Partners to Parents

Partners to Parents: Development of an On-line Intervention for Enhancing Partner Support and Preventing Perinatal Depression and Anxiety

Submitted by

Pamela D. Pilkington BA, BSc (Psych) (Hons) (ANU)

A thesis submitted in partial fulfilment of the degree of Masters of Psychology (Clinical) and total fulfilment of the degree of Doctor of Philosophy

School of Psychology

Faculty of Health Sciences

14 January 2016

Statement of Authorship and Sources

This thesis contains no material published elsewhere or extracted in whole or in part from a thesis by which I have qualified for or been awarded another degree or diploma.

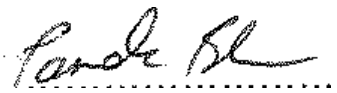
No parts of this thesis have been submitted towards the award of any other degree or diploma in any other tertiary institution.

No other person's work has been used without due acknowledgment in the main text of the thesis.

All research procedures reported in the thesis received the approval of the relevant Ethics/Safety Committees (where required).

This thesis by publication comprises the original work of the author. In all published research studies, the author was the Principal Investigator, contributed 50% or more, and planned and prepared the work for publication.

Dr Tom Whelan[1] and Dr Lisa Milne[1] contributed to the completion of all four research studies reported in this thesis. Kathryn Cairns[2] contributed to the completion of the systematic review and meta-analysis reported in Chapter 6 and the Delphi consensus study reported in Chapter 7. James Lewis[3] contributed to the completion of the systematic review and meta-analysis reported in Chapter 6. Holly Rominov[1] and Dr Rebecca Giallo[4] contributed to the completion of the usability study reported in Chapter 8.



Pamela Doreen Pilkington

14 January 2016.

[1]School of Psychology, Faculty of Health Sciences, Australian Catholic University

[2]Melbourne School of Population and Global Health, University of Melbourne

[3]School of Psychological Science, College of Science, Health, and Engineering, La Trobe University

[4]Population Health Theme, Murdoch Childrens Research Institute

Acknowledgments

First, I would like to thank my supervisors, Dr Tom Whelan and Dr Lisa Milne, for their consistent support, guidance, and warm words of encouragement throughout my candidature. Their calm, collaborative approach to supervision has developed my confidence as an early career researcher.

I would also like to acknowledge the support and input of those who co-authored manuscripts included in this thesis, namely Kathryn Cairns, Holly Rominov, Becc Giallo, and James Lewis. I would particularly like to thank Kat, who has provided insightful advice on various aspects of the research, and been a supportive friend and listener.

I am grateful to the perinatal mental health experts and parents who generously contributed their time and expertise to enable the development of *Partners to Parents.*

I would like to thank the staff and students of the School of Psychology, for their ongoing support. In particular, I would like to acknowledge the students, colleagues, and supervisors with whom I have had the opportunity to work in a clinical capacity. Thank you for supporting me in my journey towards becoming a psychologist.

Finally, I would like to thank my family and friends. In particular, thank you to my husband Conor Hutchison for being endlessly encouraging, patient, and kind. Thank you for buffering the stress of postgraduate study with your gentle and calm nature, and showing me firsthand the importance of love and partner support to wellbeing.

Abstract

Background. Perinatal mood problems are a significant public health issue that adversely affect the individual, compromise the partner relationship, and can have significant deleterious effects on the child's development. Despite the availability of effective treatments, few parents who experience emotional difficulties during pregnancy or following childbirth seek professional help. The high prevalence of perinatal depression and anxiety and low rates of help-seeking indicate a need for effective universal prevention approaches. Partner support is an ideal target for prevention efforts because it is consistently identified as one of the strongest protective factors against perinatal mood problems. The aim of this thesis by publication was to develop a father and same-sex partner inclusive on-line intervention for preventing perinatal depression and anxiety that enhances partners' understanding of how they can be mutually supportive of one another during the transition to parenthood.

Method. An evidence-informed intervention named *Partners to Parents* (http://www.partnerstoparents.org) was developed using a mixed methods sequential design. First, a systematic review was conducted to evaluate existing interventions that aim to prevent perinatal depression and anxiety by targeting the intimate partner relationship. Second, the risk and protective factors for perinatal depression and anxiety that are potentially modifiable by partners without professional assistance were identified via a systematic review and meta-analysis. Third, a Delphi consensus study was conducted to translate the research evidence identified by the meta-analysis into specific actions that partners can take to be mutually supportive of one another and reduce their vulnerability to perinatal depression and anxiety. The resulting recommendations were (1) formatted into a guidelines document for dissemination to new and expectant parents, and (2) translated into

a prototype of the *Partners to Parents* on-line intervention. The website was refined through usability testing with a sample of men and women who were pregnant or parenting an infant aged up to 24 months.

Results. The initial systematic review of interventions for preventing perinatal distress that address partner support or the couple relationship found that a number of these have shown benefits. Nonetheless, the findings indicated that there remains a need for interventions that are easily accessible, scalable, father-inclusive, and target both antenatal and postnatal outcomes. The systematic review and meta-analysis of risk and protective factors that are modifiable by partners found that there is sound evidence that emotional closeness and partner support protect against perinatal depression and anxiety. There was also sound evidence for the protective effect of communication, emotional and instrumental support, and relationship satisfaction against perinatal depression, while conflict increases risk.

The Delphi consensus study recruited two panels of experts in perinatal mental health (21 consumer advocates and 39 professionals) to rate the extent to which they believed a series of actions, derived from a review of academic and lay literature, are important for the prevention of perinatal depression and anxiety. A total of 214 recommendations on how partners can support one another were endorsed as important or essential by at least 80% of both panels, and formed the basis for the content of a prototype of the on-line intervention. Usability testing with 12 parents (7 women and 5 men) to inform development of the website yielded more than 250 comments on system and content quality, potential barriers to accessing the website, and suggestions for improvement. Generally, the findings suggested that the *Partners to Parents* intervention is perceived as appealing and relevant by expectant and new parents. The feedback also facilitated a series

of refinements, including improved graphic design, layout, and navigability, smart phone and tablet compatibility, Search Engine Optimisation, and improved readability.

Conclusion. *Partners to Parents* provides a novel approach to the prevention of perinatal depression and anxiety. It is supported by the research literature, endorsed by perinatal mental health professionals and consumers, and seen as acceptable and relevant by parents. This web-based intervention has the potential to contribute to reducing the public health burden of perinatal depression and anxiety and optimising parental and infant outcomes. Future research is necessary to establish the extent to which the intervention enhances relationship satisfaction and support, and prevents perinatal depression and anxiety.

Research Outputs, Awards, and Funding

Awards

Pilkington, P.D. (2015). Young Researcher Award. Australasian Marcé Society for Perinatal Mental Health.

Actual and potential published refereed papers as chapters of the thesis

Pilkington, P.D., Whelan, T.A, & Milne, L.C. (2015). A review of partner-inclusive interventions for preventing postnatal depression and anxiety, *Clinical Psychologist*, *19,* 63-75. doi: 10.1111/cp.12054 (Chapter 5)

Pilkington, P.D., Milne, L.C., Cairns, K.E., Lewis, J., & Whelan, T.A., (2015). Modifiable partner factors associated with perinatal depression and anxiety: a systematic review and meta-analysis, *Journal of Affective Disorders, 178,* 165-180. doi: 10.1016/j.jad.2015.02.023 (Chapter 6)

Pilkington, P. D., Cairns, K. E., Milne, L. C., & Whelan, T. A. (2016). Enhancing reciprocal partner support to prevent perinatal depression and anxiety: a Delphi consensus study. *BMC Psychiatry, 16,* 1-15. doi:10.1186/s12888-016-0721-0 (Chapter 7)

Pilkington, P. D., Rominov, H., Milne, L., Giallo, R., et al. (2016). Partners to Parents: development of an on-line intervention for enhancing partner support and preventing perinatal depression and anxiety. *Advances in Mental Health: Promotion, Prevention and Early Intervention,* Early online access. doi:10.1080/18387357.2016.1173517 (Chapter 8)

Additional actual and potential published refereed papers published during candidature

Pilkington, P.D., Windsor, T.D., & Crisp, D. (2012). Volunteering and subjective wellbeing in midlife and older adults: the role of supportive social networks. *Journals of Gerontology: Social Sciences*, *67*, 249-260. doi:10.1093/geronb/gbr154

Pearson, E.L., Windsor, T.D., Crisp, D., Butterworth, P., **Pilkington, P.D.,** & Anstey, K.J. (2013). Normative data and longitudinal invariance of the Life Engagement Test (LET) in a community sample of older adults. *Quality of Life Research, 22:* 327-331. doi: 10.1007/s11136-012-0146-2

Pilkington, P.D., Reavley, N.J., & Jorm, A.F. (2013). The Australian public's beliefs about the causes of depression: associated factors and changes over 16 years. *Journal of Affective Disorders, 150:* 356-362. doi:10.1016/j.jad.2013.04.019

Yap, M.B.H., **Pilkington, P.D.,** Ryan, S., & Jorm, A.F. (2014). Parental factors associated with depression and anxiety in young people: a systematic review and meta-analysis. *Journal of Affective Disorders, 156:* 8-13. doi: 10.1016/j.jad.2013.11.007

Yap, M.B.H., **Pilkington, P.D.,** Ryan, S., Kelly, C.M., & Jorm, A.F. (2014). Parenting strategies for reducing the risk of adolescent depression and anxiety disorders: a Delphi consensus study. *Journal of Affective Disorders, 156*: 67-75. doi: 10.1016/j.jad.2013.11.017

Reavley N.J., & **Pilkington P.D.** (2014). Use of Twitter to monitor attitudes toward depression and schizophrenia: an exploratory study. *PeerJ,* 2:e647. doi:10.7717/peerj.647

Cairns, K.E., Yap, M.B.H., **Pilkington, P.D.,** & Jorm, A.F. (2014). Risk and protective factors for depression that are modifiable by adolescents: a systematic review and meta-analysis of longitudinal studies. *Journal of Affective Disorders, 169,* 61-75. doi: 10.1016/j.jad.2014.08.006

Pilkington, P.D., Whelan, T.A, & Milne, L.C. (2015). Maternal crying and postpartum distress: The moderating role of partner support. *Journal of Reproductive and Infant Psychology, 34:* 64-76. doi: 10.1080/02646838.2015.1067884

Rominov, H., **Pilkington, P.D.,** Giallo, R., & Whelan, T.A. (2016). A systematic review of interventions targeting paternal mental health in the perinatal period. *Infant Mental Health, 37:* 289-301. *doi: 10.1002/imhj.21560.*

Conference presentations

Pilkington, P.D., Milne, L.C., &Whelan, T.A. (2014, October). Preventing perinatal depression and anxiety through partner support. *III School of Psychology Research Conference*, Australian Catholic University, Melbourne, Australia.

Pilkington, P.D., Milne, L.C., Cairns, K., & Whelan, T.A. (2014, October). The need for a partner-inclusive approach to preventing perinatal depression and anxiety: existing interventions and future directions. *The 2014 Alliance for the Prevention of Mental Disorders Conference,* Adelaide, South Australia.

Pilkington, P.D., Milne, L.C., Cairns, K., & Whelan, T.A. (2015, October). How can partners support one another to prevent perinatal depression and anxiety? A Delphi consensus study. *The Australasian Marcé Society for Perinatal Mental Health 2015 Conference*, Adelaide, Australia.

Invited presentations

Pilkington, P.D. (2015, April). How can partners support each other to prevent perinatal depression and anxiety? *Invited presentation*, Moreland Maternal Child Health Nurses, Melbourne, Australia.

Pilkington, P.D. (2015, October). Enhancing reciprocal partner support to prevent perinatal depression and anxiety: a Delphi consensus study. *Invited presentation*, Parent Infant Research Institute, Austin Health, Melbourne, Australia.

Pilkington, P.D. (2015, November). *Partners to Parents*: a web-based intervention for the prevention of perinatal depression and anxiety. *Invited presentation*, Population Mental Health Group, University of Melbourne, Melbourne, Australia.

Pilkington, P.D. (2015, December). *Partners to Parents*: a web-based intervention for the prevention of perinatal depression and anxiety. *Invited presentation*, Healthy Mothers, Healthy Families, Murdoch Childrens Research Institute, Melbourne, Australia.

Media attention

Ramchandani, P., & Grimas, E. (2015). Could partner factors reduce the risk of maternal depression and anxiety in the perinatal period? Retrieved 23 August 2015, from http://www.nationalelfservice.net/populations-and-settings/pregnancy/could-partner-factors-reduce-the-risk-of-maternal-depression-and-anxiety-in-the-perinatal-period

Clark, C. (2015). New parents should aim to enhance relationship satisfaction, communication, and closeness, to prevent perinatal depression and anxiety. Retrieved 23 August 2015, from http://brainblogger.com/2015/04/09/best-and-worst-in-psychology-and-psychiatry-march-2015/

Sunraysia Daily. (2015). Parent guide aims to beat depression. Retrieved 22 November 2015, from http://www.sunraysiadaily.com.au/story/3505170/parent-guide-aims-to-beat-depression/

Australian Catholic University Newsroom. (2015). Tips on beating the post-baby blues. Retrieved 22 November 2015, from http://www.acu.edu.au/staff/our_university/newsroom/new_archive/tips_on_beating_the_post-baby_blues

Family Included. (2016). New guide to partner support during pregnancy and in the first year. Retrieved 19 September 2016, from http://familyincluded.com/guide-to-partner-support-australia/

Essential Baby. (2016). From Partners to Parents: the site to help all new mums and dads. Retrieved 19 September 2016, from http://www.essentialbaby.com.au/just-for-you/relationships/from-partners-to-parents-the-site-to-help-all-new-mums-and-dads-20160601-gp95xm

Midwives Information and Resource Service. (2016). Empowering new parents to reduce the risk of perinatal depression. Retrieved 19 September 2016, from https://www.midirs.org/empowering-parents-to-reduce-risk-perinatal-depression/

HealthDirect. (2016). Partners to Parents. Retrieved 19 September 2016, from http://www.healthdirect.gov.au/partners/partners-to-parents

Funding

Pilkington, P.D. (2012-2015). Faculty Research Student Support Scheme (FRSSS) - $3 500. Faculty of Health Sciences, Australian Catholic University, Melbourne, Australia.

Pilkington, P.D. (2014-2016). Australian Postgraduate Award (APA) - $75 894. Australian Commonwealth Government.

Table of Contents

List of Tables

List of Figures

List of Appendices

List of Abbreviations

BDI	Beck Depression Inventory
CIDI	Composite International Diagnostic Interview
CINAHL	Cumulative Index of Nursing and Allied Health Literature
CMA	Comprehensive Meta-Analysis
CSI	Couple Satisfaction Index
DAS	Dyadic Adjustment Scale
DASS-21	Depression Anxiety Stress Scales, short form
DSM-5	Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition
DSM-IV-TR	Diagnostic Statistical Manual of Mental Disorders, Fourth Edition, Text Revision
EPDS	Edinburgh Postnatal Depression Scale
HADS	Hospital Anxiety and Depression Scale
MAT	Locke Wallace Marital Adjustment Test
MEDLINE	Medical Literature Analysis and Retrieval System On-line
MPQPS	Mother's Perceived Quality of Partner Support
NHMRC	National Health and Medical Research Council
NPDI	National Perinatal Depression Initiative
PANDA	Post and Ante Natal Depression Association
PAS	Partner Awareness Scale
PMT	Pre Menstrual Tension
PND	Post Natal Depression
PRISMA	Preferred Reporting Items for Systematic Reviews
PSE	Present State Examination

SAS	Speilberger Trait/State Anxiety Scale
SCL-90	Derogatis Symptom Checklist 90-item
SOS	Significant Others Scale
SPAFF	The SPecific AFFect coding system
SS	Study Specific measure
SWIRS	Satisfaction With Interpersonal Relationships Scale
WDW	Who Does What?/ Who will Do What?
WHO	World Health Organisation

Chapter 1 : Introduction

Despite an increase in the availability of evidence-based treatments for depression and anxiety, mood problems remain prevalent during the perinatal period (conception to 12 months postpartum; Brugha et al., 2011; Dennis & Chung-Lee, 2006). Meta-analyses indicate that perinatal depression affects 12.9% of mothers (Gavin et al., 2005) and 10.4% of fathers (Paulson & Bazemore, 2010). The prevalence rates of perinatal anxiety range between 2.6-39% in women (Leach et al., 2015b) and 2.4-16.3% in men (Leach et al., 2015a). Few parents seek formal treatment for perinatal mood problems (Dennis & Chung-Lee, 2006). Barriers include imprecise screening tools (Austin & Lumley, 2003; Kingston et al., 2015a), stigma, and the perceived risks of antidepressant use while pregnant or breastfeeding (Bilszta et al., 2010). Even if detection and treatment rates were to improve, only a portion of the burden of depression would be averted (Andrews et al., 2004).

Perinatal mood problems affect the whole family (Brugha et al., 2011). Adverse consequences for the parent include increased risk of physical health complications and long-term mental health problems (O'Hara, 2009). Perinatal distress can also negatively affect the infant's cognitive and emotional development (Glover, 2014; Murray & Cooper, 2003; Ramchandani et al., 2005). These problems may even extend beyond childhood, with some evidence suggesting that antenatal depression predicts adolescent depression (Pawlby et al., 2009). Preventing parental psychopathology therefore may have cumulative benefits for the child's wellbeing and development. If perinatal distress in caregivers is prevented, their capacity to bond with their infant and engage in safe parenting practices is enhanced (Field, 2010; McLearn et al., 2006), and the negative outcomes for the child are potentially averted (Dennis & Dowswell, 2013).

This thesis targets the prevention of both depression and anxiety, as they are often comorbid (Matthey et al., 2003; Yelland, 2010), and anxiety is common during the perinatal period (Fisher et al., 2010; Matthey et al., 2003; Miller et al., 2006). Evidence that individuals with comorbid depression and anxiety experience more disability, have more severe symptoms, and are less likely to respond to treatment (Penninx et al., 2008; Yelland, 2010) further justifies a trans-diagnostic approach. Perinatal anxiety often precedes depressive symptoms (Heron et al., 2004; Skouteris et al., 2009) and emerging evidence suggests that they share overlapping risk and protective factors (Leach et al., 2015b; Reid et al., 2009). Trans-diagnostic prevention strategies may therefore be more cost-effective and beneficial than approaches that restrict their focus to depression (Fisher et al., 2010).

Prevention programs need to target known risk and protective factors that are supported by reliable evidence (Jacka et al., 2013). The intimate partner relationship is an opportune target for interventions aiming to prevent perinatal depression and anxiety as it is well-established that partner support is protective against perinatal mood problems, while low relationship quality increases risk (Dennis & Ross, 2006; Highet et al., 2011; Hopkins & Campbell, 2008; Rowe & Fisher, 2010). The term “partner” refers to someone with whom the individual shares an intimate relationship, and can include de facto and same-sex relationships (Kruse et al., 2012). “Partner support” is used in this thesis as an umbrella term for various social exchanges within the couple relationship, including the provision of emotional and instrumental support, effective communication, empathy, and satisfaction with the division of labour. Negative support interactions include verbal disagreements, being criticised, feeling controlled, and experiencing one’s partner as unavailable or withdrawn.

Interventions aiming to facilitate partner support may target maternal or paternal mental health outcomes, and partners can be male or female. In other words, this thesis does not equate the term 'partner' with 'father'. Mothers and fathers can equally be providers and recipients of support, and both have the potential to experience perinatal mental illness. This perspective is consistent with the shift in research and practice in perinatal mental health towards a focus on parents, away from the focus on mothers that has characterised earlier discourse (Schumacher et al., 2008). Interventions that target both partners in the couple dyad may have a higher likelihood of success than clinical interventions, as parents prefer to access emotional support from their partner rather than health professionals (Forsyth et al., 2011; Rowe et al., 2013), and contact with supports outside of the family tends to decrease following childbirth (Perren et al., 2005).

Thesis aim and overview

The aim of this thesis was to develop a web-based intervention that enhances reciprocal partner support and prevents perinatal depression and anxiety. This research is presented as a thesis by publication in accordance with section five of the Australian Catholic University's *Guidelines on the Preparation and Presentation of a Research or Professional Doctoral Thesis for Examination* (Australian Catholic University, 2015). Chapter 2 examines the nature, prevalence, and course of perinatal depression and anxiety, and evaluates its significance as a public health problem. Chapter 3 outlines the rationale for the prevention of perinatal depression and anxiety, evaluates the effectiveness of current prevention efforts, and provides a theoretical framework for the research program's focus on partner support. Chapter 4 provides an overview of the research design and the underlying methodological rationale. Chapter 5 reviews the strengths and limitations of existing interventions that aim to prevent perinatal depression or anxiety by targeting partner

support or the partner relationship (Pilkington et al., 2015b). Chapter 6 presents the findings of a systematic review and meta-analysis of factors associated with perinatal depression and anxiety that partners can modify without professional assistance (Pilkington et al., 2015a). Chapter 7 outlines the findings of a Delphi consensus study designed to establish expert consensus on how partners can support one another to prevent perinatal depression and anxiety (Pilkington et al., 2016a). The resulting guidelines were published as a booklet to be disseminated to new and expectant parents and provided the foundation for the web-based preventive intervention, *Partners to Parents*. The *Partners to Parents* website provides information on how partners can support one another to reduce their vulnerability to perinatal depression and anxiety. Chapter 8 outlines the rationale for this website and the findings from usability testing with expectant and new parents (Pilkington et al., 2016b). Chapter 9 provides a general discussion of the findings, highlights the translational value of this thesis, and outlines the need for future research to evaluate the effectiveness of the *Partners to Parents* website in enhancing reciprocal partner support and relationship satisfaction, and reducing the risk of perinatal depression and anxiety in men and women.

Chapter 2 : Perinatal Depression and Anxiety

Overview

This chapter reviews the nature, prevalence, and course of perinatal depression and anxiety. It explores whether depression during the perinatal period differs from depression at other points in the lifespan, and examines perinatal depression and anxiety in fathers and parents in same-sex relationships. The chapter concludes by evaluating the significance of perinatal depression and anxiety as a public health problem.

What is perinatal depression and anxiety?

Research conducted in the area of perinatal mental health has traditionally focused on postnatal depression. In 2013, the *Diagnostic and Statistical Manual of Mental Disorders Fifth Edition* (*DSM-5;* American Psychiatric Association [APA], 2013) introduced a perinatal onset specifier, to acknowledge that depression is also prevalent in the antenatal period. Perinatal depression refers to a non-psychotic episode of major or minor depressive disorder with onset occurring during pregnancy or within four weeks of childbirth (APA, 2013). Symptoms include low mood, diminished interest or pleasure in activities, change in appetite, sleep difficulties, psychomotor agitation, fatigue, and feelings of worthlessness or excessive guilt (APA, 2013). In clinical practice and in the research literature the perinatal period is typically expanded to include up to 12 months postpartum (Beck, 2002).

Researchers have proposed that conceptualisations of perinatal distress be broadened to include anxiety, rather than focusing solely on depression (e.g., Rallis et al., 2014). The *DSM-5* (American Psychiatric Association, 2013) describes anxiety as feelings of tension, worried thoughts, and physiological changes such as increased heart rate, and provides diagnostic criteria for a number of anxiety disorders. These include Generalised Anxiety Disorder (GAD), phobias, and panic disorder. For the purposes of this thesis,

perinatal anxiety refers more generally to clinically significant anxiety symptoms during pregnancy or the 12 months following childbirth. Focusing on anxiety symptoms, rather than disorders, is consistent with research suggesting that the relevance of standard diagnostic criteria to perinatal anxiety is limited (Ayers et al., 2015). The literature primarily utilises self-report measures of anxiety symptom severity, rather than structured diagnostic interviews, as there may be specific manifestations of anxiety that are particular to the perinatal period that are not adequately captured by diagnostic measures (Ayers et al., 2015). For example, evidence suggests that perinatal anxiety commonly presents as hypervigilance around infant wellbeing, and ruminating or obsessional thoughts (Abramowitz et al., 2010).

Despite evidence that anxiety is more prevalent than depression during the perinatal period (Fisher et al., 2010; Matthey et al., 2003; Miller et al., 2006), it is often overlooked. This is concerning given that perinatal anxiety is associated with a number of adverse parent and infant outcomes, including reduced capacity for caregiving (Reck et al., 2012; Seymour et al., 2015; Van den Bergh et al., 2005). Moreover, depression and anxiety often co-occur (Matthey et al., 2003; Yelland, 2010). Matthey et al. (2003) found that assessing mothers and fathers for anxiety disorders identified more than three times as many cases than assessing for depression alone. It is therefore important to examine broader indicators of perinatal distress to avoid significant anxiety going undetected and untreated (Matthey et al., 2003). The singular focus on depression may have contributed to the limited success of previous prevention programs for perinatal mood problems (Fisher et al., 2010).

Differences from other mental disorders

Perinatal depression and anxiety are differentiated from the postpartum blues. The postpartum blues (commonly known as the baby blues) refers to symptoms of emotional lability, irritability, and tearfulness in the days immediately following childbirth. These

symptoms are experienced by between 30 to 75% of women (O'Hara et al., 1990) but typically resolve within approximately 10 days (Sit & Wisner, 2009). Perinatal depression differs from the postpartum blues as it involves the presence of depressive symptoms for two weeks or more.

Perinatal depression is also distinguished from puerperal psychosis: the onset of psychotic symptoms within the first two weeks postpartum. Puerperal psychosis affects only one or two women for every 1000 births (Sit et al., 2006), but can have significant implications for the safety of the mother and her infant (Robertson et al., 2004).

Differences and similarities to depression at other points in the life span

There are conflicting views on whether perinatal depression is distinct from depression at other points in the life span. Some authors conceptualise depression during the perinatal period as qualitatively different, with early research suggesting that it is more likely to be characterised by symptoms of irritability and anxiety (Pitt, 1968). Others suggest that the symptom severity of postpartum depression is milder than depression experienced outside of the postnatal period (Whiffen & Gotlib, 1993).

However, more recent evidence suggests that depression symptomatology during the perinatal period is fundamentally equivalent to depression experienced at other times. For example, Hoertel et al. (2015) applied item response theory to compare depression symptoms in a sample of more than 11 000 women of child-bearing age. The findings showed no significant differences in the clinical presentation of depression in women who were pregnant, women who had recently given birth, and women outside of the perinatal period. Cunningham et al. (2013) administered the short-form Depression Anxiety Stress Scales (DASS-21; Lovibond & Lovibond, 1996) to patients admitted to an Australian psychiatric Mother and Baby Unit and replicated the three-factor depression-anxiety-stress

model found in other clinical and non-clinical populations. In terms of prevalence, there is little evidence that depression is more common during the postnatal period (O'Hara & McCabe, 2013).

Based on these findings, perinatal depression appears to be fundamentally similar in nature and prevalence to mood problems experienced at other times. Even so, distinguishing perinatal depression from depression occurring at other points in the life span remains important as expectant and new parents are influenced by unique contextual factors, and perinatal depression is associated with poorer treatment outcomes than other depressive disorders (Hoertel et al., 2015).

Paternal perinatal depression and anxiety

Although there is extensive research investigating maternal mental health, the literature has only recently begun to explore men's emotional wellbeing during the perinatal period (Divney et al., 2012; Goodman, 2012). A shift in gender roles has seen fathers' involvement in parenting increase (Goodman, 2012; McKellar et al., 2006) but perinatal health care services continue to be predominately focused on the needs and concerns of women (Habib, 2012). A number of qualitative studies have reported that fathers feel excluded from parent education (e.g., Asenhed et al., 2014). There is increasing recognition that research and clinical practice need to address the current inequalities in access to perinatal mental health services and promote the involvement of fathers (Fletcher et al., 2015). In Australia, the need for a father-inclusive approach to perinatal mood problems has been recognised by projects such as the recently established Paternal Perinatal Depression Initative (Fletcher et al., 2014). This thesis aims to be consistent with the father-inclusive approach, which frames perinatal mental health as a family issue, rather than something

that is specific to women (Fisher et al., 2010; May & Fletcher, 2013; McKellar et al., 2006; Paulson & Bazemore, 2010).

Perinatal depression and anxiety in parents in same-sex relationships

Like fathers, little is known about the experiences of parents in same-sex relationships. This population is frequently marginalised in the perinatal depression literature by the predominant emphasis on the child-bearing woman (Trettin et al., 2006). Research examining the transition to parenthood needs to recognise same-sex couples, particularly given evidence suggesting that depression may be more prevalent in mothers who identify as being lesbian or bisexual (Ross et al., 2007). The emerging literature suggests that although the transition to parenthood is fundamentally similar for opposite-sex and same-sex couples, same-sex parents face some unique stressors (Goldberg & Smith, 2011; Ross et al., 2005). These include lower social support (Abelsohn et al., 2013), exposure to stigma (Goldberg & Smith, 2011), and the lack of community and legal recognition of same-sex parents (Goldberg & Smith, 2011; Khajehei et al., 2012). This thesis deliberately aimed to be inclusive of parents in both opposite-sex and same-sex relationships.

Prevalence

Depression. Various perinatal depression prevalence rates have been reported in the literature due to differences in assessment methods and timing, and the population studied (Sockol et al., 2013). For example, the prevalence of depression is slightly higher when assessed using self-report questionnaires, in comparison to diagnostic interviews (O'Hara & Swain, 1996). Inflated scores may be due to somatic indicators of depression (e.g., sleep disturbance, lack of energy, weight loss, difficulty concentrating) being confounded with 'normal' responses to parenting an infant (Matthey, 2010; Miller et al., 2006; O'Hara & Wisner, 2014). Variation in the cut-off points applied to self-report measures of depression

(e.g., the Edinburgh Postnatal Depression Scale; Cox et al., 1987) to categorise parents as 'depressed' or 'not depressed' has also contributed to discrepancies in prevalence rates (Matthey et al., 2006). Finally, the accuracy of reported prevalence rates may be influenced by the reluctance of some new parents to disclose that they are experiencing depressive symptoms (Dennis & Chung-Lee, 2006; Forder, 2013; Oddy et al., 2009).

The most precise estimates of depression prevalence rates are obtained through structured clinical interviews. Gavin et al. (2005) conducted a meta-analysis of the prevalence of maternal perinatal depression, limited to studies using diagnostic interviews, and concluded that the combined period prevalence of depression during pregnancy is 18.4%, while up to 19.2% of women have a depressive episode in the first three months postpartum. A meta-analysis by Paulson and Bazemore (2010) estimated that 10.4% of fathers experience depression during the perinatal period, with the peak period prevalence being 25.6% at three to six months postpartum. Their analyses combined studies that used structured clinical interviews and self-report questionnaires, as the literature on paternal depression is only emerging.

Anxiety. Leach and her colleagues recently conducted two systematic reviews of the prevalence rates of maternal (Leach et al., 2015b) and paternal (Leach et al., 2015a) perinatal anxiety respectively. The reported prevalence rates for maternal anxiety disorders in the perinatal period range from 2.6 to 39% (Leach et al., 2015b). The prevalence rates of paternal anxiety disorders and 'probable' anxiety disorders range between 4.1 and 16.0% during the antenatal period, and 2.4 to 16.3% following childbirth (Leach et al., 2015a). The wide variation in prevalence rates may be due to differences in how and when perinatal anxiety is assessed (e.g., diagnostic clinical interviews versus mean symptom severity), and the widespread use of small, convenience samples recruited in various clinical and

community settings. Epidemiological studies are needed to obtain more reliable estimates of the population-level prevalence of perinatal anxiety (Leach et al., 2015a; Leach et al., 2015b). Nonetheless, anxiety is clearly prevalent in both men and women during the transition to parenthood.

Course

Depression. The peak incidence of maternal postpartum depression is in the first three months following childbirth (Cox et al., 1993; Escribà-Agüir & Artazcoz, 2011; Wisner, 2004). At six months, 50% of women remain depressed, and at 12 months, 25% (National Institute for Health and Care Excellence, 2007). Vliegen et al. (2014) systematically reviewed longitudinal studies on the course of postpartum depression in women. The findings indicated that generally depression severity decreases over time. However, a large subgroup of women experienced chronic depression that persisted beyond one year postpartum (Vliegen et al., 2014). Giallo et al. (2014a) similarly identified a subgroup of women who reported high levels of depression symptoms from the first postnatal year to six to seven years postpartum, with symptoms worsening overtime. Therefore, some women experience persistently high depression symptoms beyond the postpartum period and into early- and mid-parenthood. This is concerning given evidence that some women do not seek treatment for postnatal depression because they believe that it will resolve spontaneously (Boath et al., 2004).

In contrast to women, the prevalence of postpartum depression in fathers peaks at three to six months postpartum (Matthey et al., 2000; Paulson & Bazemore, 2010). Fathers tend to experience postnatal depression following the onset of depression in their partners (Matthey et al., 2000), but a causal influence has not been shown empirically (Paulson & Bazemore, 2010). Nonetheless, evidence suggests that the mental health of partners is

correlated (Don & Mickelson, 2012; Paulson & Bazemore, 2010), and this association is mediated by partner support (Don & Mickelson, 2012). These findings support the argument that both partners in the couple dyad should be targeted by prevention efforts.

Anxiety. The course of anxiety symptoms tends to follow a U-shaped pattern, peaking in the first trimester of pregnancy, decreasing in the second, and increasing in the final trimester (Teixeira et al., 2009). This is evident in both men and women, although women, understandably, report higher levels of anxiety at childbirth than men (Figueiredo & Conde, 2011). Anxiety appears to decline in the postpartum but remains prevalent (Wynter et al., 2013a).

Interrelationships. Research suggests that the course of perinatal depression and anxiety symptoms is interrelated. Longitudinal data indicate that maternal depression symptoms in early pregnancy predict increased anxiety in late pregnancy (Skouteris et al., 2009). In turn, anxiety in late pregnancy is associated with elevated depression symptoms in the postpartum period (Heron et al., 2004; Skouteris et al., 2009). Interrelationships between depression, anxiety, and stress symptoms have also been observed in fathers. Wee et al. (2015) found that elevated paternal anxiety earlier in the antenatal period predicted higher levels of depression and stress in middle and late pregnancy. Given these interrelationships, efforts that aim to prevent depression and anxiety concurrently are likely to be more efficient (Rowe & Fisher, 2010).

Burden of disease

Perinatal depression and anxiety present a significant public health problem. Depression and anxiety are the leading cause of non-fatal disease burden in Australia for both men and women, and are major causes of disability (Begg et al., 2007). Perinatal depression increases the individual's risk of suicide (Kim et al., 2015), physical health

problems (Kelly et al., 2001), and long-term mental illness (Giallo et al., 2014a). Depression during pregnancy is a risk factor for low-birth weight, pre-term delivery (Grote et al., 2010) and perinatal loss (Howard et al., 2007).

Following childbirth, depression and anxiety reduces the parent's capacity to be warm and engage in enriching interactions with their infant, such as reading (Reissland & Burt, 2010; Seymour et al., 2015). Infants of parents with postpartum depression are more likely to demonstrate behavioural problems (Ramchandani et al., 2005), have difficult temperaments (Dave et al., 2005), and delayed cognitive development (Murray & Cooper, 2003). Antenatal anxiety has also been associated with cognitive, behavioural, and emotional problems in the infant, potentially due to the in utero effects of increased cortisol concentrations on the developing foetus (Stein et al., 2014; Van den Bergh et al., 2005).

From an economic perspective, perinatal mood problems incur financial costs from lost worker productivity and increased health service utilisation (Petrou et al., 2015; Post and Antenatal Depression Association, 2012). The Post and Antenatal Depression Association (2012) estimated that maternal and paternal perinatal depression cost the Australian government and the private sector a total of $78.66 million in 2012. More recently, Bauer et al. (2015) estimated the economic consequences of perinatal depression based on longitudinal data on children living in South London. For each child exposed to perinatal depression, the costs to the public sector were greater than £3030 (AUD$6362), costs due to reduced earnings were £1400 (AUD$2940), and health-related quality of life loss was valued at £3760 (AUD$7895). It is therefore imperative that mental health is promoted during both pregnancy and the postpartum period in order to optimise parent and child outcomes, and reduce the associated economic and societal costs (Lewis et al., 2012).

Conclusion

The singular focus on postnatal depression that characterises earlier research is increasingly viewed as inadequate, as it does not recognise that anxiety is also common, or that perinatal mood problems often begin in the antenatal period. In light of the high rates of comorbidity and the interrelationships between the course of depression and anxiety over the perinatal period, a trans-diagnostic approach is more appropriate. Moreover, evidence that perinatal depression and anxiety are prevalent in both men and women points to the need for a father-inclusive approach to perinatal mental health promotion. Similarly, interventions should aim to be inclusive of parents in same-sex relationships, who are currently marginalised in the literature.

Perinatal depression and anxiety pose a significant public health problem, impair the functioning of the individual, and can trigger a cascade of negative effects for the child and family. Interventions are needed to reduce the incidence of mood problems during pregnancy and following childbirth. The following chapter will outline the rationale for preventing perinatal depression and anxiety, evaluate the effectiveness of existing approaches, and argue that partner support is an ideal target for prevention efforts.

Chapter 3 : The Prevention of Perinatal Depression and Anxiety

Overview

The previous chapter outlined the nature and prevalence of perinatal depression and anxiety, and established their status as a significant public health problem. This chapter defines prevention, provides the rationale for prevention, and evaluates the effectiveness of current approaches to preventing perinatal depression and anxiety. The chapter concludes by providing a rationale for prevention efforts focused on enhancing partner support, and an overview of the studies comprising this thesis.

What is prevention?

There is increasing recognition that prevention approaches need to be utilised alongside diagnosis and treatment in order to reduce the burden of mental disorders (Jacka & Reavley, 2014). In the early 1990s, the Institute of Medicine (Mrazek & Haggerty, 1994) was commissioned to provide a report outlining recommendations for mental illness prevention research and policy. The authors defined prevention as interventions that occur before the onset of the disorder to reduce the incidence, duration, prevalence, recurrence, or risk of the disorder (Mrazek & Haggerty, 1994). Prevention was further classified into selective, indicated, and universal approaches. *Selective* prevention efforts target individuals or subgroups of the population identified as being at increased risk of mental illness based on risk factors (e.g., ethnic minorities). *Indicated* prevention strategies target individuals currently experiencing elevated, but subclinical, symptoms. Finally, *universal* prevention strategies target the general public or a whole population group, without identifying which individuals are at increased risk (Mrazek & Haggerty, 1994).

The current research aimed to develop a universal strategy for the prevention of perinatal mood problems. Although meta-analyses indicate that the effects of universal

interventions tend to be smaller than selective strategies (Relative Risk [RR] = .66, 95% CI = .50, .88; Dennis & Dowswell, 2013), universal programs can have a greater impact because they reach a larger proportion of the population (Shamblen & Derzon, 2009). Furthermore, universal prevention interventions do not require screening to identify which individuals may be more likely to experience perinatal mood disorders. This is important as measures with acceptable predictive validity to accurately identify who will develop depression are not yet available (Austin & Lumley, 2003; O'Hara et al., 2015), and qualitative research indicates that some parents find screening stigmatising (Shakespeare et al., 2003). As argued by Small et al. (2014), interventions that target all parents, rather than those experiencing subclinical symptoms or classified as “at risk”, frame the need for support during the perinatal period as normative, rather than a sign of being “a failure”.

The case for preventing perinatal depression and anxiety

Prevention is rated by mental health consumers, carers, clinicians, and researchers as a top priority for mental health research (Christensen et al., 2013). In Australia, reforms in national policy over the past decade have recognised that the early detection and prevention of perinatal mood problems is needed (e.g., the National Perinatal Depression Initiative; Australian Government Department of Health, 2013; beyondblue, 2014). Despite the proliferation of evidence-based treatments for depression and anxiety, mood disorders remain prevalent.

An investigation of the cost-effectiveness of treatments for depression and anxiety by Andrews et al. (2004) found that current treatment of depression in Australia averts only 13 to 16% of the disease burden. Even if individuals were to adhere to optimal treatment for depression and anxiety that complied with clinical practice guidelines, only 40% of the burden could be averted (Andrews et al., 2004). Notably, a meta-analysis by Cuijpers et al.

(2008) of 19 randomised controlled trials found that preventive interventions reduced the incidence of major depressive disorder by 22%. In accordance with these findings, economic modelling studies indicate that health care systems that incorporate web-based preventive interventions are significantly more cost-effective than those that do not (Lokkerbol et al., 2014). These findings suggest that health care systems need to use preventive and treatment approaches alongside one another to reduce the prevalence of mental illness.

Evidence-based targets for prevention efforts

The National Health and Medical Research Council (NHMRC; 2000) recommends that prevention programs are based on known risk and protective factors. The term risk factor refers to "a characteristic, experience, or event that, if present, is associated with an increase in the probability (risk) of a particular outcome over the base rate of the outcome in the general (unexposed) population" (Kazdin et al., 1997, p. 377). In contrast, a protective factor is an antecedent condition "associated with a decrease in the likelihood of undesirable outcomes or with an increase in the likelihood of positive outcomes" (Kazdin et al., 1997, p. 377). The factors associated with perinatal depression and anxiety can be framed within a biopsychosocial vulnerability stress model (Figure 3.1; Milgrom et al., 1999), which posits that biological, psychological, and sociocultural factors interact to produce perinatal mood problems (Ross et al., 2004). The biopsychosocial risk and protective factors associated with perinatal depression and anxiety are reviewed below and summarised in Table 3.1[1]. The factors are categorised based on whether they are modifiable or unmodifiable. Modifiable factors are amenable to change and should therefore be targeted by prevention programs at a population level (Jacka et al., 2012; NHMRC, 2000).

[1] Chapter 6 provides a systematic review and meta-analysis of the risk and protective factors associated with perinatal depression and anxiety that are potentially modifiable by partners.

Risk factors for perinatal depression. The *modifiable* psychosocial risk factors associated with maternal postpartum depression that are most consistently reported in the literature are intimate partner violence (Howard et al., 2013) and sleep disturbance (Bei et al., 2010). However, there is a growing evidence base that points to other modifiable risk factors that may play a role in the development of perinatal mental health problems. Beck's (2001) meta-analysis of risk factors identified low self-esteem as a significant predictor of maternal postpartum depression. In a meta-analysis of antenatal risk factors, Robertson et al. (2004) found that experiencing stressful life events during pregnancy also increases the chance that a woman will experience depression in the postnatal period. Grice et al. (2007) identified that the conflict resulting from balancing work and family roles is a risk factor for maternal mental illness following childbirth. Notably, this association may be ameliorated by support from friends and family (Grice et al., 2007). Work-family conflict also poses a challenge for men. In Australia, almost all new fathers combine parenting with paid work, and unsupportive work conditions increase their risk of postnatal distress (Cooklin et al., 2015). Incongruence between expectations and the reality of parenthood is common in women (Beck, 2002) and men (Edward et al., 2015) experiencing postpartum depression. Edward et al. (2015) also identified impaired bonding with the infant and feeling excluded from mother-infant bonding as risk factors for paternal depression. The bidirectional nature of many of these risk factors must be acknowledged. For example, impaired father-infant bonding may also be an outcome of depression.

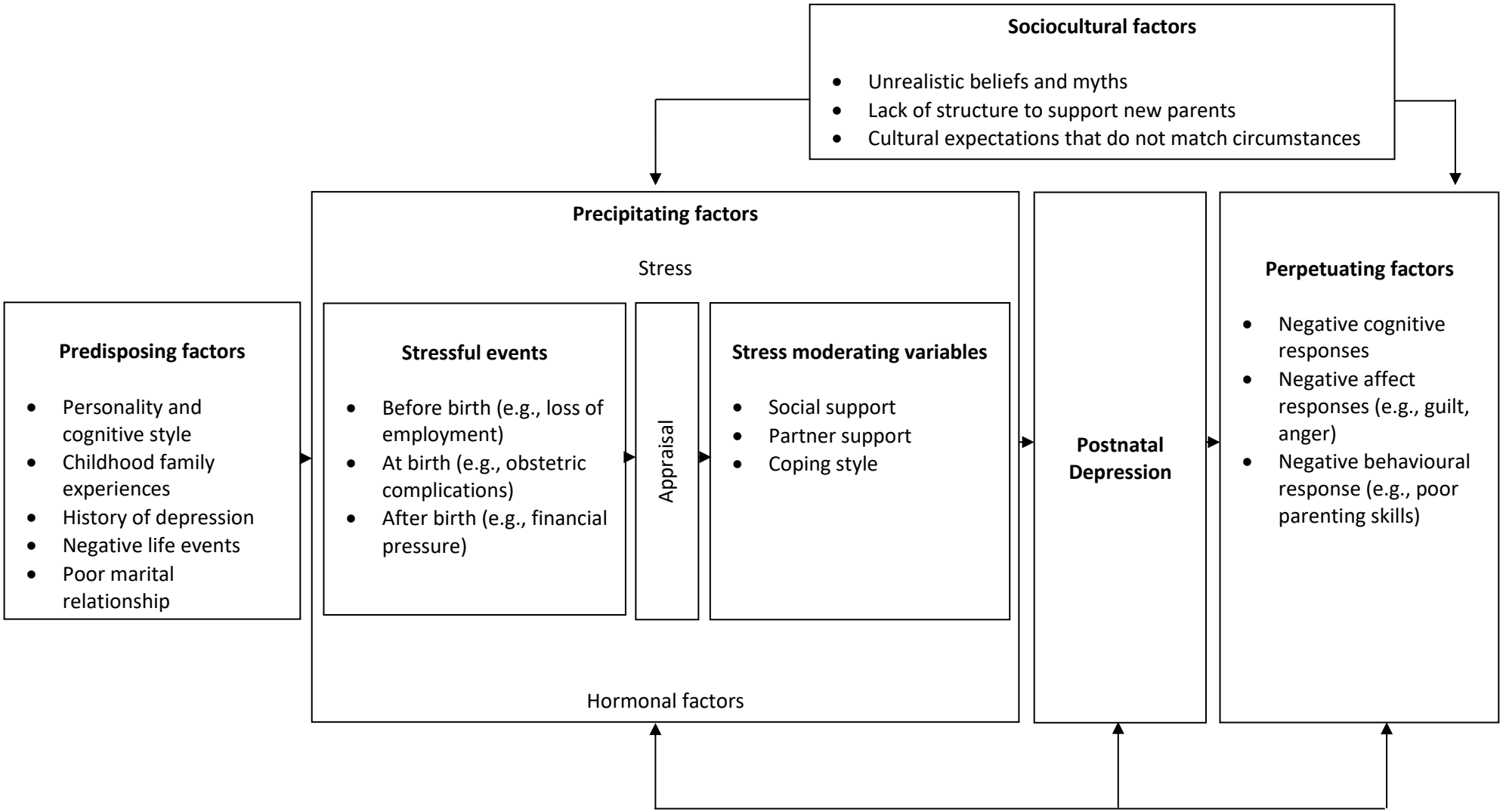


Figure 3.1. **The biopsychosocial model of postnatal depression (Milgrom et al., 1999)**

Table 3.1. **Summary of risk factors implicated in perinatal depression and anxiety**

Risk factor	Depression		Anxiety	
	Antenatal	**Postnatal**	**Antenatal**	**Postnatal**
Sociodemographic factors				
Young parental age	✓	✓	✓	✓
Not partnered	✓	✓	✓	✓
Low education	✓	✓	✓	✓
Low socioeconomic status*	✓	✓	✓	✓
Social factors				
Couple relationship problems*	✓	✓	✓	✓
Poor social support*	✓	✓	✓	✓
Intimate partner violence	✓	✓	✓	✓
Recent life stressors	✓	✓	✓	
Lack of care from own parents	✓	✓		
Partner experiencing depression*		✓		
Work-family conflict*		✓		
Pregnancy and birth factors				
Prior perinatal loss	✓	✓	✓	✓
Unplanned pregnancy	✓	✓	✓	✓
Negative birth experience		✓		✓
Health and lifestyle factors				
Smoker		✓	✓	✓
Premenstrual syndrome			✓	✓
Sleep disturbance		✓		
Psychological factors				
Low self-esteem/self-efficacy	✓	✓	✓	✓
Personality factors (e.g., neuroticism)*	✓	✓	✓	
Incongruence between expectations and reality of parenting*		✓		
History of mental illness*	✓	✓	✓	✓
History of trauma or abuse*		✓	✓	
Infant factors				
Difficult infant temperament*		✓		✓
Infant health problems		✓		✓
Reduced breastfeeding		✓		✓
Impaired parent-infant bonding		✓		

Note. Adapted from Leach et al. (2015b). Asterisk indicates that there is evidence available for both men and women.

Unmodifiable psychosocial risk factors include a personal or family history of depression (Beck, 1996; Mrazek & Haggerty, 1994), unplanned pregnancy (Beck, 2001), low socioeconomic status (Wylie et al., 2011), and young parental age (Beck, 2001; Quinlivan & Condon, 2005). Wee et al. (2011) identified having a partner with depression as the most common risk factor for paternal depression.

Individuals who experienced a lack of care from their own parents (Boyce et al., 1991a) or sexual abuse during childhood (Buist, 1998) are at increased risk of postpartum depression. Personality factors associated with increased vulnerability to postpartum depression include neuroticism (Matthey et al., 2000), introversion, perfectionism (Verkerk et al., 2005), and sensitivity to interpersonal rejection (Boyce et al., 1991b). Some studies have implicated obstetric complications with postpartum depression (Robertson et al., 2004), however, the findings in this area are mixed (Nielsen et al., 2000). More relevant, it seems, is the individual and their partner's subjective experience of the birth as negative or traumatic (Iles et al., 2011). There are also conflicting results regarding parity, with some studies suggesting that first-time mothers are at increased risk (Eberhard-Gran et al., 2002), others finding no effect (Josefsson et al., 2002), and still others reporting that multiparous women are at increased risk (Atar Gürel & Gürel, 2000).

There is currently little evidence that biological factors are implicated in the development of postnatal depression (Seyfried & Marcus, 2003). Research suggests that only a subgroup of women appear to be predisposed to depression following childbirth due to hormonal changes (Schiller et al., 2014; Soares & Zitek, 2008). A systematic review of biological factors associated with postnatal depression identified hypothalamic-pituitary-adrenal dysregulation, inflammatory processes, and genetic vulnerabilities as risk factors, but noted that there are limited data available (Yim et al., 2015). In order to advance our understanding of the biopsychosocial aetiology of perinatal depression, more studies on

biological factors are needed (Giallo et al., 2014a), with a view towards integrating the biological and psychosocial literatures (Yim et al., 2015).

Risk factors for perinatal anxiety. Despite the extensive literature on risk factors associated with perinatal depression, there are considerably fewer studies on perinatal anxiety (O'Hara & Wisner, 2014). Leach et al. (2015a) recently reviewed the growing body of literature on the correlates of maternal anxiety and found that the risk factors for perinatal depression and anxiety largely overlap (see Table 3.1). Persistent infant crying and difficult infant temperament are associated with increased maternal anxiety (McMahon et al., 2001). Smoking tobacco (Clavarino et al., 2010), as well as low self-esteem and self-efficacy are also implicated (Martini et al., 2015).

The literature on *unmodifiable* risk factors suggests that there is some evidence that women with perinatal anxiety tend to be younger (Clavarino et al., 2010). Schmied et al. (2013) reviewed longitudinal studies on maternal mental health in Australia and New Zealand and found that the strongest risk factor for perinatal anxiety was a history of anxiety disorders. Longitudinal pregnancy cohort studies in Canada (Bayrampour et al., 2015) and Germany (Martini et al., 2015) have also identified a history of mental health problems as a risk factor for anxiety during pregnancy and following birth. A history of trauma prior to the pregnancy was also shown to predict maternal antenatal anxiety, while low education, premenstrual syndrome, and mode of delivery predicted anxiety following childbirth (Martini et al., 2015).

Protective factors against perinatal depression and anxiety. In addition to partner support and relationship satisfaction (see Chapter 6 for review), the main protective factor against perinatal depression and anxiety in both men and women is social support (Boyce, 2003; Haga, 2012; Lee et al., 2007; Wee et al., 2011). “Social support” is defined as “the

provision of psychological and material resources intended to benefit an individual's ability to cope with stress" (Cohen & Wills, 1985, p. 676). Low social support is consistently associated with depression (Ibarra-Rovillard & Kuiper, 2011). Conversely, supportive social ties are beneficial for mental health (Berkman, 2001; House et al., 1988). Supportive relationships appear to influence the onset of depression in two main ways: first, by reducing depressive symptoms and promoting positive emotions; and second, by acting as a buffer against stress (Cohen & Wills, 1985; Thoits, 2011). Cultural practices such as confinement (convalescing for 30 days following childbirth) are also protective (Klainin & Arthur, 2009).

Existing interventions for preventing perinatal depression and anxiety

A number of psychosocial and biological interventions that aim to prevent perinatal mental illness are available, the majority of which target postnatal depression. Psychosocial and psychological interventions include non-therapeutic social support, psycho-education, psychotherapy, and non-directive counselling (see Werner et al., 2014 for a qualitative review). These approaches reduce the risk of perinatal mental illness either directly (e.g., facilitating help seeking) or indirectly, by buffering the effects of stress (e.g., encouraging adaptive coping methods; Dennis & Dowswell, 2013). Biological approaches aim to prevent perinatal depression and anxiety using dietary supplements (e.g., calcium, fish oil), reproductive hormones, and antidepressant medication (Sockol et al., 2013). The effectiveness of these approaches is reviewed below. Prevention efforts that target the intimate partner relationship are comprehensively reviewed in Chapter 5.

Depression. Dennis and Dowswell (2013) conducted a Cochrane review of psychosocial and psychological interventions for preventing postpartum depression and found these interventions have a small but significant protective effect (RR = 0.78, 95% CI =

0.66, .93). Notably, interventions that included the provision of social support were the most promising: specifically, telephone-based peer support (RR = .54, 95% CI = .38, .77), interpersonal therapy (Standardised Mean Difference [SMD] = -0.27, 95% CI = -.52, -.01), and postpartum home-visits (RR = .56, 95% CI = .43, .73). There was no clear evidence to recommend the implementation of antenatal classes, potentially due to methodological limitations such as high rates of attrition at follow up (Austin, 2004; Dennis & Dowswell, 2013). More recently, a systematic review investigating the effectiveness of exercise as a strategy for treating and preventing antenatal depression found that it may be beneficial (SMD = .46, 95% CI = -.87, -.05), but this conclusion was based on only six low-moderate quality trials (Daley et al., 2015) and requires confirmation in further high quality studies.

Sockol et al. (2013) extended Dennis and Dowswell's (2013) review by including biological interventions and investigating intervention type (i.e., psychosocial versus biological) as a potential moderator of the efficacy of interventions for preventing postpartum depression. The results of their meta-analysis examining intervention type as a moderator indicated that biological (Odds Ratio [OR] = .71, 95% CI = -.24, 2.12) and psychosocial interventions (OR = .61, 95% CI = .50, .84) were similarly effective in preventing depression symptoms at six months postpartum. However, Sockol et al. noted that further studies examining antidepressant medication, hormonal interventions, and dietary supplements are needed to firmly establish whether biological and psychosocial interventions are similarly effective. They concluded that at this point psychosocial interventions are preferable given that exposure to antidepressants during pregnancy and the postpartum may have adverse outcomes (Ray & Stowe, 2014; Yonkers et al., 2013) and there are low levels of adherence to medication (Boath et al., 2004).

Anxiety. The effectiveness of interventions for the prevention of perinatal anxiety is yet to be synthesised in a meta-analysis. The majority of prevention efforts that have targeted anxiety have done so alongside depression using antenatal classes (e.g., Austin et al., 2008; Ip et al., 2009) and home visits (Heinicke et al., 1999), as well as written materials such as quizzes (Matthey et al., 2008) and self-help workbooks (Milgrom et al., 2011). The findings on the effectiveness of psychoeducation-based interventions for preventing perinatal anxiety are mixed. In addition to psychoeducation, a number of researchers have evaluated the effectiveness of relaxation and mindfulness-based interventions (e.g., Teixeira et al., 2005; Urech et al., 2010). The emerging evidence suggests that these interventions are beneficial, but further research is warranted given the limited evidence available (Marc et al., 2011; O'Hara et al., 2015).

The theoretical rationale for enhancing reciprocal partner support

There is a need for evidence-based prevention strategies that target known modifiable risk and protective factors (Jacka & Reavley, 2014). Existing interventions show promise, particularly those targeting social support (Dennis & Dowswell, 2013). Of note, these interventions have tended to rely on the provision of support by professionals (e.g., home visits), despite evidence that parents prefer to access help from their partners (Forsyth et al., 2011; Rowe et al., 2013). Relying on professional sources of support, at the neglect of naturally occurring support networks (e.g., partners and other family members), represents a missed opportunity. The aim of this thesis was to develop an intervention for preventing perinatal depression and anxiety, focused on facilitating reciprocal partner support.

The theoretical rationale for the centrality of partner factors in the development of perinatal mood problems is convincing. From an attachment theory perspective, support-seeking and caregiving in intimate relationships is a fundamental need (Collins & Feeney,

2010). For most adults, the intimate partner relationship is the single most important relationship and source of support (Collins & Feeney, 2010). An individual's relationship with their partner has the potential to both confer risk, and protect against perinatal depression or anxiety. For example, partner support can buffer the stress associated with parenting responsibilities, while promoting the individual's sense of efficacy in their new role (Yim et al., 2015). Conversely, adult attachment ambivalence, inter-partner conflict, and partner substance use increase the individual's risk to perinatal depression (Yim et al., 2015). The potency of an unsupportive partner relationship was demonstrated by Bilszta et al. (2008), who found that pregnant women who were single had a lower risk of depression than those who were in an unsupportive relationship.

Enhancing partner support is consistent with the stress buffering model, which posits that social support moderates the link between stress and wellbeing (Cohen & Wills, 1985). The biopsychosocial model proposed by Milgrom et al. (1999) similarly identifies partner support as a buffer against the influence of predisposing and precipitating factors for postnatal depression. From this perspective, perinatal depression and anxiety can be understood as resulting from the interaction between individual vulnerability (e.g., history of depression), stressful events (i.e., pregnancy and childbirth), and the interpersonal context (e.g., lack of social support). Given that most individual factors are not easily modifiable (e.g., personality traits, personal history of depression, history of childhood sexual abuse), interpersonal factors are a promising focus for interventions aiming to reduce an individual's risk of mood problems.

Enhancing the couples' capacity to cope together with stress – known as dyadic coping (Bodenmann, 2005) – is an important intervention target. Dyadic coping conceptualises the couple's response to a stressful life event as a reciprocal process, in

which both partners mutually influence one another. From this perspective, supportive interactions enhance the couple's capacity to cope and this protects against the stress associated with the transition to parenthood (Kluwer, 2010).

Conceptualising partner support as a reciprocal, dyadic process is also consistent with equity theory (Walster et al., 1973), which predicts that relationship satisfaction will decline if one person in the dyad provides more support than they have received. According to the theory, a sense of imbalance contributes to feelings of obligation and inequality in the relationship, and increases distress (Gleason et al., 2003). Therefore, approaches that cast men, but not women, as support persons can actually lead to increased conflict (Lamb, 2001 in Montigny & Lacharité, 2004). Together, these findings indicate the need for interventions to target reciprocal partner support in order to prevent inequity within the couple dyad and in recognition of the fact that both men and women have increased support needs during the perinatal period.

Finally, aiming to enhance support interactions between partners is consistent with the major premise of self-regulation theory (Karoly, 1993). Self-regulation theory posits that learning is a process whereby individuals are taught skills to change their *own* behaviour (Karoly, 1993). The self-regulatory model when applied to the perinatal period seeks to build parents' expertise, to empower them to modify their own behaviour without external intervention. Partners who monitor their own behaviour and make efforts to enhance their relationship report more consistent levels of relationship satisfaction, while partners who tend to blame relationship problems on their partner report declining relationship satisfaction (Halford et al., 2007). Leveraging naturally occurring sources of support has a number of advantages, including reducing the burden on health professionals, and increasing parents' self-directedness and autonomy (Sanders & Kirby, 2012). Increasing

mutual partner support thus represents an economical and empowering way of enhancing family wellbeing (Montigny & Lacharité, 2004).

Conclusion and thesis aim

This chapter has reviewed the current evidence for interventions targeting the prevention of perinatal depression and anxiety, and provided a theoretical rationale for developing an intervention targeting the intimate partner relationship. The aim of this thesis was to identify how partners can support one another to prevent perinatal depression and anxiety and use this knowledge to develop a web-based intervention. The scope of the research was limited to the development of a universal prevention intervention for non-psychotic perinatal depression and anxiety that is generalisable to *most* expectant and new parents who are currently in an intimate partner relationship and reside in English-speaking developed Western countries. The research program limited its focus to partner support, and did not aim to address intimate partner violence. Although intimate partner violence is a serious public health concern and established risk factor for perinatal depression (Howard et al., 2013), it was deemed outside the scope of this thesis as it is difficult to modify without professional intervention due to its severity (Babcock et al., 2004).

A series of four studies was conducted to address the thesis aim and meet the need for evidence-based preventive interventions for perinatal depression and anxiety, as described below:

1. A review of partner-inclusive interventions for preventing postnatal depression and anxiety. A systematic review was conducted to evaluate the status of existing interventions that aim to prevent perinatal depression and anxiety by targeting the couple relationship (Chapter 5). The prevention approaches were evaluated in terms of their accessibility and scalability, and the extent to which they actively include fathers.

2. Modifiable partner factors associated with perinatal depression and anxiety: a systematic review and meta-analysis. A systematic review and meta-analysis of the specific partner factors associated with perinatal distress was completed to facilitate translation of the evidence base into prevention strategies (Chapter 6). Although previous reviews have examined partner support within the broader context of risk and protective factors for postpartum depression (e.g., Beck, 2001), a comprehensive review of partner factors was required to examine how specific aspects of partner support relate to perinatal depression and anxiety. The inclusion of anxiety, in addition to depression, was consistent with the recent recognition that a broader conceptualisation of perinatal distress is warranted (Miller et al., 2006). This review clarified which partner factors have a sound evidence base, and should therefore be targeted by interventions, and which factors warrant further investigation.

3. Enhancing reciprocal partner support to prevent perinatal depression and anxiety: a Delphi consensus study. Despite the broad evidence for the importance of the partner relationship, there is a lack of research operationalising *how* parents can reduce the risk of their partner developing depressive or anxiety symptoms (Rowe & Fisher, 2010;

Wynter et al., 2013b). Research is needed to develop guidelines for partners on the actions they can take to support one another and prevent the development of perinatal depression and anxiety. A Delphi consensus study (Jones & Hunter, 1995) was conducted to address this need (Chapter 7).

4. *Partners to Parents*: development of a couples-based on-line intervention to prevent perinatal depression and anxiety. Finally, a website was developed to facilitate knowledge translation of the guidelines produced by the Delphi consensus study. Usability testing with parents was conducted to inform development of the website (Chapter 8). Feedback was obtained on the quality of the website using a think-aloud protocol, and was subsequently used to refine and improve the intervention.

Chapter 4 : Methodological Rationale

Overview

This chapter briefly outlines the methods selected to meet the research aim. Given that the method sections of the publications included as chapters in this thesis provide procedural detail, the focus of the current chapter is the underlying methodological rationale. The aim of this thesis was to develop a couples-based on-line intervention for preventing perinatal depression and anxiety using a mixed-methods research methodology. There were three key phases to the research design (see Figure 4.1):

1) Synthesising the evidence base on the role of partner support in the prevention of perinatal depression and anxiety
2) Identifying the actions that partners can take to support one another during the perinatal period and reduce their risk of depression and anxiety
3) Developing a web-based intervention to prevent perinatal depression and anxiety, informed by the views of new and expectant parents

A mixed methods sequential design was considered the most appropriate as combining quantitative and qualitative research methods enables a better understanding than can be gained using either approach alone (Palinkas et al., 2011). Mixed methods research also enables empirical data to be integrated with the views and needs of key stakeholders (Sanders & Kirby, 2012). Quantitative methods were required to first evaluate the existing evidence base and develop the content of the website. Following this, qualitative methods were needed to conduct usability testing to obtain feedback from parents on the quality of the intervention. These findings were subsequently used to inform further development of the website, thus enhancing its potential reach and uptake (Palinkas et al., 2011; Sanders & Kirby, 2012).

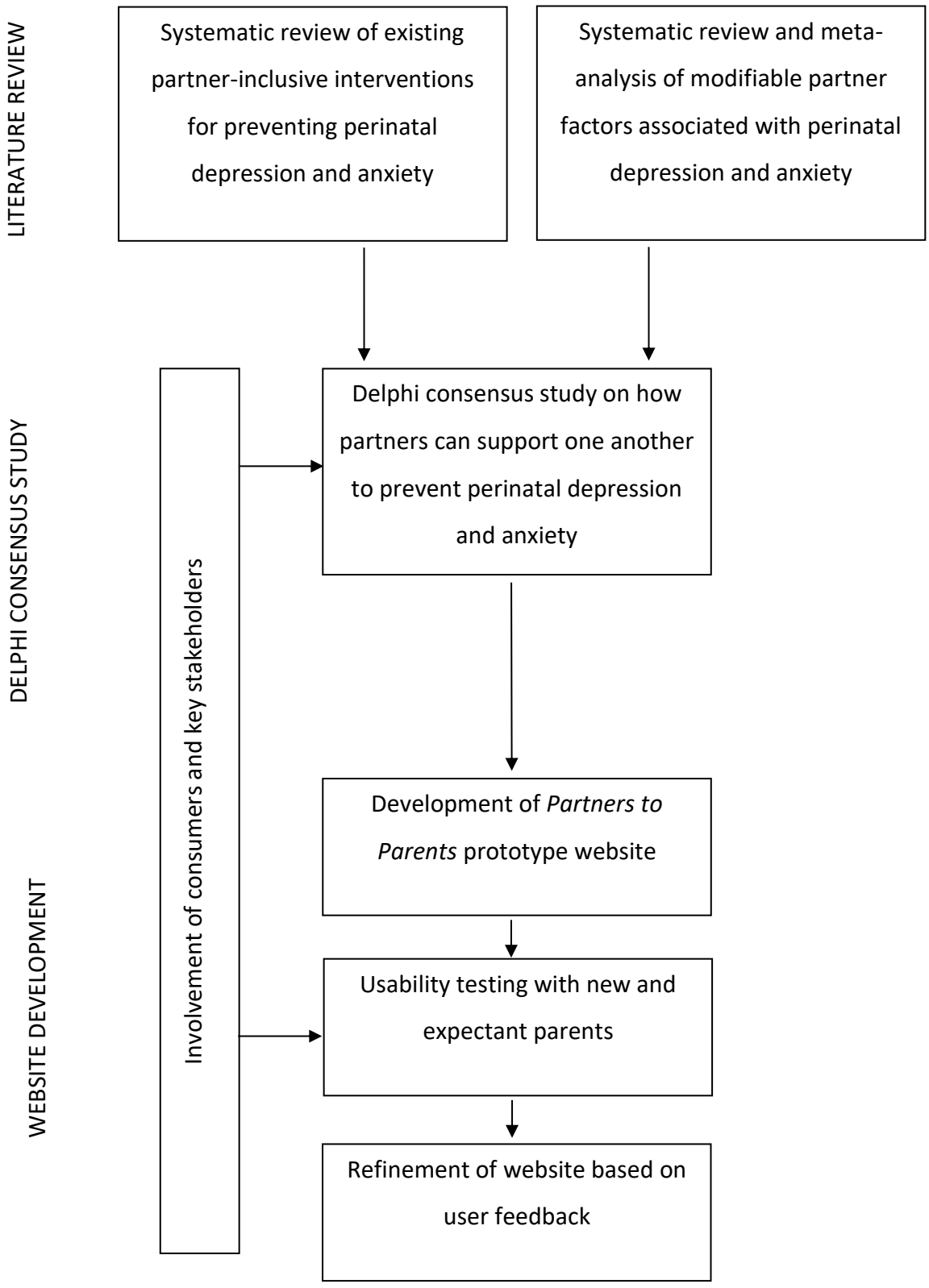


Figure 4.1. **Development of the *Partners to Parents* website.**

Structurally, this chapter consists of two main sections. The first section focuses on systematic reviews and meta-analyses, and justifies their use in Studies 1 and 2. The second section emphasises the utility of consumer and stakeholder involvement in mental health promotion research. In particular, it explains how and why key stakeholders were involved in the development of the intervention using the Delphi consensus technique (Study 3) and usability testing (Study 4). Each section first describes the method and its strengths and potential limitations, and then explains how it was applied in this thesis.

Systematic reviews and meta-analyses

Systematic reviews and meta-analyses aim to systematically identify, evaluate, and synthesise the findings of multiple studies (Higgins & Green, 2011). They use pre-specified eligibility criteria and an explicit, reproducible methodology to answer specific research questions (Higgins & Green, 2011). Systematic reviews are often accompanied by meta-analyses, the use of statistical techniques to quantify the magnitude of associations based on the pooled results of individual studies (Umscheid, 2013).

Strengths. Systematic reviews are an increasingly important part of knowledge advancement (Moher et al., 2009). It is not possible for clinicians, consumers, researchers, and policymakers to incorporate the burgeoning public health literature into their decision-making without the aid of systematic reviews (Mulrow, 1994). Review findings can be used to inform policy, facilitate knowledge translation, prioritise areas for further research (Egger & Smith, 1997), and establish cost-effectiveness (Moher et al., 2009).

A notable strength of systematic reviews is their lower risk of bias and improved reliability, relative to narrative reviews (Mulrow, 1994; Umscheid, 2013). Systematic reviews are guided by protocols that provide transparency around how studies were identified, selected, and synthesised (Umscheid, 2013). In contrast, authors of narrative reviews may selectively include or exclude certain articles (Umscheid, 2013). A systematic review with a

clearly articulated protocol can be more easily replicated or updated by others (Umscheid, 2013).

Meta-analyses produce more precise estimates of the magnitude of the association than estimates derived from individual studies, due to the statistical power gained from combining samples (Higgins & Green, 2011; Umscheid, 2013). Another key advantage of meta-analyses over traditional literature reviews is the capacity to assess the consistency of relationships (Mulrow, 1994). Summarising the results of diverse studies addressing similar questions through meta-analysis identifies whether factors or interventions are consistently associated with outcomes across various study populations and designs (Mulrow, 1994). If heterogeneity is detected, subgroup analyses can be used to explore potential reasons for the differences (Egger & Smith, 1997; Higgins & Green, 2011). Narrative reviews often neglect to examine study characteristics as sources of inconsistent findings across investigations (Noble, 2006).

Potential limitations. Systematic reviews and meta-analyses have been criticised for their potential to give researchers false confidence (Noble, 2006). The mathematical nature of meta-analysis can give a false sense of certainty that obscures the uncertainty inherent in the research process (Noble, 2006). Although systematic reviews are less biased than traditional reviews, there are still elements that can be influenced by subjectivity. For example, accurate data extraction and coding can be compromised if the primary studies provide ambiguous information (Noble, 2006). Independent extraction and coding of data by at least two authors is therefore required to ensure accurate data extraction (Moher et al., 2009).

A related criticism is that meta-analyses can be disadvantaged by their focus on summarising univariate associations. Synthesising the results may gloss over important

differences in the study designs, participant characteristics, and contexts of the primary research studies (Moncrieff, 1998). This limits the capacity for potential confounds or alternative explanations for the results to be explored (Noble, 2006; Sandler et al., 2014). Neglecting to take into account the methodological quality of the data from each study can also reduce the validity of the meta-analytic findings. The Cochrane Handbook for Systematic Reviews of Interventions (Higgins & Green, 2011) recommends that all meta-analyses assess the risk of bias, as study design characteristics, publication bias (Thornton & Lee, 2000), and small sample sizes can inflate estimates of effect sizes (Noble, 2006).

The use of systematic reviews and meta-analyses in this thesis. Two systematic reviews were completed: (1) a review of existing interventions that aim to prevent perinatal depression or anxiety by targeting the intimate partner relationship; and (2) a review of risk and protective factors associated with perinatal depression and anxiety that partners can modify without professional intervention. The first systematic review was qualitative, as the primary aim was to describe the existing interventions and evaluate their strengths and weaknesses. The second review included meta-analyses to quantify the magnitude of the associations between modifiable partner factors and perinatal depression and anxiety, and assess consistency across studies. The reviews were needed to establish the status of the current evidence and to guide the subsequent studies reported in this thesis. The findings may also facilitate application of the evidence base to perinatal mental health policy, practice, and research more broadly.

To overcome the potential limitations of systematic reviews summarised above, both reviews were conducted in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) statement (Moher et al., 2009). The PRISMA statement provides a 27-item checklist and a four-phase flow-diagram for authors to use

when conducting and reporting their systematic review. To add further validity to the systematic review process, the review protocol was prospectively registered with the PROSPERO database of systematic reviews (http://www.crd.york.ac.uk/prospero; registration number CRD42014007524; see Appendix B). Both reviews included quality assessments of the included studies to address the risk of bias (See Table 5.1 and Appendix J).

Consumer and stakeholder involvement in mental health research

It is important to complement quantitative data from empirical studies with qualitative, participatory research. There is growing recognition of the need for mental health research to incorporate consumer viewpoints (Banfield et al., 2014). A consumer is "a receiver or a potential receiver of health care products, programs or services" (Boote et al., 2002, p. 214). Consumer engagement is defined as the process by which consumers' "knowledge and experience…is shared in a collaborative dialogue with program developers, practitioners, and researchers" (Sanders & Kirby, 2012, p. 237).

Sanders and Kirby (2012) argue that evidence-based parenting programs are more likely to be successful when the research process is inclusive of consumers and key stakeholders. Consumer involvement increases the likelihood that consumers will engage with the final product, as their input improves the quality, acceptability, cultural appropriateness, and relevance of the intervention (Sanders & Kirby, 2012). This is essential as the low-uptake of evidence-based prevention interventions compromises their capacity to produce population-level effects (Sanders & Kirby, 2012). Consumer engagement in the current program of research was facilitated via Studies 3 and 4 of the thesis. The methods by which consumer perspectives were harnessed in each study are described in turn below.

The Delphi consensus method

The Delphi consensus method is used to draw on the experience and expertise of consumers and other key stakeholders (e.g., clinicians, researchers, policymakers). The Delphi technique was first developed in the 1950s by the United States government to inform military decisions (Dalkey & Helmer, 1963), but is now widely-used in health research to inform policy and service planning, develop clinical guidelines, and identify professional competencies (Jorm, 2015; McKenna, 1994). The Delphi consensus method is used to establish agreement among experts (Jones & Hunter, 1995). This is achieved by asking experts to independently rate questionnaire items on a rating scale (e.g., a 5-point scale ranging from 'Important or essential' to 'Should not be included') over successive rounds. Following each round, participants are provided with summaries of the findings from the previous round and asked to consider whether they would like to change or maintain their original rating. Items that do not achieve sufficient consensus are excluded.

Rowe and Wright (1999) identified four key characteristics of the Delphi approach: (1) anonymity, (2) controlled feedback, (3) iteration, and (4) aggregation. Panel members maintain *anonymity* to enable them to freely express their opinions and reduce the potential for social desirability bias. *Controlled feedback* between rounds is used to inform respondents of the diversity of the views emerging from the panel. *Iteration* allows panel members to re-consider their position and modify their responses. Finally, *aggregation* allows for quantitative analysis of results to facilitate interpretation of the data.

Strengths. The Delphi technique is an efficient and cost-effective way (McKenna, 1994) of generating knowledge when contradictory or insufficient information is available (Hasson et al., 2000), or the research question cannot be answered using experimental or epidemiological methods (Jorm, 2015). Delphi studies are increasingly implemented via the Internet, and a number of researchers have developed mental health guidelines using this

method (e.g., Berk et al., 2011; Kelly et al., 2010; Morgan & Jorm, 2009). This has a number of practical advantages. As Delphi studies do not require face-to-face interaction, the sampling pool is not limited by geographical constraints (Cole et al., 2013). Participants can anonymously complete the surveys at a convenient time and place (Nair et al., 2011). This enables increased sample size and diversity, and allows for the recruitment of international experts (Cole et al., 2013).

The anonymity afforded to participants also reduces the risk of bias from factors such as social desirability (Powell, 2003). Unlike focus groups, respondents are less likely to be influenced by the researcher or the composition of the group, as they complete the questionnaires in private (Nair et al., 2011). Correspondingly, outcomes obtained through the Delphi technique are seen as more acceptable and reliable than decisions reached through working groups using methods such as the nominal group technique (Meijering et al., 2013).

Potential limitations. Despite the advantages of the Delphi method, researchers have identified a number of potential limitations. One of the main controversies surrounding the technique is whether it is a weak form of evidence, as it is 'opinion-based' rather than 'evidence-based'. Although the findings of Delphi studies represent expert opinion, rather than indisputable fact (Powell, 2003), the 'evidence-based' versus 'opinion-based' argument presents a false dichotomy. As observed by Jorm (2015), expert consensus underpins the methodologies of the evidence-based movement: it is used to develop criteria for assessing the quality of research, to determine which research projects receive funding, and to establish standards for the reporting of randomised controlled trials and systematic reviews and meta-analyses. In fact, Delphi studies could be said to exemplify evidence-based practice as they integrate empirical evidence with individual clinical expertise (Sackett et al., 1996).

Another criticism frequently levelled at Delphi studies is that their sample sizes are insufficient. Studies that have administered the Delphi technique on-line have often noted difficulties with recruitment and attrition (Cole et al., 2013). It can be difficult to engage potential participants via email or on-line advertising, rather than via face-to-face recruitment. It is therefore important that the recruitment email clearly communicates the credibility of the research team and their organisation. The absence of direct interaction with the researcher may also reduce participants' engagement during the course of the study. The time involved in participating in a Delphi study is another factor that can deter participants from completing the questionnaires (Jorm, 2015). Most Delphi surveys are administered over three rounds, the first of which may take two or more hours to complete (e.g., Yap et al., 2014). In addition, the time between rounds can be lengthy, as the round is left open to maximise the number of participants. Therefore, participants who completed the round when the survey invitation was first distributed may have lost interest by the time they are invited to the subsequent round.

Although Delphi studies are often criticised for attrition and small sample sizes, there is actually little agreement in the literature on how many panel members is sufficient. The size of Delphi panels vary widely, ranging from 6 to 2865 panel members (Akins et al., 2005). One study of healthcare quality and safety used bootstrap sampling to investigate whether larger panels are needed to produce more stable results by reducing the influence of each individual's response (Akins et al., 2005). They found that as few as 23 panel members are needed to produce adequate stability (Akins et al., 2005). Even so, the number of participants is less relevant to the validity of Delphi studies than the appropriateness and credibility of the panel members (Hasson et al., 2000).

The composition of the expert panel is a more important consideration than panel size as respondents with inadequate expertise compromise the validity of the findings. Clibbens et al. (2012) argue that bias in participant selection reduces the validity of the outcomes. The reliance on “self-identified” experts is also a potential limitation (Cole et al., 2013). It is therefore important to systematically identify sampling pools and screen potential respondents on selection criteria to ensure adequate experience or expertise.

Another aspect of Delphi studies that can potentially weaken the validity of the findings is unclear criteria around how consensus is quantified (Hasson et al., 2000; Meijering et al., 2013). Meijering et al. (2013) conducted computer simulations of Delphi scenarios using various indices of agreement. The results indicated that different indices produce varying results. Therefore, the consensus index needs to be identified a priori to prevent researchers from modifying the criteria depending on the responses (Meijering et al., 2013).

Finally, an oft-cited problem with the application of the Delphi method to the development of public health guidelines is that the findings are too prescriptive. Specifically, critics argue that the resulting guidelines disregard the individual’s unique situation and needs (Cairns et al., 2015). As noted by Reavley et al. (2012), it can be difficult to develop guidelines that are specific enough to be useful, while remaining broad enough to be relevant to most people. The tension between generalisability and utility is a difficult issue to resolve. Nonetheless, guidelines produced by the Delphi method are likely to be more generalisable than guidelines developed by individual experts or working groups, as they are based on consensus.

The use of the Delphi method in this thesis. The Delphi method was applied to develop guidance on how partners can support one another to reduce their risk of perinatal

depression and anxiety. Although a meta-analysis synthesised the evidence-base for partner factors associated with perinatal depression and anxiety, a Delphi consensus study was needed to translate these findings into specific actions that parents can implement (Rini et al., 2006).

Figure 4.2 provides a schematic diagram of how the Delphi consensus method was applied. Items on how partners can support one another to prevent perinatal depression or anxiety were drawn from a systematic search of academic and lay literature. Respondents were also invited to suggest potential items in the first round survey. Two panels of experts in perinatal mental health (consumer advocates and professionals) rated the importance of each item for preventing the development of perinatal depression or anxiety. The study was approved by the Human Research Ethics Committee of the Australian Catholic University (No. 2013 246V; Appendix C).

