Yes
Pablo	45	Portuguese	Married	Undergraduate	Full-time	0	Prenatal	Yes

Findings and interpretation

The data analysis process resulted in two key themes. Theme 1, *a journey from breadwinner to (equal) partners*. Further analysis resulted in three sub-themes: (a) traditional fatherhood, (b) (re)constructed fatherhood, and (c) father as a primary carer. Theme 2, *culture, gender roles and fatherhood* on further analysis resulted in two sub-themes: (a) bicultural gender role stress and (b) acculturation and (re)constructed fatherhood.

A journey from breadwinners to (equal) partners

Traditional fatherhood

When the discussion around fatherhood started, most participants talked about their relationship with their fathers and the type of upbringing or fathering they had received from their fathers. This was a particularly important conversation for the first-time fathers as they did not have any previous experience in fathering and considered their fathers as their role models. The first-time fathers wanted to encapsulate some of the learnings and role modelling of their fathers into their own fathering. For instance, Pablo stated that:

My father was an old school kind of father... everyone knows he is the head of the family... we were all financially dependent on him. My mother would... just let him discipline us and did not interfere out of respect... he [father] was a strict father, he pushed me to work hard towards my goals. When my baby is born, I would also like to push her towards her goals like my father did to me... but just not be overbearing about it... I want to be there (emotionally and physically) for her [the baby] when she is growing up.

The expectation of fatherhood by men appears to be based on the appraisal of the model of their own fathers (Kings et al., 2017). During the interview when participants talked about their fathers, they often represented their fathers as traditional, old school, strict, and a

provider. Their fathers often incorporated the stereotypical masculine standards into the role of a father. For example, they fulfil the role of fatherhood by providing for their family (breadwinner) but are physically and emotionally distant from them (Farstad & Stefansen, 2015). However, participants in this study while adopting some traditional masculine norms (e.g., high achiever – ‘the big wheel’ trait) also wanted to provide emotional nurturing to their children which they did not receive from their own father. These findings are congruent with previous research which suggests that men who missed out on attention and time from their fathers while growing up often want to be emotionally involved with their own children (Kings et al., 2017; Thompson et al., 2013). Thus, participants in this study appeared to have (re)constructed fatherhood using a combination of traditional and egalitarian gender roles.

(Re)constructed fatherhood

The mixing and matching of the traditional and egalitarian gender roles to (re)construct the fatherhood identity was seen amongst all participants and in various forms. For example, Dave shared his experience of attending a doctor’s appointment:

I made sure that my wife booked her doctor’s appointment when I could also come with her... I have not missed any so far... most importantly I wanted to be there for my wife. I just wanted to be there to show her my support and reassure her that we are doing this together. The doctor’s appointments also allowed me to ask questions and be informed about the development of my baby.

Providing reassurance, engaging in childcare and development, and showing support to the partner are traditionally considered feminine traits (Farstad & Stefansen, 2015). However, in this study, the participants did not hesitate to discuss their prenatal involvement within their families. It was also apparent that while feminine gender traits were displayed, men also chose to exhibit some traditionally masculine traits. For instance, Dave was further

prompted to explain what he meant by 'being there for my wife'. He explained that being present at the doctor's appointment meant that he could provide support to his wife if there were some anomalies on the scan. His being there also meant that he could make difficult decisions for them as a family if the situation asked for it. It made him feel useful and reliable in case of an emergency. The portrayal of toughness, unflappability and self-reliance closely represents the trait of 'sturdy oak' where men are self-reliant and certain about situations and how to handle them if the need arises (David & Brannon, 1976). Although Dave presented the feminine gender traits of emotion and affection, he did not completely forgo his traditional masculine gender traits of toughness and self-reliance. In essence, he reduced the chances of MGRS by finding a balance between masculine and feminine gender traits and (re)constructing fatherhood.

Father as a primary carer

The participants in the current study wanted to be involved in caring for their children from the early stages of infancy by spending as much time as possible with their children. This early involvement was often discussed in terms of paternal leave. One participant, Frank explained that:

I only get two weeks of paid paternal leave. So, I started accumulating my leave... But I wish it was even longer. I did not even realise how quickly the first few days went by once we got our baby home. I had so much fun during those weeks though... It was such a great experience, and I am glad I got the time to build an emotional attachment with my baby.

Participants frequently mentioned that they wanted to be directly involved with the day-to-day care of their child, including the challenges such as changing diapers or holding a crying baby. There was also a sense of achievement by spending time with the baby and

being able to provide care to the baby independently, without the help of their partner. For instance, Jack stated that:

My favourite time of the day is to... have my one-on-one time with my baby. It includes giving her a shower, playing with her and reading her bedtime stories. This also includes the messy time like feeding her and getting food everywhere, ... It gives me the opportunity to emotionally bond with her and at the same time makes me confident that I can take care of her on my own if I need to.

These excerpts from the participants' narratives show that the participants engaged in both egalitarian and traditional aspects of masculinity. For example, caring for the child, and showing expressions of affection and emotions are not considered stereotypical masculine traits and could result in MGRS (Chhabra et al., 2020). However, the participants tried to reduce MGRS by showcasing some traditionally masculine traits such as emotional inexpressiveness. For example, Jack enjoyed his one-on-one time with his infant, independent of his wife. The father's wish to be alone with the child and engage in routines to emotionally bond with the child may be interpreted as a form of traditional masculinity (Farstad & Stefansen, 2015) which emphasises his independence and authority (E. Anderson, 2009). It appeared that participants in this study were embracing feminine traits of infant care while ensuring to maintain their *masculine space* (E. Anderson, 2005) giving rise to (re)constructed fatherhood.

Culture, gender role and fatherhood

Bicultural masculine gender role stress

While discussing participants' role as fathers, the immigrants to Australia often showed glimpses of how their culture played a pivotal role in shaping their identities of

masculinity and fatherhood. One participant Aman shared his experiences of immigrating to Australia and becoming a father:

It has been a few months since we moved to Australia [from India] ...we recently found out that we were pregnant. I had to quickly shuffle few things and change my job to support us. My wife is not working, and the financial responsibility is solely on me. I am not complaining because, in our culture a man should be able to provide for his family. I have seen my father and his father do it and it is expected of me.

Aman feared that if he was not able to financially provide for his family, he would be shunned by society. However, he was also stressed because he felt he was missing out on his baby's childhood. Aman shared that:

I want to be involved with the day-to-day activities of my baby. I want to spend time with him and play with him [the baby] ... Here [Australia] it is expected of you...But the financial expectation [from me] means that I have to work on some weekends as well... I fear I am missing out on my own baby. I am trying to find a middle ground... I am struggling at the moment.

Fatherhood and masculinity appear to be two intertwined concepts. The more strongly a man adheres to the stereotypical masculine gender norms, the more likely he is to portray traditional fatherhood (Chhabra et al., 2020). As mentioned earlier, masculinity is not a fixed trait but is influenced by cultural and social norms. Now, in Western countries, the focus is moving from traditional masculinity toward an egalitarian approach. But in some non-Western countries, traditional masculinity is still considered a core part of the culture. For example, in Indian culture, it is a father's duty to look after his family's welfare and fill the role of a provider, guide, and mentor (Sriram & Sandhu, 2010). Thus, the conflict between

continuing the traditional fathering role Aman was brought up in and the progressive fathering role he wants to adopt from the Australian culture may lead to bicultural masculine gender role stress (Silverstein et al., 2002). Moreover, the acculturation strategy adopted by Aman may also be coming into play and adding to his bicultural masculine gender role stress. Although Aman has immigrated to Australia, he has not fully integrated his Indian cultural beliefs with Australian cultural beliefs. Thus, adding to his bicultural masculine gender role stress (Silverstein et al., 2002).

Acculturation and (re)construction of fatherhood

Although the (re)construction of fatherhood has brought focus onto bicultural gender role stress experienced by immigrant participants, this reconstruction has also highlighted the changes in the cultural expectations of some of these participants. For instance, Cam shared that:

There is a traditional Chinese cultural expectation that you should have at least one boy child. It is considered a duty of the son to carry on his family name and take care of his parents when they grow old...I have two daughters and I love them both equally... I know they will take care of us as any son of ours.

In a traditional Chinese family, a father-son relationship is seen as central as it is considered that a son will carry forward the family name and care for his parents (Yeung, 2013). The interaction between daughters and fathers is often limited. Emotionally, traditional Chinese fathers have the image of being strict, distant and emotionally inexpressive, portraying the stereotypical traits of masculinity (Sriram & Sandhu, 2010; Yeung, 2013). However, Cam during his interview was visibly affectionate with his daughters and did not have any qualms about not having a son to carry on his family name. This could be attributed to Cam's integration acculturation strategy where he (re)constructed

his cultural beliefs to reduce the impact of expectations from his dominant culture (W. Li, 2013). Thus, giving rise to his (re)constructed fatherhood identity.

Discussion

During the interviews with participants, two dominant themes emerged. The first theme, *a journey from breadwinner to (equal) partners* articulated how men are reconstructing fatherhood which is physically, emotionally and mentally satisfying to them. In this narrative, participants spoke about mirroring aspects of fatherhood from their own fathers while also integrating traditional feminine roles such as childcaring into their reconstructed fatherhood. The second theme, *culture, gender role and fatherhood* articulated the difficulties some participants faced when they reconstructed fatherhood. The participants in this narrative were from a non-Western cultural background and spoke about how their cultural expectations were different from the progressive fathering role being promoted in Australia.

Amongst both themes, there was an undercurrent of competing forms of traditional and non-traditional masculinity. The participants appeared to be moving towards an egalitarian approach while still adhering to some of the stereotypical traits of masculinity (Coltart & Henwood, 2012; Farstad & Stefansen, 2015; Widarsson et al., 2015). For example, the participants were adopting the role of primary carer and forming an emotional attachment with their infants. However, they were simultaneously playing the role of breadwinner and ‘a sturdy oak’. The inclusivity of traditional and non-traditional forms of masculinity into fatherhood resulted in the reconstructed fatherhood. This also showcased the dynamic nature of masculinity and by extension, fatherhood (Kachel et al., 2016). The reconstructed fatherhood may also be psychologically gratifying to the participants as it still retains some aspects of traditional masculinity which may reduce the risk of MGRS in the fathers and ultimately decrease their risk of perinatal mental distress (Chhabra et al., 2020).

The current study also highlighted the importance of the cultural impact on fatherhood which has been reported previously by only a few studies (Bornstein, 2017; Jain & Belski, 1997; Marsiglia et al., 2014). The influence of culture was apparent in the narratives of the participants from different ethnic backgrounds. For example, these participants were reconstructing their own version of fatherhood which included aspects of their own cultures and the culture they were currently living in. Their version of reconstructed fatherhood may not be similar to the versions constructed by other participants in this study. This suggests that definitions of fatherhood are not rigid but can differ significantly between ethnicities and cultures (Miller & Maiter, 2008). Also, strong adherence to traditional cultural values promoting masculinity may increase the chances of paternal perinatal distress (Roubinov et al., 2014). Hence, to avoid MGRS fathers were actively adopting an integration acculturation strategy to promote egalitarian fatherhood.

The findings from this interpretative analysis expand our understanding of the experiences and challenges faced by fathers during the perinatal period. However, there were some limitations to the study. First, the primary investigator who interviewed the participants was a female. Hence, it is possible that men with higher MGRS may not have openly shared their fears and experiences due to the fear of appearing less masculine. Second, during the recruitment of participants for the study, the aim was to select participants from diverse ethnic, educational, and socio-economic levels. However, the majority of the participants were from a regional city in Australia. The different lifestyles and responsibilities of men from the metropolitan cities may have shed some different insight into their portrayal of fatherhood. Thus, future research should include a larger and broader sample to gain more insight into how reconstructing fatherhood and masculinity is impacting men and their families during the perinatal period. Finally, future research should include mothers as participants as well. The egalitarian gender roles mean that a significant population of women

are also engaged in paid work. Thus, it would be worth investigating how both mothers and fathers juggle their work, home, and childcaring commitments during the perinatal period.

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Declaration of interest

The authors do not have any declarations of interest.

CHAPTER 7: Masculinity and Paternal Perinatal Mental Distress: The Mediating Role of Family-Work Conflict and Sleep Disturbances

In the following chapter, the results of an in-depth secondary analysis of existing quantitative data which was primarily used in the mixed methods study are presented. By using this method, new research questions were answered which were not a part of the primary study. The in-depth analysis of quantitative data also provided an opportunity to provide a more in-depth understanding of the underlying mechanisms that influence the relationship between the risk factors and paternal perinatal mental distress. The quantitative data was analysed using mediation analysis.

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Abstract

This study aimed to explore the underlying mechanisms that influence the relationship between masculine gender role stress and perinatal mental distress in Australian fathers. Using a cross-sectional survey design, a total of 525 participants were recruited within Australia and three hypotheses were developed. A mediation analysis revealed that family-work conflict and sleep disturbances significantly mediated the relationship between MGRS and paternal perinatal mental distress. However, work-family conflict despite being significantly correlated with both masculine gender role stress and paternal perinatal mental distress did not mediate their relationship. The results from this study provide an insight into how masculine gender roles may impact the expression and experience of mental distress in fathers within the perinatal period. Implications of research findings are discussed.

