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

Jasleen Chhabra[1] , **Wendy Li[1], and Brett McDermott[2]**

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 mental distress of fathers in the perinatal period measured by Edinburgh postnatal depression scale. 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 role may affect 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, mix methods

Received September 24, 2021; revised January 22, 2022; accepted January 24, 2022

Introduction

Perinatal period, the period from first trimester of the pregnancy up to 1 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 in 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). 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% 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 being 2.4–12% (Tohotoa et al., 2012), 10% (Figueiredo & Conde, 2011), and 2–3.5% (Koh et al., 2015), respectively.

[1]Department of Psychology, College of Healthcare Sciences, James Cook University, Townsville, Queensland, Australia
[2]Department of Medicine, College of Medicine and Dentistry, James Cook University, Townsville, Queensland, Australia

Corresponding Author:
Dr Jasleen Chhabra, Department of Psychology, College of Healthcare Sciences, James Cook University, 1 James Cook Drive, Townsville, Queensland 4811, Australia.
Email: Jasleen.chhabra@my.jcu.edu.au

Paternal perinatal anxiety and depression have 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 affect 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 behavioral 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 family, and the health care 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 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 6 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 (Ansari et al., 2021; Goodman, 2004) 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 mother's mental distress in the perinatal period is not only just a correlate of but also a factor in the etiology 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 anxiety/depression for fathers if they are unfamiliar with the tasks of child care and cannot cope with the associated stress (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 activator of marital distress (Coyne & Benazon, 2001). Maternal depression may also contribute to marital distress. If the mother is depressed, she may be noncommunicative and the father may experience difficulties communicating their needs and experiences (Wang et al., 2021). Also, mothers are the first source of social support to the fathers (Bronte-Tinkew et al., 2007) and unable to receive this support may affect 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 reported 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 fathers due to 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 socio-economic 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 externalizing 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 display behaviors, which 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 practices that reward masculine attitudes and behaviors (e.g., breadwinner, hard worker) while punishing nonmasculine attitudes and

behaviors (e.g., care taking) result in the development of masculine gender role cognitive schemas in the majority of men (Arrindell, 2005). Rigid masculine gender socialization and strong adherence to traditional masculine gender norms may also result in 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 vulnerability of men to depression and anxiety (Arrindell, 2005; Paredes & Parchment, 2021). The impact of MGRS on mental health of fathers has also been noticed with research suggesting the risk of perinatal depression and anxiety increasing 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 few studies have explored the role of masculinity and MGRS as a risk factor for mental distress in fathers during the perinatal period.

Similarly, work–family conflict that is the conflict due to incompatible demands from works, 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 toward 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 to 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 richness of data, augmenting interpretation and usefulness of findings (Creswell & Plano Clark, 2018; Johnson et al., 2007; Ramprogus, 2005). The current study integrated qualitative and quantitative phase 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 for 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 and anxiety 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 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 to discuss 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. W. Li, 2013). All interviews were digitally audio-recorded, with the interviews lasting between 45 and 60 min. 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, Queensland.

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, research team's network, and social media sites such as Facebook and Twitter. Second, Online-Access-Panel-based survey was distributed through Qualtrics platform (Callegarol 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 have similar psychometric properties and produced criterion validities similar to conventionally sourced data (Behrend et al., 2011; 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 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, 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 Depression and Anxiety. Paternal perinatal depression and anxiety were assessed using the 10-item Edinburgh postnatal depression scale (EPDS; Cox et al., 1987). EPDS is scored on a four-point (0–3) Likert-type scale from 0 (*yes, most of the time)* to 3 (*no, never*) and consists of items such as "I have blamed myself unnecessarily when thing 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, 2003, 2020). A cut-off score of 10 and more has been suggested to screen for depression in Australian fathers. Although a cut-off score of 4 from Items 3, 4, and 5 on EPDS (EPDS 3-A) 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, 2007; Matthey et al., 2003). 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, the Cronbach's alpha was .87.

Maternal Depression. Maternal depression was measured by 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-type scale with responses ranging from 0 (*always disagree*) to 5 (*always agree*), with lower scores indicating marital distress. Items 4–6 measure the frequency of an event between couples on a six-point Likert-type 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-type 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, the Cronbach's alpha was .83, which is similar to .82 obtained by Hunsley et al. (2001).