To overcome the potential problems with the quality of participants discussed above, the researchers and clinicians on the professional panel were required to have a minimum of five years of experience in perinatal mental health. This requirement was based on the conventions of similar Delphi studies in mental health research (Jorm, 2015). Consumer and carer advocates were required to have experienced perinatal depression or anxiety or cared for someone who had, and currently be in a consumer advocacy role. Where available, brief evidence summaries of the literature reviewed in our systematic review and meta-analysis of partner factors associated with perinatal depression and anxiety were included in the questionnaire for panel members to consider when deciding their ratings.

Questionnaire responses were analysed to determine which items were endorsed by panel members as important for preventing perinatal depression and anxiety. Inclusion, re-rating, and exclusion criteria for consensus were identified a priori, as recommended by

Meijering et al. (2013). The criteria were based on the conventions of Delphi consensus studies conducted in mental health (e.g., Reavley et al., 2012).

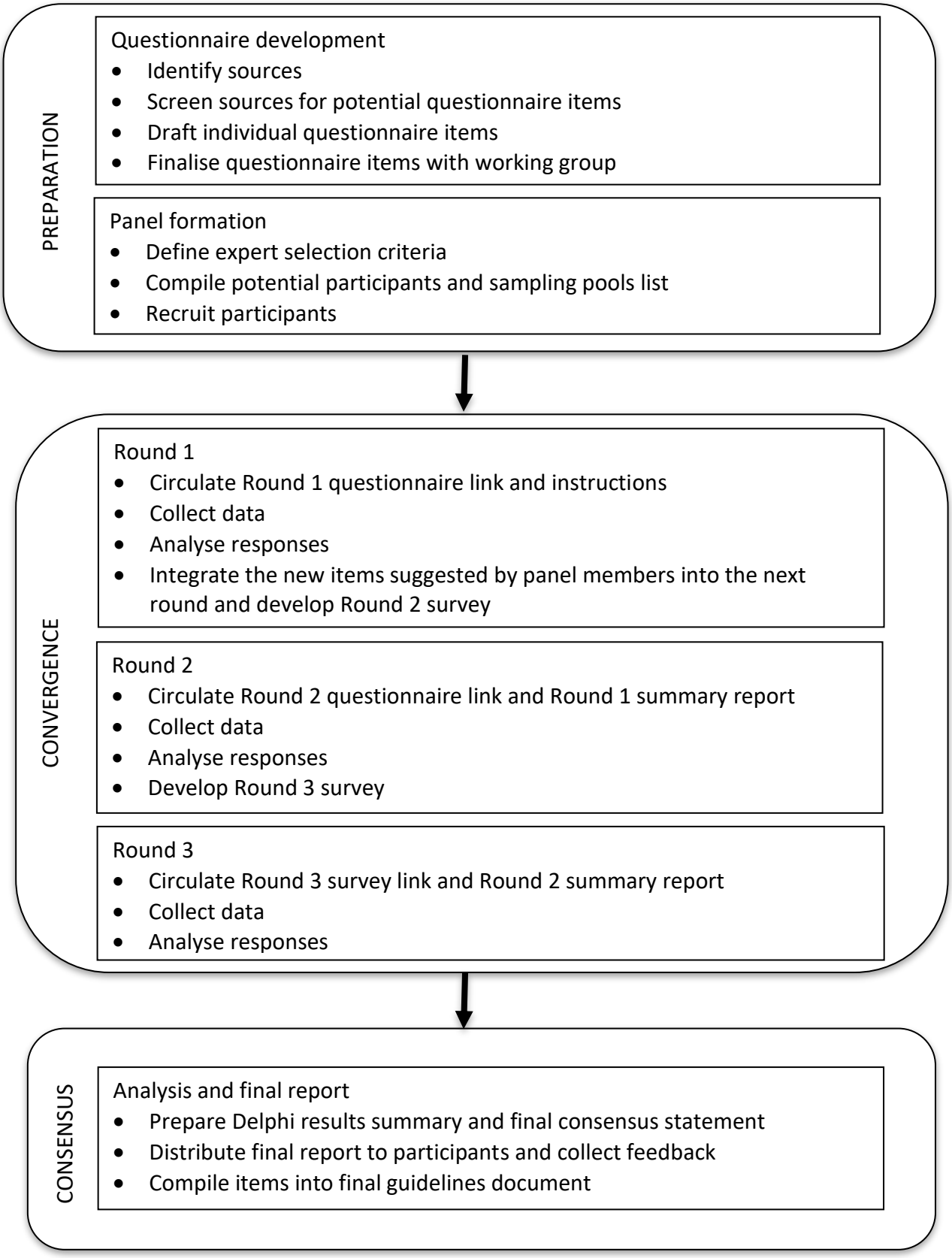


Figure 4.2. **The three-round Delphi method (adapted from Cole et al., 2013)**

Usability testing

Usability testing is a frequently utilised approach in eHealth research (Van Velsen et al., 2013). Usability is defined as the user's experience of the intervention as easy to use, acceptable, and relevant (Bangor et al., 2008). Usability testing involves end users or experts interacting with a prototype to identify its usability strengths and weaknesses.

Common methods for usability testing include think-aloud protocols and the cognitive walkthrough method. These approaches involve encouraging the user to verbalise their cognitions as they navigate a prototype of the website or application, and are ideal for eliciting real-time impressions (Van Velsen et al., 2013). This information can then be used to improve the functionality and design of the intervention (Jaspers et al., 2004).

Strengths. Usability testing is a relatively quick and inexpensive way of generating rich, real-time data that can be used to enhance the quality of the website content and layout. Many web-based interventions are not successful in reaching or maintaining engagement with the target population (van Gemert-Pijnen et al., 2011). Usability testing has been shown to improve the reach and uptake of the final product (Ludden et al., 2015; van Gemert-Pijnen et al., 2011). Perinatal mental health researchers have successfully applied usability testing to inform the development of web-based interventions for the treatment and prevention of postnatal depression (e.g., Danaher et al., 2012).

Potential limitations. A potential limitation of usability testing is that it can limit the creativity of the design team, as the views of the end users and stakeholders are prioritised (Van Velsen et al., 2013). A second limitation is that usability testing occurs following the development of a prototype, but some researchers argue that the target audience should be consulted at all stages (e.g., Kelders et al., 2013). Another potential concern is that usability testing is conducted with small samples and this limits generalisability. Nonetheless, Nielsen

(1994) demonstrated that as few as five usability testers are needed to identify 77% of errors. Finally, as identified by Haga et al. (2013), if usability testers are aware that the interviewer has a professional interest in the website, they may be influenced by social desirability bias and be reluctant to provide negative feedback.

The use of usability testing in this thesis. Obtaining the perspectives of mothers and fathers is integral to the development of interventions aiming to promote mental health during the perinatal period. A usability testing methodology was adopted in this thesis to inform the development of a web-based intervention for the prevention of perinatal depression and anxiety. Individual face-to-face usability testing sessions were conducted to obtain feedback on the website from men and women who were expecting or parenting an infant aged up to 24 months. A think-aloud protocol was used to elicit perceptions of the website's content, layout and design, and navigability.

Participants were encouraged to provide both negative and positive feedback. The participants were also invited to consider potential barriers and facilitators to accessing the website. The audio from each usability test session was digitally recorded and transcribed.The transcriptions were coded in *NVivo 10* (QSR International, 2012b) using deductive coding (Braun & Clarke, 2006), based on a coding scheme devised by Kelders et al. (2013) to identify comments relating to system and content quality. The study was approved by the Human Research Ethics Committee of the Australian Catholic University (No. 2015-131E; Appendix D).

Conclusion

This chapter has considered the advantages and disadvantages of the methodological approaches selected for use in this thesis, namely: (1) systematic reviews and meta-analyses; (2) the Delphi technique; and (3) usability testing. The methodological rationale is strengthened by the integration of quantitative and qualitative research approaches. It is

important to complement empirical data with qualitative exploration of the perspectives of key stakeholders. A major strength of the design of this thesis is the inclusion of the viewpoints of consumers, researchers, and clinical professionals to inform the development of an evidence-based on-line intervention for the prevention of perinatal depression and anxiety.

Chapter 5 : A Review of Partner-inclusive Interventions for Preventing Postnatal Depression and Anxiety

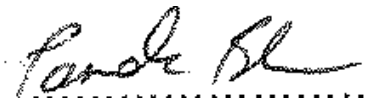
The previous chapter provided a rationale for the quantitative and qualitative methods selected for this program of research. This chapter presents the first of two systematic reviews, and was published as a peer reviewed journal article in the *Clinical Psychologist*[2]. This article systematically reviews and evaluates existing interventions for preventing perinatal depression and anxiety that target the intimate partner relationship. Key areas of focus were the extent to which fathers are included as active participants, and the accessibility and efficacy of the interventions. The insights into the limitations of existing partner-inclusive interventions gained from this review were used to inform the development of the web-based prevention intervention outlined in Chapter 8.

[2] The *Clinical Psychologist* was recently established in 2010 as the official journal of the Australian Psychological Society's College of Clinical Psychologists. It has a 5-year impact factor of .973 and is in the 2nd quartile of 'clinical psychology' research (SCImago, 2015).

Statement of Contribution

Pilkington, P.D., Whelan, T.A, & Milne, L.C. (2015). A review of partner-inclusive interventions for preventing postnatal depression and anxiety, *Clinical Psychologist*, *19,* 63-75. doi: 10.1111/cp.12054

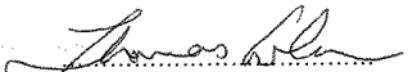
I acknowledge that my contribution to the above paper is 75 percent.

Signature:  Date: 14 January 2016

Pamela D. Pilkington

School of Psychology, Faculty of Health Sciences, Australian Catholic University

I acknowledge that my contribution to the above paper is 15 percent.

Signature:  Date: 14 January 2016

Dr Thomas A. Whelan

School of Psychology, Faculty of Health Sciences, Australian Catholic University

I acknowledge that my contribution to the above paper is 10 percent.

Signature:  Date: 14 January 2016

Dr Lisa C. Milne

School of Psychology, Faculty of Health Sciences, Australian Catholic University

Abstract

Background. Preventing perinatal mood problems is critical due to the adverse consequences for the individual and their family. Partner support is an ideal target for prevention efforts as it is a protective factor for both perinatal depression and anxiety and is modifiable.

Method. This review explores the current evidence and future directions for interventions that aim to reduce the risk of perinatal mood problems by addressing partner support. A systematic search of electronic databases was conducted to identify relevant peer-reviewed studies. Interventions were eligible for inclusion if they aimed to facilitate partner support or strengthen the couple relationship and included perinatal depression or anxiety as an outcome variable.

Results. A number of prevention efforts have been developed that include a partner component and these have reported some benefits. Even so, not all of these interventions were delivered to both mothers and fathers, and research evaluating their effects on paternal mental health is lacking. In addition, current prevention strategies tend to be limited by low attendance rates.

Conclusions. Future research should focus on developing interventions that provide more opportunities for the active involvement of both partners. Alternatives to psycho-education groups should be explored to increase accessibility and enable scalability.

Keywords: Anxiety; depression; partner; postpartum; prevention.

Introduction

Childbirth is widely seen as a cause for joy and happiness. Nonetheless, the transition to parenthood is also associated with fatigue and stress as it requires significant adjustment to new roles and responsibilities (Buist et al., 2003; Matthey et al., 2009a). New parents are vulnerable to mood problems as they adapt to this major life event. Indeed, depression is reported to affect up to 13% of mothers (Gavin et al., 2005) and 10% of fathers (Paulson & Bazemore, 2010) during the perinatal period (i.e., pregnancy to 12 months postpartum). Perinatal anxiety is also common, affecting between 7% to 13% of parents (Miller et al., 2006; Skari et al., 2002). Preventing perinatal mood problems is critical due to the potential adverse impact on the parent's physical and mental health (O'Hara, 2009) and functioning (Mazure et al., 2002). Of particular concern are the significant deleterious effects of perinatal distress on the infant's cognitive and emotional development (Giallo et al., 2015; Ramchandani et al., 2005).

Consistent evidence shows that support from partners protects against postpartum depression (e.g., Dennis & Ross, 2006), while poor relationship functioning is associated with higher levels of depressive symptoms during pregnancy and the postpartum period (Whisman et al., 2011). Research examining postpartum anxiety symptoms and marital adjustment converges with the postpartum depression literature, with evidence that lack of partner support is associated with increased anxiety symptoms (Figueiredo et al., 2008; Rini et al., 2006). Therefore, partner support is a key target for interventions that aim to prevent perinatal mood disorders (Highet et al., 2011).

This review aims to evaluate prevention interventions that address the couple relationship and examined maternal and/or paternal perinatal depression or anxiety as outcomes. The predominant discourse in the perinatal literature focuses on mothers, while

the wellbeing of fathers and same-sex parents is marginalised. We deliberately aim to broaden the emphasis by considering perinatal distress as something that can be experienced by both mothers and fathers. We focus on partner support given that it is a protective factor against perinatal mood problems in heterosexual men (Gawlik et al., 2013) and women (Dennis & Ross, 2006), as well as same-sex parents (Goldberg & Smith, 2011).

"Partner" refers to someone with whom the individual shares a romantic partnership, including de facto and same-sex relationships (Kruse et al., 2012). From this perspective, partner-inclusive interventions for the prevention of perinatal distress may target both mothers and fathers, and partners can be male or female. Partner-inclusive prevention strategies address partner support or the couple relationship, either as the focus of the intervention or alongside other risk and protective factors. We use the term partner support as an umbrella term for various aspects of the couple relationship, including the exchange of emotional and instrumental support, effective communication, relationship satisfaction, empathy, and the division of labour.

Partner support and perinatal distress

New parents experience an increased need for support from their partners and family during the perinatal period (Bost et al., 2002). The importance of intimate relationships becomes more salient, as new parents have less contact with the social networks that they have established through work and other activities (Perren et al., 2005). The presence of a supportive partner protects against postpartum depression by buffering the stress associated with the transition to parenthood (Bilszta et al., 2008).

At the same time that the couple relationship becomes more important, it also becomes more vulnerable (Don & Mickelson, 2012). The birth of a child is a significant stressor for both parents that can reduce their capacity to support one another as they usually would (Don & Mickelson, 2012). The transition to parenthood is associated with an

increase in household labour and fatigue, resulting in less time for positive social exchanges and intimacy (Shapiro & Gottman, 2005). Correspondingly, marital conflict can increase, while marital quality decreases, following the birth of a child (Shapiro et al., 2000). Prevention efforts that aim to strengthen the couple relationship are needed.

Partner support and the prevention of perinatal distress

Partners are ideally positioned to provide consistent long-term support and detect changes in their spouse's wellbeing. Fisher et al. (2010) noted that a number of early prevention programs have attempted to facilitate social support through enhanced professional care, rather than addressing the individual's relationship with their partner. Given that parents show a preference for support from their partner (Forsyth et al., 2011; Rowe et al., 2013), strategies that target the couple relationship are likely to be beneficial.

Partner support is an ideal target for prevention efforts as it is not gender-specific. Societal changes in the role of men and their increased involvement in parenting necessitates that interventions for postpartum depression include fathers (Goodman, 2012). Addressing paternal mental health is essential as it can negatively impact infants' emotional and behavioural development (Fletcher et al., 2011; Giallo et al., 2011).

Postpartum depression in fathers often appears to follow the onset of depression in their partner (Matthey et al., 2000) and peaks in the first 12 months postpartum (Giallo et al., 2014c). Infants of parents who are both experiencing postpartum depression are at greater risk of poor developmental outcomes than those of one parent with depression (Goodman, 2012). Evidence that the correlation between maternal and paternal postpartum depression is mediated by partner support and relationship satisfaction (Don & Mickelson, 2012) reinforces the need for prevention strategies that directly address partner support. Wee et al. (2013) suggest that the most effective support for fathers is likely to come from

their partners, given that paternal and maternal mental health is interrelated. Nonetheless, many prevention and intervention strategies do not target both partners within the couple dyad (Rowe & Fisher, 2010). Men currently feel marginalised by perinatal health services (Rowe et al., 2013), which are predominately mother-centred.

Focusing on both individuals in the couple dyad also avoids hetero-sexism, by recognising that a significant proportion of parents are in same-sex relationships. Consistent with the literature on heterosexual couples, the limited research on the mental health of lesbian and gay parents indicates that poor relationship quality is associated with increased depression and anxiety symptoms in the first year of parenthood (e.g., Goldberg & Smith, 2011). The couple relationship is therefore an ideal target for interventions aiming to prevent perinatal distress in heterosexual and same-sex parents.

Method

Search strategy

A systematic search was conducted in accordance with the PRISMA statement (Moher et al., 2009). Electronic databases PsycInfo, MEDLINE and CINAHL were searched on 4 February 2014 using the search terms "(partner or spouse or couple) and (depressi* or distress or affective or mood or anxiety or PND) and (postpartum or postnatal or perinatal or antenatal or pregnancy)". The search terms were required to appear in the abstract. Searches were limited to peer-reviewed articles written in English. No publication date limits were applied. Additional sources were identified by hand searching reference lists of studies identified as relevant from the initial search, as well as by screening papers citing these relevant studies in Web of Science or Google Scholar. The forward citation search was completed on 23 June 2014.

Selection criteria and data extraction

The first author screened all potential studies that were identified as a result of the search strategy for inclusion based on the article title, abstract, and if necessary, the full text. Studies were required to fulfil the following inclusion criteria: (a) published in a peer-reviewed journal; (b) evaluated an intervention that aimed to prevent perinatal depression or anxiety; (c) addressed partner support or the couple relationship, either as the focus of the intervention or alongside other risk and protective factors; and (d) analysed depressive or anxiety symptoms or diagnoses during pregnancy or up to 12 months postpartum as outcome variables. Studies were excluded if: (a) the article did not report data (e.g., the article was a review paper, meta-analysis, or discussion paper); (b) the article was not in English; (c) the sample included participants aged younger than 16 years; or (d) more than 20% of the participants were depressed or anxious at trial entry. PP extracted the study information and TW confirmed accurate extraction.

Assessment of quality

The methodological quality of the studies was assessed using the following criteria (Dennis & Dowswell, 2013): (1) randomisation of participants: adequate, inadequate, unclear; (2) allocation concealment: adequate, inadequate, unclear; (3) blinding of participants: yes, no, inadequate, unclear; (4) blinding of outcome assessment: yes, no, inadequate, unclear; and (5) percentage of participants with complete follow-up data at final assessment. PP and TW independently assessed the methodological quality of each study and resolved discrepancies through discussion.

Results

Figure 5.1 outlines the results of the systematic literature search. Thirteen partner-inclusive interventions were identified. The characteristics of the included studies are summarised in Table 5.1. All of the interventions included mothers as participants. Nine studies included fathers as participants in at least part of the intervention. Nonetheless, only five studies reported on paternal outcomes. Only one study specified that their intervention was designed to be inclusive of same sex couples (Milgrom et al., 2011), while another identified the need for future research to modify their intervention for lesbian and gay couples (Shapiro & Gottman, 2005). The majority of studies were of high methodological quality, utilising randomised controlled designs, although a number of studies reported high rates of attrition (e.g., Lara et al., 2010b).

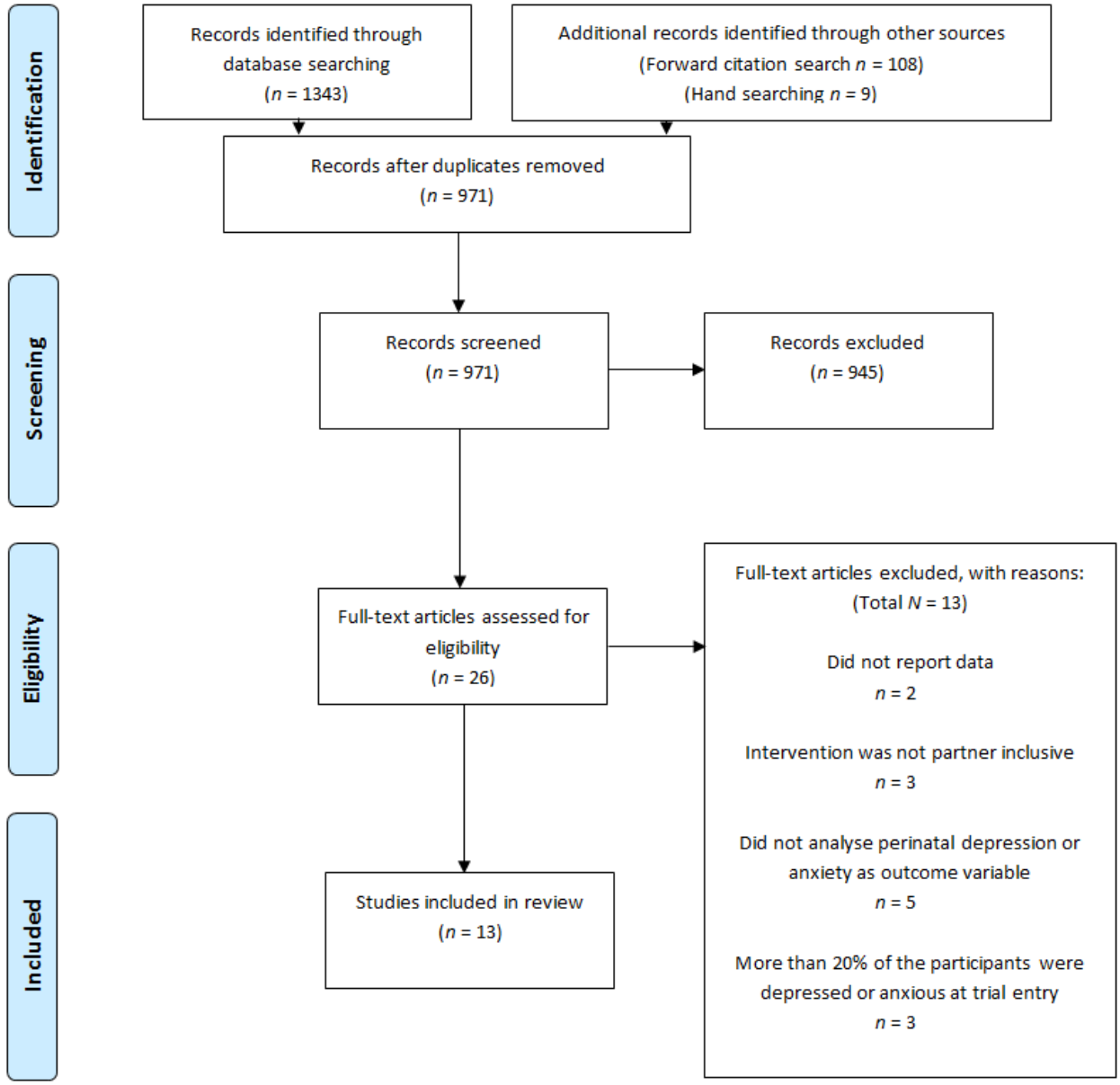
Four interventions addressed partner support as one component of a broader psycho-educational program. Seven interventions explicitly focused on couples and included both mothers and fathers as participants. The remaining two interventions used approaches other than psycho-education, such as home-visits or telephone support. The psycho-educational interventions are reviewed first, followed by the couples-focused interventions, and other approaches.

Psycho-educational approaches

A selective prevention strategy was evaluated in a pilot study by Buist et al. (1999). This intervention comprised antenatal education, with one of the sessions focusing on the partner's role in postnatal depression. Women who participated in the intervention were less likely to experience anxiety symptoms at six weeks postpartum than women attending routine care. Even so, no differences were evident in levels of postpartum depression symptoms. The mental health of fathers was not assessed. Furthermore, the investigators

described the session as exploring the partner's role in postnatal depression, implying that postpartum depression is only experienced by mothers.

PRISMA 2009 Flow-Diagram



From: Moher D, Liberati A, Tetzlaff J, Altman DG, The PRISMA Group (2009). Preferred Reporting Items for Systematic Reviews and Meta-Analyses: The PRISMA Statement. PLoS Med 6(6): e1000097. doi:10.1371/journal.pmed1000097

For more information, visit: **www.prisma-statement.org**.

Figure 5.1. **PRISMA flow-diagram**

Elliott et al. (2000) delivered group classes that aimed to encourage mothers to strengthen and utilise their social support networks, reduce the number of stressors associated with childbirth, and normalise postpartum negative moods and coping difficulties. Although the intervention reduced first-time mothers' risk of major depressive disorder at three months postpartum, no effect was evident for multiparous women. Notably, mothers reported increased confidence in their primary confidant, although this did not mediate the effect of the intervention on mood. Despite targeting women who reported marital dissatisfaction, fathers were only included as active participants in one of 11 sessions.

The efficacy of brief interpersonal-psychotherapy oriented psycho-education was investigated by Gao et al. (2010). This intervention targeted interpersonal problem areas including the marital relationship. Participants participated in two group sessions and received a follow-up phone call within two weeks of childbirth. Women in the intervention group reported fewer depression symptoms and better relationships with their husbands and their mothers-in-law than those in the control group. Husbands were not included as active participants.

Finally, Lara et al. (2010a) evaluated the efficacy of weekly antenatal classes that addressed the role of the partner, postpartum depression, self-care, positive thinking, and increasing social support. The results indicated a trend towards a reduction in postpartum depressive symptoms, but the effect was not significant. The investigators observed that high attrition rates reduced the interpretability of the findings (Lara et al., 2010b). Notably, women who reported less relationship satisfaction were more likely to complete the intervention. This shows that parents with low partner support are motivated to engage in antenatal education, presumably due to their higher need for support (Lara et al., 2010a).

Nevertheless, the intervention was limited in that women's partners were not directly involved in any of the sessions.

Couple-focused interventions

Interventions that specifically focus on the couple-relationship and include both partners as participants may be more likely to show benefits. In an early investigation, Midmer et al. (1995) examined the effect of couples-based antenatal classes on the prevention of postpartum anxiety and marital adjustment. The classes included role-plays, psycho-education and values work. Couples were given the opportunity to discuss how their relationship was likely to change following childbirth. Participants in the intervention reported lower levels of anxiety and higher marital adjustment at six weeks and six months postpartum than those in the control group.

Similarly, Matthey et al. (2004) evaluated the effects of a single antenatal class designed to develop first-time parents' empathy towards each other and facilitate their adjustment to parenthood. Participants also received mailed information to consolidate their learning. Self-esteem was investigated as a moderator of the effectiveness of the intervention. Women with low antenatal self-esteem who received the intervention reported reduced postpartum distress and more satisfaction with the sharing of domestic tasks at six weeks postpartum than those in the control conditions. In addition, fathers who received the intervention were significantly more aware of their partner's experience of new parenthood. However, these effects were no longer present at six months postpartum, and effects on paternal mental health were not evident at either time.

Another couple-focused intervention was examined by Shapiro and Gottman (2005). Couples who attended a workshop focused on strengthening the couple relationship reported lower levels of depression and higher relationship quality at 12 months postpartum than controls. An observational assessment of couples during conflict showed that those

who had received the intervention displayed less hostile affect. This demonstrates that a dyadic approach to postpartum adjustment can have significant benefits for the couple's wellbeing following the birth of their child. Nevertheless, the study is limited by its small sample size (*N*=38).

A universal prevention program was evaluated by Feinberg and Kan (2008). This consisted of eight classes delivered over the perinatal period. The program focused on facilitating supportive co-parenting, rather than the romantic relationship, by fostering equal division of labour, managing disagreements, and facilitating joint problem solving. Mothers who completed the intervention had a larger decrease in depression and anxiety at six months postpartum than those in the control group. In addition, both mothers and fathers reported more positive co-parenting. Nevertheless, the intervention did not show a significant impact on paternal depression or anxiety.

A novel intervention by Matthey et al. (2008) used a quiz to develop partner communication and empathy. In this approach, mothers and fathers were asked a series of questions that encouraged them to reflect on how their partner was experiencing parenthood. Mothers who participated in the intervention were significantly more likely to perceive that their spouse understood their experience of parenthood than those in the control group. However, women in both conditions reported similar levels of overall satisfaction with partner support and no differences in depression or anxiety were evident. Fathers' depression and anxiety symptoms were also assessed, but the effect of the intervention on these indicators was not reported, presumably due to a low response rate. A notable strength of the quiz format is that it does not need to be facilitated by a health professional in a specified setting; it can be made available in pamphlet form and completed at home.

Fisher et al. (2010) developed a couples-based intervention that aimed to prevent common postpartum mental disorders by targeting the partner relationship and infant sleep and settling. This prevention strategy was based on the premise that the couple's relationship needs to adapt to the new demands of parenting an infant. In particular, the division of domestic tasks needs to be redistributed to prevent fatigue from excessive workload. A half-day session of psycho-education was delivered by Maternal and Child Health nurses to first-time parents at four weeks postpartum. Fisher et al. (2010) evaluated the intervention using a pre-post design and found that it reduced the risk of developing postpartum mental disorders in mothers with no history of psychiatric illness. More than 70% of participants who completed the intervention reported that they could now talk more effectively about parenting with their partner.

In a recent investigation, Gambrel and Piercy (2014) delivered four group-based sessions comprising relationship education and relational mindfulness. Couples were also expected to engage in mindfulness practice six days per week. There were no significant differences in postnatal distress between the intervention and control groups. Of note, fathers (but not mothers) showed significant improvements in relationship satisfaction at one week after the intervention. The authors indicated that low power may have obscured true effects.

Other approaches

As indicated, the majority of prevention efforts have consisted of group-based psycho-education. An alternative to antenatal classes was investigated by Milgrom et al. (2011). This intervention used a self-help workbook in conjunction with telephone support to reduce parents' vulnerability to postpartum depression, anxiety, and stress. The workbook comprised nine units, one of which was dedicated to partners, and another to the couple relationship. Notably, Milgrom et al. (2011) intended to evaluate the effect of the

intervention on both mothers and fathers, but this did not eventuate as the response rate for men was too low. In comparison to routine care, women who completed the intervention were significantly less likely to experience postnatal depression and anxiety symptoms at 12 weeks postpartum. The effect of the intervention on partner support was not evaluated.

Heinicke et al. (1999) delivered an intervention to at-risk mothers that consisted of weekly home visits focused on strengthening mothers' relationships with their partners and families. Participants were randomised to home visits or paediatric follow-up. Participants attended an average of 17 weekly home visits with a mental health professional. Partners also attended individual home visits but not as frequently as mothers and some partners had no direct contact with the home visitor. Mothers reported feeling more positive about their relationship with their partner but no differences in depression or anxiety were evident between the intervention and control groups at 12 months postpartum.

Table 5.1. Summary of published partner-inclusive postpartum depression and anxiety prevention interventions

Reference	Intervention name	Intervention features	Partner component	Universal, selective, or indicated	Screening risk factors	Sample	Primary outcome measures (Cut-off)	Efficacy	Partner outcome measure	Influenced partner support	Follow-up period	Methodological quality
Psycho-educational approaches												
Buist, Westle, and Hill (1999)*	-	Eight antenatal and two postpartum classes	One session focused on the partner's role in postnatal depression	Selective	PMT, marital or childhood difficulties, history of depression in self or family	Primiparous women (Intervention *n* = 20; Control *n* = 18)	BDI SAS	N Y	DAS-S	N	Six weeks and six months postpartum	Study reported randomisation but no information was provided on how this was done (pilot study). Follow-up data: 69% of intervention, 57% of control.
Elliott et al. (2000)	*Preparation for Parenthood / Surviving Parenthood*	Five antenatal and six postnatal classes	Targeted mothers who reported marital dissatisfaction. Fathers were invited to attend one session	Selective	Marital difficulties, psychiatric history, lacking a confidante, high antenatal anxiety	Primiparous and multiparous women (Intervention *n* = 47; Control *n* = 52; Less vulnerable control *n* = 88)	PSE	Y (Primiparous only)	SS – confiding in primary confidante	Y	Three months postpartum	Randomisation: inadequate. Allocation concealment: inadequate (based on expected delivery date). Blinding of outcome assessment: yes. Follow-up data: insufficient information provided.

Gao, Chan, Li, Chen, and Hao (2010)		Two antenatal classes and a telephone follow-up within 2 weeks of delivery	Interpersonal psychotherapy oriented psycho-education included a discussion of strategies to manage marriage after childbirth	Universal	-	Primiparous women (Intervention *n* =96; Control *n* = 98)	EPDS	Y	SWIRS	Y	Six weeks postpartum	Randomisation: adequate. Allocation concealment: adequate. Blinding of participants: unclear. Blinding of outcome assessment: yes. Follow-up data: 91% of intervention, 90% of control.
Lara, Navarro, and Navarrete (2010b)	*'Salud Mental de Mamás y Bebés' (Mothers' and Babies' Mental Health)*	Eight antenatal classes	Addressed the role of the partner	Indicated	Elevated depression symptoms (CES-D) and/or history of depression	Primiparous and multiparous women (Intervention *n* = 250; Control *n* = 127)	BDI-II (≥14) CES-D (≥16)	N	-	-	Six weeks and four to six months postpartum	Randomisation: adequate. Allocation concealment: inadequate. Blinding of participants: no. Blinding of outcome assessment: no. Follow-up data: 27% of intervention, 54% of control.
Couples-focused interventions												
Feinberg and Kan (2008)	*Family Foundation s*	Four antenatal and four postnatal classes	Focused on conflict management, problem solving, communication, and mutual support strategies that foster co-parenting.	Universal	-	Primiparous couples (Intervention *n* =89*;* Control *n* = 80*)*	CES-D	Y (Mothers only)	SS – Co-parenting relationship	Y	Six months postpartum	Study reported randomisation but no information was provided on how this was done. Blinding of outcome assessment: yes (self-report). Follow-up data: 89% of intervention, 91% of control.

Fisher et al. (2010)*	*What Were We Thinking!*	Half-day postnatal session of couples-based, psycho-education. The program has since been made available on-line[3]	Delivered to both parents and included a specific component to assist couples in adapting to changed needs for support, renegotiating the paid and unpaid household workload, and adjusting to parenthood	Universal	-	Primiparous women (Intervention *n* = 189; Control *n* = 210)	CIDI – diagnosis of Depression or Anxiety	Y (de novo only)	SS – able to talk about parenting to partner	Y	Six months postpartum	Randomisation: inadequate (pre-post design). Allocation concealment: inadequate. Blinding of participants: no. Blinding of outcome assessment: yes. Follow-up data: 90% of intervention, 83% of control.
Gambrel and Piercy (2014)*	*Mindful Transition to Parenthood Program*	Four antenatal sessions	A combination of skill-based relationship education programs and relational mindfulness	Universal	-	Primiparous couples (Intervention *n* = 32; Wait-list control *n* = 34)	DASS-21	N	CSI	Y (Fathers only)	One week post-intervention	Randomisation: adequate. Allocation concealment: adequate. Blinding of participants: no (wait-list control). Blinding of outcome assessment: yes (self-report). Follow-up data: 88% of intervention, 94% of control.

[3] Since publication of this article, *What Were We Thinking!* has also been developed into a mobile phone and tablet application.

Matthey et al. (2004)	-	A single antenatal class and mailed information	Focused on increasing couples' awareness of each other's psychosocial concerns in pregnancy and the postpartum by discussing their concerns in separate and mixed gender groups	Universal	-	Primiparous couples (Intervention *n* = 89, Control *n* = 101, Nonspecific control *n* = 78)	EPDS (≥15)	M (Mothers only)	SOS; PAS; WDW; SS - overall satisfaction with sharing of domestic tasks	Y	Six weeks and six months postpartum	Study reported randomisation based on groups but no information was provided on how this was done. Blinding of outcome assessment: yes (self-report). Follow-up data: 74% of intervention, 73% of control, nonspecific control 76%.
Matthey, McGregor and Ha (2008)*	*The Great Parents' Quiz*	A pen-and-paper quiz	Delivered to both parents and explicitly addressed the couple relationship	Universal	-	Primiparous and multiparous couples (Intervention *n* = 26 women, 16 men; Control *n* = 25 women 7 men)	HADS-A (≥8) EPDS (≥10)	N	SS - partner support; partner awareness	Y	Four weeks post recruitment	Randomisation: adequate. Allocation concealment: inadequate (alternating days). Blinding of participants: yes. Blinding of outcome assessment: yes (self-report). Follow-up data: 66% of women.
Midmer, Wilson, and Cummings (1995)	-	Two antenatal classes	Couples-based classes included discussion of division of household labour and changes in the couple's relationship	Universal	-	Primiparous couples (Intervention *n* = 41 couples; Control *n* = 29 couples)	STAI-S	Y	DAS	Y	Six weeks and six months postpartum	Study reported randomisation but no information was provided on how this was done. Blinding of outcome assessment: yes (self-report). Follow-up data: 72% of intervention, 76% of control.

Shapiro and Gottman (2005)	*Bringing Baby Home*	A two-day couples workshop	Focused on recognising and avoiding marital problems, communication, intimacy, conflict management, and developing a shared meaning system	Universal	-	Primiparous couples (Intervention *n* = 18 couples; Control *n* = 20 couples)	SCL-90	Y	MAT; SPAFF	Y	Three and 12 months postpartum	Study reported randomisation but no information was provided on how this was done. Follow-up data: insufficient information provided.
Other approaches												
Heinicke, Fineman, Ruth, Recchia, Guthrie and Rodning (1999)*	-	Home visitor	Focused on helping the mother maintain a positive relationship with her partner based on family systems theory	Selective	Poverty and lack of suport	Primiparous women (Intervention *n* = 31; Control *n* = 33)	BDI STAI	N	MPQPS	Y	One month and 12 months postpartum	Randomisation: adequate. Allocation concealment: adequate. Blinding of participants: unclear. Blinding of outcome assessment: yes. Follow-up data: 89% of intervention, 94% of control.

Milgrom, Schembri, Ericksen, Ross, and Gemmill (2011)*	*Towards Parenthood*	A self-help workbook in conjunction with telephone support	The workbook comprised nine units, one of which was dedicated to partners and another to the couple relationship	Indicated	Elevated depression symptoms (EPDS)	Primiparous and multiparous women (Intervention *n* = 71; Control *n* = 72)	EPDS (≥13) DASS-21-A (≥8) BDI-II (≥14)	Y	-	-	12 weeks postpartum	Randomisation: adequate. Allocation concealment: adequate. Blinding of participants: yes. Blinding of outcome assessment: yes (self-report). Follow-up data: 66% of intervention, 58% of control.

Note. -A = Anxiety subscale; BDI = Beck Depression Inventory; CIDI = Composite International Diagnostic Interview; CSI = Couple Satisfaction Index; DAS= Dyadic Adjustment Scale; DASS-21 = Depression Anxiety Stress Scales, 21 item short form; EPDS = Edinburgh Postpartum Depression Scale; HADS = The Hospital Anxiety and Depression Scale; MAT = Locke Wallace Marital Adjustment Test; MPQPS = Mother's Perceived Quality of Partner Support; PAS = Partner Awareness Scale; PMT = Premenstrual Tension; PSE = Present State Examination; SAS = Speilberger Trait/State Anxiety Scale; SCL-90 =The Derogatis Symptom Checklist 90-item; SOS = Significant Others Scale; SPAFF = The SPecific AFFect coding system; SS = Study Specific measure; SWIRS = Satisfaction With Interpersonal Relationships Scale; WDW = Who Does What?/Who will Do What?

Efficacy: Y = Yes; N = No, M = Mixed findings. Influenced partner support: Y = Yes; N = No, M = Mixed findings.

*Examined both depression and anxiety as outcomes.

Discussion

The majority of interventions reviewed demonstrated prevention effects. Nine of the 13 studies showed a reduction in postpartum depression or anxiety. Matthey et al. (2004) reported mixed effects, noting that benefits at six weeks were not maintained over time. Buist et al. (1999) showed a reduction in anxiety symptoms, but no effect on depression. Nine of the 11 studies that evaluated the effect of the intervention on partner support or relationship quality reported benefits.

It is surprising that although all of the interventions reviewed included a component on the partner relationship, several were not delivered to both mothers and fathers. Prevention efforts tend to position fathers as contributors to maternal mental illness, rather than acknowledging the potential for fathers to develop depression and anxiety symptoms themselves. Indeed, Letourneau et al. (2012) advocated that postnatal depression should be reconceptualised as a condition of the family, rather than of the mother, given its impact on the entire family. Paternal depression and maternal depression often co-exist (Matthey et al., 2000), outcomes for the infant are poorer when both parents have postpartum depression (Goodman, 2012), and interventions that focus on developing the mother's expertise, but not the father's, can increase inter-parental conflict (Montigny & Lacharité, 2004). Paternal and maternal wellbeing in the perinatal period warrant equal attention. The majority of current prevention programs have not evaluated their effect on fathers' depression and anxiety symptoms. Future prevention efforts should include both the childbearing woman and her partner, and assess the effects on maternal and paternal mental health. Additionally, more innovative service delivery models that encourage fathers to participate should be considered.

Not only would inclusion of partners presumably improve paternal outcomes, research suggests that maternal compliance with interventions is also improved if partners attend. Wheatley et al. (2003) investigated predictors of engagement in their prevention program (Brugha et al., 2000) and observed that a number of participants in the intervention reported that they would have preferred more partner involvement. Furthermore, women with postpartum depression often retrospectively report that they were reluctant to seek help as their partners were dismissive of their symptoms (Letourneau et al., 2007). Given that more than 50% of postpartum depression cases go undetected (Goodman & Tyer-Viola, 2010), addressing men's literacy about perinatal depression may facilitate earlier intervention (Everingham et al., 2006; Highet et al., 2011).

The mental health of same-sex couples should also be addressed. A single study specified that they aimed to be inclusive of same-sex couples (Milgrom et al., 2011). The literature on postpartum depression and anxiety is dominated by research on heterosexual parents. Emerging research shows that poor relationship quality also predicts depression and anxiety symptoms in gay and lesbian couples (Goldberg & Smith, 2011). Given that the transition to parenthood is fundamentally the same for both heterosexual and same-sex couples, and there is considerable overlap in common risk factors (Ross, 2005), future prevention efforts should seek to include same-sex couples.

A broader approach to prevention

The majority of prevention efforts have not targeted depression and anxiety concurrently, despite their high co-morbidity and evidence that anxiety is prevalent. There is growing recognition that a conceptualisation of perinatal mood problems which goes beyond postnatal depression is warranted (Rallis et al., 2014). It is important to investigate perinatal anxiety, due to its association with decreased parenting confidence (Reck et al.,

2012) and poor infant outcomes (Van den Bergh et al., 2005), and evidence that co-morbid depression and anxiety can be more treatment resistant (Yelland, 2010). Despite its prevalence and negative consequences, anxiety remains under-researched (Christensen et al., 2013). Indeed, Fisher et al. (2010) questioned whether the limited success of previous prevention efforts may be due to the fact that they did not pay sufficient attention to postpartum anxiety symptoms.

The interventions reviewed focused on postpartum outcomes. Antenatal depression and anxiety are also worthy of attention given that they are both risk factors for postpartum depression (Escribà-Agüir & Artazcoz, 2011), and can negatively affect the developing foetus (Field et al., 2006). Developing prevention strategies to target antenatal depression is in keeping with the recent edition of the *Diagnostic and Statistical Manual of Mental Disorders* (DSM-5; American Psychiatric Association, 2013), which expanded the postpartum onset specifier to include the antenatal period.

Web-based prevention efforts

The majority of interventions reviewed comprised group classes delivered by health professionals. Although benefits were reported, the impact of antenatal classes has generally been limited by their low attendance rates and high rates of attrition (Lara et al., 2010b). Furthermore, expectant parents from minority groups are less likely to attend group sessions (Rowe & Garcia, 2003), despite their higher susceptibility to mood problems in the postpartum period (Rich-Edwards et al., 2006). Therefore, alternatives to antenatal classes should be explored. For example, strategies delivered on-line (e.g., Fisher et al., 2010; http://www.whatwerewethinking.org.au) may improve the uptake of prevention programs (Cuijpers et al., 2010), and reduce the burden on health professionals. A further advantage of web-based prevention strategies is scalability in that they can be delivered to more

people without an increase in cost (Jacka et al., 2013). Other formats, such as the use of self-help books (e.g., Milgrom et al., 2011) and workbooks also warrant further attention (Leach et al., 2007). Given that efforts to engage men in traditional treatment for depression and anxiety have had limited success (Möller-Leimkühler, 2002), and men are likely to have limited availability due to work commitments, research is needed to explore the preferences of couples regarding the best format for prevention.

Limitations

We acknowledge that our review has two key limitations. First, our synthesis of the literature is influenced by subjectivity, as meta-analytic methods were not used to statistically summarise the effects of the interventions. Nonetheless, we believe a qualitative synthesis was appropriate for our aims, and we improved the robustness of our review by using a systematic search strategy.

Second, our focus on partners does not allow for single parents or alternative family structures. The structure of contemporary families is increasingly diverse and the traditional nuclear family model cannot be assumed (Bengtson, 2001). Depending on the individual's family structure, some new parents may be more reliant on their own mother or other significant people in their life. Cultural differences may also contribute to differences in support preferences, with evidence that parents from Asian cultures are more likely to source assistance from their family of origin (Klainin & Arthur, 2009). Parents commonly access support from various individuals besides their partner. Given the considerable evidence showing the protective effect of social support on perinatal mental health (e.g., Haga, 2012), prevention efforts that aim to facilitate both partner support and social support more broadly could be more effective than partner support alone.

Conclusions

Preventing perinatal mood problems is critical due to the adverse consequences for the parent, his or her partner, and their infant. Partner support is an ideal target for prevention efforts targeting perinatal mood disorders (Dennis & Ross, 2006; Rowe & Fisher, 2010). Over the past two decades, preventive interventions that address partner support have been developed, the majority of which have been evaluated using randomised controlled designs and shown to be beneficial. However, existing prevention efforts tend to be limited by the relatively low uptake (Matthey et al., 2004). In addition, many interventions offer limited opportunities for the active involvement of partners and the mental health of partners is rarely addressed. It is important that future programs acknowledge that postnatal depression and anxiety can occur in both parents, and adopt more innovative and inclusive formats in order to reach as many new parents as possible.

Chapter 6 : Modifiable Partner Factors Associated with Perinatal Depression and Anxiety: A Systematic Review and Meta-analysis

The previous chapter established that the majority of current prevention efforts do not adequately include fathers, few target anxiety, and none address antenatal outcomes. In addition, the scalability and reach of most existing interventions is limited by their reliance on group classes delivered by a professional. Prevention efforts that empower the individual to modify their behaviour without professional assistance are needed. Therefore, this chapter provides a systematic review and meta-analysis of the factors that mothers and fathers can potentially modify to reduce their partner's risk of perinatal depression and anxiety without professional intervention. The chapter was published as a peer reviewed journal article in the *Journal of Affective Disorders*[4].

This systematic review and meta-analysis aimed to extend previous reviews of the risk and protective factors associated with postnatal depression by comprehensively examining the specific factors that partners can modify. Previous reviews have broadly examined partner support alongside other risk and protective factors. The inclusion of antenatal outcomes and anxiety is a significant strength of the current review. The findings will facilitate the development of prevention efforts for perinatal depression and anxiety that target the intimate partner relationship. The review also identifies directions for further research by establishing which factors require further empirical attention.

---

[4] The *Journal of Affective Disorders* is the official journal of the International Society for Affective Disorders. It has a 5-year impact factor of 3.939, is in the 1st quartile of both 'clinical psychology' and 'psychiatry and mental health research', and has an H index of 128 (SCImago, 2015).

Statement of Contribution

Pilkington, P.D., Milne, L.C., Cairns, K.E., Lewis, J., and Whelan, T.A. (2015). Modifiable partner factors associated with perinatal depression and anxiety: A systematic review and meta-analysis, *Journal of Affective Disorders, 178,* 165-180. doi: 10.1016/j.jad.2015.02.023

I acknowledge that my contribution to the above paper is 60 percent.

Signature: ..... Date: 14 January 2016

Pamela D. Pilkington

School of Psychology, Faculty of Health Sciences, Australian Catholic University

I acknowledge that my contribution to the above paper is 10 percent.

Signature: Date: 14 January 2016

Dr Lisa C. Milne

School of Psychology, Faculty of Health Sciences, Australian Catholic University

I acknowledge that my contribution to the above paper is 10 percent.

Signature: Date: 14 January 2016

Kathryn E. Cairns

Melbourne School of Population and Global Health, University of Melbourne

I acknowledge that my contribution to the above paper is 10 percent.

Signature: Date: 14 January 2016

James Lewis

School of Psychological Science, Faculty of Science, Technology and Engineering, La Trobe University

I acknowledge that my contribution to the above paper is 10 percent.

Signature: Date: 14 January 2016

Dr Thomas A. Whelan

School of Psychology, Faculty of Health Sciences, Australian Catholic University

Abstract

Background. Perinatal distress is a significant public health problem that adversely impacts the individual and their family. The primary objective of this systematic review and meta-analysis was to identify factors that partners can modify to protect each other from developing perinatal depression and anxiety.

Method. In accordance with the PRISMA statement, we reviewed the risk and protective factors associated with perinatal depression and anxiety symptoms that partners can potentially modify without professional assistance (PROSPERO reference CRD42014007524). Participants were new or expectant parents aged 16 years or older. The partner factors were sub-grouped into themes (e.g., instrumental support) based on a content analysis of the scale items and measure descriptions. A series of meta-analyses were conducted to estimate the pooled effect sizes of associations.

Results. We included 120 publications, reporting 245 associations with depression and 44 with anxiety. Partner factors with sound evidence that they protect against both perinatal depression and anxiety are: emotional closeness and global support. Partner factors with a sound evidence base for depression only are communication, conflict, emotional and instrumental support, and relationship satisfaction.

Limitations. This review is limited by the lack of generalizability to single parents and the inability to systematically review moderators and mediators, or control for baseline symptoms.

Conclusion. The findings suggest that future prevention programs targeting perinatal depression and anxiety should aim to enhance relationship satisfaction, communication, and emotional closeness, facilitate instrumental and emotional support, and minimise conflict between partners.

Keywords: Anxiety; depression; meta-analysis; partner; perinatal.

Introduction

The burden and prevalence of perinatal depression and anxiety

More than 13% of parents are affected by depression (Gavin et al., 2005; Paulson & Bazemore, 2010) or anxiety (Miller et al., 2006; Skari et al., 2002) during pregnancy and following childbirth. Depression and anxiety are major causes of disability, resulting in considerable costs for the individual and the public health system (Begg et al., 2007). It is imperative that mental health is promoted during pregnancy and the postnatal period in order to optimise infant outcomes (Lewis et al., 2012). Preventing depression and anxiety in early parenthood has cumulative benefits for the child (O'Hara, 2009) as it enhances the parent's capacity to develop a secure attachment with their infant (Lilja et al., 2012) and engage in positive parenting practices (Field, 2010). The need for effective universal prevention approaches is reinforced by evidence that perinatal depression and anxiety remain common despite an increase in the availability of evidence-based treatments (Brugha et al., 2011; Dennis & Chung-Lee, 2006).

The prevention of perinatal depression and anxiety

The current review aims to identify factors that partners can modify to protect each other from developing perinatal depression and anxiety. "Partner" refers to someone with whom the individual shares an intimate relationship, including de facto and same-sex partners (Kruse et al., 2012). This information will facilitate the development of universal prevention programs for perinatal depression and anxiety which include partner support as a target, and inform future research by establishing which aspects of partner support warrant further investigation.

Effective preventive approaches for depression and anxiety need to be based on factors that are amenable to change and have broad empirical support (Jacka et al., 2012; Jacka et al., 2013; National Health and Medical Research Council, 2000). Enhancing the

couple relationship and facilitating partner support is therefore an ideal target for prevention efforts as meta-analyses consistently identify that partner support and the quality of the marital relationship are moderately associated with reduced risk of postpartum depression (e.g., Beck, 1996, 2001; Robertson et al., 2004). Similarly, partner support is associated with lower levels of anxiety following childbirth (Clavarino et al., 2010; Figueiredo et al., 2008; Rini et al., 2006; Whisman et al., 2011).

The transition to parenthood is an opportune time for couples-based interventions (Glade et al., 2005) as marital satisfaction often declines following the birth of a child as the focus of attention shifts from the self and the partner to the needs of the infant (Kluwer, 2010; Shapiro et al., 2000). The birth of a child leads to increased household labour (Kluwer, 2010), increased conflict (Shapiro et al., 2000), and less opportunities for shared leisure activities and intimacy (Shapiro & Gottman, 2005). The physical demands of parenting, such as breastfeeding and sleep disturbance, place additional pressure on couples (Petch & Halford, 2008). Interventions that seek to reduce the impact that these changes have on the couple relationship, and enable couples to more effectively navigate the transition to parenthood, are needed.

Targeting the couple relationship repositions perinatal mental health as a family issue, rather than something that is specific to mothers (Fisher et al., 2010; McKellar et al., 2006; Paulson & Bazemore, 2010). A number of researchers have called for increased attention on fathers' emotional health (e.g., DeSouza, 2014). A shift in gender roles in Western countries has seen fathers' involvement in parenting increase (Goodman, 2012; McKellar et al., 2006) yet perinatal health services continue to be predominately women-centred. Qualitative research by Rowe et al. (2013) revealed that fathers feel that their potential to develop depression is often not recognised. Furthermore, the potential for fathers to provide support to their partners tends to be overlooked. Few antenatal

education programs aiming to prevent psychological distress have adequately included fathers (Gawlik et al., 2013; Pilkington et al., 2015b). Therefore, this review is inclusive of both maternal and paternal mental health outcomes. Similarly, we aim to be inclusive of research examining same-sex couples, in an effort to avoid the hetero-sexism that currently pervades the literature (Trettin et al., 2006). The emerging literature suggests that the transition to parenthood is fundamentally similar for heterosexual and same-sex parents (Goldberg & Smith, 2008; Ross, 2005). Therefore, universal prevention efforts for perinatal depression and anxiety should seek to be inclusive of all parents.

Pilkington et al. (2015b) recently reviewed the existing prevention interventions for perinatal depression and anxiety that aim to enhance partner support or address the couple relationship, either as the focus of the intervention or alongside other risk and protective factors. Although most interventions demonstrated prevention effects, they were typically characterised by low attendance rates and a number excluded fathers as active participants (e.g., Lara et al., 2010b). The current reliance on health professionals for the delivery of prevention programs limits their scalability and accessibility (Jacka et al., 2013). There is a need for universal prevention programs that focus on empowering couples to reduce their own risk of developing perinatal depression and anxiety without professional intervention.

The current review

A systematic review is needed to identify the factors associated with perinatal distress that are modifiable by partners. This will facilitate knowledge translation and inform the development of future prevention efforts. Although previous reviews have examined partner support within the broader context of risk factors for postpartum depression (e.g., Beck, 2001), a focus on the specific factors that partners can modify is required to translate the current evidence into couples-based prevention strategies.

Our review extends previous research by broadening the definition of perinatal distress to include anxiety (Rallis et al., 2014). The majority of prevention efforts have not targeted depression and anxiety concurrently, despite their high co-morbidity, overlapping risk factors, and evidence that postpartum anxiety is equally prevalent (Matthey et al., 2003; Miller et al., 2006). Improved understanding of how partner support is related to both depression and anxiety will enable future prevention efforts to use a trans-diagnostic approach. A trans-diagnostic approach is likely to be more efficacious and cost-effective than focusing solely on depression (Fisher et al., 2010).

Similarly, both antenatal and postnatal outcomes need to be examined to facilitate the development of interventions that target mental health across pregnancy and early parenthood. Existing prevention interventions tend to restrict their focus to postnatal mental health (Pilkington et al., 2015b). Antenatal outcomes are also worthy of attention as they are associated with low birth weight, pre-term delivery (Grote et al., 2010), and infant behavioural outcomes due to in utero effects (Van den Bergh et al., 2005). Furthermore, antenatal depression and anxiety are both risk factors for postpartum depression (Escribà-Agüir & Artazcoz, 2011). Broadening the focus of prevention strategies to target perinatal mood problems is also consistent with the *Diagnostic and Statistical Manual of Mental Disorders* (DSM-5; American Psychiatric Association, 2013), which expanded the postpartum onset specifier for depression to include the antenatal period.

Method

Search strategy

This review followed the PRISMA statement (Moher et al., 2009) and the protocol was registered with the PROSPERO database of systematic reviews (http://www.crd.york.ac.uk/prospero; registration number CRD42014007524). Details of the protocol for this systematic review can be accessed at

http://www.crd.york.ac.uk/PROSPERO/display_record.asp?ID=CRD42014007524. See On-line Supplement 1[5] to view the PRISMA checklist for this review. Electronic databases PsycInfo, MEDLINE and CINAHL were searched on 4 February 2014 using the search terms "(partner or spouse or couple) and (depressi$ or distress or affective or mood or anxiety or PND) and (postpartum or postnatal or perinatal or antenatal or pregnancy)". The search terms were required to appear in the abstract. Where possible, searches were limited to peer-reviewed articles and articles written in English. No publication date limits were applied. Additional sources were identified by hand searching reference lists of studies identified as relevant from the initial search, and by screening papers citing these relevant studies in Web of Science and Google Scholar (http://scholar.google.com). The forward citation search was completed on 31 March 2014. See On-line Supplement 2[6] for additional details about the search strategy.

Selection criteria

For inclusion in the review, studies were required to fulfil the following criteria: (a) employed a case-control, longitudinal, cross-sectional or retrospective study design; (b) published in a peer-reviewed journal; (c) analysed one or more modifiable partner factors assessed during pregnancy or up to 12 months postpartum as predictors; and (d) analysed depression or anxiety symptoms or diagnoses during pregnancy or up to 12 months postpartum as outcome variables.

Studies were excluded if: (a) the article did not report original data (e.g., the article was a review paper, meta-analysis, or discussion paper); (b) the article was not in English; c) participants were exposed to an intervention; (d) the sample included participants aged

[5] Appendix E
[6] Appendix F

younger than 16 years; (e) the outcome variable lacked adequate specificity (e.g., general psychopathology) or assessed temporary depressive or anxious affect (e.g., transient sadness); or (f) the study reported data for a clinical sample in the absence of a control group. The first author screened all the potential studies for inclusion based on the article title, abstract, and if necessary, the full text. A research assistant independently confirmed that all studies included after screening met the inclusion criteria. See Figure 6.1.

Data extraction and management

Two authors independently extracted all data using a standardised spreadsheet. Data extraction was completed by PP, KC, and JL, and collated by PP. Discrepancies were resolved through discussion. The data extracted included basic descriptive information about the sample, the study design, length of follow-up, details of the predictor and outcome variables, and the effect size and direction. Pre-specified decision hierarchies were developed to manage articles that reported multiple associations for the variables of interest or duplicate data (See On-line supplement 3[7]). On-line supplement 4[8] summarises the data extracted for all included studies.

Coding

Factors modifiable by partners. Risk and protective factors that are modifiable by partners were defined as those that can feasibly be altered by the partner in the absence of professional intervention or assistance (Cairns et al., 2014). This precluded the inclusion of variables that relate to (a) stable personality traits or demographic characteristics (e.g., financial status); (b) personal or familial history of depression; (c) intimate partner violence; or (d) composites of multiple risk and protective factors. Intimate partner violence (e.g.,

[7] Appendix G
[8] Appendix H

sexual or physical abuse) was considered to not be easily modifiable by partners without professional intervention due to its severity (Babcock et al., 2004). For a recent review of the associations between domestic violence and perinatal illness see Howard et al. (2013). PP sub-grouped the eligible factors into themes based on content analysis of the scale items. If the items were unavailable (e.g., the measure was specifically developed by the study authors), the theme classification was determined based on the description provided in the article's method section. See

Table *6.1*.

Quality assessment. Two authors (PP and TW) independently assessed the quality of included studies by examining the following indicators: (a) sampling method (random = 2, non-random = 1, unclear = 0); (b) independent variable measure (1 = validated measure, 0 = study specific measure); (c) dependent variable measure (2 = validated diagnostic tool, 1 = validated screening tool, 0 = study specific measure); and (d) study design (2 = longitudinal, 1 = cross-sectional, 0 = retrospective). Total scores were calculated for each study. Scores ranged from zero to seven, with higher scores representing higher quality studies.

Meta-analysis procedures

Comprehensive Meta-Analysis Version 2.2.064 (CMA; Borenstein et al., 2005) was used to conduct a series of meta-analyses. Separate meta-analyses were conducted for each partner factor and outcome for the following timeframes (1) factors assessed during pregnancy predicting antenatal outcomes; (2) factors assessed during pregnancy predicting postnatal outcomes; and (3) factors assessed following childbirth predicting postnatal outcomes.

Effect size computation. The correlation coefficient *r* was selected as the summary effect size metric as this was the most commonly reported and is easily interpretable. When interpreting the pooled effect sizes, *r* of at least .1 was considered to be small, .3 medium,

and .5 large (Cohen, 1992). If an effect size other than a correlation coefficient was reported, it was converted to *r* in *CMA* (Borenstein et al., 2009). If authors reported the significance of an association without providing the corresponding *r*, then *r* equivalent was calculated in *CMA* (Rosenthal & Rubin, 2003). If a study compared more than two groups based on cut-offs of a continuous variable (e.g., low, moderate, or high levels of depression symptoms), the effect size was calculated based on the two most extreme groups (i.e., low vs high). Unadjusted associations were prioritised, but where these were not available adjusted associations were extracted. Following data extraction, the decision was made to exclude adjusted associations from the review, as they accounted for less than 10% of the data and their covariates varied considerably. The evidence for each theme was considered to be "sound" if the meta-analyses identified a significant association between the partner factor and the outcome based on 10 or more studies. Evidence was considered "emerging" if there were mixed findings, or only 5 to 9 studies were included in the synthesis. Partner factors were considered to have an insufficient number of studies if less than 5 studies were available.

Assessment of heterogeneity and publication bias

A random effects model was used for all analyses as considerable heterogeneity was expected. Heterogeneity was assessed using the *Q* and I^2 statistics. An I^2 value of 0% indicates no observed heterogeneity and higher values indicate greater heterogeneity (25% low, 50% moderate, and 75% substantial). If I^2 indicated substantial heterogeneity, subgroup analyses were conducted to investigate the effects of (a) sample type (general population sample versus non-population sample versus diagnostic case control); (b) parity (primiparous versus other); (c) gender (mothers versus fathers); (d) follow-up timing (immediate to short-term postpartum versus intermediate to long-term postpartum); (e) the type of outcome variable (symptom or disorder-based); and (f) study design (longitudinal versus cross-

sectional). Following the conventions of Dennis and Dowswell (2013), immediate to short-term postpartum refers to zero to 16 weeks postpartum, while 17 to 52 weeks postpartum is considered intermediate to long-term postpartum. Subgroup analyses were conducted for those meta-analyses that involved at least three associations that differed on a subgroup of interest. Publication bias was assessed for those analyses that involved at least three associations by visually inspecting funnel plots for asymmetry and quantifying the bias using Egger's test (Egger et al., 1997). The findings of the subgroup analyses and tests for publication bias are only reported in text if they were significant.

Table 6.1. **Theme definitions and example measures and items**

Theme	Definition	Measures	Example items
Alcohol or drug use by partner			
	The severity or frequency with which the partner engages in alcohol consumption, tobacco use, and/or illicit drug use.	Cut-down Annoyed Guilty Eye-opener (CAGE; Ewing, 1984) Quantity/Frequency of Alcohol use (Das Eiden et al., 2002)	Does your partner have a problem with alcohol or drugs? Have people annoyed you by criticizing your drinking?
Communication			
	The extent to which partners communicate effectively and with a sense of positive regard.	Dyadic Adjustment Scale (Cohesion subscale; Spanier, 1976) SS - Can discuss concerns without criticism/rejection (Lemola et al., 2007)	How often do you and your partner calmly discuss something? Can you talk to your husband/partner?
Conflict			
	The frequency and intensity of disagreements and the extent to which partners express verbal aggression towards each other.	Marital Conflict Questionnaire (Verbal aggression subscale; Rands, 1981) Quality of Relationships Inventory (Conflict subscale; Pierce, 1994) Test of Negative Social Exchanges – Modified (Ruehlman & Karoly, 1991)	He/she gets really mad and starts yelling How much do you argue with this person? My partner lost his or her temper with me
Control			

	The degree to which the partner controls the individual and makes important decisions without their input.	Intimate Bonds Questionnaire (Control subscale; Wilhelm & Parker, 1988) Male Female Relations Questionnaire (Marital roles subscale; Spence et al., 1980) SS - Controlling behaviour of partner (Ludermir et al., 2010)	My partner tends to order me about I think I should take the leadership in making important decisions I would expect to be head of the house simply because I'm a man
Division of household labour			
	The extent to which the distribution of household tasks between the couple is perceived to be satisfactory or fair.	SS - How do you feel about the fairness of your relationship when it comes to the division of household tasks? (Goldberg & Perry-Jenkins, 2004)	My partner usually expects more help and support from me than he is willing to give back.
Emotional closeness			
	A sense of emotional closeness between partners that is characterised by a sense of belonging, affection, and commitment to the relationship.	Intimate Bonds Measure (Care subscale; Wilhelm & Parker, 1988) Quality of Relationships Inventory (Depth subscale; Pierce, 1994) Relationship Questionnaire (Love subscale; Braiker & Kelley, 1979) Social Provisions Scale (Attachment subscale; Russell & Cutrona, 1984)	My partner is very considerate of me My partner is very loving to me To what extent did you have a sense of belonging with your partner?
Emotional support			
	The degree to which the partner affirms the appropriateness of their partner's emotions, cognitions, and behaviours, and encourages a sense of being accepted and understood.	Contextual Assessment for Maternity Experience (Emotional support subscale; Bernazzani et al., 2004) Mothers' Informational Tool (Emotional support subscale; Horowitz & Callaghan, 1990) Postpartum Partner Support Scale (Appraisal subscale; Dennis & Ross, 2006) Significant Others Scale (Emotional support subscale; Power et al., 1988) SS - My partner provides the emotional support I need	My partner helps me feel positive about being a mother How often will your husband/partner indicate to you by words or behaviour that he knows that it is hard work to take care of a baby? My husband/wife/partner often lets me know that he/she thinks I'm a worthwhile person.

Global support		
Global assessments of the extent to which the partner provides support.*	Support Expectations Index (Total received support; Coffman et al., 1994) Norbeck Social Support Questionnaire (Total; Norbeck et al., 1981) Postpartum Social Support Questionnaire (Total; Hopkins et al., 1987)	What is your opinion of the support received from your partner? To what extent could you count on this person for help with a problem?
Informational support		
The degree to which the partner provides knowledge relevant to problem solving, such as advice or feedback.	Postpartum Partner Support Scale (Informational support subscale; Dennis & Ross, 2006) Social Support Effectiveness (Information subscale; Rini et al., 2006)	I can turn to my partner for advice if I were having problems My partner provides me with feedback on how I am doing
Instrumental support		
The degree to which the partner provides practical help or tangible aid, including assistance with infant care and household tasks.	Contextual Assessment for Maternity Experience (Practical support subscale; Bernazzani et al., 2004) Postpartum Partner Support Scale (Instrumental support subscale; Dennis & Ross, 2006) Social Support Network Inventory (Practical help subscale; Flaherty et al., 1983)	Makes me feel that I can count on him if I need help How often will your husband/partner help out with family meals?
Partner stress		
The extent to which the partner elicits stress.	The Social Support Interview - spouse makes life easier (O'Hara, 1986) SS - Does the father of your child make things more difficult for you? (Ramchandani et al., 2009)	Did problems experienced by your husband place an extra burden on you?
Relationship satisfaction		
The extent to which the individual is satisfied with the couple relationship.	ENRICH Marital Satisfaction Scale (Fowers & Olson, 1993) Objective Social Perception Inventory (Kipper et al., 1977)	Our relationship is a perfect success I am very happy in my relationship Are you satisfied with your marriage?

Sexual satisfaction			
	The degree to which the individual is satisfied with the couple's sexual relationship.	SS - Sexual satisfaction Dyadic Adjustment Scale (Affection subscale; Spanier, 1976)	Satisfaction with sexual relationship The extent of agreement between you and your partner on sex relations.
Withdrawal			
	The extent to which the partner is unavailable or withdrawn.	Marital Conflict Questionnaire (Avoidance subscale; Rands, 1981) The Social Support Interview (Availability subscale; O'Hara et al., 1983)	He/she gets cool and distant and gives me the cold shoulder How often is your spouse available when needed?

*Global support included composite measures of various types of support (i.e., emotional support, instrumental support, and informational support), if analyses examining the subtypes separately were not reported.

Results

Characteristics of included studies

One-hundred and twenty studies reporting 289 associations were included (245 with depression; 44 with anxiety). The articles were published between 1980 and 2013 and were conducted in the United States of America (*n* = 34), Europe (*n* = 31), Australia and New Zealand (*n* = 15), Asia (*n* = 8), the United Kingdom (*n* = 11), Africa (*n* = 7), Canada (*n* = 6), and South America (*n* = 4). One-hundred studies examined mothers only, seven studies examined fathers only, and 12 studies included both mothers and fathers. A single study examined lesbian mothers. References for all included studies are included in On-line supplement 5[9].

Quality assessment

Almost all studies (90%) received an overall score of at least four out of seven on our quality assessment checklist. The majority of studies utilised a cross-sectional (62%) or longitudinal (37%) design, with only one retrospective study identified. Random sampling was used by 50% of the studies. Almost 45% of studies used non-random sampling methods, and the remaining 5% of studies did not provide sufficient information to determine the sampling method. Partner factors were predominately assessed using tools developed by the authors (55%), rather than validated measures (45%). However, almost all studies used validated screening (87%) or diagnostic (12%) tools to assess perinatal depression and anxiety. Only two studies (1%) used measures developed by the authors to assess the dependent variable. See On-line supplement 6[10] for further detail regarding the quality assessment.

---

[9] Appendix I
[10] Appendix J

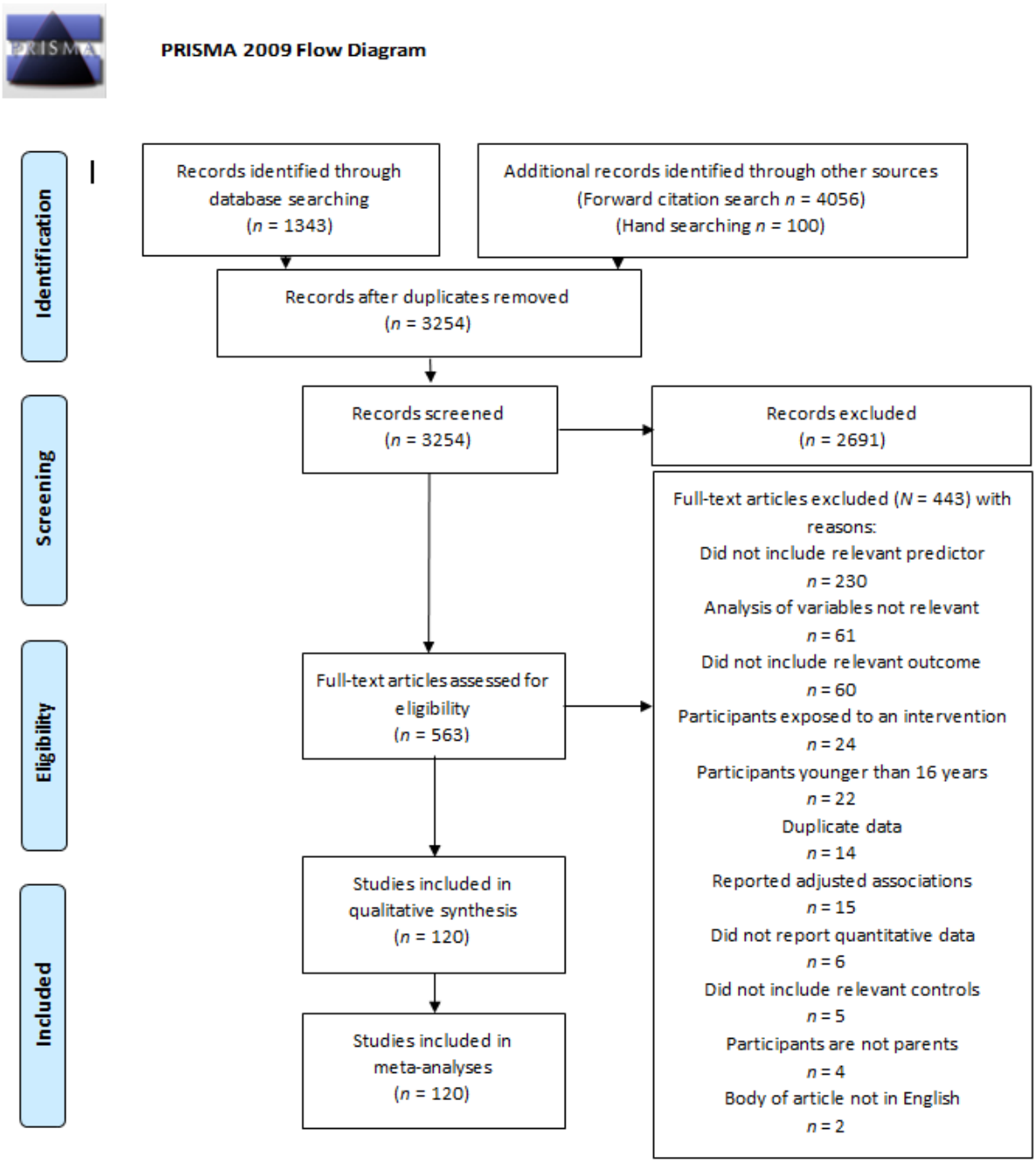


Figure 6.1. **PRISMA flow-diagram**

Factors modifiable by partners associated with reduced risk of perinatal depression and anxiety

Table 6.2 presents the effect size *r* (with 95% confidence intervals), the Egger's test two-tailed *p* value, and I^2 for each theme. Forest plot diagrams for each meta-analysis are presented in On-line supplement 7[11].

Communication.

Depression. Based on two cross-sectional studies, more positive communication during pregnancy was moderately associated with lower levels of *antenatal depression*, although substantial heterogeneity was evident (I^2=92.1%). A single longitudinal study examined communication during pregnancy and *postnatal depression* and found a significant negative correlation. Based on seven studies, one of which was longitudinal, communication during the postnatal period was associated with lower levels of *postnatal depression*. A small, significant effect size was found, and there was little heterogeneity (I^2=18.6%).

Anxiety. No studies examining communication and *perinatal anxiety* were identified.

Division of household labour.

Depression. Based on two studies, contributing three associations, greater satisfaction with the division of household labour following childbirth was associated with lower levels of *postnatal depression*. A small, mean effect size emerged, with zero heterogeneity evident.

Anxiety. A single longitudinal study examined the division of household labour during pregnancy and *antenatal anxiety* and reported a significant, negative correlation. A single cross-sectional study examined the division of household labour following childbirth and found that it was negatively correlated with *postnatal anxiety*.

---

[11] Appendix K

Emotional closeness.

Depression. Based on eight cross-sectional studies, emotional closeness during pregnancy was associated with lower levels of *antenatal depression*. A small but significant effect size emerged, with moderate heterogeneity evident (I^2=64.4%). Based on seven longitudinal studies, emotional closeness during pregnancy predicted lower levels of *postnatal* depression. A significant, although small, effect size emerged, with low heterogeneity evident (I^2=32.3%). Based on nine studies, three of which were longitudinal, emotional closeness following childbirth was associated with lower levels of *postnatal depression*. A small effect size was found, but substantial heterogeneity was detected (I^2=76.2%).

Anxiety. Based on three cross-sectional studies, contributing five associations, emotional closeness during pregnancy was associated with lower levels of *antenatal anxiety*, with a small but significant effect size found. Moderate heterogeneity was evident (I^2=61.4%). Based on five longitudinal studies, contributing seven associations, emotional closeness during pregnancy predicted lower levels of *postnatal anxiety*. A small, significant effect size emerged, with low levels of heterogeneity evident (I^2=30.8%). A single study examined emotional closeness following childbirth and *postnatal anxiety* and reported a significant, negative correlation.

Emotional support.

Depression. Based on nine studies, contributing 10 associations, emotional support during pregnancy was associated with lower levels of *antenatal depression*. A small, significant effect size emerged, but substantial heterogeneity was evident. Based on six longitudinal studies, contributing seven associations, emotional support during pregnancy predicted lower levels of *postnatal depression*. A small but significant effect size emerged,

although substantial heterogeneity was evident (I^2=81.5%). A subgroup analysis by parity revealed a significant interaction (p<.001), with a greater mean effect size for first-time parents. Based on 13 studies, three of which were longitudinal, emotional support following childbirth was associated with lower levels of *postnatal depression*. A medium effect size was found, although there was substantial heterogeneity (I^2=93.1%).

Anxiety. Based on three cross-sectional studies, contributing four associations, emotional support during pregnancy was associated with *antenatal anxiety*, with a small but significant effect size emerging. There was evidence of substantial heterogeneity between studies (I^2=94.5%). A single longitudinal study examined emotional support during pregnancy and *postnatal anxiety* and found a significant negative correlation. A single cross-sectional study found that emotional support following childbirth and *postnatal anxiety* were negatively correlated.

Global support.

Depression. Based on 21 cross-sectional studies, contributing 22 associations, support during pregnancy was associated with lower levels of *antenatal depression*. A small, significant effect size was found, although there was substantial heterogeneity (I^2=94.6%). Based on six longitudinal studies, support during pregnancy predicted lower levels of *postnatal depression*. A small but significant effect size emerged, with moderate heterogeneity evident (I^2=55.0%). Based on 12 studies, three of which were longitudinal, contributing 14 associations, support following childbirth was associated with lower levels of *postnatal depression*. A small significant effect size emerged, with low heterogeneity evident (I^2=42.1%).

Anxiety. Based on five cross-sectional studies, a moderate effect size emerged between support during pregnancy and reduced risk of *antenatal anxiety*, with zero

heterogeneity. Based on two cross-sectional studies, support during pregnancy was also associated with lower levels of *postnatal anxiety*, with a medium effect size emerging, with zero heterogeneity.

Informational support.

Depression. A single longitudinal study examined informational support during pregnancy and *antenatal* depression and found a non-significant, positive correlation. A single longitudinal study examined informational support following childbirth and *postnatal* depression and reported a significant negative correlation.

Anxiety. A single longitudinal study reported a significant negative correlation between informational support during pregnancy and *postnatal* anxiety.

Instrumental support.

Depression. Based on six cross-sectional studies, contributing seven associations, instrumental support during pregnancy was associated with lower levels of *antenatal depression*, with a small but significant effect size. Substantial heterogeneity was evident (I^2=94.5%). Based on seven longitudinal studies, contributing eight associations, instrumental support during pregnancy predicted lower levels of *postnatal depression*. A small but significant effect size emerged, with moderate heterogeneity evident (I^2=70.0%). Based on 15 studies, one of which was longitudinal, a small, significant effect size was found between instrumental support following childbirth and lower levels of *postnatal depression*. However, substantial heterogeneity was evident (I^2=84.1%).

Anxiety. Based on one cross-sectional study, contributing two associations, a non-significant effect size emerged between instrumental support during pregnancy and *antenatal* anxiety, with zero heterogeneity. Based on two longitudinal studies, contributing

three associations, instrumental support during pregnancy predicted lower levels of *postnatal* anxiety, with a small but significant mean effect size and zero heterogeneity.

Relationship satisfaction.

Depression. Based on 12 cross-sectional studies, contributing 13 associations, relationship satisfaction during pregnancy was associated with lower levels of *antenatal depression*. A small, significant effect size emerged, but considerable heterogeneity was evident (I^2=94.0%). Seven longitudinal studies and one retrospective study contributed nine associations on relationship satisfaction during pregnancy and *postnatal depression*. A small, significant effect size emerged indicating reduced risk of depression, although there was substantial heterogeneity (I^2=82.8%). Based on 23 studies (five longitudinal), contributing 27 associations, relationship satisfaction following childbirth was associated with lower levels of *postnatal depression*. A medium effect size was found but substantial heterogeneity was evident (I^2=88.9%).

Anxiety. Based on two cross-sectional studies, a large but non-significant mean effect size emerged between relationship satisfaction during pregnancy and lower levels of *antenatal anxiety*. Substantial heterogeneity was evident (I^2=96.7%). A single longitudinal study examined relationship satisfaction in pregnancy and *postnatal anxiety* and reported a significant negative correlation. Based on three studies, one of which was longitudinal, reporting four associations, relationship satisfaction following childbirth was associated with lower levels of *postnatal anxiety*. A small, significant effect size was found, with moderate heterogeneity evident (I^2=53.1%).

Sexual satisfaction.

Depression. Based on two cross-sectional studies, a small but significant effect size was found between sexual satisfaction during pregnancy and *antenatal depression*. A single

longitudinal study reported a non-significant correlation between sexual satisfaction during pregnancy and *postnatal depression*. Based on three cross-sectional studies, sexual satisfaction following childbirth was associated with reduced risk of *postnatal depression*, with zero heterogeneity detected.

Anxiety. No studies examining sexual satisfaction and *perinatal anxiety* were identified.