Keywords: depression, anxiety, masculine gender role stress, fathers, sleep disturbances

Introduction

Masculinity is defined through traits such as dominance, controlling behaviour, and aggressiveness (Vandello et al., 2008). Men are encouraged to display their masculinity by devaluing traits, interests or characteristics which are culturally coded as feminine (e.g., refusing to wear pink; Berdahl et al., 2018). Social interactions consisting of rewards, punishments, and observational learning further reinforce young boys and men to endorse and conform to traditional gender roles to portray manliness (Levant & Wimer, 2014). Some of the traditional masculine gender roles are being a breadwinner, emotionally restrictive, successful, powerful and a sturdy presence (Addis, 2008). Although gender role socialisation is a part of gender development, rigid adherence to traditional masculine gender roles can be psychologically detrimental for men when they face discrepancies between culturally approved dominant ideals of masculinity and themselves (Sung, 2020). One of the times when men face this type of discrepancy is during their transition to fatherhood.

Traditionally, a good father has been defined as someone who is a good provider to his family (breadwinner), maintains emotional distance with his children (emotionally restrictive) and focuses on disciplining them (powerful; Kings et al., 2017; Silverstein et al., 2002). These traits of a good father flourished during an era when there was a gendered division of work where men were dominating the workforce and women were predominantly housewives. However, with the shift in socio-political culture around the world, both men and women are engaging in the workforce equally, with rising expectations from men to engage in household activities including childcare (Shafer et al., 2019). Thus, the contrasting expectations of a good father (traditional father) and the father who is involved in childcare (egalitarian father) may cause mental distress for fathers during the perinatal period and result in paternal perinatal depression and anxiety.

In the last few decades, paternal perinatal depression and anxiety have been of great interest to researchers around the world. Paternal perinatal depression and anxiety are defined as symptoms of depression and anxiety experienced by fathers between pregnancy and the first year after childbirth (Baldoni & Giannotti, 2020). The current prevalence of paternal perinatal depression in the world is 8.75% (Rao et al., 2020) and the prevalence of paternal perinatal anxiety is between 2-18% (Leach et al., 2016). Although these rates display that a significant proportion of fathers around the world experience paternal perinatal depression and anxiety, it has been suggested that these rates are underreported. The existing clinical and research literature on depression in men suggests that there are gender differences in how men express and experience depression which may not be diagnosed with current measures used for diagnostic purposes (Olliffe & Phillips, 2008).

Both men and women share some similar depressive symptoms (low mood, fatigue, anhedonia), but some men may express depression through externalising symptoms such as violence, substance abuse, emotional stoicism, and anger (Addis, 2008). These gendered differences in expression of depression can be explained through the masculine depression framework. This framework suggests that men who strongly adhere to traditional masculine gender roles are hypothesised to exhibit externalising symptoms of depression because of intolerant attitudes about depression (crying, sadness, grief) which is viewed as incompatible with masculine socialisation (Addis, 2008; Rodger et al., 2014). Hence, some men may experience masculine depression, a variant of depression. Over the past few years, research into perinatal depression in fathers using the masculine depression framework has linked masculine gender role stress (MGRS) to high scores of perinatal depression and anxiety on self-report measures (Chhabra et al., 2021).

MGRS theory rests on the assumption that men may experience stress as a result of situational demands or global self-appraisals in which culturally defined schemas of

masculinity are violated (Eisler & Skidmore, 1987). MGRS is based on the assertion that gender plays an integral role in how men respond to physical and mental problems. Thus, men who rigidly adhere to traditional masculine gender roles may experience stress from their inability to cope with situations where their masculinity is threatened (Paredes & Parchment, 2021). For example, expressing emotions is considered a traditional feminine norm. Thus, men who are in a situation where they may have to express emotions to their friends and family may find that particular situation stressful as it challenges their masculinity. The rigid adherence to masculine gender roles seen within MGRS may also increase the vulnerability of men to depression and anxiety (Arrindell, 2005). MGRS has also been found as a risk factor for paternal perinatal depression and anxiety (Chhabra et al., 2020; Chhabra et al., 2022). It should also be noted here that both depression and anxiety are highly comorbid. The tripartite model by L. A. Clarke and Watson (1991) conceptualises this comorbidity and suggests that both depression and anxiety share a distress component also known as mental distress. Since the focus of this study is on both depression and anxiety and their comorbid expression in fathers during the perinatal period, the expression of both perinatal anxiety and depression together in fathers will be referred to as paternal perinatal mental distress.

Fathers who strongly adhere to traditional masculine roles may also respond to perinatal mental distress differently through withdrawal from family and friends and show a strong focus on control at the workplace (Price et al., 2018; Shafer et al., 2019). It is theorised that gender role beliefs direct behaviour (Lobel, 1991). Thus, a father who strongly adheres to traditional masculine gender roles is likely to identify with his role as an employee (work identity) than his role as a father (Huffman et al., 2014). By maintaining his work identity, the father is also able to strengthen and demonstrate his masculinity through dominance over his family (breadwinner), financial independence and societal standing (Berdahl et al., 2018). Moreover, during the perinatal period, men are more likely to engage in paid work than

women. This further reinforces the traditional ‘breadwinner’ role played by a father (Kuo et al., 2018).

While dedication to work may be integral to maintaining a masculine identity for a father, it also means that he may forego his caregiving responsibilities. The unequal distribution of work and family responsibilities may lead to work-family conflict, especially in contemporary fathers who believe that being both a ‘breadwinner’ and a ‘caregiver’ are integral to a father’s role (Hagqvist et al., 2017; Harrington et al., 2013). Work-family conflict occurs when the experiences and commitments at work interfere with family life (Taşdelen- Karçkay & Bakalım, 2017). Some of the experiences are job stress, infrequent work hours, frequent travel, and unsupportive supervisors. Also, the relationship between work and family life is bidirectional (Taşdelen- Karçkay & Bakalım, 2017). An individual’s family life might also impact their work-life resulting in family-work conflict. Family-work conflict occurs when the commitments and experiences in the family interfere with work-life (Chernyak-Hai & Tziner, 2016). One of the scenarios where men may experience family-work conflict is when they are caring for infants at home. During the perinatal period, fathers not only have to fulfil their role as a breadwinner but also must support their partners and fulfil their role as involved and nurturing parents. Therefore, it is possible that in the perinatal period, a father’s caregiving responsibility may overshadow his work responsibilities. When this happens, fathers who strongly adhere to traditional gender roles may experience MGRS due to their perceptions about their masculinity being challenged by the portrayal of the traditional feminine norm (caregiving) and may ultimately result in family-work conflict in fathers. Both work-family conflict and family-work conflict have also been identified as risk factors for paternal perinatal mental distress (Chhabra et al., 2022). It is important to mention that only a few studies have explored the role of work-family and family-work conflict as risk factors for mental distress in fathers during the perinatal period. With only a dearth of studies

investigating the relationship between masculinity and work-family and family-work conflict, the true impact of traditional masculine gender roles on work-family life is not fully known.

One of the other challenges a father may face during the perinatal period is sleep disturbances. Sleep is both a biological and social phenomenon. Within the family environment, the sleep patterns of one family member may have the potential to affect the sleep patterns of other family members, their health, and their functioning (Coles et al., 2022). The period following the birth of an infant often leads to changes in the sleep patterns of the parents. As parents accommodate the sleeping and feeding pattern of their infant in their nightly schedule, they are likely to experience sleep disturbances (Saxbe et al., 2016). Sleep disturbances include sleep fragmentation, sleep deprivation, and poor sleep quality (McDaniel & Teti, 2012). Existing research has demonstrated a relationship between sleep disturbances and mood disorders in the general population (Buysse et al., 2008). Within the context of the perinatal period, few studies have investigated the impact of sleep disturbances in mothers but the relationship between perinatal mental distress and disturbed sleep of fathers is lacking (Kalogeropoulos et al., 2021). The limited research on fathers has indicated that the quality of sleep and repeated sleep disturbances during the perinatal period may result in postpartum depression (Cook et al., 2017; McDaniel & Teti, 2012; Saxbe et al., 2016). Sleep disturbances can result in fatigue, irritation, and impact the day-to-day life of fathers including their involvement with childcare (Loutzenhiser et al., 2015). Reduced involvement of fathers with their infants may potentially lead to physical, mental, and cognitive development issues (Ramchandani et al., 2008). Furthermore, fatigued fathers may not engage with their partners and may not provide the required social support. A recent systematic review by Coles et al. (2022) suggests that sleep disturbances experienced by fathers due to poor infant sleep cycle may result in partner conflict (El-Sheikh, et al., 2012; Kelly & El-Sheikh, 2011), cooperation (Meijer & van den Wittenboer, 2007; Peltz et al.,

2016), poor relationship satisfaction (Germo et al., 2007; Loutzenhiser & Sevigny, 2008; Meijer & van den Wittenboer, 2007; Peltz et al., 2016), and poor relationship quality (Germo et al., 2007; McDaniel & Teti, 2012; Potter, 2017). A lapse in communication between partners may contribute to their relationship distress (Thiel et al., 2020).

While the negative consequences of sleep disturbances on a father's perinatal mental health and indirectly on his family unit make it imperative to examine the association between disturbed sleep and paternal perinatal mental distress, few studies have suggested that strong adherence to masculinity may also impact how men respond to sleep disturbances which may ultimately contribute to their symptoms of perinatal mental distress (Meadows et al., 2008; N. B. Warren & Campbell, 2021). Prior research on sleep disturbances within the perinatal period has primarily focussed on variables such as demographics, bedsharing, breastfeeding and infant health (Cockshaw et al., 2014; N. B. Warren & Campbell, 2021). However, the possibility of gendered sleep stereotypes has been largely overlooked.

Traditional masculine ideology suggests men showcase traits of being strong, sturdy, and unflappable to signal their masculinity while help-seeking behaviours are avoided as they are considered feminine (Pinkhasov et al., 2010). The strong adherence to masculine gender roles may also be reflected in the sleep patterns of some men. Men may evaluate their need for sleep based on their ability to perform their roles which promote their masculinity (N. B. Warren & Campbell, 2021). For example, men with strong traditional masculine roles may believe that sleeping eight hours a day may be a burden on them as it prevents them from fulfilling their roles (worker) which showcase their masculinity (Meadows et al., 2008). Fatherhood is also one of the ways in which men acquire and enact their masculine identity (Kings et al., 2017). For example, going to work with only a few hours of sleep (e.g., sleep disturbances due to infant feeding, and crying) may signal to fathers that they are fulfilling their role of a breadwinner and thus, meeting the criteria for masculinity. Although both

Meadows et al. (2008) and N. B. Warren and Campbell (2021) reflect on the relationship between sleep and masculinity, much more research is needed to identify if there are specific and persistent trends in male beliefs that may impact how men respond to sleep in their personal lives. Moreover, both studies are qualitative and explored the relationship between masculinity and sleep in the general population. There is a lack of quantitative studies exploring this relationship within the perinatal period within a larger sample.

This study fills two important gaps in the research literature by (a) examining the associations between work-family conflict, family-work conflict, masculinity, and paternal perinatal mental distress, and (b) examining the associations between sleep disturbances, masculinity, and paternal perinatal mental distress. Accordingly, it aims to answer the following research questions (RQs): RQ1 Does the fathers' work-family conflict mediate the relationship between their masculine gender role stress and perinatal mental distress?; RQ2 Does the fathers' family-work conflict mediate the relationship between their masculine gender role stress and perinatal mental distress?; and RQ3 Does the fathers' sleep disturbance mediate the relationship between their masculine gender role stress and perinatal mental distress?

Method

Participants and Procedure

A total of 660 participants were recruited and voluntarily participated in this study. An online cross-sectional survey using Qualtrics was employed to collect data in Australia between March and October 2020. The eligibility criteria to participate in the survey included Australian men over the age of 18 years, with a pregnant partner and/or an infant under the age of 12 months with the ability to comprehend Basic English. Two methods were used to recruit participants. First, the online survey was advertised through James Cook University's social network, the authors' professional and personal networks and online platforms such as

Facebook and Twitter. Second, the survey was distributed through Qualtrics (Callegaro et al., 2014) and an online access pool was employed. An online access panel is a process of paid recruitment of a pool of people who have agreed to take part in web surveys (Blom et al., 2015; Gritz, 2004; Porter et al., 2018). Ethical approval for the study was obtained from James Cook University, Australia (Ref: H8038).

Measures

Demographic variables. Demographic variables included age, marital status, the highest level of education, annual income, and unplanned pregnancy.

Paternal perinatal mental distress. Paternal perinatal mental distress was assessed using the 10-item Edinburgh postnatal depression scale (EPDS; Cox et al., 1987). EPDS is scored on a four-point Likert scale with responses ranging from 0 (*yes, most of the time*) to 3 (*no, never*). The higher scores correspond to higher levels of mental distress. The scale consists of items such as “I have been so unhappy that I have been crying” and “I have felt scared or panicky for no good reason”. EPDS has been validated to measure paternal perinatal mental distress (depression and anxiety) with a cut-off score of 6 or higher (Edmondson et al., 2010; Massoudi, 2013; Matthey et al., 2003; Matthey et al., 2020). In the current study, Cronbach’s alpha was .87, which was similar to that obtained by Cox et al. (1987).