Masculine Gender Role Stress. MGRS was measured using 40-item MGRS scale (Eisler & Skidmore, 1987). MGRS is scored on a six-point Likert-type 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 unfavorably to other men" and "getting fired from your job." The scale shows high level of reliability with Cronbach's alpha being .93 (Swartout et al., 2015). In the current study, the 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-type 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. Global sleep assessment questionnaire (GSAQ; Roth et al., 2002) is an 11-item self-report scale used to assess sleep disturbances in general population. The scale is a four-point Likert-type 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 over 12 months. Using Mahalanobis distance figures (using criterion $\alpha = .001$, critical $\chi^2 = 27.75$; Tabachnick & Fiddel, 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 normality of the scales. Results showed that while Kolmogorov–Smrinov test of all scales were 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 second and third authors. A narrative thematic analysis was employed to analyze the data following five steps (Cao et al., 2020; W. W. Li et al., 2014) and NVivo (*version 11*) was used to organize 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 primary author getting familiarized 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, family–work conflict, and sleep disturbances).

Results

Participants' Characteristics

The participant characteristics for qualitative phase are presented in Table 1. The participants have been referred

Table 1. Father Characteristics (N = 13)—Study 1.

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

using a pseudonym throughout the "Results" section and Table 1. The participant characteristics for the quantitative phase are presented in Table 2.

Qualitative Phase

Findings and Interpretation. All participants in the current study expressed excitement in welcoming their new family member, particularly the first-time fathers (*N* = 11). They also expressed worries and anxiety in 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 sleep disturbances, unplanned pregnancy, work–family conflict, MGRS, marital distress, and maternal depression. The themes (risk factors) were organized according to their frequency.

Sleep Disturbance. Ten participants expressed that sleep disturbances caused them mental distress during the perinatal period. For instance, Dave stated that, "You are not prepared how often you have to get up. . .to feed the baby or change the baby. In 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 reported 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 results 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 make me feel guilty.

Sleep disturbance often results in tiredness and fatigue, which is likely to disrupt day-to-day parent–child interactions and have adversely impact the father's well-being (Goodman, 2004). For instance, Phil felt guilty about lack of interaction with his baby. Lack of interaction between the father and the infant may also affect the bonding between them and negatively impact the behavioral, 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 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, the financial stress is likely to be higher in individuals who are unemployed and/or belong to 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,

Table 2. Father Characteristics (N = 525)—Study 2.

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

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 are 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; Nilson 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 fulfill this role may lead to MGRS in some men through their perceptions of not meeting the expectations of the 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 was being challenged (caregiving vs. breadwinner) leading him to experiences MGRS.

Marital Distress. Five participants experienced difficulties in their marital relationship during the perinatal period. For instance, Mark expressed that, "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 so as to not say anything which will upset her."

Mark excerpt suggests that transition to parenthood comes with changes in marital relationship. As partners adjust with the addition of new being in their dyadic relationship, it is possible that partners are unable to spend

Table 3. Intercorrelations.

Variable	1	2	3	4	5	6	7ª	M	SD	Theoretical range
EPDS	1	.57**	−.16**	38**	.48**	.67**	.26**	11.97	6.46	0–30
MGRS		1	.08	.49**	.54**	.64**	.28**	72.53	47.80	0–200
DAS-7			1	.12**	.02	−.04	.08	31.62	6.47	0–36
WFC				1	.82**	.51**	.25**	18.95	7.60	5–35
FWC					1	.58**	.24**	17.71	7.93	5–35
GSAQ						1	.30**	10.48	7.25	0–45
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; GSAQ = global sleep assessment qMatuestionnaire; .Dep = maternal depression.
ªPoint–biserial correlations with no = 0 and yes = 1.
**$p < .001$ (two-tailed).

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 child care activities, which can result in fathers taking extra responsibilities for infant care and partner support (Olatunde & Lasebikan, 2019; 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

Table 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).

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 3 presents the 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 significant positive correlation with EPDS, MGRS, marital distress, family–work conflict, and sleep disturbance. Both family–work conflict and sleep disturbance showed positive significant association with EPDS, MGRS, and work–family conflict. The point–biserial correlations between EPDS and maternal depression showed significant positive association.

Prevalence of depression, anxiety, and mental distress was estimated and presented in Table 4. The analysis indicated that more than half (63.6%) of the participants

Table 5. Summary of Hierarchical Regression Analysis for Variables Predicting EPDS.

