



Centre for Research on Ageing, Health and Wellbeing

The Australian National University

The impact of pregnancy and early fatherhood on Australian men's mental health

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MAIN MESSAGES

- The reported prevalence of paternal perinatal depression and anxiety varies greatly, ranging between (0.7-46.2%) for depression [1] and 3.9-16.3% for anxiety (Study 1 and Study 2). Prevalence estimates fluctuate considerably depending on the characteristics of the sample population, the measures used, and the point in time at which screening is undertaken.
- Given the variability in prevalence estimates, it is not possible to reliably conclude whether rates of depression and anxiety are greater for expecting and new fathers than men in the general Australian population.
- Our study using data from the HILDA Survey showed that expecting and new fatherhood are not associated with increases in psychological distress (Study 3).
- In similar analyses of PATH Survey data, this finding was replicated: expecting and new fatherhood were not associated with increases in anxiety or depression (Study 4).
- These findings are good news for expecting and new fathers. They highlight the positive mental health aspects of new fatherhood. They suggest that, for most men, fatherhood incurs no increased risk of depression and/or anxiety.
- These findings also suggest that prevention and intervention resources might best be targeted towards men with additional risk factors, such as a partner with poor perinatal mental health, rather than at all perinatal men.
- What are the key characteristics of men who *are* at increased risk of poorer mental health during the perinatal period? Study 2 of this report found that men are more vulnerable if they have a partner with poor mental health, and/or they are unhappy in their intimate partner relationship.
- Objectives for future research in this area include: a) using data from representative, population-based samples, b) using well-matched comparison groups of non-fathers (to compare with fathers), c) longitudinal research extending both prior to and post the perinatal period, and d) acquiring data from both partners ('dyad data').

EXECUTIVE SUMMARY

The current research program was designed and developed to investigate “*the impact of pregnancy and early fatherhood on Australian men’s mental health*”. We aimed to increase understanding of paternal depression and anxiety throughout the perinatal period: a time which comprises of both the antenatal period (partner’s pregnancy) and the post-partum period (first 12 months after birth).

The program consisted of two interrelated streams of research. The first stream focused on synthesising existing literature on the prevalence, risk factors and outcomes for paternal depression and anxiety during the perinatal period. The second stream of research used existing longitudinal, epidemiological datasets to investigate whether Australian men are at greater risk of psychological distress (primarily depression and anxiety) during the transition to fatherhood than at other times of their lives.

The research program concluded with a workshop hosted by the researchers: “Fatherhood and Men’s Mental Health Workshop” on 23rd July 2014. The aim of the workshop was to bring together interested individuals, researchers, health practitioners, NGOs and government representatives, to discuss recent research on the mental health of fathers.

Stream 1: Literature Reviews

There have been several high-quality literature reviews investigating the prevalence and risk factors for paternal depression during the perinatal period [1-3]. In contrast, there has been no review of the literature concerning men’s anxiety during the perinatal period. Stream 1 addressed this gap by conducting two literature reviews on (1) the prevalence, and (2) the risk factors and outcomes for paternal anxiety.

There is little agreement about the prevalence of paternal, perinatal anxiety both within the Australian and the international literature. Reports of anxiety disorders in men during the perinatal period vary widely from 3.9% [4] to 16.3% [5]. Prevalence estimates vary greatly and reflect the characteristics of the sample population, the measures of anxiety used, and the time within the perinatal period at which screening occurred. Two key limitations of prevalence research in this field include: a) a lack of comparison (control) groups of non-fathers and b) a lack of longitudinal research that extends both prior to and post the perinatal period. The former is necessary to determine whether the prevalence or level of anxiety reported by expecting or new fathers differs to other men (including men who already have children and men without children). The latter is needed to determine whether any anxiety reported by new fathers is related to this transition (i.e., indicates a *change* in anxiety). Common risk factors identified associated with paternal perinatal anxiety include men’s partner’s perinatal mental health and the quality of their couple relationship. Research into the outcomes of men’s perinatal anxiety remains scarce. The small number of studies on this topic have reported some negative outcomes, including insecure attachment with infants and behavioural problems in young children.