Masculine gender role stress. Masculine gender role stress (MGRS) was measured using the 40-items self-report scale by Eisler and Skidmore (1987). MGRS is scored on a six-point Likert scale with responses ranging from 0 (*not stressful*) to 5 (*extremely stressful*) with higher scores indicating physical and mental health difficulties (Buist et al., 2003). Sample items include “Comforting a male friend who is upset” and “Having others say that you are

too emotional”. The scale shows a high level of reliability with a Cronbach’s alpha of .90 (Jakupcak et al., 2002; Mahalik et al., 2005). In the current study, Cronbach’s alpha was .98.

Work-family and family-work conflict. Work-family and family-work conflicts were measured by the 10-item work-family conflict scale (Haslam et al., 2015). The scale is scored on a seven-point Likert scale with responses ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). The scale has two subscales: the conflict at work (work-family conflict) and conflict in family life (family-work conflict) and has been validated for use in parents. Sample items include “My work prevents me from spending sufficient quality time with my family” for the work-family conflict subscale and “My family has a negative impact on my day-to-day work duties” for the family-work conflict subscale, respectively. Skoufi et al. (2017) reported Cronbach alphas of .91 for work-family conflict and .90 for family-work conflict. The Cronbach’s alpha for work-family conflict and family-work conflict in the current study are .92 and .94 respectively.

Global sleep assessment questionnaire. The global sleep assessment questionnaire (GSAQ; Roth et al., 2002) is an 11-item self-report scale used to assess sleep disturbances in the general population. The scale is a four-point Likert scale with responses ranging between 0 (*Never*) and 3 (*Always*) with higher scores indicating difficulty in sleeping. Some of the items are “Did you fall asleep unintentionally or have to fight to stay awake during the day?” and “Did sleep difficulties or daytime sleepiness interfere with your daily activities?”. In the current study, the scale displayed a Cronbach’s alpha of .92, matching that reported by Roth et al. (2002).

Data Cleaning

A total of 660 participants responded to the survey. Amongst these, 60 responses missing more than 10% of values were removed. In the remaining 600 responses, 47

participants reported incomplete scales (MGRS, GSAQ), 17 participants had indicated incorrect pregnancy trimester, and 3 unengaged responses were removed. Further, 11 multivariate outliers were removed using Mahalanobis distance figures (using criterion $\alpha=.001$, critical $\chi^2 =24.200$; Tabachnick & Fidell, 2013), resulting in a total of 525 participants. The pairwise deletion method was used to deal with the missing data.

The Kolmogorov-Smirnov test was used to test for the normality of the scales. Results showed that all K-S scores of all scales were significant ($p<.001$), suggesting a violation of the assumption of normality. However, histograms and Normal Q-Q plots for all scales suggested that the scales were reasonably normally distributed.

Data analysis

Data analysis was performed using IBM's SPSS version 26. This study is a further analysis of the existing qualitative data from Chhabra and colleagues (2022). Further analyses of existing data can dramatically increase the overall generalisability of research and provides researchers with the opportunity to fully use the data and test new research questions and theories which were not tested in the primary data (Johnston, 2017). Descriptive statistics were performed to describe the sample population. Bivariate correlations were done to verify preliminary statistical relations between variables. PROCESS (version 3.5) macro for SPSS (A. Hayes, 2020) was used to conduct a mediation analysis. Severe collinearity between predictors in multiple mediator models can affect sampling variance and impact the width of confidence intervals (A. Hayes, 2020). Accordingly, VIF values were generated (entering all predictors and control variables) to assess for collinearity. VIF values were small (< 4 for all predictors), falling well below the commonly recommended value of 10, and the more conservative cut-off value of 5 (Montgomery et al., 2021).

Results

Participants' characteristics

A total of 525 participants participated in the online survey. Demographic factors in the current study included age, ethnicity, marital status, education status, education qualification, occupation, and annual income. Table 7.1. shows the demographic characteristics of the participants.

Table 7.1. Participant Characteristics (N=525)

Characteristics	N	%
Age		
18-25 years	82	15.6
26-35 years	199	37.9
36-45 years	122	23.2
46-55 years	35	6.7
>55 years	86	16.4
Missing	1	0.2
Marital Status		
Single	50	9.5
De facto	183	35.0
Married	262	50.0
Divorced/Separated	29	5.5
Education		

High School/Diploma	179	34.1
Undergraduate	227	43.2
Postgraduate	119	22.5
Ethnicity		
Caucasian	354	67.4
Aboriginal & Torres Strait Islander	17	3.2
Asian	96	18.3
South Asian	22	4.2
Latino/Hispanic	10	1.9
African	7	1.3
Other	19	3.4
Employment		
Casual	15	3.0
Part-time	79	15.0
Full-time	282	53.7
Missing data	149	28.3

Annual Income

\$0-\$18,200	88	16.8
\$18,201-\$37,000	92	17.5
\$37,001-\$80,000	173	33.0
\$80,000-\$120,000	90	17.1
>\$120,000	82	15.6

Unplanned Pregnancy

Yes	151	28.8
No	361	68.8
Missing data	9	2.4

Previous Children

Yes	241	45.9
No	283	53.9
Missing	1	0.2

History of Mental health

Yes	132	25.1
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No	393	74.9
Partner's (maternal) depression		
Yes	188	35.8
No	337	64.2

Preliminary analysis

Descriptive statistics showed that there were significant differences of age, $F(4, 519) = 5.277, p = .000, \eta^2 = .04$; marital status, $F(4, 519) = 2.667, p = .032, \eta^2 = .02$; and income, $F(4, 520) = 2.971, p = .019, \eta^2 = .02$; in EPDS. A point biserial correlation showed that the relationship between EPDS and unplanned pregnancy was positive but not statistically significant, $r_{pb} = .024, N = 519, p = .525$. Similarly, point biserial correlation showed that the relationship between EPDS and previous children was negative and not statistically significant, $r_{pb} = -.003, N = 524, p = .947$.

Bivariate correlations of the study variables showed that MGRS positively correlated with EPDS, work-family conflict, family-work conflict and sleep disturbance. Work-family conflict showed a significant positive correlation with EPDS, MGRS, family-work conflict and sleep disturbance. Both family-work conflict and sleep disturbance showed positive significant associations with EPDS, MGRS, and work-family conflict. Table 7.2. shows the zero-order correlations.

Table 7.2. Intercorrelations

Variable	1	2	3	4	5	M	SD	Theoretical Range
1. EPDS	1	.57**	.38**	.48**	.67**	11.97	6.46	0-30
2. MGRS		1	.49**	.54**	.64**	72.53	47.80	0-200
3. WFC			1	.82**	.51**	18.95	7.60	5-35
4. FWC				1	.58**	17.71	7.93	5-35
5. GSAQ					1	10.48	7.25	0-45

**P<.001 (2-tailed). EPDS – Edinburgh Postnatal Depression Scale; MGRS – Masculine Gender Role Stress; WFC – Work-Family Conflict; FWC – Family-Work Conflict; GSQ – Global Sleep Assessment Questionnaire

Test of RQ1, RQ2, and RQ3

To test RQ1, RQ2, and RQ3, a mediation analysis was performed using PROCESS (version 3.5) macro for SPSS (A. Hayes, 2020) and a multiple mediator model was run. Multiple mediator models are most useful when mediators are correlated, as multiple models quantify the effect of each mediator holding constant the effect of the other mediators (A. Hayes, 2020). Mediation effects were tested by using the bootstrap procedure (Williams & MacKinnon, 2008). 5,000 bootstrap data samples were created from the original data ($N = 525$) by random sampling with replacements. If the 95% confidence interval (CI) for the estimate of an indirect effect does not include zero, it can be concluded that the indirect effect is statistically significant at the .05 level (A. Hayes, 2020; Mallinckrodt et al., 2006).

Testing of RQ1

RQ1 asks whether the fathers' work-family conflict mediates the relationship between their masculine gender role stress and perinatal mental distress. To assess this, a mediation model was run with work-family conflict as a mediator. The relative indirect effects of MGRS on paternal perinatal mental distress through work-family conflict were negative and non-significant. Although higher MGRS was associated with higher work-family conflict ($b = .07, p = .000$), no significant relationship was found between work-family conflict and mental distress in fathers during the perinatal period ($b = -.08, p = .087$). The completely standardised effect size ($b = -.043, 95\% \text{ CI } [-.094, .006]$) provided further credibility that there was no mediation by work-family conflict on the relationship between MGRS and paternal perinatal mental distress.

Testing of RQ2

RQ2 asks whether the fathers' family-work conflict mediates the relationship between their masculine gender role stress and perinatal mental distress. To assess this, family work conflict was added as a mediator to the previous model. The relative indirect effects of

MGRS on paternal perinatal mental distress through family-work conflict were positive and significant. Thus, a higher MGRS was associated with higher family-work conflict ($b = .08, p = .000$), and higher family-work conflict significantly predicted mental distress to the fathers in the perinatal period ($b = .12, p = .017$). The completely standardised effect size ($b = .073, 95\% \text{ CI } [.012, .140]$) suggested that although significant, it was a fairly small effect.

Testing of RQ3

RQ3 asks whether the fathers' sleep disturbances mediate the relationship between their masculine gender role stress and perinatal mental distress. To determine this, sleep disturbance was added to the previous model as a mediator. The indirect effect of MGRS on paternal perinatal mental distress through sleep disturbances was positive and significant. Hence, not only higher MGRS was associated with higher sleep disturbances ($b = .09, p = .000$), more sleep disturbances also significantly predicted perinatal mental distress in fathers ($b = .42, p = .000$). This represented a small effect ($b = .305, 95\% \text{ CI } [.230, .400]$) and provided a compelling evidence that there was a small, but meaningful mediation effect.

Relative direct, total, and indirect effects for the model are reported in Table 7.3 whereas a conceptual diagram of the model is presented in Figure 7.1.

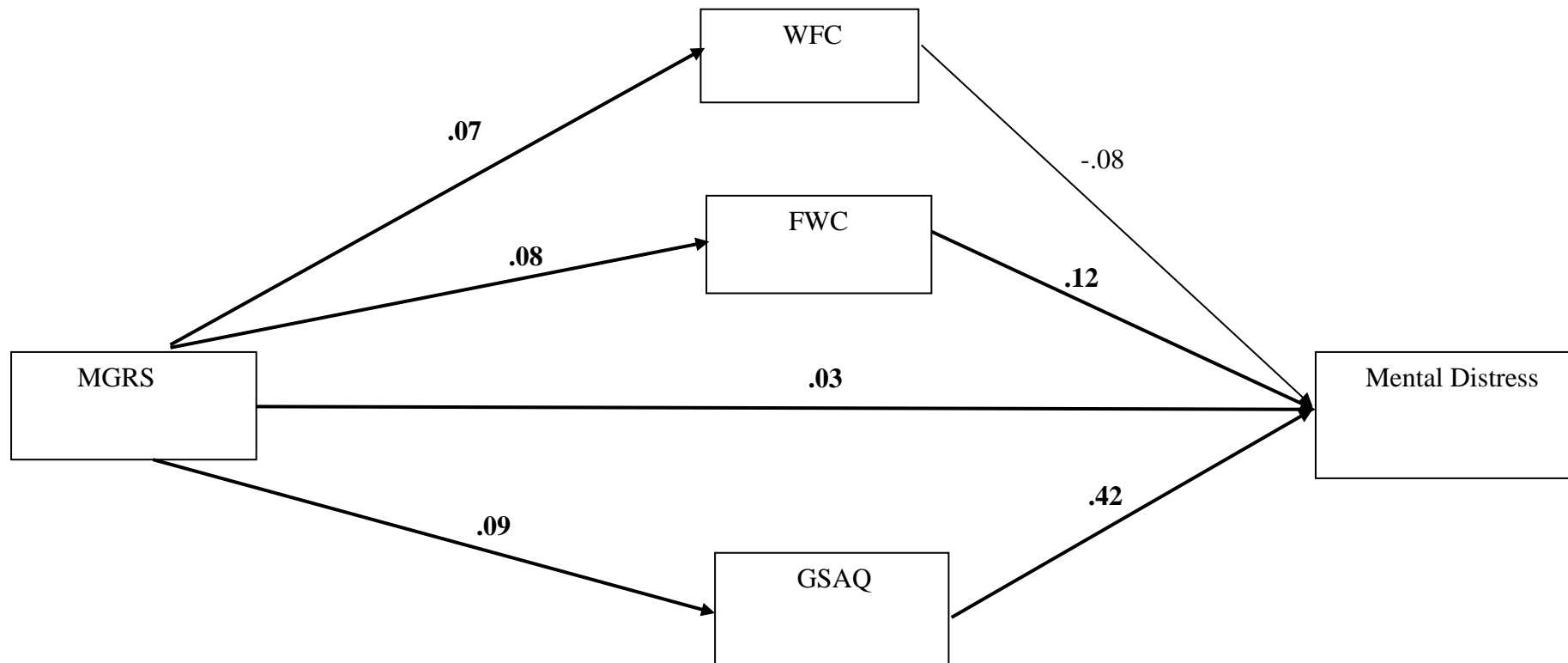


Figure 7.1. Conceptual diagram for model assessing the effect of masculine gender role stress (MGRS) on paternal perinatal mental distress through the three mediators: work-family conflict (WFC), family-work conflict (FWC), and sleep disturbances (GSAQ). The model is controlled for age, marital status, and income. Significant associations and paths are in bold.