Model	Variable	Unstandardised coefficients		Standardized coefficients	R^2	ΔR^2
		B	SEB	β		
I	(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					
	AU $0–$18,200	.44	.79	.02		
	AU $18,201–$37,000	.65	.77	.03		
	AU $37,001–$80,000	−.29	.67	−.02		
	AU $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 >AU $120,000 serving as reference groups, respectively. SEB = Standard Error of B; EPDS = Edinburgh postnatal depression scale; DAS-7 = Dyadic adjustment scale; MGRS = Masculine gender role stress; WFC = Work–family conflict; FWC = Family–work conflict; GSAQ = Global sleep assessment questionnaire.
*$p < .05$. **$p < .01$. ***$p < .001$.

had screened for depression. Similarly, a large proportion of the sample screened for anxiety (72%) and mental distress (81.9%).

Hierarchical Multiple Regression

Table 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 to 15.9% of variation in EPDS, $F (1, 510) = 16.155$, $p=.000$. DAS-7 accounted for 2.7% variation in EPDS. MGRS was

entered at step 4 of the model. The model remained significant, explaining 40.6% of variation in EPDS, $F (1, 509) = 212.169$, $p=.000$. MGRS was accounted for 24.8% variation in EPDS. At 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 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 nonsignificant 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 was accounted for 9.2% variation in EPDS. The results from this quantitative inquiry are similar to that of qualitative phase and indicate that maternal depression, marital distress, MGRS, family-work conflict, and sleep disturbances are significant risk factors for paternal perinatal mental distress. Moreover, these results indicate MGRS as the strongest predictor of perinatal distress in fathers followed by sleep disturbances.

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 being the greatest predictor for paternal perinatal depression and anxiety. Rigid adherence to traditional masculine gender roles and role conflict has been reported 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 an egalitarian fatherhood and, hence, 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 (Mayers & Baldwin, 2006; Saxbe et al., 2016). Low quality of sleep and fatigue in fathers has also been linked with postpartum depression (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 affect their day-to-day interactions with their family (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 (Goodman, 2004). When 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 recognize the signs and symptoms of maternal depression has been documented in the literature (Henshaw et al., 2016; Letourneau et al., 2011). 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 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). Decline in spousal relationship also means decline in social support from spouse, which may be detrimental for fathers' mental health as often their primary social support is their partner or spouse (Garfield & Isacco, 2009). This decline in 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 child care 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 for 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 in 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 reduction of 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 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 increase in expenses (Chhabra et al., 2020). The financial stress due to unpreparedness is likely to be experienced by fathers who are from low socio-economic group 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 the unplanned pregnancy due to their perception of not meeting the expectations of other males (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 to 46% 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 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 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, 2003, 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 level of work demands, higher living costs, increased house pricing, etc., may contribute to higher level of challenges to 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 loss of 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 role (e.g., breadwinner). The high prevalence levels of depression, mental distress and anxiety suggest that the cut-off scores for father 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 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 for 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' response 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 interpretating 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. Third, the participants for quantitative phase of this study were recruited online. As this was an anonymous survey, it provides limited opportunity to collect detailed information about the participants, making it difficult to know how generalizable the findings are. Last, the current study is a cross-sectional study, which 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 perinatal period. The study should be replicated in future to determine whether these findings are generalizable 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 factor such as maternal depression, marital distress, unplanned pregnancy with mothers during the perinatal period. Although work–family conflict has been identified as a risk factor for maternal perinatal mental distress, in fathers it has shown to affect their mental distress due to underlying gendered context. MGRS a unique risk factor to men during 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 counseling (Chuick et al., 2009). 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.

Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

ORCID iD

Jasleen Chhabra (iD) https://orcid.org/0000-0002-2814-7114

References

Addis, M. E. (2008). Gender and depression in men. *Clinical Psychology: Science and Practice*, *15*, 153–168. https://doi.org/10.1111/j.1468-2850.2008.00125.x

Allen, A. L., Manning, W. D., Longmore, M. A., & Giordano, P. C. (2019). Young adult parents' work-family conflict: The roles of parenting stress and parental conflict. *Transitions into Parenthood: Examining the Complexities of Childrearing (Contemporary Perspectives in Family Research)*, *15*, 1–16.

Alyami, H. S., Naser, A. Y., Dahmesh, E. Z., Alyami, M. H., & Alyami, M. S. (2021). Depression and anxiety during the COVID-19 pandemic in Saudi Arabia: A cross-sectional study. *The International Journal of Clinical Practice*, *75*(7), Article e14244.