Stream 2: Change in mental health with the transition to parenthood

Despite speculation that men are at greater risk of psychological distress (primarily depression and anxiety) during the perinatal period, there is little empirical evidence that this is the case. The two studies we conducted for this project found no evidence that, on average, men's levels of anxiety, depression, or general psychological distress increase when they become either expecting fathers (partner was pregnant) or new first-time fathers. Generally, this is good news for these fathers, their families and those around them. The findings highlight the ongoing positive mental health of most men at this phase of their lives. This is not to say that some men don't either continue to experience poor mental health during the perinatal period or experience an elevation of symptom level. These findings raise queries about how best to identify those men *who do* experience paternal anxiety and depression. Universal approaches targeted at *all* expecting and new fathers may not be an effective use of resources. Importantly, limitations of our research are discussed within this report and point towards directions for future research.

PROGRAM CONTEXT

Early life experiences lay the foundation for health and wellbeing in later life. This has been recognised by the recent scientific and political focus on early intervention for mental health. The importance of fathers in childhood development is also becoming increasingly apparent. We now know it is not only mothers' mental health and parenting skills that impact on children's emotional and cognitive development, but that fathers' mental health also plays a pivotal role [6]. At the intersection of these two priority areas - early childhood and men's mental health - lies a critical, but largely under-researched clinical and public health question: What is the impact of new fatherhood on men's mental health?

There is a growing body of research investigating the prevalence and risk factors for paternal anxiety and depression during the perinatal period. The perinatal period covers both the antenatal period when men's partners are pregnant ('expecting fatherhood') and the post-natal period during the first 12 months after birth ('new fatherhood'). Existing research on men's mental health during this period is disparate and methodologically inconsistent. A meta-analysis of 43 studies by Paulson and Bazemore [1] reported a pooled prevalence of post-partum depression of 8% from birth to 3 months, 26% from 3 to 6 months, and 9% from 6 to 12 months. However, the authors note that prevalence rates in the individual studies included in their meta-analyses varied widely from 0.7 to 46.2%.

There has been no systematic review of the prevalence of men's anxiety during the perinatal period. Estimates from individual studies again appear to vary widely from 3.9% to 16.3% [5]. This variation makes it difficult to provide a confident estimate of the rate at which men experience ante- and post-natal depression and/or anxiety at any point or over a 12 month period. In turn, this means that we cannot easily compare prevalence rates between perinatal men and men in the general population in order to determine whether expecting and new fatherhood are linked to increased psychological distress.

As an alternative to between-group comparisons, longitudinal, population-based data tracking changes in men's psychological distress across the transition to fatherhood, may

help us understand how mental health changes in accordance with new fatherhood. A key objective of the current research program was to utilise two longitudinal population-based Australian datasets (HILDA and PATH Surveys) to observe how men's mental health changes when they become expecting and new fathers. This research is novel, and advances the discussion beyond simple comparisons of prevalence rates between populations of perinatal and non-perinatal men.

STUDIES UNDER THIS PROGRAM OF RESEARCH

Stream One: Literature Reviews

Context

Research into mental health during the perinatal period has predominantly focused on women's experience of depression. A significant proportion of pregnant and post-partum women experience depression (6.5-12.9% point prevalence during the perinatal period [7]). This body of research has recently expanded on two fronts to include: 1) anxiety symptoms and disorders, and 2) men's experience of mental health at this time.

Despite the recent findings that anxiety symptoms are common in men during the first 6 months postpartum (Wynter et al., 2013), there has been no systematic review of studies on anxiety symptoms in expecting or new fathers. The importance of this topic is further emphasised by findings demonstrating that interaction with fathers (as well as mothers) is important for childhood development in the early years, and other findings showing links between fathers' mental health problems and children's behavioural, emotional and social functioning [8].