Factors modifiable by partners associated with increased risk of perinatal depression and anxiety

Alcohol or drug use by partner.

Depression. Based on three studies, one of which was longitudinal, that contributed four associations, alcohol or drug use by partners during the antenatal period was significantly associated with higher levels of *antenatal depression*. A small but significant effect size was found, and there was low heterogeneity (I^2=18.5%).

Anxiety. No studies examining partner's use of alcohol or drug and *perinatal anxiety* were identified.

Conflict.

Depression. Based on 11 associations from 10 cross-sectional studies, conflict during pregnancy was moderately associated with higher levels of *antenatal depression*, although substantial heterogeneity was evident (I^2=89.8%). Based on five longitudinal studies, conflict during pregnancy predicted higher levels of *postnatal depression*, with zero heterogeneity evident. Based on seven associations, two of which were longitudinal, conflict during the postnatal period was associated with higher levels of *postnatal depression*, with a small but significant mean effect size. However, there was substantial heterogeneity evident (I^2=80.2%).

Anxiety. Based on three cross-sectional studies, conflict during pregnancy was associated with higher levels of *antenatal anxiety*. A medium effect size emerged, with moderate heterogeneity evident (I^2=62.2%). A single longitudinal study examined conflict during pregnancy and *postnatal anxiety* and found a significant, positive correlation.

Control.

Depression. Based on six cross-sectional studies, higher levels of control (i.e., the degree to which the partner controls the individual and makes important decisions without their input) during pregnancy was associated with higher levels of *antenatal depression*. A small but significant effect size was found, with substantial heterogeneity evident (I^2=90.7%). Based on two longitudinal studies, a small but significant effect size indicated that higher levels of control during pregnancy predicted higher levels of *postnatal depression*, with low heterogeneity detected (I^2=10.5%). Based on three cross-sectional studies, there was no evidence of a relationship between control following childbirth and *postnatal depression*. A non-significant effect size was found, with zero heterogeneity.

Anxiety. No studies examining control and *perinatal anxiety* were identified.

Partner stress.

Depression. A single cross-sectional study found a significant positive correlation between partner stress during pregnancy and *antenatal depression*. A single longitudinal study examined partner stress during pregnancy and *postnatal depression* and reported a significant, positive correlation. Based on two studies, one of which was longitudinal, partner stress following childbirth was associated with higher levels of *postnatal depression*, with a small but significant effect size and zero heterogeneity.

Anxiety. No studies examining partner stress and *perinatal anxiety* were identified.

Withdrawal.

Depression. Based on two cross-sectional studies, the extent to which the partner was unavailable or withdrawn during pregnancy was associated with increased risk of *antenatal depression*. A medium effect size was found, with zero heterogeneity evident. A single longitudinal study reported a significant positive correlation between withdrawal during pregnancy and *postnatal depression*. Based on two studies, one of which was longitudinal, contributing three associations, withdrawal following childbirth was associated with higher levels of *postnatal depression*. A small but significant effect size emerged, with moderate heterogeneity evident (I^2=61.8%).

Anxiety. No studies examining withdrawal and *perinatal anxiety* were identified.

Table 6.2. **Summary of meta-analysis findings**

	Antenatal factors			Postnatal factors		
	Antenatal depression	**Antenatal anxiety**	**Postnatal depression**	**Postnatal anxiety**	**Postnatal depression**	**Postnatal anxiety**
Alcohol and drug use by partner						
No. of associations	4					
r (95% CI)	.16 (.10, .22)					
p value for *r*	<.001					
I^2	18.5%					
Eggers test two-tailed *p*	.340					
Communication						
No. of associations	2		1		7	
r (95% CI)	-.31 (-.49, -.10)		-		-.23 (-.29, -.17)	
p value for *r*	.005		-		<.001	
I^2	92.1%		-		18.6%	
Eggers test two-tailed *p*	-		-		.816	
Conflict						
No. of associations	11	3	5	1	7	
r (95% CI)	.30 (.21, .39)	.35 (.25, .45)	.35 (.25, .44)	-	.28 (.15, .40)	
p value for *r*	<.001	<.001	<.001	-	<.001	
I^2	89.8%	62.2%	0.0%	-	80.2%	
Eggers test two-tailed *p*	.092	.386	.300	-	.093	
Control						
No. of associations	6		2		3	
r (95% CI)	.16 (.00, .31)		.19 (.02, .34)		.04 (-.05, .13)	
p value for *r*	.049		.026		.377	
I^2	90.7%		10.5%		0.0%	
Eggers test two-tailed *p*	.652		-		.969	

Division of household labour						
No. of associations		1			3	1
r (95% CI)		-			-.23 (-.29, -.17)	-
p value for *r*		-			<.001	-
I^2		-			0.0%	-
Eggers test two-tailed *p*		-			.330	-
Emotional closeness						
No. of associations	8	5	7	7	9	1
r (95% CI)	-.25 (-.34, -.16)	-.22 (-.38, -.04)	-.17 (-.26, -.09)	-.21 (-.28, -.14)	-.22 (-.31, -.13)	-
p value for *r*	<.001	.016	<.001	<.001	<.001	-
I^2	64.4%	61.4%	32.3%	30.8%	76.2%	-
Eggers test two-tailed *p*	.682	.054	.939	.548	.736	-
Emotional support						
No. of associations	10	4	7	1	13	1
r (95% CI)	-.26 (-.34, -.17)	-.20 (-.34, -.27)	-.26 (-.34, -.17)	-	-.30 (-.42,-.18)	-
p value for *r*	<.001	<.001	<.001	-	<.001	-
I^2	90.4%	94.5%	81.5%	-	93.1%	-
Eggers test two-tailed *p*	.657	.703	.335	-	.871	-
Informational support						
No. of associations	1			1	1	
r (95% CI)	-			-	-	
p value for *r*	-			-	-	
I^2	-			-	-	
Eggers test two-tailed *p*	-			-	-	
Instrumental support						
No. of associations	7	2	8	3	15	
r (95% CI)	-.16 (.-29, -.00)	-.15 (-.40, -.12)	-.17 (-.24, -.09)	-.23 (-.33, -.12)	-.19 (-.27, -.12)	
p value for *r*	.039	.266	<.001	<.001	<.001	
I^2	89.4%	0.0%	70.0%	0.0%	84.1%	
Eggers test two-tailed *p*	.538	-	.676	.891	.827	

Partner stress						
No. of associations	1		1		2	
r (95% CI)	-		-		.25 (.14, .36)	
p value for *r*	-		-		<.001	
I^2	-		-		0.0%	
Eggers test two-tailed *p*	-		-		-	
Relationship satisfaction						
No. of associations	13	2	9	1	27	4
r (95% CI)	-.29 (-.42, -.14)	-.53 (-.88, -.19)	-.28 (-.39, -.17)	-	-.33 (-.38, -.27)	-.29 (-.39, -.17)
p value for *r*	<.001	.138	<.001	-	<.001	.001
I^2	94.0%	96.7%	82.8%	-	88.9%	53.1%
Eggers test two-tailed *p*	.444	-	.085	-	.909	.527
Sexual satisfaction						
No. of associations	2		1		3	
r (95% CI)	-.19 (-.27, -.12)		-		-.24 (-.36, -.11)	
p value for *r*	<.001		-		<.001	
I^2	38.9%		-		0.0%	
Eggers test two-tailed *p*	-		-		.134	
Global support						
No. of associations	22	5	6		14	2
r (95% CI)	-.28 (-.37, -.17)	-.32 (-.40, -.22)	-.26 (-.36, -.16)		-.21 (-.26, -.15)	-.31 (-.50, -.08)
p value for *r*	<.001	<.001	<.001		<.001	.01
I^2	94.6%	0.0%	55.0%		42.1%	0.0%
Eggers test two-tailed *p*	.495	.858	.643		.439	-
Withdrawal						
No. of associations	2		1		3	
r (95% CI)	.32 (.18, .44)		-		.18 (.01, .35)	
p value for *r*	<.001		-		.038	
I^2	0.0%		-		61.8%	
Eggers test two-tailed *p*	-		-		.592	

Discussion

This systematic review and meta-analysis aimed to identify the factors associated with perinatal depression and anxiety that are modifiable by partners without professional intervention. We identified several factors for which there is sound or emerging evidence, and found effect sizes that were small to medium in magnitude. The implications of the findings for research translation and directions for future research are discussed below.

Factors with sound evidence for both depression and anxiety

Emotional closeness. There is sound evidence that a sense of emotional closeness between partners, characterised by a sense of belonging, affection and commitment to the relationship, is a significant predictor of lower levels of depression and anxiety across the perinatal period. Emotional closeness should therefore be a key target for future prevention efforts aiming to reduce couples' risk of perinatal depression and anxiety. It may be particularly beneficial to strengthen emotional closeness during pregnancy in anticipation of the decreased time available for positive social exchanges and intimacy following childbirth.

Global support. Our meta-analyses indicated that support protects against depression and anxiety during pregnancy and following childbirth. This is consistent with previous meta-analyses that have broadly examined supportive partner relationships amongst other risk and protective factors for postnatal depression (e.g., Edward et al., 2015). Our review extends the findings of previous meta-analyses by clarifying that the association holds for antenatal outcomes, as well as anxiety. However, the capacity to translate this information into prevention efforts is limited, as researchers tend to assess partner support globally using either composite measures, which combine various aspects of support, or broad single-item questions (e.g., "is your partner supportive?"). We attempted to overcome this by extracting associations for the subtypes of support where available but future research should aim to develop a more nuanced understanding of whether the

specific components of support are differentially associated with perinatal depression and anxiety. The use of measures which distinguish between informational, emotional, and instrumental support, such as the Postpartum Partner Support Scale (Dennis & Ross, 2006), will aid in this goal.

Factors with sound evidence for depression only

Conflict. Our review identified that there is a sound evidence base for the link between conflict and increased risk of perinatal depression. We found medium effect sizes indicating that conflict during pregnancy and following childbirth is associated with higher levels of depression. We also found evidence that conflict during pregnancy is associated with increased risk of antenatal anxiety. Unfortunately, studies examining postnatal anxiety were lacking. The importance of minimising conflict is recognised by current interventions aiming to prevent perinatal depression and anxiety. An intervention developed by Shapiro and Gottman (2005), which aimed to provide couples with conflict management skills, resulted in couples demonstrating less hostile affect and lower levels of depression at 12 months postpartum compared to the control group. Feinberg and Kan (2008) taught couples skills in managing disagreements and joint problem solving, and found that mothers who completed the intervention had a larger decrease in depression and anxiety at six months postpartum than those in the control group. The evidence suggests that minimising conflict should be targeted more routinely by prevention programs for perinatal depression and anxiety.

Communication. Our review revealed that there is sound evidence that the extent to which partners communicate effectively and with a sense of positive regard for each other protects against perinatal depression. Positive communication is a key target for prevention efforts as it allows partners to establish an understanding of each other's experiences and needs, and facilitates their ability to support each other and resolve conflicts (Matthey et al.,

2012). Correspondingly, a number of existing interventions have targeted communication and have shown benefits (Feinberg & Kan, 2008; Matthey et al., 2008; Shapiro & Gottman, 2005). However, no studies examining communication and anxiety were identified. Future investigations should aim to establish whether communication is also protective against perinatal anxiety.

Emotional support. Our review indicates that the degree to which the partner affirms the appropriateness of the individual's emotions, cognitions, and behaviours, and encourages a sense of being accepted and understood, protects against perinatal depression. However, the evidence base linking emotional support with perinatal anxiety is still emerging. Our review indicated that emotional support during pregnancy is associated with antenatal anxiety, but studies examining its relationship with anxiety following childbirth were lacking.

Emotional support is a key target for preventive interventions, particularly given that partners typically see each other as their primary source of emotional support during the transition to parenthood (Escribà-Agüir & Artazcoz, 2011; Rowe et al., 2013). A number of prevention efforts have aimed to enhance understanding between partners. For example, Matthey et al. (2004) aimed to increase partner empathy by facilitating discussions about each other's concerns about the postpartum period. Although the intervention increased partner awareness, this did not translate into increased emotional support. Future research should investigate ways in which emotional support between partners can be fostered during the perinatal period.

Instrumental support. Based on our review, there is sound evidence that the partner's provision of practical help or tangible aid, including assistance with infant care and household tasks, reduces the individual's risk of developing perinatal depression. However, the evidence base linking instrumental support with anxiety is still emerging and shows

mixed results. Our analyses indicated that instrumental support during pregnancy is not associated with antenatal anxiety but does predict reduced risk of postnatal anxiety. These inconsistent findings may reflect the lack of studies in this area to date. Further research is needed to establish whether instrumental support protects against perinatal anxiety. Nonetheless, prevention efforts should target instrumental support given its clear status as a protective factor against perinatal depression, combined with qualitative evidence that women see instrumental support as essential to their wellbeing following childbirth (Negron et al., 2013).

Relationship satisfaction. The association between relationship satisfaction and depression has been well documented by previous reviews and was the most frequently studied factor in the current meta-analysis. We found that higher levels of satisfaction with the couple relationship protects against depression both during pregnancy and following childbirth. Our findings are consistent with those of previous meta-analyses reporting that relationship satisfaction during pregnancy (Robertson et al., 2004) and following childbirth (Beck, 2001) protects against both maternal and paternal perinatal depression (Lancaster et al., 2010; Wee et al., 2011).

Only a few studies examined whether relationship satisfaction was protective against perinatal anxiety, and these investigations reported mixed results. No association between relationship satisfaction during pregnancy and antenatal anxiety was found, although this was based on just two studies. In contrast, relationship satisfaction following childbirth was significantly associated with reduced risk of postnatal anxiety. Based on the current evidence, prevention programs should continue to aim to enhance relationship satisfaction (e.g., Gambrel & Piercy, 2014).

Factors with emerging evidence

Alcohol and drug use by partner. The emerging evidence suggests that partners' use of alcohol and drugs during pregnancy increases the risk of antenatal depression. However, no studies examining postnatal outcomes or anxiety were identified. In the absence of sufficient longitudinal data, it is difficult to determine the causal nature of this relationship. Given the high concordance of drug and alcohol use in couples (Demers et al., 1999), it could be that the individual is also consuming alcohol and drugs, which compromises their mental health. Alternatively, antenatal depression could lead the individual's partner to increase their alcohol and drug use as a maladaptive coping strategy. Further, a third variable may increase the risk for both partner's alcohol and drug use and depression. For example, smoking and alcohol use among partners is correlated with intimate partner violence (Hedin & Janson, 2000) and reduced relationship satisfaction (Rodriguez et al., 2014). Further research which explores the causal nature of the relation between alcohol and drug use by partners and subsequent perinatal depression is warranted.

Control. The evidence linking control and depression is mixed. A sense of feeling over-controlled by one's partner during pregnancy was associated with increased risk of antenatal depression, although the mean effect sizes were small in magnitude. Control following childbirth was not associated with postnatal depression. Surprisingly, no studies examining control and perinatal anxiety were found. Further research is needed to build on the limited evidence currently available.

Division of household labour. Although satisfaction with the distribution of labour has been targeted by a number of existing prevention interventions (e.g., Feinberg & Kan, 2008; Fisher et al., 2010; Midmer et al., 1995) our review indicates that the evidence base is only emerging. Our review suggests that satisfaction with the division of household labour protects against postnatal depression, but further research is needed to clarify its

associations with anxiety and prenatal outcomes. Although the argument put forward by Fisher et al. (2010) that the division of domestic tasks needs to be redistributed to prevent fatigue and mood disturbance is convincing, further research is needed to provide empirical support for this hypothesis.

Sexual satisfaction. An emerging evidence base indicates that satisfaction with the couple's sexual relationship is associated with lower levels of antenatal and postnatal depression. However, to date no studies have examined whether sexual satisfaction is associated with perinatal anxiety. Given the cross-sectional nature of the data, the causal direction of this relationship is not clear. It is possible that reduced sexual satisfaction is an outcome of being depressed. Moel et al. (2010) found that mothers with postnatal depression reported less interest in sex and less sexual satisfaction than mothers without depression. Prevention programs should take care in targeting sexual satisfaction until more evidence is available which establishes its potential role as a protective factor against perinatal depression and anxiety.

Withdrawal. Based on the few studies available, the extent to which the partner is unavailable or withdrawn does appear to increase the individual's risk of perinatal depression. However, no studies examined the relation between withdrawal and anxiety. Although it is intuitive that withdrawal and avoidance would preclude the provision of support, further research is required to elucidate its relevance to the prevention of perinatal depression and anxiety. Until more evidence is available, care should be taken in targeting withdrawal within prevention programs.

Factors for which there are insufficient studies available for synthesis

Informational support. There were insufficient data available to determine whether informational support is associated with perinatal depression or anxiety. Although the prevailing theoretical models of social support distinguish between emotional, instrumental,

and informational support (Kruse et al., 2012; Salonen et al., 2010), informational support remains understudied. Research shows that men see their partners as their primary source of pregnancy-related information (Forsyth et al., 2011). Given that improved understanding of what the transition to parenthood involves reduces psychological distress (Forsyth et al., 2011), it is plausible that the provision of informational support would be protective. Further research is needed to test this hypothesis (Lee et al., 2004).

Partner stress. Similarly, there were not enough studies examining partner stress to draw conclusions as to whether or not it is implicated in perinatal depression and anxiety. We found a small effect size between partner stress following childbirth and postnatal depression, but this was based on only two studies. Although the relationship between stress and depression is well-established, and meta-analyses of risk factors for postpartum depression have identified life stress as a strong predictor (Beck, 2001; Robertson et al., 2004), further research is needed in the specific area of partner stress.

Directions for future research

Future investigations should seek to include anxiety as an indicator of perinatal distress (Miller et al., 2006; O'Hara & Wisner, 2014; Rallis et al., 2014). Studies investigating anxiety were available for only six of the 14 themes. Nonetheless, where literature existed for both outcomes the findings tended to converge. This supports the notion that depression and anxiety should be targeted concurrently by prevention efforts (Fisher et al., 2010; Pilkington et al., 2015b). Trans-diagnostic approaches are needed as anxiety is highly prevalent and negatively influences various parent and infant outcomes (Reck et al., 2012). Furthermore, perinatal depression and anxiety are interrelated. Longitudinal studies indicate that depression symptoms in early pregnancy predict increased anxiety in late pregnancy (Skouteris et al., 2009). In turn, anxiety in late pregnancy is associated with elevated depression symptoms in the postpartum period (Heron et al., 2004; Skouteris et al., 2009). A

trans-diagnostic approach is likely to be more effective than targeting depression alone due to the comorbidity of perinatal depression and anxiety.

The current evidence on partner factors associated with perinatal depression and anxiety is also limited by its focus on heterosexual mothers, although more inclusive research is emerging (e.g., Fletcher, 2011; Ross et al., 2007). Only 19 of the 120 articles included in this review reported on paternal mental health outcomes. Although research suggests that the support needs and preferences of mothers and fathers are similar (Rowe et al., 2013), there is currently insufficient data regarding fathers and same-sex couples to determine whether certain aspects of partner support are more salient to different parents. Future research should aim to be inclusive of fathers and same-sex couples. This will enable the development of universal prevention programs that have relevance to all parents.

A focus on postnatal outcomes was also evident in the literature. Antenatal outcomes warrant equal empirical attention given that pre-natal adjustment predicts postnatal distress (Escribà-Agüir & Artazcoz, 2011) and distress during pregnancy can negatively affect the developing foetus (Field et al., 2006). The findings for antenatal and postnatal outcomes largely converged, and factors assessed during pregnancy were predictive of postnatal depression and anxiety. This suggests that interventions which begin in pregnancy (or even pre-conception) and target the perinatal period are warranted. It seems likely that intervening during pregnancy, before the pressures of child-care deplete the couple's capacity to take on new information, is likely to be more effective. In support of this, Pinquart and Teubert (2010) showed that couple interventions that include both antenatal and postnatal components are more likely to be effective in improving couple communication and psychological wellbeing. Future investigations should expand their focus to include both antenatal and postnatal outcomes. Finally, there is a need for more

rigorously designed, prospective studies as most of the extant studies utilised a cross-sectional design, which limits the conclusions that can be drawn regarding causality.

Strengths and limitations

This systematic review is strengthened by its use of meta-analytic methods to synthesise the literature on partner factors associated with perinatal depression and anxiety. Our use of a clear protocol, developed in line with the PRISMA statement, provides transparency around how data were extracted and analysed, allowing for replication as the evidence base builds. Our deliberate inclusion of both depression and anxiety was intended to facilitate a trans-diagnostic approach in the application of this evidence in programs seeking to prevent perinatal distress. Although previous reviews have broadly examined partner support and relationship satisfaction amongst other risk and protective factors for postpartum depression (e.g., Beck, 2001), our comprehensive review has clarified which aspects of partner support are most relevant to perinatal depression and anxiety. Our inclusion of both maternal and paternal outcomes has highlighted the lack of research in this area that explicitly targets fathers. Our focus on factors that partners can modify in the absence of professional intervention will enable the development of interventions which empower the couple and therefore reduce the burden on professionals.

Our review is limited by its reliance on mostly cross-sectional data. In the absence of longitudinal data, for many of the analyses we were unable to establish temporal precedence of the partner factor. However, restricting our review to prospective studies would have resulted in the exclusion of studies examining antenatal outcomes. We prioritised comprehensively reviewing the literature for both antenatal and postnatal outcomes.

As studies varied considerably in the covariates they included in their models, we were unable to control for baseline symptoms or systematically review moderators and

mediators. We detected substantial heterogeneity for a number of analyses but were unable to determine the cause of this through subgroup analyses. Finally, it may be difficult to generalise the findings to alternative family structures and parents from different cultural backgrounds (Klainin & Arthur, 2009). Nonetheless, the study samples included in this review were drawn from both Western and non-Western countries and subgroup analyses did not attribute any heterogeneity to the sample location.

Finally, our omission of intimate partner violence could be considered a limitation. Domestic violence is a serious public health concern and is associated with increased risk of adverse obstetric outcomes and child behavioural problems (Flach et al., 2011). However, we considered intimate partner violence to be outside the scope of this review as our aim was to identify variables that partners can modify without professional intervention. The associations between domestic violence and perinatal mental illness have been comprehensively reviewed by Howard et al. (2013).

Summary and conclusions

This systematic review and meta-analysis has elucidated the status of the current evidence base for factors associated with perinatal depression and anxiety that are modifiable by partners. Based on our review, prevention efforts for perinatal depression and anxiety should aim to enhance relationship satisfaction, communication, and emotional closeness, encourage provision of instrumental and emotional support, and minimise conflict between partners. We have identified a need for further research into a number of partner factors, such as the division of household labour and sexual satisfaction. There is an obvious need for increased empirical attention on predictors of perinatal anxiety, and the mental health of fathers and parents in same-sex relationships. In conclusion, this review synthesises the current evidence linking modifiable partner factors with perinatal depression

and anxiety. This information can now be used to inform future prevention efforts and has clarified the aspects of partner support that warrant further empirical attention.

Chapter 7 : Enhancing Reciprocal Partner Support to Prevent Perinatal Depression and Anxiety: A Delphi Consensus Study

The previous chapter established the status of the current evidence base for partner factors associated with perinatal depression and anxiety that are potentially modifiable by partners without professional intervention. The findings indicated that there is sound evidence that relationship satisfaction, communication, emotional closeness, and emotional and instrumental support protect against depression during the perinatal period. A limited number of studies have examined anxiety, but the available literature provides sound evidence that emotional closeness and partner support are protective.

Although this review established the specific aspects of partner support that are associated with perinatal depression and anxiety, the capacity to translate this evidence into interventions is limited. The findings provide a general understanding of the partner factors that are implicated in perinatal depression and anxiety, but they do not provide specific guidance on how parents can reduce their partner's risk of mood problems. For the evidence base to be accessible and informative for expectant and new parents, the findings need to be translated into specific guidance on the actions they can take. In this chapter, the Delphi consensus method is used to identify *how* partners can support one another to reduce their risk of perinatal depression and anxiety. The findings of this research informed the content of the web-based prevention intervention outlined in the subsequent chapter.

The findings were presented at the 2015 Australasian Marcé Society for Perinatal Mental Health conference, where the author was awarded the society's Young Researcher Award. The article was published in *BMC Psychiatry*[12].

---

[12] *BMC Psychiatry* is part of the BioMed Central series of journals. It has a 5-year impact factor of 2.90, is in the 1st quartile of 'psychiatry and mental health research', and has an H index of 51.

Statement of Contribution

Pilkington, P. D., Cairns, K. E., Milne, L. C., & Whelan, T. A. (2016). Enhancing reciprocal partner support to prevent perinatal depression and anxiety: a Delphi consensus study. *BMC Psychiatry, 16,* 1-15. doi:10.1186/s12888-016-0721-0

I acknowledge that my contribution to the above paper is 65 percent.

Signature: ..... Date: 14 January 2016

Pamela D. Pilkington

School of Psychology, Faculty of Health Sciences, Australian Catholic University

I acknowledge that my contribution to the above paper is 10 percent.

Signature: Date: 14 January 2016

Dr Lisa C. Milne

School of Psychology, Faculty of Health Sciences, Australian Catholic University

I acknowledge that my contribution to the above paper is 10 percent.

Signature: Date: 14 January 2016

Kathryn E. Cairns

Melbourne School of Population and Global Health, University of Melbourne

I acknowledge that my contribution to the above paper is 15 percent.

Signature: Date: 14 January 2016

Dr Thomas A. Whelan

School of Psychology, Faculty of Health Sciences, Australian Catholic University

Abstract

Background. Systematic reviews have established that partner support protects against perinatal mood problems. It is therefore a key target for interventions designed to prevent maternal and paternal depression and anxiety. Nonetheless, the extant literature is yet to be translated into specific actions that parents can implement. Prevention efforts aiming to facilitate reciprocal partner support within the couple dyad need to provide specific guidance on how partners can support one another to reduce their vulnerability to perinatal depression and anxiety.

Method. Two panels of experts in perinatal mental health (21 consumer advocates and 39 professionals) participated in a Delphi consensus study to develop a set of guidelines on how partners can support one another to reduce their risk of developing depression and anxiety during pregnancy and the postpartum period.

Results. A total of 214 recommendations on how partners can support each other were endorsed by at least 80% of both panels as important or essential in reducing the risk of perinatal depression and anxiety. The recommendations were grouped under the following categories: becoming a parent, supporting each other through pregnancy and childbirth, communication, conflict, division of labour, practical support, emotional support, emotional closeness, sexual satisfaction, using alcohol and drugs, encouraging self-care, developing acceptance, and help-seeking.

Conclusion. This study established consensus between consumers and professionals in order to produce a set of guidelines on how partners can support each other to prevent depression and anxiety during pregnancy and following childbirth. It is hoped that these guidelines will inform the development of perinatal depression and anxiety prevention efforts.

Keywords: Anxiety; Delphi; depression; partner; perinatal; prevention; support.

Background

Burden and prevalence

Perinatal distress is a significant public health problem that negatively impacts the individual (Dunkel Schetter, 2011), compromises the partner relationship (Burke, 2003), and can have significant deleterious effects on the child's development (Murray & Cooper, 2003). Depression and anxiety are common among parents during the perinatal period, with meta-analyses indicating that perinatal depression affects 12.9% of mothers (Gavin et al., 2005) and 10.4% of fathers (Paulson & Bazemore, 2010). Given the reluctance of some new parents to disclose that they are experiencing mood problems, the prevalence of perinatal distress is likely to be underreported (Dennis & Chung-Lee, 2006; Forder, 2013; Oddy et al., 2009). The high prevalence of perinatal depression and anxiety and low rates of help-seeking (Dennis & Chung-Lee, 2006) indicate a need for effective prevention approaches that target all parents (Brugha et al., 2011). The current study aimed to identify how we can enhance partner support and relationship satisfaction for both partners in the couple dyad, to reduce men and women's vulnerability to perinatal mood problems. We deliberately aimed to be inclusive of mothers and fathers in both opposite-sex and same-sex relationships.

A couples-based approach to preventing perinatal depression and anxiety

Partner support is a key target for prevention interventions for perinatal depression and anxiety as it is an established modifiable protective factor (Dennis & Ross, 2006; Highet et al., 2011; Hopkins & Campbell, 2008; Rowe & Fisher, 2010). The transition to parenthood is a significant stressor for both parents (Don & Mickelson, 2012) that can result in increased marital conflict and decreased marital quality (Shapiro et al., 2000). Preventive interventions that aim to promote parents' mental health and wellbeing should help partners support each other in adjusting to this significant life event (Divney et al., 2012).

A couples-focused approach recognises that both maternal and paternal depression and anxiety need to be addressed (Don & Mickelson, 2012). Research suggests that partners' mental health is interrelated (Salmela-Aro et al., 2006). Up to 50% of fathers with a partner experiencing postpartum depression will also develop symptoms, often following the onset of postpartum depression in their partner (Matthey et al., 2000). Paternal distress can have adverse effects on infants' emotional and behavioural development (Giallo et al., 2011), particularly if the mother is also depressed (Goodman, 2012). Longitudinal research suggests that the correlation between maternal and paternal postpartum depression is mediated by partner support and relationship satisfaction (Don & Mickelson, 2012).

Despite these findings, fathers report that the potential for them to develop postnatal depressive symptoms is often not recognised and their capacity to provide support to their partners is minimised by healthcare professionals (Rowe et al., 2013). Although societal changes in gender roles has seen fathers' involvement in parenting increase, health services continue to focus on the wellbeing of mothers (Goodman, 2012; Widarsson et al., 2015) The potential for fathers to develop perinatal mood problems needs to be recognised given the reciprocal nature of the couple relationship and the correlation between partners' mental health (Salmela-Aro et al., 2006). Prevention efforts should also be inclusive of same-sex parents. Heterosexual and same-sex parents share more similarities than differences in their experience of parenthood, including common risk factors for perinatal mood problems (Ross, 2005).

Parents have limited knowledge about perinatal depression and anxiety

Most expectant parents are open to learning new information (Buist et al., 1999) and extensive resources on pregnancy and the experience of childbirth are readily available. In contrast, parents' understandings of perinatal mental health problems are often more

limited (Highet et al., 2011). Antenatal classes tend to focus on childbirth and may not adequately prepare couples for the emotional adjustment to parenthood. A number of researchers and policymakers have identified the need for new parents to improve their perinatal mental health literacy (e.g., Highet et al., 2011). Improved awareness of perinatal depression and anxiety is likely to lead to earlier recognition of symptoms and increased help-seeking (Bilszta et al., 2010; Letourneau et al., 2007).

Existing partner-inclusive interventions aiming to prevent perinatal depression and anxiety mostly involve face-to-face psycho-education delivered by professionals (Fisher et al., 2010; Pilkington et al., 2015b). The reliance on professionals limits the scalability and accessibility of these interventions, and overlooks evidence that parents prefer to access support from family (Forsyth et al., 2011; Rowe et al., 2013). There is a need for universal prevention efforts that nurture parents' sense of self-efficacy by providing them with knowledge about the actions *they* personally can take to reduce their partner's risk (McKellar et al., 2006).

Parents who feel that they have personal control over their risk of perinatal depression are less likely to develop symptoms (Sword et al., 2012). Providing expectant parents with information on the specific actions they can take to prevent perinatal mood problems is likely to increase their sense of empowerment. In particular, interventions that promote interpersonal agency - the achievement of positive outcomes through interactions with others (Smith et al., 2000) - are likely to be beneficial (Sword et al., 2012). Prevention efforts should therefore empower parents with specific guidance on how they can support each other to reduce their risk of perinatal depression and anxiety, without necessitating face-to-face professional intervention, which is resource-intensive and difficult to scale (Cairns et al., 2015).

Parents need specific guidance on how best to support each other

Rowe et al. (2013) found that couples are unsure about the precise ways they can meet each other's emotional needs following childbirth. Wee et al. (2013) argue that the most effective support for fathers is likely to come from their partners, with more than 90% of men seeing their partners as an important source of emotional or informational support during pregnancy (Forsyth et al., 2011). Letourneau et al. (2007) noted that mothers also see partners as their primary source of support, but that their partners' understanding of how to offer support is limited. A survey of expectant fathers confirmed that a significant proportion of men worry about their capacity to adequately support their partner, "losing" their partner to the baby, and maintaining closeness (Forsyth et al., 2011). Rosenquist (2013) argues that although partners are encouraged to monitor and recognise symptoms of depression, this needs to be supplemented with an understanding of how to provide support.

Our systematic review and meta-analysis of factors that are associated with perinatal depression and anxiety that couples can modify (Pilkington et al., 2015a) identified that there is sound evidence that emotional closeness and partner support protect against both depression and anxiety. There was also strong evidence that positive communication and emotional and instrumental support protect against perinatal depression, while inter-partner conflict is a significant risk factor. Although empirical studies show that aspects of partner support and perinatal depression and anxiety are linked, the literature mostly relies on self-report measures, which are difficult to translate into specific actions that parents can implement (Rini et al., 2006). To effectively improve partner support, interventions need to provide couples with specific guidance (Rini et al., 2006).

The current study

The aim of the current study was to use the Delphi Consensus method to develop a set of guidelines on the actions that partners can take to reduce each other's risk of developing depression and anxiety during the transition to parenthood. We included both depression and anxiety as outcomes, as targeting both concurrently is more likely to be effective and less costly (Fisher et al., 2010). Similarly, we focused on both antenatal and postnatal outcomes, given evidence that antenatal depression is equally as common as postnatal depression (Austin, 2004; Milgrom et al., 2008), and anxiety peaks in the last trimester of pregnancy (Teixeira et al., 2009). Moreover, co-morbid depression and anxiety may be more treatment resistant (Yelland, 2010), and is more strongly associated with lack of parental warmth than anxiety alone (Seymour et al., 2015). The resulting recommendations can be promoted to new and expectant parents to help prevent perinatal depression and anxiety.

Methods

The Delphi method

The Delphi method (Jones & Hunter, 1995) was used to establish expert consensus on the actions that partners can take to prevent each other from developing perinatal depression and anxiety. The Delphi technique was first developed in the 1950s by the United States government to inform military decisions (Dalkey & Helmer, 1963), but is now widely-used in health research to inform policy and service planning, develop clinical guidelines, and identify professional competencies (Jorm, 2015; McKenna, 1994). Delphi studies are increasingly implemented via the Internet, and a number of researchers have drawn on the experience and expertise of consumers and other key stakeholders to develop mental health promotion guidelines using this method (Cairns et al., 2015; Fischer et al., 2013; Yap et al.,

2014). See Jorm (2015) for an overview of the use of the Delphi expert consensus method in mental health research.

A panel of experts independently rated the extent to which they believed each action to be important for the prevention of perinatal depression and anxiety. The ratings were made over three successive rounds. Following each round, panel members were provided with summaries of the findings from the previous round, and asked to consider whether they would like to change or maintain their original rating. The study was approved by the Human Research Ethics Committee at the Australian Catholic University (No. 2013_246V).

Panel formation

Two expert panels were formed of (1) researchers and clinicians with a minimum of five years of experience in perinatal mental health (professionals), and (2) consumer and carer advocates with lived experience of perinatal depression or anxiety (consumers). A minimum of five years was required to ensure that professionals had sufficient expertise and experience. Consumer advocates were required to (a) have suffered from perinatal depression or anxiety or cared for someone who had; (b) be currently well; and (c) be in a consumer advocacy role (e.g., peer support, public awareness). All participants were required to be aged 18 years or older.

Panel members were recruited internationally by emailing an advertisement to relevant individuals, professional groups, and organizations. The following sampling pools were used to identify potential participants: (1) authors of articles in our systematic review and meta-analysis of factors associated with perinatal depression and anxiety that couples can modify (Pilkington et al., 2015a); (2) psychologists listed on the Australian Psychological Society's *Find a Psychologist* website (http://www.psychology.org.au/FindaPsychologist) who identified their area of expertise as "Depression/Anxiety" and "Couples"; (3) consumer

and carer advocacy organisations and websites (e.g., the Post and Ante Natal Depression Association); (4) professional organizations and websites (e.g., the International Marcé Society for Perinatal Mental Health); and (5) individuals known to the authors to have relevant clinical or research experience.

Questionnaire development

We systematically searched websites and books to identify actions that parents could take to prevent depression or anxiety in their partner. The search for websites was conducted on 1 August 2014 by entering the search terms "prevent* (depression OR anxiety) (partner OR couple OR relationship) (postpartum OR postnatal OR antenatal)" into five search engines (http://google.com, http://google.ca, http://google.com.au, http://google.co.nz, http://google.co.uk). The top 50 websites identified by each search engine were captured using *NCapture* (QSR International, 2012a), a web browser extension for Google Chrome that captures web pages for analysis in *NVivo 10* (QSR International, 2012b). Duplicate webpages were deleted. If sites referred to other relevant webpages or books, these were also obtained and screened. Further books were identified by entering the search terms "prevent depression pregnancy postpartum" into Amazon (http://www.amazon.com). Inclusion of "anxiety" as a search term did not produce additional results. The search identified 15 books and 358 webpages. The academic literature was also searched for relevant partner support strategies via three electronic databases (PsycInfo, MEDLINE and CINAHL) using the search terms "(partner or spouse or couple) and (depressi* or distress or affective or mood or anxiety or PND) and (postpartum or postnatal or perinatal or antenatal or pregnancy)". The academic literature did not contribute any items but formed the basis of the evidence summaries provided to panel members (see below).

The first author screened the search results for suggestions on how couples can support one another to prevent perinatal depression or anxiety using *NVivo 10* (QSR International, 2012b). *NVivo 10* enables the user to import web pages as PDFs and code the text into categories. The nine themes that emerged from our systematic review and meta-analysis (Pilkington et al., 2015a) (supporting each other through pregnancy and childbirth, communication, conflict, division of labour, practical support, emotional support, emotional closeness, sexual satisfaction, using alcohol and drugs) were used as a priori categories. In addition, four new categories emerged from the lay literature (becoming a parent, encouraging self-care, developing acceptance, help-seeking). These categories were formulated by the first author, and refined through discussion with the co-authors. This process identified 1253 suggestions that were drafted into individual questionnaire items by the first author. Items that were repetitive in content were consolidated into single items that captured the central idea. Suggestions involving more than one idea were divided into multiple items. Most sources framed suggestions in terms of how fathers can support mothers. When possible, suggestions were reworded to be gender-neutral (e.g., “Partners should do things to show each other love and appreciation, e.g., buy flowers, make a cup of tea, give massages”) so that they applied to both heterosexual and same-sex couples, unless the suggestion was explicitly gender-specific (e.g., “Partners should help the child-bearing mother with heavy lifting and carrying as much as possible”). The authors formed a working group to screen the items to ensure that they were actionable by partners, comprehensible, and represented all the ideas identified by the literature search. The final questionnaire comprised 252 items from 210 webpages and four books.

Questionnaire administration

Panel members rated the importance of each item for preventing the development of perinatal depression or anxiety. The rating scale was 1 = *Essential*, 2 = *Important*, 3 = *Don't know/Depends*, 4 = *Unimportant*, 5 = *Should not be included*. Panel members were instructed to base their ratings on any knowledge available to them, including research evidence, clinical experience in treating individuals with perinatal mental health problems, lived experience of perinatal depression or anxiety, or experience with caring for someone with perinatal depression or anxiety. Where available, brief summaries of the academic literature reviewed in Pilkington et al. (2015a) were included in the questionnaire for panel members to consider when deciding their ratings.

The questionnaire also included definitions for the following key terms. *Perinatal depression* was defined as a non-psychotic major depressive episode occurring during pregnancy or the first 12 months after childbirth (Beck, 2002). *Perinatal anxiety* was defined as the presence of anxiety symptoms occurring during pregnancy or the first 12 months after childbirth. *Partner* was defined as an adult, with whom the mother or father of the infant shares an intimate relationship, including de facto and same-sex relationships. The term *primary caregiver* refers to the individual who takes primary responsibility for caring for the baby.

The questionnaire was administered on-line over three rounds using *Qualtrics* survey software (Qualtrics, 2013). Respondents were sent up to three email reminders per round. Those who completed less than 50% of a survey round were excluded from the subsequent round/s. The Round 1 questionnaire consisted of items identified from the literature search. The questionnaire responses were analysed to determine which items were endorsed by panel members as important for preventing perinatal depression and anxiety. Items that did

not establish clear consensus in Round 1 were re-rated in Round 2. Panel members were also invited to suggest additional statements not included in the Round 1 questionnaire, to be rated in Round 2. Suggestions judged to be a new idea were drafted into items and included in the Round 2 questionnaire.

The Round 2 questionnaire therefore consisted of 1) new items to be rated for the first time, and 2) items that did not achieve clear consensus in Round 1 and needed to be re-rated. Items from Round 1 that were re-rated in Round 2 and did not achieve sufficient consensus a second time were excluded. New items in Round 2 that did not establish clear consensus were re-rated in the third and final round. Members of the panel were not given the opportunity to suggest additional statements in Round 2. Therefore, Round 3 consisted solely of new items from Round 2 that required re-rating.

Statistical analysis

The questionnaire responses were analysed to determine the percentage of panel members who endorsed each item as important for preventing perinatal depression and anxiety. Following the conventions of similar Delphi consensus studies (e.g., Reavley et al., 2012) the following cut-off points were used:

- **Included items:** The item was included in the final guidelines if it was endorsed by at least 80% of both panels (professionals and consumers) as either *Important* or *Essential.*
- **Re-rated items:** The item was re-rated in the subsequent round if it was endorsed by at least 80% or more of one of the two panels as *Important* or *Essential* OR it was endorsed by 70 to 79% of both panels as *Important* or *Essential*. Items were re-rated once only.
- **Excluded items:** Items that did not meet the above criteria were excluded.

Following each survey round, panel members were provided with a summary report that listed which items had been endorsed and excluded, and which items needed re-rating. For those items that needed to be re-rated, the report listed the percentage of consumers and professionals that had endorsed the item, and the participant's personal rating. This was to allow participants to compare their ratings with the other panel members' ratings and choose whether they wished to maintain or change their rating in the subsequent round.

Results

Panel members

The invitation email was sent to 1191 individuals and 50 organizations. Thirty-six emails returned non-delivery reports and 101 returned "out of the office" replies. Of the 1054 individual emails that were successfully sent, 136 individuals (13%) started the survey. Of these, 60 experts (39 professionals, 21 consumers) completed at least 50% of the Round 1 questionnaire, yielding a response rate of 44%. The majority of panel members (88%) responded to all Round 1items. There was some attrition over the course of the three questionnaire rounds. The Round 2 survey was completed by 13 consumers (62% of Round 1), and 26 professionals (67%). Twelve consumers (92% of Round 2) and 21 professionals (81%) completed the final Round 3 survey. These unequal panel sizes do not influence the results, as equal weight is given to the ratings of each panel.

Professionals

The professional panel comprised 31 clinicians and eight researchers. The clinicians primarily worked as psychologists (*n* = 15), psychiatrists (*n* = 5), and nurses (*n* =3). Social workers, counsellors, and other specialists (*n* = 8) also participated. The professionals reported working in a range of contexts, including hospitals, universities, family therapy, private practice, and specialist perinatal mental health services. Most (69%) had at least 16

years of specialist experience in perinatal mental health. Twenty-four were from Australia, six from the United States of America, four from Europe, two from Canada, two from the United Kingdom, and one from the Middle East.

Consumer advocates

Consumer advocates were affiliated with organizations such as Post and Ante Natal Depression Support and Information Inc (PANDSI) and Pre and Postnatal Depression Advice and Support (PANDAS). Seventeen were from Australia, two from the United States of America, one from Canada, and one from the United Kingdom.

Endorsed statements

Round 1. Figure 7.1 shows the number of items that were included, excluded, and re-rated at each round of the survey. In the Round 1 survey, 166 items were rated as essential or important by 80% or more of both panels, 29 items were excluded, and 57 items met criteria to be re-rated in Round 2. Based on the suggestions made by panel members in Round 1, 59 new items were developed. Of these, 15 were modified versions of items from Round 1.

Round 2. Of the 116 items in Round 2, 47 achieved adequate consensus to be included in the final guidelines, 60 items were excluded, and 9 met criteria to be re-rated in the third and final round.

Round 3. In Round 3, one of the nine items achieved adequate consensus to be included in the final guidelines. Items not endorsed in Round 3 were excluded. This produced a total of 214 items for inclusion in the final guidelines as suggestions for how partners can support each other to reduce each other's risk of developing perinatal

depression or anxiety. See On-line Supplement 113[13] for a full list of the items meeting criteria for inclusion, exclusion, and re-rating at each round.

Final recommendations

The 214 recommendations were synthesised into a cohesive document by the first author. This involved removing contextual strings from items ("Partners should…") and adding conjunctions. The content or meaning of the items was not altered. The document was organised based on the survey subheadings. Some of the shorter sections were collapsed together, and the wording of some subheadings was updated (e.g., sexual satisfaction was updated to "Sex and intimacy"), to increase readability. Refer to Table 7.1 for examples of the endorsed recommendations in each of the questionnaire categories, and how these map onto the subheadings used in the final document. The working group edited the document to ensure that it was coherent and that it maintained fidelity to the items endorsed by the expert panels. Panel members were then invited to provide feedback on the wording and structure of the draft guidelines. Panel member comments judged by the working group as improving the comprehensibility of the guidelines, without introducing a new idea, were integrated into the final document. The document was then formatted by a graphic designer for dissemination to new and expectant parents. The final guidelines are provided in On-line Supplement 2[14] to be freely reproduced for non-profit purposes, provided the source is acknowledged.

[13] Appendix L
[14] Appendix M

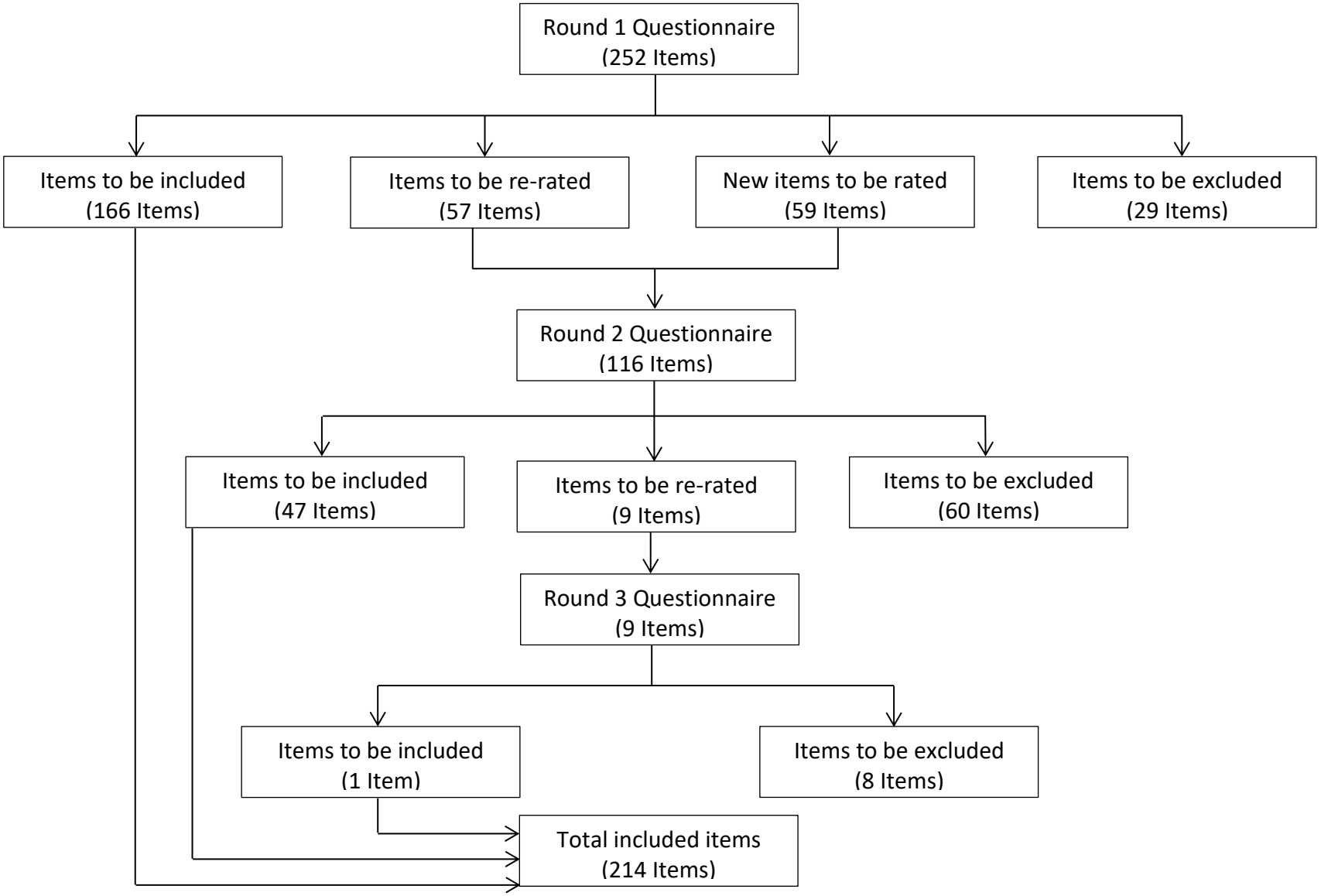


Figure 7.1. **The number of items included, re-rated, and excluded at each round of the questionnaire**

Table 7.1. **Examples of partner strategies under the subheadings used in the Delphi questionnaires and the final guidelines**

Final document subheadings	Questionnaire categories	Example items
Becoming parents	Becoming a parent	Identify potential sources of stress, such as relationship problems or financial difficulties, and explore ways of dealing with these problems before the baby is born.
	Developing acceptance	Be willing to continually explore and adapt, as what works one day may not work the next
Pregnancy and childbirth	Supporting each other though pregnancy and childbirth*	Share how you are feeling about labour and childbirth during pregnancy
Tips for communicating	Communication*	Share your concerns, thoughts, and feelings with each other
Managing conflict	Conflict*	Use 'I' statements, e.g., Instead of saying, "You don't make any time for us anymore", say "I feel lonely when we spend less time together"
Sharing the workload	Division of labour*	Plan the division of labour and agree on who does what before the baby is born, e.g., talk about who will be employed in paid work
Seeking help from family and friends	Practical support*	Discuss and consider what supports you will draw on when you become parents
Showing affection and acceptance	Emotional support*	Validate each other's thoughts, experiences, and worries, e.g., "I can see how hard this is for you", "This would be a hard time for anyone", "You have been dealing with so much lately"
	Emotional closeness*	Do what you can to strengthen your connection during pregnancy and following childbirth, e.g., let each other know that you love each other
Sex and intimacy	Sexual satisfaction*	If you or your partner lose interest in sex, explore different types of intimacy, such as cuddling or hand holding
Staying healthy	Encouraging self-care	Look for quick and easy meal options that incorporate lean meats, whole-grains, low-fat dairy products and fresh fruit, and vegetables
	Using alcohol and drugs*	Be aware that there are healthier ways of coping than alcohol or drug use
Seeking help	Help-seeking	Encourage your partner to seek professional help if you think she or he is experiencing depression as this will benefit their health, the healthy development of your baby, and your relationship

*Accompanied by summary of evidence.

Differences between consumers and professionals

Post-hoc analyses were conducted to explore differences in the extent to which each panel endorsed the items. Overall there was considerable agreement about the strategies considered important to the prevention of perinatal depression and anxiety (r = .73, p<.05). In Round 1, the professional and consumer panels' responses provided similar levels of endorsement in between 72 to 80% of instances (i.e., whether the item should be included, excluded, or re-rated). Items that differed in the level of endorsement by more than 20% are provided in Table 7.2.

Table 7.2. Partner strategies with large differences in endorsement between panels

Strategy	Endorsed by consumers as "Essential" or "Important" (%)	Endorsed by professionals as "Essential" or "Important" (%)	Difference (%)
• If their partner is experiencing problems with anxiety, partners should encourage them to consider taking supplements such as magnesium and calcium, as these are effective in reducing anxiety	71.4	33.3	38.1
• If their partner is resistant to going out, partners should think of things that they can do together in the home that give them a break from parenting, e.g., board games, watching a movie	95.2	67.6	27.6
• Partners should be aware that there is very little they can do to help the child-bearing mother during labour	47.6	20.5	27.1
• Partners should help with the cleaning	90.5	63.9	26.6

• Partners should help with housework before having to be asked by the primary caregiver	95.2	69.4	25.8
• Partners should try to get outdoors together with the baby as much as possible	90.5	64.7	25.8
• Partners should help the primary caregiver with preparing meals, e.g., food shopping, cooking, clearing the table	90.5	66.7	23.8
• Partners who are working should telephone their partner from work, or drop in for lunch occasionally if they work close to home	76.2	52.9	23.2
• Partners should monitor each other for withdrawal or change in mood	85.7	62.5	23.2
• If their partner is experiencing depression, partners should also seek professional help for themselves	85.7	62.5	23.2
• Partners should be prepared to listen even if they feel that they are hearing the same things over and over	100.0	76.9	23.1
• Partners should challenge negative thinking by pointing out situations or tasks that their partner has handled well	95.2	74.3	21.0
• Partners should set aside quiet time to spend together while the baby is sleeping, even if it is only for 10 minutes	100.0	79.4	20.6

Note. Large difference = strategies with at least a 20% difference in endorsement

Discussion

The aim of this study was to identify how partners can support each other over the perinatal period in order to reduce their risk of developing depression or anxiety. The research literature has identified partner support as a key protective factor against mood problems during pregnancy and following childbirth. Using the Delphi consensus method this study has translated this evidence base into specific, actionable recommendations on *how* partners can reduce each other's risk of developing depression and anxiety.

We identified 214 recommendations grouped under 13 categories, nine of which corresponded to partner factors in our systematic review and meta-analysis of risk and protective factors associated with perinatal depression and anxiety that partners can potentially modify. Partner factors that were supported with sound evidence in our systematic review (i.e., positive communication, emotional closeness, emotional support, practical support and minimising conflict) were also widely endorsed by panel members. However, a number of items relating to practical support received only qualified endorsement. Items relating to accessing practical support from sources outside of the family (i.e., friends, parent groups, on-line forums, support groups, play groups and workmates) were endorsed by very few respondents. This is consistent with qualitative research suggesting that partners prefer to access support from each other and other family members (Rowe et al., 2013) and reinforces the need for prevention interventions that enhance partners' ability to support one another. It may also reflect panel member's perceptions that couples' sources of support vary greatly depending on their individual circumstances. This is confirmed by the finding that 100% of both the professional and consumer panels endorsed the item "Partners should discuss and consider what supports they will draw on when they become parents".

Of note, a number of categories without supporting literature nonetheless also received widespread endorsement. In particular, all of the items on developing acceptance (e.g., “Partners should try to enjoy their family rather than feel that they are missing out on the old days”) were highly endorsed by both panels. Although our systematic review of partner factors associated with perinatal depression and anxiety did not identify literature relating to this category, the results are consistent with evidence that incongruence between expectations and the reality of parenthood is common in men (Edward et al., 2015) and women (Beck, 2002) experiencing postpartum depression. An accepting and flexible attitude towards the pressures of early parenthood may therefore be protective against depression and anxiety. Items relating to how partners can encourage each other to take care of themselves (e.g., by being physically active) were also widely endorsed. Finally, suggestions relating to satisfaction with the sexual relationship were largely supported, even though the evidence base for this is only emerging (Pilkington et al., 2015a). It appears that these areas are under-researched and warrant further investigation.

Generally, there were high levels of agreement between the consumer advocate and professional panels. Items that were endorsed by 100% of both panels mostly related to the need for relationship and mental health problems to be “taken seriously” and professional help sought when needed (e.g., “Partners should take their partner seriously if she or he talks about not wanting to live or about harming themselves”). Items relating to awareness that the perinatal period is stressful and it is normal to experience a wide range of emotions were also endorsed by 100% of both panels. It is clearly seen as important for partners to have the capacity to differentiate between the normal stress that is part of becoming a parent and problems that require professional intervention.

There were some large differences between the two panels in their endorsement, particularly of the recommendations on practical support. Consumers tended to highly endorse these items, while professionals were less likely to indicate that they should be included in the final guidelines. For example, 90% of the consumer panel endorsed the item that “Partners should help with the cleaning” while only 64% of the professional panel believed this was important. This is surprising given the sound research evidence that practical support protects against perinatal depression (Pilkington et al., 2015a). This finding could reflect that professionals are more likely to work with individuals experiencing more severe symptoms of perinatal depression and anxiety, and therefore the relevance of practical support is not as salient. In contrast, individuals with personal experience of perinatal depression would be more likely to endorse the need for practical support (Letourneau et al., 2007).

Another surprising finding was that none of the items relating to both mothers and fathers attending antenatal appointments and classes were endorsed. Attendance by both partners does not appear to be seen as relevant to the prevention of perinatal depression and anxiety. Alternatively, panel members’ reluctance to endorse antenatal classes may reflect that perinatal health services are currently focused on maternal wellbeing. Antenatal classes are usually only attended by one of the partners (Wallby et al., 2012), more commonly the child-bearing mother (Habib, 2012; Matthey et al., 2009b), as fathers often have limited availability due to work commitments. Alternative formats such as web-based interventions, as well as men’s preferences around the format and timing of interventions, need to be considered to optimise accessibility for both men and women (Pilkington et al., 2015b).

Strengths and limitations

The study utilised a well-established method that is widely used to develop mental health promotion guidelines. The inclusion of consumer and carer advocates as experts is a key strength of this study. Consumer involvement improves the relevance and usefulness of mental health promotion guidelines (Sanders & Kirby, 2012). There was attrition between rounds but this occurred at a similar rate to other Delphi consensus studies (Berk et al., 2011; Fischer et al., 2013; Kelly et al., 2010). Future research should consider potential strategies to improve responses rates, such as the use of incentives. The time commitment involved in Delphi studies is also likely to contribute to attrition rates, and efforts should be made to minimise the participant burden. Even so, the number of participants is less relevant to the validity of Delphi studies than the appropriateness and credibility of the panel members (Hasson et al., 2000). The panel members had considerable and diverse expertise, and more than two-thirds of the professional panel had over 16 years of experience in perinatal mental health. The use of successive rounds further increases the content validity of the Delphi findings.

Although relatively few consumer advocates participated in the study, and all but one were female, any potential bias from the difference in panel size was overcome by giving equal weight to the ratings of each group. As we did not ask members of the consumer advocate panel to specify whether they were in heterosexual or same-sex relationships, further research is needed to confirm that same-sex couples see the recommendations as relevant.

The results of this study may not apply to all couples, depending on their cultural background and individual circumstances. The relevance of the guidelines is limited to parents who are in a relationship with a partner. The findings may not generalise to other

family constellations, such as blended families, or families in which the grandparent has a primary role in the care of the grandchildren. Further research is needed to establish the relevance of the guidelines to diverse family types, such as couples who have adopted their children, who may face unique stressors. Given that social support is well-established as a protective factor against perinatal distress (Boyce, 2003; Haga, 2012; Lee et al., 2007; Wee et al., 2011), it could also be useful to expand the current research to consider how other people in the parent's social network, such as their family of origin, can be supportive. Nonetheless, at least 84% of families in Australia are two-parent families (Australian Bureau of Statistics, 2011), and panel members were reluctant to endorse items around seeking support from friends and family.

Although we recruited an international panel, a number of respondents raised concerns that the study was prescriptive and did not sufficiently acknowledge the diversity of families or take individual circumstances into account. As noted by Reavley et al. (2012), one of the challenges of developing guidelines is to make them specific enough to be useful while remaining broad enough to be relevant to most people. The guidelines are designed to be generalizable to most couples as it is hoped that the final guidelines will inform the development of universal prevention efforts. Some panel members also questioned whether certain items pathologised parenthood, an issue that has received attention in the academic literature (e.g., Matthey, 2010). We attempted to counter this by phrasing items positively (i.e., what partners could do, rather than what they should not do).

Future directions

Further research is needed to evaluate whether the provision of these guidelines as an information booklet translates into enhanced support, improved relationship satisfaction, and reduced vulnerability to perinatal depression and anxiety. A more dynamic and engaging

format, such as a website, may be more effective in eliciting behaviour change (Kelders et al., 2013). Future research should translate the recommendations into an intervention format that is appealing to new parents, and evaluate their efficacy in preventing perinatal depression and anxiety. Consultation with new parents, such as through focus group discussions, could elucidate preferred formats for dissemination.

Consideration of the range of complex factors that influence whether support is effective, or has unanticipated negative consequences (e.g., the recipient feeling incompetent; Rini et al., 2006), was outside the scope of the current research. However, future research should also explore these and other factors (e.g., work-family conflict) that influence partners' capacity to support one another (Cooklin et al., 2015). Finally, given that partner support is a protective factor against various adverse outcomes, in addition to mood problems, future research could investigate whether enhancing partner support influences other aspects of perinatal wellbeing such as co-parenting and parent-child relationships (Feinberg & Kan, 2008).

Conclusions

This study has identified a set of recommendations that are supported by the expert opinion of perinatal mental health clinicians and researchers, as well as consumer and carer advocates with lived experience of perinatal depression and anxiety. These guidelines can be promoted to new and expectant parents to help them understand how they can best support each other to protect themselves from depression and anxiety. It is also hoped that these guidelines will inform the development of prevention interventions for perinatal depression and anxiety that target the couple relationship, either as the focus of the intervention or alongside other risk and protective factors.

Chapter 8 : *Partners to Parents*: Development of a Couples-based On-line Intervention to Prevent Perinatal Depression and Anxiety

The previous chapter described the use of the Delphi consensus method to identify the actions that parents can take during pregnancy and following childbirth to support one another and reduce their risk of developing depression or anxiety. The resulting guidelines document is included in Appendix M. Evidence suggests that although printed materials such as booklets are strong in terms of depth, they are limited in reach and are not able to be tailored to the individual (Atkin & Salmon, 2013). In contrast, websites are dynamic, interactive, and enable personalisation. Therefore, to facilitate knowledge translation and increase accessibility to the guidelines, the information was translated into *Partners to Parents,* a web-based intervention for preventing perinatal depression and anxiety. The current chapter, published in *Advances in Mental Health: Promotion, Prevention and Early Intervention*[15], describes the formative work that contributed to the development of the intervention, including the implementation of usability testing to obtain feedback from men and women expecting or parenting an infant aged up to 24 months.

Note

Alain Martineau wrote the code for the prototype version of the *Partners to Parents* website that was usability tested. Following usability testing, the author developed version 2.0 of *Partners to Parents* in WordPress. Tim Marwick wrote the code that enables the personalisation functionality for version 2.0 of the website.

---

[15] *Advances in Mental Health: Promotion, Prevention, and Early Intervention* has an impact factor of 0.40, is in the 3rd quartile of 'psychiatry and mental health research', and has an H index of 6. It was considered appropriate for this manuscript as its readership includes mental health practitioners, researchers, clinicians, nurses, social workers, carers, mediators, counsellors, consumers, commentators and policy developers.

Statement of Contribution

Pilkington, P. D., Rominov, H., Milne, L., Giallo, R., et al. (2016). Partners to Parents: development of an on-line intervention for enhancing partner support and preventing perinatal depression and anxiety. *Advances in Mental Health: Promotion, Prevention and Early Intervention,* Early online access. doi:10.1080/18387357.2016.1173517

I acknowledge that my contribution to the above paper is 60 percent.

Signature:  Date: 14 January 2016

Pamela D. Pilkington

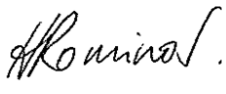
School of Psychology, Faculty of Health Sciences, Australian Catholic University

I acknowledge that my contribution to the above paper is 10 percent.

Signature:  Date: 14 January 2016

Dr Lisa C. Milne

I acknowledge that my contribution to the above paper is 10 percent.

Signature:  Date: 14 January 2016

Holly Rominov

School of Psychology, Faculty of Health Sciences, Australian Catholic University

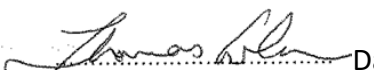
I acknowledge that my contribution to the above paper is 10 percent.

Signature:  Date: 14 January 2016

Dr Rebecca Giallo

Population Health Theme, Murdoch Childrens Research Institute

I acknowledge that my contribution to the above paper is 10 percent.

Signature:  Date: 14 January 2016

Dr Thomas A. Whelan

School of Psychology, Faculty of Health Sciences, Australian Catholic University

Abstract

Background. Couples-based interventions to prevent perinatal depression and anxiety in men and women are needed to optimise parental wellbeing and infant mental health. Current interventions are limited by their focus on maternal mental health, postnatal outcomes, and a reliance on professionals for their delivery. This article describes the development of *Partners to Parents* (http://www.partnerstoparents.org), an on-line intervention for preventing perinatal depression and anxiety focused on enhancing partner support that is endorsed by empirical evidence and expert consensus.

Method. Individual usability testing sessions were conducted with 12 parents in the perinatal period (seven women and five men) to assess the quality of the website. A deductive coding scheme was applied using *NVivo 10* to identify comments relating to system and content quality of the website, as well as positive and negative comments.

Results. The results of the usability testing yielded more than 250 comments on system and content quality, potential barriers to accessing the website, and suggestions for improvement. This feedback was used to update the design of the *Partners to Parents* intervention.

Conclusion. The usability testing sessions suggested that the majority of the mothers and fathers involved perceived the website to be a useful new resource. Consultation with potential users of the website enabled refinement of the content and design of the web-based intervention.

Keywords: Anxiety; depression; eHealth; partners; perinatal; prevention.

Introduction

Mood problems during the perinatal period (defined in this study as pregnancy and the first 12 months after birth) are a significant public health problem. Meta-analyses indicate that the combined period prevalence of maternal depression during pregnancy is 18.4%, while up to 19.2% of women have a depressive episode in the first three months postpartum (Gavin et al., 2005). Estimates of the prevalence of paternal depression are also high: 10.4% of fathers experience depression during the perinatal period, with the peak period prevalence being 25.6% at three to six months postpartum (Paulson & Bazemore, 2010). The adverse effects of perinatal depression and anxiety often extend to the entire family, by compromising the intimate partner relationship (Figueiredo et al., 2008), and affecting parenting behaviour (Lilja et al., 2012). Perinatal distress is associated with adverse child outcomes, including delays in cognitive and emotional development (Murray & Cooper, 2003; Ramchandani et al., 2005) and behavioural problems (Giallo et al., 2014; Giallo et al., 2015).

Despite the availability of effective treatments (Sockol et al., 2011), research suggests that only 50% of mothers affected by perinatal mood problems seek formal treatment (Woolhouse et al., 2009). Alarmingly, a recent survey of fathers' mental health help-seeking identified that only 3.2% of fathers sought mental health counselling, and fathers reporting higher levels of distress were less likely to seek help (Isacco et al., 2015). Therefore, interventions targeting the prevention of depression and anxiety during the transition to parenthood are needed alongside treatment, to optimise parental wellbeing and infant mental health. This article describes the rationale for and development of a universal on-line intervention for preventing perinatal depression and anxiety focused on enhancing partner support.

Partner support as an important target for prevention

The argument that the couple relationship is an ideal target for preventive interventions is compelling: partner support is consistently identified as a protective factor (Pilkington et al., 2015a), expectant couples are interested in relationship education (Engsheden et al., 2013; Haga et al., 2013), and approaches that are delivered to both partners in the couple dyad are more likely to benefit parents' mental health (Burgess, 2011). A burgeoning evidence base demonstrates that supportive relationships facilitate an individual's capacity to adjust to significant life events, such as the birth of a child, by buffering the associated stress (Figueiredo et al., 2008). Accordingly, meta-analyses consistently demonstrate that partner support and relationship satisfaction are two of the strongest protective factors against perinatal depression and anxiety (Beck, 1996, 2001; Pilkington et al., 2015a; Robertson et al., 2004). Conversely, poor communication, conflict, and dissatisfaction with the partner relationship are associated with increased risk of depression and anxiety during the transition to parenthood (Pilkington et al., 2015a; Rosand et al., 2011). However, few interventions have realised the potential for a couples-based approach to the prevention of perinatal depression and anxiety.

Current approaches to perinatal education tend to focus on physical wellbeing (Woolhouse et al., 2014) and the practical aspects of infant care (May & Fletcher, 2013), while less attention is paid to parents' emotional and support needs (Highet et al., 2011). Qualitative findings indicate that both mothers (Woolhouse et al., 2014) and fathers (Fletcher et al., 2004) feel unprepared for changes in their intimate and sexual relationship following childbirth. A number of researchers have identified a need for antenatal education to provide practical advice on how partners can effectively support one another during the transition to parenthood (e.g., May & Fletcher, 2013; Rowe et al., 2013). We aimed to address this need by developing an intervention for the

prevention of perinatal depression and anxiety focused on facilitating partner support that aspires to be inclusive of mothers and fathers in opposite-sex and same-sex relationships.

The rationale for a web-based approach to prevention

A number of psychosocial interventions that aim to prevent perinatal mental illness are available. These have primarily utilised antenatal classes to communicate information (Dennis & Dowswell, 2013; O'Hara et al., 2015), and focused almost exclusively on maternal postnatal depression (Pilkington et al., 2015b). Dennis and Dowswell (2013) conducted a Cochrane review of psychosocial and psychological interventions for preventing postpartum depression and found these to have a small but significant protective effect. Notably, interventions that included the provision of social support were the most promising. There was no clear evidence to recommend the implementation of antenatal classes, potentially due to methodological limitations such as high rates of attrition at follow up (Austin (Austin, 2004), 2004; Dennis & Dowswell, 2013). The effectiveness of interventions for the prevention of perinatal anxiety is yet to be synthesised in a meta-analysis, but the findings on the effectiveness of psychoeducation-based approaches for preventing perinatal anxiety are mixed. Parenting classes are unlikely to be an effective format for couples-based universal interventions as they are expensive and labour-intensive (Jones et al., 2013), and they are usually only attended by one of the parents (Wallby et al., 2012), most commonly the mother (Habib, 2012).

Web-based approaches may offer a viable alternative to face-to-face strategies (StGeorge & Fletcher, 2011). More than 95% of Australian households with children under the age of 15 years have access to the Internet (Australian Bureau of Statistics, 2014), and the Internet is increasingly used as a source of health information (Fox, 2011a, 2011b). On-line interventions can be conveniently accessed at any time, and the absence of geographical constraints means that they have the potential to reach under-serviced rural areas as well as parents living in urban

settings (Crockett et al., 2008). Web-based interventions may be particularly appealing to parents in the immediate postpartum when it is often difficult to leave the house due to the demands of infant care. Accessing information on-line may also be more appealing to parents due to the anonymity it affords, allowing parents with subclinical symptoms of depression or anxiety to avoid the potential stigma associated with help seeking (Maloni et al., 2013).

A number of on-line partner-inclusive interventions for the prevention of mood problems following childbirth have recently been developed. Interventions aiming to prevent postnatal depression that provide modules on the partner relationship include Mamma Mia (Haga et al., 2013), MoodGym (Jones et al., 2013), and Mothers and Babies (Curso Mamás y Bebés; Barrera et al., 2015). A major limitation of these interventions, to date, has been their tendency to address maternal, but not paternal mental health. Furthermore, current approaches have focused on postnatal depression, despite evidence suggesting that a broader, trans-diagnostic approach to the prevention of perinatal depression and anxiety is preferable (Fisher et al., 2010). Finally, given the emerging nature of this research area, the efficacy of these interventions is yet to be established. Therefore, we aimed to develop a web-based intervention targeting mothers and fathers that comprehensively addresses how partners can support one another to prevent perinatal depression and anxiety.

The Partners to Parents intervention

The development of the Partners to Parents website (http://www.partnerstoparents.org) was informed by a systematic review evaluating existing partner-inclusive interventions for perinatal depression and anxiety (Pilkington et al., 2015b), a systematic review and meta-analysis of the partner factors associated with perinatal depression and anxiety (Pilkington et al., 2015a), and a Delphi study to obtain expert consensus on the actions partners can take to support one another to reduce their risk of perinatal depression and anxiety. Table 1 outlines the topics that

comprise the pages of the website, an overview of their content, and the rationale for their inclusion. All topics included on the website were endorsed in our Delphi study by perinatal mental health experts and consumer advocates as important for the prevention of perinatal depression and anxiety, and most were supported by a sound or emerging evidence base, as identified by our systematic review and meta-analysis. The website was also developed with reference to established rating scales to assess the quality of postnatal mental health websites (Moore & Ayers, 2011), and recommendations for the content of father-inclusive antenatal education (May & Fletcher, 2013).

In accordance with Moore and Ayer's (2011) quality rating scale, we ensured that the website specifies the creators and their contact details, the homepage includes a clear index that links to all pages on the site, the text is clear and uncluttered, a picture is included on most pages, there are no advertisements, information on how to seek help is included, and the user does not need special software or to provide fees to access the website. The extent to which the website is consistent with these guidelines is shown in Table 2.

Although recommended by Moore and Ayer (2011), we chose not to include additional resources for healthcare professionals, or provide on-line or off-line support. Allowing website visitors to contact others in similar situations was also advocated by Fletcher's (2011) review of website content for fathers in families with perinatal depression. Nonetheless, we elected to provide hyperlinks to relevant resources for parents seeking additional support, rather than including on-line or off-line informal or formal support, for two main reasons. First, a key principle of the website is that it empowers partners to support one another without professional intervention. Second, only a minority of the parents, perinatal mental health professionals, and researchers who participated in our Delphi study endorsed seeking support from sources outside of the family, including on-line forums and off-line support groups, as important to the prevention

of perinatal depression and anxiety (Pilkington et al., 2016). We also elected to exclude information on parent-infant attachment and infant crying, despite inclusion of this information being recommended by May and Fletcher (2013), given our focus on the partner relationship.

The present study

The current study aimed to investigate mothers' and fathers' perceptions of the usability of the Partners to Parents website. Usability was defined as the user's experience of the intervention as easy to use, acceptable, and relevant (Bangor et al., 2008). Even when an intervention is supported by a wealth of empirical evidence, its capacity to produce population-level effects is compromised if the end user does not find it appealing or engaging (Sanders & Kirby, 2012). Inclusion of consumers' viewpoints is integral to the development of health interventions, as it increases the likelihood that users will engage with the final product (Sanders & Kirby, 2012). It was therefore essential that the development of the Partners to Parents website was not only based on the available empirical evidence, but was also informed by the views and opinions of parents in the perinatal period. Usability testing with new and expectant parents was thus undertaken to optimise the quality and usefulness of the website.

Table 8.1. **Topics, outline of content, and rationale for inclusion**

Headings	Topics	Partner factor*	Content	Endorsed by experts	Evidence base	Consistent with guidelines
Parenthood	Preparing for parenthood Adapting to parenthood		Informs parents about potential changes in emotional health and their partner relationship associated with parenthood, and encourages discussion of hopes, fears, and expectations during pregnancy and following childbirth.	✓	-	✓
	Pregnancy and childbirth		Encourages couples to discuss their expectations and feelings around labour and childbirth, provides tips on how to be supportive during labour, and emphasises the importance of de-briefing, particularly if the birth was traumatic.	✓	-	✓
Connection	Listening Talking about tricky things	Communication	Informs parents about the importance of relating to each other respectfully, and provides tips on reflective listening and how to talk about difficult emotions and topics.	✓	Sound	
	Sex and intimacy	Sexual satisfaction	Informs parents about how their sexual relationship may change and encourages exploration of different types of intimacy.	✓	Emerging	
	Strengthening your connection	Emotional closeness Emotional support	Encourages partners to spend time together, validate one another's thoughts and feelings, and praise one another's parenting efforts.	✓	Sound	

Teamwork	Helping one another	Instrumental support	Provides tips on how to provide instrumental support.	✓	Sound	✓
		Division of household labour	Encourages partners to discuss returning to work, how household and childcare tasks will be distributed following childbirth, and to renegotiate this as needed.			
	Seeking help from family and friends		Encourages partners to identify potential sources of social support. Provides tips on how to establish boundaries if help from others feels intrusive.	✓	-	-
	Problem solving as a team		Provides step by step tips on how to problem solve together.	✓		✓
	When things get heated	Conflict	Acknowledges that conflict is a natural part of relationships and provides advice on how to express needs respectfully and avoid being critical.	✓	Sound	-
	Managing conflict					
Health	Diet and exercise	Alcohol or drug use by partner	Encourages partners to help one another to eat healthily, sleep when needed, exercise, minimise or avoid using drugs or alcohol to regulate emotions, and provides tips on how to support a partner who is breastfeeding.	✓	Emerging	-
	Alcohol and drugs					
Mood	Is my partner OK?		Provides information on depression and anxiety symptoms and risk factors, and how to respond appropriately if a parent is concerned about their partner's mood. The Edinburgh Postnatal Depression Scale is provided for parents to self-assess the severity of their distress.	✓	-	✓
	Depression					
	Anxiety					
	Depression self-test					
Help	Seeking professional help		Encourages parents to seek professional help if they are concerned about their partner, particularly if they are having thoughts of suicide or harming themselves or their infant.	✓	-	✓
	Resources					

*Systematic review and meta-analysis reported in Pilkington et al. (2015a).

Table 8.2. **Consistency with recommendations and guidelines**

Article	Guideline	Addressed
Moore and Ayers (2011)		
	Include information about depression and anxiety symptoms	✓
	Include information about factors that increase risk for postnatal mental illness	✓
	List the impact postnatal mental illness has on the mother, infant, and partner/family	✓
	Include treatment and screening information	✓
	Include additional resources for healthcare professionals	x
	Specify the creators of the website	✓
	Provide contact details for the site owner	✓
	Maintain website regularly	✓
	Include a clear index on the homepage that links to all pages on the site	✓
	Use clear text, uncluttered, with a picture on most pages	✓
	No advertisements	✓
	Provide self-help tools (e.g., information on how to seek help)	✓
	Provide on-line and offline support (e.g., email counselling)	x
	No fees or special software	✓

May and Fletcher (2013)	
Prepare fathers for the relationship and role changes that they are likely to experience by providing information on what to expect and how to build and sustain a healthy parenting partnership.	✓
Increase parental awareness of the increased risk that fathers face of developing mental distress and depression, the implications that this has for their family and the importance of seeking help and support if it occurs.	✓
Improve fathers' ability to better support their partners by better preparing them for their personal experiences, by improving the father's understanding of what the mother is experiencing, and by providing specific training to fathers in how to be an effective support.	✓
Promote the development of early and strong attachments between fathers and their infants by improving the father's ability to identify and interpret infant communication	x
Promote the development of a strong parenting alliance by informing parents about the importance of parenting teamwork and the key features that help to build a strong parenting partnership	✓
Help fathers understand infant crying patterns, why babies cry and what parents and carers can do to avoid feeling overwhelmed by infant crying.	x

Note. Guidelines reproduced from Moore and Ayers (2011) and May and Fletcher (2013) with permission.

Participants

Participants were men and women who were expecting and/or parenting an infant aged up to 24 months. Eligibility criteria required that parents were not currently experiencing depression or anxiety, were aged 18 years or older, were currently married or in a de facto relationship, and resided in the Melbourne metropolitan area. A total of 12 participants (five men and seven women) completed face-to-face interviews to evaluate a prototype of the Partners to Parents website. This sample size was determined based on established guidance regarding usability testing (Nielsen, 1994). Characteristics of the sample are displayed in Table 3. Of the seven females, six were primiparous (mean infant age = 11.4 months). All men were expecting their first or second infant. Two women were parenting twins. One woman was in a same-sex relationship. All participants except one were tertiary educated, and the majority reported an average annual income of more than AUD$50 000.

Table 8.3. **Participant characteristics**

Demographics	**Mothers (*n* = 7)**	**Fathers (*n* = 5)**
Parent age in years, *M* (*SD*)	31.3 (2.9)	37.6 (3.2)
Expectant, *n* (%)	2 (29.0%)	5 (100.0%)
Age of youngest infant in months, *M* (*SD*)	11.4 (4.67)	*
Infant gender		
Male, *n* (%)	4 (57.1%)	2 (40.0%)
Female, *n* (%)	1 (14.3%)	1 (20.0%)
Unknown, *n* (%)	2 (28.6%)	2 (40.0%)
First-time parent, *n* (%)	6 (85.7%)	2 (40.0%)
Annual income > AUD$50 000, *n* (%)	4 (57.1%)	5 (100%)
Undergraduate degree or higher, *n* (%)	7 (100.0%)	4 (80.0%)

Note. The mean age of the youngest infant is not provided for men as all were expecting.

Procedure

The study was approved by the Human Research Ethics Committee of the Australian Catholic University (No. 2015-131E). A convenience sample was recruited via word-of-mouth, snowball sampling, and on-line advertising. Informed consent, demographic data and contact information were obtained via an on-line registration form using *Qualtrics* (2013). This form also included single-item questions to screen participants against the inclusion criteria (e.g., "Are you currently experiencing an episode of depression or anxiety symptoms?" Yes, No). A hyperlink to the information sheet and registration form was circulated to the researchers' personal and professional networks of perinatal and family health professionals and researchers, and posted on relevant Facebook pages (e.g. Melbourne Mums and Bubs), and online forums (e.g., BubHub). Recipients were also encouraged to forward the hyperlink to their networks. Upon registration, participants were contacted by email to arrange an interview time.