American Psychological Association. (2018). *Diagnostic and statistical manual of mental disorders: DSM-5* (5th ed.). American Psychological Association.

Ansari, N. S., Shah, J., Denni, C.-L., & Shah, P. S. (2021). Risk factors for postpartum depressive symptoms among fathers: A systematic review and meta-analysis. *Acta Obstetricia et Gynercologica Scandinavica*, *100*(7), 1186–1199.

Arrindell, W. A. (2005). Masculine gender role stress. *Psychiatric Times*, *22*(11), 31–32.

Behrend, T. S., Sharek, D. J., Meade, A. W., & Wiebe, E. N. (2011). The viability of crowdsourcing for survey research. *Behavior Research Methods*, *43*, 800–813. https://doi.org/10.3758/s13428-011-0081-0

Bergström, M. (2013). Depressive symptoms in new first-time fathers: Associations with age, sociodemographic characteristics, and antenatal psychological well-being. *Birth*, *40*, 32–38.

Blom, A. G., Bosnjak, M., Cornilleau, A., & Krieger, U. (2015). A comparison of four probability-based online and mixed-mode panels in Europe. *Social Science Computer Review*, *34*(1), 8–25. https://doi.org/10.1177/0894439315574825

Bocchicchio, A. M. (2007). Fathers in the workplace: The use of EAP core technology functions in assisting fathers with work/family balance. *Journal of Workplace Behavioural Health*, *22*(1), 89–102.

Bronte-Tinkew, J., Moore, K. A., Matthews, G., & Carrano, J. (2007). Symptoms of major depression in a sample of fathers of infants. *Journal of Family Issues*, *28*, 61–99. https://doi.org/10.1177/0192513X06293609

Bryman, A. (2006). Integrating quantitative and qualitative research: How is it done? *Qualitative Research*, *6*(1), 97–113.

Buist, A., Morse, C. A., & Durkin, S. (2003). Men's adjustment to fatherhood: Implications for obstetric health care. *Journal of Obstetric, Gynecologic, and Neonatal Nursing*, *32*, 172–180. https://doi.org/10.1177/0884217503252127

Burke, L. (2003). The impact of maternal depression in familial relationships. *International Review of Psychiatry*, *15*, 243–255.

Callegaro, M., Villar, A., Yeager, D. S., & Kronsick, J. A. (2014). A critical review of studies investigating the quality of data obtained with online panels based on probability and nonprobability samples. In M. Callegaro, R. Baker, J. Bethlehem, A. Goritz, J. Krosnick, & P. Lavrakas (Eds.), *Online panel research: A data quality perspective* (pp. 23–53). Wiley.

Cao, Y., Li, W., & Xue, Y. (2020). Dying and relational aftermath concerns among terminal cancer patients in China. *Death Studies*, *44*(9), 586–595.

Centre of Perinatal Excellence. (2017). *National perinatal mental health guideline.* https://www.cope.org.au/health-professionals/health-professionals-3/review-of-new-perinatal-mental-health-guidelines/

Chhabra, J., McDermott, B., & Li, W. (2020). Risk factors for paternal perinatal depression and anxiety: A systematic review and meta-analysis. *Psychology of Men and Masculinities*, *21*(4), 593–611.

Chuick, C. D., Greenfeld, J. M., Greenberg, S. T., Shepard, S. J., Cochran, S. V., & Haley, J. T. (2009). A qualitative investigation of depression in men. *Psychology of Men & Masculinity*, *10*, 302–313.

Connell, R. W. (2005). *Masculinities* (2nd ed.). University of California Press.

Cox, J., & Holden, J. M. (2003). *Perinatal mental health: A guide to the Edinburgh Postnatal Depression Scale (EPDS)*. Royal College of Psychiatrists.

Cox, J., Holden, J. M., & Sagovski, R. (1987). Edinburgh Postnatal Depression Scale. *British Journal of Psychiatry*, *151*(865), 782–786.

Coyne, J. C., & Benazon, N. R. (2001). Not agent blue: Effects of marital functioning on depression and implications for treatment. In S. R. H. Beach (Ed.), *Marital and family processes in depression* (pp. 25–43). American Psychological Association.

Creswell, J. W., & Plano Clark, V. L. (2018). *Designing and conducting mixed methods research* (3rd ed.). SAGE.

