

The mental health of mothers of unsettled infants: is there value in routine psychosocial assessment in this context?

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Abstract This study aims to investigate the (1) pattern of psychosocial risk factors among mothers of unsettled infants, (2) the relationship between these risk factors and current mental health status and (3) acceptability of psychosocial risk assessment in the parentcraft setting. Women with unsettled infants aged up to 12 months were assessed using the Edinburgh Postnatal Depression Scale, a diagnostic interview (Mini-International Neuropsychiatric Interview (MINI)) and a psychosocial assessment tool, the Postnatal Risk Questionnaire (PNRQ). Of the women, 27.5 % met the MINI diagnostic criteria for a

current (predominantly) anxiety disorder, and 43.1 %, for a past psychiatric diagnosis. On the Edinburgh Postnatal Depression Scale, 29.9 % of women scored above 12 (mean 9.8; SD 5.1). The most common psychosocial risk factors were high trait anxiety (40.9 %), past mental health problems (40.7 %), perfectionistic traits (38.1 %) and ‘abuse trauma’ of any kind (31.6 %). The likelihood of meeting diagnostic criteria for a current mental illness was significantly increased for women who experienced emotional abuse during childhood (adj. odds ratio (OR) 3.386; $p=0.006$), had high trait anxiety (adj. OR=2.63, $p=0.003$) or had a negative birth experience (adj. OR 2.78; $p=0.015$). The majority of women (78 %) felt moderately to very comfortable completing the PNRQ. The results showed high rates of current anxiety disorders (almost twice that of the general postnatal population) and multiple significant psychosocial risk factors among mothers with unsettled infants. Identification of specific psychosocial risk factors in mothers of unsettled infants can help to address issues beyond infant settling difficulties such as mother–infant interaction, especially for mothers with unresolved issues around their own parenting or trauma history.

Keywords Postnatal period · Mental health · Psychosocial risk assessment · Parent craft · Unsettled infants

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Introduction

Mothers of unsettled infants experience higher rates of depression and anxiety disorder in the post-partum period than postnatal women in general (McMahon et al. 2001; Fisher et al. 2011), although the direction of association between unsettled infant behaviour and postnatal depression and anxiety is not clear (McMahon et al. 2001). Unsettled infant behaviour, often associated with feeding difficulties, is also one of the most common reasons for women to attend parentcraft services in Australia (Fisher et al. 2011). These services

provide support with feeding and settling problems by child and family health nurses and paediatricians, and there is an opportunity for assessment at the same time by psychologists, social workers and psychiatrists. Unsettled infant behaviour that can lead to distress in parents includes prolonged and inconsolable crying, resistance to soothing and settling, frequent night waking and waking after short sleeps (Fisher et al. 2011). Infant feeding problems include breastfeeding difficulties, colic and reflux in the infant or refusal to feed.

Several studies have investigated the prevalence of postnatal depression and anxiety disorders in mothers presenting to residential parentcraft units in Australia. Studies using structured clinical interviews (e.g. SCID, Composite International Diagnostic Interview (CIDI)) found point prevalence rates of 32 % for depression and 30.5 % for anxiety (Phillips et al. 2007) as well as period prevalence rate of 75 % for depression since childbirth (McMahon et al. 2001) in those mothers attending parentcraft services.

This compares to point prevalence rates of 16 % for anxiety disorders (Matthey et al. 2003; Wenzel et al. 2005; Phillips et al. 2007) and 6.5 % to 12.9 % for depressive disorders (Gavin 2005; Phillips et al. 2007) in postnatal women in the community as assessed with a structured clinical interview. In summary, the evidence shows that postnatal women who are seeking parentcraft support for 'unsettled' infants have much higher rates of psychiatric illness compared to postnatal women in general.