Each participant completed a 30-minute usability testing session at the Australian Catholic University in Melbourne to obtain their views on the website's strengths and limitations. The sessions were conducted individually with one of the authors (PP or HR). Transcripts were checked for fidelity across interviewers. The think-aloud technique was used to obtain direct, real-time impressions of the website content (Jaspers et al., 2004). This involved encouraging participants to verbalise their thoughts as they browsed the *Partners to Parents* website. Participants were invited to provide both positive and negative feedback. Research demonstrates that think-aloud protocols improve user-satisfaction with the final product (Jaspers et al., 2004).

In addition to freely browsing the website, users completed a cognitive walkthrough, in which they were asked to complete a series of actions to evaluate the navigability of the

website (e.g., “Invite your partner to participate”). The session concluded with two open-ended questions, adapted from Kelders et al. (2013), to identify key areas of improvement (i.e., “What three things does the website need?”) and potential barriers to using the website (i.e., “What would stop you from visiting this website?”). The audio from each usability test session was digitally recorded and transcribed.

Deductive thematic analysis was used to code the transcriptions using qualitative software *NVivo 10* (QSR International, 2012). We used a predetermined coding scheme based on the work of Kelders et al. (2013) to identify comments relating to system and content quality, as well as positive and negative comments. System quality refers to the extent to which the website is user-friendly, including the visual layout and placement of menus and buttons (Kelders et al., 2013). Content quality refers to the usefulness and persuasiveness of the information presented in the website (Kelders et al., 2013).

Results

The results of the usability testing yielded more than 250 comments on the system and content quality of the website. Examples of positive and negative comments are provided in Table 4. The subject of comments was similar between mothers and fathers.

System quality

The positive comments on system quality related to the personalisation of the website, based on the name and gender of the participant and their partner, and whether they were currently in the antenatal or postnatal period (*n* = 4). Participants also commented on the clean, clutter-free design (*n* = 4) and reported that they liked the logo (*n* = 3). The negative comments on system quality identified issues with navigability and the layout (*n* = 9). Two participants found that the graphic design of the website was too static,

as each page used the same layout, and two participants noted that there were few images accompanying the text.

Table 8.4. **Examples of system and content quality feedback from mothers and fathers**

Type	**Mothers**		**Fathers**	
	Positive	Negative	Positive	Negative
System	"It's not too busy. It's nice and easy to click through. You don't get distracted by a million and one different things." "It is nice how it is personalised."	"The menu's a bit funny because it's a bit see-through and there's text underneath so it's a little bit hard to see stuff." "All the pages look the same."	"The categories at the top all seem to make sense and are sort of in an order that makes sense." "The pictures are good. The colours are good."	"I think the only thing you've got to watch is that some people as soon as they have to fill in a form, even if it's two names …" "It's a little light on, as far as imagery is concerned."
Content	"Talking about tricky things sounds interesting." "It's almost like you're having a one-on-one with someone but it's in your own sort of time."	"The alcohol and drugs is little bit judge-y." "All the headings… it is overwhelming."	"I'd certainly recommend this site to dads." "This is good stuff for dads I think. Because we often forget this stuff."	"Too academic." "I pretty much won't read anything that isn't in bullet points. If it's in a paragraph I won't read it."

Content quality

Positive comments on content quality mainly related to the usefulness of the information (*n* = 8), particularly to fathers. Generally, the negative comments on content quality centred on the large amount of information (*n* = 3). Participants suggested that bullet points be used to increase the readability of the text (*n* =4), and noted the use of some jargon (e.g., perinatal; *n* = 4). One participant reported that they perceived the tips on staying healthy to be judgmental, and suggested that they be reworded.

Suggestions for website improvements

The suggestions for improving the website, and subsequent changes made to address these, are summarised in Table 5. Broadly, participant feedback indicated a need for improved navigability (*n* = 5), simplification of the content to improve readability (*n* = 4), and the inclusion of "real-life" examples (*n* = 3), quizzes and interactive elements to increase the appeal of the website (*n* = 4). It was not clear to three participants that the information provided was informed by evidence, and they recommended this be specified.

Potential barriers to visiting the website

The most frequently cited barrier (*n* = 6) to accessing the website was not being aware of its existence, or it being difficult to find through search engines such as Google (e.g., "So that'd be the only reason that'd stop me is if it wasn't in the top sort of five Google searches"). The need for the website to have mobile device compatibility (i.e., accessible on smart phones and tablets) was also emphasised by three participants (e.g., "It's got to be mobile and tablet friendly"). Another three participants identified that if they thought the website lacked credibility they would not continue to access the site (e.g., "Probably the source, like I do actually look at the source or where this comes from to see how reliable the source is."). One mother reported that the pop-up that asks the user to enter their name, their partner's name, and their genders (to enable personalisation of the content) was a

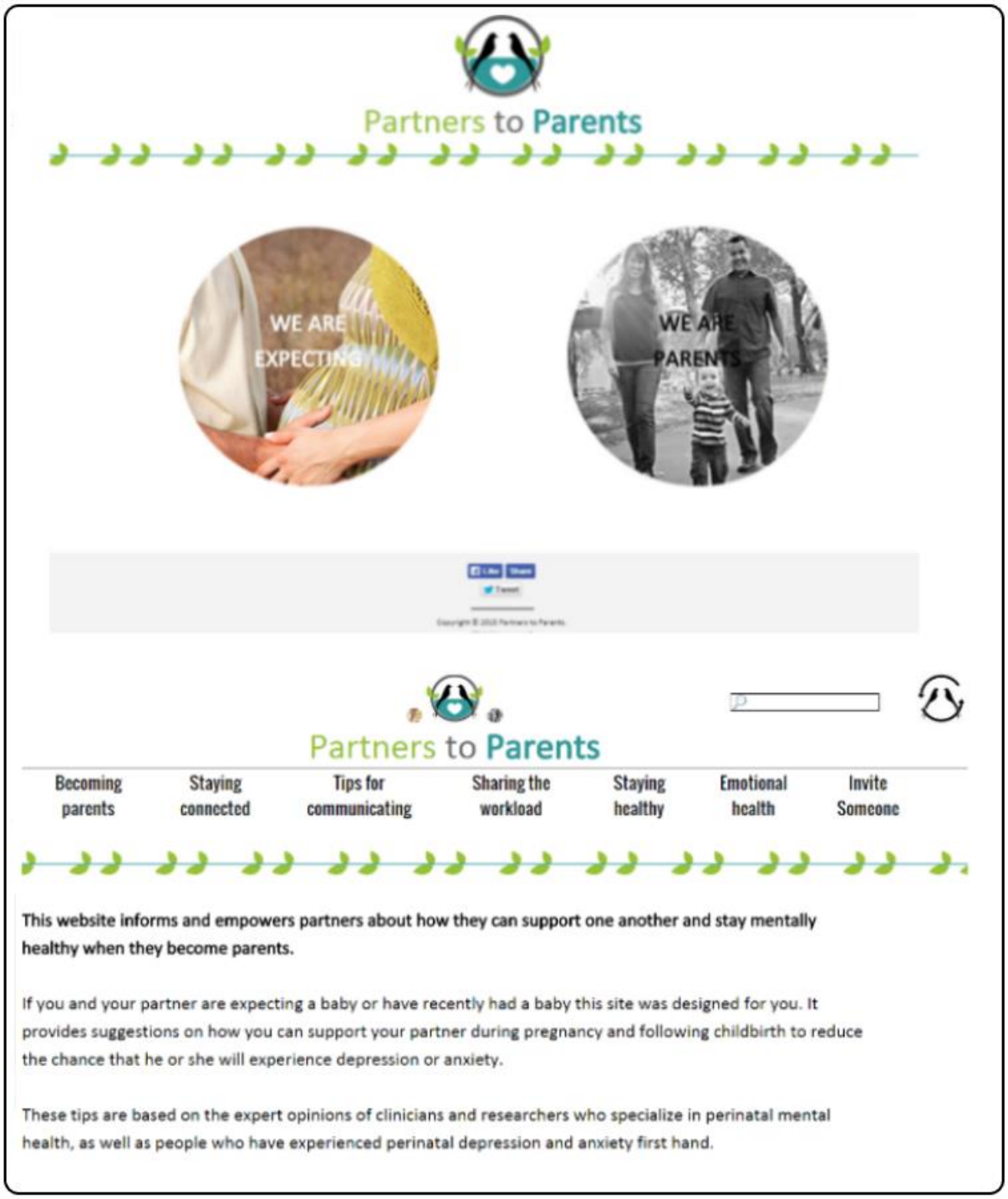
deterrent to using the website. Potential deterrents to accessing *Partners to Parents* cited by individual participants were if there was a better rival website, lack of time, access to the website requiring an email log-in, and if the website included advertisements.

Summary of changes

The changes that were made to address the feedback included simplifying the language and structure of the content, improving the structure of the website to enhance the graphic design and navigability, increasing the number of images, and developing new material to increase engagement and interactivity. New material included “real life” quotes from parents, infographics, quizzes, and activities. For example, in an attempt to make the content more experiential, the page on “Preparing for Parenthood” encourages parents to find a photo of themselves when they were a small child and reflect on their own experiences of childhood and how this may influence how they parent. Finally, we maximised Search Engine Optimisation (SEO) to ensure that the site is easily accessible through Google and other major search engines. See Figure 1 for example pages of the website before and after it was updated based on the usability testing feedback. Ongoing research is needed to evaluate these changes and further reiterations of the website.

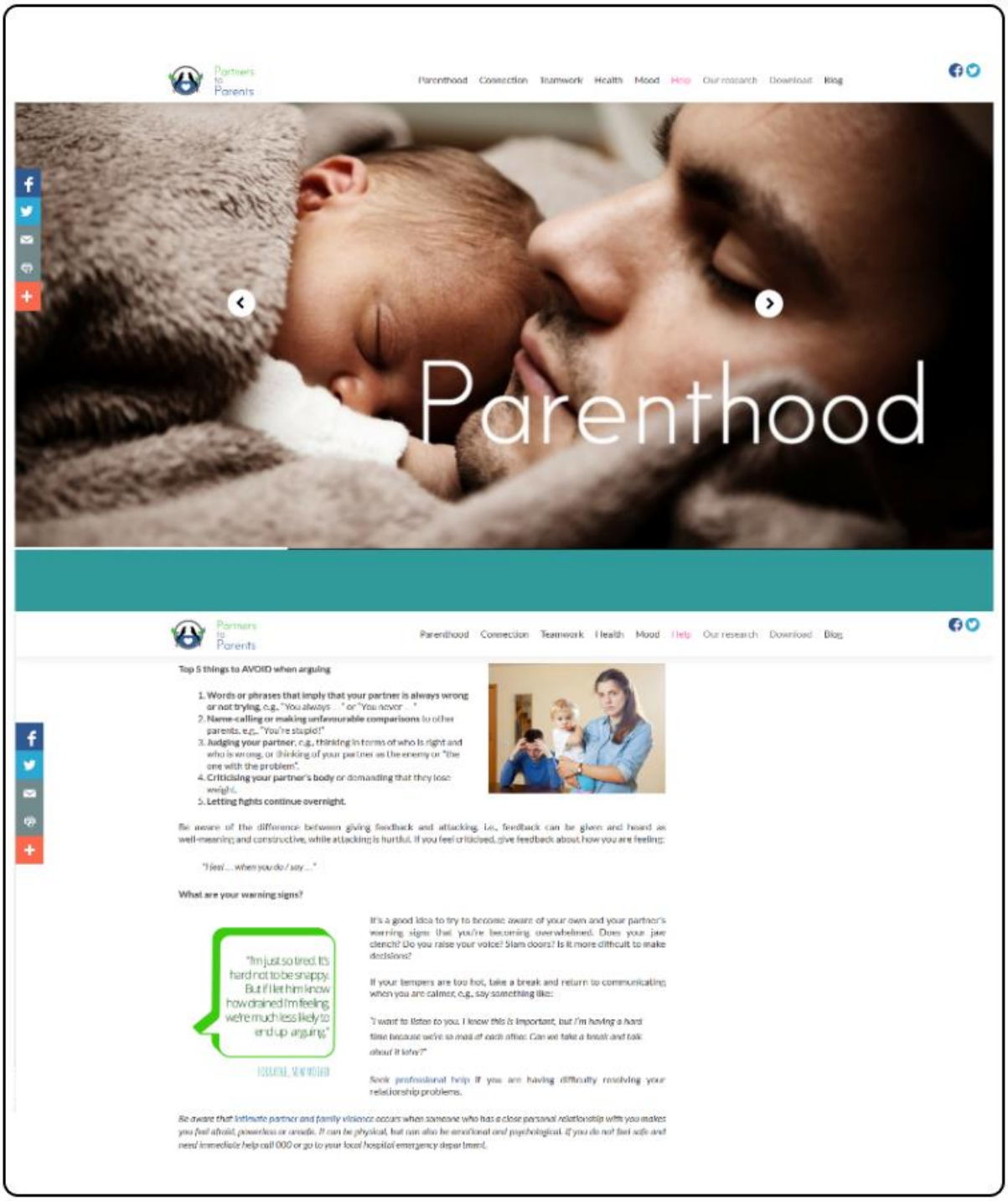
Table 8.5. **Summary of suggested improvements and subsequent changes to the website**

Comment	Changes made to address feedback
1. Provide "real-life examples" and vignettes	• Quotes were inserted to reflect parents' experiences • A guest blog was included to enable inclusion of the perspectives and experiences of real parents and experts in perinatal mental health
2. Reduce the amount of text and use more bullet points	• The text was chunked further into bullet points and numbered lists
3. Use more catchy and emotive headings and subheadings	• The headings and subheadings were simplified and updated to be more engaging
4. Include more visually engaging and interactive components	• At least one image was inserted into every page • The content was updated to include quizzes, infographics, and interactive elements
5. Improve navigability, layout, and graphic design	• The website was recreated in *WordPress* (http://www.wordpress.com) to improve the layout, navigability, and graphic design
6. Clarify that the information is evidence-based and reputable	• A welcome statement was included on the landing page to clarify that the information is informed by evidence
7. Link to information on breastfeeding, having multiples, and morning sickness	• Hyperlinks to relevant websites were inserted throughout the text and links to the Australian Breastfeeding Association and the Australian Multiple Birth Association were included on the resources page.



Initial prototype

Figure 8.1. **Representative screen captures of the *Partners to Parents* website**



Final website

Discussion

This study aimed to describe the formative work that contributed to the development of *Partners to Parents,* a novel web-based intervention specifically designed to prevent perinatal depression and anxiety by enhancing reciprocal partner support. Usability testing sessions were conducted with men and women in the perinatal period to gather information on the perceived quality of the website and improve its design and functionality. Overall, the participants had a positive reaction to the content of *Partners to Parents*, and appreciated the personalisation, inclusion of fathers, and simple design. Consultation with parents resulted in a number of improvements, including improved graphic design, layout, and navigability. In addition, the website was modified to enable smart phone and tablet compatibility, search engine optimisation, and enhanced readability.

The resulting web-based intervention has a number of potential advantages, including evidence-informed content, inexpensive to maintain, and easily accessible. Numerous websites providing advice on the perinatal period are available, but few are informed by rigorous research evidence. Accordingly, a number of participants commented on the proliferation of websites on pregnancy and parenting, and noted that it is important to know which websites are credible. *Partners to Parents* is supported by research evidence and the views of perinatal mental health clinicians and researchers, as well as consumer advocates with a history of perinatal depression and anxiety.

The *Partners to Parents* website extends existing partner-inclusive interventions by adopting a father and same-sex partner-inclusive, trans-diagnostic approach to the prevention of perinatal mood problems. To our knowledge, it is the first theory-informed, evidence-informed on-line intervention for preventing perinatal mental illness that (1) is directed towards both men and women; (2) is inclusive of same-sex couples; (3) incorporates

both antenatal and postnatal outcomes; and (4) targets anxiety alongside depression. These are important targets for prevention interventions, which have thus far tended to focus on maternal depression following childbirth.

Limitations

A key methodological limitation associated with face-to-face usability testing is the potential influence of the facilitator. Although participants were reminded that they were testing a prototype and encouraged to provide critical, as well as positive feedback, they may have been influenced by social desirability bias as they were aware that one of the facilitators developed the website.

The homogeneity of the sample may limit the generalisability of the findings. The majority of participants were well-educated and financially stable, and all were Caucasian. Therefore, it is not possible to comment on how parents from other ethnicities and socioeconomic backgrounds may perceive the website. Although a universal approach was adopted it is yet to be seen whether the website will be accessed and seen as relevant by parents from a diverse range of backgrounds. A potential limitation of web-based interventions is that their users tend to be more highly educated, as certain socioeconomic groups are less likely to have access to the Internet due to the 'digital divide' (Andersson & Titov, 2014).

The relevance of the website is also limited to parents who are in a relationship with a partner. The findings may also have less relevance to other family constellations, such as blended families, or families in which the grandparent has a primary role in the care of the grandchildren. Nonetheless, most new parents are in a relationship: at least 84% of families in Australia are two-parent families (Australian Bureau of Statistics, 2011). Given that social support is well-established as a protective factor against perinatal distress, it may be useful

to expand the website to include tips on how other people in the parent's social network can be supportive.

Future research

The website is currently relatively static, and further tailoring and increased use of multimedia may be required to facilitate engagement and behaviour change. In particular, it could be useful to provide parents with videos to demonstrate some of the strategies, such as communicating effectively or problem-solving as a team. The addition of audio or video components could also improve its accessibility for parents with low literacy levels (Kingston et al., 2015). Ongoing evaluation will inform continuous refinement of the website. Further research is needed to establish the extent to which the intervention enhances partner support and relationship satisfaction, and reduces the risk of perinatal depression and anxiety, as hypothesised. This should be evaluated empirically through a randomised controlled trial.

Conclusion

Overall, consultation with parents in the perinatal period enabled refinement of the intervention. The study revealed that the website needs to be easily accessible, both in terms of being easily findable on popular search engines, and available on smart phones and tablets. Improvements were made to eliminate these potential barriers to use. Increasing the tailoring and adaptability of the website to individual needs may improve its uptake. Further research is needed to evaluate the efficacy of the resulting intervention on relationship satisfaction and perinatal mental health.

Chapter 9 : General Discussion

The aim of this thesis was to develop a web-based intervention that enhances reciprocal partner support to prevent perinatal depression and anxiety. This final chapter provides an overview of the major findings of this program of research and outlines the theoretical and practical implications. The strengths and limitations of the research are considered. The chapter concludes by considering future research to expand this study, both in terms of direct extensions, and broader issues for future work.

Summary of research findings

The major outcome of this thesis was the development of *Partners to Parents* (http://www.partnerstoparents.org), a freely available web-based intervention for the prevention of perinatal depression and anxiety that comprehensively addresses how partners can support one another during the transition to parenthood. This was achieved by systematically reviewing the extant literature on partner-inclusive interventions that aim to prevent perinatal depression and anxiety, and the factors associated with perinatal depression and anxiety that parents can modify (Studies 1 and 2). To identify the specific ways partners can support one another to potentially prevent depression and anxiety, a Delphi consensus study was conducted with consumers and experts in perinatal mental health (Study 3). Finally, usability testing was used to develop and refine a prototype of the intervention (Study 4).

There are a number of existing interventions available to expectant parents that are intended to support partners during the transition to parenthood. The initial systematic review (Pilkington et al., 2015b) provided an in-depth qualitative evaluation of the available partner-inclusive interventions. The findings established a need for interventions that: (1) include antenatal outcomes; (2) include fathers as active participants; (3) recognise that men are also

vulnerable to perinatal mood problems; (4) target both depression and anxiety; and (5) have better accessibility and reach.

We proposed that a web-based intervention might be able to overcome the limitations of existing partner-inclusive interventions. Web-based interventions reduce the reliance on professionals for their implementation, can be accessed anywhere at any time, and may be more likely to be accessed by men than antenatal classes (May & Fletcher, 2013). To facilitate the translation of the empirical literature on modifiable partner factors that increase and decrease risk for perinatal depression and anxiety, a systematic review and meta-analysis was conducted (Pilkington et al., 2015a). This process identified a sound evidence base for a number of factors that protect against perinatal depression and anxiety that partners can potentially modify without professional intervention. Partner factors with sound evidence of their protective effect against both perinatal depression and anxiety are emotional closeness and global support. Partner factors with a sound evidence base for depression only are communication, conflict, emotional and instrumental support, and relationship satisfaction. Significant effect sizes (*r*) between partner factors and perinatal depression and anxiety were primarily moderate in magnitude (ranging from -.15 to -.35), which suggests that they are important targets for interventions aiming to prevent perinatal distress.

Practical application of the evidence base pertaining to risk factors for perinatal distress is hindered by the use of brief, self-report measures, which are difficult to translate into specific actions that parents can implement (Rini et al., 2006). Therefore, a Delphi study was conducted to establish consensus on the specific supportive actions partners can take that are important for preventing perinatal depression and anxiety. Drawing on the expertise of 60 perinatal mental health professionals and consumer and carer advocates with lived experience of perinatal depression and anxiety, this method identified 214 recommendations for partners. These were

grouped into the following themes: supporting each other through pregnancy and childbirth, communication, conflict, division of labour, practical support, emotional support, emotional closeness, sexual satisfaction, using alcohol and drugs, becoming a parent, encouraging self-care, developing acceptance, and help-seeking. The resulting guidelines were formatted into a booklet for dissemination to expectant and new parents (Appendix M).

In the final study of the thesis, the recommendations endorsed by the expert panels were translated into a web-based intervention that aims to prevent perinatal depression and anxiety by enhancing partner support. The development process was informed by the views of new and expectant parents through usability testing. Consultation with men and women in the perinatal period resulted in a number of improvements, including improved graphic design, layout, and navigability, smart phone and tablet compatibility, Search Engine Optimisation, and enhanced readability. Additional material was also generated to increase engagement. For example, the perspectives of real parents were included via a blog, as there is evidence that suggests that websites that include narratives are more likely to stimulate health behaviour change (Stavrositu & Kim, 2015).

Comparison to previous research

The final intervention differs from existing partner-inclusive and web-based approaches to preventing perinatal mental illness in a number of key ways. These differences are summarised in Table 9.1. *Partners to Parents* is thus far the only intervention to target both antenatal and postnatal outcomes. Less than one-third of the existing interventions have targeted depression and anxiety concurrently (Buist et al., 1999; Fisher et al., 2010; Heinicke et al., 1999; Matthey et al., 2008; Milgrom et al., 2011). Less than half have included men as active participants (Feinberg & Kan, 2008; Fisher et al., 2010; Gambrel & Piercy, 2014; Matthey et al., 2004; Matthey et al., 2008; Midmer et al., 1995; Shapiro & Gottman, 2005), and only one has demonstrated efficacy in

preventing depression and anxiety in men (Shapiro & Gottman, 2005). Previous efforts to include fathers and assess paternal outcomes (Milgrom et al., 2011) may have been unsuccessful because perinatal mental health services have traditionally been mother-centric. As the paradigm shift towards father-inclusive practice gains momentum, it may become easier to engage men in research focused on the perinatal period. Although almost all of the interventions have been developed based on the research literature, few have been developed in consultation with key stakeholders (Fisher et al., 2010; Haga et al., 2013; Midmer et al., 1995; Milgrom et al., 2011). The inclusion of consumers and key stakeholders in the development of *Partners to Parents* is one of the main strengths of this body of research and significantly improved the quality of the final intervention.

Comparison with existing interventions also identifies that *Partners to Parents* has a number of potential limitations and areas warranting further research. In particular, interventions that target multiple risk and protective factors, in accordance with the biopsychosocial model of the aetiology of perinatal mood problems, may be more effective than a singular focus on partner support. For example, the couples-based intervention developed by Fisher et al. (2010), *What Were We Thinking!,* also targets infant settling problems, as this is a common source of stress for new parents.

Nonetheless, interrogation of the website content supported by the Delphi consensus study reveals that a number of the broader risk and protective factors reviewed in Chapter 3 (see Table 3.1) are indirectly addressed. Partners are encouraged to address factors that are known to be implicated in the development of perinatal mood problems. For example, *Partners to Parents* recommends that partners encourage one another to engage in positive health behaviours, such as maintaining a healthy diet and minimising drug and alcohol use. Partners are encouraged to access social support, seek professional help, debrief around negative birth experiences, and

consider whether they have realistic expectations around parenthood. This guidance overlaps with known risk and protective factors for perinatal depression and anxiety (drug and alcohol use, poor social support, negative birth experiences, and unrealistic expectations around parenthood).

Practical implications

The primary outcome of this research was the development of a universal web-based intervention that is designed to contribute to reducing the prevalence of perinatal depression and anxiety, and preventing the associated adverse outcomes for the parent and their family. The website produced by this program of research has a number of advantages, including being informed by evidence, inexpensive to maintain, and easily and freely accessible. Another important advantage of web-based interventions is that they ensure fidelity (Andersson & Titov, 2014). Interventions that are delivered in person are subject to the influence of the facilitator or health professional, and how they choose to deliver the material based on their theoretical or clinical orientation.

Although there are numerous websites available that provide advice on the perinatal period, their credibility is limited as few are supported by evidence or endorsed by experts or consumers. A number of participants in the usability testing phase commented on the proliferation of websites on pregnancy and parenting, and noted that it is important to know which websites are credible. *Partners to Parents* is informed by a meta-analysis, the views of perinatal mental health clinicians and researchers, consumer advocates with a history of perinatal depression and anxiety, as well as parents currently experiencing the transition to parenthood.

Table 9.1. **Characteristics of published partner-inclusive and web-based perinatal depression and anxiety prevention interventions**

	Pilkington et al.	**Fisher et al. 2010**	**Midmer et al. 1995**	**Shapiro and Gottman, 2005**	**Matthey et al.2004**	**Matthey et al. 2008**	**Milgrom, et al. 2011**	**Feinberg and Kan, 2008**	**Gambrel and Piercy, 2014**	**Heinicke et al. 1999**	**Elliott et al. 2000**	**Gao et al. 2010**	**Buist et al. 1999**	**Lara et al. 2010b**	**Haga et al. 2013***	**Jones et al. 2013***	**Barrera et al. 2015***
	Partners to Parents	*What Were We Thinking!*	-	*Bringing Baby Home*	-	*The Great Parents' Quiz*	*Towards Parenthood*	*Family Foundations*	*Mindful Transition to Parenthood*	-	*Preparation for Parenthood*	-	-	*Mothers and Babies*	*Mamma Mia*	*MoodGYM*	*Mothers and Babies*
Informed by evidence	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Informed by consultation with key stakeholders	✓	✓	✓	X	X	X	✓	X	X	X	X	X	X	X	✓	X	X
Partner relationship is the primary focus	✓	✓	✓	✓	✓	✓	X	✓	✓	✓	X	X	X	✓	X	X	X
Targets both men and women equally	✓	✓	✓	✓	✓	✓	X	✓	✓	X	X	X	X	X	X	X	X
Aims to be same-sex partner inclusive	✓	X	X	X	X	X	✓	X	X	X	X	X	X	X	X	X	X
Targets both depression and anxiety	✓	✓	X	X	X	✓	✓	X	X	✓	X	X	✓	X	X	X	X
Targets both antenatal and postnatal outcomes	✓	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Effective in preventing maternal depression/anxiety	?	✓	✓	✓	✓	X	✓	✓	X	X	✓	✓	✓	X	?	?	X
Effective in preventing paternal depression/anxiety	?	?	?	✓	X	?	?	X	?	?	?	?	?	?	?	?	?
Effective in enhancing partner support	?	✓	✓	✓	✓	✓	?	✓	✓	✓	✓	✓	X	?	?	?	?

The guidance on how partners can be mutually supportive of one another developed in this thesis could also be disseminated via other avenues. Providing this practical information in multiple formats will enable greater dissemination and cater to parents' preferences. For example, health professionals, general practitioners, and maternal child health nurses may prefer to provide parents with a PDF or hard copy of the guidelines document. Although antenatal classes are costly to run, this format may be preferable for parents with low computer literacy or parents who do not have access to the internet. The guidelines could also be elaborated to form a more extensive self-help book, given the success of existing self-help guides such as *Towards Parenthood* (Milgrom et al., 2011). Finally, the information could be used to inform the development of an educational mobile or tablet application given the increasing popularity of mobile technologies (Peragallo Urrutia et al., 2015).

Theoretical implications

The major contribution of this thesis was knowledge translation of the theoretical and empirical literature on partner support and perinatal mental health into a practical intervention. The outcomes of this research provide broad support for theoretical frameworks that emphasise the importance of interpersonal relationships in the aetiology of mood disorders. The findings are consistent with theories that highlight the moderating effect of the intimate partner relationship on the link between stressful life events, such as the transition to parenthood, and wellbeing. In particular, the findings of the systematic review and meta-analysis of partner factors associated with perinatal depression and anxiety lend support to the stress buffering model (Cohen & Wills, 1985), and the biopsychosocial model proposed by Milgrom et al. (1999) that were reviewed in Chapter 3. In agreement with these models, the evidence suggests that partner support is an important buffer against

the stress of parenting. The study findings are also consistent with the notion of dyadic coping (Bodenmann, 2005), which conceptualises the couple's response to a stressful life event as a reciprocal process, in which both partners mutually influence one another.

Importantly, the findings extend our theoretical understanding of the aetiology of perinatal anxiety and antenatal outcomes, which have received less attention than postnatal depression. The synthesis of partner factors associated with anxiety across pregnancy and following childbirth provides a building block for further research into the aetiology of perinatal anxiety. This research has also improved our understanding of the common risk and protective factors for perinatal depression and anxiety. These findings can be used to inform the development of trans-diagnostic approaches to promoting perinatal mental health.

The application of a mixed methods approach to the analysis and interpretation of the results provided a richer and more complete understanding of the research questions than could be obtained through quantitative methods alone. Although the systematic review and meta-analysis reported in Chapter 6 synthesised the literature on partner support factors and perinatal depression and anxiety, these quantitative findings have limited practical utility. Integrating this quantitative data with the Delphi approach and usability testing allowed the findings to go beyond correlational research, to understanding how partner support can be enacted in the "real world" to reduce the risk of perinatal depression and anxiety. Combining quantitative and qualitative methods has therefore increased the external validity of the findings. This approach is consistent a with social constructivist paradigm, which, in contrast to positivism, acknowledges that individuals hold differing views on the world, rather than there being a single, universal truth for researchers to discover (Gergen & Gergen, 2008).

Limitations of the research

The specific limitations of each study comprising this thesis have been discussed in the respective chapters. Therefore, this section focuses on the limitations of the research more broadly. Supporting quotes are drawn from the feedback provided by the panel members in the Delphi study and the participants who completed the usability testing, as it was not possible to thoroughly explore these in the corresponding journal articles due to word limits.

Over-pathologising parenthood. *Partners to Parents* aims to increase parents' mental health literacy around perinatal mood problems and frames the increased need for support from social and professional sources as normative. However, a potential concern is that the intervention may increase health anxiety by inadvertently "over-medicalising" emotional experiences during the perinatal period. A number of panel members expressed concern that the guidelines over-pathologise emotional difficulties that are a "normal" response to becoming a parent:

> *"Be cautious about "over medicalising/ over psychologising". Having a baby and losing the joy… many couples cope very well and it is not all problematic."*
>
> (Psychiatrist, 16 to 20 years of experience, Female, Australia)

Nonetheless, the potential to under-pathologise perinatal distress is a more significant concern with serious repercussions. A national cross-sectional telephone survey found that over 50% of Australians thought that depression during pregnancy was "normal" (Highet et al., 2011), and few parents currently seek professional help for postnatal depression or anxiety (Woolhouse et al., 2009). Given that few parents initiate discussions around their mental health concerns with health professionals the risk of false negatives is less concerning than the risk of perinatal mental illness continuing to go under-detected and

under-treated (Kingston et al., 2015b). Notably, none of the participants in the usability study expressed concerns about the potential for *Partners to Parents* to increase health anxiety.

Feasibility and barriers to implementation. The issue of whether education around how to be supportive will translate into behavioural change is also an important consideration. It is not yet established, "…whether the strategies are easily translatable to real life" (Psychologist, midwife, and academic, 20+ years of experience, Australia). One panel member with experience of perinatal mood problems noted that:

> *"It is challenging to get parents to hear this info. They are really focused on HOW this baby is going to get OUT and whether the nursery is pretty…"* (Consumer, Female, Canada)

This comment suggests that there may be barriers that prevent parents from accessing and implementing the recommended strategies, particularly during the antenatal period, when the focus is on physical changes during pregnancy and preparing for childbirth. A related comment was made by one of the expectant fathers who participated in the usability testing:

> *"I sort of expect to have to deal with it [changes to the partner relationship] when it kind of happens. Yeah we haven't had any real dramas so far and look, I'm sure we'll run into them when the birth happens."* (Father, expecting first child)

This quote reflects that people are often reactive, and only take action once a mental health problem has developed or relationship problems start to occur. A difficulty faced by many prevention approaches is motivating people who are currently mentally healthy to modify their behaviour to reduce their risk of mental illness. This is reflected in the following quote:

"You go for a run to stay fit, to maintain a basic level of fitness, but for your mental health, it's not as if there is any maintenance, is there? It's only when there is an injury that people would seek something out….." (Father, expecting second child)

This comment is consistent with research on risk perceptions and health behaviour that suggests that individuals may be less motivated to engage in preventive actions, due to unrealistic optimism about their vulnerability to health problems (Ferrer & Klein, 2015; Weinstein, 1982). Encouragingly, it may be easier to promote health behaviour change to individuals during the perinatal period than at other life stages. Most parents proactively seek out health information during pregnancy (Larsson, 2009) and are more motivated to maintain their emotional wellbeing out of concern for the wellbeing of their infant. Educating expectant and new parents about the risk factors (Ferrer & Klein, 2015) and prevalence of perinatal depression and anxiety, as well as the impact of perinatal distress on the couple relationship and the developing infant, may increase their motivation to engage with the prevention strategies.

Generalisability. The findings of this research may have limited generalisability, as the feasibility and relevance of the strategies is likely to vary between couples. The ecological model of relationship outcomes suggests that the extent to which partners are able to modify their relationship satisfaction and implement the recommended preventive strategies will depend on factors in their sociocultural context (e.g., the couple's cultural beliefs), the extent to which they are experiencing shared and individual major life events (e.g., changing jobs), and their individual characteristics (e.g., negative family-of-origin experiences; Halford, 2011). For example, the capacity for each individual in the couple dyad to be supportive may be moderated by factors such as fatigue (Carter-Edwards et al., 2009)

and self-esteem (Matthey et al., 2004). Panel members' concerns about the generalisability of the recommendations are reflected in the following comment:

> *"Each individual, couple, pregnancy is different, so it's difficult to generalise or be prescriptive about these situations."* (Research Fellow, 20+ years of experience, Female, Australia)

The panel members of a Delphi consensus study on self-help strategies for sub-threshold depression similarly indicated that it is difficult to generalise feasibility across individuals, due to differences in contextual factors, such as socioeconomic status and personal circumstances (Morgan & Jorm, 2009).

It is possible that the recommendations contained in the website may have limited relevance to parents from diverse cultural backgrounds. Parents' cultural context is likely to influence the appeal and feasibility of the various strategies:

> *"Some cultures do not consider that mutual gaze is appropriate to resolve conflict etc... Some cultures do NOT talk about problems directly. Some do NOT talk about the baby before birth."* (Psychiatrist and Researcher, 16 to 20 years of experience, Female, France)

The target audience for the guidelines is couples in developed English-speaking Western countries, and the website is designed to provide couples with a menu of prevention strategies from which they can select the most relevant and feasible strategies based on their specific circumstances. It is difficult to develop recommendations that have broad applicability to most parents, given the diverse range of socioeconomic and cultural backgrounds in Australia and other multicultural countries. For example, the relevance to Aboriginal parents is likely to be limited, due to the lack of consultation with Australian Aboriginal people in the development of the guidelines and website. The relevance to

parents from culturally and linguistically diverse backgrounds is also unclear. For example, the literature suggests that women from Asian backgrounds see their own mothers as their primary source of support (Klainin & Arthur, 2009). If the guidelines lack relevance to the needs of vulnerable or disadvantaged subgroups in the population, this could inadvertently perpetuate or widen inequalities in perinatal mental health (Yelland et al., 2012). Future research could seek to address this by conducting qualitative research to determine the extent to which different types of parents and families perceive the guidelines to be feasible and relevant.

Some panel members' responses also suggested that the guidelines may be less relevant to parents facing socioeconomic disadvantage and other life stressors:

> *"[The items] read like a manual for well-educated couples without problems. It's a good starting point, but my very troubled couples from lower socio-economic backgrounds would not identify with any of this."* (Professor and Psychiatrist, 16 to 20 years of experience, Female, Australia).

This comment suggests that although aiming to be universal, the content of *Partners to Parents* may be skewed towards couples who are well-educated and high functioning. Some evidence suggests that relationship education interventions are more likely to be attended by parents who are already at low risk of relationship problems (Halford et al., 2006). It is possible that individuals who seek out information on the couple relationship have certain characteristics, such as motivation to be supportive of one another, and sufficient skills to find what they need. Therefore, it is possible that *Partners to Parents* will need to be adapted to increase its relevance to low income and minority parents. An evaluation of the guidelines and the *Partners to Parents* intervention should be conducted to investigate the broader applicability of the strategies for diverse couples and families.

Social determinants of perinatal mental health. Although the significant contextual factors implicated in perinatal mental health, such as social adversity (Yelland et al., 2012), were outside the scope of this thesis, the social disparities in perinatal mental health need to be acknowledged. Parents' experiences in the perinatal period are influenced by their social and economic circumstances, such as low income or financial difficulties, living in a rural area, inability to pay for essential health care, and belonging to an ethnic or religious minority (Fisher et al., 2012). Focusing exclusively on the couple will not be sufficient for broader population-level change, as each individual's capacity to engage in health behaviour is influenced by a broad range of social determinants (Allen et al., 2014). Further research should seek to address inequities in perinatal mental health and increase the dissemination of evidence-base prevention programs to low and middle income countries (Watts & Andrews, 2014).

Gender differences in the perinatal period. A potential criticism of this program of research is that adopting a gender-neutral approach ignores important gender-based differences in parents' experiences of the perinatal period. Proponents of a gendered approach argue that gender inequality is an important determinant of mental health problems. Women are more likely to experience affective disorders and gender-based violence, and are over-represented in low-paid jobs (Aneshensel et al., 2013). Men and women's experiences of the perinatal period may differ in significant ways. During the perinatal period, women experience the physical and hormonal changes associated with pregnancy, childbirth, and breastfeeding. In general, women are more involved in infant care and perform a disproportionate amount of household labour compared to men (Cowan & Cowan, 1988; Goldberg & Perry-Jenkins, 2004). Conversely, men are generally more likely to experience an increased sense of financial responsibility and increase their work hours

(Halford et al., 2015). These findings suggest that a gendered approach to preventing perinatal mood problems may be more appropriate. For example, educating parents in opposite-sex relationships about the demands and challenges that are specific to women and men may increase their empathy towards one another (Burgess, 2011).

Nonetheless, we focused on facilitating mutual partner support as spousal mental health is interrelated. Focusing exclusively on maternal wellbeing could, in fact, inadvertently perpetuate inequality, as it maintains societal expectations that mothers are always the primary caregiver (Ammari & Schoenebeck, 2015). A father-inclusive approach to antenatal education promotes more equal roles in infant care and the division of household labour (Burgess, 2011). Furthermore, promoting mutual partner support and paternal wellbeing is likely to have indirect benefits for the mental health of their partners as it optimises their capacity to be supportive and share parenting responsibilities (Don & Mickelson, 2012; Fletcher et al., 2015).

The gender distribution of the expert panel who participated in the Delphi study was predominately female (87% of perinatal mental health professionals and 95% of consumer and carer advocates). Although this is consistent with the gender distribution of professionals working in perinatal mental health and the greater recognition of maternal depression, the bias may limit the relevance of the guidelines for men. Even so, post hoc analyses indicated that, overall, men and women agreed on whether or not each item should be included or excluded in the final guidelines in 76% of instances. Moreover, fathers who participated in the usability testing of the website were positive about the content. Given the dearth of research in this area, further research on the support needs of fathers is warranted.

Relevance to men and parents in same-sex relationships. A related limitation to those discussed above, is that the Delphi consumer panel members were not asked to identify whether they were in same-sex or opposite-sex relationships, and it is therefore not possible to determine what proportion could draw on this context-specific expertise. It is possible that the resulting guidelines have less relevance for parents in same-sex relationships. Nonetheless, the usability testing with 12 mothers and fathers, including a mother in a same-sex relationship, indicated that parents saw the advice as relevant and useful. Furthermore, the final intervention enables personalisation based on the gender of the individual and their partner. Further research is needed to confirm the extent to which the website is relevant to same-sex couples.

Contextual factors influencing the effectiveness of support. A limitation of the intervention is that it cannot account for contextual factors that influence support provision and effectiveness. The provision of support in couples is a dynamic, interactional, ongoing process, and support needs change over time. The Social Support Effectiveness (SSE) framework (Rini & Dunkel Schetter, 2010) posits that the extent to which support attempts predict positive or negative outcomes for the provider and the recipient depends on individual and contextual factors. The provision of partner support does not ensure a positive outcome, and more frequent partner support is not always beneficial. In fact, the *over*provision of informational support has been identified as a predictor of declining relationship satisfaction in recently married couples (Brock & Lawrence, 2009). For example, if the support recipient perceives the action to be controlling or implying incompetence, they are more likely to feel resentment or disappointment (Brock & Lawrence, 2009; Rini et al., 2006).

Support efforts also have the potential to increase psychological distress in the support provider, if the support is not reciprocated (Sullivan & Davila, 2010). In a study on parents of a child with a disability, efforts to maintain the partner relationship during stressful episodes were associated with higher levels of psychological distress when the recipient of the support action responded negatively (Sullivan & Davila, 2010). It is therefore important that future research considers the moderators and mediators of the relationship between partner support and wellbeing.

Future research

Further research is needed to obtain more extensive data on the strengths and weaknesses of the website so that it can be further enhanced. Additionally, although a universal approach was adopted, it is yet to be seen whether the website will be accessed by parents from a diverse range of backgrounds. Some universal prevention interventions are only accessed by certain socio-demographic groups, despite being intended for the whole population. The characteristics of visitors to the website should be monitored to allow for an assessment of intervention reach and identify which factors influence engagement. In particular, it will be important to establish whether it is reaching fathers and parents from minority groups. A stratified approach, in which the whole population is exposed to an intervention but the content and delivery is tailored for each group, may increase uptake and relevance. Future research could seek to broaden the website's personalisation functionality to allow for tailoring of the language, content, vignettes, and pictures to increase perceived relevance and goodness of fit for different subgroups of the population.

It is not yet clear whether the provision of information via a website is sufficient to translate into behavioural change. Although knowledge is essential to changing attitudes and behaviour, knowledge alone is not always sufficient due to the gap between intention and

behaviour (Schwarzer, 2008). Given the emerging nature of eHealth research, it is has not yet been firmly established whether web-based interventions are equal or superior to psychological interventions or group-based psychoeducation. As noted by Halford et al. (2015), adult learning principles suggest that experiential activities that allow couples to try out new ways of relating and reflecting on their experiences are likely to enhance engagement and understanding (Kolb & Kolb, 2012). The evidence on the cost-effectiveness of self-help books for preventing depression, however, is encouraging (Mihalopoulos & Vos, 2013).

The website is currently relatively static, and further tailoring and development of interactive elements may be required to facilitate engagement. This could involve assessing the individual's current understanding of how to be supportive, and prompting them to view the content that is relevant to them. It may also be useful to include quizzes to allow parents to monitor their implementation of the strategies and identify any positive outcomes. It could also be advantageous to adapt the website using tunnelled information architecture, so that the content is delivered as modules for parents to work through sequentially. This has the advantage of reducing noise and the cognitive load on users, and can improve adherence (Drozd et al., 2015). Regular emails tailored based on the gestational week or number of weeks postpartum may also facilitate ongoing engagement with the *Partners to Parents* website.

The content of the website could be expanded in a number of ways. First, research could be conducted to extend the content of the website to include information on how a parent can be supportive if their partner is experiencing clinical or subclinical levels of perinatal depression or anxiety. Qualitative interviews with women experiencing postnatal depression identified that their partners often have limited knowledge of how to support

someone experiencing depression (Letourneau et al., 2007). Similar websites targeting the carers of people with mental illness have been successfully developed (e.g., http://www.bipolarcaregivers.org; Berk et al., 2013). Nonetheless, the individual's emotional capacity to be a caregiver for their partner who is experiencing perinatal depression or anxiety may be limited, as they are at increased risk of perinatal mood problems themselves (Don & Mickelson, 2012; Goodman, 2012).

It may also be useful to expand the current research to consider how other people in the couples' social network can be supportive (Small et al., 2011). Social support is reliably identified as protective against perinatal distress, and home visits have been found to be effective in preventing perinatal depression and anxiety (Dennis & Dowswell, 2013). However, the majority of perinatal mental health professionals who participated in the Delphi consensus study were reluctant to endorse items around seeking support from friends and extended family. Analysis of the open ended comments revealed that this was due to concerns that encouraging partners to seek support from certain sources was too prescriptive as couples' social networks are likely to vary. For example, not all parents have supportive families of origin. Similarly, few Delphi panel members endorsed seeking support from internet forums as important to the prevention of perinatal depression and anxiety, and, therefore, the *Partners to Parents* website does not include this functionality.

Once the website content is fully developed, it is recommended that a randomised controlled trial (RCT) is conducted to evaluate its effectiveness in preventing perinatal depression and anxiety and enhancing partner support. In particular, mediation analyses could be used to test whether partner support and relationship satisfaction account for any effects on perinatal depression and anxiety outcomes. Moderation analyses will also be useful for identifying whether there are particular couples for whom the intervention is

more or less effective. Given that partner support is protective against numerous adverse outcomes (e.g., harsh parenting; Hajal et al., 2015), it may also be useful for longitudinal evaluation trials to evaluate whether the website impacts other domains of family functioning. For example, there is evidence that Feinberg et al.'s co-parenting focused intervention, Family Foundations, prevents child adjustment problems (Solmeyer et al., 2014) and parent-child aggression (Kan & Feinberg, 2014).

Finally, Partners to Parents does not address intimate partner violence despite its established status as a risk factor for perinatal depression and anxiety (Howard et al., 2013), and this area warrants further investigation. Up to 28% of major depressive disorder, subthreshold depressive symptoms and postnatal depression can be attributed to a lifetime exposure of intimate partner violence (Beydoun et al., 2012). Notably, the largest significant associations in the meta-analysis of partner factors associated with perinatal depression and anxiety were between conflict during pregnancy and antenatal anxiety (r =.35, 95% CI =25, .45), and postnatal depression (r =.35, 95% CI = .25, .44). Alarmingly, intimate partner violence during pregnancy is a common experience (Devries et al., 2010). Preventing intimate partner violence and reducing inter-parental conflict thus represent important targets for further research.

Conclusion

This thesis has provided an original and significant contribution to perinatal mental health research and practice by developing a web-based intervention for enhancing partner support and preventing perinatal depression and anxiety. The website is based on rich data from multiple sources: it is informed by the empirical literature, endorsed by experts and individuals with lived experience, and was refined based on feedback from men and women expecting or parenting an infant. The intervention also largely adheres to recent guidelines

on the recommended content of websites for postnatal mental health and father-inclusive perinatal education. The delivery of relationship education via the Internet represents a scalable, accessible, and low cost approach to preventing affective disorders, and optimising parental and infant outcomes during the transition to parenthood.

References

Abelsohn, K. A., Epstein, R., & Ross, L. E. (2013). Celebrating the “other” parent: mental health and wellness of expecting lesbian, bisexual, and queer non-birth parents. *Journal of Gay and Lesbian Mental Health, 17*, 387-405. doi:10.1080/19359705.2013.771808

Abramowitz, J. S., Meltzer-Brody, S., Leserman, J., Killenberg, S., et al. (2010). Obsessional thoughts and compulsive behaviors in a sample of women with postpartum mood symptoms. *Archives of Women's Mental Health, 13*, 523-530. doi:10.1007/s00737-010-0172-4

Akins, R. B., Tolson, H., & Cole, B. R. (2005). Stability of response characteristics of a Delphi panel: application of bootstrap data expansion. *BMC Medical Research Methodology, 5*, 1-12. doi:10.1186/1471-2288-5-37

Allen, J., Balfour, R., Bell, R., & Marmot, M. (2014). Social determinants of mental health. *International Review of Psychiatry, 26*, 392-407. doi:10.3109/09540261.2014.928270

American Psychiatric Association. (2013). *Diagnostic and Statistical Manual of Mental Disorders, 5th Edition*. Arlington, VA: Author.

Ammari, T., & Schoenebeck, S. (2015). *Understanding and supporting fathers and fatherhood on social media sites.* Paper presented at the Proceedings of the 33rd Annual ACM Conference on Human Factors in Computing Systems.

Andersson, G., & Titov, N. (2014). Advantages and limitations of Internet-based interventions for common mental disorders. *World Psychiatry, 13*, 4-11. doi:10.1002/wps.20083

Andrews, G., Issakidis, C., Sanderson, K., Corry, J., et al. (2004). Utilising survey data to inform public policy: comparison of the cost-effectiveness of treatment of ten mental disorders. *British Journal of Psychiatry, 184*, 526-533. doi:10.1192/bjp.184.6.526

Aneshensel, C., Phelan, J., & Bierman, A. (2013). *Handbook of the Sociology of Mental Health*. Netherlands: Springer.

Asenhed, L., Kilstam, J., Alehagen, S., & Baggens, C. (2014). Becoming a father is an emotional roller coaster - an analysis of first-time fathers' blogs. *Journal of Clinical Nursing, 23*, 1309-1317. doi:10.1111/jocn.12355

Atar Gürel, S., & Gürel, H. (2000). The evaluation of determinants of early postpartum low mood: the importance of parity and inter-pregnancy interval. *European Journal of Obstetrics and Gynecology and Reproductive Biology, 91*, 21-24. doi:10.1016/s0301-2115(99)00224-9

Atkin, C., & Salmon, C. T. (2013). Advances in public communication campaigns. In E. Scharrer (Ed.), *The International Encyclopedia of Media Studies* (pp. 526-551). London, UK: Wiley-Blackwell.

Austin, M.-P. (2004). Antenatal screening and early intervention for “perinatal” distress, depression and anxiety: where to from here? *Archives of Women’s Mental Health, 7*, 1-6. doi:10.1007/s00737-003-0034-4

Austin, M. P., Frilingos, M., Lumley, J., Hadzi-Pavlovic, D., et al. (2008). Brief antenatal cognitive behaviour therapy group intervention for the prevention of postnatal depression and anxiety: a randomised controlled trial. *Journal of Affective Disorders, 105*, 35-44. doi:10.1016/j.jad.2007.04.001

Austin, M. P., & Lumley, J. (2003). Antenatal screening for postnatal depression: a systematic review. *Acta Psychiatrica Scandinavica, 107*, 10-17. doi:10.1034/j.1600-0447.2003.02024.x

Australian Bureau of Statistics. (2011). Family Characteristics, Australia, 2009-10. Retrieved from

http://www.abs.gov.au/AUSSTATS/abs@.nsf/DetailsPage/8146.02012-13?OpenDocument

http://onlinelibrary.wiley.com/doi/10.1002/9781444361506.wbiems129/abstract

Australian Bureau of Statistics. (2014). Household Use of Information Technology, Australia, 2012-13. Retrieved from http://www.abs.gov.au/AUSSTATS/abs@.nsf/DetailsPage/8146.02012-13?OpenDocument

Australian Catholic University. (2015). Guidelines on the Preparation and Presentation of a Research or Professional Doctoral Thesis for Examination. Retrieved from http://www.acu.edu.au/__data/assets/pdf_file/0017/166400/Guidelines_for_the_Preparation_and_Presentation_of_a_Professional_or_Doctor.pdf

Australian Government Department of Health. (2013). National Perinatal Depression Initiative. Retrieved from https://www.health.gov.au/internet/main/publishing.nsf/Content/mental-perinat

Ayers, S., Coates, R., & Matthey, S. (2015). Identifying perinatal anxiety. In J. Milgrom & A. W. Gemmill (Eds.), *Identifying Perinatal Depression and Anxiety: Evidence-Based Practice in Screening, Psychosocial Assessment, and Management* (pp. 93-107). West Sussex, UK: John Wiley & Sons Ltd.

Babcock, J. C., Green, C. E., & Robie, C. (2004). Does batterers' treatment work? A meta-analytic review of domestic violence treatment. *Clinical Psychology Review, 23*, 1023-1053. doi:10.1016/j.cpr.2002.07.001

Banfield, M. A., Barney, L. J., Griffiths, K. M., & Christensen, H. M. (2014). Australian mental health consumers' priorities for research: qualitative findings from the SCOPE for

Research project. *Health Expectations, 17*, 365-375. doi:10.1111/j.1369-7625.2011.00763.x

Bangor, A., Kortum, P. T., & Miller, J. T. (2008). An empirical evaluation of the system usability scale. *International Journal of Human-Computer Interaction, 24*, 574-594. doi:10.1080/10447310802205776

Barrera, A. Z., Wickham, R. E., & Muñoz, R. F. (2015). Online prevention of postpartum depression for Spanish- and English-speaking pregnant women: a pilot randomized controlled trial. *Internet Interventions, 2*, 257-265. doi:10.1016/j.invent.2015.06.002

Bauer, A., Pawlby, S., Plant, D., King, D., et al. (2015). Perinatal depression and child development: exploring the economic consequences from a South London cohort. *Psychological Medicine, 45*, 51-61. doi:10.1017/s0033291714001044

Bayrampour, H., McDonald, S., & Tough, S. (2015). Risk factors of transient and persistent anxiety during pregnancy. *Midwifery, 31*, 582-589. doi:10.1016/j.midw.2015.02.009

Beck, C. (1996). A meta-analysis of predictors of postpartum depression. *Nursing Research, 45*, 297-303. doi:10.1097/00006199-199609000-00008

Beck, C. (2001). Predictors of postpartum depression: an update. *Nursing Research, 50*, 275-285. doi:10.1097/00006199-200109000-00004

Beck, C. (2002). Postpartum depression: a metasynthesis. *Qualitative Health Research, 12*, 453-472. doi:10.1177/104973202129120016

Begg, S., Vos, T., Barker, B., Stevenson, C., et al. (2007). The burden of disease and injury in Australia 2003. Retrieved from http://www.aihw.gov.au/WorkArea/DownloadAsset.aspx?id=6442459203

Bei, B., Milgrom, J., Ericksen, J., & Trinder, J. (2010). Subjective perception of sleep, but not its objective quality, is associated with immediate postpartum mood disturbances in healthy women. *Sleep, 33*, 531-538.

Bengtson, V. L. (2001). Beyond the nuclear family: the increasing importance of multigenerational bonds. *Journal of Marriage and Family, 63*, 1-16. doi:10.1111/j.1741-3737.2001.00001.x

Berk, L., Jorm, A. F., Kelly, C. M., Dodd, S., et al. (2011). Development of guidelines for caregivers of people with bipolar disorder: a Delphi expert consensus study. *Bipolar Disorder, 13*, 556-570. doi:10.1111/j.1399-5618.2011.00942.x

Berkman, L. F. (2001). Social ties and mental health. *Journal of Urban Health, 78*, 458-467. doi:10.1093/jurban/78.3.458

Bernazzani, O., Conroy, S., Marks, M., Siddle, K., et al. (2004). Contextual Assessment of the Maternity Experience: development of an instrument for cross-cultural research. *British Journal of Psychiatry, 184*, s24-s30. doi:10.1192/bjp.184.46.s24

Beydoun, H. A., Beydoun, M. A., Kaufman, J. S., Lo, B., et al. (2012). Intimate partner violence against adult women and its association with major depressive disorder, depressive symptoms and postpartum depression: a systematic review and meta-analysis. *Social Science and Medicine, 75*, 959-975. doi:10.1016/j.socscimed.2012.04.025

beyondblue. (2014). National Perinatal Depression Initiative. Retrieved from http://www.beyondblue.org.au/about-us/programs/perinatal-program-beyond-babyblues/national-perinatal-depression-initiative-npdi

Bilszta, J., Ericksen, J., Buist, A., & Milgrom, J. (2010). Women's experience of postnatal depression: beliefs and attitudes as barriers to care. *Australian Journal of Advanced Nursing, 27*, 44-54.

Bilszta, J. L. C., Tang, M., Meyer, D., Milgrom, J., et al. (2008). Single motherhood versus poor partner relationship: outcomes for antenatal mental health. *Australian and New Zealand Journal of Psychiatry, 42*, 56-65. doi:10.1080/00048670701732731

Boath, E., Bradley, E., & Henshaw, C. (2004). Women's views of antidepressants in the treatment of postnatal depression. *Journal of Psychosomatic Obstetrics and Gynecology, 25*, 221-223. doi:10.1080/01674820400017889

Bodenmann, G. (2005). Dyadic coping and its significance for marital functioning. In T. A. Revenson, K. Kayser, & G. Bodenmann (Eds.), *Couples Coping with Stress: Emerging Perspectives on Dyadic Coping* (pp. 33-49). Washington, DC, USA: American Psychological Association.

Boote, J., Telford, R., & Cooper, C. (2002). Consumer involvement in health research: a review and research agenda. *Health Policy, 61*, 213-236. doi:10.1016/s0168-8510(01)00214-7

Borenstein, M., Hedges, L., Higgins, J., & Rothstein, H. (2005). *Comprehensive Meta-Analysis Version 2*. Engelwood, NJ: Biostat.

Borenstein, M., Hedges, L. V., Higgins, J. P. T., & Rothstein, H. R. (2009). *Introduction to Meta-Analysis*. West Sussex, UK: John Wiley & Sons, Ltd.

Bost, K. K., Cox, M. J., & Payne, C. (2002). Structural and supportive changes in couples' family and friendship networks across the transition to parenthood. *Journal of Marriage and Family, 64*, 517–531. doi:10.1111/j.1741-3737.2002.00517.x

Boyce, P., Hickie, I., & Gordon, P. (1991a). Parents, partners or personality? Risk factors for post-natal depression. *Journal of Affective Disorders, 21*, 245-255. doi:10.1016/0165-0327(91)90004-c

Boyce, P., Parker, G., Barnett, B., Cooney, M., et al. (1991b). Personality as a vulnerability factor to depression. *British Journal of Psychiatry, 159*, 106-114. doi:10.1192/bjp.159.1.106

Boyce, P. M. (2003). Risk factors for postnatal depression: a review and risk factors in Australian populations. *Archives of Women's Mental Health, 6* s43-s50. doi:10.1007/s00737-003-0005-9

Braiker, H. B., & Kelley, H. H. (1979). Conflict in the development of close relationships. In R. Burgess & T. Huston (Eds.), *Social Exchange in Developing Relationships* (pp. 135-168). New York: Academic.

Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology, 3*, 77-101. doi:10.1191/1478088706qp063oa

Brock, R. L., & Lawrence, E. (2009). Too much of a good thing: underprovision versus overprovision of partner support. *Journal of Family Psychology, 23*, 181-192. doi:10.1037/a0015402

Brugha, T. S., Morrell, C. J., Slade, P., & Walters, S. J. (2011). Universal prevention of depression in women postnatally: cluster randomized trial evidence in primary care. *Psychological Medicine, 41*, 739-748. doi:10.1017/S0033291710001467

Brugha, T. S., Wheatley, S., Taub, N. A., Culverwell, A., et al. (2000). Pragmatic randomized trial of antenatal intervention to prevent post-natal depression by reducing psychosocial risk factors. *Psychological Medicine, 30*, 1273-1281. doi:10.1017/s0033291799002937

Buist, A. (1998). Childhood abuse, postpartum depression and parenting difficulties: a literature review of associations. *Australian and New Zealand Journal of Psychiatry, 32*, 370-378. doi:10.3109/00048679809065529

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. doi:10.1177/0884217503252127

Buist, A. E., Westle, D., & Hill, C. (1999). Antenatal prevention of postnatal depression. *Archives of Women's Mental Health, 1*, 167-173. doi:10.1007/s007370050024

Burgess, A. (2011). Fathers' roles in perinatal mental health: causes, interactions and effect. *New Digest, 53*, 24-20.

Burke, L. (2003). The impact of maternal depression on familial relationships. *International Review of Psychiatry, 15*, 243-255. doi:10.1080/09540260305192

Cairns, K. E., Yap, M. B., Reavley, N. J., & Jorm, A. F. (2015). Identifying prevention strategies for adolescents to reduce their risk of depression: a Delphi consensus study. *Journal of Affective Disorders, 183*, 229-238. doi:10.1016/j.jad.2015.05.019

Cairns, K. E., Yap, M. B. H., Pilkington, P. D., & Jorm, A. F. (2014). Risk and protective factors for depression that adolescents can modify: a systematic review and meta-analysis of longitudinal studies. *Journal of Affective Disorders, 169*, 61-75. doi:10.1016/j.jad.2014.08.006

Carter-Edwards, L., Østbye, T., Bastian, L. A., Yarnall, K. S., et al. (2009). Barriers to adopting a healthy lifestyle: insight from postpartum women. *BMC research notes, 2*, 161. doi:10.1186/1756-0500-2-161

Christensen, H., Batterham, P. J., Griffiths, K. M., Gosling, J., et al. (2013). Research priorities in mental health. *Australian and New Zealand Journal of Psychiatry, 47*, 355-362. doi:10.1177/0004867412474072

Clavarino, A. M., Mamun, A. A., O'Callaghan, M., Aird, R., et al. (2010). Maternal anxiety and attention problems in children at 5 and 14 years. *Journal of Attention Disorders, 13*, 658-667. doi:10.1177/1087054709347203

Clibbens, N., Walters, S., & Baird, W. (2012). Delphi research: issues raised by a pilot study. *Nurse Researcher, 19*, 37-44. doi:10.7748/nr2012.01.19.2.37.c8907

Coffman, S., Levitt, M. J., & Brown, L. (1994). Effects of clarification of support expectations in prenatal couples. *Nursing Research, 43*, 111-116. doi:10.1097/00006199-199403000-00010

Cohen, J. (1992). A power primer. *Psychological Bulletin, 112*, 155-159. doi:10.1037/0033-2909.112.1.155

Cohen, S., & Wills, T. A. (1985). Stress, social support, and the buffering hypothesis. *Psychological Bulletin, 98*, 310-357. doi:10.1037//0033-2909.98.2.310

Cole, Z. D., Donohoe, H. M., & Stellefson, M. L. (2013). Internet-based Delphi research: case based discussion. *Environmental Management, 51*, 511-523. doi:10.1007/s00267-012-0005-5

Collins, N. L., & Feeney, B. C. (2010). An attachment theoretical perspective on social support dynamics in couples: normative processes and individual differences. In K. Sullivan & J. Davila (Eds.), *Support Processes in Intimate Relationships* (pp. 89-120). Kindle Edition: Oxford University Press.

Cooklin, A. R., Giallo, R., Strazdins, L., Martin, A., et al. (2015). What matters for working fathers? Job characteristics, work-family conflict and enrichment, and fathers' postpartum mental health in an Australian cohort. *Social Science and Medicine*. doi:10.1016/j.socscimed.2015.09.028

Costa, D. D., Zelkowitz, P., Bailey, K., Cruz, R., et al. (2015). Results of a needs assessment to guide the development of a website to enhance emotional wellness and healthy behaviors during pregnancy. *Journal of Perinatal Education, 24*, 213-224. doi:10.1891/1058-1243.24.4.213

Cowan, C. P., & Cowan, P. A. (1988). Who does what when partners become parents: Implications for men, women, and marriage. *Marriage and Family Review, 12*, 105-131. doi:10.1300/j002v12n03_07

Cox, J., Holden, J., & Sagovsky, R. (1987). Detection of postnatal depression: development of the 10-item Edinburgh Postnatal Depression Scale. *British Journal of Psychiatry, 150*, 782–786. doi:10.1192/bjp.150.6.782

Cox, J. L., Murray, D., & Chapman, G. (1993). A controlled study of the onset, duration and prevalence of postnatal depression. *British Journal of Psychiatry, 163*, 27-31. doi:10.1192/bjp.163.1.27

Crockett, K., Zlotnick, C., Davis, M., Payne, N., et al. (2008). A depression preventive intervention for rural low-income African-American pregnant women at risk for postpartum depression. *Archives of Women's Mental Health, 11*, 319-325. doi:10.1007/s00737-008-0036-3

Cuijpers, P., van Straten, A., Smit, F., Mihalopoulos, C., et al. (2008). Preventing the onset of depressive disorders: a meta-analytic review of psychological interventions. *American Journal of Psychiatry, 165*, 1272-1280. doi:10.1176/appi.ajp.2008.07091422

Cuijpers, P., van Straten, A., Warmerdam, L., & van Rooy, M. J. (2010). Recruiting participants for interventions to prevent the onset of depressive disorders: possible ways to

increase participation rates. *BMC Health Services Research, 10*, 1-6. doi:10.1186/1472-6963-10-181

Cunningham, N. K., Brown, P. M., Brooks, J., & Page, A. C. (2013). The structure of emotional symptoms in the postpartum period: is it unique? *Journal of Affective Disorders, 151*, 686-694. doi:10.1016/j.jad.2013.08.002

Daley, A., Foster, L., Long, G., Palmer, C., et al. (2015). The effectiveness of exercise for the prevention and treatment of antenatal depression: systematic review with meta-analysis. *BJOG: An International Journal of Obstetrics and Gynaecology, 122*, 57-63. doi:10.13140/RG.2.1.5120.9767

Dalkey, N., & Helmer, O. (1963). An experimental application of the Delphi method to the use of experts. *Management Science, 9*, 458-467. doi:10.1287/mnsc.9.3.458

Danaher, B. G., Milgrom, J., Seeley, J. R., Stuart, S., et al. (2012). Web-based intervention for postpartum depression: formative research and design of the MomMoodBooster Program. *JMIR Research Protocols, 1*, e18. doi:10.2196/resprot.2329

Das Eiden, R., Edwards, E. P., & Leonard, K. E. (2002). Mother-infant and father-infant attachment among alcoholic families. *Development and Psychopathology, 14*, 253-278. doi:10.1017/s0954579402002043

Dave, S., Nazareth, I., Sherr, L., & Senior, R. (2005). The association of paternal mood and infant temperament: a pilot study. *British Journal of Developmental Psychology, 23*, 609-621. doi:10.1348/026151004X22962

Demers, A., Bisson, J., & Palluy, J. (1999). Wives' convergence with their husbands' alcohol use: social conditions as mediators. *Journal of Studies on Alcohol and Drugs, 60*, 368-377. doi:10.15288/jsa.1999.60.368

Dennis, C. L., & Chung-Lee. (2006). Postpartum depression help-seeking barriers and maternal treatment preferences: a qualitative systematic review. *Birth, 33*, 323-331. doi:10.1111/j.1523-536X.2006.00130.x

Dennis, C. L., & Dowswell, T. (2013). Psychosocial and psychological interventions for preventing postpartum depression. *Cochrane Database of Systematic Reviews, 4*, CD001134-001131. doi:10.1002/14651858.CD001134.pub3

Dennis, C. L., & Ross, L. (2006). Women's perceptions of partner support and conflict in the development of postpartum depressive symptoms. *Journal of Advanced Nursing, 56*, 588-599. doi:10.1111/j.1365-2648.2006.04059.x

DeSouza, R. (2014). Enhancing the role of fathers. *Kai Tiaki: Nursing New Zealand, 20*, 26-67.

Devries, K. M., Kishor, S., Johnson, H., Stöckl, H., et al. (2010). Intimate partner violence during pregnancy: analysis of prevalence data from 19 countries. *Reproductive Health Matters, 18*, 158-170. doi:10.1016/s0968-8080(10)36533-5

Divney, A. A., Sipsma, H., Gordon, D., Niccolai, L., et al. (2012). Depression during pregnancy among young couples: the effect of personal and partner experiences of stressors and the buffering effects of social relationships. *Journal of Pediatric and Adolescent Gynecology, 25*, 201-207. doi:10.1016/j.jpag.2012.02.003

Don, B. P., & Mickelson, K. D. (2012). Paternal postpartum depression: the role of maternal postpartum depression, spousal support, and relationship satisfaction. *Couple and Family Psychology: Research and Practice, 1*, 323-334. doi:10.1037/a0029148

Drozd, F., Haga, S. M., Brendryen, H., & Slinning, K. (2015). An internet-based intervention (Mamma Mia) for postpartum depression: mapping the development from theory to practice. *JMIR Research Protocols, 4*, e120. doi:10.2196/resprot.4858

Dunkel Schetter, C. (2011). Psychological science on pregnancy: stress processes, biopsychosocial models, and emerging research issues. *Annual Review of Psychology, 62*, 531-558. doi:10.1146/annurev.psych.031809.130727

Eberhard-Gran, M., Eskild, A., Tambs, K., Samuelsen, S., et al. (2002). Depression in postpartum and non-postpartum women: prevalence and risk factors. *Acta Psychiatrica Scandinavica, 106*, 426-433. doi:10.1034/j.1600-0447.2002.02408.x

Edward, K. L., Castle, D., Mills, C., Davis, L., et al. (2015). An integrative review of paternal depression. *American Journal of Men's Health, 9*, 26-34. doi:10.1177/1557988314526614

Egger, M., & Smith, G. D. (1997). Meta-analysis: potentials and promise. *British Medical Journal, 315*, 1371-1374. doi:10.1136/bmj.315.7119.1371

Egger, M., Smith, G. D., Schneider, M., & Minder, C. (1997). Bias in meta-analysis detected by a simple, graphical test. *British Medical Journal, 315*, 629-634. doi:10.1136/bmj.315.7109.629

Elliott, S. A., Leverton, T. J., Sanjack, M., Turner, H., et al. (2000). Promoting mental health after childbirth: a controlled trial of primary prevention of postnatal depression. *British Journal of Clinical Psychology, 39*, 223-241. doi:10.1348/014466500163248

Engsheden, N., Fabian, H., & Sarkadi, A. (2013). Offering relationship education (PREP) for couples during pregnancy: self-selection patterns. *Family Relations, 62*, 676-685. doi:10.1111/fare.12032

Escribà-Agüir, V., & Artazcoz, L. (2011). Gender differences in postpartum depression: a longitudinal cohort study. *Journal of Epidemiology and Community Health, 65*, 320-326. doi:10.1136/jech.2008.085894

Everingham, C. R., Heading, G., & Connor, L. (2006). Couples' experiences of postnatal depression: a framing analysis of cultural identity, gender and communication. *Social Science and Medicine, 62*, 1745-1756. doi:10.1016/j.socscimed.2005.08.039

Ewing, J. A. (1984). Detecting alcoholism: the CAGE questionnaire. *Journal of the American Medical Association, 252*, 1905-1907. doi:10.1001/jama.252.14.1905

Feinberg, M. E., & Kan, M. L. (2008). Establishing Family Foundations: intervention effects on coparenting, parent/infant well-being, and parent-child relations. *Journal of Family Psychology, 22*, 253-263. doi:10.1037/0893-3200.22.2.253

Ferrer, R., & Klein, W. M. (2015). Risk perceptions and health behavior. *Current Opinion in Psychology, 5*, 85-89. doi:10.1016/j.copsyc.2015.03.012

Field, T. (2010). Postpartum depression effects on early interactions, parenting, and safety practices: a review. *Infant Behavior and Development, 33*, 1-6. doi:10.1016/j.infbeh.2009.10.005

Field, T., Diego, M., & Hernandez-Reif, M. (2006). Prenatal depression effects on the fetus and newborn: a review. *Infant Behavior and Development, 29*, 445-455. doi:10.1016/j.infbeh.2006.03.003

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. doi:10.1007/s00737-011-0217-3

Figueiredo, B., Field, T., Diego, M., Hernandez-Reif, M., et al. (2008). Partner relationships during the transition to parenthood. *Journal of Reproductive and Infant Psychology, 26*, 99-107. doi:10.1080/02646830701873057

Fischer, J. A., Kelly, C. M., Kitchener, B. A., & Jorm, A. F. (2013). Development of guidelines for adults on how to communicate with adolescents about mental health problems

and other sensitive topics: a Delphi study. *SAGE Open, 3*, 1-15. doi:10.1177/2158244013516769

Fisher, J., Mello, M. C. d., Patel, V., Rahman, A., et al. (2012). Prevalence and determinants of common perinatal mental disorders in women in low-and lower-middle-income countries: a systematic review. *Bulletin of the World Health Organization, 90*, 139-149. doi:10.2471/blt.11.091850

Fisher, J., Wynter, K., & Rowe, H. (2010). Innovative psycho-educational program to prevent common postpartum mental disorders in primiparous women: a before and after controlled study. *BMC Public Health, 10*, 432-447. doi:10.1186/1471-2458-10-432

Flach, C., Leese, M., Heron, J., Evans, J., et al. (2011). Antenatal domestic violence, maternal mental health and subsequent child behaviour: a cohort study. *BJOG: An International Journal of Obstetrics and Gynaecology, 118*, 1383-1391. doi:10.1111/j.1471-0528.2011.03040.x

Flaherty, J. A., Gaviria, F. M., & Pathak, D. S. (1983). The measurement of social support: the social support network inventory. *Comprehensive Psychiatry, 24*, 521-529. doi:10.1016/0010-440x(83)90019-6

Fletcher, R. (2011). Field testing of father-inclusive guidelines for web-based information and support aimed at families with perinatal depression. *Health Promotion Journal of Australia, 22*, 231-233.

Fletcher, R., Dowse, E., Bennett, E., Chan, S., et al. (2014). The paternal perinatal depression initiative. *Australian Nursing and Midwifery Journal, 22*, 40.

Fletcher, R., Garfield, C., & Matthey, S. (2015). Fathers' perinatal mental health. In J. Milgrom & A. W. Gemmill (Eds.), *Identifying Perinatal Depression and Anxiety: Evidence-Based*

Practice in Screening, Psychosocial Assessment, and Management (pp. 165-176). West Sussex, UK: John Wiley & Sons Ltd.

Fletcher, R., Silberberg, S., & Galloway, D. (2004). New fathers' postbirth views of antenatal classes: satisfaction, benefits, and knowledge of family services. *Journal of Perinatal Education, 13*, 18-26. doi:10.1624/105812404x1734

Fletcher, R. J., Feeman, E., Garfield, C., & Vimpani, G. (2011). The effects of early paternal depression on children's development. *Medical Journal of Australia, 195*, 685-689. doi:10.5694/mja11.10192

Forder, P., Rich, J., Harris, S., Reilly, N., Chojenta, C., Austin, M.-P., & Loxton, D. (2013). *The issue of honesty during perinatal screening for depression and anxiety.* Paper presented at the Australasian Marcé Society Conference, Melbourne, Australia.

Forsyth, C., Skouteris, H., Wertheim, E. H., Paxton, S. J., et al. (2011). Men's emotional responses to their partner's pregnancy and their views on support and information received. *Australian and New Zealand Journal of Obstetrics and Gynaecology, 51*, 53-56. doi:10.1111/j.1479-828X.2010.01244.x

Fowers, B. J., & Olson, D. H. (1993). ENRICH Marital Satisfaction Scale: a brief research and clinical tool. *Journal of Family Psychology, 7*, 176-185. doi:10.1037//0893-3200.7.2.176

Fox, S. (2011a). Health topics: 80% of internet users look for health information online. Retrieved from http://www.pewinternet.org/files/old-media/Files/Reports/2011/PIP_Health_Topics.pdf

Fox, S. (2011b). The social life of health information 2011. Retrieved from http://www.pewinternet.org/files/old-media//Files/Reports/2011/PIP_Social_Life_of_Health_Info.pdf

Gambrel, L. E., & Piercy, F. P. (2014). Mindfulness-based relationship education for couples expecting their first child—Part 1: A randomized mixed-methods program evaluation. *Journal of Marital and Family Therapy*. doi:10.1111/jmft.12066

Gao, L. L., Chan, S. W., Li, X., Chen, S., et al. (2010). Evaluation of an interpersonal-psychotherapy-oriented childbirth education programme for Chinese first-time childbearing women: a randomised controlled trial. *International Journal of Nursing Studies, 47*, 1208-1216. doi:10.1016/j.ijnurstu.2010.03.002

Gavin, N. I., Gaynes, B. N., Lohr, K. N., Meltzer-Brody, S., et al. (2005). Perinatal depression: a systematic review of prevalence and incidence. *Obstetrics and Gynecology, 106*, 1071-1083. doi:10.1097/01.AOG.0000183597.31630.db

Gawlik, S., Muller, M., Hoffmann, L., Dienes, A., et al. (2013). Prevalence of paternal perinatal depressiveness and its link to partnership satisfaction and birth concerns. *Archives of Women's Mental Health, 17*, 49-56. doi:10.1007/s00737-013-0377-4

Gergen, K. J., & Gergen, M. M. (2008). Social construction and research as action. In P. Reason & H. Bradbury (Eds.), *The SAGE handbook of action research: Participative inquiry and practice* (pp. 159-171). Los Angeles, CA: Sage Publications.

Giallo, R., Cooklin, A., & Nicholson, J. M. (2014a). Risk factors associated with trajectories of mothers' depressive symptoms across the early parenting period: an Australian population-based longitudinal study. *Archives of Women's Mental Health, 17*, 115-125. doi:10.1007/s00737-014-0411-1

Giallo, R., Cooklin, A., Wade, C., D'Esposito, F., et al. (2011). Fathers' postnatal mental health and child wellbeing at aged five: the mediating role of parental self-efficacy and parenting behaviour. *Journal of Family Issues, 35*, 1543-1562. doi:10.1177/0192513X13477411

Giallo, R., Cooklin, A., Wade, C., D'Esposito, F., et al. (2014b). Maternal postnatal mental health and later emotional–behavioural development of children: the mediating role of parenting behaviour. *Child: Care, Health and Development, 40*, 327-336. doi:10.1111/cch.12028

Giallo, R., D'Esposito, F., Cooklin, A., Christensen, D., et al. (2014c). Factors associated with trajectories of psychological distress for Australian fathers across the early parenting period. *Social Psychiatry and Psychiatric Epidemiology, 49*, 1961-1971. doi:10.1007/s00127-014-0834-z

Giallo, R., Woolhouse, H., Gartland, D., Hiscock, H., et al. (2015). The emotional-behavioural functioning of children exposed to maternal depressive symptoms across pregnancy and early childhood: a prospective Australian pregnancy cohort study. *European Child and Adolescent Psychiatry, 24*, 1233-1244. doi:10.1007/s00787-014-0672-2

Glade, A. C., Bean, R. A., & Vira, R. (2005). A prime time for marital/relational intervention: a review of the transition to parenthood literature with treatment recommendations. *American Journal of Family Therapy, 33*, 319-336. doi:10.1080/01926180590962138

Gleason, M. E., Iida, M., Bolger, N., & Shrout, P. E. (2003). Daily supportive equity in close relationships. *Personality and Social Psychology Bulletin, 29*, 1036-1045. doi:10.1177/0146167203253473

Gloaguen, V., Cottraux, J., Cucherat, M., & Blackburn, I.-M. (1998). A meta-analysis of the effects of cognitive therapy in depressed patients. *Journal of Affective Disorders, 49*, 59-72. doi:10.1016/s0165-0327(97)00199-7

Glover, V. (2014). Maternal depression, anxiety and stress during pregnancy and child outcome; what needs to be done. *Best Practice & Research Clinical Obstetrics & Gynaecology, 28*, 25-35.

Goldberg, A. E., & Perry-Jenkins, M. (2004). Division of labor and working-class women's well-being across the transition to parenthood. *Journal of Family Psychology, 18*, 225-236. doi:10.1037/0893-3200.18.1.225

Goldberg, A. E., & Smith, J. Z. (2008). The social context of lesbian mothers' anxiety during early parenthood. *Parenting: Science and Practice, 8*, 213-239. doi:10.1080/15295190802204801

Goldberg, A. E., & Smith, J. Z. (2011). Stigma, social context, and mental health: lesbian and gay couples across the transition to adoptive parenthood. *Journal of Counseling Psychology, 58*, 139-150. doi:10.1037/a0021684

Goodman, J. H. (2012). Paternal postpartum depression, its relationship to maternal postpartum depression, and implications for family health. *Journal of Advanced Nursing, 45*, 26–35. doi:10.1046/j.1365-2648.2003.02857.x

Goodman, J. H., & Tyer-Viola, L. (2010). Detection, treatment, and referral of perinatal depression and anxiety by obstetrical providers. *Journal of Women's Health, 19*, 477-490. doi:10.1089/jwh.2008.1352

Grice, M. M., Feda, D., McGovern, P., Alexander, B. H., et al. (2007). Giving birth and returning to work: the impact of work–family conflict on women's health after childbirth. *Annals of Epidemiology, 17*, 791-798. doi:10.1016/j.annepidem.2007.05.002

Grote, N. K., Bridge, J. A., Gavin, A. R., Melville, J. L., et al. (2010). A meta-analysis of depression during pregnancy and the risk of preterm birth, low birth weight, and intrauterine growth restriction. *Archives of General Psychiatry, 67*, 1012-1024. doi:10.1001/archgenpsychiatry.2010.111

Habib, C. (2012). Paternal perinatal depression: an overview and suggestions towards an intervention model. *Journal of Family Studies, 18*, 4-16. doi:10.5172/jfs.2012.18.1.4

Haga, S. M. (2012). *Identifying risk factors for postpartum depressive symptoms: the importance of social support, self-efficacy, and emotion regulation.* (Doctoral Thesis), University of Oslo, Oslo, Norway.