Da Costa, D., Danieli, C., Abrahamowicz, M., Dasgupta, K., Sewitch, M., Lowensteyn, I., & Zelkowitz, P. (2019). A prospective study of postnatal depressive symptoms and associated risk factors in first-time fathers. *Journal of Affective Disorders*, *249*, 371–377. https://doi.org/10.1016/j.jad.2019.02.033

Darwiche, J., Favez, N., Aimonelli, A., Antonietti, J.-P., & Frascarolo, F. (2015). Prenatal coparenting alliance and marital satisfaction when pregnancy occurs after assisted reproductive technologies or spontaneously. *Family Relations*, *64*(4), 534–546.

Davis, R. N., Davis, M. M., Freed, G. L., & Clark, S. J. (2011). Fathers' depression related to positive and negative parenting behaviours with 1-year old children. *Pediatrics*, *127*(4), 612–618.

Denzin, N. K. (1978). *The research act: A theoretical introduction to sociological methods*. Praeger.

Edmondson, O. J. H., Psychogiou, L., Vlachos, H., Netsi, E., & Ramchandani, P. G. (2010). Depression in fathers in the postnatal period: Assessment of the Edinburgh postnatal depression scale as a screening measure. *Journal of Affective Disorders*, *125*(1–3), 365–368.

Edoka, I. P., Petrou, S., & Ramchandani, P. G. (2011). Healthcare costs of paternal depression in the postnatal period. *Journal of Affective Disorders*, *133*, 356–360. https://doi.org/10.1016/j.jad.2011.04.005

Eisler, R. M., & Blalock, J. A. (1991). Masculine gender role stress: Implications for the assessment of men. *Clinical Psychology Review*, *11*(1), 45–60.

Eisler, R. M., & Skidmore, J. R. (1987). Masculine gender role stress. Scale development and component factors in the appraisal of stressful situations. *Behavioural Modification*, *11*, 123–136. https://doi.org/10.1177/01454455870112001

ESOMAR. (2019). *28 questions to help buyers of online samples*. ESOMAR.

Figueiredo, B., & Conde, A. (2011). Anxiety and depression in women and men from early pregnancy to 3-months postpartum. *Archives of Women's Mental Health*, *14*, 247–255. https://doi.org/10.1007/s00737-011-0217-3

Fisher, J., Tran, T. D., Nguyen, T. T., & Tran, T. (2012). Common perinatal mental disorders and alcohol dependence in men in northern Vietnam. *Journal of Affective Disorders*, *140*, 97–101. https://doi.org/10.1016/j.jad.2012.03.029

Gao, L. L., Chan, S. W., & Mao, Q. (2009). Depression, perceived stress, and social support among first-time Chinese mothers and fathers in the postpartum period. *Research in Nursing and Health*, *32*, 50–58. https://doi.org/10.1002/nur.20306

Garfield, C. F., & Isacco, A. (2009). Urban fathers' role in maternal postpartum mental health. *Fatehring*, *7*(3), 286–302.

Gawlik, S., Müller, M., Hoffmann, L., Dienes, A., Wallwiener, M., Sohn, C., Schlehe, B., & Reck, C. (2014). Prevalence of paternal perinatal depressiveness and its link to partnership satisfaction and birth concerns. *Archives of Women's Mental Health*, *17*, 49–56. https://doi.org/10.1007/s00737-013-0377-4

Giallo, R., D'Esposito, F., Christensen, D., Mensah, F., Cooklin, A., Wade, C., Lucas, N., Canterford, L., & Nicholson, J. M. (2012). Father mental health during the early parenting period: Results of an Australian population based longitudinal study. *Social Psychiatry and Psychiatric Epidemiology*, *47*, 1907–1916. https://doi.org/10.1007/s00127-012-0510-0

Goodman, J. H. (2004). Paternal postpartum depression, its relationship to maternal postpartum depression, and implications for family health. *Journal of Advanced Nursing*, *45*, 26–35.

Gritz, A. S. (2004). The impact of material incentives on response quantity, response quality, sample composition, survey outcome and cost in online access panels. *International Journal of Market Research*, *46*(3), 327–345.

Hall, S. J., Ferguson, S. A., Turner, A. I., Robertson, S. J., Vincent, G. E., & Aisbett, B. (2017). The effect of working on-call on stress physiology and sleep: A systematic review. *Sleep Medicine*, *33*, 79–87.