Implications

Stream One synthesises the available literature regarding the prevalence of anxiety disorders for men during the perinatal period (Study 1) and the risk factors and outcomes of paternal anxiety disorders (Study 2). This information is of importance to public health organisations aiming to understand and quantify the impacts and effects of perinatal paternal anxiety.

Like previous reviews attempting to synthesise the literature for perinatal depression in men [1, 2], the research undertaken in Stream One identifies a need for further longitudinal, population-based research if we are to accurately estimate how many men (prevalence) are experiencing perinatal anxiety. The inclusion of comparison groups of non-perinatal men, and assessments of men both prior to pregnancy and post the perinatal period is also needed.

While the body of research regarding perinatal anxiety in both men and women has grown substantially, there has been little effort to synthesise this literature. Consideration is needed regarding consistent study methodology and measurement, as a lack of

methodological comparability between studies makes it difficult combine or synthesise study findings in a meaningful way.

Study 1: Systematic review of perinatal anxiety in men

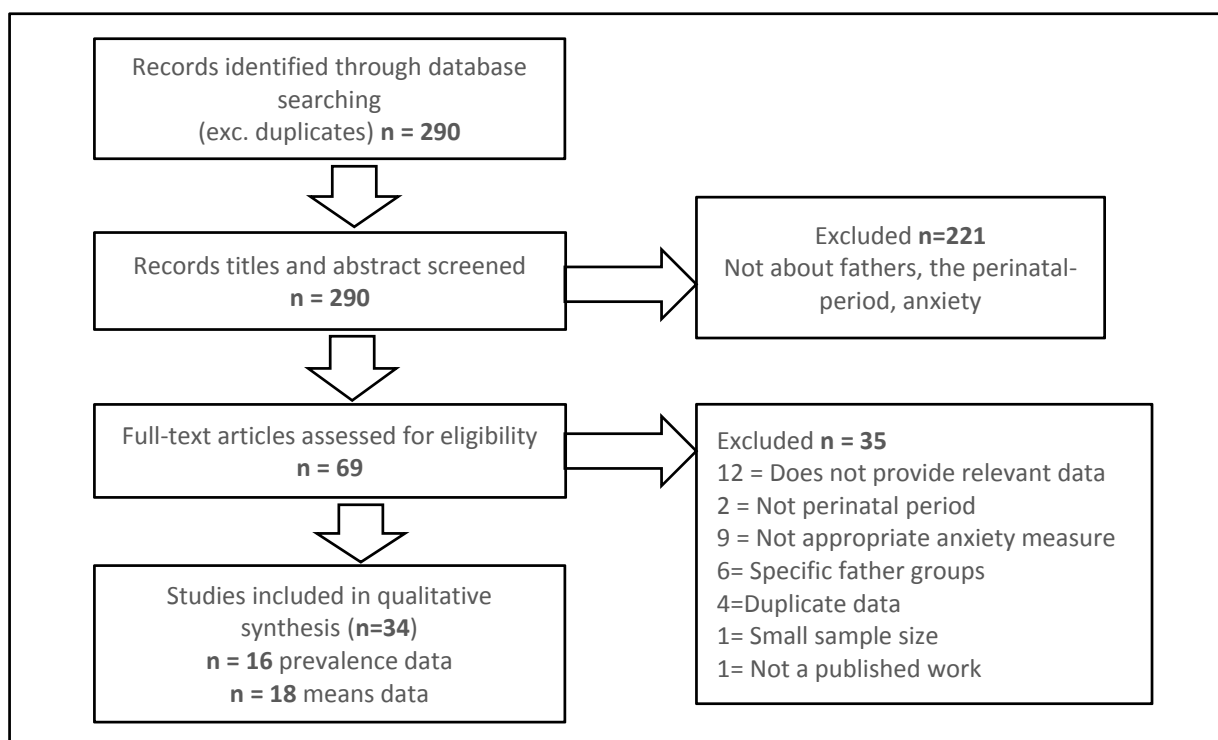
Approach

This review included studies of the prevalence of anxiety disorders (or mean levels of symptomatology) in perinatal men. The information gathered in this review was used to identify gaps in knowledge, and propose future research directions. A search of databases (Pubmed, Cochrane) revealed no prior systematic review investigating anxiety symptoms in fathers over the perinatal period covering the antenatal period and/or the first 12 months postpartum. For this systematic review, five databases including PubMed, Psycinfo, Cochrane, Scopus, and Web of Science were searched from 2000-2014 using search terms referring to fathers, anxiety and the perinatal period. Papers identified for review were coded on relevant study characteristics.

Results

The literature search of the five major databases revealed a possible 290 papers for review on the topic of perinatal anxiety and fatherhood. Full-text was obtained for 69 articles that were considered potentially relevant. A further 35 were excluded based on lack of relevant findings. The review found 16 papers reporting prevalence estimates for anxiety measures in perinatal men and 18 papers reporting means data (average scores on symptom scales).

Figure 1. Study inclusion and exclusion process.