Haga, S. M., Drozd, F., Brendryen, H., & Slinning, K. (2013). Mamma mia: a feasibility study of a Web-based intervention to reduce the risk of postpartum depression and enhance subjective well-being. *JMIR Research Protocols, 2*, e29. doi:10.2196/resprot.2659

Hajal, N., Neiderhiser, J., Moore, G., Leve, L., et al. (2015). Angry responses to infant challenges: parent, marital, and child genetic factors associated with harsh parenting. *Child Development, 86*, 80-93. doi:10.1111/cdev.12345

Halford, W. K. (2011). *Marriage and Relationship Education: What Works and How to Provide It*. New York, NY: Guilford Press.

Halford, W. K., Lizzio, A., Wilson, K. L., & Occhipinti, S. (2007). Does working at your marriage help? Couple relationship self-regulation and satisfaction in the first 4 years of marriage. *Journal of Family Psychology, 21*, 185-194. doi:10.1037/0893-3200.21.2.185

Halford, W. K., O'Donnell, C., Lizzio, A., & Wilson, K. L. (2006). Do couples at high risk of relationship problems attend premarriage education? *Journal of Family Psychology, 20*, 160-163. doi:10.1037/0893-3200.20.1.160

Halford, W. K., Petch, J., & Creedy, D. (2015). *Clinical Guide to Helping New Parents: The Couple CARE for Parents Program*. New York, USA: Springer Science+Business Media.

Hasson, F., Keeney, S., & McKenna, H. (2000). Research guidelines for the Delphi survey technique. *Journal of Advanced Nursing, 32*, 1008-1015. doi:10.1046/j.1365-2648.2000.t01-1-01567.x

Hedin, L. W., & Janson, P. O. (2000). Domestic violence during pregnancy. *Acta Obstetricia et Gynecologica Scandinavica, 79*, 625-630. doi:10.1034/j.1600-0412.2000.079008625.x

Heinicke, C. M., Fineman, N., Ruth, G., Recchia, S., et al. (1999). Relationship-based intervention with at-risk mothers: outcome in the first year of life. *Infant Mental Health Journal, 20*, 349-374. doi:10.1002/(sici)1097-0355(199924)20:4<349::aid-imhj1>3.0.co;2-x

Heron, J., O'Connor, T. G., Evans, J., Golding, J., et al. (2004). The course of anxiety and depression through pregnancy and the postpartum in a community sample. *Journal of Affective Disorders, 80*, 65-73. doi:10.1016/j.jad.2003.08.004

Higgins, J., & Green, S. (2011). *Cochrane Handbook for Systematic Reviews of Interventions Version 5.1.0*: The Cochrane Collaboration.

Highet, N. J., Gemmill, A. W., & Milgrom, J. (2011). Depression in the perinatal period: awareness, attitudes and knowledge in the Australian population. *Australian and New Zealand Journal of Psychiatry, 45*, 223-231. doi:10.3109/00048674.2010.547842

Hoertel, N., López, S., Peyre, H., Wall, M. M., et al. (2015). Are symptom features of depression during pregnancy, the postpartum period and outside the peripartum period distinct? Results from a nationally representative sample using item response theory (IRT). *Depression and Anxiety, 32*, 129-140. doi:10.1002/da.22334

Hopkins, J., & Campbell, S. (2008). Development and validation of a scale to assess social support in the postpartum period. *Archives of Women's Mental Health, 11*, 57-65. doi:10.1007/s00737-008-0212-5

Hopkins, J., Campbell, S. B., & Marcus, M. (1987). Role of infant-related stressors in postpartum depression. *Journal of Abnormal Psychology, 96*, 237-241. doi:10.1037//0021-843x.96.3.237

Horowitz, J., & Callaghan, J. (1990). *Mothers' information tool*. Unpublished manuscript.

House, J. S., Landis, K. R., & Umberson, D. (1988). Social relationships and health. *Science, 241*, 540-545. doi:10.1126/science.3399889

Howard, L. M., Kirkwood, G., & Latinovic, R. (2007). Sudden infant death syndrome and maternal depression. *Journal of Clinical Psychiatry, 68*, 1279-1283. doi:10.4088/jcp.v68n0816

Howard, L. M., Oram, S., Galley, H., Trevillion, K., et al. (2013). Domestic violence and perinatal mental disorders: a systematic review and meta-analysis. *PLoS Medicine, 10*, 1-16. doi:10.1371/journal.pmed.1001452.g001

Ibarra-Rovillard, M., & Kuiper, N. A. (2011). Social support and social negativity findings in depression: perceived responsiveness to basic psychological needs. *Clinical Psychology Review, 31*, 342-352. doi:10.1016/j.cpr.2011.01.005

Iles, J., Slade, P., & Spiby, H. (2011). Posttraumatic stress symptoms and postpartum depression in couples after childbirth: the role of partner support and attachment. *Journal of Anxiety Disorders, 25*, 520-530. doi:10.1016/j.janxdis.2010.12.006

Ip, W. Y., Tang, C. S., & Goggins, W. B. (2009). An educational intervention to improve women's ability to cope with childbirth. *Journal of Clinical Nursing, 18*, 2125-2135. doi:10.1111/j.1365-2702.2008.02720.x

Jacka, F. N., Mykletun, A., & Berk, M. (2012). Moving towards a population health approach to the primary prevention of common mental disorders. *BMC Medicine, 10*, 1-6. doi:10.1186/1741-7015-10-149

Jacka, F. N., & Reavley, N. J. (2014). Prevention of mental disorders: evidence, challenges and opportunities. *BMC Medicine, 12*, 1-3. doi:10.1186/1741-7015-12-75

Jacka, F. N., Reavley, N. J., Jorm, A. F., Toumbourou, J. W., et al. (2013). Prevention of common mental disorders: what can we learn from those who have gone before and where do we go next? *Australian and New Zealand Journal of Psychiatry, 47*, 920-929. doi:10.1177/0004867413493523

Jaspers, M. W., Steen, T., van den Bos, C., & Geenen, M. (2004). The think aloud method: a guide to user interface design. *International Journal of Medical Informatics, 73*, 781-795. doi:10.1016/j.ijmedinf.2004.08.003

Jones, B. A., Griffiths, K. M., Christensen, H., Ellwood, D., et al. (2013). Online cognitive behaviour training for the prevention of postnatal depression in at-risk mothers: a randomised controlled trial protocol. *BMC Psychiatry, 13*, 1-8. doi:10.1186/1471-244x-13-265

Jones, J., & Hunter, D. (1995). Consensus methods for medical and health services research. *British Medical Journal, 311*, 376-380. doi:10.1136/bmj.311.7001.376

Jorm, A. F. (2015). Using the Delphi expert consensus method in mental health research. *Australian and New Zealand Journal of Psychiatry, Advanced online access*, 1-11. doi: 10.1177/0004867415600891

Josefsson, A., Angelsiöö, L., Berg, G., Ekström, C.-M., et al. (2002). Obstetric, somatic, and demographic risk factors for postpartum depressive symptoms. *Obstetrics and Gynecology, 99*, 223-228. doi:10.1016/s0029-7844(01)01722-7

Kan, M. L., & Feinberg, M. E. (2014). Can a family-focused, transition-to-parenthood program prevent parent and partner aggression among couples with young children? *Violence and victims, 29*, 967-980. doi:10.1891/0886-6708.vv-d-12-00162 =

Karoly, P. (1993). Mechanisms of self-regulation: a systems view. *Annual Review of Psychology, 44*, 23-52. doi:10.1146/annurev.psych.44.1.23

Kazdin, A. E., Kraemer, H. C., Kessler, R. C., Kupfer, D. J., et al. (1997). Contributions of risk-factor research to developmental psychopathology. *Clinical Psychology Review, 17*, 375-406. doi:10.1016/s0272-7358(97)00012-3

Kelders, S. M., Pots, W. T., Oskam, M. J., Bohlmeijer, E. T., et al. (2013). Development of a web-based intervention for the indicated prevention of depression. *BMC Medical Informatics and Decision Making, 13*, 1-11. doi:10.1186/1472-6947-13-26

Kelly, C. M., Jorm, A. F., & Kitchener, B. A. (2010). Development of mental health first aid guidelines on how a member of the public can support a person affected by a traumatic event: a Delphi study. *BMC Psychiatry, 10*, 49-54. doi:10.1186/1471-244X-10-49

Kelly, R. H., Russo, J., & Katon, W. (2001). Somatic complaints among pregnant women cared for in obstetrics: normal pregnancy or depressive and anxiety symptom amplification revisited? *General Hospital Psychiatry, 23*, 107-113. doi:10.1016/s0163-8343(01)00129-3

Khajehei, M., Doherty, M., & Tilley, M. (2012). Assessment of postnatal depression among Australian lesbian mothers. *International Journal of Childbirth Education, 27*, 49-54.

Kim, J. J., La Porte, L. M., Saleh, M. P., Allweiss, S., et al. (2015). Suicide risk among perinatal women who report thoughts of self-harm on depression screens. *Obstetrics and Gynecology, 125*, 885-893. doi:10.1097/aog.0000000000000718

Kingston, D., Austin, M.-P., Heaman, M., McDonald, S., et al. (2015a). Barriers and facilitators of mental health screening in pregnancy. *Journal of Affective Disorders, 186*, 350-357. doi:10.1016/j.jad.2015.06.029.

Kingston, D., Janes-Kelley, S., Tyrrell, J., Clark, L., et al. (2015b). An integrated web-based mental health intervention of assessment-referral-care to reduce stress, anxiety, and depression in hospitalized pregnant women with medically high-risk pregnancies: a feasibility study protocol of hospital-based implementation. *JMIR Research Protocols, 4*, e9. doi:10.2196/resprot.4037

Kipper, D. A., Zigler-Shani, Z., Serr, D. M., & Insler, V. (1977). Psychogenic infertility, neuroticism and the feminine role: a methodological inquiry. *Journal of Psychosomatic Research, 21*, 353-358. doi:10.1016/0022-3999(77)90042-3

Klainin, P., & Arthur, D. G. (2009). Postpartum depression in Asian cultures: a literature review. *International Journal of Nursing Studies, 46*, 1355-1373. doi:10.1016/j.ijnurstu.2009.02.012

Kluwer, E. S. (2010). From partnership to parenthood: a review of marital change across the transition to parenthood. *Journal of Family Theory and Review, 2*, 105-125. doi:10.1111/j.1756-2589.2010.00045.x

Kolb, A. Y., & Kolb, D. A. (2012). Experiential learning theory. In N. Seel (Ed.), *Encyclopedia of the Sciences of Learning* (pp. 1215-1219). New York, NY: Springer.

Kruse, J. A., Low, L. K., & Seng, J. S. (2012). Validation of alternative indicators of social support in perinatal outcomes research using quality of the partner relationship. *Journal of Advanced Nursing, 69*, 1562-1573. doi:10.1111/jan.12015

Lagan, B. M., Sinclair, M., & Kernohan, W. G. (2010). Internet use in pregnancy informs women's decision making: a web-based survey. *Birth, 37*, 106-115.

Lancaster, C. A., Gold, K. J., Flynn, H. A., Yoo, H., et al. (2010). Risk factors for depressive symptoms during pregnancy: a systematic review. *American Journal of Obstetrics and Gynecology, 202*, 5-14. doi:10.1016/j.ajog.2009.09.007

Lara, M. A., Navarro, C., & Navarrete, L. (2010a). Outcome results of a psycho-educational intervention in pregnancy to prevent PPD: a randomized control trial. *Journal of Affective Disorders, 122*, 109-117. doi:10.1016/j.jad.2009.06.024

Lara, M. A., Navarro, C., Navarrete, L., & Le, H.-N. (2010b). Retention rates and potential predictors in a longitudinal randomized control trial to prevent postpartum depression. *Salud Mental, 33*, 429-436. doi:10.1016/j.ajog.2012.12.036

Larsson, M. (2009). A descriptive study of the use of the Internet by women seeking pregnancy-related information. *Midwifery, 25*, 14-20. doi:10.1016/j.midw.2007.01.010

Leach, L., Poyser, C., Cooklin, A., & Giallo, R. (2015a). Prevalence and course of anxiety disorders (and symptom levels) in men during the perinatal period: A systematic review. *Journal of Affective Disorders, 190*, 675-686. doi:10.1016/j.jad.2015.09.063

Leach, L. S., Christensen, H., Griffiths, K. M., Jorm, A. F., et al. (2007). Websites as a mode of delivering mental health information: perceptions from the Australian public. *Social Psychiatry and Psychiatric Epidemiology, 42*, 167-172. doi:10.1007/s00127-006-0138-z

Leach, L. S., Poyser, C., & Fairweather-Schmidt, K. (2015b). Maternal perinatal anxiety: a review of prevalence and correlates. *Clinical Psychologist, Early online access*. doi:10.1111/cp.12058

Lee, A. M., Lam, S. K., Lau, S. M. S. M., Chong, C. S. Y., et al. (2007). Prevalence, course, and risk factors for antenatal anxiety and depression. *Obstetrics and Gynecology, 110*, 1102-1112. doi:10.1097/01.aog.0000287065.59491.70

Lee, D. T. S., Yip, A. S. K., Leung, T. Y. S., & Chung, T. K. H. (2004). Ethnoepidemiology of postnatal depression - Prospective multivariate study of sociocultural risk factors in a

Chinese population in Hong Kong. *British Journal of Psychiatry, 184*, 34-40. doi:10.1192/bjp.184.1.34

Lemola, S., Stadlmayr, W., & Grob, A. (2007). Maternal adjustment five months after birth: the impact of the subjective experience of childbirth and emotional support from the partner. *Journal of Reproductive and Infant Psychology, 25*, 190-202. doi:10.1080/02646830701467231

Letourneau, N., Duffett-Leger, L., Stewart, M., Hegadoren, K., et al. (2007). Canadian mothers' perceived support needs during postpartum depression. *Journal of Obstetric, Gynecologic, and Neonatal Nursing, 36*, 441-449. doi:10.1111/j.1552-6909.2007.00174.x

Letourneau, N. L., Dennis, C.-L., Benzies, K., Duffett-Leger, L., et al. (2012). Postpartum depression is a family affair: addressing the impact on mothers, fathers, and children. *Issues in Mental Health Nursing, 33*, 445-457. doi:10.3109/01612840.2012.673054

Lewis, A. J., Bailey, C., & Galbally, M. (2012). Anti-depressant use during pregnancy in Australia: findings from the Longitudinal Study of Australian Children. *Australian and New Zealand Journal of Public Health, 36*, 487-488. doi:10.1111/j.1753-6405.2012.00917.x

Lilja, G., Edhborg, M., & Nissen, E. (2012). Depressive mood in women at childbirth predicts their mood and relationship with infant and partner during the first year postpartum. *Scandinavian Journal of Caring Sciences, 26*, 245-253. doi:10.1111/j.1471-6712.2011.00925.x

Lokkerbol, J., Adema, D., Cuijpers, P., Reynolds, C. F., et al. (2014). Improving the cost-effectiveness of a healthcare system for depressive disorders by implementing

telemedicine: a health economic modeling study. *American Journal of Geriatric Psychiatry, 22*, 253-262.

Lovibond, S. H., & Lovibond, P. F. (1996). *The DASS: Manual for the Depression, Anxiety Stress Scales*. Sydney, NSW: University of New South Wales.

Ludden, G. D., van Rompay, T. J., Kelders, S. M., & van Gemert-Pijnen, J. E. (2015). How to increase reach and adherence of web-based interventions: a design research viewpoint. *Journal of Medical Internet Research, 17*, e172. doi:10.2196/jmir.4201

Ludermir, A. B., Lewis, G., Valongueiro, S. A., de Araujo, T. V., et al. (2010). Violence against women by their intimate partner during pregnancy and postnatal depression: a prospective cohort study. *The Lancet, 376*, 903-910. doi:10.1016/S0140-6736(10)60887-2

Maloni, J. A., Przeworski, A., & Damato, E. G. (2013). Web recruitment and internet use and preferences reported by women with postpartum depression after pregnancy complications. *Archives of Psychiatric Nursing, 27*, 90-95. doi:10.1016/j.apnu.2012.12.001

Marc, I., Toureche, N., Ernst, E., Hodnett, E., et al. (2011). Mind-body interventions during pregnancy for preventing or treating women's anxiety. *Cochrane Database of Systematic Reviews, 7*, CD007559. doi:10.1002/14651858.CD007559.pub2

Martini, J., Petzoldt, J., Einsle, F., Beesdo-Baum, K., et al. (2015). Risk factors and course patterns of anxiety and depressive disorders during pregnancy and after delivery: A prospective-longitudinal study. *Journal of Affective Disorders, 175*, 385-395. doi:10.1016/j.jad.2015.01.012

Matthey, S. (2010). Are we overpathologising motherhood? *Journal of Affective Disorders, 120*, 263-266. doi:10.1016/j.jad.2009.05.004

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. doi:10.1016/s0165-0327(02)00012-5

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. doi:10.1016/s0165-0327(99)00159-7

Matthey, S., Henshaw, C., Elliott, S., & Barnett, B. (2006). Variability in use of cut-off scores and formats on the Edinburgh Postnatal Depression Scale–implications for clinical and research practice. *Archives of Women's Mental Health, 9*, 309-315. doi:10.1007/s00737-006-0152-x

Matthey, S., Kavanagh, D. J., Howie, P., Barnett, B., et al. (2004). Prevention of postnatal distress or depression: an evaluation of an intervention at preparation for parenthood classes. *Journal of Affective Disorders, 79*, 113-126. doi:10.1016/s0165-0327(02)00362-2

Matthey, S., McGregor, K., & Ha, M. (2008). Developing partner awareness and empathy in new parents: the Great Parents' Quiz. *International Journal of Mental Health Promotion, 10*, 5-16. doi:10.1080/14623730.2008.9721764

Matthey, S., Reay, R., & Fletcher, R. (2009a). Service strategies for engaging fathers in the perinatal period-what have we learned so far? *International Journal of Mental Health Promotion, 11*, 29-41. doi:10.1080/14623730.2009.9721785

Matthey, S., Reay, R., & Fletcher, R. (2009b). Service strategies for engaging fathers in the perinatal period — What have we learned so far? *International Journal of Mental Health Promotion, 11*, 29-41. doi:10.1080/14623730.2009.9721785

Matthey, S., Trapolini, T., & Joseph, M. (2012). Maternal perceptions of partner understanding, couple communication and the couple's relationship in parents of infants and pre-schoolers. *International Journal of Mental Health Promotion, 14*, 71-82. doi:10.1080/14623730.2012.665341

May, C., & Fletcher, R. (2013). Preparing fathers for the transition to parenthood: recommendations for the content of antenatal education. *Midwifery, 29*, 474-478. doi:10.1016/j.midw.2012.03.005

Mazure, C., Keita, G., & Blehar, M. (2002). Summit on women and depression: proceedings and recommendations. Retrieved from http://www.apa.org/pi/women/programs/depression/summit-2002.pdf

McKellar, L. V., Pincombe, J. I., & Henderson, A. M. (2006). Insights from Australian parents into educational experiences in the early postnatal period. *Midwifery, 22*, 356-364. doi:10.1016/j.midw.2005.09.004

McKenna, H. P. (1994). The Delphi technique: a worthwhile research approach for nursing? *Journal of Advanced Nursing, 19*, 1221-1225. doi:10.1111/j.1365-2648.1994.tb01207.x

McLearn, K. T., Minkovitz, C. S., Strobino, D. M., Marks, E., et al. (2006). Maternal depressive symptoms at 2 to 4 months post partum and early parenting practices. *Archives of Pediatrics and Adolescent Medicine, 160*, 279-284. doi:10.1001/archpedi.160.3.279

McMahon, C., Barnett, B., Kowalenko, N., Tennant, C., et al. (2001). Postnatal depression, anxiety and unsettled infant behaviour. *Australian and New Zealand Journal of Psychiatry, 35*, 581-588. doi:10.1080/0004867010060505

Meijering, J., Kampen, J., & Tobi, H. (2013). Quantifying the development of agreement among experts in Delphi studies. *Technological Forecasting and Social Change, 80*, 1607-1614. doi:10.1016/j.techfore.2013.01.003

Midmer, D., Wilson, L., & Cummings, S. (1995). A randomized, controlled trial of the influence of prenatal parenting education on postpartum anxiety and marital adjustment. *Family Medicine, 27*, 200-205. doi:10.1037/a0028781

Mihalopoulos, C., & Vos, T. (2013). Cost-effectiveness of preventive interventions for depressive disorders: an overview. *Expert Review of Pharmacoeconomics and Outcomes Research, 13*, 237-242. doi:10.1586/erp.13.5

Milgrom, J., Gemmill, A. W., Bilszta, J. L., Hayes, B., et al. (2008). Antenatal risk factors for postnatal depression: a large prospective study. *Journal of Affective Disorders, 108*, 147-157. doi:10.1016/j.jad.2007.10.014

Milgrom, J., Martin, P. R., & Negri, L. M. (1999). *Treating Postnatal Depression: A Psychological Approach for Health Care Practitioners*. Chichester, UK: John Wiley & Sons Ltd.

Milgrom, J., Schembri, C., Ericksen, J., Ross, J., et al. (2011). Towards parenthood: an antenatal intervention to reduce depression, anxiety and parenting difficulties. *Journal of Affective Disorders, 130*, 385-394. doi:10.1016/j.jad.2010.10.045

Miller, R., Pallant, J., & Negri, L. (2006). Anxiety and stress in the postpartum: is there more to postnatal distress than depression? *BMC Psychiatry, 6*, 1-11. doi:10.1186/1471-244X-6-12

Moel, J. E., Buttner, M. M., O'Hara, M. W., Stuart, S., et al. (2010). Sexual function in the postpartum period: effects of maternal depression and interpersonal psychotherapy

treatment. *Archive of Women's Mental Health, 13*, 495-504. doi:10.1007/s00737-010-0168-0

Moher, D., Liberati, A., Tetzlaff, J., & Altman, D. G. (2009). Preferred Reporting Items for Systematic Reviews and Meta-Analyses: the PRISMA statement. *PLoS Medicine, 6*, 1-6. doi:10.1371/journal.pmed.1000097

Möller-Leimkühler, A. M. (2002). Barriers to help-seeking by men: a review of sociocultural and clinical literature with particular reference to depression. *Journal of Affective Disorders, 71*, 1-9. doi:10.1016/S0165-0327(01)00379-2

Moncrieff, J. (1998). Research synthesis: systematic reviews and meta-analysis. *International Review of Psychiatry, 10*, 304-311. doi:10.1080/09540269874655

Montigny, F., & Lacharité, C. (2004). Fathers' perceptions of the immediate postpartal period. *Journal of Obstetric, Gynecologic, and Neonatal Nursing, 33*, 328-339. doi:10.1177/0884217504266012

Moore, D., & Ayers, S. (2011). A review of postnatal mental health websites: help for healthcare professionals and patients. *Arch Womens Ment Health, 14*, 443-452. doi:10.1007/s00737-011-0245-z

Morgan, A. J., & Jorm, A. F. (2009). Self-help strategies that are helpful for sub-threshold depression: a Delphi consensus study. *Journal of Affective Disorders, 115*, 196-200. doi:10.1016/j.jad.2008.08.004

Mrazek, P., & Haggerty, R. (1994). *Reducing risks for mental disorders: frontiers for preventive intervention research* (P. Mrazek & R. Haggerty Eds.). Washington: National Academy Press.

Mulrow, C. D. (1994). Rationale for systematic reviews. *British Medical Journal, 309*, 597-599. doi:10.1136/bmj.309.6954.597

Murray, L., & Cooper, P. (2003). *Intergenerational transmission of affective and cognitive processes assiociated with depression: infancy and the preschool years*. New York: Oxford University Press.

Nair, R., Aggarwal, R., & Khanna, D. (2011). Methods of formal consensus in classification/ diagnostic criteria and guideline development. *Seminars in Arthritis and Rheumatism, 41*, 95-105. doi:10.1016/j.semarthrit.2010.12.001

National Health and Medical Research Council. (2000). Prevention of postnatal depression. In M. Sweet (Ed.), *Postnatal depression: Not just the baby blues* (pp. 129-260). Canberra, Australia: Commonwealth of Australia.

National Institute for Health and Care Excellence. (2007). *Antenatal and postnatal mental health: clinical management and service guidance*. Manchester, United Kingdom: National Institute for Health and Clinical Excellence.

Negron, R., Martin, A., Almog, M., Balbierz, A., et al. (2013). Social support during the postpartum period: mothers' views on needs, expectations, and mobilization of support. *Maternal and Child Health Journal, 17*, 616-623. doi:10.1007/s10995-012-1037-4

Nielsen, D., Videbech, P., Hedegaard, M., Dalby, J., et al. (2000). Postpartum depression: identification of women at risk. *BJOG: An International Journal of Obstetrics and Gynaecology, 107*, 1210-1217. doi:10.1111/j.1471-0528.2000.tb11609.x

Nielsen, J. (1994). Estimating the number of subjects needed for a thinking aloud test. *International Journal of Human-Computer Studies, 41*, 385-397. doi:10.1006/ijhc.1994.1065

Noble, J. H., Jr. (2006). Meta-analysis: methods, strengths, weaknesses, and political uses. *Journal of Laboratory and Clinical Medicine, 147*, 7-20. doi:10.1016/j.lab.2005.08.006

Norbeck, J. S., Lindsey, A. M., & Carrieri, V. L. (1981). The development of an instrument to measure social support. *Nursing Research, 30*, 264-269. doi:10.1097/00006199-198109000-00003

O'Hara, M. (2009). Postpartum depression: what we know. *Journal of Clinical Psychology, 65*, 1258-1269. doi:10.1002/jclp.20644

O'Hara, M., Rehm, L. P., & Campbell, S. B. (1983). Postpartum depression: a role for social network and life stress variables. *Journal of Nervous and Mental Disease, 171*, 336-341. doi:10.1097/00005053-198306000-00002

O'Hara, M. W. (1986). Social support, life events, and depression during pregnancy and the puerperium. *Archives of General Psychiatry, 43*, 160-161. doi:10.1001/archpsyc.1986.01800060063008

O'Hara, M. W., Dennis, C.-L., McCabe, J. E., & Galbally, M. (2015). Evidence-based treatments and pathways to care. In J. Milgrom & A. W. Gemmill (Eds.), *Identifying Perinatal Depression and Anxiety: Evidence-Based Practice in Screening, Psychosocial Assessment, and Management* (pp. 177-192). West Sussex, UK: John Wiley & Sons, Ltd.

O'Hara, M. W., & McCabe, J. E. (2013). Postpartum depression: current status and future directions. *Annual Review of Clinical Psychology, 9*, 379-407. doi:10.1146/annurev-clinpsy-050212-185612

O'Hara, M. W., & Wisner, K. L. (2014). Perinatal mental illness: definition, description and aetiology. *Best Practice and Research: Clinical Obstetrics and Gynaecology, 28*, 3-12. doi:10.1016/j.bpobgyn.2013.09.002

O'Hara, M. W., Zekoski, E. M., Philipps, L. H., & Wright, E. J. (1990). Controlled prospective study of postpartum mood disorders: comparison of childbearing and

nonchildbearing women. *Journal of Abnormal Psychology, 99*, 1-15. doi:10.1037/0021-843x.99.1.3

O'Hara, M. W., & Swain, A. M. (1996). Rates and risk of postpartum depression: a meta-analysis. *International Review of Psychiatry, 8*, 37-54. doi:10.3109/09540269609037816

Oddy, B., Rowe, H., & Fisher, J. (2009). Consumers' views on the use of diagnostic labels to describe psychological distress in the postpartum: implications for health care. *Australian Journal of Primary Health, 15*, 9-16. doi:10.1071/PY08061

Palinkas, L. A., Aarons, G. A., Horwitz, S., Chamberlain, P., et al. (2011). Mixed method designs in implementation research. *Administration and Policy in Mental Health and Mental Health Services Research, 38*, 44-53. doi:10.1007/s10488-010-0314-z

Paulson, J., & Bazemore, S. (2010). Prenatal and postpartum depression in fathers and its association with maternal depression: a meta-analysis. *Journal of the American Medical Association, 303*, 1961–1969. doi:10.1001/jama.2010.605

Pawlby, S., Hay, D., Sharp, D., Waters, C., et al. (2009). Antenatal depression predicts depression in adolescent offspring: prospective longitudinal community based study. *Journal of Affective Disorders, 11*, 236-243. doi:10.1016/j.jad.2008.05.018

Penninx, B. W., Beekman, A. T., Smit, J. H., Zitman, F. G., et al. (2008). The Netherlands Study of Depression and Anxiety (NESDA): rationale, objectives and methods. *International Journal of Methods in Psychiatric Research, 17*, 121-140. doi:10.1002/mpr.256

Peragallo Urrutia, R., Berger, A. A., Ivins, A. A., Beckham, A. J., et al. (2015). Internet use and access among pregnant women via computer and mobile phone: implications for delivery of perinatal care. *JMIR Mhealth Uhealth, 3*, 1-10. doi:10.2196/mhealth.3347

Perren, S., Von Wyl, A., Burgin, D., Simoni, H., et al. (2005). Depressive symptoms and psychosocial stress across the transition to parenthood: associations with parental psychopathology and child difficult. *Journal of Psychosomatic Obstetrics and Gynecology, 26*, 173–183. doi:10.1080/01674820400028407

Petch, J., & Halford, W. K. (2008). Psycho-education to enhance couples' transition to parenthood. *Clinical Psychology Review, 28*, 1125-1137. doi:10.1016/j.cpr.2008.03.005

Petrou, S., Morrell, C. J., & Knapp, M. (2015). An overview of health economic aspects of perinatal depression. In J. Milgrom & A. W. Gemmill (Eds.), *Identifying Perinatal Depression and Anxiety: Evidence-Based Practice in Screening, Psychosocial Assessment, and Management* (pp. 228-239). West Sussex, UK: John Wiley & Sons Ltd.

Pierce, G. R. (1994). The Quality of Relationships Inventory: assessing the interpersonal context of social support. In B. R. Burleson, L. Terrance, & I. G. Sarason (Eds.), *Communication of Social Support: Messages, Interactions, Relationships, and Community* (pp. 247-264). Thousand Oaks, California, USA: Sage Publications, Inc.

Pilkington, P. D., Cairns, K. E., Milne, L. C., & Whelan, T. A. (2016a). Enhancing reciprocal partner support to prevent perinatal depression and anxiety: a Delphi consensus study. *BMC Psychiatry, 16*, 1-15. doi:10.1186/s12888-016-0721-0

Pilkington, P. D., Milne, L. C., Cairns, K. E., Lewis, J., et al. (2015a). Modifiable partner factors associated with perinatal depression and anxiety: a systematic review and meta-analysis. *J Affect Disord, 178*, 165-180. doi:10.1016/j.jad.2015.02.023

Pilkington, P. D., Rominov, H., Milne, L., Giallo, R., et al. (2016b). Partners to Parents: development of an on-line intervention for enhancing partner support and

preventing perinatal depression and anxiety. *Advances in Mental Health: Promotion, Prevention and Early Intervention, Early online access*. doi:10.1080/18387357.2016.1173517

Pilkington, P. D., Whelan, T. A., & Milne, L. C. (2015b). A review of partner-inclusive interventions for preventing postnatal depression and anxiety. *Clin Psych, 19*, 63-75. doi:10.1111/cp.12054

Pinquart, M., & Teubert, D. (2010). A meta-analytic study of couple interventions during the transition to parenthood. *Family Relations, 59*, 221-231. doi:10.1111/j.1741-3729.2010.00597.x

Pitt, B. (1968). "Atypical" depression following childbirth. *British Journal of Psychiatry, 114*, 1325-1335. doi:10.1192/bjp.114.516.1325

Post and Antenatal Depression Association. (2012). The cost of perinatal depression in Australia. Retrieved from http://www.panda.org.au/images/stories/PDFs/PANDA_Exec_Summ_Deloitte_Web.pdf

Powell, C. (2003). The Delphi technique: myths and realities. *Journal of Advanced Nursing, 41*, 376-382. doi:10.1046/j.1365-2648.2003.02537.x

Power, M., Champion, L., & Aris, S. (1988). The development of a measure of social support: the Significant Others (SOS) Scale. *British Journal of Clinical Psychology, 27*, 349-358. doi:10.1111/j.2044-8260.1988.tb00799.x

QSR International. (2012a). NCapture (Version 1.0.136.0). Doncaster, Australia: QSR International Pty Ltd.

QSR International. (2012b). NVivo Qualitative Data Analysis Software (Version 10). Doncaster, Australia: QSR International Pty Ltd.

Qualtrics. (2013). Qualtrics software (Version 2013). Provo, UT: Qualtrics.

Quinlivan, J. A., & Condon, J. (2005). Anxiety and depression in fathers in teenage pregnancy. *Australian and New Zealand Journal of Psychiatry, 39*, 915-920. doi:10.1111/j.1440-1614.2005.01664.x

Rallis, S., Skouteris, H., McCabe, M., & Milgrom, J. (2014). The transition to motherhood: towards a broader understanding of perinatal distress. *Women and Birth, 27*, 68-71. doi:10.1016/j.wombi.2013.12.004

Ramchandani, P., Stein, A., Evans, J., & O'Connor, T. G. (2005). Paternal depression in the postnatal period and child development: a prospective population study. *The Lancet, 365*, 2201-2205. doi:10.1016/s0140-6736(05)66778-5

Ramchandani, P. G., Richter, L. M., Stein, A., & Norris, S. A. (2009). Predictors of postnatal depression in an urban South African cohort. *Journal of Affective Disorders, 113*, 279-284. doi:10.1016/j.jad.2008.05.007

Rands, M. (1981). Patterns of conflict resolution and marital satisfaction. *Journal of Family Issues, 2*, 297-322.

Ray, S., & Stowe, Z. N. (2014). The use of antidepressant medication in pregnancy. *Best Practice and Research: Clinical Obstetrics and Gynaecology, 28*, 71-83. doi:10.1016/j.bpobgyn.2013.09.005

Reavley, N. J., Ross, A., Killackey, E. J., & Jorm, A. F. (2012). Development of guidelines to assist organisations to support employees returning to work after an episode of anxiety, depression or a related disorder: a Delphi consensus study with Australian professionals and consumers. *BMC Psychiatry, 12*, 135-142. doi:10.1186/1471-244X-12-135

Reck, C., Noe, D., Gerstenlauer, J., & Stehle, E. (2012). Effects of postpartum anxiety disorders and depression on maternal self-confidence. *Infant Behavior and Development, 35*, 264-272. doi:10.1016/j.infbeh.2011.12.005

Reid, H., Power, M., & Cheshire, K. (2009). Factors influencing antenatal depression, anxiety and stress. *British Journal of Midwifery, 17*, 501-508. doi:10.12968/bjom.2009.17.8.43643

Reissland, N., & Burt, M. (2010). Bi-directional effects of depressed mood in the postnatal period on mother–infant non-verbal engagement with picture books. *Infant Behavior and Development, 33*, 613-618. doi:10.1016/j.infbeh.2010.07.013

Rich-Edwards, J. W., Kleinman, K., Abrams, A., Harlow, B. L., et al. (2006). Sociodemographic predictors of antenatal and postpartum depressive symptoms among women in a medical group practice. *Journal of Epidemiology and Community Health, 60*, 221-227. doi:10.1136/jech.2005.039370

Rini, C., & Dunkel Schetter, C. (2010). The effectiveness of social support attempts in intimate relationships. In K. T. Sullivan & J. Davila (Eds.), *Support Processes in Intimate Relationships*. USA: Oxford University Press.

Rini, C., Schetter, C. D., Hobel, C. J., Glynn, L. M., et al. (2006). Effective social support: antecedents and consequences of partner support during pregnancy. *Personal Relationships, 13*, 207-229. doi:10.1111/j.1475-6811.2006.00114.x

Robertson, E., Grace, S., Wallington, T., & Stewart, D. E. (2004). Antenatal risk factors for postpartum depression: a synthesis of recent literature. *General Hospital Psychiatry, 26*, 289-295. doi:10.1016/j.genhosppsych.2004.02.006

Rodriguez, L. M., Neighbors, C., & Knee, C. R. (2014). Problematic alcohol use and marital distress: an interdependence theory perspective. *Addiction Research and Theory, 22*, 294-312. doi:10.3109/16066359.2013.841890

Rosand, G. M., Slinning, K., Eberhard-Gran, M., Roysamb, E., et al. (2011). Partner relationship satisfaction and maternal emotional distress in early pregnancy. *BMC Public Health, 11*, 1-12. doi:10.1186/1471-2458-11-161

Rosenquist, S. E. (2013). When the bough breaks: rethinking treatment strategies for perinatal depression. *American Journal of Clinical Hypnosis, 55*, 291-323. doi:10.1080/00029157.2012.723284

Rosenthal, R., & Rubin, D. B. (2003). r equivalent: a simple effect size indicator. *Psychological Methods, 8*, 492-496. doi:10.1037/1082-989x.8.4.492

Ross, L., Sellers, E., Gilbert Evans, S., & Romach, M. (2004). Mood changes during pregnancy and the postpartum period: development of a biopsychosocial model. *Acta Psychiatrica Scandinavica, 109*, 457-466. doi:10.1111/j.1600-0047.2004.00296.x

Ross, L. E. (2005). Perinatal mental health in lesbian mothers: a review of potential risk and protective factors. *Women and Health, 41*, 113-128. doi:10.1300/J013v41n03_07

Ross, L. E., Steele, L., Goldfinger, C., & Strike, C. (2007). Perinatal depressive symptomatology among lesbian and bisexual women. *Arch Womens Ment Health, 10*, 53-59. doi:10.1007/s00737-007-0168-x

Ross, L. E., Steele, L., & Sapiro, B. (2005). Perceptions of predisposing and protective factors for perinatal depression in same-sex parents. *Journal of Midwifery and Women's Health, 50*, e65-70. doi:10.1016/j.jmwh.2005.08.002

Rowe, G., & Wright, G. (1999). The Delphi technique as a forecasting tool: issues and analysis. *International Journal of Forecasting, 15*, 353-375. doi:10.1016/s0169-2070(99)00018-7

Rowe, H., & Fisher, J. (2010). Development of a universal psycho-educational intervention to prevent common postpartum mental disorders in primiparous women: a multiple method approach. *BMC Public Health, 10*, 499-554. doi:10.1186/1471-2458-10-499

Rowe, H., Holton, S., & Fisher, J. (2013). Postpartum emotional support: a qualitative study of women's and men's anticipated needs and preferred sources. *Australian Journal of Primary Health, 19*, 46-52. doi:10.1071/PY11117

Rowe, R. E., & Garcia, J. (2003). Social class, ethnicity and attendance for antenatal care in the United Kingdom: a systematic review. *Journal of Public Health, 25*, 113-119. doi:10.1093/pubmed/fdg025

Ruehlman, L. S., & Karoly, P. (1991). With a little flak from my friends: development and preliminary validation of the Test of Negative Social Exchange (TENSE). *Psychological Assessment: A Journal of Consulting and Clinical Psychology, 3*, 97-104. doi:10.1037//1040-3590.3.1.97

Russell, D. W., & Cutrona, C. E. (1984). *Social Provisions Scale*: Iowa State University.

Sackett, D. L., Rosenberg, W. M., Gray, J., Haynes, R. B., et al. (1996). Evidence based medicine: what it is and what it isn't. *British Medical Journal, 312*, 71-72. doi:10.1136/bmj.312.7023.71

Salmela-Aro, K., Aunola, K., Saisto, T., Halmesmäki, E., et al. (2006). Couples share similar changes in depressive symptoms and marital satisfaction anticipating the birth of a child. *Journal of Social and Personal Relationships, 23*, 781-803. doi:10.1177/0265407506068263

Salonen, A. H., Kaunonen, M., Astedt-Kurki, P., Jarvenpaa, A. L., et al. (2010). Parenting satisfaction during the immediate postpartum period: factors contributing to mothers' and fathers' perceptions. *Journal of Clinical Nursing, 19*, 1716-1728. doi:10.1111/j.1365-2702.2009.02971.x

Sanders, M. R., & Kirby, J. N. (2012). Consumer engagement and the development, evaluation, and dissemination of evidence-based parenting programs. *Behavior Therapy, 43*, 236-250. doi:10.1016/j.beth.2011.01.005

Sandler, I., Wolchik, S. A., Cruden, G., Mahrer, N. E., et al. (2014). Overview of meta-analyses of the prevention of mental health, substance use, and conduct problems. *Annual Review of Clinical Psychology, 10*, 243-273. doi:10.1146/annurev-clinpsy-050212-185524

Schiller, C. E., Meltzer-Brody, S., & Rubinow, D. R. (2014). The role of reproductive hormones in postpartum depression. *CNS Spectrums*, 1-12. doi:10.1017/s1092852914000480

Schmied, V., Johnson, M., Naidoo, N., Austin, M. P., et al. (2013). Maternal mental health in Australia and New Zealand: a review of longitudinal studies. *Women and Birth, 26*, 167-178. doi:10.1016/j.wombi.2013.02.006

Schumacher, M., Zubaran, C., & White, G. (2008). Bringing birth-related paternal depression to the fore. *Women and Birth, 21*, 65-70. doi:10.1016/j.wombi.2008.03.008

Schwarzer, R. (2008). Modeling health behavior change: How to predict and modify the adoption and maintenance of health behaviors. *Applied Psychology, 57*, 1-29. doi:10.1111/j.1464-0597.2007.00325.x

SCImago. (2015). SCIMago Journal and Country Rank. Retrieved from http://www.scimagojr.com

Seyfried, L. S., & Marcus, S. M. (2003). Postpartum mood disorders. *International Review of Psychiatry, 15*, 231-242. doi:10.1080/0954026031000136857

Seymour, M., Giallo, R., Cooklin, A., & Dunning, M. (2015). Maternal anxiety, risk factors and parenting in the first post-natal year. *Child: Care, Health and Development, 41*, 314-323. doi:10.1111/cch.12178

Shakespeare, J., Blake, F., & Garcia, J. (2003). A qualitative study of the acceptability of routine screening of postnatal women using the Edinburgh Postnatal Depression Scale. *British Journal of General Practice, 53*, 614-619.

Shamblen, S. R., & Derzon, J. H. (2009). A preliminary study of the population-adjusted effectiveness of substance abuse prevention programming: towards making IOM program types comparable. *Journal of Primary Prevention, 30*, 89-107. doi:10.1007/s10935-009-0168-x

Shapiro, A., & Gottman, J. (2005). Effects on marriage of a psycho-communicative-educational intervention with couples undergoing the transition to parenthood, evaluation at 1-year post intervention. *Journal of Family Communication, 5*, 1-24. doi:10.1207/s15327698jfc0501_1

Shapiro, A., Gottman, J., & Carrere, S. (2000). The baby and the marriage: identifying factors that buffer against decline in marital satisfaction after the first baby arrives. *Journal of Family Psychology, 14*, 59-70. doi:10.1037//0893-3200.14.1.59

Sit, D., Rothschild, A. J., & Wisner, K. L. (2006). A review of postpartum psychosis. *Journal of Women's Health, 15*, 352-368. doi:10.1089/jwh.2006.15.352

Sit, D. K. Y., & Wisner, K. L. (2009). Identification of postpartum depression. *Clinical Obstetrics and Gynaeocology, 52*, 456-468. doi:10.2147/IJWH.S6938

Skari, H., Skreden, M., Malt, U. F., Dalholt, M., et al. (2002). Comparative levels of psychological distress, stress symptoms, depression and anxiety after childbirth—a prospective population-based study of mothers and fathers. *British Journal of Obstetrics and Gynaecology, 109*, 1154–1163. doi:10.1111/j.1471-0528.2002.00468.x

Skouteris, H., Wertheim, E. H., Rallis, S., Milgrom, J., et al. (2009). Depression and anxiety through pregnancy and the early postpartum: an examination of prospective relationships. *Journal of Affective Disorders, 113*, 303-308. doi:10.1016/j.jad.2008.06.002

Small, R., Taft, A. J., & Brown, S. J. (2011). The power of social connection and support in improving health: lessons from social support interventions with childbearing women. *BMC Public Health, 11*, S4. doi:10.1186/1471-2458-11-s5-s4

Small, R., Watson, L., Gunn, J., Mitchell, C., et al. (2014). Improving population-level maternal health: a hard nut to crack? Long term findings and reflections on a 16-community randomised trial in Australia to improve maternal emotional and physical health after birth *PLoS One, 9*, e88457. doi:10.1371/journal.pone.0088457

Smith, G. C., Kohn, S. J., Savage-Stevens, S. E., Finch, J. J., et al. (2000). The effects of interpersonal and personal agency on perceived control and psychological well-being in adulthood. *The Gerontologist, 40*, 458-468. doi:10.1093/geront/40.4.458

Soares, C. N., & Zitek, B. (2008). Reproductive hormone sensitivity and risk for depression across the female life cycle: a continuum of vulnerability? *Journal of Psychiatry and Neuroscience, 33*, 331-345.

Sockol, L. E., Epperson, C. N., & Barber, J. P. (2013). Preventing postpartum depression: a meta-analytic review. *Clinical Psychology Review, 33*, 1205-1217. doi:10.1016/j.cpr.2013.10.004

Solmeyer, A. R., Feinberg, M. E., Coffman, D. L., & Jones, D. E. (2014). The effects of the Family Foundations prevention program on coparenting and child adjustment: a mediation analysis. *Prevention Science, 15*, 213-223. doi:10.1007/s11121-013-0366-x

Spanier, G. B. (1976). Measuring dyadic adjustment: new scales for assessing the quality of marriage and similar dyads. *Journal of Marriage and the Family, 38*, 15-28. doi:10.2307/350547

Spence, J. T., Helmreich, R. L., & Sawin, L. L. (1980). The Male-Female Relations Questionnaire: a self-report inventory of sex role behaviors and preferences and its relationships to masculine and feminine personality traits, sex role attitudes, and other measures. *Journal Supplement Abstract Service Selected Documents in Psychology, 10*, 87-90.

Stavrositu, C. D., & Kim, J. (2015). All blogs are not created equal: the role of narrative formats and user-generated comments in health prevention. *Health Communication, 30*, 485-495. doi:10.1080/10410236.2013.867296

Stein, A., Pearson, R. M., Goodman, S. H., Rapa, E., et al. (2014). Effects of perinatal mental disorders on the fetus and child. *The Lancet, 384*, 1800-1819. doi:10.1016/s0140-6736(14)61277-0

StGeorge, J. M., & Fletcher, R. J. (2011). Fathers online: learning about fatherhood through the internet. *Journal of Perinatal Education, 20*, 154. doi:10.1891/1058-1243.20.3.154

Sullivan, K. T., & Davila, J. (2010). *Support Processes in Intimate Relationships*. USA: Oxford University Press.

Sword, W., Clark, A. M., Hegadoren, K., Brooks, S., et al. (2012). The complexity of postpartum mental health and illness: a critical realist study. *Nursing Inquiry, 19*, 51-62. doi:10.1111/j.1440-1800.2011.00560.x

Teixeira, C., Figueiredo, B., Conde, A., Pacheco, A., et al. (2009). Anxiety and depression during pregnancy in women andmen. *Journal of Affective Disorders, 119*, 142–148. doi:10.1016/j.jad.2009.03.005

Teixeira, J., Martin, D., Prendiville, O., & Glover, V. (2005). The effects of acute relaxation on indices of anxiety during pregnancy. *Journal of Psychosomatic Obstetrics and Gynecology, 26*, 271-276. doi:10.1080/01674820500139922

Thoits, P. A. (2011). Mechanisms linking social ties and support to physical and mental health. *Journal of Health and Social Behavior, 52*, 145-161. doi:10.1177/0022146510395592

Thornton, A., & Lee, P. (2000). Publication bias in meta-analysis: its causes and consequences. *Journal of Clinical Epidemiology, 53*, 207-216. doi:10.1016/s0895-4356(99)00161-4

Trettin, S., Moses-Kolko, E. L., & Wisner, K. L. (2006). Lesbian perinatal depression and the heterosexism that affects knowledge about this minority population. *Archives of Women's Mental Health, 9*, 67-73. doi:10.1007/s00737-005-0106-8

Umscheid, C. A. (2013). A primer on performing systematic reviews and meta-analyses. *Clinical Infectious Diseases, 57*, 725-734. doi:10.1093/cid/cit333

Urech, C., Fink, N. S., Hoesli, I., Wilhelm, F. H., et al. (2010). Effects of relaxation on psychobiological wellbeing during pregnancy: a randomized controlled trial. *Psychoneuroendocrinology, 35*, 1348-1355. doi:10.1016/j.psyneuen.2010.03.008

Van den Bergh, B. R., Mulder, E. J., Mennes, M., & Glover, V. (2005). Antenatal maternal anxiety and stress and the neurobehavioural development of the fetus and child: links and possible mechanisms: a review. *Neuroscience and Biobehavioral Reviews, 29*, 237-258. doi:10.1016/j.neubiorev.2004.10.007

van Gemert-Pijnen, J. E., Nijland, N., van Limburg, M., Ossebaard, H. C., et al. (2011). A holistic framework to improve the uptake and impact of eHealth technologies. *Journal of Medical Internet Research, 13*, e111. doi:10.2196/jmir.1672

Van Velsen, L., Wentzel, J., & Van Gemert-Pijnen, J. E. (2013). Designing eHealth that matters via a multidisciplinary requirements development approach. *JMIR Research Protocols 2*, e21. doi:10.2196/resprot.2547

Verkerk, G. J., Denollet, J., Van Heck, G. L., Van Son, M. J., et al. (2005). Personality factors as determinants of depression in postpartum women: a prospective 1-year follow-up study. *Psychosomatic Medicine, 67*, 632-637. doi:10.1097/01.psy.0000170832.14718.98

Vliegen, N., Casalin, S., & Luyten, P. (2014). The course of postpartum depression: a review of longitudinal studies. *Harvard Review of Psychiatry, 22*, 1-22. doi:10.1097/hrp.0000000000000013

Wallby, T., Modin, B., & Hjern, A. (2012). Child health care utilisation in families with young or single mothers in a Swedish county. *Journal of Child Health Care, 17*, 17-29. doi:10.1177/1367493512450624

Walster, E., Berscheid, E., & Walster, G. W. (1973). New directions in equity research. *Journal of Personality and Social Psychology, 25*, 151-176. doi:10.1037/h0033967

Watts, S. E., & Andrews, G. (2014). Internet access is NOT restricted globally to high income countries: so why are evidenced based prevention and treatment programs for

mental disorders so rare? *Asian Journal of Psychiatry, 10*, 71-74. doi:10.1016/j.ajp.2014.06.007

Wee, K. Y., Pier, C., Milgrom, J., Richardson, B., et al. (2013). Fathers' mental health during the ante- and postnatal periods: knowledge, recommendations and interventions. *British Journal of Midwifery, 21*, 342-353. doi:10.1177/0192513x13477411

Wee, K. Y., Skouteris, H., Pier, C., Richardson, B., et al. (2011). Correlates of ante- and postnatal depression in fathers: a systematic review. *Journal of Affective Disorders, 130*, 358-377. doi:10.1016/j.jad.2010.06.019

Wee, K. Y., Skouteris, H., Richardson, B., McPhie, S., et al. (2015). The inter-relationship between depressive, anxiety and stress symptoms in fathers during the antenatal period. *Journal of Reproductive and Infant Psychology, 33*, 359-373. doi:10.1080/02646838.2015.1048199

Weinstein, N. D. (1982). Unrealistic optimism about susceptibility to health problems. *Journal of Behavioral Medicine, 5*, 441-460. doi:10.1007/bf00845372

Werner, E., Miller, M., Osborne, L. M., Kuzava, S., et al. (2014). Preventing postpartum depression: review and recommendations. *Archives of Women's Mental Health, 18*, 41-60. doi:10.1007/s00737-014-0475-y

Wheatley, S. L., Brugha, T. S., & Shapiro, D. A. (2003). Exploring and enhancing engagement to the psychosocial intervention 'Preparing for Parenthood'. *Archives of Women's Mental Health, 6*, 275-285. doi:10.1007/s00737-003-0025-5

Whiffen, V., & Gotlib, I. (1993). Comparison of postpartum and nonpostpartum depression: clinical presentation, psychiatric history, and psychosocial functioning. *Journal of Consulting and Clinical Psychology, 61*, 485-494. doi:10.1037//0022-006X.61.3.485

Whisman, M. A., Davila, J., & Goodman, S. H. (2011). Relationship adjustment, depression, and anxiety during pregnancy and the postpartum period. *Journal of Family Psychology, 25*, 375–383. doi:10.1037/a0023790

Widarsson, M., Engstrom, G., Tyden, T., Lundberg, P., et al. (2015). 'Paddling upstream': Fathers' involvement during pregnancy as described by expectant fathers and mothers. *Journal of Clinical Nursing, 24*, 1059-1068. doi:10.1111/jocn.12784

Wilhelm, K., & Parker, G. (1988). The development of a measure of intimate bonds. *Psychological Medicine, 18*, 225-234. doi:10.1017/s0033291700002051

Wisner, K. L. (2004). Timing of depression recurrence in the first year after birth. *Journal of Affective Disorders, 78*, 249-252. doi:10.1016/S0165-0327(02)00305-1

Woolhouse, H., Brown, S., Krastev, A., Perlen, S., et al. (2009). Seeking help for anxiety and depression after childbirth: results of the Maternal Health Study. *Archives of Women's Mental Health, 12*, 75-83. doi:10.1007/s00737-009-0049-6

Woolhouse, H., McDonald, E., & Brown, S. J. (2014). Changes to sexual and intimate relationships in the postnatal period: women's experiences with health professionals. *Australian Journal of Primary Health, 20*, 298-304. doi:10.1071/py13001

Wylie, L., Hollins Martin, C. J., Marland, G., Martin, C. R., et al. (2011). The enigma of post-natal depression: an update. *Journal of Psychiatric and Mental Health Nursing, 18*, 48-58. doi:10.1111/j.1365-2850.2010.01626.x

Wynter, K., Rowe, H., & Fisher, J. (2013a). Common mental disorders in women and men in the first six months after the birth of their first infant: a community study in Victoria, Australia. *Journal of Affective Disorders, 151*, 980-985. doi:10.1016/j.jad.2013.08.021

Wynter, K., Rowe, H., & Fisher, J. (2013b). Interactions between perceptions of relationship quality and postnatal depressive symptoms in Australian, primiparous women and

their partners. *Australian Journal of Primary Health, 20*, 174-182. doi:10.1071/PY12066

Yap, M. B., Pilkington, P. D., Ryan, S. M., Kelly, C. M., et al. (2014). Parenting strategies for reducing the risk of adolescent depression and anxiety disorders: a Delphi consensus study. *Journal of Affective Disorders, 156*, 67-75. doi:10.1016/j.jad.2013.11.017

Yelland, J. (2010). Postpartum anxiety, depression and social health: findings from a population-based survey of Australian women. *BMC Public Health, 10*, 771-782. doi:10.1186/1471-2458-10-771

Yelland, J. S., Sutherland, G. A., & Brown, S. J. (2012). Women's experience of discrimination in Australian perinatal care: the double disadvantage of social adversity and unequal care. *Birth, 39*, 211-220. doi:10.1111/j.1523-536x.2012.00550.x

Yim, I. S., Tanner Stapleton, L. R., Guardino, C. M., Hahn-Holbrook, J., et al. (2015). Biological and psychosocial predictors of postpartum depression: systematic review and call for integration. *Annual Review of Clinical Psychology, 11*, 99-137. doi:10.1146/annurev-clinpsy-101414-020426

Yonkers, K. A., Blackwell, K. A., Glover, J., & Forray, A. (2013). Antidepressant use in pregnant and postpartum women. *Annual Review of Clinical Psychology, 10*, 369-392. doi:10.1146/annurev-clinpsy-032813-153626

Appendix A. Research portfolio

Published refereed papers as chapters of the thesis

Pilkington, P.D., Whelan, T.A, & Milne, L.C. (2015). A review of partner-inclusive interventions for preventing postnatal depression and anxiety, *Clinical Psychologist*, *19,* 63-75. doi: 10.1111/cp.12054 (Chapter 5)

Pilkington, P.D., Milne, L.C., Cairns, K.E., Lewis, J., & Whelan, T.A., (2015). Modifiable partner factors associated with perinatal depression and anxiety: a systematic review and meta-analysis, *Journal of Affective Disorders, 178,* 165-180. doi: 10.1016/j.jad.2015.02.023 (Chapter 6)

Pilkington, P. D., Cairns, K. E., Milne, L. C., & Whelan, T. A. (2016). Enhancing reciprocal partner support to prevent perinatal depression and anxiety: a Delphi consensus study. *BMC Psychiatry, 16,* 1-15. doi:10.1186/s12888-016-0721-0 (Chapter 7)

Pilkington, P. D., Rominov, H., Milne, L., Giallo, R., et al. (2016). Partners to Parents: development of an on-line intervention for enhancing partner support and preventing perinatal depression and anxiety. *Advances in Mental Health: Promotion, Prevention and Early Intervention,* Early online access. doi:10.1080/18387357.2016.1173517 (Chapter 8).

Proof of Acceptance

Clinical Psychologist

Clinical Psychologist •• (2015) ••–••

APS Australian Psychological Society

A review of partner-inclusive interventions for preventing postnatal depression and anxiety

Pamela D. PILKINGTON, Thomas A. WHELAN and Lisa C. MILNE

School of Psychology, Faculty of Health Sciences, Australian Catholic University, Fitzroy, Victoria, Australia

Key words
anxiety, depression, partner, postpartum, prevention.

Correspondence
Pamela D. Pilkington, School of Psychology, Faculty of Health Sciences, Australian Catholic University, Locked Bag 4115, Fitzroy, Vic. 3065, Australia.
Email: ta0126503@myacu.edu.au

Received 30 April 2014; accepted 6 November 2014.

doi:10.1111/cp.12054

Abstract

Background: Preventing perinatal mood problems is critical because of the adverse consequences for the individual and their family. Partner support is an ideal target for prevention efforts as it is a protective factor for both perinatal depression and anxiety and is modifiable.
Method: This review explores the current evidence and future directions for interventions that aim to reduce the risk of perinatal mood problems by addressing partner support. A systematic search of electronic databases was conducted to identify relevant peer-reviewed studies. Interventions were eligible for inclusion if they aimed to facilitate partner support or strengthen the couple relationship, and included perinatal depression or anxiety as an outcome variable.
Results: A number of prevention efforts have been developed that include a partner component, and these have reported some benefits. Even so, not all of these interventions were delivered to both mothers and fathers, and research evaluating their effects on paternal mental health is lacking. In addition, current prevention strategies tend to be limited by low attendance rates.
Conclusions: Future research should focus on developing interventions that provide more opportunities for the active involvement of both partners. Alternatives to psycho-education groups should be explored to increase accessibility and enable scalability.

Key Points

1 Partner support is an ideal target for prevention efforts targeting perinatal depression and anxiety as it has been consistently identified as a protective factor and is modifiable.
2 Existing partner-inclusive interventions to prevent perinatal depression and anxiety have shown benefits but are limited by their relatively low uptake and their tendency to exclude fathers.
3 Future research should acknowledge that perinatal depression and anxiety can occur in both parents and increase engagement by exploring alternatives to antenatal classes, such as web-based interventions.

Funding: Pamela D. Pilkington was funded by an Australian Postgraduate Award awarded by the Australian Government.
Conflict of interest: None.

Introduction

Childbirth is widely seen as a cause for joy and happiness. Nonetheless, the transition to parenthood is also associated with fatigue and stress as it requires significant adjustment to new roles and responsibilities (Nagata, Nagai, Sobajima, Ando, & Honjo, 2004). New parents are vulnerable to mood problems as they adapt to this major life event. Indeed, depression is reported to affect up to 13% of mothers (Gavin et al., 2005) and 10% of fathers (Paulson & Bazemore, 2010) during the perinatal period (i.e., pregnancy to 12 months postpartum). Perinatal anxiety is also common, affecting between 7% and 13% of parents (Miller, Paliant, & Negri, 2006; Skari et al., 2002). Preventing perinatal mood problems is critical because of the potential adverse impact on the parent's physical and mental health (O'Hara, 2009) and functioning (Mazure, Keita, & Blehar, 2002). Of particular concern are the significant deleterious effects of perinatal distress on the infant's cognitive and emotional development (Ramchandani, Stein, Evans, & O'Connor, 2005).

Journal of Affective Disorders 178 (2015) 165–180

Contents lists available at ScienceDirect

Journal of Affective Disorders

journal homepage: www.elsevier.com/locate/jad

Review

Modifiable partner factors associated with perinatal depression and anxiety: A systematic review and meta-analysis

Pamela D. Pilkington [a,*], Lisa C. Milne [a], Kathryn E. Cairns [b], James Lewis [c], Thomas A. Whelan [a]

[a] School of Psychology, Faculty of Health Sciences, Australian Catholic University, Australia
[b] Melbourne School of Population and Global Health, University of Melbourne, Australia
[c] School of Psychological Science, Faculty of Science, Technology and Engineering, La Trobe University Australia

ARTICLE INFO

Article history:
Received 21 November 2014
Received in revised form
20 February 2015
Accepted 23 February 2015
Available online 6 March 2015

Keywords:
Anxiety
Depression
Meta-analysis
Partner
Perinatal

ABSTRACT

Background: Perinatal distress is a significant public health problem that adversely impacts the individual and their family. The primary objective of this systematic review and meta-analysis was to identify factors that partners can modify to protect each other from developing perinatal depression and anxiety.

Method: In accordance with the PRISMA statement, we reviewed the risk and protective factors associated with perinatal depression and anxiety symptoms that partners can potentially modify without professional assistance (PROSPERO reference CRD42014007524). Participants were new or expectant parents aged 16 years or older. The partner factors were sub-grouped into themes (e.g., instrumental support) based on a content analysis of the scale items and measure descriptions. A series of meta-analyses were conducted to estimate the pooled effect sizes of associations.

Results: We included 120 publications, reporting 245 associations with depression and 44 with anxiety. Partner factors with sound evidence that they protect against both perinatal depression and anxiety are: emotional closeness and global support. Partner factors with a sound evidence base for depression only are communication, conflict, emotional and instrumental support, and relationship satisfaction.

Limitations: This review is limited by the lack of generalizability to single parents and the inability to systematically review moderators and mediators, or control for baseline symptoms.

Conclusion: The findings suggest that future prevention programs targeting perinatal depression and anxiety should aim to enhance relationship satisfaction, communication, and emotional closeness, facilitate instrumental and emotional support, and minimize conflict between partners.

Contents

* Correspondence to: School of Psychology, Faculty of Health Sciences, Australian Catholic University, Locked Bag 4115, Fitzroy, Victoria 3065, Australia. Tel.: +61 3 9953 3212; fax: +61 3 9953 3205.
E-mail address: pam.pilkington@acu.edu.au (P.D. Pilkington).

http://dx.doi.org/10.1016/j.jad.2015.02.023
0165-0327/

Pilkington et al. BMC Psychiatry (2016) 16:23
DOI 10.1186/s12888-016-0721-0

BMC Psychiatry

RESEARCH ARTICLE Open Access

Enhancing reciprocal partner support to prevent perinatal depression and anxiety: a Delphi consensus study

Pamela Pilkington[1], Lisa Milne[1], Kathryn Cairns[2] and Thomas Whelan[1*]

Abstract

Background: Systematic reviews have established that partner support protects against perinatal mood problems. It is therefore a key target for interventions designed to prevent maternal and paternal depression and anxiety. Nonetheless, the extant literature is yet to be translated into specific actions that parents can implement. Prevention efforts aiming to facilitate reciprocal partner support within the couple dyad need to provide specific guidance on how partners can support one another to reduce their vulnerability to perinatal depression and anxiety.

Method: Two panels of experts in perinatal mental health (21 consumer advocates and 39 professionals) participated in a Delphi consensus study to establish how partners can support one another to reduce their risk of developing depression and anxiety during pregnancy and the postpartum period.

Results: A total of 214 recommendations on how partners can support each other were endorsed by at least 80 % of both panels as important or essential in reducing the risk of perinatal depression and anxiety. The recommendations were grouped under the following categories: becoming a parent, supporting each other through pregnancy and childbirth, communication, conflict, division of labor, practical support, emotional support, emotional closeness, sexual satisfaction, using alcohol and drugs, encouraging self care, developing acceptance, and help-seeking.

Conclusion: This study established consensus between consumers and professionals in order to produce a set of guidelines on how partners can support each other to prevent depression and anxiety during pregnancy and following childbirth. It is hoped that these guidelines will inform the development of perinatal depression and anxiety prevention efforts.

Keywords: Anxiety, Delphi, Depression, Partner, Perinatal, Prevention, Support

Background

Burden and prevalence

Perinatal distress is a significant public health problem that negatively impacts the individual [1], compromises the partner relationship [2], and can have significant deleterious effects on the child's development [3]. Depression and anxiety are common among parents during the perinatal period, with meta-analyses indicating that perinatal depression affects 12.9 of mothers [4] and 10.0 % of fathers [5]. Given the reluctance of some new parents to disclose that they are experiencing mood problems, the prevalence of perinatal distress is likely to be underreported [6–8]. The high prevalence of perinatal depression and anxiety and low rates of help-seeking [6] indicate a need for effective prevention approaches that target all parents [9]. The current study aimed to identify how we can enhance partner support and relationship satisfaction for both partners in the couple dyad, to reduce men and women's vulnerability to perinatal mood problems. We deliberately aimed to be inclusive of mothers and fathers in both opposite-sex and same-sex relationships.

A couples-based approach to preventing perinatal depression and anxiety

Partner support is a key target for prevention interventions for perinatal depression and anxiety as it is an

*Correspondence: tom.whelan@acu.edu.au
[1]School of Psychology, Faculty of Health Sciences, Australian Catholic University, Locked Bag 4115, Fitzroy, Victoria 3065, Australia
Full list of author information is available at the end of the article

ADVANCES IN MENTAL HEALTH, 2016
http://dx.doi.org/10.1080/18387357.2016.1173617

Routledge
Taylor & Francis Group

Partners to Parents: development of an online intervention for enhancing partner support and preventing perinatal depression and anxiety

Pamela D. Pilkington[a], Holly Rominov[a], Lisa C. Milne[a], Rebecca Giallo[b] and Thomas A. Whelan[a]

[a]School of Psychology, Faculty of Health Sciences, Australian Catholic University, Fitzroy, Australia; [b]Population Health Theme, Murdoch Childrens Research Institute, Parkville, Australia

ABSTRACT

Objective: Couples-based interventions to prevent perinatal depression and anxiety are needed to optimise parental well-being and infant mental health. Current interventions are limited by their focus on maternal mental health, postnatal outcomes, and a reliance on professionals for their delivery. This article describes the development of *Partners to Parents* (http://www.partnerstoparents.org), an online intervention for preventing perinatal depression and anxiety focused on enhancing partner support.

Method: Individual usability testing sessions were conducted with 12 parents in the perinatal period (7 women and 5 men) to assess the quality of the website. A deductive coding scheme was applied using NVivo 10 to identify comments relating to system and content quality of the website, as well as positive and negative comments.

Results: The results of the usability testing yielded more than 250 comments on system and content quality, potential barriers to accessing the website, and suggestions for improvement. This feedback was used to update the design of the intervention.

Discussion: The usability testing sessions suggested that the majority of the mothers and fathers involved perceived the website to be a useful new resource. Consultation with potential users of the website enabled refinement of the content and design of the *Partners to Parents* website.

ARTICLE HISTORY
Received 21 January 2016
Accepted 29 March 2016

KEYWORDS
Anxiety; depression; eHealth; partners; perinatal; prevention

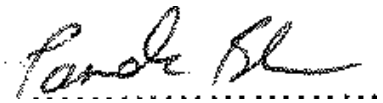
Introduction

Mood problems during the perinatal period (defined in this study as pregnancy and the first 12 months after birth) are a significant public health problem. Meta-analyses indicate that the combined period prevalence of maternal depression during pregnancy is 18.4%, while up to 19.2% of women have a depressive episode in the first three months postpartum (Gavin et al., 2005). Estimates of the prevalence of paternal depression are also high: 10.4% of fathers experience depression during the perinatal period, with the peak period prevalence being 25.6% at 3–6 months postpartum (Paulson & Bazemore, 2010). The

CONTACT Pamela D. Pilkington pam.pilkington@acu.edu.au

Copyright declaration

I warrant that I have obtained, where necessary, permission from the copyright owners to use any third-party copyright material reproduced in the thesis (e.g. questionnaires, artwork, unpublished letters), or to use any of my own published work (e.g. journal articles) in which the copyright is held by another party (e.g. publisher, co-author).



Pamela D. Pilkington

Statement of Contribution of Others

This thesis by publication comprises the original work of the author. In all published research studies, the author was the Principal Investigator, contributed 50% or more, and planned and prepared the work for publication.

Pilkington, P.D., Whelan, T.A, & Milne, L.C. (2015). A review of partner-inclusive interventions for preventing postnatal depression and anxiety, *Clinical Psychologist*, *19,* 63-75. doi: 10.1111/cp.12054

This publication is included as Chapter 5 of the thesis. Pamela Pilkington conceptualised the study and drafted the manuscript. Dr Thomas Whelan contributed to the study conception and critically revised the manuscript. Dr Lisa Milne critically revised the manuscript. All authors approved the final manuscript.

Pilkington, P.D., Milne, L.C., Cairns, K.E., Lewis, J., and Whelan, T.A., (2015). Modifiable partner factors associated with perinatal depression and anxiety: A systematic review and meta-analysis, *Journal of Affective Disorders, 178, 165-180*. doi: 10.1016/j.jad.2015.02.023

This publication is included as Chapter 6 of the thesis. Pamela Pilkington planned and executed the systematic review, completed the data extraction and analyses, and drafted the manuscript. Dr Thomas Whelan contributed to conceptualising the project and critically revised the manuscript. Kathryn Cairns assisted with data extraction and contributed to the manuscript. James Lewis assisted with data extraction and contributed to the manuscript. Dr Lisa Milne critically revised the manuscript. All authors approved the final manuscript.

Pilkington, P. D., Cairns, K. E., Milne, L. C., & Whelan, T. A. (2016). Enhancing reciprocal partner support to prevent perinatal depression and anxiety: a Delphi consensus study. *BMC Psychiatry, 16,* 1-15. doi:10.1186/s12888-016-0721-0

This publication is included as Chapter 7 of this thesis. Pamela Pilkington conceptualised the study, developed the questionnaire, collected and analysed the data, and drafted the manuscript. Dr Lisa Milne contributed to developing the study design, contributed to developing the questionnaire, and critically revised the manuscript. Kathryn Cairns contributed to developing the questionnaire and critically revised the manuscript. Dr Thomas Whelan contributed to the study conception and design, contributed to developing the questionnaire, and critically revised the manuscript. All authors approved the final manuscript.

Pilkington, P. D., Rominov, H., Milne, L., Giallo, R., et al. (2016). Partners to Parents: development of an on-line intervention for enhancing partner support and preventing perinatal depression and anxiety. *Advances in Mental Health: Promotion, Prevention and Early Intervention,* Early online access. doi:10.1080/18387357.2016.1173517

This publication is included as Chapter 8 of this thesis. Pamela Pilkington conceptualised the study, collected and analysed the data, and drafted the manuscript. Holly Rominov contributed to the study design, collected data, and critically revised the article. Dr Lisa Milne contributed to the study design and critically revised the article. Rebecca Giallo contributed to the study design and critically revised the article. Dr Thomas Whelan contributed to the study design and drafting the manuscript. All authors approved the final manuscript.

Appendix B. Registration of systematic review with PROSPERO

UNIVERSITY of York
Centre for Reviews and Dissemination

NHS
National Institute for Health Research

PROSPERO International prospective register of systematic reviews

---

Partner factors associated with perinatal depression and anxiety: a systematic review and meta-analysis

Pamela Pilkington, Tom Whelan, Lisa Milne, Kathryn Cairns, James Lewis

---

Citation

Pamela Pilkington, Tom Whelan, Lisa Milne, Kathryn Cairns, James Lewis. Partner factors associated with perinatal depression and anxiety: a systematic review and meta-analysis. PROSPERO 2014:CRD42014007524 Available fromhttp://www.crd.york.ac.uk/PROSPERO/display_record.asp?ID=CRD42014007524

Review question(s)

Which partner factors are associated with perinatal depression and anxiety?

Searches

Electronic databases PsycINFO, MEDLINE and CINAHL were searched on the 4th of February 2014 using the search terms "(partner or spouse or couple) and (depressi$ or distress or affective or mood or anxiety or PND) and (postpartum or postnatal or perinatal or antenatal or pregnancy)". The search terms were required to appear in the abstract. Where possible, searches were limited to peer-reviewed articles and articles written in English. No publication date limits were applied. Additional sources will be identified by hand searching reference lists of studies identified as relevant from the initial search, as well as by screening papers citing these relevant studies.

Types of study to be included

Include if

a. Retrospective

b. Longitudinal

c. Cross-sectional

d. Case-control

e. Peer-reviewed journal article

Exclude if

a. Does not report data (e.g., review paper, meta-analysis, or discussion paper)

b. Reports a single case study

c. Participants were exposed to an intervention

d. Article not in English

Condition or domain being studied

Perinatal depression is defined as an episode of major depressive disorder occurring either during pregnancy or within the first 12 months postpartum.

Perinatal anxiety is defined as symptoms of excessive anxiety occurring either during pregnancy or within the first 12 months postpartum.

Participants/ population

Include if

a. Participants are expectant parents, or parents of infants aged 12 months or younger at the time the independent variable was assessed.

b. All participants are at least 16 years of age.

Exclude if

a. Study reports findings for a clinical sample in the absence of a control group.

Intervention(s), exposure(s)

Include if

a. IV is actionable and modifiable by partners*

b. IV was assessed during pregnancy or up to 12 months postpartum

Exclude if

a. IV is a composite of multiple risk and protective factors

b. Intimate partner violence (i.e., physical or sexual abuse)

*The term partner refers to the adult with whom the mother or father of the baby shares an intimate relationship, including de facto and same-sex relationships.

Comparator(s)/ control

Not applicable.

Context

Studies on expecting parents/parents of infants aged up to 12 months that examine partner factors as a predictors of perinatal depression and/or anxiety.

Outcome(s)
Primary outcomes

Include if

a. Depression

b. Anxiety

c. Stress

d. Distress

Exclude if

a. DV lacks adequate specificity (e.g., measure of general psychopathology)

b. DV is a measure of temporary or observed levels of depressed affect or anxiety

c. Assessed prior to pregnancy or beyond 12 months postpartum (e.g., Life time diagnosis of depression)

Secondary outcomes

None.

Data extraction, (selection and coding)

Associations between partner factors and perinatal depression and anxiety outcome variables will be extracted from the studies that meet full inclusion criteria by PP, using a standardised extraction sheet and codebook. The following data will be extracted: basic descriptive information about the sample, the study design, length of follow-up periods, details of the predictor and outcome variables, and the effect size and direction. A set of rules has been developed to standardise the process. Two research assistants (KC and JL) will independently extract the data to confirm accurate extraction. Discrepancies will be discussed between PP and the research assistant. Any differences that remain will be resolved through consultation with TW and LM.

Risk of bias (quality) assessment

Not applicable.

Strategy for data synthesis

A quantitative synthesis is planned. A meta-analysis will be conducted using Comprehensive Meta-Analysis software to evaluate the associations between each partner factor and perinatal depression and anxiety. As the range of statistical approaches and methodologies in the literature will prevent the extraction of standard effect sizes for all studies, Stouffer's method of combining p values will also be used to synthesise the findings. This method tests the combined significance level rather than assessing effect magnitude and can therefore be applied to studies which analyse data in a variety of ways. Stouffer's z's will be calculated to determine the overall p value of the associations reviewed for each combination of partner factor and outcome (depression, anxiety).

Analysis of subgroups or subsets

Gender differences will be explored.

Dissemination plans

The review will be published in a peer-reviewed journal.

Contact details for further information

Pamela Pilkington

School of Psychology

Faculty of Health Sciences

Australian Catholic University

115 Victoria Parade (Locked Bag 4115)

Fitzroy VIC 3065 AUSTRALIA

ta0126503@myacu.edu.au

Organisational affiliation of the review

School of Psychology, Faculty of Health Sciences, Australian Catholic University

http://www.acu.edu.au

Review team

Miss Pamela Pilkington, Australian Catholic University
Dr Tom Whelan, Australian Catholic University

Dr Lisa Milne, Australian Catholic University
Miss Kathryn Cairns, University of Melbourne
Mr James Lewis, La Trobe University

Details of any existing review of the same topic by the same authors

None.

Anticipated or actual start date

04 February 2014

Anticipated completion date

31 December 2014

Funding sources/sponsors

P.D. Pilkington is funded by an Australian Postgraduate Award Scholarship.

Conflicts of interest

None known

Language

English

Country

Australia

Subject index terms status

Subject indexing assigned by CRD

Subject index terms

Adaptation, Psychological; Anxiety; Depression, Postpartum; Female; Humans; Postpartum Period; Pregnancy; Risk Factors

Stage of review

Ongoing

Date of registration in PROSPERO

12 February 2014

Date of publication of this revision

14 October 2014

Stage of review at time of this submission	**Started**	**Co**
Preliminary searches	Yes	Ye
Piloting of the study selection process	Yes	Ye
Formal screening of search results against eligibility criteria	Yes	Ye
Data extraction	Yes	Ye
Risk of bias (quality) assessment	Yes	Ye
Data analysis	Yes	Ye

Appendix C. Human Research Ethics Committee approval certificate and study information sheet for the Delphi consensus study

ACU
AUSTRALIAN CATHOLIC UNIVERSITY

Human Research Ethics Committee
Committee Approval Form

Principal Investigator/Supervisor: Dr Thomas Whelan

Co-Investigators: Dr Lisa Milne

Student Researcher: : Pamela Pilkington (HDR Student)

Ethics approval has been granted for the following project:
Partner support and the prevention of postpartum depression and anxiety

for the period: 31/12/2015

Human Research Ethics Committee (HREC) Register Number: 2013 246V

Special Condition/s of Approval
Prior to commencement of your research, the following permissions are required to be submitted to the ACU HREC:
N/A

The data collection of your project has received ethical clearance but the decision and authority to commence may be dependent on factors beyond the remit of the ethics review process and approval is subject to ratification at the next available Committee meeting. The Chief Investigator is responsible for ensuring that outstanding permission letters are obtained, interview/survey questions, if relevant, and a copy forwarded to ACU HREC before any data collection can occur. Failure to provide outstanding documents to the ACU HREC before data collection commences is in breach of the National Statement on Ethical Conduct in Human Research and the Australian Code for the Responsible Conduct of Research. Further, this approval is only valid as long as approved procedures are followed.

Clinical Trials: You are required to register it in a publicly accessible trials registry prior to enrolment of the first participant (e.g. Australian New Zealand Clinical Trials Registry http://www.anzctr.org.au/) as a condition of ethics approval.

It is the Principal Investigators / Supervisors responsibility to ensure that:

1. All serious and unexpected adverse events should be reported to the HREC with 72 hours.
2. Any changes to the protocol must be reviewed by the HREC by submitting a Modification/Change to Protocol Form prior to the research commencing or continuing. http://research.acu.edu.au/researcher-support/integrity-and-ethics/
3. Progress reports are to be submitted on an annual basis. http://research.acu.edu.au/researcher-support/integrity-and-ethics/
4. All research participants are to be provided with a Participant Information Letter and consent form, unless otherwise agreed by the Committee.
5. Protocols can be extended for a maximum of five (5) years after which a new application must be submitted. (The five year limit on renewal of approvals allows the Committee to fully re-review research in an environment where legislation, guidelines and requirements are continually changing, for example, new child protection and privacy laws).

Researchers must immediately report to HREC any matter that might affect the ethical acceptability of the protocol eg: changes to protocols or unforeseen circumstances or adverse effects on participants.