Haslam, D., Filus, A., Morowska, A., Sanders, M. R., & Fletcher, R. (2015). The work-family conflict scale (WAFCS): Development and initial validation of a self-report measure of work-family conflict for use with parents. *Child Psychiatry and Human Development*, *46*, 346–357.

Henshaw, E. J., Durkin, K. M., & Snell, R. J. (2016). First-time parents' shared representation of postpartum depressive symptoms: A qualitative analysis. *Social Science & Medicine*, *160*, 102–110.

Huffman, A. H., Olson, K. J., O'Gara, Jr, T. C., & King, E. B. (2014). Gender role beliefs and fathers' work-family conflict. *Journal of Managerial Psychology*, *29*(7), 774–793.

Hunsley, J., Best, M., Lefebvre, M., & Vito, D. (2001). The seven-item short form of the dyadic adjustment scale: Further evidence of construct validity. *The American Journal of Family Therapy*, *29*(4), 325–335.

Ierardi, J. A., Fantasia, H. C., Mawn, B., & Watson Driscoll, J. (2019). The experiences of men whose partners have postpartum depression. *Journal of the American Psychiatric Nurses Association*, *25*, 433–439. https://doi.org/10.1177/1078390319849102

Johnson, R. B., Onuwuegbuzie, A. J., & Turner, L. A. (2007). Toward a definition of mixed methods research. *Journal of Mixed Methods Research*, *1*(2), 112–133. https://doi.org/10.1177/1558689806298224

Kalogeropoulos, G., Burdayron, R., Laganiere, C., Béliveau, M., Dubois-Comtois, K., & Pennestri, M. (2021). Investigating the link between sleep and postpartum depression in fathers utilising subjective and objective sleep measures. *Sleep Medicine*, *3*, Article 100036.

Kido, K., Mitani, A., Uemura, Y., Okano, M., & Matsumura, K. (2020). The prevalence and relevant factors of paternal depression during a partner's pregnancy in Japan. *International Journal of Nursing and Midwifery*, *12*(4), 120–129.

Kiecolt-Glaser, J. K., & Wilson, S. J. (2017). Lovesick: How couples' relationships influence health. *Annual Review of Clinical Psychology*, *13*(1), 1–23.

Koh, Y. W., Chui, C. Y., Tang, C. S. K., & Lee, A. M. (2014). The prevalence and risk factors of paternal depression from the antenatal to the postpartum period and the relationships between antenatal and postpartum depression among fathers in Hong Kong. *Depression Research and Treatment*, *2014*, Article 127632. https://doi.org/10.1155/2014/127632

Koh, Y. W., Lee, A. M., Chan, C. Y., Fong, D. Y. T., Lee, C. P., Leung, K. Y., & Tang, C. S. K. (2015). Survey on examining prevalence of paternal anxiety and its risk factors in perinatal period in Hong Kong: A longitudinal study. *BMC Public Health*, *15*, Article 1131. https://doi.org/10.1186/s12889-015-2436-4

Leach, L. S., Poyser, C., Cooklin, A. R., & Giallo, R. (2016). Prevalence and course of anxiety disorders (and symptom levels) in men across the perinatal period: A systematic review. *Journal of Affective Disorders*, *190*, 675–686. https://doi.org/10.1016/j.jad.2015.09.063

Letourneau, N., Duffett-Leger, L., Dennis, C. L., Stewart, M., & Tryphonopoulos, D. (2011). Identifying the support needs of fathers affected by post-partum depression: A pilot study. *Journal of Psychiatric and Mental Health Nursing*, *18*(1), 41–47.

Li, J. (2021). *Impact of social isolation on depressive symptoms in perinatal women during the Coronavirus pandemic* (Yale School of Medicine Physician Associate Program Theses no. 95). https://elischolar.library.yale.edu/ysmpa_theses/95

Li, W. W. (2013). *Shifting selves in migration: Home, ageing in place and well-being*. Central Compilation & Translation Press.

Li, W. W., Hodgetts, D., & Christopher, S. (2014). Multiple senses of community among older Chinese migrants to New Zealand. *Journal of Community & Applied Social Psychology*, *24*(1), 26–36.

Mangialavori, S., Cacioppo, M., Terrone, G., & O'Hara, M. W. (2021). A dyadic approach to stress and prenatal depression in first-time parents: The mediating role of marital satisfaction. *Stress and Health*, *37*(4), 755–765.