Table 7.3. Total, Direct and Indirect Effects (and their 95% CI) for multiple mediator models assessing the effect of MGRS on paternal perinatal mental distress, controlling for age, marital status, and income

Model	Total Effect	Direct Effect	Indirect Effect: WFC	Indirect Effect: FWC	Indirect Effect: GSAQ
MGRS → paternal perinatal mental distress	.078 [.068 - .088]	.034 [.022 - .045]	-.005 [-.013 - .001]	.01 [.001 - .020]	.04 [.030 - .050]

CI – Confidence Interval, WFC – Work-Family Conflict, FWC – Family – Work Conflict, GSAQ – Global Sleep Assessment Questionnaire; Significant effects are in bold

Discussion

The results from the current study confirm the three hypotheses that is, work-family conflict does not mediate the relationship between a father's MGRS and his perinatal mental distress (RQ1); that a father's family-work conflict does mediate the relationship between his MGRS and perinatal mental distress (RQ2); and the sleep disturbances a father experiences during perinatal period does mediate the relationship between his MGRS and perinatal mental distress (RQ3).

The work-family conflict did not mediate the association between a father's MGRS and his perinatal mental distress. A father is likely to experience work-family conflict when his work responsibilities are impacting his family life (Taşdelen- Karçkay & Bakalım, 2017). But fathers with strong adherence to traditional masculine gender roles may not experience work-family conflict as they are more likely to associate with their role as a breadwinner and an employee than a caregiver. Therefore, he is likely to invest more time, commitment, and resources to further his career and enhance his work performance as he is likely to achieve a sense of reward for his efforts (promotion at work, providing for the family; Huffman et al., 2014). However, fathers who are likely to adopt an egalitarian approach to fatherhood may experience work-family conflict if they are unable to contribute to the caregiving of their infant (Chhabra et al., 2021). From the results of the current study, it appears that Australian fathers may still have a strong adherence to the traditional masculine role associated with fathering.

The results from the current study propose that family-work conflict mediates the relationship between MGRS and paternal perinatal mental distress. A father is likely to experience family-work conflict if his family responsibilities are impacting his family life (Taşdelen- Karçkay & Bakalım, 2017). Having a baby often results in an increase in responsibilities at home (Chhabra et al., 2020). This may mean that fathers may have to take

time off work (parental leave), reduce their working hours, or change in working hours (Chhabra et al., 2021). This may be stressful for some fathers who associate with traditional gender roles as they may believe that their masculinity is being challenged because they are spending more time performing feminine roles (caregiving) than fulfilling their role of a breadwinner or excelling in their work domain. Fathers who are threatened about their masculinity in situations where they are unable to perform their masculine gender roles (family-work conflict) may experience MGRS. Moreover, both MGRS and family-work conflict have been identified as risk factors for paternal perinatal depression (Chhabra et al., 2021). Hence, the results from the current study provide an initial understanding of how these risk factors may interact with each other and paternal perinatal depression and anxiety.

Finally, the results suggest that sleep disturbances mediate the relationship between MGRS and paternal perinatal mental distress. Sleep disturbance has been identified as a risk factor for paternal perinatal depression and anxiety (Chhabra et al., 2021; Kalogeropoulos et al., 2021; Mayers & Baldwin, 2006). The arrival of a new infant into a family is likely to cause sleep disturbances for both mothers and fathers. While sleep disturbances in mothers have been extensively studied (Bhati & Richards, 2015; Douglas & Hill, 2013; Maume et al., 2010; Venn et al., 2008), only a few studies have examined the impact of sleep disturbances on fathers' health. Although over the recent decade fathers are engaging in infant caregiving responsibilities, including night-time care (Atlintas et al., 2017; Atlintas & Sullivan, 2017), during the perinatal period fathers primarily retain the role of being a breadwinner and protector (Bianchi et al., 2014; Fagan & Norman, 2016) thus, unintentionally engaging in traditional masculine gender roles and precipitating a sense of dual conflicting roles and responsibilities (Cockshaw et al., 2014).

Existing research suggests that men may evaluate their sleep requirements based on if it interferes with their ability to perform roles that demonstrate their masculinity (Meadows et

al., 2008). This has led to the coining of the term ‘sleep-deprived masculinity stereotype’ which suggests that sleeping less or disturbed sleep is related to the conceptions of increased masculinity in men whereas sleeping more is associated with less masculinity in men (N. B. Warren & Campbell, 2021). When seen within the context of fatherhood, fathers may believe that by waking up throughout the night, they are also showcasing their masculinity through not being irresponsible and providing (feeding) for the infant. Also, going to work with less sleep or disturbed sleep helps them showcase their masculinity as they are fulfilling the role of a financial provider of the family. Although the association between masculinity and sleep disturbances during the perinatal period is quite interesting, this result should be interpreted with caution due to the lack of previous research. While fathers may be able to showcase their masculinity through sleeping less or working through disturbed sleep, it is not beneficial for their mental health. Further, only a dearth of studies has explored the association between masculinity and sleep disturbances (Meadows et al., 2008). Therefore, much more research is needed to develop an understanding of how men can be assured that their masculinity will not be threatened if they do sleep through the required amount of sleep but instead it will be beneficial for their mental health.

The present study has limitations that should be recognised. First, the findings from the present study should be interpreted with caution. The cross-sectional nature of the study limits the understanding of the causal relationship between the risk factors and paternal perinatal mental distress, even though the associations between variables were supported using a strong theoretical framework. Hence, future studies should use a longitudinal study design to understand the causal relationship between variables. Second, the study used EPDS to measure perinatal depression and anxiety in fathers. The results from EPDS should be interpreted with caution. Although EPDS has been validated to measure anxiety and depression in fathers (cut-off score >6; Matthey et al., 2020), it does not consider that fathers

may express depression differently from mothers. Fathers who strongly adhere to traditional masculine gender roles may show externalising symptoms of depression such as violence, aggression, and substance abuse (Addis, 2008) which are unlikely to be captured by EPDS. Finally, the study used self-report measures. The use of only self-report data may not be enough for studying these complex processes (Mangialavori et al., 2021). Thus, other data collection methodologies such as clinical interviews and observational studies should be integrated with questionnaires in future studies. Despite these limitations, the study has several strengths. The present study is one of the first studies to examine the associations between MGRS and mental distress in fathers during the perinatal period. This is also the first study to explore family-work conflict and sleep disturbances as a potential mechanism linking MGRS and perinatal mental distress in fathers. Moreover, the study has a large sample, which allowed for powerful tests for hypotheses.

Conclusion

In conclusion, the current study provides empirical evidence about the underlying mechanisms that influence the relationship between MGRS and paternal perinatal depression and anxiety. Fathers who strongly associate with the traditional masculine roles are more likely to experience family-work conflict and sleep disturbances which may impact their perinatal mental health. Furthermore, clinicians in the medical settings should be made aware that men with strong adherence to traditional masculine roles may express depression differently than women, with completely different underlying mechanisms that influence depressive symptoms.

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Conflict of interest

There are no conflicts of interest relevant to this article to disclose.

CHAPTER 8: General Discussion

Research Findings Summary

This thesis aimed to examine the risk factors of paternal mental distress in the perinatal period beyond what has already been established in the literature regarding depression and anxiety in fathers. This thesis also aimed to examine the role of conceptualisations of gender and its impact on the mental health of fathers during the perinatal period.

Following the general introduction presented in Chapter 1, Chapter 2 presented an overview of the literature supporting the notion that men may experience and express depression and anxiety differently from women. Firstly, the socio-cultural expectations from the society that reward masculine attitudes and behaviours, while punishing feminine behaviour may result in rigid masculine gender role socialisation in men. This rigid socialisation may result in the development of masculine schemata in men. These schemata are then used by men to produce coping responses in cases of potential threat. However, the rigid gender role socialisation leads to restrictive coping strategies in situations where men may need to perform a role that has been characteristically labelled as a traditional feminine norm (caregiving, emotional support, etc.). This may result in men experiencing masculine gender role stress (MGRS; Eisler & Blalock, 1991). Secondly, the restrictive masculine gender roles play a salient role in depression symptom presentation and the help-seeking attitudes in men (Addis & Mahalik, 2003; Oliffe et al., 2019). Whilst many men exhibit the prototypic symptoms of depression like women such as sadness, guilt, and low mood; some men may demonstrate externalising symptoms such as substance abuse, violence, and aggression which are incongruent with a depression diagnosis (Rice, 2011; Rutz & Rhimer, 2007). Such externalising symptoms may lead to incorrect or underdiagnosis of depression,

particularly in primary care settings where consultations tend to be time limited and focused on urgent problems (Strömberg et al., 2010).

The literature review presented in Chapter 2 suggested that while the cultural expectation of fatherhood was fundamentally positive albeit demanding, there was a significant proportion of fathers who experienced mental distress within the perinatal period. A recent meta-analysis by Rao et al. (2020) has estimated that the prevalence of paternal perinatal depression is 8.75%. The current prevalence of anxiety in fathers during the perinatal period is between 2-18% (Leach et al., 2016). However, given that men's adherence to masculine gender roles influences how they express and experience depression, these rates may be underreported. These findings and suggestions are of grave concern, for several reasons. First, the impact of paternal perinatal mental distress on the physical and mental health of their infant is significantly negative. Depressed or anxious fathers are less likely to engage in enriching parenting activities such as playing, reading, and telling stories with their infants (Davis et al., 2011). Further, research suggests that if fathers are depressed at six months postnatally, their infants are more likely to display more negative affect and greater intensity of moods and behaviour when they are two years old (Hanington et al., 2012). Second, the high prevalence of depression and anxiety is likely to incur high costs associated with healthcare (Edoka et al., 2011). The prevalence of depression and anxiety in fathers is very concerning especially when it can have a severe negative impact on their infant and the healthcare system. Hence, identifying risk factors associated with paternal perinatal depression and anxiety is imperative.

The systematic review and meta-analysis presented in Chapter 4 examined the risk factors associated with paternal perinatal depression and anxiety in the current literature. The results suggested that while some risk factors for perinatal mental distress are similar in both fathers and mothers (e.g., marital distress, low income, low education status), some risk

factors are unique to fathers only (e.g., masculine gender role stress). Maternal depression was identified as the most commonly reported risk factor for paternal perinatal mental distress in the literature increasing the risk by three-fold ($OR = 3.51$, 95% CI [2.63-4.68]). Marital distress was identified as the second most common risk factor for paternal perinatal mental distress, and it increased the risk by more than two-fold ($OR = 2.16$, 95% CI [1.47-3.19]). Masculine gender role stress was identified as a unique risk factor for paternal perinatal mental distress. It increased the risk by more than four-fold ($OR = 4.66$, 95% CI [2.14-10.15]). The results from this study provided an insight into how a father's adherence to traditional masculine gender roles may impact his mental health in the perinatal period. Data collection was iterative; the results from the systematic review and meta-analysis informed the qualitative data collection. Similarly, the preliminary analysis of the qualitative data informed the quantitative data collection. The results from both qualitative and quantitative studies were integrated in Chapter 5.

The mixed methods study presented in Chapter 5 examined the risk factors associated with paternal perinatal mental distress in Australian fathers is presented. Results from this study suggested that fathers' strong adherence to traditional masculine gender roles may negatively impact their mental health in the perinatal period. MGRS was identified as the strongest predictor of mental distress in Australian fathers during the perinatal period. Further, sleep disturbance was identified as the second strongest predictor of perinatal mental distress in Australian fathers during the perinatal period. Sleep disturbance was a novel finding in this study. Sleep disturbances among new parents are common as young infants often rouse every few hours to be fed or changed (Bathory & Tomopoulos, 2017). Adult sleep disturbance is associated with increased risk for physical health conditions such as cardiovascular diseases, and diabetes (Zaharna & Guilleminault, 2010). In parents, lack of sleep can result in compromised executive control, suboptimal performance, and a higher

degree of risk-taking in everyday decisions that can impact the ability to care for the infant (Kienhuis et al., 2010). The evidence for perinatal sleep disturbances among parents has focused mainly on mothers and less is known about fathers' sleep and fatigue and its association with their mental health. The results of this study add to the limited literature and suggest that sleep disturbances in fact do negatively impact the mental health of fathers. The impact of sleep disturbances experienced by fathers in the perinatal period may not only impact their mental health but may have far-reaching implications. Many fathers return to work soon after birth when sleep deprivation may compromise their safety in the workplace (Czeisler, 2015). At home, fathers' support and engagement in infant care are protective factors of mothers' mental health (Tikotzky et al., 2010). However, if the father is experiencing sleep disturbances, it may increase the risk of irritation, anger, decreased self-control, and potentially adverse consequences for day-to-day interactions within the family (Kalogeropoulos et al., 2021). Existing research further suggests that fathers' sleep disturbances are often associated with increased depression symptoms between two months and one year postpartum (Da Costa et al., 2019; Saxbe et al., 2016). Hence, the results of the current study suggest that health professionals consulting with families with young infants should include fathers' sleep in their assessments of family needs and treatment plans.