The systematic review (Study 1) showed a growing number of studies reporting data on the prevalence of anxiety disorders and average anxiety levels in men during the ante- and postnatal period. Within the antenatal period, prevalence of a 'likely anxiety disorder' (measured using the State Trait Anxiety Inventory (STAI ≥ 40)) was shown to be as high as 16.3% [9]. Similarly, within the first 6 months post-partum, prevalence of 'any anxiety disorder' (measured using the Composite International Diagnostic Interview (CIDI)) was shown to be as high as 16.3% (including diagnoses of Acute Adjustment Disorder with Anxiety [5]). However, other studies reported rates as low as 3.9% [4] for any 'anxiety disorder' (measured using the Diagnostic Interview Schedule (DIS)) at 6 weeks post-partum, and 5.4% during pregnancy (measured using the Hospital Anxiety and Depression Scale (HADS ≥ 11)) [10].

While the evidence reveals that anxiety is common for men during the perinatal period, the lack of methodological comparability between studies means we are unable to provide robust 'overall/combined' prevalence estimates of anxiety disorders during the perinatal period. Because of this, we are unable to determine whether men are more vulnerable to anxiety problems during the perinatal period, than at other life stages. The 12 month prevalence of any affective disorder for Australian men in the general population is 7.0% aged 25-34 and 8.4% aged 35-44 [11]; 1 week rates of mixed anxiety and depressive disorder for UK men is 7.4% aged 25-34 and 7.4% aged 35-44 [12].

Study 2: Literature update on perinatal anxiety and its aetiology in parents

Approach

A second literature review was conducted to better understand the characteristics of perinatal anxiety in parents (both men and women), including prevalence, risk factors and outcomes. In this review three databases including PubMed, PsycInfo and Web of Science, were searched using a variety of terms covering the perinatal period and anxiety to identify relevant articles published between 2006 and 2014 (a previous systematic review covering the period 1966 to 2005 was identified). The key findings from papers located by this search were summarised to provide a picture of the current literature.

Results

Anxiety is common for both women and men during the perinatal period. The number of studies reporting prevalence estimates for perinatal anxiety disorders has grown. However, again, we find there is wide variation in reported estimates. Prominent risk factors for anxiety in men during the perinatal period include circumstances around the pregnancy (e.g. unwanted and/or unplanned births) and birth (e.g. labour complications), partner mental health, and quality of partner relationships. Few studies have examined negative outcomes for men's perinatal anxiety; however, there are reports of poor quality interaction with infants and delayed child development. Complexities in reviewing this literature again include large heterogeneity in study methodology and capturing the interaction between men and women's experiences.