Mao, Q., Zhu, L., & Su, X. (2011). A comparison of postnatal depression and related factors between Chinese new mothers and fathers. *American Journal of Orthopsychiatry*, *70*, 523–531.

Marsiglio, W., & Roy, K. (2012). *Nurturing dads: Fatherhood initiatives beyond the wallet*. Russell Sage Foundation.

Massoudi, P., Hwang, C. P., & Wickberg, B. (2013). How well does the Edinburgh postnatal depression scale identify depression and anxiety in fathers? A validation study in a population based Swedish sample. *Journal of Affective Disorders*, *149*(1–3), 67–74.

Matthey, S. (2007). Using the Edinburgh postnatal depression scale to screen for anxiety disorders. *Depression and Anxiety*, *25*(11), 926–931.

Matthey, S., Barnett, B., Howie, P., & Kavanagh, D. J. (2003). Diagnosing postpartum depression in mothers and fathers: Whatever happened to anxiety? *Journal of Affective Disorders*, *74*, 139–147. https://doi.org/10.1016/S0165-0327(02)00012-5

Matthey, S., Barnett, B., Kavanagh, D. J., & Howie, P. (2001). Validation of the Edinburgh postnatal depression scale for men, and comparison of item endorsement with their partners. *Journal of Affective Disorders*, *64*(2–3), 175–184.

Matthey, S., Barnett, B., Ungerer, J., & Waters, B. (2000). Paternal and maternal depressed mood during the transition to parenthood. *Journal of Affective Disorders*, *60*, 75–85. https://doi.org/10.1016/S0165-0327(99)00159-7

Matthey, S., Fisher, J., & Rowe, H. (2013). Using the Edinburgh postnatal depression scale to screen for anxiety disorders: Conceptual and methodological considerations. *Journal of Affective Disorders*, *146*(2), 224–230.

Matthey, S., Vedova, D., & Maria, A. (2020). Screening for mood difficulties in men in Italy and Australia using the Edinburgh Postnatal Depression Scale and the Matthey Generic Mood Questionnaire. *Psychology of Men and Masculinities*, *21*(2), 278–287.

Matthijsse, S. M., Leeuw, E. D., & Hox, J. J. (2015). Internet panels, professional respondents, and data quality. *Methodology*, *11*(3), 81–88. https://doi.org/10.1027/1614-2241/a000094

Mayers, A. G., & Baldwin, D. S. (2006). The relationship between sleep disturbance and depression. *International Journal of Psychiatry in Clinical Practice*, *10*(1), 2–16.

Ng, K. L., Buvanaswari, P., Loh, L. W. L., Chee, C. Y. I., Teng, J. Y., Wang, W., & He, H.-G. (2021). A descriptive qualitative study exploring the experiences of fathers with partners suffering from maternal perinatal depression. *Midwifery*, *102*, Article 103075.

Nilson, W., Skipstein, A., Ostby, K. A., & Mykletun, A. (2017). Examination of the double burden hypothesis—a systematic review of work-family conflict and sickness absence. *European Journal of Public Health*, *27*(3), 465–471.

O'Cathain, A., Murphy, E., & Nicjoll, J. (2017). The quality of mixed methods studies in health services research. *Journal of Health Services Research & Policy*, *13*(2), 92–98. https://doi.org/10.1258/jhsrp.2007.007074

Offord, D. R., & Kraemer, H. C. (2000). Risk factors and prevention. *Evidence-Based Mental Health*, *3*, 70–71. https://doi.org/10.1136/ebmh.3.3.70

Olatunde, A., & Lasebikan, V. O. (2019). Factors associated with paternal perinatal depression in fathers of newborns in Nigeria. *Journal of Psychosomatic Obstetrics & Gynecology*, *40*(1), 57–65.

Paredes, T. M., & Parchment, T. M. (2021). The Latino father in the postnatal period: The role of egalitarian masculine gender role attitudes and coping skills in depressive symptoms. *Psychology of Men & Masculinities*, *22*(1), 113–123.

Paulson, J. F., & Bazemore, S. D. (2010). "Prenatal and postpartum depression in fathers and mothers": In reply. *JAMA: Journal of the American Medical Association*, *304*(9), 961–962.

Philpott, L. F., & Corcoran, P. (2018). Paternal postnatal depression in Ireland: Prevalence and associated factors. *Midwifery*, *56*, 121–127.