The interpretative phenomenological analysis was employed in Chapter 6 to explore how fathers were reconstructing their masculine gender roles during fatherhood. By analysing participants' experiences of the perinatal period and their perceptions about masculinity and fatherhood, this study showcased how fathers were balancing both, the traditional masculine gender roles and the egalitarian gender roles to reconstruct gender roles that were psychologically gratifying to them. For example, the participants were adopting the role of primary carer and forming an emotional attachment with their infants. However, they were simultaneously playing the role of breadwinner and 'a sturdy oak'. The inclusivity of

traditional and non-traditional forms of masculinity into fatherhood resulted in the reconstructed fatherhood. This also showcased the dynamic nature of masculinity and by extension, fatherhood (Kachel et al., 2016). The results from the current study also highlighted the importance of the cultural impact on fatherhood which has been reported previously by only a few studies (Bornstein, 2017; Jain & Belski, 1997; Marsiglia et al., 2014). Although culture was not the primary focus of this study, the narratives of the participants from different ethnic backgrounds were culturally influenced. For example, the participants from different cultural backgrounds were reconstructing their version of fatherhood which included aspects of their own cultures and the culture they were currently living in, adopting an integration acculturation strategy to promote their version of egalitarian fatherhood.

The quantitative study employing mediation analysis in Chapter 7 examined the underlying mechanisms that influence the relationship between MGRS, and paternal perinatal mental distress. Results from this study suggested that both family-work conflict and sleep disturbances mediated the relationship between MGRS and paternal perinatal mental distress. It is important to note here that the focus of the study was only on the factors (work-family conflict, family-work conflict, and sleep disturbances) which were significantly associated with MGRS and paternal perinatal mental distress in the initial analysis of quantitative data (*See Chapter 5*). However, the results provided compelling evidence that there is a significant indirect effect of both family-work conflict and sleep mediation on the relationship between MGRS and paternal perinatal mental distress, the meaningful mediation effect is small. This suggests that other potential mediators should be included in the model to explain the underlying mechanisms between MGRS and paternal perinatal mental distress. The current study was one of the first few studies which explored the mediating role of sleep disturbances on the relationship between MGRS and paternal perinatal mental distress, providing a novel

finding. Sleep disturbance has been identified as a risk factor for paternal perinatal mental distress (*See Chapter 5*; Chhabra et al., 2021; Kalogeropoulos et al., 2021; Wynter et al., 2021). Although infant care used to fall predominantly under maternal care, over the recent decade fathers are engaging in infant caregiving responsibilities, including night-time care (Atlintas et al., 2017; Atlintas & Sullivan, 2017). But during the perinatal period fathers still retain the role of being breadwinner and protector (Bianchi et al., 2014; Fagan & Norman, 2016) as many fathers return to work due to lack of paternity leave, financial responsibilities, etc, thus, unintentionally engaging in traditional masculine gender roles and precipitating a sense of dual conflicting roles and responsibilities (Cockshaw et al., 2014). While the consequences of sleep disturbances on paternal perinatal mental health are discussed in this chapter, the results of this study also shed light on the underlying relationship between sleep disturbances and masculinity. The results from this study suggest that some men may evaluate their sleep requirements based on if it interferes with their ability to perform roles that demonstrate their masculinity (Meadows et al., 2008). For example, fathers may believe that waking up throughout the night and going to work the next day may signal to other men that while they are engaged in caregiving activities at night, they are also fulfilling the role of a financial provider of the family. While the highlighted association between masculinity and sleep disturbances during the perinatal period in the current study is quite interesting, these results should be interpreted with caution due to the lack of previous research. Much more research is needed to develop an understanding of how men can be assured that sleep disturbances do not promote masculinity but instead are likely to result in paternal perinatal mental distress.

Key Contributions

Theoretical Contributions

Targeted research examining men's experiences of perinatal mental distress is a recent phenomenon. Hypotheses regarding the men's manifestation of depression first appeared in the research literature in the 1990s (Pollack, 1998, Rutz et al., 1997), with the focus on paternal perinatal mental distress even later than this. Such hypotheses have led to the development of several theories and theoretical frameworks to understand the complexity of the expression of depression and mental distress in men. However, much more work is needed to refine both the theory and the screening tools used to understand the complex relationship linking MGRS to men's mental distress (Addis, 2008), especially in the perinatal period.

The masculine depression framework suggests that men who strongly adhere to traditional masculine norms express atypical or externalising symptoms of depression (e.g., substance abuse, violence, anger) which are more congruent with the traditional masculine ideology (Rice, 2011). Hence, men with strong traditional masculine norms may experience the prototypic form of depression as listed in DSM-V but may avoid or deny the experience as it is incongruent with the male role (Magovcevic & Addis, 2005). This framework is consistent with Pleck's (1981) gender role strain paradigm and supports MGRS theory – the psychological stress men experience when they are not living up to the demands of the male role (Eisler & Blalock, 1991). Moreover, there is a lack of research exploring how masculinity and in particular MGRS impacts the mental health of fathers in the perinatal period. The findings from this thesis (Chapters 4 and 5) provide empirical insight into this. The results suggest that MGRS is a significant risk factor for perinatal mental distress in fathers. The additional responsibilities (e.g., financial changes, lifestyle changes) experienced

by men during the perinatal period may challenge their masculine gender norms and contribute to their mental distress in the perinatal period.

It has been acknowledged throughout this thesis that the Edinburgh Postnatal Depression Scale (EPDS) has been significantly valuable to further the research area of perinatal mental health in men. Currently, EPDS is used in Australia to screen paternal perinatal depression with a cut-off score of 10 and above, and perinatal mental distress in fathers with a cut-off score of 6 and above (Matthey et al., 2008; Matthey et al., 2020). But as mentioned earlier (*Chapter 3*), EPDS has some possible limitations (e.g., multiple cut-off scores, high rate of false positives). Moreover, this screening measure does not consider the influence of traditional masculine ideology on the experience and expression of mental distress of fathers. Fathers who strongly adhere to traditional masculine ideology may express atypical or externalising symptoms of depression such as anger, violence, and substance abuse than the typical symptoms of depression (sadness, guilt, low mood, crying; masculine depression framework). Hence, by using EPDS to screen fathers' perinatal mental distress, we may fail to screen and recognise fathers who strongly adhere to traditional masculine gender roles, resulting in underdiagnosing and under-reporting of perinatally distressed fathers. This suggests the need for further research for the development of a scale that is specific for men in the perinatal period and takes into account the role of masculine gender norms and the presence of externalising symptoms of mental distress in the perinatal period.

Clinical Contributions

One of the most important potential clinical contributions of this research is that the results from this thesis may serve to inform clinical approaches that may better serve the unique needs of the fathers in the perinatal period. There are several ways in which this can be done. First, there needs to be consideration given in the clinical field that reflects on the impact of traditional masculinity ideology and MGRS upon the expression of perinatal

distress by fathers and their help-seeking behaviours. That is to say one needs to acknowledge men's current understanding of masculinity, and that their understanding is very likely to have been influenced by traditional masculinity ideology and their own culture. As mentioned earlier, fathers who strongly adhere to traditional masculine norms are more likely to express externalising symptoms of depression (e.g., violence, substance abuse) that do not challenge their masculinity (Addis, 2008). Hence, it is possible that in a clinical setting, a father may not discuss the typical (guilt, sadness, low mood) symptoms of depression and mental distress with his GP (Brownhill et al., 2005; Strömberg et al., 2010). Nonetheless, clinicians should carefully evaluate these externalising symptoms as they may put some men at risk of serious injury or health complications (Rutz & Rhimer, 2007). Hence, there is clinical importance and value in assessing, and as required, treating the externalising symptoms. Thus, opening up discussions about symptoms that fathers feel comfortable discussing may enable GPs and other healthcare providers to then probe for the underlying mental distress. Therefore, clinicians and other healthcare providers will need to tailor services accordingly in terms of being mindful of the various traditional masculinity-related ideologies and dynamics that exist and serve to make diagnoses of mental distress and help-seeking challenging for men (Englar-Carlson, 2006). This may further help researchers and clinicians to work collaboratively to develop interventions that are specific to fathers.

Second, while this thesis raises awareness about traditional masculine ideologies in clinical health settings, it also stresses the need to encourage fathers who are actively challenging the traditional masculine messages they have received from their fathers and society and reconstructing their gender roles. The very act of outwardly and openly challenging the traditional masculine ideologies and normalising and celebrating those who find the courage to step outside of the normative boxes created by these ideologies may further make the task of help-seeking easier for men and reconstruct their identities as fathers.

The findings from this thesis (Chapter 6) provide empirical evidence to support that men are less likely to experience mental distress in the perinatal period when they conform to the socially accepted egalitarian gender roles rather than the patriarchally dominant masculine gender roles. By being an involved parent with their infant, fathers are more likely to forge a bond and connection with their infant which is beneficial for both parties involved. Moreover, sharing the responsibilities (e.g., economic, caregiving) with their partner may positively impact their romantic relationship. Fathers may feel less stressed about portraying the role of a breadwinner. Moreover, they may find a confidante in their partner with whom they can share their experiences of parenting. Finally, accepting fathers and their changing gender roles may also prompt fathers to seek help if they are experiencing mental distress in the perinatal period as they are less likely to be ostracised by their peers for not being “manly”.

Third, apart from masculinity, the results from this thesis present sleep disturbances as the second most significant risk factor for paternal perinatal mental distress. Although both the qualitative and the quantitative phase of this PhD project highlighted the impact of sleep disturbances on the mental health of fathers in the perinatal period, the existing literature is still scarce, unfortunately. Nurses, midwives, and other health professionals consulting with families with young infants should include fathers’ sleep in their assessments of family needs and treatment plans. As a first step, asking about fathers’ sleep or inviting fathers to complete a brief self-report scale would be appropriate for fathers who are often time-poor and focused on their partners and infants (Darwin et al., 2017; Wynter et al., 2021). Recently, a five-item version of a fatigue assessment scale has been validated for use among women in the postnatal period (D. Wilson et al., 2018) and may prove to be a useful tool for assessing fatigue among fathers once reliability and validity have been established. Also, the 11-item GSAQ scale used in this study assesses sleep disturbances in individuals, with a factor

specifically focusing on the impact of sleep disturbances on the mental health of individuals (e.g., depression, anxiety, and stress). This scale may further be used to assess the mental health of fathers who are experiencing sleep disturbances in the perinatal period.

The reduced parental sleep quality is a direct product of infant sleep disturbances (Cook et al., 2017; Montgomery-Downs et al., 2010; Wynter et al., 2021). For mothers, early parenting services (N. Wilson et al., 2019) and community health nurse-led education (W.A. Hall et al., 2019) which focus on addressing unsettled infant behaviour, have each been shown to improve sleep and mental health outcomes with sustainable strategies for managing infant sleep problems. These services should explore how they could include fathers in their initial assessments and ongoing support as these services represent an opportunity to engage and screen fathers who are experiencing infant sleep problems (Rominov et al., 2018; T.K. Smith et al., 2015). The effectiveness of work-family sleep interventions in improving sleep has been demonstrated (Crain et al., 2015; Crain et al., 2019), but no such interventions exist for parents of a young infant. The development of such services and programs will further prompt health professionals to refer fathers or couples to engage in the services. Further, health professionals should themselves suggest or facilitate conversations between fathers and their partners in which opportunities to maximise rest in each parent are negotiated.

Finally, a father's involvement during pregnancy and childbirth has been shown to promote a positive prenatal experience for his pregnant partner and is the most significant factor in a mother's childbearing decision (Fenwick et al., 2012). Other positive health outcomes associated with fathers' involvement during pregnancy include healthier maternal behaviours such as reduced/no smoking, low/no consumption of alcohol, a significant reduction in low-birth-weight infants, and lower maternal stress levels (Alio et al., 2013; Xue et al., 2018). However, a father's level of involvement during pregnancy and childbirth can be heavily influenced by the informational support available for fathers. While the transition

to fatherhood can be a challenging process, minimal support and guidance are made available to fathers (Deave et al., 2008; Premberg & Lundgren, 2006; Xue et al., 2018). Fathers can receive this support from their friends and family members. Healthcare professionals, midwives, and nurses are another great source of support for fathers (Parry et al., 2019). Engagement in antenatal classes is another avenue of information support for fathers (Porrett et al., 2013). However, there is consensus throughout the literature that prenatal classes are often directed towards mothers, with fathers acting in a secondary role (Parry et al., 2019). The secondary role that fathers experience in prenatal classes means that men are less likely to have opportunities to ask educators and midwives questions and are likely to be overlooked in class. The secondary role of fathers during pregnancy and childhood was further highlighted during the COVID-19 pandemic when fathers had limited to no interaction with prenatal care. Fathers were largely excluded from prenatal care appointments and often did not meet the midwives, nurses, and obstetricians until the delivery of the infant (Poulos et al., 2022). This further reinforces the notion that fathers are secondary to mothers and infants. To mitigate this notion, health professionals and family focused practices should endeavour to make prenatal appointments as inclusive and meaningful as possible for fathers. During situations like COVID-19, telehealth should be used as an alternative prenatal appointment (unless for imaging tests) to ensure fathers are also included in the prenatal discussion (Poulos et al., 2022). Telehealth prenatal appointments can engage both mothers and fathers while providing critical support they need during pregnancy. Moreover, there is a need for the development of father-specific materials. Midwives and health professionals should engage in the development of prenatal classes, especially for fathers where they are not spectators or secondary to mothers but active participants. Moreover, an experienced father leading a group only for fathers at some point during the prenatal classes may be

appropriate and helpful. The use of specifically trained father-facilitators in prenatal classes has been successfully tested in Australia (Parry et al., 2019) but still lacks nationwide uptake.