Stream Two: Change in mental health with expecting and new fatherhood (data analysis and findings)

Context

The transition to initial parenthood is a time of immense change. There are new roles and responsibilities to be negotiated, along with additional time and financial pressures. Despite growing interest in men's perinatal mental health, we still know little about whether becoming an expecting father and/or new fatherhood causes increases in psychological distress (including symptoms of depression and anxiety). This uncertainty is chiefly due to a lack of prospective, longitudinal research. Most comparisons have been made between point-prevalence (cross-sectional) rates for post-partum men and the rates for similarly aged men in the general population in an attempt to determine whether the perinatal period is a time of increased risk.

Several longitudinal studies have examined change in psychological symptoms during the perinatal period [13-18]. However, no previous study has included both pre-pregnancy status *and* a control/comparison group of non-fathers. Pre-pregnancy data (covering the period prior to expectant paternity) is required to determine whether men's mental health differs from before they began the transition to fatherhood. The inclusion of a control group allows us to both account for (i.e., adjust statistically) and observe the mental health of men who do not become fathers. This between and within groups approach is essential to fully characterise change in mental health that may occur over this period.

Implications

Studies 3 and 4 are the first studies, internationally, to assess change in anxiety and depression in association with new and expecting fatherhood using representative samples and baseline, pre-transition data. Our findings indicate that expecting and new fathers experience no greater psychological distress than before the transition to fatherhood.

These results are important for health services, clinicians and public health organisations responsible for developing methods of identifying men with poor perinatal mental health. These findings suggest that prevention and intervention resources might best be targeted towards men with additional risk factors, such as a partner with poor perinatal mental health, rather than at all perinatal men. Further discussion around the implementation of universal approaches (such as attempting screen all men within the perinatal period) is needed, as if most men are at no greater risk of poorer mental health this approach may not be effective.

Study 3: Changes in Psychological Distress (HILDA findings)

Approach

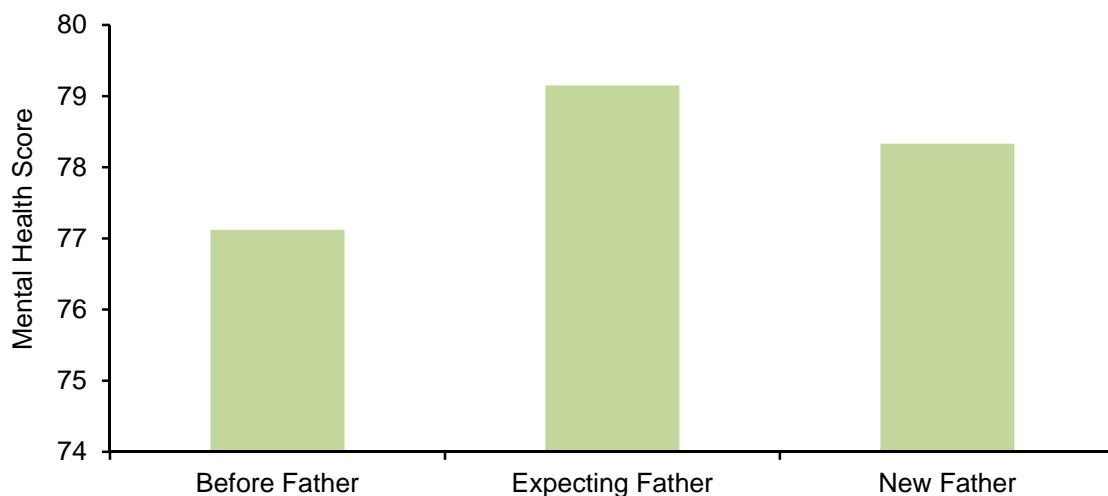
Study 3 used national population-level data to determine whether Australian men who become 'expecting' and/or a new fathers experience an increase in psychological distress. Ten waves of data collected annually from the nationally representative Household, Income,

and Labour Dynamics in Australia (HILDA) Survey were analysed. This yielded 224 men who became expecting fathers, 285 men became new fathers, and 1658 men did not have children ('never fathers'), within the time frame of the study. Psychological distress was measured using the five item Mental Health Inventory (MHI-5) at every year of data collection. To be clarified as an expecting or new father a wave of survey data had to occur during men's partner's pregnancy or within the year after the birth of their first child.