K. Pashley.

Signed: .... Date: .... 30/11/2015.....
(Research Services Officer, Australian Catholic University, Tel: 02 9739 2646)

ABN 15 050 192 660
Melbourne Campus (St Patrick's)
115 Victoria Parade Fitzroy Vic 3065
www.acu.edu.au

INFORMATION LETTER TO PARTICIPANTS

Partner support and the prevention of perinatal depression and anxiety: a Delphi consensus study with professionals and consumers

STUDENT RESEARCHER: PAM PILKINGTON (M Clin Psych/PhD Candidate)
PRIMARY SUPERVISOR: DR TOM WHELAN
SECONDARY SUPERVISOR: DR LISA MILNE

Dear Participant,

You are invited to participate in a research project titled 'Partner support and the prevention of perinatal depression and anxiety'.

What is the project about?

Researchers have established that partner support protects parents against developing depression and anxiety during pregnancy and following childbirth. However, it is difficult to translate the academic literature into specific actions that partners can implement. Interventions aiming to prevent perinatal depression and anxiety need to be able to provide couples with specific guidance on how they can best support one another. This Delphi consensus study will identify how partners can support one another to reduce their risk of developing perinatal depression and anxiety.

Who is undertaking the project?

This project is being conducted by Pam Pilkington, under the supervision of Dr Tom Whelan and Dr Lisa Milne, and will form the basis for the degree of Masters of Clinical Psychology/PhD at the Australian Catholic University.

Are there any risks associated with participating in this project?

There are no known risks associated with participation in this project. Please feel free to contact the researchers at any point to discuss any concerns that you may have regarding your participation in the study.

Who is being asked to participate?

We are inviting people with a minimum of five years' experience in clinical treatment or research involving perinatal mental health to participate. We are also inviting individuals with a history of perinatal depression or anxiety (consumers) and individuals who have cared for someone with perinatal depression or anxiety (carers) who are now in advocacy roles. Participants must be aged 18 years or older and reside in Western countries.

What will I be asked to do?

If you agree to participate, you will be asked to:

- Complete an online questionnaire over three rounds. In each round, you will be asked to rate whether each item should be included in guidelines for partners for preventing perinatal depression and anxiety. The first round will take about 1 hour to complete. The final two rounds are expected to take significantly less time (less than 1/2 hour).
- You will be asked to rate some statements twice, as the aim of the project is to achieve consensus about the best way partners can support one another to prevent perinatal depression and anxiety problems. You can choose to either retain or change your original ratings. Items that are endorsed by at least 80% of both the professional and consumer expert panels will form the final guidelines
- Provide comments on a draft of the final guidelines

Please note that you will not meet the other panel members in person, as all tasks will be completed individually on-line. Individuals' specific views may or may not be adopted, depending upon the group consensus.

What are the benefits of the research project?

There are no immediate benefits to participants. The final guidelines will form the basis of a universal prevention strategy to reduce the incidence of perinatal depression and anxiety.

Can I withdraw from the study?

Participation in this study is completely voluntary. You are not under any obligation to participate. If you agree to participate, you can withdraw from the study at any time without adverse consequences.

Will anyone else know the results of the project?

We intend to publish outcomes of this study in peer reviewed journals. No individual participant will be identifiable: only summary data will be reported. The resulting guidelines will be disseminated to couples via websites and printed material.

Will I be able to find out the results of the project?

You will be provided with a copy of the final guidelines. You will also be provided with reports summarising the results of each round.

Who do I contact if I have questions about the project?

Any questions regarding this project should be directed to the Student Researcher, Pam Pilkington, or one of her Supervisors, Dr. Tom Whelan or Dr. Lisa Milne, on +613 9953 3084, in the School of Psychology at the Australian Catholic University, St Patrick's Campus, Fitzroy, 3065.

What if I have a complaint or concerns?

The study has been approved by the Human Research Ethics Committee at Australian Catholic University (approval number 2013_246V). If you have any complaints or concerns about the conduct of the project, you may write to the Chair of the Human Research Ethics Committee care of the Office of the Deputy Vice Chancellor (Research).

Chair, HREC
c/o Office of the Deputy Vice Chancellor (Research)
Australian Catholic University
Melbourne Campus
Locked Bag 4115
FITZROY, VIC, 3065
Ph: 03 9953 3150
Fax: 03 9953 3315
Email: res.ethics@acu.edu.au

Any complaint or concern will be treated in confidence and fully investigated. You will be informed of the outcome.

I want to participate!

If you accept the invitation to join the study, please click the "next" button below to complete the first round questionnaire. This will take between 1 to 2 hours to complete. You will have at least 2 weeks to complete the Round 1 questionnaire.

Yours sincerely,

Pam Pilkington	Primary supervisor
M Clin Psych/PhD	Dr. Lisa Milne
Candidate	Secondary supervisor

Dr. Tom Whelan

Appendix D. Human Research Ethics Committee approval certificate, study information sheet, and consent form for the usability study

ACU
AUSTRALIAN CATHOLIC UNIVERSITY

Human Research Ethics Committee
Committee Approval Form

Principal Investigator/Supervisor: Dr Thomas Whelan

Co-Investigators: Dr Lisa Milne

Student Researcher: : Pamela Pilkington (HDR Student)

Ethics approval has been granted for the following project:
Partner support and the prevention of postpartum depression and anxiety

for the period: 31/12/2015

Human Research Ethics Committee (HREC) Register Number: 2013 246V

Special Condition/s of Approval
Prior to commencement of your research, the following permissions are required to be submitted to the ACU HREC:
N/A

The data collection of your project has received ethical clearance but the decision and authority to commence may be dependent on factors beyond the remit of the ethics review process and approval is subject to ratification at the next available Committee meeting. The Chief Investigator is responsible for ensuring that outstanding permission letters are obtained, interview/survey questions, if relevant, and a copy forwarded to ACU HREC before any data collection can occur. Failure to provide outstanding documents to the ACU HREC before data collection commences is in breach of the National Statement on Ethical Conduct in Human Research and the Australian Code for the Responsible Conduct of Research. Further, this approval is only valid as long as approved procedures are followed.

Clinical Trials: You are required to register it in a publicly accessible trials registry prior to enrolment of the first participant (e.g. Australian New Zealand Clinical Trials Registry http://www.anzctr.org.au/) as a condition of ethics approval.

It is the Principal Investigators / Supervisors responsibility to ensure that:

1. All serious and unexpected adverse events should be reported to the HREC with 72 hours.
2. Any changes to the protocol must be reviewed by the HREC by submitting a Modification/Change to Protocol Form prior to the research commencing or continuing. http://research.acu.edu.au/researcher-support/integrity-and-ethics/
3. Progress reports are to be submitted on an annual basis. http://research.acu.edu.au/researcher-support/integrity-and-ethics/
4. All research participants are to be provided with a Participant Information Letter and consent form, unless otherwise agreed by the Committee.
5. Protocols can be extended for a maximum of five (5) years after which a new application must be submitted. (The five year limit on renewal of approvals allows the Committee to fully re-review research in an environment where legislation, guidelines and requirements are continually changing, for example, new child protection and privacy laws).

Researchers must immediately report to HREC any matter that might affect the ethical acceptability of the protocol eg: changes to protocols or unforeseen circumstances or adverse effects on participants.

K. Pashley.

Signed: .... Date: .... 30/11/2015.....
(Research Services Officer, Australian Catholic University, Tel: 02 9739 2646)

PARTICIPANT INFORMATION LETTER

The needs and support preferences of mothers and fathers during pregnancy and following childbirth

PRINCIPAL INVESTIGATOR: Dr Thomas Whelan
STUDENT RESEARCHERS: Holly Rominov, Pamela Pilkington
STUDENT'S DEGREE: Masters Clinical Psychology/PhD

Dear Participant,

You are invited to participate in the research project described below.

What is the project about?
The transition to parenthood is associated with fatigue and stress, as it requires significant adjustment to new roles and responsibilities. Research has yet to adequately examine the support needs and preferences of fathers in the perinatal period. The proposed research aims to 1) describe fathers' perceived support needs, barriers and facilitators to accessing mental health and parenting support in the perinatal period; and 2) obtain input from both mothers and fathers on the accessibility and usefulness of a web-based intervention that helps couples facilitate partner support and strengthen their relationship to reduce their risk for perinatal depression and anxiety.

The findings will contribute to the development of father-inclusive interventions for preventing perinatal depression and anxiety and promoting positive parenting behaviours.

Who is undertaking the project?
This project is being conducted by Holly Rominov and Pamela Pilkington and will form the basis for the degree of Masters Clinical Psychology/PhD at Australian Catholic University under the supervision of Dr Thomas Whelan, Dr Rebecca Giallo, Dr Lisa Milne, and Dr David Hamilton.

Are there any risks associated with participating in this project?
There is minimal risk associated with participating in this project. If you become distressed or anxious as a result of participating, the services of the Australian Catholic University's Psychology and Counselling clinic are available for support. Please contact the clinic on 9953 3006 or by emailing melbournepsychologyclinic@acu.edu.au.

Am I eligible to participate?
You are eligible to participate if you are:

- 18 years or older
- Not currently experiencing mental illness

- Expecting a baby and/or parenting an infant aged between 0 to 24 months
- Currently married or in a de facto relationship
- Residing in Melbourne, Australia

What will I be asked to do?

- The views of fathers and mothers who are expecting a baby or are parenting an infant aged up to 2 years will be obtained through individual face-to-face or telephone interviews using semi-structured interview questions.
- All interviews will be audiotaped.
- Face-to-face interviews will be held at the Australian Catholic University, Fitzroy, Melbourne. Toilet facilities will be available.
- **Each participant will be provided with a $20 voucher and be given a free information booklet on how partners can support one another when they become parents.**

The interviews with **FATHERS** will:

- Be between 60 to 90 minutes in length.
- Focus on fathers' perceived support needs, barriers and facilitators to accessing mental health and parenting support in the perinatal period, and their perceptions of the utility and acceptability of a web-based intervention.

The interviews with **MOTHERS** will:

- Be 30 to 60 minutes in length.
- Focus on mothers' perceptions of the utility and acceptability of a web-based intervention.

What are the benefits of the research project?

Participants will have a chance to talk about their experiences during pregnancy and following childbirth in a supportive environment, as well as the opportunity to provide input and feedback on how they would like to be supported during this time.

Can I withdraw from the study?

Participation in this study is completely voluntary. You are not under any obligation to participate. If you agree to participate, you can withdraw from attending the interview at any time without adverse consequences. If you choose to withdraw partway through the interview, any of your individual data collected up to that point will not be used in the study.

Will anyone else know the results of the project?

The research results will be published in peer reviewed journals. If participants are quoted, their gender, age, parity, and whether they are pre or postpartum will be reported, but their name and other identifying information will be kept confidential. Only the research team will access the audiotape data, which will be securely stored at Australian Catholic University.

Will I be able to find out the results of the project?

A summary of the results after the completion of the project can be provided to you upon request.

Who do I contact if I have questions about the project?
If you have any questions about the project, please contact either Holly or Pam: Holly.Rominov@acu.edu.au or Pam.Pilkington@acu.edu.au

What if I have a complaint or any concerns?
The study has been reviewed by the Human Research Ethics Committee at Australian Catholic University (review number 2015-131E). If you have any complaints or concerns about the conduct of the project, you may write to the Manager of the Human Research Ethics Committee care of the Office of the Deputy Vice Chancellor (Research).

Manager, Ethics
c/o Office of the Deputy Vice Chancellor (Research)
Australian Catholic University
North Sydney Campus
PO Box 968
NORTH SYDNEY, NSW 2059
Ph.: 02 9739 2519
Fax: 02 9739 2870
Email: resethics.manager@acu.edu.au

Any complaint or concern will be treated in confidence and fully investigated. You will be informed of the outcome.

I want to participate! How do I sign up?
Click the NEXT button. Thank you for your interest! We look forward to meeting you soon.

Yours sincerely,

Holly Rominov

Pam Pilkington

Dr Thomas Whelan
Primary Supervisor

Dr Rebecca Giallo
Secondary Supervisor

Dr David Hamilton
Secondary Supervisor

Dr Lisa Milne
Secondary Supervisor

AUSTRALIAN CATHOLIC UNIVERSITY

CONSENT FORM

Copy for Participant

TITLE OF PROJECT: The needs and support preferences of mothers and fathers during pregnancy and following childbirth

PRINCIPAL INVESTIGATOR: Dr Thomas Whelan

STUDENT RESEARCHERS: Holly Rominov and Pamela Pilkington

I ..... have read and understood the information provided in the Letter to Participants. Any questions I have asked have been answered to my satisfaction. I agree to participate in this interview that may last up to 1 hour and I understand it will be digitally recorded. I realise I can withdraw my consent at any time without adverse consequences. I agree that research data collected for the study may be published or may be provided to other researchers in a form that does not identify me in any way.

NAME OF PARTICIPANT: .....

SIGNATURE: .....

DATE: .....

SIGNATURE OF PRINCIPAL INVESTIGATOR: .....

DATE: .....

SIGNATURE OR STUDENT RESEARCHER: .....

DATE: .....

Appendix E. PRISMA 2009 checklist

Section/topic	#	Checklist item	Reported on page #
TITLE			
Title	1	Identify the report as a systematic review, meta-analysis, or both.	1
ABSTRACT			
Structured summary	2	Provide a structured summary including, as applicable: background; objectives; data sources; study eligibility criteria, participants, and interventions; study appraisal and synthesis methods; results; limitations; conclusions and implications of key findings; systematic review registration number.	2
INTRODUCTION			
Rationale	3	Describe the rationale for the review in the context of what is already known.	3-6
Objectives	4	Provide an explicit statement of questions being addressed with reference to participants, interventions, comparisons, outcomes, and study design (PICOS).	5
METHODS			
Protocol and registration	5	Indicate if a review protocol exists, if and where it can be accessed (e.g., Web address), and, if available, provide registration information including registration number.	7
Eligibility criteria	6	Specify study characteristics (e.g., PICOS, length of follow-up) and report characteristics (e.g., years considered, language, publication status) used as criteria for eligibility, giving rationale.	7
Information sources	7	Describe all information sources (e.g., databases with dates of coverage, contact with study authors to identify additional studies) in the search and date last searched.	7
Search	8	Present full electronic search strategy for at least one database, including any limits used, such that it could be repeated.	Supp. 2
Study selection	9	State the process for selecting studies (i.e., screening, eligibility, included in systematic review, and, if applicable, included in the meta-analysis).	7-8
Data collection process	10	Describe method of data extraction from reports (e.g., piloted forms, independently, in duplicate) and any processes for obtaining and confirming data from investigators.	7-9
Data items	11	List and define all variables for which data were sought (e.g., PICOS, funding sources) and any assumptions and simplifications made.	Supp. 3

Risk of bias in individual studies	12	Describe methods used for assessing risk of bias of individual studies (including specification of whether this was done at the study or outcome level), and how this information is to be used in any data synthesis.	9
Summary measures	13	State the principal summary measures (e.g., risk ratio, difference in means).	9
Synthesis of results	14	Describe the methods of handling data and combining results of studies, if done, including measures of consistency (e.g., I^2) for each meta-analysis.	9-10
Risk of bias across studies	15	Specify any assessment of risk of bias that may affect the cumulative evidence (e.g., publication bias, selective reporting within studies).	10
Additional analyses	16	Describe methods of additional analyses (e.g., sensitivity or subgroup analyses, meta-regression), if done, indicating which were pre-specified.	10
RESULTS			
Study selection	17	Give numbers of studies screened, assessed for eligibility, and included in the review, with reasons for exclusions at each stage, ideally with a flow-diagram.	Fig. 1
Study characteristics	18	For each study, present characteristics for which data were extracted (e.g., study size, PICOS, follow-up period) and provide the citations.	Supp. 4
Risk of bias within studies	19	Present data on risk of bias of each study and, if available, any outcome level assessment (see item 12).	Supp. 6
Results of individual studies	20	For all outcomes considered (benefits or harms), present, for each study: (a) simple summary data for each intervention group (b) effect estimates and confidence intervals, ideally with a forest plot.	Supp. 7
Synthesis of results	21	Present results of each meta-analysis done, including confidence intervals and measures of consistency.	Table 2
Risk of bias across studies	22	Present results of any assessment of risk of bias across studies (see Item 15).	Supp. 6
Additional analysis	23	Give results of additional analyses, if done (e.g., sensitivity or subgroup analyses, meta-regression [see Item 16]).	11
DISCUSSION			
Summary of evidence	24	Summarise the main findings including the strength of evidence for each main outcome; consider their relevance to key groups (e.g., healthcare providers, users, and policymakers).	22 - 28
Limitations	25	Discuss limitations at study and outcome level (e.g., risk of bias), and at review-level (e.g., incomplete retrieval of identified research, reporting bias).	27
Conclusions	26	Provide a general interpretation of the results in the context of other evidence, and implications for future research.	28

FUNDING			
Funding	27	Describe sources of funding for the systematic review and other support (e.g., supply of data); role of funders for the systematic review.	Role of funding source

From: Moher D, Liberati A, Tetzlaff J, Altman DG, The PRISMA Group (2009). Preferred Reporting Items for Systematic Reviews and Meta-Analyses: The PRISMA Statement. PLoS Med 6(6): e1000097. doi:10.1371/journal.pmed1000097
For more information, visit: **www.prisma-statement.org**.

Appendix F. Searches conducted for partner factors associated with perinatal depression and anxiety

Database	Provider	Search terms	Search fields	Years searched	Date search was run	Any filters used	Studies identified	Exploded
Initial search								
PsycInfo	Ovid	(partner or spouse or couple) and (depressi$ or distress or affective or mood or anxiety or PND) and (postpartum or postnatal or perinatal or antenatal or pregnancy)	Abstract	Inception to now	5-Feb-14	Peer reviewed and English Language	377	Yes
Medline	Ovid	(partner or spouse or couple) and (depressi$ or distress or affective or mood or anxiety or PND) and (postpartum or postnatal or perinatal or antenatal or pregnancy)	Abstract	Inception to now	5-Feb-14	English Language	542	Yes
CINAHL	EBSCO	(partner or spouse or couple) and (depressi$ or distress or affective or mood or anxiety or PND) and (postpartum or postnatal or perinatal or antenatal or pregnancy)	Abstract	Inception to now	5-Feb-14	Peer reviewed and English Language	424	Yes
Forward search								
Web of Science*	Thomson ISI	Cited reference search	Cited author and year	Inception to now	31-Mar-14	-	4056	-

*Google Scholar was used to search for 10% of the citations as they could not be located in Web of Science.

$ indicates that the query searches for the given word and any word beginning with that word. E.g., depress$ returns depressed, depression, depressive.

Appendix G. Inclusion and exclusion criteria

Study characteristics

Include

a. Longitudinal
b. Cross-sectional
c. Case-control
d. Retrospective
e. Peer-reviewed journal article

Exclude

a. Does not report data (e.g., review paper, meta-analysis, or discussion paper)
b. Reports a single case study
c. Participants were exposed to an intervention
d. Article not in English

Sample characteristics

Include

a. Participants were expectant parents or parents of infants aged 12 months or younger at the time the independent variable was assessed.
b. All participants were at least 16 years of age.

Exclude

a. Study reports findings for a clinical sample in the absence of a control group

Independent variable

Include

a. Variables that are actionable or modifiable by partners
b. Variables assessed during pregnancy or up to 12 months postpartum

Exclude

a. Variables that are composites of multiple risk and protective factors
b. Variables relating to intimate partner violence (i.e., physical or sexual abuse)

Dependent variable

Include

a. Depression
b. Anxiety

c. Variables assessed during pregnancy or up to 12 months postpartum

Exclude

a. Variables which lack adequate specificity (e.g., measure of general psychopathology)
b. Variables which capture temporary or observed levels of depressed affect or anxiety
c. Variables that were assessed prior to pregnancy (e.g., Lifetime diagnosis of depression) or later than 12 months postpartum

Decision hierarchies

Dependent variable

Method

1. Diagnostic interview
2. Self-report

Type

1. Continuous variables
2. Categories based on score cut offs

Informant

1. Individual
2. Partner
3. Independent observer

Independent variable

Measure characteristics

1. Validated scale
2. Study specific measure

1. Variable that is more consistent with the theme definition
2. Variable that is less consistent with the theme definition

Support

1. Satisfaction or adequacy
2. Frequency

1. Received support
2. Anticipated support

1. Support subthemes (i.e., instrumental support, emotional support, and informational support)
2. General measures of support

   Instrumental support

1. Infant care
2. House-hold tasks

   Partner's use of alcohol or drugs

1. Alcohol use
2. Drug use

Rules for extracting effect sizes

a. If the study reports the significance of an association without providing the corresponding effect size, *r* equivalent is calculated based on the sample size and the *p* value provided.
b. If the study reports findings for multiple independent samples (e.g., Italy and France), the effect sizes for each sample are extracted.
c. If the sample was divided into cohorts for the analyses, the effect sizes for each cohort are extracted.
d. If the analyses are performed for both individuals in the couple dyad separately, both effect sizes are extracted (e.g., mothers and fathers).
e. If a study compares more than two groups based on cut-offs on a continuous variable (e.g. low, moderate, or high levels of support), the effect size which compares the two most extreme groups (i.e., low vs high) is extracted.
f. If a study reports multiple longitudinal associations within a theme x outcome x time rubric (i.e., antenatal factor predicting antenatal outcome; antenatal factor predicting postnatal outcome; or postnatal factor predicting postnatal outcome), the association with the longest follow-up is extracted.

Appendix H. Characteristics of included studies organised by theme, dependent variable, and time frame

Study				Predictor				Outcome						Association		
Article	Sample	Parity	Design	Variable	Informant	Method	Timing	Variable	Informant	Method	Scale	Cut-off	Timing	*r*	N	In analyses
Alcohol or drug use by partner																
Depression																
Postnatal alcohol and drug use by partner and postnatal depression																
Bottino (2012)	Pop	M+P	XS	Frequency of alcohol use (CAGE)	Mo	Int	Int post (5 m)	EPDS	Mo	Int	Cat	11	Int post (5 m)	.22***	811	Y
Das Eiden (2002) - Mothers	Pop	M+P	XS	Frequency of alcohol use (QFI)	Fa	SR	LT post (12 m)	CES-D	Mo	SR	Cont	-	LT post (12 m)	.11	223	Y
Das Eiden (2002) - Fathers	Pop	M+P	XS	Frequency of alcohol use (QFI)	Mo	SR	LT post (12 m)	CES-D	Fa	SR	Cont	-	LT post (12 m)	.08	223	Y
Dennis (2006a)	Pop	M+P	L	Problem with alcohol or drugs (ALPHA)	Mo	SR	Imm post (1 w)	EPDS	Mo	SR	Cat	9	Imm post (8 w)	.16	498	Y
Communication																
Depression																
Antenatal communication and antenatal depression																
Boyce (2007)	Pop	P	XS	Cohesion (DAS)	Fa	SR	Second trim (20 w)	GHQ	Fa	SR	Cat	5	Second trim (20 w)	-.20***	312	Y
Ludermir (2010)	Pop	M+P	XS	Communication with partner (SS)	Mo	SR	Third trim	EPDS	Mo	SR	Cat	12	Third trim	-.41***	1045	Y
Antenatal communication and postnatal depression																
Ramchandani (2009)	Pop	M+P	L	Can talk to partner (SS)	Mo	Int	Third trim (33 w)	PDQ	Mo	Int	Cat	20	Int post (6 m)	-.12**	1035	N
Postnatal communication and postnatal depression																
Boyce (2005)	Pop	M+P	L	Problems with communication (SS)	Mo	Int	Imm post (2 d)	SCID/EPDS	Mo	SR	Diag	12	Int post (6 to 24 w)	-.15*	425	Y
Dudley (2001)	Non-Pop	M+P	XS	Cohesion (DAS)	Fa	SR	Int post (1 to 6 m)	EPDS	Fa	SR	Cat	10	Int post (1 to 6 m)	-.35***	92	Y
Fisher (2004)	Pop	M+P	XS	Unable to confide in partner (SS) (Rev)	Mo	Int	Imm post (5 w)	EPDS	Mo	Int	Cat	12	Imm post (5 w)	-.27***	506	Y

	Lemola (2009)	Pop	M+P	XS	Can discuss concerns without criticism/rejection (SS)	Mo	SR	Imm post (6 w)	EPDS	Mo	SR	Cont	-	Imm post (6 w)	-.27***	374	Y
	O'Hara (1986)	Pop	M+P	XS	Unable to talk with spouse (TSSI) (Rev)	Mo	SR	Postpartum	SADS	Mo	Int	Diag	-	Postpartum	-.27**	99	Y
	Paykel (1980)	Pop	M+P	XS	Communication (SS)	Mo	Int	Imm post (6 w)	RTAS	Mo	SR	Cat	7	Imm post (6 w)	-.19*	104	Y
	Ramchandani (2011)	Non-Pop	M+P	XS	Cohesion (DAS)	Fa	SR	ST post (3 m)	SCID	Fa	Int	Diag	-	ST post (3 m)	-.11	153	Y
Conflict																	
Depression																	
Antenatal conflict and antenatal depression																	
	Blaney (2004)	Non-Pop	-	XS	Negative support (SS)	Mo	Int	Second trim (24 w or more)	CES-D	Mo	Int	Cont	-	Second trim (24 w or more)	.14*	307	Y
	Boyce (2007)	Pop	P	XS	Concensus (DAS)	Fa	SR	Second trim (20 w)	GHQ	Fa	SR	Cat	5	Second trim (20 w)	.30***	312	Y
	Crockenberg (2003)	Pop	P	XS	Verbal aggression (MCQ)	Mo	SR	Third trim (7 to 8 m)	CES-D	Mo	SR	Cont	-	Third trim (7 to 8 m)	.13*	84	Y
	Giardinelli (2012)	Non-Pop	M+P	XS	Conflictual relationship (SS)	Mo	Int	Third trim (28 to 32 w)	EPDS	Mo	Int	Cat	10	Third trim (28 to 32 w)	.37***	590	Y
	Glazier (2004)	Pop	M+P	XS	Conflict (SSI)	Mo	SR	Second trim (24 w)	CES-D	Mo	SR	Cont	-	Second trim (24 w)	.47***	2052	Y
	Liu (2013)	Pop	M+P	XS	Argued more than usual (SS)	Mo	SR	Second trim (Mdn = 3.5 m)	SS	Mo	SR	Cat	Yes/No	Second trim (Mdn = 3.5 m)	.13*	3566	Y
	Ross (2011)	Pop	-	XS	Negative interactions (SCS)	Mo	SR	Third trim (36 w)	EPDS	Mo	SR	Cont	-	Third trim (36 w)	.34**	87	Y
	Sagrestano (2004)	Non-Pop	M+P	XS	Negative interactions (SS)	Mo	SR	Second trim (M = 20 w)	CES-D	Mo	SR	Cont	-	Second trim (M = 20 w)	.41***	197	Y
	Senturk (2011)	Pop	M+P	XS	Conflict (TCPQ-M)	Mo	SR	Third trim (32 w)	EPDS	Mo	SR	Cat	13	Third trim (32 w)	.32***	730	Y
	Simpson (2003) - Mothers	Non-Pop	P	XS	Conflict (TENSE-M)	Mo	SR	Third trim (34 w)	CES-D	Mo	SR	Cont	-	Third trim (34 w)	.44***	106	Y
	Simpson (2003) - Fathers	Non-Pop	P	XS	Conflict (TENSE-M)	Fa	SR	Third trim (34 w)	CES-D	Fa	SR	Cont	-	Third trim (34 w)	.28**	106	Y
Antenatal conflict and postnatal depression																	
	Aceti (2012)	CC	M+P	L	Conflict (SS)	Mo	Int	Third trim	EPDS/SCID	Mo	Mix	Cat	12	Imm post (1 m)	.51***	44	Y
	Crockenberg (2003)	Pop	P	L	Verbal aggression (MCQ)	Mo	SR	Third trim (7 to 8 m)	CES-D	Mo	SR	Cont	-	Int post (5 m)	.32**	84	Y
	Figueiredo (2008)	Non-Pop	M+P	L	Conflict (TRQ)	Pa	SR	Second trim (M=20 w)	CES-D	Pa	SR	Cont	-	Imm post (14 d)	.38*	31	Y

	Giardinelli (2012)	Non-Pop	M+P	L	Conflictual relationship (SS)	Mo	Int	Third trim (28 to 32 w)	EPDS	Mo	Int	Cat	10	ST post (12 w)	.26*	590	Y
	Ross (2011)	Pop	-	L	Negative interactions (SCS)	Mo	SR	Third trim (36 w)	EPDS	Mo	SR	Cont	-	LT post (6 to 8 m)	.37***	87	Y
	Postnatal conflict and postnatal depression																
	Boyce (2001)	Pop	M+P	L	Frequency of arguments (SS)	Mo	SR	Imm post (within 1 w)	EPDS	Mo	SR	Cat	12	Imm post (8 w)	.39***	490	Y
	Crockenberg (2003)	Pop	P	XS	Verbal aggression (MCQ)	Mo	SR	Int post (5 m)	CES-D	Mo	SR	Cont	-	Int post (5 m)	.04	84	Y
	Dennis (2006b)	Pop	M+P	L	Conflict (QRI)	Mo	SR	Imm post (4 w)	EPDS	Mo	SR	Cat	9	Imm post (8 w)	.17**	390	Y
	Garcia-Esteve (2008)	Pop	M+P	XS	Disagreements (SS)	Mo	SR	Imm post (6 w)	SCID	Mo	Int	Diag	9	Imm post (6 w)	.09	334	Y
	Hassert (2011)	Non-Pop	M+P	XS	Conflict (QRI)	Mo	SR	Int post (6 m)	EPDS	Mo	SR	Cont	-	Int post (6 m)	.58***	59	Y
	Ramchandani (2011)	Non-Pop	M+P	XS	Critical (SS)	Fa	SR	ST post (3 m)	SCID	Fa	Int	Diag	-	ST post (3 m)	.24**	153	Y
	Ross (2011)	Pop	-	XS	Negative interactions (SCS)	Mo	SR	LT post (6 to 8 m)	EPDS	Mo	SR	Cont	-	LT post (6 to 8 m)	.48***	87	Y
Anxiety																	
	Antenatal conflict and antenatal anxiety																
	Giardinelli (2012)	Non-Pop	M+P	XS	Conflictual relationship (SS)	Mo	Int	Third trim (28 to 32 w)	STAI-T	Mo	Int	Cat	40	Third trim (28 to 32 w)	.17	461	Y
	Glazier (2004)	Pop	M+P	XS	Conflict (SSI)	Mo	SR	Second trim (24 w)	STAI	Mo	SR	Cont	-	Second trim (24 w)	.40***	197	Y
	Sagrestano (2004)	Non-Pop	M+P	XS	Negative interactions (SS)	Mo	SR	Second trim (M=20 w)	STAI	Mo	SR	Cont	-	Second trim (M=20 w)	.38	2052	Y
	Antenatal conflict and postnatal anxiety																
	Figueiredo (2008)	Non-Pop	M+P	L	Conflict (TRQ)	Pa	SR	Second trim (M=20 w)	STAI	Pa	SR	Cont	-	Imm post (14 d)	.39*	31	N
Control																	
Depression																	
	Antenatal control and antenatal depression																
	Boyce (1991)	Non-Pop	P	XS	Control (IBM)	Mo	SR	Second trim	BDI	Mo	SR	Cont	-	Second trim	.07	149	Y
	Boyce (2007)	Pop	P	XS	Control (IBM)	Fa	SR	Second trim (20 w)	GHQ	Fa	SR	Cat	5	Second trim (20 w)	.30***	312	Y
	Buist (2003)	Non-Pop	M+P	XS	Control (IBM)	Fa	Int	Second trim (26 w)	EPDS	Fa	SR	Cat	10	Second trim (26 w)	.13	118	Y

Hock (1995)	Pop	P	XS	Marital roles (MFRQ)	Fa	SR	Second trim (6 m)	CES-D	Mo	SR	Cont	-	Second trim (6 m)	.09	142	Y
Kaaya (2010)	Pop	M+P	XS	Inclusion in decisions (SS)	Mo	SR	Third trim (32 w or fewer)	KHSCL	Mo	SR	Cat	1.06	Third trim (32 w or fewer)	-.05	600	N
Ludermir (2010)	Pop	M+P	XS	Controlling (SS)	Mo	SR	Third trim	EPDS	Mo	SR	Cat	12	Third trim	.37***	1045	Y
Antenatal control and postnatal depression																
Boyce (1991)	Non-Pop	P	L	Control (IBM)	Mo	SR	Second trim	EPDS	Mo	SR	Cat	12.5	Int post (6 m)	.03	140	Y
Hock (1995)	Pop	P	L	Marital roles (MFRQ)	Fa	SR	Second trim (6 m)	CES-D	Mo	SR	Cont	-	LT post (9 m)	.23**	142	Y
Postnatal control and postnatal depression																
Buist (2003)	Non-Pop	M+P	XS	Control (IBM)	Fa	Int	Int post (4 m)	EPDS	Fa	SR	Cat	10	Int post (4 m)	.09	152	Y
Hock (1995)	Pop	P	XS	Marital roles (MFRQ)	Fa	SR	LT post (9 m)	CES-D	Mo	SR	Cont	-	LT post (9 m)	.04	142	Y
Matthey (2000)	Pop	P	XS	Control (IBM)	Mo	SR	Imm post (6 w)	EPDS	Mo	SR	Cat	12	Imm post (6 w)	0	157	Y
Division of labor																
Depression																
Postnatal division of labor and postnatal depression																
Hyde (1995)	Pop	M+P	XS	Equal division of labor (SS)	Mo	Int	Int post (4 m)	CES-D	Mo	Int	Cont	-	Int post (4 m)	-.24***	541	Y
Romito (1999) - Italian sample	Pop	M+P	XS	Conflicts about the sharing of housework (SS) (Rev)	Mo (Italy)	SR	LT post (12 m)	GHQ	Mo	SR	Cat	6	LT post (12 m)	-.16*	706	Y
Romito (1999) - French sample	Pop	M+P	XS	Conflicts about the sharing of housework (SS) (Rev)	Mo (France)	SR	LT post (12 m)	GHQ	Mo	SR	Cat	6	LT post (12 m)	-.24***	598	Y
Anxiety																
Antenatal division of labor and antenatal anxiety																
Rini (2006)	Pop	M+P	L	Relationship equity (SS)	Mo	Int	Third trim (30 to 32 w)	STAI	Mo	SR	Cont	-	Third trim (30 to 32 w)	-.12	176	N
Postnatal division of labor and postnatal anxiety																
Hyde (1995)	Pop	M+P	XS	Equal division of labor (SS)	Mo	Int	Int post (4 m)	STAI	Mo	Int	Cont	-	Int post (4 m)	-.14**	541	N
Emotional closeness																
Depression																

Antenatal emotional closeness and antenatal depression																
Anderson (2002)	Non-Pop	M+P	XS	Closeness (SS)	Mo	SR	Third trim	EPDS	Mo	SR	Cont	-	Third trim	-.66***	31	Y
Boyce (1991)	Non-Pop	P	XS	Care (IBM)	Mo	SR	Second trim	BDI	Mo	SR	Cont	-	Second trim	-.22**	149	Y
Boyce (2007)	Pop	P	XS	Care (IBM)	Fa	SR	Second trim (20 w)	GHQ	Fa	SR	Cat	5	Second trim (20 w)	-.25***	312	Y
Buist (2003)	Non-Pop	M+P	XS	Care (IBM)	Fa	Int	Second trim (26 w)	EPDS	Fa	SR	Cat	10	Second trim (26 w)	-.18**	118	Y
Conde (2011) - Mothers	Non-Pop	M+P	XS	Emotional closeness (ASI)	Mo	Int	Second trim	EPDS	Mo	SR	Cont	-	Second trim	-.05	63	Y
Conde (2011) - Fathers	Non-Pop	M+P	XS	Emotional closeness (ASI)	Fa	Int	Second trim	EPDS	Fa	SR	Cont	-	Second trim	-.19	63	Y
Dennerstein (1989)	Pop	P	XS	Not close (SS) (Rev)	Mo	Int	Third trim (28 w)	BDI	Mo	SR	Cont	-	Third trim (28 w)	-.18**	283	Y
Stapleton (2012)	Pop	M+P	XS	Emotional closeness and intimacy (SS)	Mo	SR	Second trim (18 to 20 w)	CES-D	Mo	SR	Cont	-	Second trim (18 to 20 w)	-.38***	272	Y
Antenatal emotional closeness and postnatal depression																
Bjerke (2008)	Non-Pop	-	L	Do you feel closely attached to your partner? (SS)	Mo	Int	Second trim (17 to 18 w)	EPDS	Mo	Int	Cat	10	ST post (within 3 m)	-.29**	194	Y
Boyce (1991)	Non-Pop	P	L	care (IBM)	Mo	SR	Second trim	EPDS	Mo	SR	Cat	12.5	Int post (6 m)	-.15	140	Y
Conde (2011) - Mothers	Non-Pop	M+P	L	Emotional closeness (ASI)	Mo	Int	Second trim	EPDS	Mo	SR	Cont	-	ST post (3 m)	.06	63	Y
Conde (2011) - Fathers	Non-Pop	M+P	L	Emotional closeness (ASI)	Fa	Int	Second trim	EPDS	Fa	SR	Cont	-	ST post (3 m)	-.26*	63	Y
Dennerstein (1989)	Pop	P	L	Not close (SS)	Mo	Int	Third trim (28 w)	BDI	Mo	SR	Cont	-	Int post (4 m)	-.09	283	Y
Figueiredo (2008)	Non-Pop	M+P	L	Care, affection, closeness and joint interests (TRQ)	Pa	SR	Second trim (M=20 w)	CES-D	Pa	SR	Cont	-	Imm post (14 d)	-.23	31	Y
Stapleton (2012)	Pop	M+P	L	Emotional closeness and intimacy (SS)	Mo	SR	Second trim (18 to 20 w)	CES-D	Mo	SR	Cont	-	Imm post (6 to 8 w)	-.23***	272	Y
Postnatal emotional closeness and postnatal depression																
Buist (2003)	Non-Pop	M+P	XS	Care (IBM)	Fa	Int	Int post (4 m)	EPDS	Fa	SR	Cat	10	Int post (4 m)	-.15	152	Y
Dennis (2006b)	Pop	M+P	L	Attachment (SPS)	Mo	SR	4 w postpartum	EPDS	Mo	SR	Cat	9	Imm post(8 w)	-.17**	390	Y
Eberhard-Gran (2002)	Pop	M+P	XS	Closely attached (SS)	Mo	SR	6 w postpartum	EPDS	Mo	SR	Cat	10	Imm post(6 w)	-.17**	416	Y
Garcia-Esteve (2008)	Pop	M+P	XS	Close and warm relationship (SS)	Mo	SR	6 w postpartum	SCID	Mo	Int	Diag	9	Imm post(6 w)	-.34***	334	Y
Hassert (2011)	Non-Pop	M+P	XS	Depth of relationship (QRI)	Mo	SR	6 m postpartum	EPDS	Mo	SR	Cont	-	Int post (6 m)	-.24	59	Y

	Lilja (2012)	Pop	P	L	Emotional closeness (RS)	Mo	SR	Imm post(3 d)	EPDS	Mo	SR	Cat	10	Imm post (10 d)	-.14**	407	Y
	Matthey (2000)	Pop	P	XS	Care (IBM)	Mo	SR	Imm post (6 w)	EPDS	Mo	SR	Cat	12	Imm post (6 w)	0	157	Y
	McGill (1995)	Non-Pop	M+P	L	Seldom or never feel loving (SS) (Rev)	Mo	SR	LT post (6 to 9 m)	EPDS	Mo	SR	Cat	11/12, 13/14	LT post (6 to 9 m)	-.31***	1330	Y
	Ozbasaran (2011)	Pop	M+P	XS	Attachment (SS)	Mo	Int	Int post postparutm (2 to 24 w)	EPDS	Mo	Int	Cat	13	Int post (2 to 24 w)	-.44***	287	Y
Anxiety																	
Antenatal emotional closeness and antenatal anxiety																	
	Conde (2011) - Mothers	Non-Pop	M+P	XS	Emotional closeness (ASI)	Mo	Int	Second trim	STAI	Mo	SR	Cont	-	Second trim	-.06	63	Y
	Conde (2011) - Fathers	Non-Pop	M+P	XS	Emotional closeness (ASI)	Fa	Int	Second trim	STAI	Fa	SR	Cont	-	Second trim	-.28*	63	Y
	Goldberg (2008) - Biological mothers	Non-Pop	P	XS	Love (RQ)	Mo	SR	Third trim (36 w)	SAS	Mo (Biological)	SR	Cont	-	Third trim (36 w)	.03	30	Y
	Goldberg (2008) - Non-biological mothers	Non-Pop	P	XS	Love (RQ)	Mo	SR	Third trim (36 w)	SAS	Mo (Non biological)	SR	Cont	-	Third trim (36 w)	-.17	30	Y
	Stapleton (2012)	Pop	M+P	XS	Emotional closeness and intimacy (SS)	Mo	SR	Second trim (18 to 20 w)	STAI	Mo	SR	Cont	-	Second trim (18 to 20 w)	-.39***	272	Y
Antenatal emotional closeness and postnatal anxiety																	
	Conde (2011) - Mothers	Non-Pop	M+P	L	Emotional closeness (ASI)	Mo	Int	Second trim	STAI	Mo	SR	Cont	-	ST post (3 m)	-.38**	63	Y
	Conde (2011) - Fathers	Non-Pop	M+P	L	Emotional closeness (ASI)	Fa	Int	Second trim	STAI	Fa	SR	Cont	-	ST post (3 m)	.01	63	Y
	Deater-Deckard (1998)	Pop	M+P	L	Lack of affection (SS)	Fa	SR	Second trim (18 w)	EPDS	Fa	SR	Cont	-	Imm post (6 to 8 w)	-.19***	5896	Y
	Figueiredo (2008)	Non-Pop	M+P	L	Care, affection, closeness and joint interests (TRQ)	Pa	SR	Second trim (M=20 w)	STAI	Pa	SR	Cont	-	Imm post (14 d)	-.45**	31	Y
	Goldberg (2008) - Biological mothers	Non-Pop	P	L	Love (RQ)	Mo	SR	Third trim (36 w)	SAS	Mo (Biological)	SR	Cont	-	ST post (3 m)	-.15	30	Y
	Goldberg (2008) - Non-biological mothers	Non-Pop	P	L	Love (RQ)	Mo	SR	Third trim (36 w)	SAS	Mo (Non	SR	Cont	-	ST post (3 m)	-.18	30	Y

									biological)							
Stapleton (2012)	Pop	M+P	L	Emotional closeness and intimacy (SS)	Mo	SR	Second trim (18 to 20 w)	STAI	Mo	SR	Cont	-	Imm post (6 to 8 w)	-.22***	272	Y
Postnatal emotional closeness and postnatal anxiety																
Hobfoll (1989)	Non-Pop	-	L	Intimacy (SS)	Mo	Int	Imm post (20 to 30 hours)	STAI	Mo	Int	Cont	-	ST post (3 m)	-.28**	93	N
Emotional support																
Depression																
Antenatal emotional support and antenatal depression																
Bilszta (2008)	Pop	M+P	XS	Emotional support (PRFQ)	Mo	SR	First trim (First antenal booking-in visit)	EPDS	Mo	SR	Cat	12	First trim (First antenatal booking-in visit)	-.26***	1356	Y
Chapman (1997)	Pop	M+P	L	Emotional support (SSQ-6)	Mo	Int	Second trim	BDI	Mo	Int	Cont	-	Third trim	-.42***	68	Y
Gallagher (1997)	Pop	-	XS	Emotional support (SSQ-6)	Mo	SR	Second trim (16 to 24 w)	BDI	Mo	Mix	Cont	-	Second trim (16 to 24 w)	-.28***	189	Y
Glazier (2004)	Pop	M+P	XS	Emotional support (MPSS)	Mo	SR	Second trim (24 w)	CES-D	Mo	SR	Cont	-	Second trim (24 w)	-.38***	2052	Y
Jeong (2013)	Pop	M+P	XS	Emotional support (SS)	Mo	SR	Second trim (M=25 w)	EPDS	Mo	SR	Cat	10	Second trim (M=25 w)		1262	Y
Leathers (1997) - Mothers	Pop	P	XS	Emotional support (SSNI-M)	Mo	SR	First trim (3 m)	CES-D	Mo	SR	Cont	-	First trim (3 m)	-.52***	55	Y
Leathers (1997) - Fathers	Pop	P	XS	Emotional support (SSNI-M)	Fa	SR	First trim (3 m)	CES-D	Fa	SR	Cont	-	First trim (3 m)	-.32*	55	Y
Reid (2009)	Pop	M+P	XS	Discrepancy in emotional support (SOS) (Rev)	Mo	SR	Second trim (M=25 w)	EPDS	Mo	SR	Cont	-	Second trim (M=25 w)	.09	299	Y
Ross (2011)	Pop	-	XS	Emotional support (SCS)	Mo	SR	Third trim (36 w)	EPDS	Mo	SR	Cont	-	Third trim (36 w)	.02	87	Y
Senturk (2011)	Pop	M+P	XS	Emotional support (TCPQ-M)	Mo	SR	Third trim (32 w)	EPDS	Mo	SR	Cat	13	Third trim (32 w)	-.34***	730	Y
Antenatal emotional support and postnatal depression																
Baker (1997)	Pop	M+P	L	Emotional support (SS)	Mo	SR	First trim (8 w)	EPDS	Mo	SR	Cat	10	Imm post (8 w)	-.21***	6643	Y
Bernazzani (2004)	Pop	M	L	Emotional support (SS)	Mo	Int	Third trim	SCID	Mo	Int	Diag	-	Int post (6 m)	-.08*	238	Y
Bernazzani (2005)	Non-Pop	M+P	L	Poor emotional support (CAME)	Mo	Int	Postpartum (since the baby's birth)	EPDS	Mo	SR	Cont	-	Imm post (1 m)	-.26**	85	Y
Gallagher (1997)	Pop	-	L	Emotional support (SSQ-6)	Mo	SR	Second trim (16 to 24 w)	BDI	Mo	Mix	Cont	-	ST post (7 to 9 w)	-.28	189	Y
Leathers (1997) - Mothers	Pop	P	L	Emotional support (SSNI-M)	Mo	SR	First trim (3 m)	CES-D	Mo	SR	Cont	-	Int post (6 m)	-.38	55	Y

	Leathers (1997) - Fathers	Pop	P	L	Emotional support (SSNI-M)	Fa	SR	First trim (3 m)	CES-D	Fa	SR	Cont	-	Int post (6 m)	-.58	55	Y
	Stapleton (2012)	Pop	M+P	L	Emotional support (SSE)	Mo	SR	Second trim (24 to 26 w)	CES-D	Mo	SR	Cont	-	Imm post (6 to 8 w)	-.26	272	Y
Postnatal emotional support and postnatal depression																	
	Baker (1997)	Pop	M+P	XS	Emotional support (SS)	Mo	SR	Imm post (8 w)	EPDS	Mo	SR	Cat	10	Imm post (8 w)	-.32***	6643	Y
	Boyce (2005)	Pop	M+P	L	Deficient emotional support (SS) (Rev)	Mo	Int	Imm post (2 d)	SCID/EPDS	Mo	SR	Diag	12	Int post (6 to 24 w postpartum)		425	Y
	Campbell (1992)	CC	P	XS	Emotional support (PSSQ)	Mo	Int	Imm post (2 m)	SADS/CES-D	Mo	Mix	Diag	-	Imm post (2 m)	-.27**	129	Y
	Cooper (1999)	Pop	M+P	XS	Emotional support (SS)	Mo	Int	Imm post (2 m)	SCID	Mo	Int	Diag	-	Imm post (2 m)	-.23**	147	Y
	Dennis (2006b)	Pop	M+P	L	Appraisal support (PPSS)	Mo	SR	Imm post (4 w)	EPDS	Mo	SR	Cat	9	Imm post (8 w)	-.18***	390	Y
	Felice (2004)	Pop	M+P	XS	Emotional support (SMS)	Mo	Int	Imm post (8 to 10 w)	EPDS/CIS-R	Mo	Mix	Cat	12	Imm post (8 to 10 w)	-.20**	233	Y
	Hassert (2011)	Non-Pop	M+P	XS	Emotional support (QRI)	Mo	SR	Int post (6 m)	EPDS	Mo	SR	Cont	-	Int post (6 m)	-.30*	59	Y
	Horowitz (2005)	Non-Pop	M+P	XS	Emotional support (MIT)	Mo	SR	ST post (11 w)	BSI	Mo	SR	Cont	-	ST post (11 w)	-.14	143	Y
	Husain (2006)	Pop	M+P	XS	Emotional support (MSPSS)	Mo	SR	ST post (12 w)	EPDS	Mo	SR	Cat	12	ST post (12 w)	-.81***	149	Y
	Kara (2013)	Non-Pop	-	XS	Emotional support (MSPSS)	Mo	SR	Postpartum	HADS	Mo	SR	Cont	-	Postpartum	-.14	50	Y
	O'Hara (1986)	Pop	M+P	XS	Emotional support (PSSQ)	Mo	SR	Postpartum	SADS	Mo	Int	Diag	-	Postpartum	-.28**	99	Y
	Ross (2011)	Pop	-	XS	Emotional support (SCS)	Mo	SR	LT post (6 to 8 m)	EPDS	Mo	SR	Cont	-	LT post (6 to 8 m)	-.42***	87	Y
	Séjourné (2012)	Pop	M+P	L	Emotional support (MSPSS)	Mo	SR	Imm post (2 to 5 d)	EPDS	Mo	SR	Cat	12	Imm post (2 m)	-.22*	119	Y
Anxiety																	
Antenatal emotional support and antenatal anxiety																	
	Reid (2009)	Pop	M+P	XS	Discrepancy in emotional support (SOS) (Rev)	Mo	SR	Second trim (M=25 w)	DASS-21	Mo	SR	Cont	-	Second trim (M=25 w)	.09	299	Y
	Ngai (2012) - Mothers	Non-Pop	M+P	XS	Emotional support (FMFM-MOS)	Mo	SR	Pregnancy	STAI	Mo	SR	Cont	-	Pregnancy	-.36***	128	Y
	Ngai (2012) - Fathers	Non-Pop	M+P	XS	Emotional support (FMFM-MOS)	Fa	SR	Pregnancy	STAI	Fa	SR	Cont	-	Pregnancy	-.43***	128	Y
	Glazier (2004)	Pop	M+P	XS	Emotional support (MPSS)	Mo	SR	Second trim (M=24 w)	STAI	Mo	SR	Cont	-	Second trim (M=24 w)	-.34***	2052	Y
Antenatal emotional support and postnatal anxiety																	

Stapleton (2012)	Pop	M+P	L	Emotional support (SSE)	Mo	SR	Second trim (24 to 26 w)	STAI	Mo	SR	Cont	-	Imm post (6 to 8 w)	-.24***	272	N
Postnatal emotional support and postnatal anxiety																
Kara (2013)	Non-Pop	-	XS	Emotional support (MSPSS)	Mo	SR	Postpartum	HADS	Mo	SR	Cont	-	Postpartum	-.22	50	N
Informational support																
Depression																
Antenatal informational support and antenatal depression																
Stapleton (2012)	Pop	M+P	L	Informational support (SSE)	Mo	SR	Second trim (24 to 26 w)	CES-D	Mo	SR	Cont	-	Imm post (6 to 8 w)	.22	272	N
Postnatal informational support and postnatal depression																
Dennis (2006b)	Pop	M+P	L	Informational support (PPSS)	Mo	SR	Imm post (4 w)	EPDS	Mo	SR	Cat	9	Imm post (8 w)	-.15**	390	N
Anxiety																
Antenatal informational support and postnatal anxiety																
Stapleton (2012)	Pop	M+P	L	Informational support (SSE)	Mo	SR	Second trim (24 to 26 w)	STAI	Mo	SR	Cont	-	Imm post (6 to 8 w)	-.17**	272	N
Instrumental support																
Depression																
Antenatal instrumental support and antenatal depression																
Dennerstein (1989)	Pop	-	XS	Lack of assistance (SS) (Rev)	Mo	SR	Third trim (28 w)	BDI	Mo	Cont	Cont	-	Third trim (28 w)	-.09	283	Y
Kaaya (2010)	Pop	M+P	XS	Help with household tasks (SS)	Mo	SR	Third trim (32 w or fewer)	KHSCL	Mo	SR	Cat	1.06	Third trim (32 w or fewer)	.09	600	Y
Leathers (1997) - Mothers	Pop	P	XS	Instrumental support (SSNI-M)	Fa	SR	First trim (3 m)	CES-D	Fa	SR	Cont	-	First trim (3 m)	-.42**	55	Y
Leathers (1997) - Fathers	Pop	P	XS	Instrumental support (SSNI-M)	Mo	SR	First trim (3 m)	CES-D	Mo	SR	Cont	-	First trim (3 m)	-.38**	55	Y
O'Hara (1986)	Pop	M+P	XS	Instrumental support (TSSI)	Mo	SR	Second trim	SADS	Mo	Int	Diag	-	Second trim	-.29**	99	Y
Reid (2009)	Pop	M	XS	Discrepancy in practical support from a partner (SOS) (Rev)	Mo	SR	Second trim (M=25 w)	EPDS	Mo	SR	Cont	-	Second trim (M=25 w)	.09	299	Y
Senturk (2011)	Pop	M+P	XS	Instrumental support (TCPQ-M)	Mo	SR	Third trim (32 w)	EPDS	Mo	SR	Cat	13	Third trim (32 w)	-.23***	730	Y
Antenatal instrumental support and postnatal depression																
Baker (1997)	Pop	M+P	L	Can rely on partner to take over if tired (SS)	Mo	SR	First trim (8 w)	EPDS	Mo	SR	Cat	10	Imm post (8 w)	-.16***	6634	Y

Bernazzani (2005)	Non-Pop	M+P	L	Practical support (CAME)	Mo	Int	Postpartum (Since the baby's birth)	EPDS	Mo	SR	Cont	-	Imm post (1 m)	0	85	Y
Dennerstein (1989)	Pop		L	Lack of assistance (SS) (Rev)	Mo		Third trim (28 w)	BDI	Mo	Cont	Cont	-	Int post (4 m)	-.09	283	Y
Leathers (1997) - Mothers	Pop	P	L	Instrumental support (SSNI-M)	Mo	SR	First trim (3 m)	CES-D	Mo	SR	Cont	-	Int post (6 m)	-.17	55	Y
Leathers (1997) - Fathers	Pop	P	L	Instrumental support (SSNI-M)	Fa	SR	First trim (3 m)	CES-D	Fa	SR	Cont	-	Int post (6 m)	-.60***	55	Y
Neter (1995)	Non-Pop	M+P	L	Involvement (SS)	Mo	Int	Third trim (M=30 w)	CES-D	Mo	Int	Cont	-	Imm post (4 to 8 w)	-.21*	108	Y
Ramchandani (2009)	Pop	M+P	L	Help with child-care (SS)	Mo	Int	Third trim (33 w)	PDQ	Mo	Int	Cat	20	Int post (6 m)	.08*	1035	Y
Stapleton (2012)	Pop	M+P	L	Task support (SSE)	Mo	SR	Second trim (24 to 26 w)	CES-D	Mo	SR	Cont	-	Imm post (6 to 8 w)	-.21***	272	Y
Postnatal instrumental support and postnatal depression																
Abbott (2006)	Pop	M+P	XS	Instrumental support (CCAS)	Mo	Int	Imm post (6 w)	EPDS	Mo	Int	Cat	12	Imm post (6 w)	0	1376	Y
Baker (1997)	Pop	M+P	XS	Can rely on partner to take over if tired (SS)	Mo	SR	Imm post (8 w)	EPDS	Mo	SR	Cat	10	Imm post (8 w)	-.22***	6634	Y
Campbell (1992)	CC	P	XS	Instrumental support (PSSQ)	Mo	Int	Imm post (2 m)	SADS/CES-D	Mo	Mix	Diag	-	Imm post (2 m)	-.09	129	Y
Cooper (1999)	Pop	M+P	XS	Practical support (SS)	Mo	Int	Imm post (2 m)	SCID	Mo	Int	Diag	-	Imm post (2 m)	-.24**	147	Y
Dennis (2006b)	Pop	M+P	L	Instrumental support (PPSS)	Mo	SR	Imm post (4 w)	EPDS	Mo	SR	Cat	9	Imm post (4 w)	-.15**	390	Y
Felice (2004)	Pop	M+P	XS	Help with household chores, shopping, and other children (SMS)	Mo	Int	ST post (8 to 10 w)	EPDS/CIS-R	Mo	Mix	Cat	12	ST post (8 to 10 w)	-.1	233	Y
Ho (2013)	Non-Pop	P	XS	Involvement in child-care (PMAQ)	Mo	SR	Imm post (1 w to 2 m)	EPDS	Mo	SR	Cat	10	Imm post (1 w to 2 m)	-.37***	186	Y
Hopkins (2008)	Pop	P	XS	Instrumental support (PSSQ)	Mo	SR	Imm post (2 m)	SADS	Mo	SR	Diag	-	Imm post (2 m)	.26**	114	Y
Horowitz (2005)	Non-Pop	M+P	XS	Practical help (MIT)	Mo	SR	ST post (11 w)	BSI	Mo	SR	Cont	-	ST post (11 w)	0	143	Y
O'Hara (1986)	Pop	M+P	XS	Child-care help (TSSI)	Mo	SR	Postpartum	SADS	Mo	Int	Diag	-	Postpartum	-.38***	99	Y
Paykel (1980)	Pop	M+P	XS	Help from husband (SS)	Mo	Int	Imm post (6 w)	RTAS	Mo	SR	Cat	7	Imm post (6 w)		104	Y
Posmontier (2008)	Non-Pop	M+P	XS	Practical help from husband (SS)	Mo	Int	LT post (6 to 26 w)	MINI	Mo	Int	Diag	-	LT post (6 to 26 w)	.21	46	Y
Romito (2009)	Non-Pop	M+P	XS	Plays with baby (SS)	Mo	SR	LT post (8 m)	GHQ	Mo	SR	Cat	6	LT post (8 m)	-.46***	292	Y
Sayil (2007)	Pop	P	XS	Help with household and childcare tasks (SS)	Mo	Int	LT post (6 to 8 m)	BDI	Mo	Int	Cont	-	LT post (6 to 8 m)	-.19**	182	Y

	Séjourné (2012)	Pop	M+P	XS	Involvement in child-care (SS)	Mo	SR	Imm post (2 m)	EPDS	Mo	SR	Cat	12	Imm post (2 m)	-.29****	119	Y
Anxiety																	
Antenatal instrumental support and antenatal anxiety																	
	Goldberg (2008) - Biological mothers	Non-Pop	P	XS	Child-care tasks (CCT)	Mo	SR	Third trim (36 w)	SAS	Mo	SR	Cont	-	Third trim (36 w)	-.18	30	N
	Goldberg (2008) - Non-biological mothers	Non-Pop	P	XS	Child-care tasks (CCT)	Mo	SR	Third trim (36 w)	SAS	Mo	SR	Cont	-	Third trim (36 w)	-.12	30	N
Antenatal instrumental support and postnatal anxiety																	
	Goldberg (2008) - Biological mothers	Non-Pop	P	L	Child-care tasks (CCT)	Mo	SR	Third trim (36 w)	SAS	Mo	SR	Cont	-	ST post (3 m)	-.17	30	Y
	Goldberg (2008) - Non-biological mothers	Non-Pop	P	L	Child-care tasks (CCT)	Mo	SR	Third trim (36 w)	SAS	Mo	SR	Cont	-	ST post (3 m)	-.27	30	Y
	Stapleton (2012)	Pop	M+P	L	Task support (SSE)	Mo	SR	Second trim (24 to 26 w)	STAI	Mo	SR	Cont	-	Imm post (6 to 8 w)	-.23***	272	Y
Partner stress																	
Depression																	
Antenatal partner stress and antenatal depression																	
	O'Hara (1986)	Pop	M+P	XS	Makes life easier (TSSI) (Rev)	Mo	SR	Second trim	SADS	Mo	Int	Diag	-	Second trim	.25*	99	N
Antenatal partner stress and postnatal depression																	
	Ramchandani (2009)	Pop	M+P	L	Makes things more difficult (SS)	Mo	Int	Third trim (33 w)	PDQ	Mo	Int	Cat	20	Int post (6 m)	.20***	1035	N
Postnatal partner stress and postnatal depression																	
	Grote (2007)	Non-Pop	P	L	Spousal stress (SS)	Mo	SR	Int post (5 m)	SCL-90-R	Mo	SR	Cont	-	LT post (6 to 8 m)	.26***	184	Y
	O'Hara (1986)	Pop	M+P	XS	Makes life easier (TSSI) (Rev)	Mo	SR	Postpartum	SADS	Mo	Int	Diag	-	Postpartum	.23**	99	Y
Relationship satisfaction																	
Depression																	
Antenatal relationship satisfaction and antenatal depression																	
	Adewuya (2007)	Pop	M+P	XS	Satisfaction with marriage (SS)	Mo	SR	Third trim	EPDS	Mo	Mix	Cat	6	Third trim	-.14	180	Y

Anderson (2002)	Non-Pop	M+P	XS	Partner satisfaction (SS)	Mo	SR	Third trim	EPDS	Mo	SR	Cont	-	Third trim	-.38*	31	Y
Bernazzani (2004)	Pop	M	XS	Poor relationship quality (SS) (Rev)	Mo	Int	Third trim	SCID	Mo	Int	Diag	-	Third trim	-.17**	238	Y
Dimitrovsky (1987)	Pop	P	XS	Relationship satisfaction (OSPI)	Mo	SR	Third trim (30 to 36 w)	SRDS	Mo	SR	Cont	-	Third trim (30 to 36 w)	-.28*	54	Y
Dudas (2012)	Pop	M+P	XS	Relationship problems (SS) (Rev)	Mo	Int	Second trim (14 to 24 w)	LQ	Mo	Int	Cat	12	Second trim (14 to 24 w)	-.06	1719	Y
Hock (1995)	Pop		XS	Marital satisfaction (SS)	Mo	SR	Third trim (6 m)	CES-D	Mo	SR	Cont	-	Third trim (6 m)	-.03	142	Y
Kaaya (2010)	Pop	M+P	XS	Relationship quality (SS)	Mo	SR	Third trim (32 w or fewer)	KHSCL	Mo	SR	Cat	1.06	Third trim (32 w or fewer)	.01	600	Y
Kim (2008)	Non-Pop	-	XS	Relationship satisfaction (MSS)	Mo	SR	Second trim (24 w)	EPDS	Mo	SR	Cont	-	Second trim (24 w)	-.47***	60	Y
Marchesi (2009)	Pop	M+P	XS	Problems (SS) (Rev)	Mo	SR	Pregnancy	PRIME-MD	Mo	Int	Diag	-	Pregnancy	-.40**	126	Y
Miszkurka (2012) - Canadian born	Pop	M+P	XS	Marital strain (SS) (Rev)	Mo (Canadian-born)	SR	Second trim (24 to 26 w)	CES-D	Mo	SR	Cat	16	Second trim (24 to 26 w)	-.53***	3762	Y
Miszkurka (2012) - Imm postigrants	Pop	M+P	XS	Marital strain (SS) (Rev)	Mo (Imm postigrant)	SR	Second trim (24 to 26 w)	CES-D	Mo	SR	Cat	16	Second trim (24 to 26 w)	-.56***	1400	Y
Saisto (2001)	Pop	M+P	XS	Relationship satisfaction (SS)	Mo	SR	Third trim (30 w or fewer)	BDI	Mo	SR	Cont	-	Third trim (30 w or fewer)	-.48***	278	Y
Yanikkerem (2013)	Non-Pop	M+P	XS	Satisfaction with marital life (SS)	Mo	SR	Pregnancy	BDI	Mo	SR	Cat	17	Pregnancy	-.11*	651	Y
Antenatal relationship satisfaction and postnatal depression																
Aderibigbe (1993)	Pop	M+P	L	Difficulties (SS) (Rev)	Mo	Int	Second trim	C-GHQ	Mo	Mix	Cat	8	Imm post (6 to 8 w)	-.35*	161	Y
Dimitrovsky (1987)	Pop	P	L	Relationship satisfaction (OSPI)	Mo	SR	Third trim (30 to 36 w)	SRDS	Mo	SR	Cont	-	Imm post (4 to 8 w)	-.27*	54	Y
Escribà-Agüir (2011) - Mothers	Pop	M+P	L	Relationship satisfaction (ENRICH)	Mo	SR	Third trim	EPDS	Mo	SR	Cat	13	LT post (12 m)	-.18*	478	Y
Escribà-Agüir (2011) - Fathers	Pop	M+P	L	Relationship satisfaction (ENRICH)	Fa	SR	Third trim	EPDS	Fa	SR	Cat	11	LT post (12 m)	-.25*	503	Y
Glasser (2000)	Pop	M+P	L	Marital disharmony (SS) (Rev)	Mo	Int	Second trim (26 w)	EPDS	Mo	SR	Cat	10	Imm post (6 w)	-.42***	288	Y
Hock (1995)	Pop		L	Marital satisfaction (SS)	Mo	SR	Second trim (6 m)	CES-D	Mo	SR	Cont	-	LT post (9 m)	-.16	142	Y
Kim (2008)	Non-Pop	-	L	Relationship satisfaction (MSS)	Mo	SR	Second trim (24 w)	EPDS	Mo	SR	Cont	-	Imm post (6 w)	-.64***	60	Y

Lee (2004)	Pop	M+P	L	Relationship satisfaction (IMS)	Mo	SR	Pregnancy (first antenatal assessment)	EPDS	Mo	SR	Cat	10	ST post (3 m)	-.08*	781	Y
McGill (1995)	Non-Pop	M+P	R	Bad relationship during pregnancy (SS) (Rev)	Mo	SR	Retrospective report 6 to 9 m postpartum	EPDS	Mo	SR	Cat	11, 13	LT post (6 to 9 m)	-.24***	1330	Y
Postnatal relationship satisfaction and postnatal depression																
Abbott (2006)	Pop	M+P	XS	Unhappiness in relationship (SS) (Rev)	Mo	Int	Imm post (6 w)	EPDS	Mo	Int	Cat	12	Imm post (6 w)	-.58***	971	Y
Appolonio (2008)	Non-Pop	M+P	XS	Marital satisfaction (PDPI)	Mo	SR	Int post (within 6 m)	EPDS	Mo	SR	Cont	-	Int post (within 6 m)	-.45***	87	Y
Bernazzani (2004)	Pop	M	XS	Poor relationship quality (SS) (Rev)	Mo	Int	Int post (6 m)	SCID	Mo	Int	Diag	-	Int post (6 m)	-.17**	238	Y
Bielawska-Batorowicz (2006)	Non-Pop	P	XS	Relationship satisfaction (MBS)	Fa	SR	Int post (3 to 6 m)	EPDS	Fa	SR	Cont	-	Int post (3 to 6 m)	-.62***	80	Y
Boyce (2005)	Pop	M+P	L	Relationship dissatisfaction (SS) (Rev)	Mo	Int	Imm post (2 d)	SCID/EPDS	Mo	SR	Diag	12	Int post (6 to 24 w postpartum)		425	Y
Campbell (1992)	CC	P	L	Poor relationship (SS) (Rev)	Mo	Int	Imm post (2 m)	SADS/CES-D	Mo	Mix	Diag	-	Imm post (2 m)	-.38***	129	Y
Danaci (2002)	Pop	M+P	XS	Bad relationship (SS) (Rev)	Mo	Int	Int post (within 6 m)	EPDS	Mo	Int	Cat	12	Int post (within 6 m)	-.21**	255	Y
Dørheim (2009)	Pop	M+P	XS	Relationship satisfaction (SS)	Mo	SR	ST post (11 w)	EPDS	Mo	SR	Cat	10	ST post (11 w)	-.22***	2825	Y
Felice (2004)	Pop	M+P	XS	Satisfaction with marital harmony (SMS)	Mo	Int	ST post (8 to 10 w)	EPDS/CIS-R	Mo	Mix	Cat	12	ST post (8 to 10 w)	-.20**	233	Y
Garcia-Esteve (2008)	Pop	M+P	XS	Poor relationship (SS) (Rev)	Mo	SR	Imm post (6 w)	SCID	Mo	Int	Diag	9	Imm post (6 w)	-.44***	334	Y
Giallo (2013)	Pop	M+P	XS	Happiness in relationship (SS)	Fa	SR	LT post (M=8 m)	K6	Fa	SR	Cat	8	LT post (M=8 m)	-.38***	3219	Y
Ho (2013)	Non-Pop	P	XS	Relationship quality (PMAQ)	Mo	SR	Imm post (1 w to 2 m)	EPDS	Mo	SR	Cat	10	Imm post (1 w to 2 m)	-.36***	186	Y
Hock (1995)	Pop		XS	Marital satisfaction (SS)	Mo	SR	LT post (9 m)	CES-D	Mo	SR	Cont	-	LT post (9 m)	-.49***	142	Y
Huang (2006)	Pop	M+P	XS	Relationship quality (SS)	Mo	Mixed	ST post (Within 3 m)	EPDS	Mo	SR	Cat	12	ST post (Within 3 m)	-.16	101	Y
Husain (2006)	Pop	M+P	XS	Marital problems (SS) (Rev)	Mo	SR	ST post (12 w)	EPDS	Mo	SR	Cat	12	ST post (12 w)	-.03	149	Y
Hyde (1995)	Pop	M+P	L	Marital rewards (PRQS)	Mo	Int	Int post (4 m)	CES-D	Mo	Int	Cont	-	Int post (4 m)	-.32***	541	Y
Kozinszky (2011) - 1996 cohort	Pop	M+P	XS	Serious relationship problems (SS) (Rev)	Mo (1996 cohort)	SR	ST post (6 to 10 w)	LQ	Mo	SR	Cat	12	ST post (6 to 10 w)	-.54***	2229	Y

	Kozinszky (2011) - 2006 cohort	Pop	M+P	XS	Serious relationship problems (SS) (Rev)	Mo (2006 cohort)	SR	ST post (6 to 10 w)	LQ	Mo	SR	Cat	12	ST post (6 to 10 w)	-.37***	1613	Y
	McGill (1995)	Non-Pop	M+P	L	Bad relationship since pregnancy (SS) (Rev)	Mo	SR	LT post (6 to 9 m)	EPDS	Mo	SR	Cat	11/12, 13/14	LT post (6 to 9 m)	-.39***	1330	Y
	Ramchandani (2011)	Non-Pop	M+P	XS	Success of relationship (SS)	Fa	SR	ST post (3 m)	SCID	Fa	Int	Diag	-	ST post (3 m)	-.22**	153	Y
	Romito (1999) - French sample	Pop	M+P	L	Relationship quality (SS)	Mo (France)	SR	Imm post (at birth)	GHQ	Mo	SR	Cat	6	LT post (12 m)	-.17**	599	Y
	Romito (1999) - Italian sample	Pop	M+P	L	Relationship quality (SS)	Mo (Italy)	SR	Imm post (at birth)	GHQ	Mo	SR	Cat	6	LT post (12 m)	-.13	711	Y
	Romito (2009)	Non-Pop	M+P	XS	Relationship quality (SS)	Mo	SR	LT post (8 m)	GHQ	Mo	SR	Cat	6	LT post (8 m)	-.24*	292	Y
	Saurel-Cubizolles (2000) - French sample	Pop	M+P	XS	Relationship quality (SS)	Mo (France)	SR	LT post (12 m)	SS	Mo	SR	Cat	-	LT post (12 m)	-.31***	697	Y
	Saurel-Cubizolles (2000) - Italian sample	Pop	M+P	XS	Relationship quality (SS)	Mo (Italy)	SR	LT post (12 m)	SS	Mo	SR	Cat	-	LT post (12 m)	-.44***	697	Y
	Serhan (2013) - Mothers	Pop	M+P	XS	Relationship satisfaction (SS)	Mo	SR	Int post (2 to 6 m)	EPDS	Mo	SR	Cont	-	Int post (2 to 6 m)	-.23**	110	Y
	Serhan (2013) - Fathers	Pop	M+P	XS	Relationship satisfaction (SS)	Fa	SR	Int post (2 to 6 m)	EPDS	Fa	SR	Cont	-	Int post (2 to 6 m)	0	110	Y
Anxiety																	
	Antenatal relationship satisfaction and antenatal anxiety																
	Kim (2008)	Non-Pop	-	XS	Relationship satisfaction (MSS)	Mo	SR	Second trim (24 w)	BAI	Mo	SR	Cont	-	Second trim (24 w)	-.76***	60	Y
	Saisto (2001)	Pop	M+P	XS	Relationship satisfaction (SS)	Mo	SR	Third trim (30 w or fewer)	PAS	Mo	SR	Cont	-	Third trim (30 w or fewer)	.20**	278	Y
	Antenatal relationship satisfaction and postnatal anxiety																
	Kim (2008)	Non-Pop	-	L	Relationship satisfaction (MSS)	Mo	SR	Second trim (24 w)	BAI	Mo	SR	Cont	-	Imm post (6 w)	-.55***	60	N
	Postnatal relationship satisfaction and postnatal anxiety																
	Barnett (1986)	Pop	P	XS	Concerns about marriage (SS) (Rev)	Mo	Int	Imm post (within 3 w of hospital discharge)	SAS	Mo	SR	Cat	40	Imm post (within 3 w of hospital discharge)	-.06	147	Y

	Hyde (1995)	Pop	M+P	L	Marital rewards (PRQS)	Mo	Int	Int post (4 m)	STAI	Mo	Int	Cont	-	Int post (4 m)	-.37**	541	Y
	Saurel-Cubizolles (2000) - Italian sample	Pop	M+P	XS	Relationship satisfaction (SS)	Mo (Italy)	SR	LT post (12 m)	SS	Mo	SR	Cat	-	LT post (12 m)	-.28***	697	Y
	Saurel-Cubizolles (2000) - French sample	Pop	M+P	XS	Relationship satisfaction (SS)	Mo (France)	SR	LT post (12 m)	SS	Mo	SR	Cat	-	LT post (12 m)	-.36***	697	Y
Sexual Satisfaction																	
	Depression																
		Antenatal sexual satisfaction and antenatal depression															
		Dennerstein (1989)	Pop	P	XS	Sexual dissatisfaction (SS) (Rev)	Mo	Int	Third trim (28 w)	BDI	Mo	SR	Cont	-	Third trim (28 w)	-.14*	283	Y
		Boyce (2007)	Pop	P	XS	Affection (DAS)	Fa	SR	Second trim (20 w)	GHQ	Fa	SR	Cat	5	Second trim (20 w)	-.24***	312	Y
		Antenatal sexual satisfaction and postnatal depression															
		Dennerstein (1989)	Pop	P	L	Sexual relationship (SS)	Mo	Int	Third trim (28 w)	BDI	Mo	SR	Cont	-	Int post (4 m)	0	283	N
		Postnatal sexual satisfaction and postnatal depression															
		Huang (2006)	Pop	M+P	XS	Sexual satisfaction (SS)	Mo	Mixed	ST post (Within 3 m)	EPDS	Mo	SR	Cat	12	ST post (Within 3 m)	-.27	50	Y
		Ramchandani (2011)	Non-Pop	M+P	XS	Affection (DAS)	Fa	SR	ST post (3 m)	SCID	Fa	Int	Diag	-	ST post (3 m)	-.29**	153	Y
		Romito (2009)	Non-Pop		XS	Readiness to resume sex after birth (SS)	Mo	SR	LT post (8 m)	GHQ	Mo	SR	Cat	6	LT post (8 m)	-.3	292	Y
Global Support																	
	Depression																
		Antenatal support and antenatal depression															
		Anderson (2002)	Non-Pop	M+P	XS	Support (SS)	Mo	SR	Third trim	EPDS	Mo	SR	Cont	-	Third trim	-.58***	31	Y
		Benute (2013)	Non-Pop	-	XS	Lack of support (PPP) (Rev)	Mo	Int	Second trim	PRIME-MD	Mo	Int	Diag	-	Second trim	.05	51	Y
		Bernazzani (2005)	Non-Pop	M+P	XS	Support (CAME)	Mo	Int	Second trim (12 to 16 w)	EPDS	Mo	Int	Cont	-	Second trim (12 to 16 w)	-.31**	85	Y
		Blaney (2004)	Non-Pop	-	XS	Support (SS)	Mo	Int	Second trim (24 w or more)	CES-D	Mo	Int	Cont	-	Second trim (24 w or more)	-.25***	307	Y
		Bolton (1998)	Pop	M+P	XS	Support (SS)	Mo	SR	Second and third trims	EPDS	Mo	SR	Cat	15	Second and third trims	-.09*	407	Y
		Dayan (2010)	Non-Pop	M+P	XS	Support (SS)	Mo	SR	Third trim (20 to 28 w)	EPDS	Mo	SR	Cat	14	Third trim (20 to 28 w)	-.14*	643	Y

Dhillon (2010)	Non-Pop	M+P	XS	Support (SS)	Mo	SR	Second trim (M=23 w)	EPDS	Mo	SR	Cat	12	Second trim (M=23 w)	-.25**	300	Y
Dudas (2012)	Pop	M+P	XS	Lack of support (SS) (Rev)	Mo	Int	Second trim (14 to 24 w)	LQ	Mo	Int	Cat	12	Second trim (14 to 24 w)	-.06*	1719	Y
Fowles (2011)	Non-Pop	M+P	XS	Support (PPP)	Mo	SR	First trim (M=8 w)	CES-D	Mo	SR	Cont	-	First trim (M=8 w)	-.58***	18	Y
Gottlieb (1995)	Pop	M	XS	General spousal support (NSSQ)	Mo	SR	Third trim (6 to 10 w prior to delivery)	POMS	Mo	SR	Cont	-	Third trim (6 to 10 w prior to delivery)	-.02	50	Y
Hildingsson (2008)	Pop	M+P	XS	Satisfaction with support (SS)	Mo	SR	Second trim (16 w)	EPDS	Mo	SR	Cat	15	Second trim (16 w)	-.25***	2340	Y
Mann (2007)	Pop	-	XS	Support (FSSQ)	Mo	SR	First trim (M=10 w)	EPDS	Mo	SR	Cont	-	First trim (M=10 w)	-.23***	318	Y
Neter (1995)	Non-Pop	M+P	XS	Support during pregnancy (SS)	Mo	Int	Third trim (30 w)	CES-D	Mo	Int	Cont	-	Third trim (30 w)	-.42***	108	Y
Nylen (2013)	Non-Pop	M+P	XS	Adequacy of support (SIRRS)	Mo	SR	Third trim (0 to 28 w)	SCID	Mo	Int	Diag	-	Third trim (0 to 28 w)	-.02	211	Y
Priel (2000)	Pop	P	XS	Expected support (SEI)	Mo	SR	Third trim (M=27 w)	CES-D	Mo	SR	Cont	-	Third trim (M=27 w)	-.11	121	Y
Rubertsson (2003)	Pop	M+P	XS	Support in early pregnancy (SS)	Mo	Sr	Second trim (Mdn = 15 w)	EPDS	Mo	SR	Cat	15	Second trim (Mdn = 15 w)	-.67***	2997	Y
Sagrestano (2004)	Non-Pop	M+P	XS	Satisfaction with support (SS)	Mo	SR	Second trim (M=20 w)	CES-D	Mo	SR	Cont	-	Second trim (M=20 w)	-.36***	197	Y
Simpson (2003) - Mothers	Non-Pop	P	XS	Support (SPS)	Mo	SR	Third trim (M=34 w)	CES-D	Mo	SR	Cont	-	Third trim (M=34 w)	-.49***	106	Y
Simpson (2003) - Fathers	Non-Pop	P	XS	Support (SPS)	Fa	SR	Third trim (M=34 w)	CES-D	Fa	SR	Cont	-	Third trim (M=34 w)	-.38***	106	Y
Spoozak (2009)	Non-Pop	-	XS	Support (KSSI-M)	Mo	Int	Second trim (16 w or fewer)	CIDI	Mo	Int	Diag	-	Second trim (16 w or fewer)	-.07*	783	Y
Terry (1996)	Non-Pop	M+P	XS	Emotional and instrumental support (SS)	Mo	SR	Third trim	EPDS	Mo	SR	Cont	-	Third trim	-.31***	197	Y
Tietjen (1985)	Non-Pop	P	XS	Satisfaction with support (SS)	Mo	SR	Third trim (M=35 w)	DACL	Mo	SR	Cont	-	Third trim (M=35 w)	-.48*	23	Y
Antenatal support and postnatal depression																
Aceti (2012)	CC	M+P	L	Support of partner (SS)	Mo	Int	Third trim	EPDS/SCID	Mo	Mix	Cat	12	Imm post (1 m)	-.39**	44	Y
Bernazzani (2005)	Non-Pop	M+P	L	Support (CAME)	Mo	Int	Second trim (12 to 16 w)	EPDS	Mo	Int	Cont	-	ST post (3 m)	-.27**	85	Y
Collins (1993)	Non-Pop	M+P	L	Instrumental and emotional support (SS)	Mo	Int	Third trim (M=30 w)	CES-D	Mo	Int	Cont	-	Imm post (4 to 8 w)	-.33***	129	Y
Leung (2005)	Pop	M+P	L	Support (PSSQ)	Mo	SR	Third trim (M=36 w)	EPDS	Mo	SR	Cont	-	Imm post (6 w)	-.22***	385	Y
Priel (2000)	Pop	P	L	Expected support (SEI)	Mo	SR	Third trim (M=27 w)	CES-D	Mo	SR	Cont	-	Imm post (8 w)	-.03	121	Y

Terry (1996)	Non-Pop	M+P	L	Emotional and instrumental support (SS)	Mo	SR	Third trim	EPDS	Mo	SR	Cont	-	Int post (5 m)	-.37***	163	Y
Postnatal support and postnatal depression																
Aydin (2005)	Pop	P	XS	Lack of support (SS) (Rev)	Mo	SR	LT post (within 12 m)	EPDS	Mo	SR	Cat	13	LT post (within 12 m)	-.17***	728	Y
Feldman (2007) - Mothers	Pop	P	XS	Instrumental and emotional support (SS)	Mo	SR	Int post (3 to 5 m)	BDI	Mo	SR	Cont	-	Int post (3 to 5 m)	-.36*	49	Y
Feldman (2007) - Fathers	Pop	P	XS	Instrumental and emotional support (SS)	Mo	SR	Int post (3 to 5 m)	BDI	Fa	SR	Cont	-	Int post (3 to 5 m)	-.12	49	Y
Gottlieb (1995)	Pop	M	XS	General spousal support (NSSQ)	Mo	SR	Imm post (5 to 6 w)	POMS	Mo	SR	Cont	-	Imm post (5 to 6 w)	-.19	50	Y
Haslam (2006)	Non-Pop	P	XS	Emotional support and instrumental support (SS)	Mo	SR	Imm post (4 w)	EPDS/BDI/SCID	Mo	SR	Cat	11	Imm post (4 w)	.02	168	Y
Iles (2011) - Mothers	Pop	M+P	L	Discrepancy in support (SOS) (Rev)	Mo	SR	Imm post (within 1 w)	EPDS	Mo	SR	Cont	-	ST post (3 m)	-.16*	203	Y
Iles (2011) - Fathers	Pop	M+P	L	Discrepancy in support (SOS) (Rev)	Fa	SR	Imm post (within 1 w)	EPDS	Fa	SR	Cont	-	ST post (3 m)	-.23**	203	Y
Kakyo (2012)	Pop	M+P	XS	Support (SS)	Mo	SR	ST post (5 to 12 w)	EPDS	Mo	SR	Cat	10	ST post (5 to 12 w)	-.20**	202	Y
McGill (1995)	Non-Pop	M+P	L	Support (SS)	Mo	SR	Long-term (6 to 9 m)	EPDS	Mo	SR	Cat	11/12, 13/14	Long-term (6 to 9 m)	-.27***	1330	Y
Melo (2012)	Pop	M+P	XS	Support (SS)	Mo	SR	Imm post (4 to 6 w)	EPDS	Mo	SR	Cat	12	Imm post (4 to 6 w)	-.09	555	Y
Neter (1995)	Non-Pop	M+P	XS	Support (SS)	Mo	Int	Imm post (4 to 8 w)	CES-D	Mo	Int	Cont	-	Imm post (4 to 8 w)	-.38***	108	Y
Priel (2000)	Pop	P	XS	Received support (SEI)	Mo	SR	Imm post (8 w)	CES-D	Mo	SR	Cont	-	Imm post (8 w)	-.29**	121	Y
Tietjen (1985)	Non-Pop	P	XS	Satisfaction with support (SS)	Mo	SR	ST post (3 m)	DACL	Mo	SR	Cont	-	ST post (3 m)	-.44*	23	Y
Tomlinson (2004)	Pop	M+P	XS	Lack of support (SS) (Rev)	Mo	Int	Imm post (2 m)	SCID	Mo	Int	Diag	-	Imm post (2 m)	-.27*	147	Y
Anxiety																
Antenatal support and antenatal anxiety																
Gottlieb (1995)	Pop	M	XS	General spousal support (NSSQ)	Mo	SR	Third trim (6 to 10 w prior to delivery)	POMS	Mo	SR	Cont	-	Third trim (6 to 10 w prior to delivery)	-.19	50	Y
Kemp (1989)	Non-Pop	M+P	XS	Support (SBI)	Mo	SR	Third trim (M=32 w)	STAI	Mo	SR	Cont	-	Third trim (M=32 w)	-.4	20	Y
Neter (1995)	Non-Pop	M+P	XS	Support during pregnancy (SS)	Mo	Int	Third trim (M=30 w)	STAI	Mo	Int	Cont	-	Third trim (M=30 w)	-.36***	108	Y

	Sagrestano (2004)	Non-Pop	M+P	XS	Satisfaction with support (SS)	Mo	SR	Second trim (M=20 w)	STAI	Mo	SR	Cont	-	Second trim (M=20 w)	-.31***	197	Y
	Tietjen (1985)	Non-Pop	P	XS	Satisfaction with support (SS)	Mo	SR	Third trim (M=35 w)	DACL	Mo	SR	Cont	-	Third trim (M=35 w)	-.39	23	Y
	Postnatal support and postnatal anxiety																
	Gottlieb (1995)	Pop	M	XS	General spousal support (NSSQ)	Mo	SR	Imm post (5 to 6 w)	POMS	Mo	SR	Cont	-	Imm post (5 to 6 w)	-.32*	50	Y
	Tietjen (1985)	Non-Pop	P	XS	Satisfaction with support (SS)	Mo	SR	ST post (3 m)	DACL	Mo	SR	Cont	-	ST post (3 m)	-.27	23	Y
Withdrawal																	
	Depression																
	Antenatal withdrawal and antenatal depression																
	Crockenberg (2003)	Pop	P	XS	Avoidance (MCQ)	Mo	SR	Third trim (7 to 8 m)	CES-D	Mo	SR	Cont	-	Third trim (7 to 8 m)	.37***	84	Y
	O'Hara (1986)	Pop	M+P	XS	Availability (TSSI) (Rev)	Mo	SR	Second trim	SADS	Mo	Int	Diag	-	Second trim	.28**	99	Y
	Antenatal withdrawal and postnatal depression																
	Crockenberg (2003)	Pop	P	L	Avoidance (MCQ)	Mo	SR	Third trim (7 to 8 m)	CES-D	Mo	SR	Cont	-	Int post (5 m)	.60***	84	N
	Postnatal withdrawal and postnatal depression																
	Elliston (2008) - Mothers	Pop	-	L	Withdrawal (SS)	Mo	Ob	ST post (3 m)	CES-D	Mo	SR	Cont	-	ST post (3 m)	.01	115	Y
	Elliston (2008) - Fathers	Pop	-	L	Withdrawal (SS)	Fa	Ob	ST post (3 m)	CES-D	Fa	SR	Cont	-	ST post (3 m)	.25**	115	Y
	O'Hara (1986)	Pop	M+P	XS	Availability (TSSI) (Rev)	Mo	SR	Postpartum	SADS	Mo	Int	Diag	-	Postpartum	.29**	99	Y

Note. IV acronyms: ALPHA = Antenatal Psychosocial Health Assessment form, ASI = Attachment Style Interview, CAGE = Cut-down-Annoyed-Guilty-Eye-opener, CAME = Contextual Assessment for Maternity Experience, CCAS = Child Care Activities Scale, CCT = Child Care Tasks, DAS = Dyadic Adjustment Scale, ENRICH = ENRICH Marital Satisfaction Scale, FMFM-MOS = Family and Marital Functioning Measures - Medical Outcomes Study, FSSQ = Duke-UNC Function Social Support Questionnaire, IBM = Intimate Bonds Measure, IMS = Index of Marital Satisfaction, KSSI = Kendler Social Support Questionnaire, MBS = Marital Bonds Scale, MCQ = Marital Conflict Questionnaire, MFRQ = Male-Female Relations Questionnaire, MIT = Mothers Informational Tool, MPSS = Measure of Perceived Social Support, MSPSS = Multidimensional Scale of Perceived Social Support, MSS = Marital Satisfaction Scale, NSSQ = Norbeck Social Support Questionnaire, OSPI = Objective Social Perception Inventory, PDPI = Postpartum Depression Predictors Inventory, PMAQ = Postpartum Maternal Adjustment Questionnaire, PPP = Prenatal Psychosocial Profile, PPSS = Postpartum Partner Support Scale, PRFQ = Psychosocial Risk Factor Questionnaire, PRQS = Partner Role Quality Scale, PSSQ = Postpartum Social Support Questionnaire, QFI = Quantity/Frequency of Alcohol use, QRI = Quality of Relationships Inventory, RQ = Relationships Questionnaire, RS = Relationship Scales, SBI = Support Behaviour Inventory, SCS = Social Conflict Scale, SEI = Support Expectations Index, SIRRS = Support in Intimate Relationships Rating Scale, SMS = Social Maladjustment Scale, SOS = Significant Other Scale, SPS = Social Provisions Scale, SSE = Social Support Effectiveness, SSI = Social Stress Indicators, SSNI = Social Support Network Inventory, SSQ = Social Support Questionnaire, TCPQ = The Close Persons Questionnaire, TENSE = Test of Negative Social Exchanges, TRQ = The Relationship Questionnaire, TSSI = The Social Support Inventory.