Limitations and Future Research Directions

The studies presented in this thesis are noteworthy from both conceptual and clinical perspectives. Limitations and future research directions have been addressed in each of the study chapters; there are, however, a few further comments that are warranted. In interpreting the findings of the present set of studies, broader issues regarding sampling and access to participants must be considered. One of the limitations of the current study regarding the sample was the inclusion of only heterosexual fathers. This led to the exclusion of gay fathers and the risk factors associated with their perinatal mental health. Common routes to gay fatherhood include gay fathers through a previous heterosexual relationship, gay fathers through adoption, gay fathers through shared parenting in agreement with a woman, and gay fathers through surrogacy (Carneiro et al., 2017; Tasker & Patterson, 2008). Gay fathers are likely to experience similar stressful situations as heterosexual fathers (e.g., financial stress, contending with stressful birth events, etc), with a recent study reporting that gay fathers through surrogacy are more likely to experience postnatal depression than heterosexual fathers (Shenkman et al., 2022). Despite the evidence, gay fathers have not been the focus of perinatal research due to the following two significant barriers. First, certain groups or populations such as the LGBTQIA⁺ population may be excluded from research due to their geographical location, or social status, concealment of identity due to fear, social pressure, or stigma, among other reasons (Ellard-Gray et al., 2015; Shaghghi et al., 2011). These populations have been termed ‘hard-to-reach’ populations (Sydor, 2013). Second, gay fathers are a highly vulnerable and hard-to-reach population due to their marginalised identities. According to the National Collaborating Centre for Detriments of Health (2021), their marginalised status may impact how and when they engage in research as participants. For

example, distrust of researchers and uncertainty as to how their shared stories are reported, portrayed, and used in public and private discourses linger (Gatlin & Johnson, 2017; Lopez et al., 2022).

One of the few methods which have been recommended to researchers to recruit 'hard-to-reach' populations is to recruit from organisations focused on identities related to the research population (Ellard-Gray et al., 2015). In Australia, Rainbow Families is one of the organisations which acts as a gatekeeper for gay fathers. During the initial planning stage of the PhD, the primary investigator did in fact reach out to Rainbow Families to facilitate the participation of gay fathers in the qualitative research. But the duration between the agreement of all parties and the actual recruitment of participants can often be quite lengthy (various ethics applications, long turnover of applications, various checks such as police checks). Due to the strict time constraints and the nature of the study (mixed methods study, multiple types of data to collect and analyse), the inclusion of gay fathers was beyond the scope of this PhD. However, it is highly recommended that future studies should strive to include gay fathers in the research surrounding perinatal distress, especially because the limited existing research suggests that gay fathers may experience similar symptoms of distress as heterosexual fathers (Shenkman et al., 2022). One of the ways future studies can include gay fathers in their research is through online platforms such as Qualtrics, SurveyMonkey, etc. Moreover, instead of relying on a single recruitment method, it is recommended that future studies should use multiple recruitment methods such as online platforms (Gibbs et al., 2021; Martinez et al., 2014), reaching out to organisations or gatekeepers focusing on gay fathers (Ellard-Gray et al., 2015), snowball sampling (Engel & Schutt, 2016), respondent-driven sampling (Salganik & Heckathorn, 2004), and venue-based sampling (Meyer & Wilson, 2009).

Another limitation of this study is that it is probable that many fathers who adhere strongly to masculine norms may be reluctant to voluntarily disclose their experiences of perinatal distress to a female investigator or even on an anonymous self-report survey. The act of disclosing one's emotional state contravenes masculine norms related to emotional restriction and independence (Rice, 2011). While the findings from the current thesis suggest that fathers who strongly adhere to traditional masculine ideology are more likely to experience perinatal mental distress, it is plausible that many of these fathers declined to participate in the present studies. Hence, it may be the case that some of the most revealing data may remain hidden from the researchers within this field. Although it is impossible to determine if and why fathers who strongly adhere to traditional masculine ideology might have refused to participate, and thus gain the insights of such fathers, it might be possible to use creative and non-threatening recruitment strategies as a priority for future researchers examining fathers' experience of mental distress. In instances where reimbursements as incentives are not offered to the participants, samples may fail to incorporate sufficiently high numbers of men who adhere strongly to masculine norms. Future research designs should consider ways of circumventing such sampling problems through novel means of data collection such as online focus groups. This type of data collection can be an alternative way of possibly accessing fathers. While online focus groups may provide the interviewer with the diversity of interviewee's profiles and enriched responses, it may also provide an opportunity for participants to meet other fathers who are possibly sharing their experiences. Fathers with shared experiences may find solidarity with each other and may more readily access help-seeking ways (Zwaanswijk & van Dulmen, 2014).

The findings of the current thesis are strengthened in that they were drawn from an array of samples recruited from the general community. However, the sample for the qualitative study (Chapters 5 & 6) was predominantly from a regional town in Queensland,

Australia despite efforts to incorporate participants from more diverse regional areas. Hence, it is possible that the risk factors and the protective factors highlighted by the participants within these studies may be influenced by the local environment (economic opportunities and cultural opportunities). Thus, future studies should aim to recruit culturally diverse participants from both regional and metropolitan cities to understand the importance and severity of risk factors influenced by culture and the local environment of the participants. Also, studies investigating traditional masculine ideology and masculine depression have largely neglected the use of structured diagnostic interviews. Using such interviews would enable the interviewers to probe for and clarify the presence of both typical and masculine depression symptoms (violence, anger), and further investigate the ways in which masculine norms may influence the presentation of such symptoms (Addis, 2008). Finally, the results from the current thesis provide an overview of the risk factors associated with paternal perinatal mental distress while highlighting the underlying mechanisms that support the relationship between MGRS and paternal perinatal mental distress. The influence of different risk factors on each other and their relationship with paternal perinatal mental distress suggest causal relationships between risk factors. However, causality could not be determined within the current cross-sectional studies in this thesis. Thus, future research into perinatal mental distress should adopt a longitudinal data collection method to provide further evidence into causal relationships between different risk factors and their relationship with paternal perinatal mental distress.

During the qualitative data collection and analysis phase, the participants were interviewed twice. The participants were invited for two interviews at an interval of six weeks. The second interview was to assess any changes in views and experiences of fathers during the interval. The two-interview structure also helped to check if the narratives were consistent across two interviews (W. Li, 2013) and to maintain methodological reflexivity

(See Chapter 3: *Methodological Reflexivity*). Within the transcription process, the researcher's attitudes regarding the topic and assumptions regarding the data may influence the final transcript (Mero-Jaffe, 2011). To minimise this, researchers often share the transcribed interviews with their participants. One of the reasons the transcripts are shared with the participants is to ensure the validity of the transcript (Polit & Beck, 2007) and to avoid significant errors that may impact the quality of the transcript and, as a result on the quality of the research (Mero-Jaffe, 2011). The participation of interviewees in the transcription process also helps the researchers to build trust with their participants. However, checking of the transcripts by the participants has raised some research and ethical issues. Some researchers believe (Hagens et al., 2009; Mero-Jaffe, 2011) that it is not completely clear yet if the transcript check by the participants has any impact on the quality of the research and adds extraordinarily little to the precision of the transcript. However, revision of transcripts by participants can have a negative impact on the participant and the researcher. For example, some participants may feel discomfort/stress reviewing verbatim transcripts as they are likely to re-live the stressful events and experiences. Moreover, transcripts can be lengthy and cumbersome to read, and often participants who feel pressured to review transcripts may withdraw from the study due to time commitment. Similar to the participants, the researchers may also find it time-consuming to review transcripts with the participants. Further, appropriate measures must be taken to securely deliver the transcript to the appropriate participant. This can lead to delayed analysis which can be detrimental for time constraint research projects such as PhD.

Due to contrasting effects of sharing transcripts with the participants in the literature, both first and second interview transcripts were not shared with the participants during the data. Once both interviews were transcribed, the transcripts were checked to see if the risk factors changed across the six weeks. Thus, it is highly recommended that future studies

which are adopting a two-interview approach should give considerable thought as to whether transcripts should be reviewed by the participants as it may raise methodological problems, ethical problems, and problems of research credibility.

The in-depth analysis (IPA; *Chapter 6*) of the qualitative data showcased that culture played a vital role in men's conformation to masculinity and their ideas and attitudes towards fatherhood. Amongst the 13 participants in the qualitative study, five participants were from varying ethnic and cultural backgrounds who had been staying in Australia for a varied period. Depending on the time spent in Australia, these participants were adopting diverse types of acculturation techniques to adapt themselves to the role of a father. For example, some of the participants were reconstructing their own version of fatherhood which included aspects of their own cultures and the individualist culture they were currently living in. Their version of reconstructed fatherhood was not similar to the versions constructed by participants who were either born in Australia or had spent significant time in Australia. The differing versions of fatherhood suggested that like masculinity, definitions of fatherhood were not rigid but had the capacity to differ significantly between ethnicities and cultures (Miller & Maiter, 2008). However, culture was not the primary focus of this PhD project and was thus, not exclusively investigated in this PhD. Its role and importance came across as a by-product of the in-depth investigation of qualitative data. The exclusion of culture was one of the limitations of this study. But the inclusion of culture as one of the factors that may influence men's perinatal mental health was beyond the scope of this PhD. Often vulnerable populations (e.g., immigrant men in this case) are exposed to research that is driven by dominant epistemologies, research methodologies, and socio-cultural lenses that can exacerbate their vulnerability, negating their socio-cultural reality (N. Wilson et al., 2022). To investigate socio-cultural practices that may influence immigrant men's adherence to masculinity and their views and attitudes towards fatherhood meant engaging in culturally

safe processes. This included engaging immigrant fathers in the initial planning phases of the research and their guidance in formulating interview guides. As culture was not the focus of this study, the emphasis of recruitment was not on recruiting two distinct groups, Australian-born and immigrant fathers but rather men who had been currently residing in Australia. To address this limitation, the primary investigator intends to conduct future studies which specifically explore the role of culture in paternal perinatal mental distress.

The data collection for the quantitative phase of this PhD project predominantly took place during the first and second waves of Coronavirus 2019 (COVID-19) in Australia. The timing of the study is crucial to mention as the psychological impact of COVID-19 is more likely to be intense at the beginning of the pandemic due to the lack of information and knowledge about the disease and the lack of vaccines (Alyami et al., 2021). This psychological impact of COVID-19 may have been captured in this thesis within the high prevalence of perinatal depression and mental distress in fathers as noted in Chapter 5. The limited knowledge about the infectious disease, its progression and outcomes, and multiple strains (e.g., Delta, Omicron), may further result in individuals feeling anxious and unsafe in the rapidly changing environment (Alyami et al., 2021). Multiple lockdowns and strict border controls during COVID-19 pandemic have also impacted the mental health of the people due to social isolation (Chhabra et al., 2022). Social isolation during COVID-19 has also been identified as a contributing factor to perinatal depression in women (J. Li, 2022). Hence, it is possible that all these factors may also impact the mental health of fathers. Unable to attend prenatal classes may mean that some new fathers may not feel prepared for the baby. Similarly, being unable to attend ultrasounds or other milestone scans with their partner due to restrictions may make some fathers feel that they are missing out and not involved in the pregnancy and childbirth (*See Chapter 6*). Hence, the combination of public fear due to sudden shutdowns of services (health, and entertainment), lockdowns, social isolation, lack of

social support from family and friends due to restrictions during COVID-19, and the fear of infection and losing loved ones may collectively have contributed to mental distress or exacerbated symptoms of anxiety and depression in fathers during the perinatal period. Moreover, financial distress due to loss of a job or reduced working hours during COVID-19 may also have contributed to higher mental distress in fathers, especially those who strongly adhere to the masculine gender role (e.g., breadwinner). The high prevalence levels of depression and mental distress as noted in Chapter 5 also suggest that the cut-off scores for fathers in the literature may not be applicable in the time of a public health crisis. Thus, future research into paternal perinatal mental distress should explore the impact of COVID-19 on the mental health of the fathers while also examining the alternative cut-off scores which take into consideration public health crises such as the COVID-19 pandemic.

Finally, the need for the development of treatment environments and programs geared towards men's presentations and circumstances has been flagged. For example, providing male-friendly reading material in the waiting room, reception staff and areas which are more engaging for men on the day appointments may encourage men to attend their appointments regularly. Engaging in therapy modules that incorporate discussion of the benefits and risks of male role expectations may embolden fathers to openly share their experiences about the perinatal period (Holden et al., 2010; Primack et al., 2010). Also, maternity care services are designed to meet the physical and psychological needs of perinatal women. However, the research surrounding fathers suggests that they are also susceptible to depression and anxiety during the perinatal period (Rao et al., 2020). Hence, these services should be redesigned to be more welcoming to fathers. As fathers are more than likely to use the primary healthcare settings as the first resource for their mental health during the perinatal period, consideration of their needs and challenges should be of utmost importance.