Results

Within participant longitudinal analyses showed no evidence that men experienced greater psychological distress when they were expecting or in their first year of fatherhood than prior to these life transitions. This can be seen in Figure 1 below, where in fact, men have slightly better mental health (higher scores) when they are 'Expecting' and 'New' Fathers, than before they became fathers (these improvements in mental health were statistically significant, $p < .05$).

Figure 1. Predicted mean mental health (MHI-5) scores for transitions into fatherhood (HILDA sample 2001-2010).



Study 4: Changes in Depression and Anxiety (PATH findings)

Approach

Using prospective longitudinal data, Study 4 examined whether Australian men who become 'expecting' and/or a new fathers experience an increase in levels of depression and anxiety. Four waves of data collected over 12 years from the 20-24 year old cohort of the Personality and Total Health (PATH) Survey were analysed. Eighty-eight men became

expecting fathers, 108 men became new fathers, and 626 men remained non-fathers. PATH is a community study of two Australian regions: Canberra (ACT) and Queanbeyan (NSW). Depression and anxiety symptomatology were measured using Goldberg's depression and anxiety scales. Covariates adjusted for included marital status, employment status, financial hardship, smoking, alcohol use, physical health, role strain, and social support.

Results

Longitudinal analyses found no significant increase in depression or anxiety when men became expecting or new fathers. This was after accounting for other variables which might influence the results, including: partner status, education level, financial resources, social support and physical health. Findings were similar for a general measure of mental health.

Limitations and Future Research

The limitations of Studies 3 and 4 will direct future research.

- Because of the number of new fathers in the surveys, the studies could not assess the impact of particular 'time-windows' within the perinatal period. For example, the studies did not distinguish mental health within the first trimester of pregnancy from the last trimester, or the first three months of the post-partum period from the next three months. Rather, the studies assessed mental health across longer time periods: a) pregnancy and b) the first 12 months post-partum.
- The studies did not include a diagnostic assessment of anxiety and/or depressive disorders. Rather, continuous measures of distress or symptoms were used. However, there is no reason to expect a diagnostic measure would be any more sensitive to changes in mental health.
- Finally, these studies did not focus on 'which expecting and new fathers' are most at risk of mental health problems during the perinatal period. The results presented reflect average changes, but individual trajectories represent a wide range of profiles. Identification of new fathers at risk is the next step in our research program. For example, it may be that new fatherhood for men with financial security is a different experience to new fatherhood for men with few financial resources. In this research we will attempt to move beyond asking 'Are new fathers at risk of greater depression?' to '*Which* new fathers are at risk of greater depression?'

Workshop Summary

Dr Liana Leach hosted the "Fatherhood and Men's Mental Health Workshop" on 23rd July 2014 at University House at The Australian National University. The aim of the workshop was to bring together interested individuals, researchers, health practitioners, NGOs and government representatives, to discuss recent research on the mental health of fathers. The program centred on an exciting line-up of guest speakers from across Australia with significant expertise in perinatal mental health research.

The workshop was at full capacity with over 30 attendees from research institutions (University of Sydney, Flinders University, Monash University, The Australian National University, and University of Canberra), NGO and mental health organisations (e.g. Menslink, *beyondblue*, Post and Ante Natal Depression Support and Information (PANDSI), Children of Parents with a Mental Illness (CoPMI)) and government departments (e.g. Department of Health, Department of Social Services, Department of Defence). The participants were engaged in discussions throughout the day, sharing their knowledge and perspectives on how the transition to fatherhood affects men, their interaction with children and their relationships, and how to support fathers during the transition to parenthood. Several men spoke candidly about their experiences of fatherhood and its impacts on their mental health.