DV acronyms: BAI = Beck Anxiety Inventory, BDI = Beck Depression Inventory, BSI = Brief Symptom Inventory, CES-D = Centre for Epidemiological Studies – Depression, CIDI = Composite International Diagnostic Index, CIS = Clinical Interview Schedule, DACL = Lubin Depression Adjective List, DASS = Depression, Anxiety, and Stress Scales, EPDS = Edinburgh Postnatal Depression Scale, GHQ = General Health Questionnaire, HADS = Hospital Anxiety and Depression Scales, K6 = Kessler-6, KHSCL = Kiswahili adapted version of the Hopkins Symptom Check List, LQ = Leverton Questionnaire, MINI = Mini-International Neuropsychiatric Interview, PAS Psychiatric Assessment Schedule, PDQ = Pitt Depression Questionnaire, POMS = Profile of Mood States, PRIME-MD = Primary Care Evaluation of Mental Disorders, RTAS = Raskin Three Areas Scale, SADS = Schedule for

Affective Disorders and Schizophrenia, SAS = Speilberger Anxiety Scale, SCID = Structure Clinical Interview for DSM, SCL-90-R = Symptoms Check List-90-Revised, SRDS = Zung Self Rating Depression Scale, STAI = State Trait Anxiety Inventory.

Other acronyms: CC = Case control, Cat = Categorical, Cont = Continuous, Diag = Diagnosis, Fa = Father, Int = Interview, L = Longitudinal, -M = Modified, M = Multiparous, Mo = Mother, Non-Pop = Non-population sample, Ob = Observed, P = Primiparous, Pa = Parent, Pop = Population sample, SR = Self-report questionnaire, SS = Study specific measure, -T = Trait, XS = Cross-sectional.

Time periods: m = months, w = weeks; First trimester = 0 to 12 weeks pregnant, Second trimester = 13 to 26 weeks pregnant, Third trimester = 27 to 40 weeks pregnant, Imm post = Immediate postpartum = 0 to 8 weeks postpartum, ST post = Short-term postpartum = 9 to 16 weeks postpartum, Int post = Intermediate postpartum = 17 to 24 weeks postpartum, LT post = Long-term postpartum = 24 to 52 weeks postpartum.

Appendix I. Studies included in the systematic review and meta-analysis-analysis

Abbott, M. W., & Williams, M. M. (2006). Postnatal depressive symptoms among Pacific mothers in Auckland: prevalence and risk factors. *Australian and New Zealand Journal of Psychiatry, 40*(3), 230-238. doi: 10.1111/j.1440-1614.2006.01779.x

Aceti, F., Aveni, F., Baglioni, V., Carluccio, G., Colosimo, D., Giacchetti, N., . . . Biondi, M. (2012). Perinatal and postpartum depression: from attachment to personality. A pilot study. *Journal of Psychopathology / Giornale di Psicopatologia, 18*(4), 328-334.

Aderibigbe, Y., Gureje, O., & Omigbodun, O. (1993). Postnatal emotional disorders in Nigerian women: a study of antecedents and associations. *The British Journal of Psychiatry, 163*(5), 645-650. doi: 10.1192/bjp.163.5.645

Adewuya, A. O., Ola, B. A., Aloba, O. O., Dada, A. O., & Fasoto, O. O. (2007). Prevalence and correlates of depression in late pregnancy among Nigerian women. *Depression and Anxiety, 24*(1), 15-21. doi: 10.1002/da.20221

Anderson, C., Roux, G., & Pruitt, A. (2002). Prenatal depression, violence, substance use, and perception of support in pregnant middle-class women. *Journal of Perinatal Education, 11*(1), 14-21. doi: 10.1624/105812402x88560

Appolonio, K. K., & Fingerhut, P. (2008). Postpartum depression in a military sample. *Military Medicine, 173*(11), 1085-1091. doi: 10.7205/milmed.173.11.1085

Aydin, N., Inandi, T., & Karabulut, N. (2005). Depression and associated factors among women within their first postnatal year in Erzurum province in eastern Turkey. *Women and Health, 41*(2), 1-12. doi: 10.1300/j013v41n02_01

Baker, D., & Taylor, H. (1997). The relationship between condition-specific morbidity, social support and material deprivation in pregnancy and early motherhood. *Social Science and Medicine, 45*(9), 1325-1336. doi: 10.1016/s0277-9536(97)00059-2

Barnett, B., & Parker, G. (1986). Possible determinants, correlates and consequences of high levels of anxiety in primiparous mothers. *Psychological Medicine, 16*(1), 177-185. doi: 10.1017/s0033291700002610

Benute, G. R. G., Nozzella, D. C. R., Prohaska, C., Liao, A., de Lucia, M. C. S., & Zugaib, M. (2013). twin pregnancies: evaluation of major depression, stress, and social support. *Twin Research and Human Genetics, 16*(2), 629-633. doi: 10.1017/thg.2012.153

Bernazzani, O., Conroy, S., Marks, M., Siddle, K., Guedeney, N., Bifulco, A., . . . Henshaw, C. (2004). Contextual Assessment of the Maternity Experience: Development of an instrument for cross-cultural research. *The British Journal of Psychiatry, 184*, s24-s30. doi: 10.1192/bjp.184.46.s24

Bernazzani, O., Marks, M. N., Bifulco, A., Siddle, K., Asten, P., & Conroy, S. (2005). Assessing psychosocial risk in pregnant/postpartum women using the Contextual Assessment of Maternity Experience (CAME): Recent life adversity, social support and maternal feelings. *Social Psychiatry and Psychiatric Epidemiology, 40*(6), 497-508. doi: 10.1007/s00127-005-0917-y

Bielawska-Batorowicz, E., & Kossakowska-Petrycka, K. (2006). Depressive mood in men after the birth of their offspring in relation to a partner's depression, social support, fathers' personality and prenatal expectations. *Journal of Reproductive and Infant Psychology, 24*(1), 21-29. doi: 10.1080/02646830500475179

Bilszta, J. L., Tang, M., Meyer, D., Milgrom, J., Ericksen, J., & Buist, A. E. (2008). Single motherhood versus poor partner relationship: Outcomes for antenatal mental health. *Australian and New Zealand Journal of Psychiatry, 42*(1), 56-65. doi: 10.1080/00048670701732731

Bjerke, S. E., Vangen, S., Nordhagen, R., Ytterdahl, T., Magnus, P., & Stray-Pedersen, B. (2008). Postpartum depression among Pakistani women in Norway: prevalence and risk factors. *Journal of Maternal-Fetal and Neonatal Medicine, 21*(12), 889-894. doi: 10.1080/14767050802320340

Blaney, N. T., Fernandez, M., Ethier, K. A., Wilson, T. E., Walter, E., & Koenig, L. J. (2004). Psychosocial and Behavioural Correlates of Depression Among HIV-Infected Pregnant Women. *AIDS Patient Care and STDs, 18*(7), 405-415. doi: 10.1089/1087291041518201

Bolton, H. L., Hughes, P. M., Turton, P., & Sedgwick, P. (1998). Incidence and demographic correlates of depressive symptoms during pregnancy in an inner London population. *Journal of Psychosomatic Obstetrics and Gynecology, 19*(4), 202-209. doi: 10.3109/01674829809025698

Bottino, M. N., Nadanovsky, P., Moraes, C. L., Reichenheim, M. E., & Lobato, G. (2012). Reappraising the relationship between maternal age and postpartum depression according to the evolutionary theory: empirical evidence from a survey in primary health services. *Journal of Affective Disorders, 142*(1-3), 219-224. doi: 10.1016/j.jad.2012.04.030

Boyce, P., Condon, J., Barton, J., & Corkindale, C. (2007). First-Time Fathers' Study: psychological distress in expectant fathers during pregnancy. *Australian and New Zealand Journal of Psychiatry, 41*(9), 718-725. doi: 10.1080/00048670701517959

Boyce, P., & Hickey, A. (2005). Psychosocial risk factors to major depression after childbirth. *Social Psychiatry and Psychiatric Epidemiology, 40*(8), 605-612. doi: 10.1007/s00127-005-0931-0

Boyce, P., Hickie, I., & Gordon, P. (1991). Parents, partners or personality? Risk factors for post-natal depression. *Journal of Affective Disorders, 21*(4), 245-255. doi: 10.1016/0165-0327(91)90004-c

Boyce, P. M., Johnstone, S. J., Hickey, A. R., Morris-Yates, A. D., & Harris, M. G. (2001). Obstetric risk factors for postnatal depression in urban and rural community samples. *Australian and New Zealand Journal of Psychiatry, 35*(1), 69-74. doi: 10.1046/j.1440-1614.2001.00862.x

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*(2), 172-180. doi: 10.1177/0884217503252127

Campbell, S. B., Cohn, J. F., Flanagan, C., Popper, S., & Meyers, T. (1992). Course and correlates of postpartum depression during the transition to parenthood. *Development and Psychopathology, 4*(1), 29-47. doi: 10.1017/s095457940000554x

Chapman, H. A., Hobfoll, S. E., & Ritter, C. (1997). Partners' stress underestimations lead to women's distress: a study of pregnant inner-city women. *Journal of Personality and Social Psychology, 73*(2), 418-425. doi: 10.1037//0022-3514.73.2.418

Collins, N. L., Dunkel-Schetter, C., Lobel, M., & Scrimshaw, S. C. (1993). Social support in pregnancy: psychosocial correlates of birth outcomes and postpartum depression. *Journal of Personality and Social Psychology, 65*(6), 1243-1258. doi: 10.1037/0022-3514.65.6.1243

Conde, A., Figueiredo, B., & Bifulco, A. (2011). Attachment style and psychological adjustment in couples. *Attachment and Human Development, 13*(3), 271-291. doi: 10.1080/14616734.2011.562417

Cooper, P. J., Tomlinson, M., Swartz, L., Woolgar, M., Murray, L., & Molteno, C. (1999). Post-partum depression and the mother-infant relationship in a South African peri-urban settlement. *British Journal of Psychiatry, 175*, 554-558. doi: 10.1192/bjp.175.6.554

Crockenberg, S. C., & Leerkes, E. M. (2003). Parental acceptance, postpartum depression, and maternal sensitivity: Mediating and moderating processes. *Journal of Family Psychology, 17*(1), 80-93. doi: 10.1037/0893-3200.17.1.80

Danaci, A. E., Dinc, G., Deveci, A., Sen, F. S., & Icelli, I. (2002). Postnatal depression in Turkey: Epidemiological and cultural aspects. *Social Psychiatry and Psychiatric Epidemiology, 37*(3), 125-129. doi: 10.1007/s001270200004

Das Eiden, R., Edwards, E. P., & Leonard, K. E. (2002). Mother-infant and father-infant attachment among alcoholic families. *Development and Psychopathology, 14*(2), 253-278. doi: 10.1017/s0954579402002043

Dayan, J., Creveuil, C., Dreyfus, M., Herlicoviez, M., Baleyte, J. M., & O'Keane, V. (2010). Developmental model of depression applied to prenatal depression: role of present and past life events, past emotional disorders and pregnancy stress. *PLoS ONE, 5*(9), e12942. doi: 10.1371/journal.pone.0012942

Deater-Deckard, K., Pickering, K., Dunn, J. F., & Golding, J. (1998). Family structure and depressive symptoms in men preceding and following the birth of a child. *American Journal of Psychiatry, 155*(6), 818-823. doi: 10.1111/1469-7610.00521

Dennerstein, L., Lehert, P., & Riphagen, F. (1989). Postpartum depression—risk factors. *Journal of Psychosomatic Obstetrics and Gynaecology, 10*, 53-67. doi: 10.3109/01674828909016681

Dennis, C. L., & Ross, L. E. (2006). Depressive symptomatology in the immediate postnatal period: identifying maternal characteristics related to true- and false-positive screening scores. *Canadian Journal of Psychiatry, 51*(5), 265-273.

Dennis, C.-L., & Ross, L. (2006). Women's perceptions of partner support and conflict in the development of postpartum depressive symptoms. *Journal of Advanced Nursing, 56*(6), 588-599. doi: 10.1111/j.1365-2648.2006.04059.x

Dhillon, N., & MacArthur, C. (2010). Antenatal depression and male gender preference in Asian women in the UK. *Midwifery, 26*(3), 286-293. doi: 10.1016/j.midw.2008.09.001

Dimitrovsky, L., Perez-Hirshberg, M., & Itskowitz, R. (1987). Depression during and following pregnancy: quality of family relationships. *Journal of Psychology, 121*(3), 213-218. doi: 10.1080/00223980.1987.9712660

Dørheim, S. K., Bondevik, G. T., Eberhard-Gran, M., & Bjorvatn, B. (2009). Sleep and depression in postpartum women: a population-based study. *Sleep, 32*(7), 847-855.

Dudas, R. B., Csatordai, S., Devosa, I., Toreki, A., Ando, B., Barabas, K., . . . Kozinszky, Z. (2012). Obstetric and psychosocial risk factors for depressive symptoms during pregnancy. *Psychiatry Research, 200*(2-3), 323-328. doi: 10.1016/j.psychres.2012.04.017

Dudley, M., Roy, K., Kelk, N., & Bernard, D. (2001). Psychological correlates of depression in fathers and mothers in the first postnatal year. *Journal of Reproductive and Infant Psychology, 19*(3), 187-202. doi: 10.1080/02646830120073206

Eberhard-Gran, M., Eskild, A., Tambs, K., Samuelsen, S. O., & Opjordsmoen, S. (2002). Depression in postpartum and non-postpartum women: prevalence and risk factors. *Acta Psychiatrica Scandinavica, 106*(6), 426-433. doi: 10.1034/j.1600-0447.2002.02408.x

Elliston, D., McHale, J., Talbot, J., Parmley, M., & Kuersten-Hogan, R. (2008). Withdrawal from coparenting interactions during early infancy. *Family Process, 47*(4), 481-499.

Escribà-Agüir, V., & Artazcoz, L. (2011). Gender differences in postpartum depression: a longitudinal cohort study. *Journal of Epidemiology and Community Health, 65*(4), 320-326. doi: 10.1136/jech.2008.085894

Feldman, R., Sussman, A. L., & Zigler, E. (2004). Parental leave and work adaptation at the transition to parenthood: Individual, marital, and social correlates. *Journal of Applied Developmental Psychology, 25*(4), 459-479. doi: 10.1016/j.appdev.2004.06.004

Felice, E., Saliba, J., Grech, V., & Cox, J. (2004). Prevalence rates and psychosocial characteristics associated with depression in pregnancy and postpartum in Maltese women. *Journal of Affective Disorders, 82*(2), 297-301. doi: 10.1016/j.jad.2003.11.011

Figueiredo, B., Field, T., Diego, M., Hernandez-Reif, M., Deeds, O., & Ascencio, A. (2008). Partner relationships during the transition to parenthood. *Journal of Reproductive and Infant Psychology, 26*(2), 99-107. doi: 10.1080/02646830701873057

Fisher, J. R. W., Morrow, M. M., Ngoc, N. T. N., & Anh, L. T. H. (2004). Prevalence, nature, severity and correlates of postpartum depressive symptoms in Vietnam. *Bjog-an International Journal of Obstetrics and Gynaecology, 111*(12), 1353-1360. doi: 10.1111/j.1471-0528.2004.00394.x

Fowles, E. R., Murphey, C., & Ruiz, R. J. (2011). Exploring relationships among psychosocial status, dietary quality, and measures of placental development during the first trimester in low-income women. *Biological Research for Nursing, 13*(1), 70-79. doi: 10.1177/1099800410378733

Gallagher, R. W., Hobfoll, S. E., Ritter, C., & Lavin, J. (1997). Marriage, Intimate Support and Depression during Pregnancy: A Study of Inner-City Women. *Journal of Health Psychology, 2*(4), 457-469. doi: 10.1177/135910539700200403

Garcia-Esteve, L., Navarro, P., Ascaso, C., Torres, A., Aguado, J., Gelabert, E., & Martin-Santos, R. (2008). Family caregiver role and premenstrual syndrome as associated factors for

postnatal depression. *Archives of Women's Mental Health, 11*(3), 193-200. doi: 10.1007/s00737-008-0012-y

Giallo, R., d'Esposito, F., Cooklin, A., Mensah, F., Lucas, N., Wade, C., & Nicholson, J. M. (2013). Psychosocial risk factors associated with fathers' mental health in the postnatal period: Results from a population-based study. *Social Psychiatry and Psychiatric Epidemiology, 48*(4), 563-573. doi: 10.1007/s00127-012-0568-8

Giardinelli, L., Innocenti, A., Benni, L., Stefanini, M., Lino, G., Lunardi, C., . . . Faravelli, C. (2012). Depression and anxiety in perinatal period: Prevalence and risk factors in an Italian sample. *Archives of Women's Mental Health, 15*(1), 21-30. doi: 10.1007/s00737-011-0249-8

Glasser, S., Barell, V., Boyko, V., Ziv, A., Lusky, A., Shoham, A., & Hart, S. (2000). Postpartum depression in an Israeli cohort: demographic, psychosocial and medical risk factors. *Journal of Psychosomatic Obstetrics and Gynecology, 21*(2), 99-108. doi: 10.3109/01674820009075615

Glazier, R., Elgar, F., Goel, V., & Holzapfel, S. (2004). Stress, social support and emotional distress in a community sample of pregnant women. *Journal of Psychosomatic Obstetrics and Gynecology, 25*(3-4), 247-255. doi: 10.1080/01674820400024406

Goldberg, A. E., & Smith, J. Z. (2008). The social context of lesbian mothers' anxiety during early parenthood. *Parenting: Science and Practice, 8*(3), 213-239. doi: 10.1080/15295190802204801

Gottlieb, L. N., & Mendelson, M. J. (1995). Mothers' moods and social support when a second child is born. *Maternal-Child Nursing Journal, 23*(1), 3-14.

Grote, N. K., & Bledsoe, S. E. (2007). Predicting postpartum depressive symptoms in new mothers: the role of optimism and stress frequency during pregnancy. *Health and Social Work, 32*(2), 107-118. doi: 10.1093/hsw/32.2.107

Haslam, D. M., Pakenham, K. I., & Smith, A. (2006). Social support and postpartum depressive symptomatology: the mediating role of maternal self-efficacy. *Infant Mental Health Journal, 27*(3), 276-291. doi: 10.1002/imhj.20092

Hassert, S., & Kurpius, S. E. (2011). Latinas and postpartum depression: role of partner relationship, additional children, and breastfeeding. *Journal of Multicultural Counseling and Development, 39*(2), 90-100. doi: 10.1002/j.2161-1912.2011.tb00143.x

Hildingsson, I., Tingvall, M., & Rubertsson, C. (2008). Partner support in the childbearing period: a follow up study. *Women and Birth, 21*(4), 141-148. doi: 10.1016/j.wombi.2008.07.003

Ho, C. L., Chang, L. I., & Wan, K. S. (2013). The relationships between postpartum adaptation and postpartum depression symptoms of first pregnancy mothers in Taiwan. *International Journal of Psychiatry in Medicine, 45*(1), 1-13. doi: 10.2190/pm.45.1.a

Hobfoll, S. E., & Leiberman, J. R. (1989). Effects of mastery and intimacy on anxiety following pregnancy: For whom is support supportive and from whom? *Anxiety Research, 1*(4), 327-341. doi: 10.1080/08917778908248729

Hock, E., Schirtzinger, M. B., Lutz, M. B., & Widaman, K. (1995). Maternal depressive symptomatology over the transition to parenthood: assessing the influence of marital satisfaction and marital sex role traditionalism. *Journal of Family Psychology, 9*(1), 79-88. doi: 10.1037//0893-3200.9.1.79

Hopkins, J., & Campbell, S. (2008). Development and validation of a scale to assess social support in the postpartum period. *Archives of Women's Mental Health, 11*(1), 57-65. doi: 10.1007/s00737-008-0212-5

Horowitz, J. A., Damato, E. G., Duffy, M. E., & Solon, L. (2005). The relationship of maternal attributes, resources, and perceptions of postpartum experiences to depression. *Research in Nursing and Health, 28*(2), 159-171. doi: 10.1002/nur.20068

Huang, Y., & Mathers, N. (2006). A comparison of sexual satisfaction and post-natal depression in the UK and Taiwan. *International Nursing Review, 53*(3), 197-204. doi: 10.1111/j.1466-7657.2006.00459.x

Husain, N., Bevc, I., Husain, M., Chaudhry, I., Atif, N., & Rahman, A. (2006). Prevalence and social correlates of postnatal depression in a low income country. *Archives of Women's Mental Health, 9*(4), 197-202. doi: 10.1007/s00737-006-0129-9

Hyde, J. S., Klein, M. H., Essex, M. J., & Clark, R. (1995). Maternity leave and women's mental health. *Psychology of Women Quarterly, 19*(2), 257-285. doi: 10.1111/j.1471-6402.1995.tb00291.x

Iles, J., Slade, P., & Spiby, H. (2011). Posttraumatic stress symptoms and postpartum depression in couples after childbirth: The role of partner support and attachment. *Journal of Anxiety Disorders, 25*(4), 520-530. doi: 10.1016/j.janxdis.2010.12.006

Jeong, H.-G., Lim, J.-S., Lee, M.-S., Kim, S.-H., Jung, I.-K., & Joe, S.-H. (2013). The association of psychosocial factors and obstetric history with depression in pregnant women: focus on the role of emotional support. *General Hospital Psychiatry, 35*(4), 354-358. doi: 10.1016/j.genhosppsych.2013.02.009

Kaaya, S. F., Mbwambo, J. K., Kilonzo, G. P., Van Den Borne, H., Leshabari, M. T., Fawzi, M. C., & Schaalma, H. (2010). Socio-economic and partner relationship factors associated with antenatal depressive morbidity among pregnant women in Dar es Salaam, Tanzania. *Tanzania Journal of Health Research, 12*(1), 23-35.

Kakyo, T. A., Muliira, J. K., Mbalinda, S. N., Kizza, I. B., & Muliira, R. S. (2012). Factors associated with depressive symptoms among postpartum mothers in a rural district in Uganda. *Midwifery, 28*(3), 374-379. doi: 10.1016/j.midw.2011.05.001

Kara, S., Tan, S., Aldemir, S., Yilmaz, A. E., Tatli, M. M., & Dilmen, U. (2013). Investigation of perceived social support in mothers of infants hospitalized in neonatal Intensive Care Unit. *Hippokratia, 17*(2), 130-135. doi: 10.1136/archdischild-2012-302724.1764

Kemp, V. H., & Hatmaker, D. D. (1989). Stress and social support in high-risk pregnancy. *Research in Nursing and Health, 12*(5), 331-336. doi: 10.1002/nur.4770120509

Kim, Y. K., Hur, J. W., Kim, K. H., Oh, K. S., & Shin, Y. C. (2008). Prediction of postpartum depression by sociodemographic, obstetric and psychological factors: A prospective study. *Psychiatry and Clinical Neurosciences, 62*(3), 331-340. doi: 10.1111/j.1440-1819.2008.01801.x

Kozinszky, Z., Dudas, R. B., Csatordai, S., Devosa, I., Toth, E., Szabo, D., . . . Pal, A. (2011). Social dynamics of postpartum depression: A population-based screening in South-Eastern Hungary. *Social Psychiatry and Psychiatric Epidemiology, 46*(5), 413-423. doi: 10.1007/s00127-010-0206-2

Leathers, S. J., Kelley, M. A., & Richman, J. A. (1997). Postpartum depressive symptomatology in new mothers and fathers: parenting, work, and support. *Journal of Nervous and Mental Disease, 185*(3), 129-139. doi: 10.1097/00005053-199703000-00001

Lee, D. T. S., Yip, A. S. K., Leung, T. Y. S., & Chung, T. K. H. (2004). Ethnoepidemiology of postnatal depression - Prospective multivariate study of sociocultural risk factors in a Chinese population in Hong Kong. *British Journal of Psychiatry, 184*, 34-40. doi: 10.1192/bjp.184.1.34

Lemola, S., Stadlmayr, W., & Grob, A. (2009). Infant irritability: the impact of fetal alcohol exposure, maternal depressive symptoms, and low emotional support from the husband. *Infant Mental Health Journal, 30*(1), 57-81. doi: 10.1002/imhj.20203

Leung, S. S. K., Martinson, I. M., & Arthur, D. (2005). Postpartum depression and related psychosocial variables in Hong Kong Chinese women: findings from a prospective study. *Research in Nursing and Health, 28*(1), 27-38. doi: 10.1002/nur.20053

Lilja, G., Edhborg, M., & Nissen, E. (2012). Depressive mood in women at childbirth predicts their mood and relationship with infant and partner during the first year postpartum. *Scandinavian Journal of Caring Sciences, 26*(2), 245-253. doi: 10.1111/j.1471-6712.2011.00925.x

Liu, C. H., & Tronick, E. (2013). Re-conceptualising prenatal life stressors in predicting post-partum depression: cumulative-, specific-, and domain-specific approaches to calculating risk. *Paediatric and Perinatal Epidemiology, 27*(5), 481-490. doi: 10.1111/ppe.12072

Ludermir, A. B., Lewis, G., Valongueiro, S. A., de Araujo, T. V., & Araya, R. (2010). Violence against women by their intimate partner during pregnancy and postnatal depression: a prospective cohort study. *Lancet, 376*(9744), 903-910. doi: 10.1016/S0140-6736(10)60887-2

Mann, J. R., McKeown, R. E., Bacon, J., Vesselinov, R., & Bush, F. (2007). Religiosity, spirituality, and depressive symptoms in pregnant women. *International Journal of Psychiatry in Medicine, 37*(3), 301-313. doi: 10.2190/PM.37.3.g

Marchesi, C., Bertoni, S., & Maggini, C. (2009). Major and minor depression in pregnancy. *Obstetrics and Gynecology, 113*(6), 1292-1298. doi: 10.1097/AOG.0b013e3181a45e90

Matthey, S., Barnett, B., Ungerer, J., & Waters, B. (2000). Paternal and maternal depressed mood during the transition to parenthood. *Journal of Affective Disorders, 60*(2), 75-85. doi: 10.1016/S0165-0327%2899%2900159-7

McGill, H., Burrows, V. L., Holland, L. A., Langer, H. J., & Sweet, M. A. (1995). Postnatal depression: a Christchurch study. *New Zealand Medical Journal, 108*, 162-165.

Melo, E. F., Jr., Cecatti, J. G., Pacagnella, R. C., Leite, D. F., Vulcani, D. E., & Makuch, M. Y. (2012). The prevalence of perinatal depression and its associated factors in two different settings in Brazil. *Journal of Affective Disorders, 136*(3), 1204-1208. doi: 10.1016/j.jad.2011.11.023

Miszkurka, M., Goulet, L., & Zunzunegui, M. V. (2012). Antenatal depressive symptoms among Canadian-born and Imm postigrant women in Quebec: differential exposure and vulnerability to contextual risk factors. *Social Psychiatry and Psychiatric Epidemiology, 47*(10), 1639-1648. doi: 10.1007/s00127-011-0469-2

Neter, E., Collins, N. L., Lobel, M., & Dunkel-Schetter, C. (1995). Psychosocial predictors of postpartum depressed mood in socioeconomically disadvantaged women. *Womens Health, 1*(1), 51-75.

Ngai, F.-W., & Ngu, S.-F. (2012). Psychometric properties of a Chinese version of the medical outcomes study family and marital functioning measures in Hong Kong Chinese childbearing families. *Community Mental Health Journal, 48*(5), 634-642. doi: 10.1007/s10597-011-9450-5

Nylen, K., O'Hara, M., & Engeldinger, J. (2013). Perceived social support interacts with prenatal depression to predict birth outcomes. *Journal of Behavioural Medicine, 36*(4), 427-440. doi: 10.1007/s10865-012-9436-y

O'Hara, M. W. (1986). Social support, life events, and depression during pregnancy and the puerperium. *Archives of General Psychiatry, 43*(6), 569-573. doi: 10.1001/archpsyc.1986.01800060063008

Ozbasaran, F., Coban, A., & Kucuk, M. (2011). Prevalence and risk factors concerning postpartum depression among women within early postnatal periods in Turkey. *Archives of Gynecology and Obstetrics, 283*(3), 483-490. doi: 10.1007/s00404-010-1402-8

Paykel, E. S., Emms, E., Fletcher, J., & Rassaby, E. (1980). Life events and social support in puerperal depression. *British Journal of Psychiatry, 136*(4), 339-346.

Posmontier, B. (2008). Functional status outcomes in mothers with and without postpartum depression. *Journal of Midwifery and Women's Health, 53*(4), 310-318. doi: 10.1016/j.jmwh.2008.02.016

Priel, B., & Besser, A. (2000). Dependency and self-criticism among first-time mothers: The roles of global and specific support. *Journal of Social and Clinical Psychology, 19*(4), 437-450. doi: 10.1521/jscp.2000.19.4.437

Ramchandani, P. G., Psychogiou, L., Vlachos, H., Iles, J., Sethna, V., Netsi, E., & Lodder, A. (2011). Paternal depression: an examination of its links with father, child and family functioning in the postnatal period. *Depression and Anxiety, 28*(6), 471-477. doi: 10.1002/da.20814

Ramchandani, P. G., Richter, L. M., Stein, A., & Norris, S. A. (2009). Predictors of postnatal depression in an urban South African cohort. *Journal of Affective Disorders, 113*(3), 279-284. doi: 10.1016/j.jad.2008.05.007

Reid, H., Power, M., & Cheshire, K. (2009). Factors influencing antenatal depression, anxiety and stress. *British Journal of Midwifery, 17*(8), 501-508. doi: 10.12968/bjom.2009.17.8.43643

Rini, C., Schetter, C. D., Hobel, C. J., Glynn, L. M., & Sandman, C. A. (2006). Effective social support: Antecedents and consequences of partner support during pregnancy. *Personal Relationships, 13*(2), 207-229. doi: 10.1111/j.1475-6811.2006.00114.x

Romito, P., Saurel-Cubizolles, M. J., & Lelong, N. (1999). What makes new mothers unhappy: Psychological distress one year after birth in Italy and France. *Social Science and Medicine, 49*(12), 1651-1661. doi: 10.1016/s0277-9536(99)00238-5

Romito, P., Turan, J. M., Neilands, T., Lucchetta, C., Pomicino, L., & Scrimin, F. (2009). Violence and women's psychological distress after birth: an exploratory study in Italy. *Health Care for Women International, 30*(1-2), 160-180. doi: 10.1080/07399330802523824

Ross, L. E., Villegas, L., Dennis, C. L., Bourgeault, I. L., Cairney, J., Grigoriadis, S., . . . Yudin, M. H. (2011). Rural residence and risk for perinatal depression: a Canadian pilot study. *Archives of Womens Mental Health, 14*(3), 175-185. doi: 10.1007/s00737-011-0208-4

Rubertsson, C., Waldenstrom, U., & Wickberg, B. (2003). Depressive mood in early pregnancy: Prevalence and women at risk in a national Swedish sample. *Journal of Reproductive and Infant Psychology, 21*(2), 113-123. doi: 10.1080/0264683031000124073

Sagrestano, L. M., Carroll, D., Rodriguez, A. C., & Nuwayhid, B. (2004). Demographc, psychological, and relationship factors in domestic violence during pregnancy in a sample of low-income women of color. *Psychology of Women Quarterly, 28*(4), 309-322. doi: 10.1111/j.1471-6402.2004.00148.x

Saisto, T., Salmela-Aro, K., Nurmi, J. E., & Halmesmaki, E. (2001). Psychosocial characteristics of women and their partners fearing vaginal childbirth. *BJOG: An International Journal of Obstetrics and Gynaecology, 108*(5), 492-498. doi: 10.1016/s0306-5456(00)00122-4

Saurel-Cubizolles, M. J., Romito, P., Lelong, N., & Ancel, P. Y. (2000). Women's health after childbirth: a longitudinal study in France and Italy. *BJOG: An International Journal of Obstetrics and Gynaecology, 107*(10), 1202-1209. doi: 10.1111/j.1471-0528.2000.tb11608.x

Sayil, M., Güre, A., & Uçanok, Z. (2007). First time mothers' anxiety and depressive symptoms across the transition to motherhood: associations with maternal and environmental characteristics. *Women and Health, 44*(3), 61-77. doi: 10.1300/j013v44n03_04

Séjourné, N., Vaslot, V., Beaumé, M., Goutaudier, N., & Chabrol, H. (2012). The impact of paternity leave and paternal involvement in child care on maternal postpartum depression. *Journal of Reproductive and Infant Psychology, 30*(2), 135-144. doi: 10.1080/02646838.2012.693155

Senturk, V., Abas, M., Berksun, O., & Stewart, R. (2011). Social support and antenatal depression in extended and nuclear family environments in Turkey: A cross-sectional survey. *BMC Psychiatry, 11*, 48. doi: 10.1186/1471-244X-11-48

Serhan, N., Ege, E., Ayrancı, U., & Kosgeroglu, N. (2013). Prevalence of postpartum depression in mothers and fathers and its correlates. *Journal of Clinical Nursing, 22*(1/2), 279-284. doi: 10.1111/j.1365-2702.2012.04281.x

Simpson, J. A., Rholes, W. S., Campbell, L., Tran, S., & Wilson, C. L. (2003). Adult attachment, the transition to parenthood, and depressive symptoms. *Journal of Personality and Social Psychology, 84*(6), 1172-1187.

Spoozak, L., Gotman, N., Smith, M. V., Belanger, K., & Yonkers, K. A. (2009). Evaluation of a social support measure that may indicate risk of depression during pregnancy. *Journal of Affective Disorders, 114*(1-3), 216-223. doi: 10.1016/j.jad.2008.07.015

Stapleton, L. R., Schetter, C. D., Westling, E., Rini, C., Glynn, L. M., Hobel, C. J., & Sandman, C. A. (2012). Perceived partner support in pregnancy predicts lower maternal and infant distress. *Journal of Family Psychology, 26*(3), 453-463. doi: 10.1037/a0028332

Terry, D. J., Mayocchi, L., & Hynes, G. J. (1996). Depressive symptomatology in new mothers: A stress and coping perspective. *Journal of Abnormal Psychology, 105*(2), 220-231. doi: 10.1037/0021-843X.105.2.220

Tietjen, A. M., & Bradley, C. F. (1985). Social support and maternal psychosocial adjustment during the transition to parenthood. *Canadian Journal of Behavioural Science - Revue Canadienne des Sciences du Comportement, 17*(2), 109-121. doi: 10.1037/h0080136

Tomlinson, M., Swartz, L., Cooper, P. J., & Molteno, C. (2004). Social factors and postpartum depression in Khayelitsha, Cape Town. *South African Journal of Psychology, 34*(3), 409-420. doi: 10.1177/008124630403400305

Yanikkerem, E., Ay, S., Mutlu, S., & Goker, A. (2013). Antenatal depression: prevalence and risk factors in a hospital based Turkish sample. *Journal of the Pakistan Medical Association, 63*(4), 472-477.

Appendix J. Quality assessment of the studies included in the systematic review and meta-analysis

Sampling method

2 = Random

1 = Non-random

0 = Unclear

IV measure

1 = Validated measure

0 = Study specific measure

DV measure

2 = Validated diagnostic tool

1 = Validated screening tool

0 = Study specific measure

Study design

2 = Longitudinal

1 = Cross-sectional

0 = Retrospective

Article	Sampling	IV Measure	DV Measure	Study design	Total (0 - 7)
Abbott (2006)	1	1	1	1	4
Aceti (2012)	1	0	2	2	5
Aderibigbe (1993)	1	0	1	2	4
Adewuya (2007)	2	0	1	1	4
Anderson (2002)	1	0	1	1	3
Appolonio (2008)	2	1	1	1	5
Aydin (2005)	2	0	1	1	4
Baker (1997)	2	0	1	2	5
Barnett (1986)	0	0	1	1	2
Benute (2013)	1	1	2	1	5
Bernazzani (2004)	1	0	2	2	5
Bernazzani (2005)	1	1	1	2	5
Bielawska-Batorowicz (2006)	1	1	1	1	4
Bilszta (2008)	1	1	1	1	4
Bjerke (2008)	1	0	1	2	4
Blaney (2004)	1	0	1	1	3
Bolton (1998)	1	0	1	1	3
Bottino (2012)	2	1	1	1	5
Boyce (1991)	1	1	1	2	5
Boyce (2001)	1	0	1	2	4
Boyce (2005)	1	0	2	2	5
Boyce (2007)	1	1	1	1	4
Buist (2003)	1	1	1	1	4
Campbell (1992)	1	1	2	2	6
Chapman (1997)	2	1	1	2	6
Collins (1993)	1	0	1	2	4
Conde (2011)	2	1	1	2	6
Cooper (1999)	2	0	2	1	5
Crockenberg (2003)	1	1	1	2	5
da Silva (1998)	2	0	1	2	5
Danaci (2002)	2	0	1	1	4
Das Eiden (2002)	1	1	1	1	4
Dayan (2010)	2	0	1	1	4
Deater-Deckard (1998)	2	0	1	2	5
Dennerstein (1989)	1	0	1	2	4
Dennis (2006a)	2	1	1	2	6
Dennis (2006b)	2	1	1	2	6
Dhillon (2010)	2	0	1	1	4
Dimitrovsky (1987)	2	1	1	2	6
Dørheim (2009)	2	0	1	1	4
Dudas (2012)	2	1	1	1	5
Dudley (2001)	2	1	1	1	5
Eberhard-Gran (2002)	2	0	1	1	4

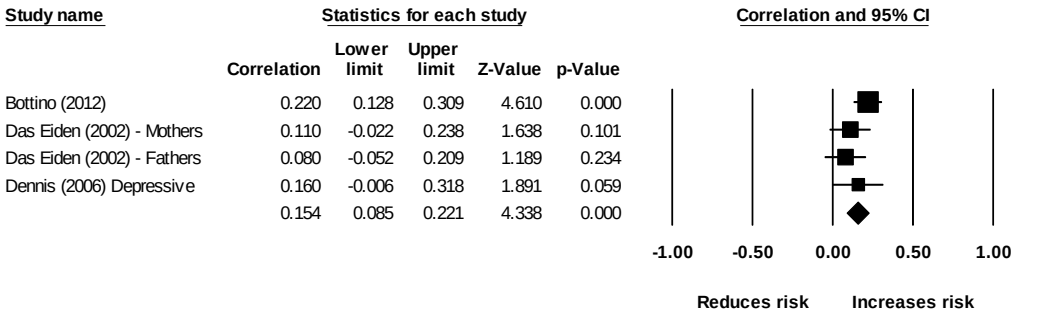
Elliston (2008)	1	0	1	2	4
Escribà-Agüir (2011)	2	1	1	2	6
Feldman (2007)	2	0	1	1	4
Felice (2004)	2	1	2	1	6
Figueiredo (2008)	1	1	1	2	5
Fisher (2004)	2	0	1	1	4
Fowles (2011)	1	1	1	1	4
Gallagher (1997)	2	0	1	2	5
Garcia-Esteve (2008)	2	0	2	1	5
Giallo (2013)	2	0	1	1	4
Giardinelli (2012)	2	0	1	2	5
Glasser (2000)	2	0	1	2	5
Glazier (2004)	0	1	1	1	3
Goldberg (2008)	1	1	1	2	5
Gottlieb (1995)	1	1	1	1	4
Grote (2007)	1	0	2	2	5
Haslam (2006)	1	0	2	1	4
Hassert (2011)	1	1	1	1	4
Hildingsson (2008)	2	0	1	1	4
Ho (2013)	1	1	1	1	4
Hobfoll (1989)	2	0	1	2	5
Hock (1995)	1	1	1	1	4
Hopkins (2008)	0	1	1	1	3
Horowitz (2005)	1	1	1	1	4
Huang (2006)	2	0	1	1	4
Husain (2006)	2	0	1	1	4
Hyde (1995)	2	0	1	2	5
Iles (2011)	2	1	1	2	6
Jeong (2013)	2	0	1	1	4
Kaaya (2010)	2	0	1	1	4
Kakyo (2012)	2	0	1	1	4
Kara (2013)	1	1	1	1	4
Kemp (1989)	1	1	1	1	4
Kim (2008)	1	1	1	2	5
Kozinszky (2011)	2	0	1	1	4
Leathers (1997)	0	1	1	2	4
Lee (2004)	2	1	1	2	6
Lemola (2009)	1	0	1	1	3
Leung (2005)	1	1	1	2	5
Lilja (2012)	0	1	1	2	4
Liu (2013)	2	0	0	1	3
Ludermir (2010)	2	0	1	1	4
Mann (2007)	2	1	1	1	5
Marchesi (2009)	2	0	2	1	5
Matthey (2000)	1	1	1	1	4
McGill (1995)	1	0	1	0	2

Melo (2012)	1	0	1	1	3
Miszkurka (2012)	2	0	1	1	4
Neter (1995)	1	1	1	2	5
Ngai (2012)	1	1	1	1	4
Nylen (2013)	1	1	2	1	5
O'Hara (1986)	1	1	1	1	4
Ozbasaran (2011)	2	0	1	1	4
Paykel (1980)	2	0	1	1	4
Posmontier (2008)	1	0	1	1	3
Priel (2000)	2	1	1	2	6
Ramchandani (2009)	2	0	1	2	5
Ramchandani (2011)	1	1	2	1	5
Reid (2009)	1	1	1	1	4
Rini (2006)	1	0	1	2	4
Romito (1999)	2	0	1	2	5
Romito (2009)	2	0	1	1	4
Ross (2011)	2	1	1	2	6
Rubertsson (2003)	2	0	1	1	4
Sagrestano (2004)	2	0	1	1	4
Saisto (2001)	2	0	1	1	4
Saurel-Cubizolles (2000)	2	0	0	1	3
Sayil (2007)	2	0	1	1	4
Séjourné (2012)	0	1	1	2	4
Senturk (2011)	1	1	1	1	4
Serhan (2013)	2	0	1	1	4
Simpson (2003)	1	1	1	1	4
Spoozak (2009)	1	1	1	1	4
Stapleton (2012)	1	1	1	2	5
Terry (1996)	1	0	1	2	4
Tietjen (1985)	1	0	1	1	3
Tomlinson (2004)	2	0	2	1	5
Yanikkerem (2013)	2	0	1	1	4

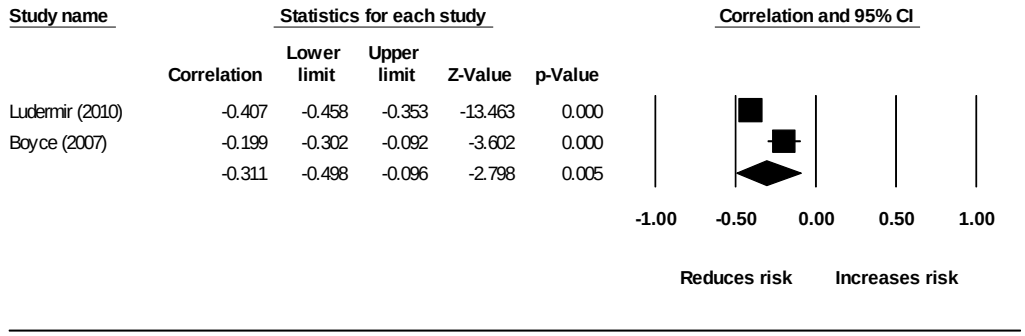
Appendix K. Forest plots of the studies included in the systematic review and meta-analysis

Alcohol and drug use by partner

Postnatal alcohol and drug use by partner and postnatal depression



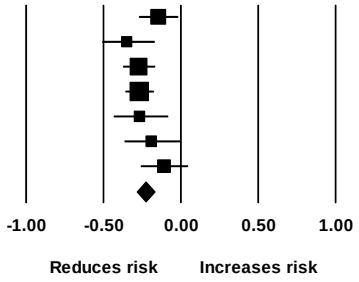
Antenatal communication and antenatal depression



Communication

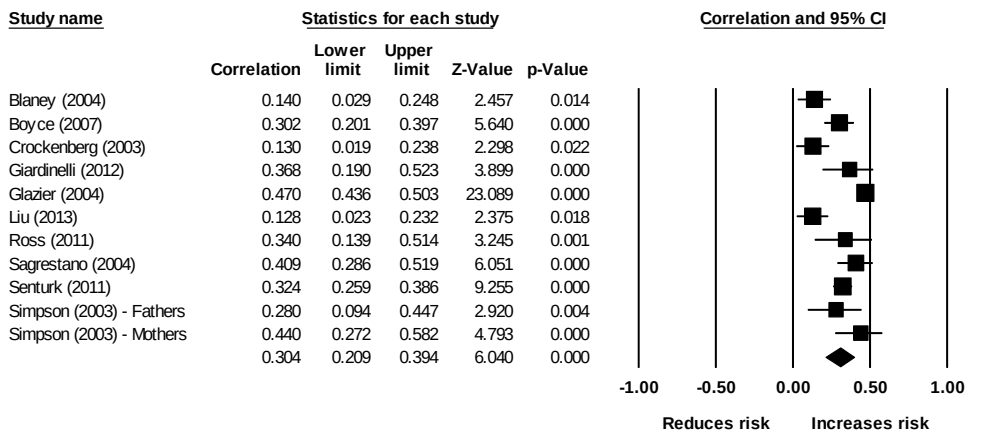
Postnatal communication and postnatal depression

Study name	Correlation	Lower limit	Upper limit	Z-Value	p-Value
Boyce (2005)	-0.146	-0.272	-0.015	-2.177	0.029
Dudley (2001)	-0.350	-0.510	-0.167	-3.634	0.000
Fisher (2004) Prevalence	-0.273	-0.375	-0.164	-4.788	0.000
Lemola (2009)	-0.269	-0.361	-0.172	-5.312	0.000
O'Hara (1986)	-0.267	-0.436	-0.080	-2.776	0.006
Paykel (1980)	-0.191	-0.366	-0.003	-1.989	0.047
Ramchandani (2011)	-0.108	-0.261	0.049	-1.351	0.177
	-0.230	-0.287	-0.172	-7.576	0.000

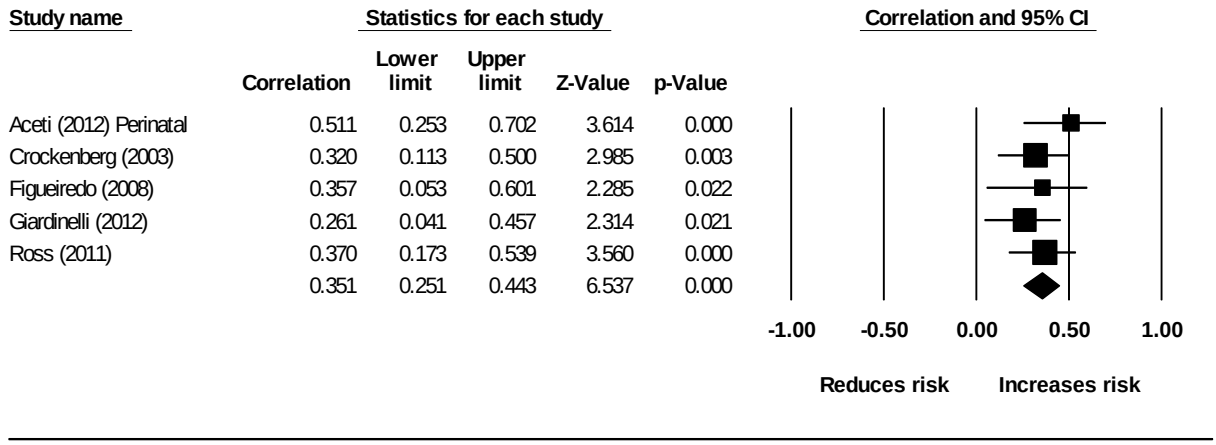


Conflict

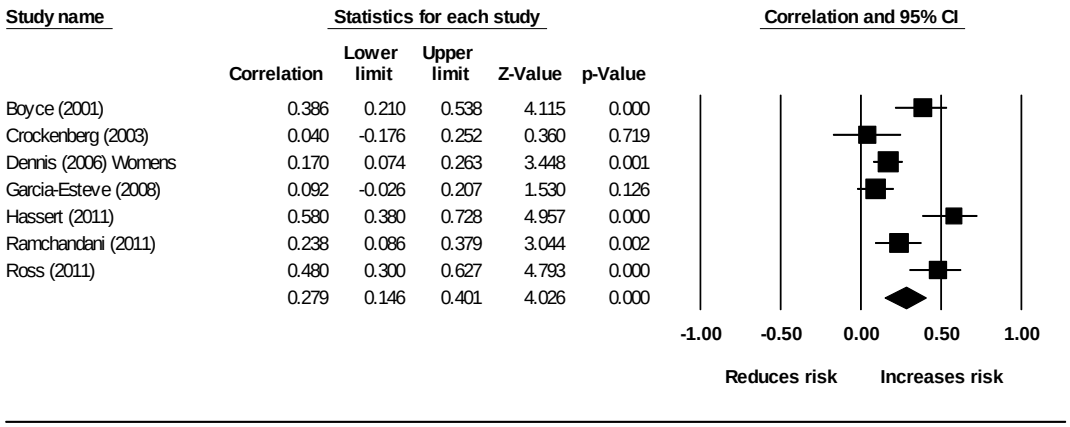
Antenatal conflict and antenatal depression



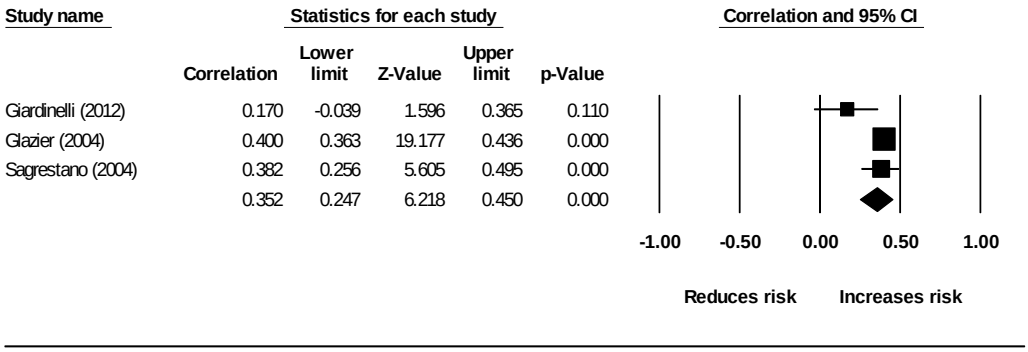
Antenatal conflict and postnatal depression



Postnatal conflict and postnatal depression



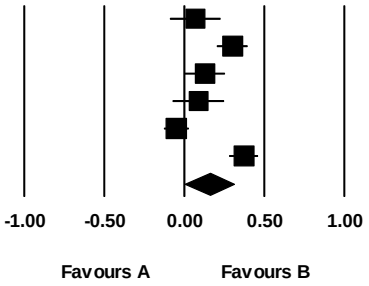
Antenatal conflict and antenatal anxiety



Control

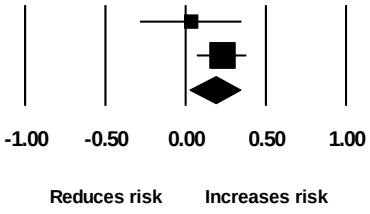
Antenatal control and antenatal depression

Study name	Correlation	Lower limit	Upper limit	Z-Value	p-Value
Boyce (1991)	0.070	-0.092	0.228	0.847	0.397
Boyce (2007)	0.303	0.201	0.398	5.651	0.000
Buist (2003)	0.130	-0.000	0.256	1.955	0.051
Hock (1995)	0.090	-0.076	0.251	1.064	0.287
Kaaya (2010)	-0.050	-0.130	0.030	-1.223	0.221
Ludermir (2010)	0.374	0.278	0.463	7.175	0.000
	0.158	0.001	0.308	1.966	0.049



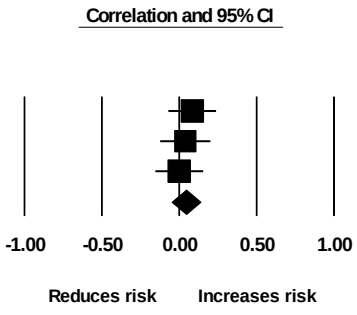
Antenatal control and postnatal depression

Study name	Correlation	Lower limit	Upper limit	Z-Value	p-Value
Boyce (1991)	0.035	-0.287	0.350	0.207	0.836
Hock (1995)	0.230	0.068	0.380	2.761	0.006
	0.185	0.022	0.339	2.224	0.026



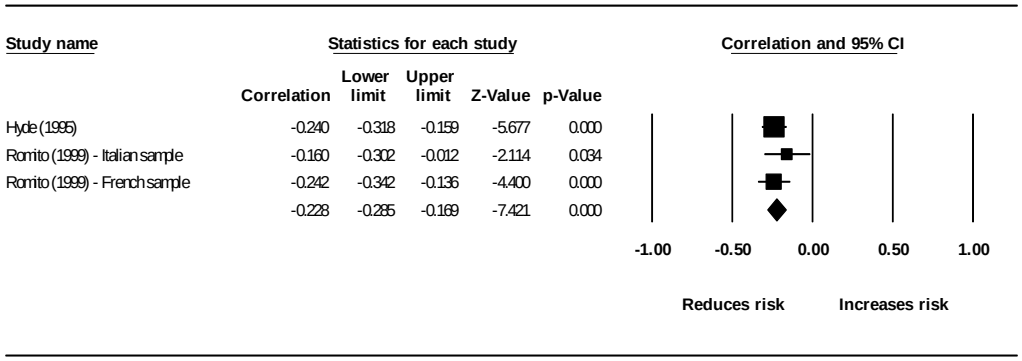
Postnatal control and postnatal depression

Study name	Correlation	Lower limit	Upper limit	Z-Value	p-Value
Boyce (1991)	0.086	-0.073	0.240	1.059	0.289
Hock (1995)	0.040	-0.126	0.203	0.472	0.637
Matthey (2000)	0.000	-0.157	0.157	0.000	1.000
	0.042	-0.051	0.134	0.883	0.377



Division of labour

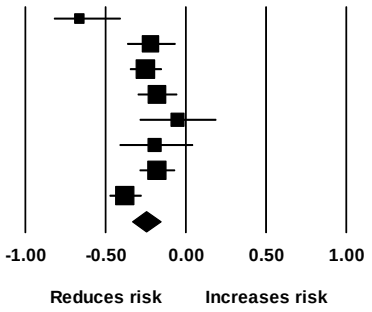
Postnatal division of labour and postnatal depression



Emotional closeness

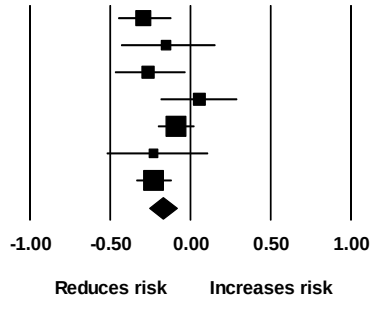
Antenatal emotional closeness and antenatal depression

Study name	Correlation	Lower limit	Upper limit	Z-Value	p-Value
Anderson (2002) Prenatal	-0.663	-0.824	-0.403	-4.223	0.000
Boyce (1991)	-0.220	-0.368	-0.061	-2.702	0.007
Boyce (2007)	-0.252	-0.351	-0.147	-4.616	0.000
Buist (2003)	-0.180	-0.302	-0.051	-2.727	0.006
Conde (2011) - Mothers	-0.052	-0.290	0.193	-0.410	0.681
Conde (2011) - Fathers	-0.194	-0.415	0.048	-1.578	0.115
Dennerstein (1989)	-0.180	-0.291	-0.065	-3.045	0.002
Stapleton (2012)	-0.380	-0.477	-0.273	-6.561	0.000
	-0.250	-0.337	-0.160	-5.290	0.000



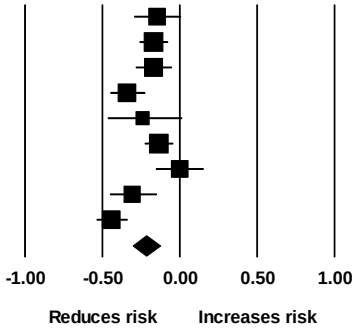
Antenatal emotional closeness and postnatal depression

Study name	Correlation	Lower limit	Upper limit	Z-Value	p-Value
Bjerke (2008)	-0.293	-0.452	-0.116	-3.197	0.001
Boyce (1991)	-0.152	-0.434	0.158	-0.961	0.337
Conde (2011) - Fathers	-0.265	-0.473	-0.029	-2.190	0.028
Conde (2011) - Mothers	0.056	-0.188	0.294	0.445	0.656
Dennerstein (1989)	-0.090	-0.204	0.027	-1.510	0.131
Figueiredo (2008)	-0.230	-0.524	0.112	-1.323	0.186
Stapleton (2012)	-0.230	-0.340	-0.114	-3.841	0.000
	-0.174	-0.259	-0.087	-3.889	0.000



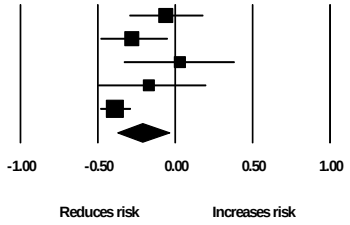
Postnatal emotional closeness and postnatal depression

Study name	Correlation	Lower limit	Upper limit	Z-Value	p-Value
Buist (2003)	-0.147	-0.297	0.010	-1.831	0.067
Dennis (2006) Womens	-0.169	-0.263	-0.073	-3.428	0.001
Eberhard-Gran (2002)	-0.170	-0.286	-0.048	-2.731	0.006
Garcia-Esteve (2008)	-0.341	-0.451	-0.221	-5.338	0.000
Hassert (2011)	-0.240	-0.467	0.017	-1.832	0.067
Lilja (2012)	-0.135	-0.229	-0.040	-2.761	0.006
Matthey (2000)	0.000	-0.157	0.157	0.000	1.000
McGill (1995)	-0.308	-0.453	-0.146	-3.646	0.000
Ozbasaran (2011)	-0.443	-0.540	-0.335	-7.318	0.000
	-0.220	-0.306	-0.130	-4.719	0.000



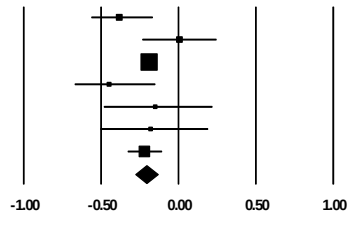
Antenatal emotional closeness and antenatal anxiety

Studyname	Correlation	Lower limit	Upper limit	Z-Value	p-Value
Conde (2011) - Mothers	-0.061	-0.298	0.184	-0.484	0.628
Conde (2011) - Fathers	-0.280	-0.485	-0.046	-2.333	0.020
Goldberg (2008) - Biological mothers	0.030	-0.334	0.386	0.156	0.876
Goldberg (2008) - Non-biological mothers	-0.170	-0.500	0.203	-0.892	0.372
Stapleton (2012)	-0.390	-0.486	-0.284	-6.754	0.000
	-0.215	-0.377	-0.040	-2.403	0.016



Antenatal emotional closeness and postnatal anxiety

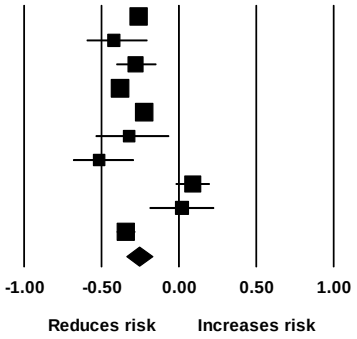
Studyname	Correlation	Lower limit	Upper limit	Z-Value	p-Value
Conde (2011) - Fathers	-0.382	-0.565	-0.164	-3.321	0.001
Conde (2011) - Mothers	0.007	-0.236	0.248	0.053	0.958
Deater-Deckard (1998)	-0.190	-0.214	-0.165	-14.765	0.000
Figueiredo (2008)	-0.448	-0.673	-0.147	-2.831	0.005
Goldberg (2008) - Biological mothers	-0.150	-0.484	0.222	-0.785	0.432
Goldberg (2008) - Non-biological mothers	-0.180	-0.507	0.193	-0.946	0.344
Stapleton (2012)	-0.220	-0.330	-0.104	-3.668	0.000
	-0.210	-0.281	-0.137	-5.524	0.000



Emotional support

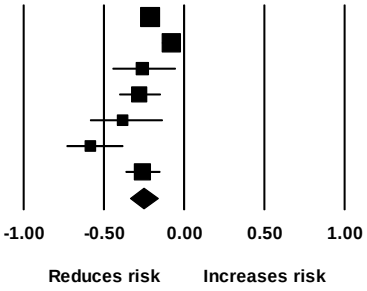
Antenatal emotional support and antenatal depression

Study name	Correlation	Lower limit	Upper limit	Z-Value	p-Value
Bilszta (2008) Single	-0.260	-0.308	-0.211	-9.966	0.000
Chapman (1997)	-0.420	-0.598	-0.202	-3.609	0.000
Gallagher (1997)	-0.280	-0.406	-0.143	-3.923	0.000
Glazier (2004)	-0.380	-0.416	-0.342	-18.109	0.000
Jeong (2013)	-0.224	-0.264	-0.182	-10.336	0.000
Leathers (1997) - Mothers	-0.321	-0.540	-0.061	-2.400	0.016
Leathers (1997) - Fathers	-0.515	-0.687	-0.289	-4.107	0.000
Reid (2009)	0.090	-0.024	0.201	1.553	0.121
Ross (2011)	0.020	-0.191	0.230	0.183	0.855
Senturk (2011)	-0.344	-0.404	-0.280	-9.906	0.000
	-0.259	-0.342	-0.173	-5.758	0.000



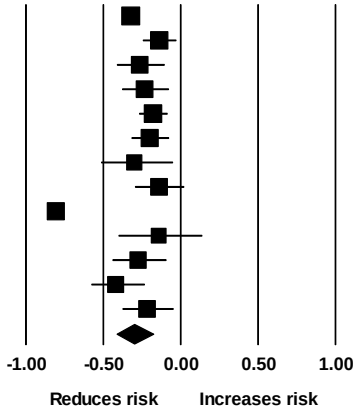
Antenatal emotional support and postnatal depression

Study name	Correlation	Lower limit	Upper limit	Z-Value	p-Value
Baker (1997) The	-0.212	-0.240	-0.184	-14.453	0.000
Bernazzani (2004)	-0.079	-0.140	-0.018	-2.539	0.011
Bernazzani (2005)	-0.260	-0.448	-0.050	-2.410	0.016
Gallagher (1997)	-0.280	-0.406	-0.143	-3.923	0.000
Leathers (1997) - Mothers	-0.383	-0.589	-0.131	-2.910	0.004
Leathers (1997) - Fathers	-0.584	-0.735	-0.377	-4.821	0.000
Stapleton (2012)	-0.260	-0.368	-0.146	-4.365	0.000
	-0.255	-0.340	-0.167	-5.511	0.000

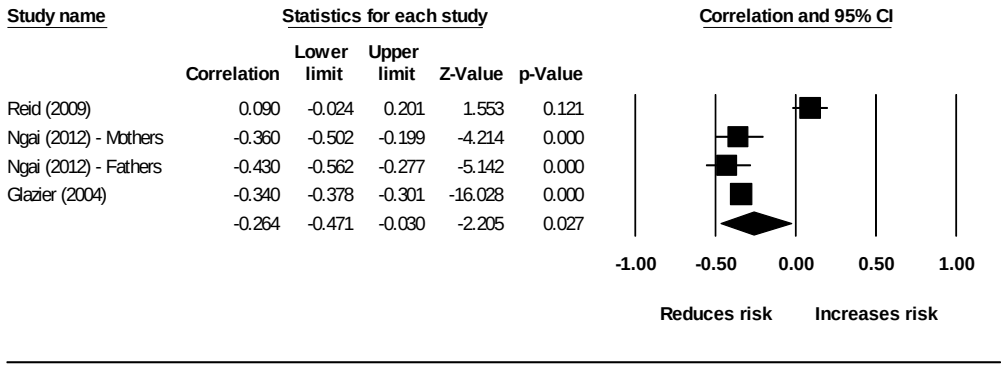


Postnatal emotional support and postnatal depression

Study name	Correlation	Lower limit	Upper limit	Z-Value	p-Value
Baker (1997) The	-0.323	-0.352	-0.293	-20.033	0.000
Boyce (2005)	-0.139	-0.247	-0.027	-2.427	0.015
Campbell (1992) Course	-0.265	-0.414	-0.101	-3.138	0.002
Cooper (1999)	-0.233	-0.381	-0.074	-2.852	0.004
Dennis (2006) Womens	-0.178	-0.271	-0.083	-3.619	0.000
Felice (2004)	-0.200	-0.320	-0.073	-3.075	0.002
Hassert (2011)	-0.300	-0.516	-0.048	-2.316	0.021
Horowitz (2005)	-0.140	-0.297	0.025	-1.667	0.095
Husain (2006)	-0.807	-0.848	-0.756	-16.627	0.000
Kara (2013)	-0.142	-0.404	0.142	-0.980	0.327
O'Hara (1986)	-0.275	-0.443	-0.089	-2.867	0.004
Ross (2011)	-0.420	-0.579	-0.230	-4.103	0.000
Séjourné (2012)	-0.217	-0.379	-0.043	-2.439	0.015
	-0.303	-0.417	-0.180	-4.686	0.000



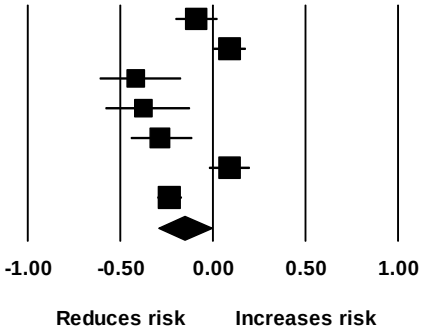
Antenatal emotional support and antenatal anxiety



Instrumental support

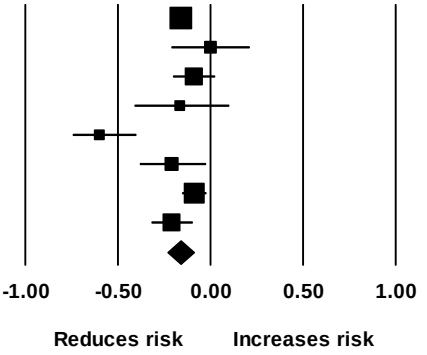
Antenatal instrumental support and antenatal depression

Study name	Correlation	Lower limit	Upper limit	Z-Value	p-Value
Dennerstein (1989)	-0.090	-0.204	0.027	-1.510	0.131
Kaaya (2010)	0.090	-0.000	0.180	1.953	0.051
Leathers (1997) - Mothers	-0.416	-0.614	-0.169	-3.193	0.001
Leathers (1997) - Fathers	-0.375	-0.582	-0.122	-2.843	0.004
O'Hara (1986)	-0.286	-0.445	-0.109	-3.120	0.002
Reid (2009)	0.090	-0.024	0.201	1.553	0.121
Senturk (2011)	-0.235	-0.302	-0.166	-6.516	0.000
	-0.156	-0.297	-0.008	-2.069	0.039



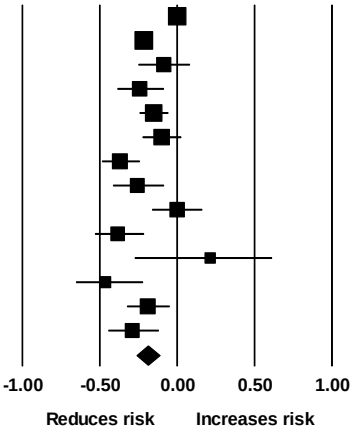
Antenatal instrumental support and postnatal depression

Study name	Correlation	Lower limit	Upper limit	Z-Value	p-Value
Baker (1997) The	-0.160	-0.187	-0.132	-11.305	0.000
Bernazzani (2005)	0.000	-0.213	0.213	0.000	1.000
Dennerstein (1989)	-0.090	-0.204	0.027	-1.510	0.131
Leathers (1997) - Mothers	-0.166	-0.413	0.104	-1.208	0.227
Leathers (1997) - Fathers	-0.600	-0.746	-0.398	-4.998	0.000
Neter (1995)	-0.210	-0.384	-0.022	-2.184	0.029
Ramchandani (2009)	-0.088	-0.155	-0.019	-2.510	0.012
Stapleton (2012)	-0.210	-0.321	-0.093	-3.496	0.000
	-0.165	-0.235	-0.092	-4.437	0.000

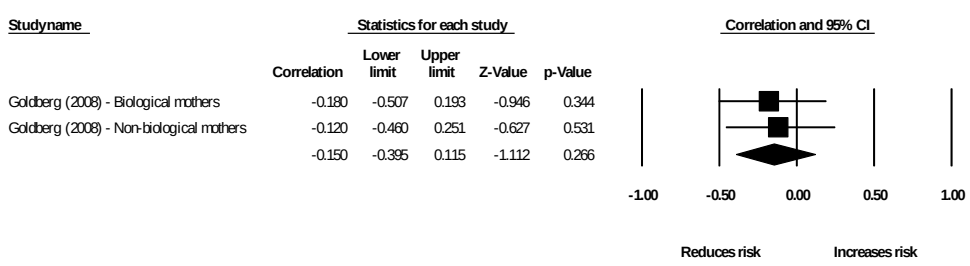


Postnatal instrumental support and postnatal depression

Study name	Correlation	Lower limit	Upper limit	Z-Value	p-Value
Abbott (2006)	0.000	-0.053	0.053	0.000	1.000
Baker (1997) The	-0.215	-0.244	-0.186	-14.025	0.000
Campbell (1992) Course	-0.087	-0.253	0.085	-0.987	0.324
Cooper (1999)	-0.242	-0.389	-0.084	-2.967	0.003
Dennis (2006) Womens	-0.151	-0.245	-0.055	-3.056	0.002
Felice (2004)	-0.100	-0.226	0.029	-1.522	0.128
Ho (2013)	-0.370	-0.488	-0.239	-5.254	0.000
Hopkins (2008)	-0.257	-0.417	-0.083	-2.858	0.004
Horowitz (2005)	0.000	-0.164	0.164	0.000	1.000
O'Hara (1986)	-0.384	-0.533	-0.212	-4.186	0.000
Posmontier (2008)	0.213	-0.277	0.615	0.848	0.396
Romito (2009) Violence	-0.465	-0.655	-0.218	-3.501	0.000
Sayil (2007)	-0.190	-0.326	-0.046	-2.573	0.010
Séjourné (2012)	-0.290	-0.447	-0.116	-3.216	0.001
	-0.192	-0.265	-0.116	-4.929	0.000

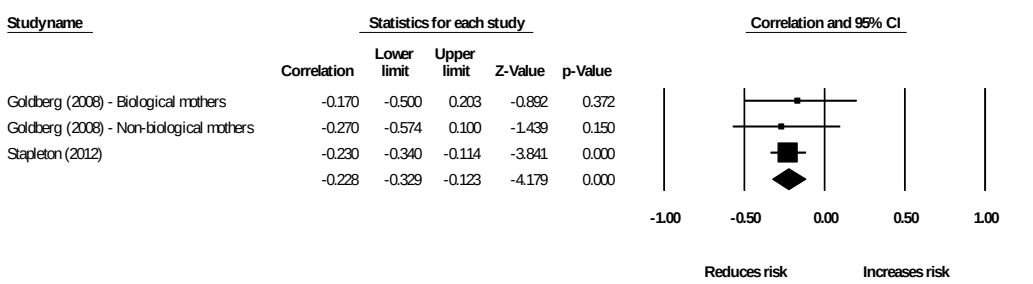


Antenatal instrumental support and antenatal anxiety



Studyname	Correlation	Lower limit	Upper limit	Z-Value	p-Value
Goldberg (2008) - Biological mothers	-0.180	-0.507	0.193	-0.946	0.344
Goldberg (2008) - Non-biological mothers	-0.120	-0.460	0.251	-0.627	0.531
	-0.150	-0.395	0.115	-1.112	0.266