Philpott, L. F., Savage, E., Leahy-Warren, P., & Fitzgerald, S. (2020). Paternal perinatal depression: A narrative review. *International Journal of Men's Social and Community Health*, *3*(1), e1–e15.

Qualtrics. (2020). *Qualtrics* (Version January—October 2020). Provo.

Ramchandani, P. G., Stein, A., O'Connor, T. G., Heron, J., Murray, L., & Evans, J. (2005). Depression in men in the postnatal period and later child psychopathology: A population cohort study. *Journal of the American Academy of Child & Adolescent Psychiatry*, *47*, 390–398.

Ramprogus, V. (2005). Triangulation. *Nurse Researcher*, *12*(4), 4–6.

Rao, W.-W., Zhu, X.-M., Zong, Q.-Q., & Xiang, Y.-T. (2020). Prevalence of prenatal and postpartum depression in fathers: A comprehensive meta-analysis of observational surveys. *Journal of Affective Disorders*, *263*, 491–499.

Reid, H., Wieck, A., & Matrunola, A. (2017). The experiences of fathers when their partners are admitted with their infants to a psychiatric mother and baby unit. *Clinical Psychology*, *24*, 919–931.

Roth, T., Zammit, G., Kushida, C., & Buysee, D. J. (2002). A new questionnaire to detect sleep disorders. *Sleep Medicine*, *3*(2), 99–108.

Saxbe, D. E., Schetter, C. D., Guardino, C. M., Ramey, S. L., Shalowitz, M. U., Thorpe, J., & Vance, M. (2016). Sleep quality predicts persistence of parental postpartum depressive symptoms and transmission of depressive symptoms from mothers to fathers. *Annals of Behavioral Medicine*, *50*(6), 862–875.

Skoufi, G. I., Lialios, G. A., Papakosta, S., Constantinidis, T. C., Galanis, P., & Nena, E. (2017). Shift work and quality of personal, professional, and family life among health care workers in a rehabilitation centre in Greece. *Indian Journal of Occupational and Environmental Medicine*, *21*(3), 115–120.

Swartout, K. M., Parrott, D. J., Cohn, A. M., Hagman, B. T., & Gallagher, K. E. (2015). Development of the abbreviated masculine gender role stress scale. *Psychological Assessment*, *27*(2), 489–500.

Tabachnick, B. G., & Fidell, L. S. (2013). A guide to statistical techniques: Using the book. In B. G. Tabachnick (Eds.), *Using multivariate statistics* (2nd ed., pp. 17–32). HarperCollins.

Thiel, F., Pittelkow, M.-M., Wittchen, H.-U., & Niegel, S.-G. (2020). The relationship between paternal and maternal depression during the perinatal period: A systematic review and meta-analysis. *Frontiers in Psychiatry*, *11*, Article 563287. https://doi.org/10.3389/fpsyt.2020.563287

Tohotoa, J., Maycock, B., Hauck, Y. L., Dhaliwal, S., Howat, P., Burns, S., & Binns, C. W. (2012). Can father inclusive practice reduce paternal postnatal anxiety? A repeated measures cohort study using the Hospital Anxiety and Depression Scale. *BMC Pregnancy and Childbirth*, *12*, Article 75. https://doi.org/10.1186/1471-2393-12-75

Tran, T. D., Tan, T., & Fisher, J. (2012). Validation of three psychometric instruments for screening for perinatal common mental disorders in men in the north of Vietnam. *Journal of Affective Disorders*, *136*(1–2), 104–109.

Walter, S. L., Seibert, S. E., Goering, D., & O'Boyle Jr, E. H. (2019). A tale of two sample sources: Do results from online panel data and conventional data converge? *Journal of Business and Psychology*, *34*, 425–452.

Wang, D., Li, Y.-L., Qiu, D., & Xiao, S.-Y. (2021). Factors influencing paternal postpartum depression: A systematic review and meta-analysis. *Journal of Affective Disorders*, *293*, 51–63.

Zhang, Y. P., Zhang, L. L., Wei, H. H., Zhang, Y., Zhang, C. L., & Porr, C. (2016). Postpartum depression and the psychosocial predictors in first-time fathers from northwestern China. *Midwifery*, *35*, 47–52.

Zhao, Y., Cooklin, A. R., Richardson, A., Strazdins, L., Butterworth, P., & Leach, L. S. (2020). Parents' shift work in connection with work-family conflict and mental health: Eexamining the pathways for mothers and fathers. *Journal of Family Issues*, *42*(2), 445–473.