The day was well-received. Feedback from participants and a brief workshop evaluation survey indicated that the participants were highly engaged with the presentations and the discussion, and were inspired to promote ways to achieve better mental health for fathers. The day also provided important networking opportunities between researchers, health professionals and policy makers.

The presenters and presentations were as follows:

Depression in the transition to fatherhood. Professor Philip Boyce, Professor of Psychiatry, University of Sydney.
First-time fatherhood, intimate partner relationship and mental health problems at 6 months postpartum. Dr Karen Wynter, Jean Hailes Research Unit, Monash University, Victoria (presented by Professor Jane Fisher).
Fathers' mental health in the early parenting period: Building the evidence to inform policy and practice. Dr Rebecca Giallo, Healthy Mothers Healthy Families Research Group, Murdoch Children's Research Institute, Victoria.
Can we pick the best measure to screen for significant distress in fathers? Associate Professor Stephen Matthey, Academic Unit of Child Psychiatry, SWS Local Health District.
Changes in psychological distress across the transition to fatherhood: Including pre-pregnancy data! Dr Liana Leach, Centre for Research on Ageing, Health and Wellbeing, ANU
Mental health of men who are married to women who are pregnant or have recently given birth in rural Vietnam: implications for public health initiatives in economically disadvantaged settings. Professor Jane Fisher, Director, Jean Hailes Research Unit, Monash University, Victoria
A Tale of Two Studies: Father-to-Infant Attachment & Grandfather-to-Infant Attachment. Professor John Condon, Professor of Psychiatry, Flinders University, South Australia
Panel Discussion: Where to from here? Emerging research issues Moderator: Dr Liana Leach; Other panel members: Prof Philip Boyce, Prof John Condon, Prof Jane Fisher, Dr Rebecca Giallo, A/Prof Stephen Matthey

The key themes and ideas to emerge from the workshop were as follows:

- 1) How to engage expectant/new fathers in services relevant to their mental health;
- 2) What is the most appropriate and meaningful terminology around perinatal-mental health disorders to encourage men to seek help. Men may engage better if their mental health is discussed in **general terms, such as 'distress' or 'stress'**;
- 3) Perinatal mental health has now clearly moved beyond a focus on 'post-natal depression'. Identifying and addressing symptoms of **'anxiety' or 'distress'** in both men and women.
- 4) The most discussed risk factors for men's perinatal mental health problems were **'relationship quality/satisfaction'** and **'partner's mental health'**. There was a lot of discussion around supporting couples in their relationships.
- 5) Issues around **flexibility and job conditions for men returning to work** after the birth of a child were raised as important. There is evidence that new fathers in poor quality work (e.g. low security, less flexibility) have poorer mental health than those with good work conditions.
- 6) There was good research evidence that men's mental health problems during the perinatal period are associated with **poorer outcomes for infants and children**.
- 7) There was discussion around men feeling **'criticised' by their partners in their new role as fathers**. This was around 'maternal gate-keeping' like behaviour, and men being criticised for not looking after the baby in the way partners expect.

ADDITIONAL RESOURCES

Publication in progress: Leach, L. Poyser, C. "Prevalence of anxiety disorders in men during the perinatal period: A systematic review." Planned submission to the Journal of Affective Disorders. This paper was based on Study 1.

Submitted publication: Leach, L. Poyser, C. Fairweather-Schmidt, K. "Perinatal anxiety: An update of prevalence, aetiology and outcomes." Clinical Psychologist. This paper was based on Study 2.

Published publication: Leach, L. Olesen, S. Butterworth, P. Poyser, C. (2014). "New Fatherhood and Psychological Distress: A longitudinal study of Australian men". American Journal of Epidemiology. doi: 10.1093/aje/kwu177. This paper was based on Study 3.