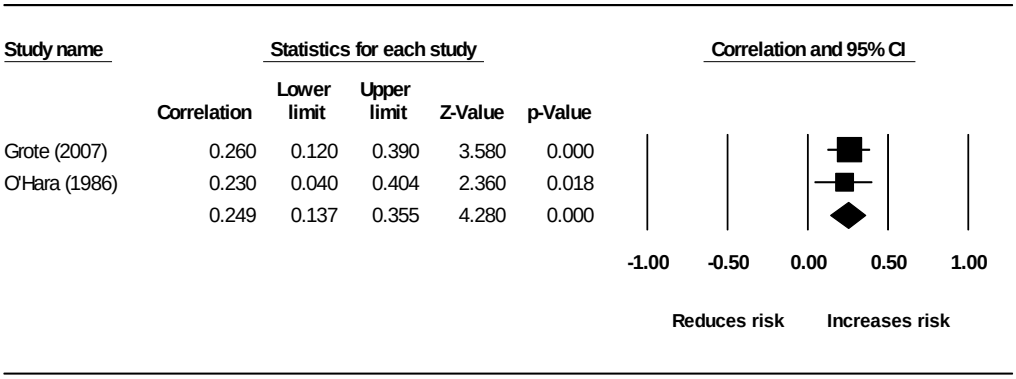
Antenatal instrumental support and postnatal anxiety



Studyname	Correlation	Lower limit	Upper limit	Z-Value	p-Value
Goldberg (2008) - Biological mothers	-0.170	-0.500	0.203	-0.892	0.372
Goldberg (2008) - Non-biological mothers	-0.270	-0.574	0.100	-1.439	0.150
Stapleton (2012)	-0.230	-0.340	-0.114	-3.841	0.000
	-0.228	-0.329	-0.123	-4.179	0.000

Partner stress

Postnatal partner stress and postnatal depression

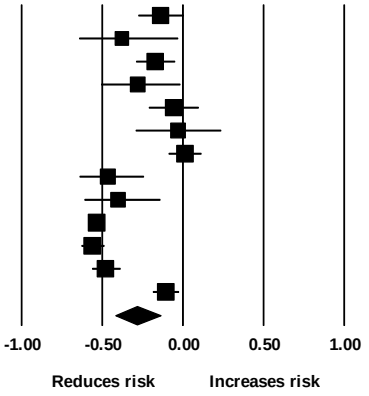


Study name	Correlation	Lower limit	Upper limit	Z-Value	p-Value
Grote (2007)	0.260	0.120	0.390	3.580	0.000
O'Hara (1986)	0.230	0.040	0.404	2.360	0.018
	0.249	0.137	0.355	4.280	0.000

Relationship satisfaction

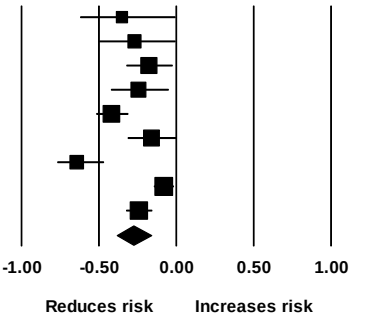
Antenatal relationship satisfaction and antenatal depression

Study name	Correlation	Lower limit	Upper limit	Z-Value	p-Value
Adewuya (2007)	-0.138	-0.279	0.008	-1.854	0.064
Anderson (2002) Prenatal	-0.378	-0.646	-0.027	-2.105	0.035
Bernazzani (2004)	-0.172	-0.293	-0.046	-2.661	0.008
Dimitrovsky (1987)	-0.280	-0.510	-0.013	-2.054	0.040
Dudas (2012)	-0.058	-0.214	0.101	-0.716	0.474
Hock (1995)	-0.030	-0.295	0.240	-0.214	0.830
Kaaya (2010)	0.013	-0.091	0.118	0.252	0.801
Kim (2008)	-0.465	-0.643	-0.239	-3.803	0.000
Marchesi (2009)	-0.402	-0.613	-0.137	-2.897	0.004
Miszkurka (2012) - Canadian born	-0.535	-0.580	-0.486	-17.723	0.000
Miszkurka (2012) - Immigrants	-0.562	-0.632	-0.483	-11.486	0.000
Saisto (2001)	-0.480	-0.566	-0.384	-8.673	0.000
Yanikkerem (2013)	-0.106	-0.189	-0.022	-2.462	0.014
	-0.287	-0.422	-0.141	-3.764	0.000



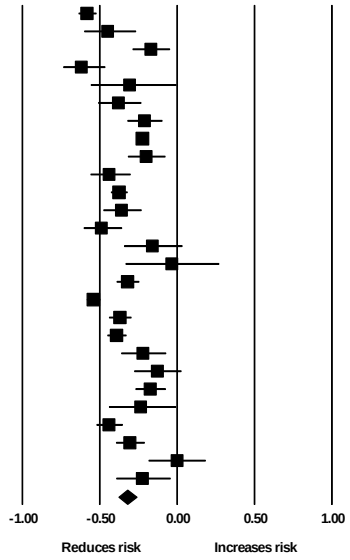
Antenatal relationship satisfaction and postnatal depression

Study name	Correlation	Lower limit	Upper limit	Z-Value	p-Value
Aderibigbe (1993)	-0.351	-0.623	-0.002	-1.973	0.049
Dimitrovsky (1987)	-0.270	-0.502	-0.002	-1.977	0.048
Escribà-Agüir (2011) - Mothers	-0.177	-0.325	-0.021	-2.223	0.026
Escribà-Agüir (2011) - Fathers	-0.245	-0.425	-0.047	-2.410	0.016
Glasser (2000)	-0.419	-0.519	-0.308	-6.812	0.000
Hock (1995)	-0.160	-0.316	0.005	-1.903	0.057
Kim (2008)	-0.643	-0.771	-0.465	-5.763	0.000
Lee (2004)	-0.080	-0.147	-0.013	-2.334	0.020
McGill (1995)	-0.242	-0.327	-0.153	-5.231	0.000
	-0.279	-0.387	-0.165	-4.652	0.000



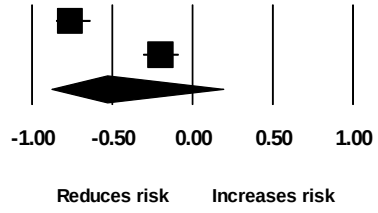
Postnatal relationship satisfaction and postnatal depression

Studyname	Correlation	Lower limit	Upper limit	Z-Value	p-Value
Abbott (2006)	-0.582	-0.640	-0.519	-14.265	0.000
Appolonio (2008)	-0.449	-0.603	-0.263	-4.431	0.000
Bernazzani (2004)	-0.170	-0.291	-0.044	-2.628	0.009
Bielawska-Batorowicz (2006)	-0.619	-0.738	-0.462	-6.348	0.000
Boyce (2005)	-0.307	-0.560	-0.002	-1.970	0.049
Campbell (1992) Course	-0.379	-0.512	-0.229	-4.708	0.000
Danaci (2002)	-0.211	-0.324	-0.093	-3.462	0.001
Dørheim (2009)	-0.224	-0.261	-0.187	-11.372	0.000
Felice (2004)	-0.200	-0.320	-0.073	-3.075	0.002
Garcia-Esteve (2008)	-0.440	-0.562	-0.298	-5.626	0.000
Giallo (2013)	-0.375	-0.430	-0.318	-11.858	0.000
Ho (2013)	-0.360	-0.479	-0.228	-5.098	0.000
Hock (1995)	-0.490	-0.606	-0.354	-6.320	0.000
Huang (2006)	-0.160	-0.345	0.037	-1.598	0.110
Husain (2006)	-0.034	-0.336	0.274	-0.211	0.833
Hyde (1995)	-0.320	-0.394	-0.242	-7.692	0.000
Kozinszky (2011) - 1996 cohort	-0.541	-0.586	-0.494	-18.325	0.000
Kozinszky (2011) - 2006 cohort	-0.370	-0.443	-0.292	-8.745	0.000
McGill (1995)	-0.391	-0.454	-0.325	-10.675	0.000
Ramchandani (2011)	-0.221	-0.364	-0.068	-2.816	0.005
Romito (1999) - French sample	-0.128	-0.280	0.030	-1.585	0.113
Romito (1999) - Italian sample	-0.173	-0.272	-0.071	-3.306	0.001
Romito (2009) Violence	-0.236	-0.442	-0.005	-2.001	0.045
Saurel-Cubizolles (2000) - French sample	-0.440	-0.523	-0.349	-8.551	0.000
Saurel-Cubizolles (2000) - Italian sample	-0.305	-0.397	-0.207	-5.900	0.000
Serhan (2013) - Fathers	0.000	-0.187	0.187	0.000	1.000
Serhan (2013) - Mothers	-0.225	-0.396	-0.040	-2.370	0.018
	-0.325	-0.381	-0.265	-10.144	0.000



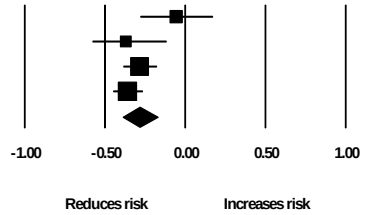
Antenatal relationship satisfaction and antenatal anxiety

Study name	Correlation	Lower limit	Upper limit	Z-Value	p-Value
Kim (2008)	-0.764	-0.853	-0.633	-7.593	0.000
Saisto (2001)	-0.200	-0.310	-0.084	-3.362	0.001
	-0.534	-0.881	0.189	-1.484	0.138



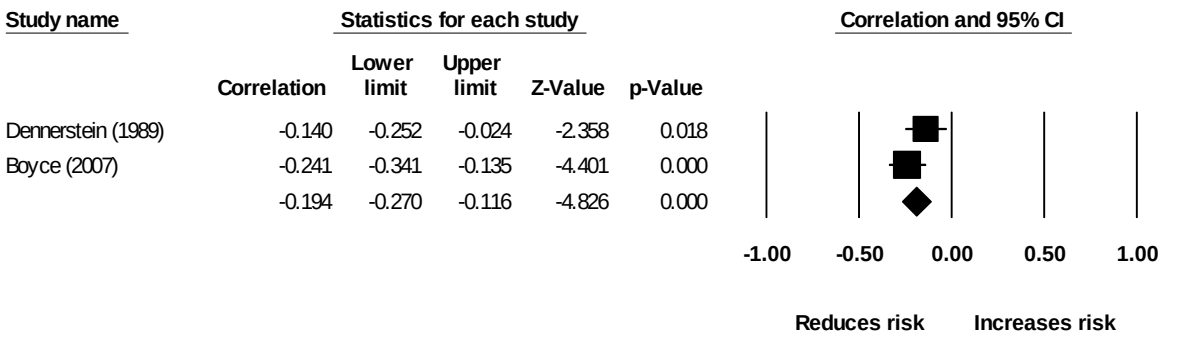
Postnatal relationship satisfaction and postnatal anxiety

Studyname	Correlation	Lower limit	Upper limit	Z-Value	p-Value
Barnett (1986)	-0.056	-0.282	0.176	-0.471	0.638
Hyde (1995)	-0.370	-0.580	-0.113	-2.774	0.006
Saurel-Cubizolles (2000) - French sample	-0.284	-0.387	-0.174	-4.909	0.000
Saurel-Cubizolles (2000) - Italian sample	-0.360	-0.451	-0.262	-6.802	0.000
	-0.287	-0.392	-0.174	-4.868	0.000

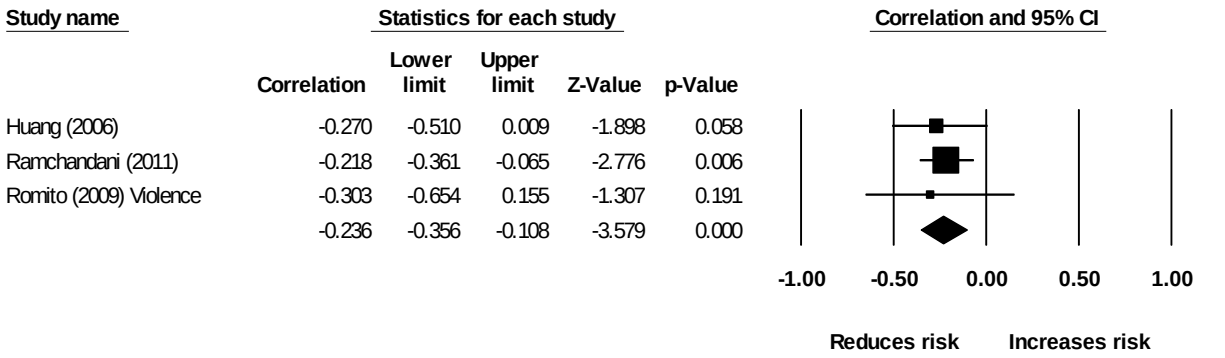


Sexual satisfaction

Antenatal sexual satisfaction and antenatal depression



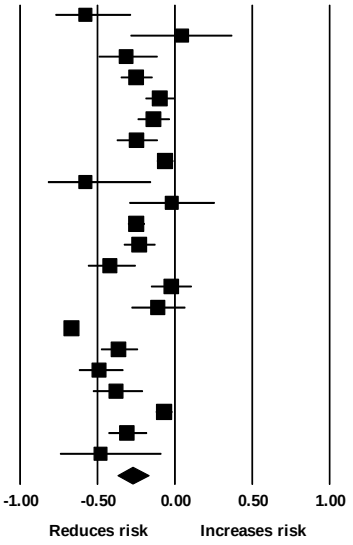
Postnatal sexual satisfaction and postnatal depression



Global partner support

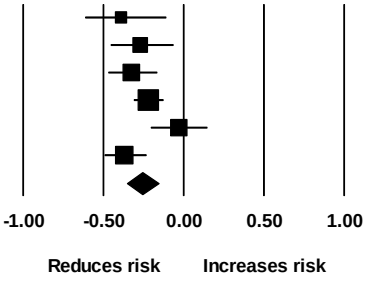
Antenatal global support and antenatal depression

Study name	Correlation	Lower limit	Upper limit	Z-Value	p-Value
Anderson (2002) Prenatal	-0.578	-0.774	-0.281	-3.490	0.000
Benute (2013)	0.047	-0.289	0.373	0.267	0.789
Bernazzani (2005)	-0.315	-0.495	-0.109	-2.949	0.003
Blaney (2004)	-0.250	-0.352	-0.142	-4.453	0.000
Bolton (1998)	-0.097	-0.193	-0.000	-1.960	0.050
Dayan (2010)	-0.138	-0.243	-0.030	-2.505	0.012
Dhillon (2010)	-0.248	-0.378	-0.108	-3.435	0.001
Dudas (2012)	-0.064	-0.119	-0.008	-2.248	0.025
Fowles (2011)	-0.578	-0.823	-0.152	-2.554	0.011
Gottlieb (1995)	-0.020	-0.297	0.260	-0.137	0.891
Hildingsson (2008)	-0.249	-0.305	-0.192	-8.277	0.000
Mann (2007)	-0.230	-0.332	-0.123	-4.156	0.000
Neter (1995)	-0.420	-0.564	-0.251	-4.587	0.000
Nylen (2013)	-0.023	-0.157	0.111	-0.337	0.736
Priel (2000)	-0.110	-0.283	0.070	-1.200	0.230
Rubertsson (2003)	-0.668	-0.705	-0.627	-22.587	0.000
Sagrestano (2004)	-0.364	-0.479	-0.236	-5.314	0.000
Simpson (2003) - Mothers	-0.490	-0.623	-0.330	-5.440	0.000
Simpson (2003) - Fathers	-0.380	-0.532	-0.204	-4.060	0.000
Spoozak (2009)	-0.069	-0.125	-0.013	-2.421	0.015
Terry (1996)	-0.310	-0.431	-0.178	-4.465	0.000
Tietjen (1985)	-0.480	-0.745	-0.085	-2.339	0.019
	-0.276	-0.373	-0.172	-5.091	0.000



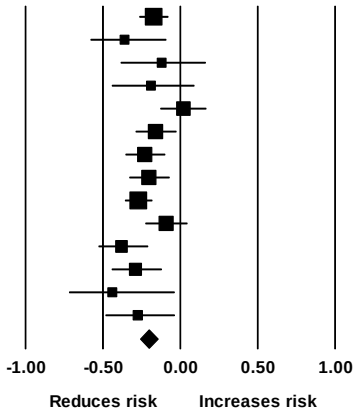
Antenatal support and postnatal depression

Study name	Correlation	Lower limit	Upper limit	Z-Value	p-Value
Aceti (2012) Perinatal	-0.390	-0.616	-0.106	-2.638	0.008
Bernazzani (2005)	-0.270	-0.457	-0.061	-2.511	0.012
Collins (1993)	-0.326	-0.472	-0.162	-3.798	0.000
Leung (2005)	-0.220	-0.313	-0.123	-4.371	0.000
Priel (2000)	-0.030	-0.207	0.149	-0.326	0.744
Terry (1996)	-0.370	-0.496	-0.229	-4.913	0.000
	-0.260	-0.356	-0.159	-4.940	0.000



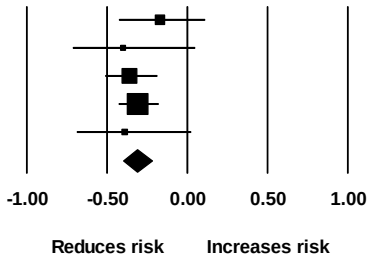
Postnatal support and postnatal depression

Study name	Correlation	Lower limit	Upper limit	Z-Value	p-Value
Aydin (2005)	-0.172	-0.267	-0.074	-3.430	0.001
Feldman (2007) - Mothers	-0.360	-0.582	-0.088	-2.556	0.011
Feldman (2007) - Fathers	-0.120	-0.388	0.167	-0.818	0.413
Gottlieb (1995)	-0.190	-0.445	0.093	-1.319	0.187
Haslam (2006)	0.020	-0.132	0.171	0.257	0.797
Iles (2011) - Mothers	-0.160	-0.291	-0.023	-2.282	0.022
Iles (2011) - Fathers	-0.230	-0.356	-0.095	-3.312	0.001
Kakyo (2012)	-0.203	-0.332	-0.067	-2.904	0.004
McGill (1995)	-0.272	-0.360	-0.179	-5.576	0.000
Melo (2012)	-0.092	-0.229	0.049	-1.281	0.200
Neter (1995)	-0.380	-0.531	-0.206	-4.099	0.000
Priel (2000)	-0.290	-0.445	-0.118	-3.243	0.001
Tietjen (1985)	-0.440	-0.721	-0.034	-2.112	0.035
Tomlinson (2004)	-0.275	-0.486	-0.034	-2.228	0.026
	-0.206	-0.262	-0.149	-6.909	0.000



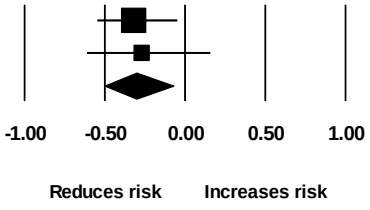
Antenatal support and antenatal anxiety

Study name	Correlation	Lower limit	Upper limit	Z-Value	p-Value
Gottlieb (1995)	-0.170	-0.428	0.114	-1.177	0.239
Kemp (1989)	-0.400	-0.716	0.052	-1.747	0.081
Neter (1995)	-0.360	-0.514	-0.184	-3.862	0.000
Sagrestano (2004)	-0.309	-0.430	-0.177	-4.449	0.000
Tietjen (1985)	-0.390	-0.691	0.026	-1.842	0.066
	-0.315	-0.403	-0.223	-6.390	0.000



Postnatal support and postnatal anxiety

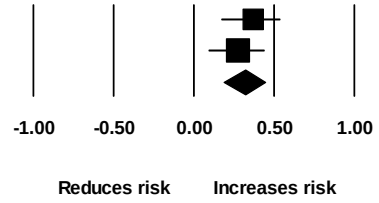
Study name	Correlation	Lower limit	Upper limit	Z-Value	p-Value
Gottlieb (1995)	-0.320	-0.549	-0.046	-2.274	0.023
Tietjen (1985)	-0.270	-0.614	0.160	-1.238	0.216
	-0.305	-0.504	-0.076	-2.581	0.010



Withdrawal

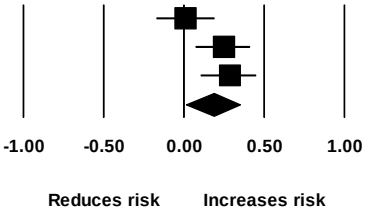
Antenatal withdrawal and antenatal depression

Study name	Correlation	Lower limit	Upper limit	Z-Value	p-Value
Crockenberg (2003)	0.370	0.169	0.541	3.496	0.000
O'Hara (1986)	0.275	0.089	0.443	2.867	0.004
	0.318	0.183	0.441	4.465	0.000



Postnatal withdrawal and postnatal depression

Study name	Correlation	Lower limit	Upper limit	Z-Value	p-Value
Elliston (2008) - Mothers	0.010	-0.173	0.193	0.106	0.916
Elliston (2008) - Fathers	0.250	0.070	0.414	2.703	0.007
O'Hara (1986) -	0.287	0.102	0.453	3.000	0.003
	0.184	0.010	0.346	2.075	0.038



Appendix L. Items meeting criteria for inclusion, exclusion, and re-rating at each round

Round	Included (Endorsed by >80% of both panels)	To be re-rated (Endorsed by >80 of one panel or >70 <79% of both panels)	Excluded
Round 1	1. Partners should be aware that it is normal to experience a wide range of emotions during pregnancy and the following year 2. Partners should be aware that even when things are progressing normally, pregnancy and new parenthood can put stresses on them, their partner and their immediate family 3. Partners should be aware that most couples find the transition to parenthood challenging 4. Partners should be aware that services are available to help with the challenging aspects of parenting, e.g., Maternal Child Health Nurses, Early Parenting Centres, Baby Sleep Clinics 5. Partners should be aware that their daily routines will change 6. Partners should be aware that having a baby causes changes which may involve a degree of loss and grief, e.g., loss of freedom, work identity, financial independence and social contacts 7. Partners should be aware that their partner acting out of character may indicate that they need help adjusting to parenthood 8. Partners should be aware that caring for a baby may place additional stress on their relationship 9. Partners should be aware that when a baby arrives, the focus shifts from self and partner-care to mostly baby-care	1. Partners should be aware that having a baby may strengthen their relationship 2. Partners should be aware that when they become new parents, they will lose a bit of their identity and what their relationship used to be 3. Partners should be aware that the transition to parenthood is one of the most important times to build their relationship 4. Partners should be aware that if their partner is depressed they are at increased risk of also becoming depressed 5. Partners should acknowledge how physically uncomfortable pregnancy is for the child-bearing mother 6. Partners should be aware that hormonal changes will affect the child-bearing mother's mood and energy levels 7. Both mothers and fathers should attend antenatal classes 8. If health professionals unknowingly overlook the father, the couple should speak to the person about making changes to involve the father more 9. Partners should help the child-bearing mother with heavy lifting and carrying as much as possible 10. Partners should discuss the possibility of the new mother and baby needing medical attention following birth ahead of time	1. Partners should discuss what they have lost in becoming parents and see what the similarities and differences are 2. Partners should consider seeking relationship counselling to help them identify their concerns and expectations about parenthood 3. Partners should attend antenatal appointments together 4. Partners should be aware that attending appointments together will help them develop the feeling that they are becoming parents together 5. Partners should be aware that there is very little they can do to help the child-bearing mother during labour 6. Partners should actively listen to help each other feel / acknowledged and supported by:-Restating their partner's comments in their own words to confirm that they understand 7. Partners should use a phrase such as a 'red day' to let each other know they have had a bad day, as this may be easier to say 8. Partners should avoid expressing anger and resentment toward each other 9. Partners should avoid getting home from work late in order to avoid arguments 10. Partners should weigh up whether an issue is really important before raising it

10. Partners should learn about the changes in roles, responsibilities, and relationships that occur after birth
11. Partners should think about the sort of partner and parent they want to be and work out how they can achieve this
12. Partners should discuss their parenting hopes, fears, and roles prior to the birth of a baby
13. Partners should communicate their expectations about parenting and try to ensure that their expectations are compatible and realistic
14. Partners should be aware of unrealistic expectations that can cause rifts in their relationship, e.g., I'll have the same time available for work or leisure activities as before the baby was born
15. Partners should be aware that they bring separate past experiences, ideas and hopes to the new family, and combining these can be difficult
16. Partners should consider their own childhoods and discuss how this might influence what they do and say as parents, e.g., if their partner was not parented warmly themselves, they may need encouragement to spend time with their baby
17. Partners should try to identify what's important to them - e.g., communicating with others, affection, fun, safety, financial security, time together as a family and so on - and discuss how they can meet these needs
18. Partners should identify potential sources of stress, such as relationship problems or financial difficulties, and explore ways of

11. Partners should let each other talk about their respective experiences of childbirth
12. Partners should seek counselling if they experience a traumatic birth
13. Partners should let each other cry or be emotional without necessarily trying to fix the problem
14. Partners should be prepared to listen even if they feel that they are hearing the same things over and over
15. Partners should avoid asking too many questions when listening, as this can sound like an interrogation
16. Partners should set aside time every day to talk without distraction
17. Partners should use open-ended questions (questions that encourage someone to talk instead of giving a yes or no answer), e.g., "How are you finding being a parent?"
18. Partners should use tentative words such as "might", "could be" and "I wonder if" when offering advice
19. Partners should be aware that suppressing their thoughts and feelings can cause their partner to feel shut out
20. Partners should avoid telling each other how they should feel
21. Partners should be aware that conflict is a natural part of relationships
22. If their partner says or does something hurtful, the partner should look for positive or neutral intentions behind it, e.g., "I know that you're working long hours because you want to take care of us"

11. Partners should use questions that begin with "Why" or "How", or "What do you think about …?" to encourage creative thinking and problem-solving skills
12. Partners should hire a house cleaner, if affordable
13. Partners should help with the shopping
14. If the baby is unsettled, partners should take the baby for walks in the pram
15. Partners who are working should let the primary caregiver sleep in on the weekends
16. Partners should seek / and accept support from:-Friends
17. Partners should seek / and accept support from:-Parent groups
18. Partners should seek / and accept support from:-On-line forums
19. Partners should seek / and accept support from:-Support groups
20. Partners should seek / and accept support from:-Play groups
21. Partners should seek / and accept support from:-Workmates
22. Partners should be aware that although they may have looked toward bosses, co-workers or friends to feel good about themselves before the baby came, they will now be each other's main source of self-esteem
23. Partners who are working should telephone their partner from work, or drop in for lunch occasionally if they work close to home
24. Partners should show interest in their partner's activities by asking about them

dealing with these problems before the baby is born
19. Partners should be aware that symptoms of depression and anxiety are common, particularly among new parents
20. Partners should know about the warning signs of depression and anxiety so that they can seek help early
21. Partners should know the differences between depression and the baby blues
22. Partners should know the risk factors and symptoms of depression
23. Partners should know the risk factors and symptoms of anxiety
24. Partners should be aware that perinatal depression and anxiety can affect both men and women
25. Partners should be aware of the symptoms of depression that may be more typical of fathers
26. Partners should be aware that fathers can get depressed even if their partner is not depressed
27. Partners should be aware that pregnancy is a powerful and life-changing experience for mothers and fathers
28. Partners should encourage the child-bearing mother to rest, particularly if she is having a difficult pregnancy
29. Partners should be aware that childbirth can provoke anxiety
30. Partners should be aware that mothers' and fathers' experiences around pregnancy, labour, childbirth, and early parenthood can be very different
31. Partners should be aware that, unlike the child-bearing mother, partners do not go through all

23. Partners should avoid bringing up the past during conflict, e.g., “This is just like last time!"
24. Partners should avoid raising conflict topics in front of other people
25. Partners should agree that either person can raise a problem for discussion at any time
26. Partners should agree to raise problems at a good time and place, e.g., when there are no other competing demands such as dinnertime
27. Partners should engage in problem solving together by identifying the problem, brainstorming solutions, choosing a solution, evaluating the solution, and making a follow-up action plan
28. When problem solving, partners should:-Avoid accepting a situation that one partner isn’t happy with
29. Partners should avoid discussing the division of labour when they are angry or upset
30. Partners should divide the labour so that both parents have quality time and contact with each other and the baby
31. Partners should share child-care responsibilities from the beginning
32. Partners should arrange to both be at home for at least the first week or two after the birth
33. Partners should help with the cleaning
34. Partners should help with housework before having to be asked by the primary caregiver

and joining in when invited, e.g., taking an evening class together
25. Partners should ask a friend or family member to take the children for a couple of hours each week so that they that they can have time alone or with each other
26. If their partner is experiencing problems with / anxiety, partners should:-Help them face anxiety-provoking situations, whilst acknowledging that this is difficult
27. If their partner is experiencing problems with / anxiety, partners should:-Encourage them to consider taking supplements such as magnesium and calcium, as these are effective in reducing anxiety
28. Partners should seek relationship counselling during pregnancy if they have a history of mood problems
29. If their partner is uncomfortable expressing vulnerable emotions, partners should use rating scales to gauge their mood, e.g., “On a scale of 1-10, how agitated/tired/sad do you feel?”

the physical changes of pregnancy and giving birth, so they may not begin to adjust to parenthood until the baby is born

32. Partners should not assume that because childbirth is a natural process, the child-bearing mother will be able to cope without support
33. Partners should share how they are feeling about labour and childbirth during pregnancy
34. Partners should discuss their birth plan and intentions for labour in advance, e.g., talk about whether or not the child-bearing mother wants the partner to be present during the labour
35. Partners should be aware that some degree of stress and fatigue is normal following childbirth
36. Partners should be aware that if the birth was traumatic, it may impact on their sexual relationship
37. Partners should be aware that if the birth was traumatic it may increase their risk of developing depression and anxiety
38. Partners should be aware that babies develop well if their parents can relate to each other with respect and affection
39. Partners should be aware that open communication will strengthen their relationship
40. Partners should be aware that when their partner wants to talk, they're not necessarily seeking advice, but just need to talk it through
41. Partners should listen to each other's concerns
42. Partners should ask each other to explain or give more information if they don't understand what's being said
43. Partners should actively listen to help each other feel / acknowledged and supported by:-
35. Partners should help the primary caregiver with preparing meals, e.g., food shopping, cooking, clearing the table
36. Partners should be aware that fathers may feel less skilled in handling the baby
37. Fathers should talk and share experiences with other fathers
38. Partners should seek / and accept support from:-Family
39. Partners should challenge negative thinking by pointing out situations or tasks that their partner has handled well
40. Partners should acknowledge their togetherness by saying something such as "It's so good we've been through this together"
41. Partners should set aside quiet time to spend together while the baby is sleeping, even if it is only for 10 minutes
42. Partners should try to get outdoors together with the baby as much as possible
43. If their partner is resistant to going out, partners should think of things that they can do together in the home that give them a break from parenting, e.g., board games, watching a movie
44. Partners should be aware that one of the greatest causes of unhappiness and conflict for fathers is a lack of physical intimacy with their partner during the pregnancy and following childbirth
45. Partners should reassure each other that it is OK if they are not interested in sex
46. If partners need help with their sexual relationship they should talk to a professional, e.g., a relationship counsellor

Stopping what they're doing to show that they are giving their full attention

44. Partners should actively listen to help each other feel / acknowledged and supported by:- Using body language to show that they are listening, e.g., maintaining eye contact and sitting in a relaxed position
45. Partners should actively listen to help each other feel / acknowledged and supported by:- Waiting until the other has finished speaking before offering their opinion or suggestions
46. Partners should be aware that talking is a major part of resolving problems or conflict
47. Partners should share their concerns, thoughts, and feelings with each other
48. Partners should ask each other about their day and how they are feeling, not just focus on the baby, e.g., "What was good?" "What wasn't as good?"
49. Partners should be mindful of what they say, and how they say it, as it may influence how their partner will respond
50. Partners should voice their needs directly rather than thinking that their partner can read their mind
51. Partners should be aware that their partner may not want to "burden" them with their feelings
52. Partners should not 'bottle-up' their feelings as this makes it more likely they'll come out the wrong way, such as during an argument
53. Partners should be aware that it can be difficult for their partner to find the words to talk about their painful and negative thoughts
47. Partners should encourage each other to stay hydrated
48. Partners should eat regularly throughout the day, because low blood sugar results in low mood and frustration
49. Partners should be aware that alcohol is a depressant
50. Partners should be aware that alcohol and drugs are bad for your physical health
51. Partners should avoid using alcohol or drugs
52. Partners should monitor each other for withdrawal or change in mood
53. If their partner is experiencing depression, partners should also seek professional help for themselves
54. Partners should be aware that depression is temporary and their partner will recover
55. Partners should be aware that pushing too hard for someone with depression to seek treatment may make them feel undermined and thus reject assistance outright
56. If partners are concerned that their partner is experiencing depression, they should talk about the positive effects of getting help – both for the person and the rest of the family - by printing information from a quality website to leave with them to read and think about
57. Partners should go to the doctor themselves for information and advice about depression, if their partner initially refuses to go

54. Partners should encourage each other to talk honestly about what they are struggling with
55. Partners should be careful not to dismiss each other's concerns when providing reassurance, e.g., rather than saying something isn't a problem say "I will be with you to help with that" or "I can see that is really worrying you but I think we can get through that"
56. Partners should be aware that professional assistance is available if they need help with communicating effectively, e.g., a couples therapist or a psychologist
57. Partners should be aware that it is common for couples to experience an increase in arguments and tension during pregnancy and following childbirth
58. Partners should manage conflict well as this will benefit their child/children
59. Partners should try to resolve small conflicts before they escalate into major rifts
60. Partners should learn and become aware of their own and their partner's warning signs that they're becoming overwhelmed, e.g., clenched jaw, raised voice, door slamming, irritability, indecisiveness
61. Partners should avoid judging each other, e.g., thinking in terms of who is right and who is wrong, or thinking of their partner as the enemy or "the one with the problem"
62. Partners should try to understand their partner's point of view even if they don't agree, e.g., "I can understand why you're angry that I asked my parents over for the weekend without talking to you first"

63. Partners should avoid words or phrases that imply that their partner is always wrong or not trying, e.g., “You always ...” or “You never ..."
64. Partners should use ‘I’ statements, e.g., Instead of saying, “You don’t make any time for us anymore”, say “I feel lonely when we spend less time together"
65. Partners should avoid letting fights continue overnight
66. Partners should take a break if their tempers are too hot and return to communicating when they are calmer, e.g., partners should say something like, “I want to listen to you. I know this is important, but I’m having a hard time because we’re so mad at each other. Can we take a break and talk about it later?"
67. Partners should seek professional help if they are having difficulty resolving their relationship problems
68. Partners should express their needs without criticising each other
69. Partners should avoid name-calling, e.g., "You’re stupid!"
70. Partners should avoid criticising the mother’s body or demanding that she loses weight
71. Partners should avoid making unfavourable comparisons to other parents
72. Partners should give feedback about how they feel when they are criticised by their partner, e.g., “When you do / say ... I feel...”
73. If one partner doesn’t want to talk about the issue at the time it is first raised, partners should schedule another time to discuss it

74. When raising an issue, partners should stay focused on the topic, rather than side track the conversation by raising other issues or concerns
75. Partners should describe what's causing their concerns without saying why they think it is happening, e.g., instead of saying "You just sit down and watch TV while I have to get the dinner ready and look after the children", say "I'd find it easier to get dinner if the kids were kept busy. Would you be able to spend some time with them?"
76. Partners should offer suggestions or examples rather than dictating to their partner what to do
77. Partners should review their progress when problem solving by discussing what worked well, what didn't work, and what they should change
78. Partners should be aware that they can't always pre-empt or fix everything that goes wrong
79. When problem solving, partners should:-Avoid jumping to conclusions
80. When problem solving, partners should:-Take turns talking
81. When problem solving, partners should:-Try to hear the positive in what their partner is saying
82. When problem solving, partners should:-Avoid trying to force the other person to change
83. Partners should plan the division of labour and agree on who does what before the baby is born, e.g., talk about who will be employed in paid work
84. Partners should be willing to re-negotiate the division of labour as needed
85. Partners should share household chores
86. The primary caregiver should encourage their partner to be involved with the baby and give

them space to do this without watching over them, as this will build their confidence and help them build a strong relationship with the child

87. Partners should accept that they may do things differently from each other, and that these different experiences can be good for the baby
88. The partner who is not the primary caregiver should be realistic about what time they'll be home, and come home on time whenever possible
89. Partners who are working should be aware that their partner may feel trapped at home all day and may feel resentful
90. Partners who are feeling nervous or unsure about providing practical support should discuss it with their partner
91. Partners should provide practical support so that the primary caregiver can focus on resting and feeding the baby for the first 6 weeks postpartum
92. Partners who are not the primary caregiver should identify a task that they can make a part of their routine, e.g., bathing the baby
93. If the partner isn’t sure what practical help the primary caregiver wants, they should ask for guidance or make suggestions
94. The primary caregiver should communicate if they need help by specifically stating what they need, e.g., Instead of saying, “I feel overwhelmed and need help around here” ask, “Would you please do the laundry for me this week? I’m feeling so overwhelmed."

95. Partners should try to help out rather than get angry if the primary caregiver is finding it hard to cope with everyday chores
96. The primary caregiver should acknowledge their partner's practical support
97. Partners should provide the primary caregiver with breaks that they can count on, e.g., taking the baby out for a walk
98. Partners should arrange things so that the primary caregiver has some leisure time at least once a week
99. Partners should take the baby if their partner is getting upset or flustered
100. If they have older children, partners should organise to take turns in caring for the baby so the other can spend one-on-one time with older siblings
101. Partners should help the primary caregiver have time away from the baby doing something they find pleasurable (e.g., a massage or a warm bath)
102. Partners should be aware that existing supports and friendships can change when they become parents
103. During pregnancy, partners should identify support people who will help them following childbirth
104. Partners should be aware that if their partner works away from home, a good support network is particularly important
105. Partners should be aware of pressure and the expectations of others (e.g., parents, in-laws, family, colleagues) and trust their own knowledge and understanding of their baby

106. Partners should discuss and negotiate whether extended family are being supportive or intrusive
107. Partners should tactfully limit visitors and establish boundaries if their partner is becoming overwhelmed by making sure that visitors don't outstay their welcome or turn up at inconvenient hours
108. Partners should be aware that nurturing each other enables them to nurture the baby
109. Partners should let each other know that they're there for each other
110. Partners should be patient and understanding with each other
111. Partners should praise each other's parenting efforts by giving specific examples, e.g., "I love how you smile at the baby"
112. Partners should let each other know if they need more acknowledgement, appreciation and encouragement
113. Partners should validate each other's thoughts, experiences, and worries, e.g., "I can see how hard this is for you", "This would be a hard time for anyone", "You have been dealing with so much lately"
114. Partners should be aware that their partner's self-esteem may be more fragile after the baby is born
115. Partners should let each other know that they are not failing their baby or partner if they feel stressed
116. Partners should do what they can to strengthen their connection during pregnancy and following childbirth, e.g., let each other know that they love each other

117. Partners should do things to show their partner love and appreciation, e.g., buy flowers, make a cup of tea, give massages
118. Partners should be aware that following childbirth they will have to make a commitment to enjoy some quality alone time, whereas before it was a luxury that they may have taken for granted
119. Partners should arrange to do enjoyable activities together
120. Partners should think about the things they used to like doing before they had the baby and consider how they might do those activities together again
121. Partners should be aware that their sex life is likely to change during pregnancy and following childbirth and may not return to normal for a year or more
122. Partners should be aware that many mothers will have less interest in sex in the later stages of pregnancy and the months following birth due to hormonal changes and the way they feel about their body
123. Partners should be aware that pregnancy, birth and parenting can affect sexual health and intimacy due to the physical recovery after childbirth, lifestyle changes after the birth, and changes in body image
124. Partners should be aware that their partner may feel rejected or unwanted if they are not interested in sex
125. Partners should be aware that less interest in sex does not mean that their partner is no longer interested in them or attracted to them
126. Partners should communicate what they want and how they feel about sex

127. If partners lose interest in sex, they should explore different types of intimacy, such as cuddling or hand holding
128. Partners should be aware that if their partner is feeling low and has also lost interest in sex, this can be a sign of depression
129. Partners should encourage each other to sleep when needed
130. Partners should look for quick and easy meal options that incorporate lean meats, whole-grains, low-fat dairy products and fresh fruit, and vegetables
131. Partners should choose healthy snacks (e.g., fruit, low-fat yoghurt, raw nuts and seeds, wholegrain crackers) over highly processed foods such as biscuits, cake, and chocolate
132. Partners should encourage each other to be physically active either individually or together
133. Partners should help each other to get out and get some fresh air
134. Partners should be aware that mothers with anxiety symptoms can benefit from reducing their intake of stimulants such as coffee, tea, cola and energy drinks as these can exacerbate symptoms
135. Partners should be aware that consuming alcohol during pregnancy is dangerous to the developing baby
136. Partners should be aware that alcohol and drugs make you feel better for a short time only
137. Partners should be aware that managing stress and worry with use of alcohol and drugs is likely to cause additional problems

138. Partners should seek professional help if they need support to manage their alcohol or drug use
139. Partners should be aware that acceptance creates a healthier, happier, and more positive environment for the whole family
140. Partners should be aware that acceptance is an attitude that can reduce the stress and challenges of working together to raise children
141. Partners should be aware that no matter how bad things get, they are temporary, e.g., babies will begin to sleep more, eat less often and it will get easier to take them out of the house
142. Partners should try to enjoy their family rather than feel that they are missing out on the old days
143. Partners should be willing to continually explore and adapt, as what works one day may not work the next
144. Partners should be aware that because the birth of a baby is highly anticipated, and expected to be a happy time, it is often difficult to recognise depression and anxiety symptoms
145. Partners should be aware that it's normal to worry when they are pregnant or have become a parent but there is an important distinction between worry and extreme anxiety
146. Partners should encourage their partner to seek help if they believe they are experiencing anxiety symptoms, as seeking help early will contribute to a quicker recovery
147. Partners should be aware that untreated anxiety can impact on the pregnancy and the baby

148. Partners should be aware depression and anxiety symptoms often happen at the same time
149. Partners should be aware that their partner may have worries that they do not think are justified, but are nonetheless very real to their partner
150. Partners should avoid responding to their partner's fears with shock or amazement
151. If their partner is experiencing problems with / anxiety, partners should:-Help them by breaking down tasks into small steps, so that even though they feel it is a challenge, they are confident they can do it
152. If their partner is experiencing problems with / anxiety, partners should:-Help them by not overly accommodating the anxiety, e.g., by not following unreasonable rules such as changing all clothing when entering the house
153. If partners notice their partner is looking unhappy or displaying negative feelings, they should approach the topic in a caring and non-judgmental way, e.g., "I've been noticing that you seem really down a lot lately, how are you feeling about things/yourself/the baby/motherhood?"
154. Partners should use follow-up questions to determine how their partner is feeling, e.g., "How are you doing? And if they say something like "I'm tired but I'm fine" asking, "But how are you really feeling?"
155. Partners should be aware that fathers are more likely to hide their depression

156. Partners should be aware that depression is not voluntary and isn't something you can just "snap out of"
157. Partners should encourage their partner to seek professional help if they think she or he is experiencing depression as this will benefit their health, the healthy development of their baby, and their relationship
158. Partners should offer to accompany their partner to the GP or maternal child health nurse if they are concerned that they may be experiencing depression
159. Partners should be aware that it is common for people with depression not to recognise that they need help or support, so they may reject offers of help
160. Partners should be aware that their partner may avoid help seeking because they are embarrassed or ashamed that they are experiencing depression
161. Partners should be aware that there are support groups available for families affected by postpartum depression and anxiety
162. Partners should take their partner seriously if she or he talks about not wanting to live or about harming themselves, e.g., by letting their partner know that they understand their feelings are real to them, no matter how bad or unreasonable they sound
163. Partners should seek professional help immediately if their partner is having thoughts of suicide or harming themselves or the baby, e.g., go to the local emergency room
164. Partners should risk conflict with their partner in the short term by getting help for them if

	they are concerned about their mental health, particularly if the wellbeing of the baby is at risk 165. If the mother is admitted to a mother-baby unit, partners should make the most of visiting times to maintain contact with her and the baby 166. Partners should seek professional help for their partner if they are acting in an unusual or bizarre way, e.g., being extremely withdrawn or fearful, or hearing or seeing things that others can't		
Round 2	1. Partners should be aware that if their partner is depressed they are at increased risk of also becoming depressed 2. Parents should discuss their parenting hopes, fears, and roles following the birth of their infant* 3. Partners should review their priorities and expectations following the birth of their infant* 4. Partners should be aware that learning about the changes and difficulties that come with being a new parent will not protect them against experiencing these difficulties, but it may help them to recognise and respond to them, if they occur* 5. Partners should be aware that they may experience difficulties during the transition to parenthood, regardless of whether or not they have a supportive relationship* 6. Partners should be aware that each parent may be vulnerable and competent during different developmental stages of their child's life* 7. Partners should be aware that hormonal changes will affect the child-bearing mother's mood and energy levels	1. Partners should be aware that not all parents will experience difficulties with the transition to parenthood* 2. Partners should talk about their own feelings, assumptions, or stigmas relating to mental illness* 3. Partners should say something straight away if they are having problems with their midwife* 4. Partners should be aware of the difference between being critical and attacking, i.e., criticism can be given and heard as well-meaning and constructive, while attacking is hurtful* 5. Partners should be aware that some conflict is inevitable and may never be properly resolved* 6. Partners should arrange to both be at home for at least the first week or two after the birth, if this is feasible given their financial arrangements* 7. Partners who are in paid work should be aware that sometimes nothing will get done while they are at work*	1. Partners should be aware that having a baby may strengthen their relationship 2. Partners should be aware that when they become new parents, they will lose a bit of their identity and what their relationship used to be 3. Partners should be aware that the transition to parenthood is one of the most important times to build their relationship 4. Partners should consider seeking relationship counselling to help them identify their concerns and expectations about parenthood, if they are having trouble negotiating these concerns among themselves* 5. Partners should consider engaging in counselling during pregnancy as a means of preparing to become a family* 6. Partners should be aware that if their relationship is not as supportive as they would like, having a baby can make you work better together as a couple* 7. Partners should try to develop an understanding of their extended family's

	8. Partners should let each other talk about their respective experiences of childbirth 9. Partners should seek professional help if they experience a traumatic birth and do not feel they are coping well afterwards* 10. The child-bearing mother should be aware that their partner may have strong feelings about the birth and need to debrief* 11. Partners should ask the child bearing mother what level of support they would like during the childbirth but be prepared to be flexible on the day* 12. Partners should be aware that they can provide the child-bearing mother with support during labour (e.g., massage, acupressure, reassurance, verbal encouragement)* 13. Partners should be prepared to listen even if they feel that they are hearing the same things over and over 14. Partners should be aware that suppressing their thoughts and feelings can cause their partner to feel shut out 15. Partners should be aware that conflict is a natural part of relationships 16. Partners should agree to raise problems at a good time and place, e.g., when there are no other competing demands such as dinnertime 17. Partners should engage in problem solving together by identifying the problem, brainstorming solutions, choosing a solution, evaluating the solution, and making a follow-up action plan 18. When problem solving, partners should take responsibility for their own behaviour and the impact of it*	8. Partners should be aware that stimulants such as coffee, tea, cola, and energy drinks can exacerbate anxiety symptoms* 9. Partners should eat quick and easy meal options that incorporate healthy foods*	background and attitudes towards mental illness* 8. Partners should acknowledge how physically uncomfortable pregnancy is for the child-bearing mother 9. Both mothers and fathers should attend antenatal classes 10. If health professionals unknowingly overlook the father, the couple should speak to the person about making changes to involve the father more 11. Partners should help the child-bearing mother with heavy lifting and carrying as much as possible 12. Partners should discuss the possibility of the new mother and baby needing medical attention following birth ahead of time 13. Partners should seek counselling if they experience a traumatic birth 14. Partners should be aware that talking about the birth without the support of a skilled third party can result in further traumatizing or re-triggering* 15. Partners should let each other cry or be emotional without necessarily trying to fix the problem 16. Partners should avoid asking too many questions when listening, as this can sound like an interrogation 17. Partners should set aside time every day to talk without distraction 18. Partners should use open-ended questions (questions that encourage someone to talk instead of giving a yes or no answer), e.g., “How are you finding being a parent?”

	19. Partners should arrange to both be at home for at least the first week or two after the birth 20. Partners should discuss any differences in parenting to ensure that both parents are happy with how the infant is being parented* 21. Partners should discuss how the primary caregiver will be supported with childcare and home duties if their partner is unable to assist (e.g., hire a cleaner)* 22. Partners should be aware of pressure from others (e.g., parents, in-laws, colleagues)* 23. Partners should trust their own knowledge and understanding of the baby* 24. Partners should seek and accept support from whomever they both feel comfortable inviting into their home or helping with their child* 25. Partners should discuss and consider what supports they will draw on when they become parents* 26. Partners should provide practical support so that the primary caregiver can focus on resting and feeding the baby until the primary caregiver feels recovered or able to take on more duties* 27. Partners should consider having a word/phrase/excuse to use if visitors are becoming overwhelming* 28. Partners should consider seeking and accepting support from the following sources, if appropriate to their circumstances: Family* 29. Partners should be aware that their partner's attitude towards their parenting affects how confident they feel in caring for the infant*	19. Partners should use tentative words such as “might”, “could be” and “I wonder if” when offering advice 20. Partners should avoid telling each other how they should feel 21. If their partner says or does something hurtful, the partner should look for positive or neutral intentions behind it, e.g., “I know that you’re working long hours because you want to take care of us" 22. Partners should avoid bringing up the past during conflict, e.g., “This is just like last time!" 23. Partners should avoid raising conflict topics in front of other people 24. Partners should agree that either person can raise a problem for discussion at any time 25. When problem solving, partners should avoid accepting a situation that one partner isn’t happy with 26. When discussing things that might need to change, partners should use the "feedback sandwich" method (a feedback sandwich consists of criticism sandwiched between two positive comments). E.g., "Thanks for helping me out with the laundry. It would be great if you could fold the towels before putting them away. I really appreciate that you always put the washing on the line"* 27. Partners should avoid expressing resentment toward each other* 28. Partners should avoid expressing anger toward each other* 29. Partners should avoid discussing the division of labour when they are angry or upset

30. Partners should set aside quiet time to spend together while the baby is sleeping, even if it is only for 10 minutes 31. Partners should try to get outdoors together with the baby as much as possible 32. If their partner is resistant to going out, partners should think of things that they can do together in the home that give them a break from parenting, e.g., board games, watching a movie 33. Partners should reassure each other that it is OK if they are not interested in sex 34. Partners should be aware that pregnancy, birth, and parenting can affect sexual health and intimacy* 35. Partners should be aware that even if the birth wasn't traumatic, it may impact their sexual relationship* 36. Partners should be aware that their sexual relationship following the birth of their infant may be different to "pre-baby" but not necessarily worse* 37. If the mother is breastfeeding, their partner should support them by making sure they are hydrated and getting enough sleep* 38. Partners should be aware that having a healthy diet will help them cope with less sleep and recovering from birth or breast-feeding* 39. Partners should be aware that there are healthier ways of coping than alcohol or drug use* 40. Partners should be aware that a partner's use of alcohol or drugs following childbirth is associated with increased risk of perinatal depression and anxiety*	30. Partners should divide the labour so that both parents have quality time and contact with each other and the baby 31. Partners should share child-care responsibilities from the beginning 32. Partners should help with the cleaning 33. Partners should help with housework before having to be asked by the primary caregiver 34. Partners should help the primary caregiver with preparing meals, e.g., food shopping, cooking, clearing the table 35. Partners should be aware that fathers may feel less skilled in handling the baby 36. Fathers should talk and share experiences with other fathers 37. Partners should seek / and accept support from family 38. Partners should share the household chores (e.g., shopping and cleaning)* 39. Partners should consider seeking and accepting support from the following sources, if appropriate to their circumstances: Friends* 40. Partners should consider seeking and accepting support from the following sources, if appropriate to their circumstances: Parent groups* 41. Partners should consider seeking and accepting support from the following sources, if appropriate to their circumstances: On-line forums* 42. Partners should consider seeking and accepting support from the following sources, if appropriate to their circumstances: Support groups* 43. Partners should consider seeking and accepting support from the following sources, if

41. Partners should monitor each other for withdrawal or change in mood
42. Partners should go to the doctor themselves for information and advice about depression, if their partner initially refuses to go
43. Partners should be aware that it is often difficult to recognise depression and anxiety symptoms*
44. If partners can have agreed strategies for seeking help for different difficulties with being a new parent (e.g., We will call his mother if we need help with cleaning the house, we will go to the MCH nurse if we need help with sleeping, we will go to our friend's house for a sleep over if we need to catch up on our sleep) this can assist the family to seek help if things get tough*
45. Partners should be aware that their partner may avoid help seeking because they do not want to acknowledge that they are not coping*
46. Partners should be aware that their partner may avoid help seeking because they do not want to acknowledge that their illness may be harmful to their baby*
47. Partners should be aware that their partner may avoid help seeking because of a wide range of worries or concerns*

appropriate to their circumstances: Play groups*

44. Partners should consider seeking and accepting support from the following sources, if appropriate to their circumstances: Workmates*
45. Partners should challenge negative thinking by pointing out situations or tasks that their partner has handled well
46. Partners should acknowledge their togetherness by saying something such as “It’s so good we’ve been through this together”
47. Partners should be aware that one of the greatest causes of unhappiness and conflict for fathers is a lack of physical intimacy with their partner during the pregnancy and following childbirth
48. If partners need help with their sexual relationship they should talk to a professional, e.g., a relationship counsellor
49. Partners should be aware that many parents do not experience sexual problems during the transition to parenthood*
50. If their partner does not want to have sex, partners should not ask why*
51. Partners should encourage each other to stay hydrated
52. Partners should eat regularly throughout the day, because low blood sugar results in low mood and frustration
53. Partners should be aware that alcohol is a depressant
54. Partners should be aware that alcohol and drugs are bad for your physical health
55. Partners should avoid using alcohol or drugs

			56. Partners should not be punitive about each other's drug or alcohol use* 57. If their partner is experiencing depression, partners should also seek professional help for themselves 58. Partners should be aware that depression is temporary and their partner will recover 59. Partners should be aware that pushing too hard for someone with depression to seek treatment may make them feel undermined and thus reject assistance outright 60. If partners are concerned that their partner is experiencing depression, they should talk about the positive effects of getting help – both for the person and the rest of the family - by printing information from a quality website to leave with them to read and think about
Round 3	1. Partners should be aware of the difference between being critical and attacking, i.e., criticism can be given and heard as well-meaning and constructive, while attacking is hurtful*	-	1. Partners should be aware that not all parents will experience difficulties with the transition to parenthood* 2. Partners should talk about their own feelings, assumptions, or stigmas relating to mental illness* 3. Partners should say something straight away if they are having problems with their midwife* 4. Partners should be aware that some conflict is inevitable and may never be properly resolved* 5. Partners should arrange to both be at home for at least the first week or two after the birth, if this is feasible given their financial arrangements* 6. Partners who are in paid work should be aware that sometimes nothing will get done while they are at work*

	7. Partners should be aware that stimulants such as coffee, tea, cola, and energy drinks can exacerbate anxiety symptoms* 8. Partners should eat quick and easy meal options that incorporate healthy foods*

*Items based on panel members' feedback on Round 1.

Appendix M. Final guidelines on how partners can support one another to prevent perinatal depression and anxiety

Supporting your partner when you have a baby

Tips to help you stay mentally healthy during the transition to parenthood

If you and your partner are expecting a baby, or have recently had a baby, this guide was designed for you. It provides information and suggestions on how you can support your partner during pregnancy and following childbirth to reduce the chance that he or she will experience depression or anxiety.

These recommendations are based on the expert opinions of clinicians and researchers who specialise in perinatal mental health, as well as people who have experienced perinatal depression and anxiety first hand.

The guidelines are designed to be inclusive of all couples, including partners in same-sex relationships. We recognise that each family is unique so not all of the suggestions may be relevant to you. Please feel free to adapt the guidelines to your specific situation.

Becoming parents

Most couples find the transition to parenthood challenging. It is normal to experience a wide range of emotions during pregnancy and over the following year. Even when things are progressing normally, pregnancy and new parenthood can be stressful for you, your partner, and your immediate family. Having a baby can cause changes which involve a degree of loss and grief, such as the loss of freedom, work identity, financial independence and social contacts. Caring for a baby can also place stress on your relationship with your partner. When a baby arrives, the focus shifts from self and partner-care to mostly baby-care.

What are your hopes, fears, and expectations?

Learning about the changes and difficulties that come with being a new parent will not necessarily protect you against experiencing these difficulties, but it may help you to recognise and respond to them if they occur. Before your baby is born, try to identify potential sources of stress, such as relationship problems or financial difficulties, and explore ways of dealing with these problems with your partner. Discuss your parenting hopes, fears, and roles together. Try to identify what's important to each of you - e.g., communicating with others, affection, fun, safety, financial security, time together as a family and so on - and discuss how you can meet these needs. Think about the sort of partner and parent you want to be and work out how you can achieve this. Talk about your expectations about parenting and try to ensure that your expectations are compatible and realistic. Be aware of unrealistic expectations that could cause rifts in your relationship, e.g., "I'll have the same time available for work or leisure activities as before the baby was born".

Thinking back to your own childhoods

You and your partner bring separate past experiences, ideas and hopes to your new family, and combining these can be difficult. Think back to your own childhoods and discuss how this might influence what you do and say as parents. For example, if your partner was not parented warmly themselves, they may need encouragement to spend time with your baby.

Adapting to parenthood

Following the birth of your baby it may be helpful to review your priorities and expectations with your partner. Find time to revisit your parenting hopes, fears, and roles. Be willing to continually explore and adapt, as what works one day may not work the next. You may be vulnerable or competent during different stages of your child's life. Try to enjoy your family rather than feel like you are missing out on the old days. Remember, no matter how difficult things get, the situation is temporary. Your baby will begin to sleep more, eat less often and it will get easier to take him or her out of the house.

It can be helpful, at this time, to develop an attitude of acceptance. Acceptance refers to opening up and making room for difficult feelings, sensations, and experiences. Acceptance creates a healthier, happier, and more positive environment for the whole family and can reduce the stress and challenges of working together to raise children.

> " It is normal to experience a wide range of emotions during pregnancy and the following year "

Pregnancy and childbirth

Pregnancy is a powerful and life-changing experience for mothers and fathers. Encourage your partner to rest, particularly if she is having a difficult pregnancy.

It is a good idea to discuss your birth plan and intentions for labour in advance. Share with your partner how you are feeling about labour and childbirth during pregnancy. If you are the child-bearing mother, talk to your partner about whether or not you want him or her to be present during the labour.

Do not assume that because childbirth is a natural process, the child-bearing mother will be able to cope without support. Childbirth can be anxiety-provoking. Partners can provide support during labour through massage or acupressure, and by providing reassurance and verbal encouragement. Discuss what level of support you would like in advance but be prepared to be flexible on the day.

The importance of de-briefing after birth

Mothers' and fathers' experiences around pregnancy, labour, childbirth, and early parenthood can be very different. Hormonal changes will affect the child-bearing mother's mood and energy levels and some degree of stress and fatigue is normal following childbirth. You and your partner may have strong feelings about the birth and need to debrief. Keep in mind that unlike the child-bearing mother, partners do not go through all the physical changes of pregnancy and giving birth, so they may not begin to adjust to parenthood until the baby is born. Talk to your partner about your respective experiences of childbirth.

Be mindful that if the birth was traumatic, it may impact on your sexual relationship. It may also increase your risk of developing depression and anxiety. If you experience a traumatic birth and do not feel you are coping afterward, consider seeking professional help.

Sex and intimacy

It is important to understand that even if the birth wasn't traumatic, it may impact upon your sexual relationship. Your sex life is likely to change during pregnancy and following childbirth, and may not return to normal for a year or more. Your sexual health and intimacy may be affected by a number of factors including the physical recovery, lifestyle changes after the birth, and changes in body image. Many child-bearing mothers will have less interest in sex in the later stages of pregnancy and the months following birth due to hormonal changes and the way they feel about their body.

You may feel rejected or unwanted if your partner is not interested in sex. Less interest in sex does not mean that your partner is no longer interested in you or attracted to you. Explore different types of intimacy, such as cuddling or hand holding. Your sexual relationship may be different to "pre-baby", but not necessarily worse. Reassure your partner that it is OK if they are not interested in sex. Communicate with your partner what you want and how you feel about sex.

It's also important to be aware that if your partner is feeling low and has lost interest in sex, this can be a sign of depression.

> " Explore different types of intimacy, such as cuddling or hand holding "

Showing affection and acceptance

Looking after each other enables you to care for your baby. Do what you can to strengthen your connection with your partner during pregnancy and following childbirth. Let your partner know that you love them. Do things to show your love and appreciation, such as buying flowers, making a cup of tea, or giving your partner a massage.

Making time for each other

Following childbirth it will be important to set aside quality time with your partner, whereas before you may have taken such occasions for granted. Arrange to do enjoyable activities with your partner. Set aside quiet-time to spend together while your baby is sleeping, even if it is only for 10 minutes. Think about the things you used to like doing before you had your baby and consider how you might do those activities together again. Try to get outdoors together with your baby as much as possible. If your partner is resistant to going out, think of things that you can do together in the home that give you a break from parenting, such as board games or watching a movie.

Showing your appreciation

Let your partner know that you're there for them and try to be patient and understanding. Your partner's self-esteem may be more fragile after your baby is born. Praise your partner's parenting efforts by giving specific examples, e.g., "I love how you smile at our baby". Validate your partner's thoughts, experiences, and worries, e.g., "I can see how hard this is for you", "This would be a hard time for anyone", "You have been dealing with so much lately". Let your partner know they are not failing your baby, or you, if they feel stressed. Also let your partner know if you feel you need more acknowledgment, appreciation and encouragement from them.

> "Do things to show your love and appreciation, such as buying flowers, making a cup of tea, or giving your partner a massage"

Tips for communicating

The art of listening

Babies develop well if their parents can relate to each other with respect and affection. Talking is a major part of resolving problems or conflict and open communication will strengthen your relationship. Share your concerns, thoughts, and feelings with your partner. Ask your partner about their day and how they are feeling, rather than just focusing on your baby, e.g., "What was good about today?" "What wasn't so good?" Listen to your partner's concerns, even if you feel that you are hearing the same things over and over. Ask them to explain or give more information if you don't understand what's being said. When your partner wants to talk, they're not necessarily seeking advice, but may just need to talk it through. Avoid jumping to conclusions. Actively listen to help one another feel acknowledged and supported by:

- stopping what you're doing to show that you are giving your full attention
- using body language to show that you are listening, e.g., maintaining eye contact and sitting in a relaxed position
- waiting until your partner has finished speaking before offering your opinion or suggestions.

Talking about tricky topics and painful feelings

It can be difficult to find the words to talk about painful and negative thoughts. Encourage your partner to talk honestly about whatever they are struggling with. Be careful not to dismiss their concerns when providing reassurance, e.g., rather than saying something isn't a problem say "I will be here to help you with that" or "I can see that is really worrying you but I think we can get through that". You may not want to 'burden' each other with your feelings. Do not bottle-up your feelings as this makes it more likely they'll come out the wrong way, such as during an argument. Voice your needs directly rather than thinking that your partner can read your mind. Hiding your thoughts and feelings can cause your partner to feel shut out.

Professional assistance is available if you need help with communicating effectively (e.g., a couples therapist or a psychologist).

Managing conflict

Conflict is a natural part of relationships. It is normal for couples to experience an increase in arguments and tension during pregnancy and following childbirth. Managing conflict well will benefit your child/children. You can't always pre-empt or fix everything that goes wrong. Try to resolve small conflicts before they escalate into major rifts.

How to express your concerns respectfully

Agree to raise problems at a good time and place, when there are no other competing demands, e.g., when your children are in bed. If your partner doesn't want to talk about the issue at the time it is first raised, schedule another time to discuss it, but avoid letting fights continue overnight.

Try to express your needs without criticising your partner. Be mindful of what you say, and how you say it, as it may influence how your partner responds. Try to use 'I' statements, e.g., Instead of saying, "You don't make any time for us anymore", say "I feel lonely when we spend less time together". Describe what's causing your concerns without saying why you think it is happening, e.g., instead of saying "You just sit down and watch TV while I have to get the dinner ready and look after the children", say "I'd find it easier to get dinner if the kids were kept busy. Would you be able to spend some time with them?" Avoid words or phrases that imply that your partner is always wrong or not trying, e.g., "You always ..." or "You never ..." Take responsibility for your own behaviour and its impact.

Problem solving as a team

Engage in problem solving with your partner by breaking things down into these steps:

1. identify the problem
2. brainstorm solutions
3. choose a solution
4. evaluate the solution
5. make a follow-up action plan

When you are problem solving together, take turns talking. Stay focused on the topic, rather than side-track the conversation by raising other issues or concerns. Try to hear the positive in what your partner is saying. Try to understand your partner's point of view even if you don't agree, e.g., "I can understand why you're angry that I asked my parents over for the weekend without talking to you first". Offer suggestions or examples rather than dictating to your partner what to do or trying to force them to change. Review your progress by discussing what worked well, what didn't work, and what you should change.

Avoiding being critical

Avoid name-calling or making unfavourable comparisons to other parents, e.g., "You're stupid!" Try not to judge your partner, e.g., thinking in terms of who is right and who is wrong, or thinking of your partner as the enemy or "the one with the problem". Avoid criticising your partner's body or demanding that they lose weight. If you feel criticised by your partner, give feedback about how you are feeling, e.g., "I feel… when you do / say..." Be aware of the difference between giving feedback and attacking, i.e., feedback can be given and heard as well-meaning and constructive, while attacking is hurtful.

It's a good idea to try to become aware of your own and your partner's warning signs that you're becoming overwhelmed, e.g., clenched jaw, raised voice, door slamming, irritability, indecisiveness. Take a break if your tempers are too hot and return to communicating when you are calmer, e.g., say something like, "I want to listen to you. I know this is important, but I'm having a hard time because we're so mad at each other. Can we take a break and talk about it later?"

Seek professional help if you are having difficulty resolving your relationship problems.

Sharing the workload

Your daily routines will change following childbirth. It can be helpful to plan the division of household labour and agree on who does what before your baby is born. Talk about who will be employed in paid work. Be willing to re-negotiate the division of labour as needed. Discuss how the primary caregiver will be supported with childcare and home duties if the other is unable to assist (e.g., hire a cleaner).

Arrange for both of you to be at home for at least the first week or two after the birth. Try to share the household chores. If you are not the primary caregiver, try to support her/him so that they can focus on resting and feeding your baby for the first six weeks, or until they feel able to take on more duties.
If you are the primary caregiver, communicate that you need help by specifically stating what you need, e.g., Instead of saying, "I feel overwhelmed and need help around here" ask, "Would you please do the laundry for me this week? I'm feeling so overwhelmed". Remember to acknowledge your partner's practical support.

Providing the primary caregiver with breaks

Try to arrange things so that the primary caregiver has some leisure time at least once a week. Provide the primary caregiver with breaks that they can count on, by doing things such as taking the baby out for a walk. Help the primary caregiver have time away from the baby doing something they find pleasurable (e.g., a massage or a warm bath). Try to help out rather than get angry if your partner is finding it hard to cope with everyday chores. Take the baby if your partner is getting upset or flustered.

Being involved in childcare

If you are the primary caregiver, encourage your partner to be involved with the baby and give them space to do this without watching over them, as this will build their confidence and help them build a strong relationship with their child. Your attitude towards your partner's parenting affects how confident they feel in caring for your baby. Accept that you may do things differently from your partner, and that these different experiences can be good for your baby. Discuss any differences in parenting to ensure that you and your partner are happy with how your baby is being parented.

Staying healthy

Diet

Having a healthy diet will help you cope with less sleep and recover from birth or breast-feeding. Look for quick and easy meal options that incorporate lean meats, whole-grains, low-fat dairy products, fresh fruit, and vegetables. Choose healthy snacks (e.g., fruit, low-fat yoghurt, raw nuts and seeds, wholegrain crackers) over highly processed foods such as biscuits, cake, and chocolate. If you have anxiety, you may benefit from reducing your intake of stimulants such as coffee, tea, cola and energy drinks as these can exacerbate symptoms.

Sleep

Encourage your partner to sleep when needed.

Exercise

Encourage your partner to be physically active either individually or with you. Help your partner to get out and get some fresh air.

Breastfeeding

If your partner is breastfeeding, support her by making sure she is hydrated and getting enough sleep.

Alcohol and drugs

There are a lot of challenges when you become a parent, and it can be tempting to use drugs and alcohol to cope. Although alcohol and drugs make you feel better for a short time, they can also lead to additional problems. Consuming alcohol during pregnancy can be dangerous to the developing baby, while excessive use of alcohol or drugs following childbirth is associated with increased risk of depression and anxiety. If you think that you might be consuming excessive alcohol or drugs, there are healthier ways of coping.

Seeking help from family and friends

Existing supports and friendships can change when you become parents. During pregnancy, identify support people who will help you following childbirth. Discuss and consider what supports you will draw on when you become parents. If one of you works away from home, a good support network is particularly important. Where possible, have agreed strategies for seeking help for different difficulties (e.g., We will call your mother if we need help with cleaning the house, we will go to the Maternal Child Health nurse if we need help with sleeping, we will go to our friend's house for a sleep over if we need to catch up on our sleep).

Seek and accept support from whomever you and your partner feel comfortable inviting into your home or helping with your child. For example, consider seeking and accepting support from family, if appropriate to your circumstances. Be aware of the pressure and the expectations of others (e.g., parents, in-laws, family, colleagues) and trust your own knowledge and understanding of your baby. Discuss and negotiate whether extended family are being supportive or intrusive. If you are becoming overwhelmed, tactfully limit visitors and establish boundaries by making sure visitors don't outstay their welcome or turn up at inconvenient hours. Consider having a word/phrase/excuse to use if visitors are becoming overwhelming.

> "Be aware of the pressure and the expectations of others and trust your own knowledge and understanding of your baby"

How can I tell if my partner is experiencing perinatal depression or anxiety?

Because the birth of a baby is highly anticipated, and expected to be a happy time, it is often difficult to recognise depression and anxiety symptoms. Monitor your partner for withdrawal or change in mood.
Fathers are more likely to hide their depression. Be aware of the symptoms of depression that may be more typical of fathers. Your partner acting out of character may indicate that they need help adjusting to parenthood.

If you notice your partner is looking unhappy or displaying negative feelings, approach the topic in a caring and non-judgmental way, e.g., "I've been noticing that you seem really down a lot lately, how are you feeling about things/yourself/the baby/parenthood?" Use follow-up questions to determine how your partner is feeling, e.g., "How are you doing? And if they say something like "I'm tired but I'm fine" ask, "But how are you really feeling?"

How you can help your partner manage their anxiety

If your partner is experiencing problems with anxiety, help them by breaking down tasks into small steps, so that even though they feel it is a challenge, they are confident they can do it. Try not to overly accommodate the anxiety. For example, try not to follow unreasonable rules such as changing all clothing when entering the house.

Your partner may have worries that you do not think are justified, but are nonetheless very real to them. Try to avoid responding to your partner's fears with shock or amazement.

What do we mean by **perinatal depression and anxiety?**

The term 'perinatal' describes pregnancy and up to one year after birth. When we talk about perinatal depression and anxiety we mean depression and anxiety disorders that develop during pregnancy or following the birth of a baby.

Perinatal depression is different from the 'baby blues'. Approximately 50 to 80% of women experience the 'baby blues' between the third and tenth day following birth. During this time women may be more tearful than usual and feel overwhelmed. These feelings usually pass within a few days. In contrast, perinatal depression persists for at least two weeks and the symptoms interfere with your ability to cope with day-to-day activities.

Perinatal anxiety refers to the presence of severe, long-lasting anxiety symptoms during pregnancy or up to one year after birth. The anxiety is strong enough to make it difficult to cope with day-to-day life and causes problems in your relationships with family and friends.

Symptoms of perinatal depression

- Low mood and/or feeling numb most of the day, nearly every day
- Feeling inadequate and/or excessive guilt
- Loss of interest in things that you would normally enjoy
- Being unable to fall asleep or get back to sleep or sleeping excessively
- Not eating or over-eating
- Feeling unmotivated and unable to cope with the daily routine
- Withdrawing from friends and family
- Not looking after yourself properly
- Decreased energy and feeling exhausted
- Having trouble concentrating, making decisions, or remembering things
- Having thoughts about harming yourself or the baby, ending your life, or wanting to escape

Source: beyondblue. (2015). Symptoms of depression. Beyondblue: Melbourne, Australia. www.beyondblue.org.au

Symptoms of perinatal anxiety

- Anxiety or fear that interrupts your thoughts and interferes with daily tasks
- Panic attacks - outbursts of extreme fear and panic that are overwhelming and feel uncontrollable
- Anxiety and persistent worries that keep coming into your mind
- Constantly feeling irritable, restless or 'on edge'
- Having tense muscles, a 'tight' chest and heart palpitations
- Finding it difficult to relax and/or taking a long time to fall asleep at night
- Anxiety or fear that stops you going out with your baby
- Anxiety or fear that leads you to check on your baby constantly
- Fear for the baby and/or fear of being alone with the baby or the baby being unsettled

Source: Adapted from beyondblue. (2015). Symptoms of anxiety. Beyondblue: Melbourne, Australia. www.beyondblue.org.au

Symptoms more typical of fathers

- Tiredness, headaches and pain
- Irritability, anxiety and anger
- Changes in appetite
- Feelings of being overwhelmed, out of control, and unable to cope
- Increased risk tasking
- Changes to sleep patterns, especially a lack of sleep
- Feeling isolated and disconnected
- Withdrawal from intimate relationships and from family, friends and community life
- Increased hours at work
- Increased alcohol or drug use

Source: Adapted from How Is Dad Going? (2015). Postnatal depression and anxiety in dads. Post and Antenatal Depression Association: Melbourne, Australia. www.howisdadgoing.org.au

Risk factors for perinatal depression and anxiety

Risk factors are characteristics or experiences that increase the likelihood that someone will develop an illness. Researchers have identified the following risk factors for perinatal depression and anxiety. If you have one or more of these risk factors it does not necessarily mean you will develop perinatal depression or anxiety – each person is unique and responds to triggers differently.

- Personal or family history of mental health problems or current mental health problems
- Pregnancy, labour or delivery complications
- Perinatal loss, e.g., miscarriage, stillbirth or termination
- Current or past history of physical, psychological, or sexual abuse
- Anxious or perfectionist personality
- Lack of support from family and friends
- Stressful life events (e.g., moving house)
- Continuing lack of sleep or rest
- Unplanned pregnancy
- Having multiples (e.g. twins or triplets)
- Severe baby blues after the birth
- Premature baby
- Difficulties with breastfeeding
- A baby that is difficult to settle
- Partner experiencing perinatal depression or anxiety

> “ Depression is not voluntary and isn’t something you can just snap out of”

Sources: Adapted from beyondblue. (2015). Life factors that increase risk. Beyondblue: Melbourne, Australia. www.beyondblue.org.au and Black Dog Institute (2013). Causes and risk factors. Black Dog Institute: Sydney, Australia www.blackdoginstitute.org.au

Seeking help

If you are concerned that your partner is experiencing depression or anxiety offer to accompany them to the GP or maternal child health nurse. Seeking professional help will benefit your health, the healthy development of your baby, and your relationship. Depression is not voluntary and isn’t something you can just “snap out of”. Untreated anxiety can impact on the pregnancy and your baby. Seeking help early will contribute to a quicker recovery.

What if my partner is reluctant to seek help?

It is common for people with depression and anxiety not to recognise that they need help or support, so they may reject offers of help. Your partner may avoid help seeking because of a wide range of worries or concerns. For example, they may not want to acknowledge that they are not coping or that their illness may be harmful to the baby. Your partner may avoid help seeking because they are embarrassed or ashamed that they are experiencing depression or anxiety. If your partner initially refuses to go to the GP, go to the doctor for information and advice by yourself. There are also support groups available for families affected by perinatal depression and anxiety.

What to do if you, your partner, or your baby is at risk of harm

Take your partner seriously if she or he talks about not wanting to live or about harming themselves. One way you can do this is by letting your partner know that you understand their feelings are real to them, no matter how bad or unreasonable they sound. Seek professional help immediately (e.g., go to your local emergency department) if:

- your partner is having thoughts of suicide or harming themselves or the baby
- your partner is acting in an unusual or bizarre way, e.g., being extremely withdrawn or fearful, or hearing or seeing things that others can’t.

If you are concerned about your partner’s mental health, risk conflict with them in the short term by getting help for them, particularly if the wellbeing of your baby is at risk. If your partner is admitted to a mother-baby unit, make the most of visiting times to maintain contact with her and the baby.

Services and support

Parenting

Services are available to help with the challenging aspects of parenting. Support is available from Maternal Child Health nurses, early parenting centres, and baby sleep clinics. Find out more about these services by contacting your local council.

Pregnancy Birth & Baby Helpline
pregnancybirthbaby.org.au
1800 882 436

Raising Children Network
raisingchildren.net.au

Parentline
parentline.com.au
1300 30 1300

Mental health support

Lifeline
lifeline.org.au
13 11 14

Post and Antenatal Depression Association Inc (PANDA)
panda.org.au
1300 726 306

Beyondblue
beyondblue.org.au
1300 22 4636

Centre of Perinatal Excellence (COPE)
cope.org.au
9376 6321

Relationships

Relationships Australia
relationships.org.au
1300 364 277

Fathers

Mens Line
mensline.org.au
1300 78 99 78

How is dad going?
howisdadgoing.org.au

Intimate partner violence

Intimate partner and family violence occurs when someone who has a close personal relationship with you makes you feel afraid, powerless or unsafe. It can be physical, but can also be emotional and psychological. If you do not feel safe and need immediate help call 000 or go to your local hospital emergency department.

National Sexual Assault, Domestic Family Violence Counselling Service
1800respect.org.au
1800 737 732

How these guidelines were developed

These guidelines were produced using the Delphi method, which is a systematic way of assessing the consensus of a panel of experts. A wide range of potential actions were derived from a review of websites and research on partner support and perinatal depression and anxiety. The actions included in the guidelines were rated as important or essential by expert panels of perinatal mental health professionals and individuals with experience of perinatal depression or anxiety, either as a consumer or a carer.

Details of the methodology can be found in Pilkington, P.D., Milne, L.C., Cairns, K.E, & Whelan, T.A. Enhancing reciprocal partner support to prevent perinatal depression and anxiety: a Delphi consensus study (in submission).

ACU
AUSTRALIAN CATHOLIC UNIVERSITY

Partners to Parents

Please cite these guidelines as follows: Pilkington, P.D., Milne, L.C., Cairns, K., & Whelan, T. (2015). Supporting your partner when you have a baby [Brochure]. Melbourne, Australia: Partners to Parents.

Enquiries should be sent to: Pam Pilkington, School of Psychology Faculty of Health Sciences,
Australian Catholic University, Locked Bag 4115, Fitzroy, VIC 3065, Australia.
Email: pam.pilkington@acu.edu.au

Appendix N. Usability testing protocol

1. **Introduction**

Thank you for coming in today to participate in this research. We are going to do three main things. First I'm going to ask you a couple of open ended questions. Then we are going to look at a website and use something called the think aloud method to get your feedback on the website. At the end I'll ask a couple more open ended questions about your thoughts on the website. And that's it. It will take us about 30 minutes.

2. **Open-ended questions**

- (If pregnant) What would you like to know about changes to the partner relationship when you become parents?
- (If postpartum) Is there anything you wish you had been told about changes to the partner relationship before you had your baby?
- Where would you go/have you gone to find out information about the partner relationship during the transition to parenthood?

3. **Think-aloud method**

Now I'm going to ask you to have a look at the website we have created. We are going to do what's called a think aloud method. What I'd like you to do is navigate through the website as you would normally, but as you go say your thoughts out loud. Try to point out any things that don't make sense or are confusing, or you think don't look very good. Also try and point out things you think are good about the website. But don't worry about pointing out flaws in the website as this is just a prototype. Your feedback will help us improve the website. I'll try not to speak, but if you get stuck just let me know. The most important thing is to just keep thinking out loud.

4. **Cognitive walkthrough**

- How would you switch from the pre to the post version of the website? (Or vice versa)
- How would you personalise the content based on your name and your partner's name?

- How would you switch user?
- Who created the website?
- Where would you find information on how to get help if you think your partner is experiencing problems?
- How would you send an email to the website team?
- How would you invite your partner to participate?

5. Final questions

- What three things does the website need? [If participant cannot name three, prompt to identify one]
- What would stop you from visiting this website?