Conclusions

This thesis provides an insight into fathers' mental health during the perinatal period. The studies in this thesis highlight several key findings, such as (i) masculine gender role stress being one of the prominent risk factors for the mental health of fathers during the perinatal period, (ii) sleep disturbances and family-work conflict may be one of the few underlying mechanisms that impact the relationship between paternal perinatal mental distress and MGRS, and (iii) the reconstruction of gender roles by fathers during the perinatal period protects their psychological well-being. While further research and theoretical development are required within this field, the present thesis showcases how traditional masculine ideology is ingrained in men's day-to-day life and how it influences all their major milestones, including fatherhood. The challenge remains for researchers and clinicians to work together in developing more effective means of intervening and reducing mental distress in the perinatal period. The aim of such research should not simply seek to develop a discourse that pits men's health against women's health, or vice-versa. Instead, researchers should work towards a more comprehensive understanding of gender-sensitive interventions and assessment procedures. The health and wellbeing of not only fathers but also of mothers and the children involved in the lives of such fathers, depends on this.

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APPENDICES

Appendix A: Ethical Approval

Chapters 5 & 6

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Chapters 5 & 7

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Appendix B: Information Page and Informed Consent

Qualitative Study



INFORMATION SHEET

PROJECT TITLE: Narrative interviews: Fathers' views on and coping with risk factors associated with paternal perinatal mental health

You are invited to take part in a research project about that aims to investigate the fathers' views on their mental health during pregnancy and childbirth. The study is being conducted by Dr Jasleen Chhabra from Department of Psychology, College of Healthcare Sciences, James Cook University and will contribute to the PhD (health) research degree at James Cook University.

By exploring personal narratives, the study is expected to yield indispensable information about the impact of pregnancy and childbirth on the mental health of fathers. The information from this study will contribute towards the understanding of the complexities associated with fathers' mental health during the pregnancy and childbirth period that are embedded in fathers' personal views. It will also provide us information regarding the factors which may potentially affect the fathers' mental health, and the coping strategies adopted by fathers during this period in order to combat these risk. Such an understanding will provide scientific evidence that will contribute towards building a framework for intervention policies and treatment strategy.

In this research project you will be asked questions regarding your experience of your partner's pregnancy and/or childbirth. There will be two interviews, each taking approximately 45-60 minutes. The second interview will take place three to six months after the first interview. The second interview aims to follow up on any information brought up in the initial interview or to note changes, if any, in the mental health of fathers as the pregnancy and/or childbirth has progressed. After the interview is completed, regardless of whether you agree to one or two interviews, you will receive a \$20 gift voucher. You can indicate your consent to be interviewed by the researcher at a location preferred by you. Alternatively, it is possible to interview you at College of Healthcare Sciences, James Cook University, Townsville QLD, 4811.

All interviews will be digitally recorded with your consent. Interviews will be conducted in English.

Please note that taking part in this study is completely voluntary and you can stop taking part in the study at any time without an explanation or prejudice. You may also withdraw any unprocessed data from the study. The data from the project will contribute towards the PhD thesis and may be published in the peer-reviewed psychology journal or other research publications. You will not be identified in any way in these publications. Your responses and contact details will be strictly confidential.

The interview may involve answering questions that some may find a little distressing. If you do feel upset or distressed in any way relating to the interview questions or the interview process, in general, please contact an appropriate counselling service. Counselling is available through Beyond Blue: (07) 5442 4277, Black Dog Institute: 1300 78 99 78 or Lifeline: 131 114.

If you are aware of others who might be interested in participating this study, please pass on this information sheet so that they may contact us to volunteer for the project.

If you have any questions about the study, please contact Dr Jasleen Chhabra, College of Healthcare Sciences, James Cook University, Townsville QLD, 4811.

Principal Investigator:

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If you have any concerns regarding the ethical conduct of the study, please contact:
Human Ethics, Research Office
James Cook University, Townsville, Qld, 4811
Phone: (07) 4781 5011 (ethics@jcu.edu.au)



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Quantitative Study



Appendix A

INFORMATION SHEET

PROJECT TITLE: Risk factors, protective factors and impact of gender role stress on paternal perinatal mental health: A cross-sectional survey

You are invited to take part in a research project that aims to investigate the risk factors and protective factors associated with the mental health of fathers in the perinatal period in the general population. The study is being conducted by Dr Jasleen Chhabra from Department of Psychology, College of Healthcare Sciences, James Cook University will contribute to the PhD(health) research degree at James Cook University.

By employing an approach of **cross-sectional survey**, this study is expected to yield crucial information about risk factors and protective factors associated with fathers' mental health in the perinatal period. This study will also bring focus on the impact of gender role stress on the fathers in the perinatal period. This information in turn will help towards understanding the complexities associated with fathers' mental health during pregnancy and childbirth.

If you agree to be involved in the study, you will be invited to be participate in an online survey. The survey should only take approximately 30 minutes of your time. The survey is available on [site]. Your contact details will remain strictly confidential and only the primary investigator and her supervisor will have access to it. The survey questionnaire may involve answering questions that some may find a little distressing. If you do feel upset or distressed in any way, relating to the survey questions, in general, please contact an appropriate counselling service. Counselling is available through Beyond Blue: (07) 5422 4277, Black Dog Institute: 1300 78 99 78 or Lifeline: 131 114.

Taking part in this study is completely voluntary and you can stop taking part in the study at any time without explanation or prejudice. You may also withdraw any unprocessed data from the study. The data from the project will contribute towards the PhD thesis and may be published in the peer-reviewed psychology journals or other research publications. You will not be identified in any way in these publications. Your responses and contact details will be completely anonymous.

Informed consent is implied if you choose the 'I consent, begin the study' option and click 'Next' button to begin the survey. If you do not wish to proceed, simply close the tab or the internet browser.

If you know of others that might be interested in this study, please kindly share the link with them. It would be greatly appreciated

If you have any questions about the study, please contact – Dr Jasleen Chhabra, College of Healthcare Sciences, James Cook University, Townsville QLD, 4811.

Principal Investigator:

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If you have any concerns regarding the ethical conduct of the study, please contact:
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Appendix C: MMAT Criteria (Pace et al., 2012)

Types of mixed methods study components or primary studies	Methodological quality criteria (see tutorial for definitions and examples)	Responses			
		Yes	No	Can't tell	Comments
Screening questions (for all types)	Are there clear qualitative and quantitative research questions (or objectives*), or a clear mixed methods question (or objective*)?				
	Do the collected data allow address the research question (objective)? E.g., consider whether the follow-up period is long enough for the outcome to occur (for longitudinal studies or study components).				
	Further appraisal may be not feasible or appropriate when the answer is 'No' or 'Can't tell' to one or both screening questions.				
1. Qualitative	1.1. Are the sources of qualitative data (archives, documents, informants, observations) relevant to address the research question (objective)?				
	1.2. Is the process for analyzing qualitative data relevant to address the research question (objective)?				
	1.3. Is appropriate consideration given to how findings relate to the context, e.g., the setting, in which the data were collected?				
	1.4. Is appropriate consideration given to how findings relate to researchers' influence, e.g., through their interactions with participants?				
2. Quantitative randomized controlled (trials)	2.1. Is there a clear description of the randomization (or an appropriate sequence generation)?				
	2.2. Is there a clear description of the allocation concealment (or blinding when applicable)?				
	2.3. Are there complete outcome data (80% or above)?				
	2.4. Is there low withdrawal/drop-out (below 20%)?				
3. Quantitative non- randomized	3.1. Are participants (organizations) recruited in a way that minimizes selection bias?				
	3.2. Are measurements appropriate (clear origin, or validity known, or standard instrument; and absence of contamination between groups when appropriate) regarding the exposure/intervention and outcomes?				
	3.3. In the groups being compared (exposed vs. non-exposed; with intervention vs. without; cases vs. controls), are the participants comparable, or do researchers take into account (control for) the difference between these groups?				
	3.4. Are there complete outcome data (80% or above), and, when applicable, an acceptable response rate (60% or above), or an acceptable follow-up rate for cohort studies (depending on the duration of follow-up)?				
4. Quantitative descriptive	4.1. Is the sampling strategy relevant to address the quantitative research question (quantitative aspect of the mixed methods question)?				
	4.2. Is the sample representative of the population understudy?				
	4.3. Are measurements appropriate (clear origin, or validity known, or standard instrument)?				
	4.4. Is there an acceptable response rate (60% or above)?				
5. Mixed methods	5.1. Is the mixed methods research design relevant to address the qualitative and quantitative research questions (or objectives), or the qualitative and quantitative aspects of the mixed methods question (or objective)?				
	5.2. Is the integration of qualitative and quantitative data (or results*) relevant to address the research question (objective)?				
	5.3. Is appropriate consideration given to the limitations associated with this integration, e.g., the divergence of qualitative and quantitative data (or results*) in a triangulation design?				
	Criteria for the qualitative component (1.1 to 1.4), and appropriate criteria for the quantitative component (2.1 to 2.4, or 3.1 to 3.4, or 4.1 to 4.4), must be also applied.				

*These two items are not considered as double-barreled items since in mixed methods research, (1) there may be research questions (quantitative research) or research objectives (qualitative research), and (2) data may be integrated, and/or qualitative findings and quantitative results can be integrated.

Appendix D: Masculine Gender Role Stress Scale (Eisler & Skidmore, 1987)

Please select one of the options for each item below:

Item	Not Stressful	Minimally Stressful	Somewhat Stressful	Moderately Stressful	Very Stressful	Extremely Stressful
1. Feeling that you are not in a good position						
2. Telling your spouse that you love her/him						
3. Being outperformed at work by a woman						
4. Having to ask for directions when you are lost						
5. Being unemployed						
6. Not being able to find a sexual partner						
7. Having a female boss						
8. Having your lover say that he/she is not satisfied						
9. Letting a woman take control of the situation						
10. Not making enough money						

11. Being perceived by someone as 'gay'
12. Telling someone that you feel hurt by what they said
13. Being married to someone who makes more money than you
14. Working with people who are more ambitious than you
15. Finding you lack occupational skills to succeed
16. Losing in a sports competition
17. Admitting that you are afraid of something
18. Being with a woman who is more successful than you
19. Talking with a 'feminist'
20. Being unable to perform sexually
21. Being perceived as having feminine traits
22. Having your children see you cry

23. Being outperformed in a game by a woman

24. Having people say that you are indecisive

25. Being too tired for sex when your lover initiates it

26. Appearing less athletic than a friend

27. Talking with a woman who is crying

28. Needing your spouse to work to help support the family.

29. Having others say that you are too emotional

30. Being unable to become sexually aroused when you want

31. Being compared unfavourably to men

32. Comforting a male friend who is upset

33. Admitting to your friends that you do housework

34. Working with people who are brighter than yourself

35. Getting passed over for a promotion

36. Knowing you cannot hold your
liquor as well as others

37. Having a man put his arm around
your shoulder

38. Being with a woman who is much
taller than you

39. Staying home during the day with a
sick child

40. Getting fired from your job

Appendix E: Edinburgh Postnatal Depression Scale (Cox et al., 1987)

Edinburgh Postnatal Depression Scale (EPDS)



Cox JL, Holden JM, Sagovsky R (1987) Detection of postnatal depression: development of the 10-item Edinburgh postnatal depression scale. *Brit J Psychiatry* 150 782-86. Reproduced with permission.

Name: _____ Date: _____

We would like to know how you have been feeling in the past week. Please indicate which of the following comes closest to how you have been feeling over the past seven days, not just how you feel today. Please tick one circle for each question that comes closest to how you have felt in the **last seven days**.

Here is an example already completed.

I have felt happy:

- Yes, all of the time
 Yes, most of the time
 No, not very often
 No, not at all

This would mean: 'I have felt happy most of the time during the past week'.

Please complete the other questions in the same way.

1. I have been able to laugh and see the funny side of things

- As much as I always could
 Not quite so much now
 Definitely not so much now
 Not at all

2. I have looked forward with enjoyment to things

- As much as I ever did
 Rather less than I used to
 Definitely less than I used to
 Hardly at all

3. I have blamed myself unnecessarily when things went wrong

- Yes, most of the time
 Yes, some of the time
 Not very often
 No, never

4. I have been anxious or worried for no good reason

- No, not at all
 Hardly ever
 Yes, sometimes
 Yes, very often

5. I have felt scared or panicky for no very good reason

- Yes, quite a lot
 Yes, sometimes
 No, not much
 No, not at all

6. Things have been getting on top of me

- Yes, most of the time I haven't been able to cope at all
 Yes, sometimes I haven't been coping as well as usual
 No, most of the time I have coped quite well
 No, I have been coping as well as ever

7. I have been so unhappy that I have had difficulty sleeping

- Yes, most of the time
 Yes, sometimes
 Not very often
 No, not at all

8. I have felt sad or miserable

- Yes, most of the time
 Yes, quite often
 Not very often
 No, not at all

9. I have been so unhappy that I have been crying

- Yes, most of the time
 Yes, quite often
 Only occasionally
 No, never

10. The thought of harming myself has occurred to me

- Yes, quite often
 Sometimes
 Hardly ever
 Never

Appendix F: Semi-structured Interview guide**INTERVIEW GUIDE**

Participant ID: _____

Community Location: _____

Date of the Interview: ____/____/____

Interview Mode:

 In Person Over the Phone

Key Informants' Gender:

 Male FemaleThe interview opens with:

Hello, my name is XXX. I will be interviewing you today. The purpose of this interview is to understand the impact of pregnancy and childbirth on the well-being of fathers. I will be audio recording this interview, which will be de-identified and remain anonymous. Taking part in this study is voluntary and you can stop at any time without explanation or prejudice. Do you consent to participate in this interview?