Submitted publication: Leach, L. Mackinnon, A. Poyser, C. Fairweather-Schmidt, K. "Depression and Anxiety in Expectant and New Fathers: Longitudinal Findings in Australian Men". British Journal of Psychiatry. This paper was based on Study 4.

REFERENCES

1. Paulson, J.F. and S.D. Bazemore, *Prenatal and postpartum depression in fathers and its association with maternal depression: a meta-analysis*. JAMA : the journal of the American Medical Association, 2010. **303**(19): p. 1961-9.
2. Goodman, J.H., *Paternal postpartum depression, its relationship to maternal postpartum depression, and implications for family health*. Journal of advanced nursing, 2004. **45**(1): p. 26-35.
3. Wee, K.Y., et al., *Correlates of ante- and postnatal depression in fathers: a systematic review*. Journal of affective disorders, 2011. **130**(3): p. 358-77.
4. Matthey, S., et al., *Validation of the Edinburgh Postnatal Depression Scale for men, and comparison of item endorsement with their partners*. J Affect Disord, 2001. **64**(2-3): p. 175-84.
5. Wynter, K., H. Rowe, and J. Fisher, *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, 2013. **151**(3): p. 980-985.
6. Ramchandani, P.G., et al., *The effects of pre- and postnatal depression in fathers: a natural experiment comparing the effects of exposure to depression on offspring*. Journal of child psychology and psychiatry, and allied disciplines, 2008. **49**(10): p. 1069-78.
7. Gavin, N.I., et al., *Perinatal depression: a systematic review of prevalence and incidence*. Obstetrics and gynecology, 2005. **106**(5 Pt 1): p. 1071-83.
8. Ramchandani, P. and L. Psychogiou, *Paternal psychiatric disorders and children's psychosocial development*. Lancet, 2009. **374**(9690): p. 646-653.
9. Keeton, C.P., M. Perry-Jenkins, and A.G. Sayer, *Sense of control predicts depressive and anxious symptoms across the transition to parenthood*. J Fam Psychol, 2008. **22**(2): p. 212-21.
10. Tohotoa, J., et al., *Can father inclusive practice reduce paternal postnatal anxiety? A repeated measures cohort study using the Hospital Anxiety and Depression Scale*. BMC Pregnancy Childbirth, 2012. **12**: p. 75.
11. ABS, *National survey of mental health and wellbeing: Summary of results*. Australian Bureau of Statistics, Canberra, 2007. **cat 4326.0**.
12. McManus, S.M., H; Brugha, TS; Bebbington, PE; Jenkins, R;, *Adult psychiatric morbidity in England, 2007*. 2009, National Centre for Social Research.
13. Ballard, C.G., et al., *Prevalence of postnatal psychiatric morbidity in mothers and fathers*. The British journal of psychiatry : the journal of mental science, 1994. **164**(6): p. 782-8.
14. Buist, A., C.A. Morse, and S. Durkin, *Men's adjustment to fatherhood: Implications for obstetric health care*. Jognn-Journal of Obstetric Gynecologic and Neonatal Nursing, 2003. **32**(2): p. 172-180.
15. Condon, J.T., P. Boyce, and C.J. Corkindale, *The First-Time Fathers Study: a prospective study of the mental health and wellbeing of men during the transition to parenthood*. The Australian and New Zealand journal of psychiatry, 2004. **38**(1-2): p. 56-64.
16. Escribà-Agüir, V. and L. Artazcoz, *Gender differences in postpartum depression: a longitudinal cohort study*. Journal of epidemiology and community health, 2011. **65**(4): p. 320-326.
17. Figueiredo, B. and A. Conde, *Anxiety and depression symptoms in women and men from early pregnancy to 3-months postpartum: Parity differences and effects*. Journal of Affective Disorders, 2011. **132**(1-2): p. 146-157.
18. Matthey, S., et al., *Paternal and maternal depressed mood during the transition to parenthood*. J Affect Disord, 2000. **60**(2): p. 75-85.