After consent is given, proceed to ask some demographic questions.

Thank you for consenting to participate in this interview!

Before we start, I would like to know a bit about you.

Part 1 – Demographic Questions

Tell me a little about yourself:

1. Could you please tell me your age?
2. How long have you lived in this region/ community?
3. What is your highest education qualification?
 - High School
 - Undergraduate degree
 - Postgraduate degree
4. What is your current employment status?
 - Working Full-time
 - Working Part time
 - Unemployed
5. What is your current relationship status?

- Single
- Married
- De facto
- Divorced

If married, number of years of marriage?

6. Ethnicity

7. Do you have any previous children? If yes, how many?

8. How far along is your current pregnancy? / How old is your infant?

Previous Medical History

1. Do you have any current medical conditions? (*such as diabetes, high blood pressure, etc*)

2. Have you ever been admitted to the hospital?

3a. Do you or any of you family member have a history of mental health problem?

3b. Does your partner has a prior history of mental health problem?

4. If so, are you or your partner on any medication for the treatment of the disorder?

Thank you very much for answering these questions.

Now I will ask you a few questions relating to your own experience as a new father

Part 2 – Participants' views on their mental health

1. Tell me a little about your family life.

2. Describe your feelings when you got to know about your partner's pregnancy?

(Prompt questions – please explain/ elaborate, did you feel happy, anxious etc)

If anxious, what was the reason for your anxiety? Were there any specific factors which caused you anxiety?

3. How was your experience during the pregnancy period? Tell me some of the stories. *Prompt- elaborate, explain*

4. Did you attend childbirth? If yes, how was your experience? (*Prompt – explain, elaborate*)

5. Describe your feelings when you saw your baby for the first time?

6. Compared to when your baby was born to now, have there been any changes in your feelings? *Prompt – explain, elaborate*. If yes, what are these changes?

7a. What was your partner's reaction to pregnancy and childbirth?

7b. What was your reaction to your partner's reaction?

7c. Did that reaction influence your reaction in any way? *Please explain or elaborate*

8. Was the experience of pregnancy and/or childbirth was similar to your expectations? Please elaborate or explain why or why not the experience was similar to your expectations.

9. How are you and your partner doing during/after pregnancy/childbirth?

Part 3 – Participants Coping Strategies

1. Do you think there have been changes to your personal life/lifestyle since the pregnancy or childbirth? If yes, what are these changes? OR What has been your day like since you brought your baby home?

2. How are you managing these changes? (*Talk about each change or factor the participant has mentioned*)

Example – Yes, lifestyle changes can be seen such as going out socially has decreased significantly. Prompt question – How are you adapting to these changes? Are you doing anything which in some way may compensate these changes? Please elaborate or explain.

3. Tell me about your relationship with your partner since pregnancy and/or childbirth. Were there any changes? *Please explain or elaborate* –How are you coping with these changes? *Please explain or elaborate*

4. Has there been an occasion where you would like to/ wanted to talk to someone? What did you want to talk about?

5. How has your sleeping pattern been? How was your mood the next day? Did you do anything which helped improve your mood?

6. Was this pregnancy planned? If yes, what steps did you take prior to becoming pregnant. If no, how are you coping with the changes? What changes did you have to make to factor in an unplanned pregnancy?

7. Did you attend prenatal classes? Was it helpful? How was it helpful?

8. What are the expectation from your culture about being a new father? Are these expectations affecting your view or your personal experiences of fatherhood? *Please elaborate or explain.*

9. Thinking back, do you think you had sufficient preparation for pregnancy and/or childbirth? Tell me more about that.

10. Is there anything you think new fathers should be aware of when they are transitioning into fatherhood during the pregnancy and/or childbirth period?

Plan of the Second Interview

Thank you so much for your insight into your mental health during pregnancy and /or childbirth period. We will analyse the information we have collected today and will prepare for second interview. In the second interview we want to explore if there have been any changes in your mood or the factors you have mentioned this time as your pregnancy and/or childbirth has progressed. Do you have any questions you ask us regarding this interview or the research project?

Appendix G: Hierarchical Regression Analysis for variables predicting EPDS

Table 5.5: Summary of hierarchical regression analysis for variables predicting EPDS (Continued from Chapter 5)

Model	Variable	Unstandardised Coefficients		Standardised Coefficients	R ²	ΔR ²
		<i>B</i>	<i>SEB</i>	<i>β</i>		
1	(Constant)	8.43	2.95**			
	Age					
	18-25 years	4.48	1.12	.25***		
	26-35 years	4.01	.86	.30***		
	36-45 years	3.11	.94	.20**		
	46-55 years	3.10	1.26	.12**		
	Marital Status					
	Single	2.57	2.88	.18		
	De Facto	1.17	2.92	.06		

	Married	1.87	2.85	.14		
	Divorced	5.61	3.08	.18		
	Income					
	\$0-\$18,200	-1.90	1.06	-.11		
	\$18,201-\$37,000	-.87	1.05	-.05		
	\$37,001-\$80,000	-2.56	.89	-.18**		
	\$80,000-\$120,000	-2.47	.97	-.14*	.083	.083
2	(Constant)	8.10	2.87**			
	Age					
	18-25 years	3.65	1.10	.20**		
	26-35 years	2.86	.87	.21**		
	36-45 years	2.20	.94	.14*		
	46-55 years	2.81	1.23	.10*		

	Marital Status				
	Single	2.59	2.81	.18	
	De Facto	1.13	2.84	.06	
	Married	1.56	2.78	.12	
	Divorced	5.18	3.00	.17	
	Income				
	\$0-\$18,200	-1.32	1.03	-.07	
	\$18,201-\$37,000	-.85	1.02	-.05	
	\$37,001-\$80,000	-2.23	.87	-.16*	
	\$80,000-\$120,000	-2.43	.95	-.14*	
	Maternal Depression	3.14	.58	.23***	.132 .049
3	(Constant)	13.21	3.11***		
	Age				

18-25 years	3.78	1.09	.21***
26-35 years	2.80	.86	.21**
36-45 years	2.11	.93	.14*
46-55 years	2.47	1.22	.10*
Marital Status			
Single	1.43	2.80	.10
De Facto	.40	2.81	.02
Married	.77	2.75	.06
Divorced	3.40	2.99	.11
Income			
\$0-\$18,200	-2.02	1.03	-.12
\$18,201-\$37,000	-1.44	1.02	-.09
\$37,001-\$80,000	-2.70	.88	-.19**

	\$80,000-\$120,000	-2.91	.94	-.17**		
	Maternal Depression	3.23	.58	.24***		
	DAS-7	-.17	.04	-.17***	.159	.027
4	(Constant)	8.18	2.63**			
	Age					
	18-25 years	1.35	.93	.07		
	26-35 years	.69	.73	.05		
	36-45 years	.63	.78	.04		
	46-55 years	1.06	1.03	.04		
	Marital Status					
	Single	1.84	2.34	.12		
	De Facto	1.89	2.36	.10		
	Married	1.11	2.31	.08		

	Divorced	1.95	2.51	.06		
	Income					
	\$0-\$18,200	.41	.88	.02		
	\$18,201-\$37,000	.62	.86	.03		
	\$37,001-\$80,000	-.60	.74	-.04		
	\$80,000-\$120,000	-.86	.80	-.05		
	Maternal Depression	1.71	.49	.12***		
	DAS-7	-.19	.03	-.19***		
	MGRS	.07	.01	.54***	.406	.248
5	(Constant)	7.11	2.61**			
	Age					
	18-25 years	.89	.91	.05		
	26-35 years	.25	.73	.01		

36-45 years	.08	.77	.00
46-55 years	.77	1.01	.03
Marital Status			
Single	1.21	2.29	.08
De Facto	1.35	2.32	.07
Married	.80	2.27	.06
Divorced	1.43	2.47	.04
Income			
\$0-\$18,200	.49	.87	.02
\$18,201-\$37,000	.62	.84	.03
\$37,001-\$80,000	-.52	.73	-.03
\$80,000-\$120,000	-.74	.79	-.04
Maternal Depression	1.52	.48	.11**

	DAS-7	-.18	.03	-.18***		
	MGRS	.06	.01	.45***		
	WFC	-.04	.05	-.05		
	FWC	.19	.05	.24***	.434	.028
6	(Constant)	6.25	2.39**			
	Age					
	18-25 years	.07	.84	.00		
	26-35 years	.32	.66	.02		
	36-45 years	.01	.71	.75		
	46-55 years	.69	.92	.02		
	Marital Status					
	Single	1.24	2.10	.08		
	De Facto	1.64	2.12	.09		

Married	.92	2.08	.07		
Divorced	1.63	2.26	.05		
Income					
\$0-\$18,200	.44	.79	.02		
\$18,201-\$37,000	.65	.77	.03		
\$37,001-\$80,000	-.29	.67	-.02		
\$80,000-\$120,000	-.87	.72	-.05		
Maternal Depression	.80	.45	.06		
DAS-7	-.14	.03	-.14***		
MGRS	.03	.01	.26**		
WFC	-.05	.04	-.06		
FWC	.09	.04	.11		
GSAQ	.39	.04	.44***	.526	.092

Note: Age, marital status and income were represented as dummy variables with age>55 years, Widowed, and >\$120,000 serving as reference groups, respectively. SEB = Standard Error of B; EPDS – Edinburgh Postnatal Depression Scale; MGRS – Masculine Gender Role Stress; DAS-7 – Dyadic Adjustment Scale; WFC – Work-Family Conflict; FWC – Family Work Conflict; GSAQ – Global Sleep Assessment Questionnaire.

* $p < .05$, ** $p < .01$, *** $p < .001$.

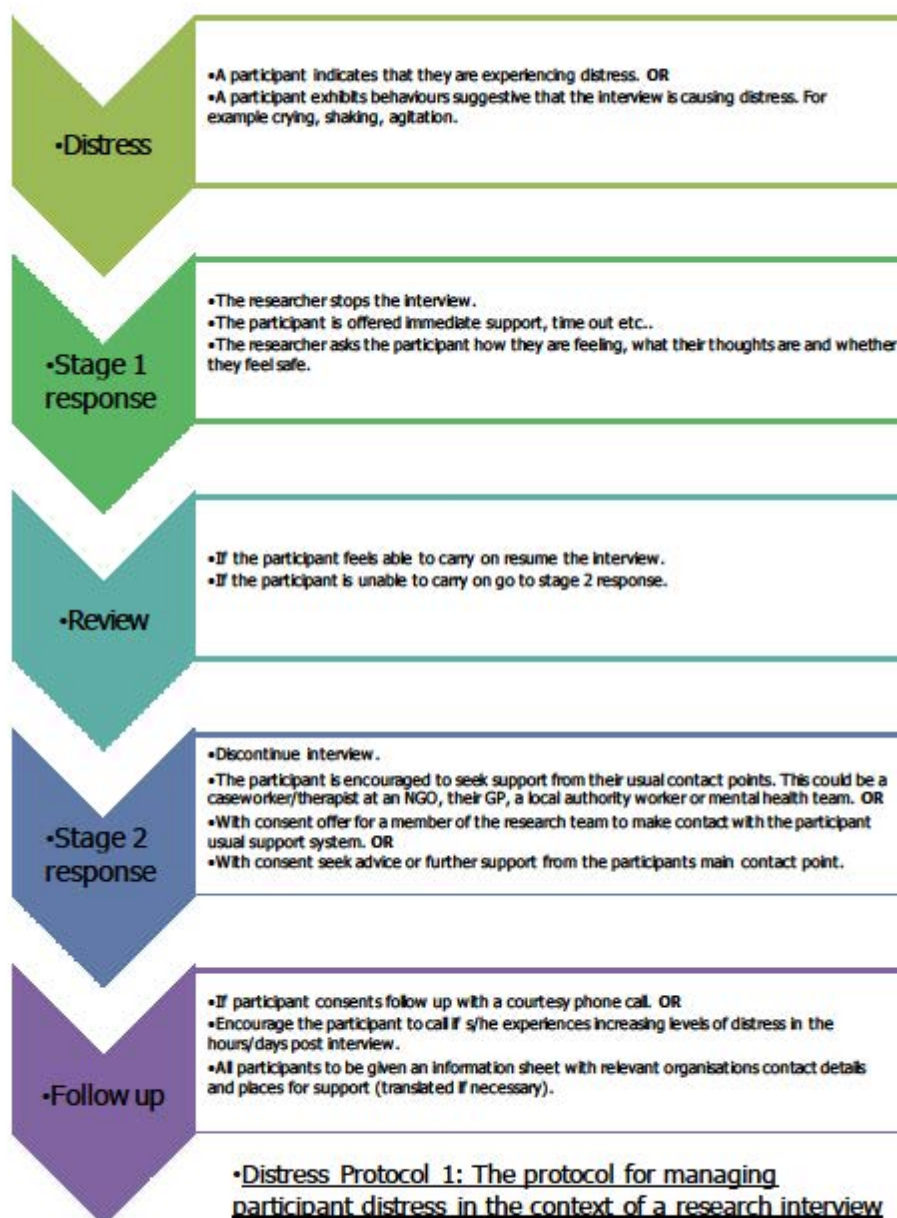
Appendix H: Distress Protocol

Distress Protocol 1: The protocol of managing participants in the context of a research interview

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Distress Protocol 2: The protocol for managing distress in the context of research interview management

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