Risk factors that have been identified as being predictive for postnatal depression and anxiety (Robertson et al. 2004; Milgrom et al. 2008; Austin et al. 2013) include past mental health problems, any history of trauma or abuse, poor support with the baby, difficult relationship with her partner and negative life events. There is some evidence from small studies that link the mother's own negative experience of being mothered as a child to the development of postnatal anxiety symptoms (Grant et al. 2012) and higher psychological distress (Fisher et al. 2002). Only one study has investigated psychosocial risk factors in parentcraft settings (Fisher et al. 2002) but was unable to comment on the relationship between psychosocial risk factors and psychiatric disorders as it did not undertake diagnostic interviews.

Early detection of mental health problems within the perinatal period (pregnancy, birth and the first postnatal year) is important to avoid negative sequelae and thereby reduces mental health morbidity and mortality among pregnant and post-partum women and their families. Mental health problems in the perinatal period are associated with negative outcomes for both mothers and their offspring (Austin and Priest 2005). Mother–infant attachment as well as the infant's social, cognitive and emotional development can be adversely affected (Murray and Cooper 1997).

Routine assessment of psychosocial risk factors in the perinatal period can facilitate early detection of, and intervention for, mental illness or mother–infant interaction problems.

Parentcraft facilities are uniquely situated to facilitate this during the early postnatal period. The recently published Australian Clinical Practice Guidelines for Depression and Related Disorders in the Perinatal Period (Austin et al. 2011) recommend that all women be asked about current depressive and anxiety symptoms and psychosocial risk factors during pregnancy and the first year post-partum.

The Edinburgh Postnatal Depression Scale (EPDS) is used routinely in the perinatal setting to screen for depression in post-partum women in Australia. This scale is well accepted and validated (Buist et al. 2006; Gemmill et al. 2006). However, assessment of psychosocial risk factors for the development of mental health and mother–infant relational problems is not yet implemented routinely. The guidelines note that to date, there is a lack of evidence to support the use of any particular psychosocial risk assessment tool for this purpose (Austin et al. 2013).

The Postnatal Risk Questionnaire (PNRQ) is a self-report psychosocial risk assessment tool based on the validated Antenatal Risk Questionnaire (Priest et al. 2008; Austin et al. 2011) with an additional three postnatal items. It identifies risk factors that are associated with depression and anxiety disorders, thereby placing mothers at greater risk of psychological morbidity including parent–infant interaction difficulties.

This study has three aims: firstly, to examine the pattern of psychosocial risk factors of mothers with unsettled infants who are seeking parentcraft support; secondly, to investigate the relationship between these risk factors and mental health diagnosis, particularly depression and anxiety; and lastly, to examine acceptability of assessment of psychosocial risk factors to mothers in a parentcraft setting.

Materials and methods

Participants and recruitment

Mothers with an infant aged up to 12 months of age were recruited to this study from the Tresillian Family Care Centre, Canterbury, between June 2010 and November 2011. This parentcraft service offers early parenting support either as an inpatient (residential unit) or outpatient (day-stay unit) service. Mothers of infants with settling or feeding difficulties are referred to the service by community health-care professionals such as family doctors, paediatricians or infant health nurses. All women attending the day-stay or residential unit with an infant aged up to 12 months were invited by the nurses at admission to participate in the study. Women with infants older than 1 year and women requiring the services of an interpreter (due to the unavailability of interpreters to conduct the clinical diagnostic interview) were excluded. The project was approved by the Human Ethics Research Committee of the University of New South Wales and the Board of Tresillian. All participants provided informed, written consent.

A total of 1,334 women with children aged up to 12 months attended the residential and day-stay programme during the study period. Of these, 400 (30 %) women consented to take part in the study.

Not all women could be reached by the researcher for a diagnostic interview on-site or via phone at a later stage, and overall, 250 of the 400 women (62.5 %; 18.7 % of the total eligible) took part in a diagnostic interview. To assess whether dropout was selective, we draw a random sample of 50 participants who did not complete the diagnostic interview and compared them on socio-demographic variables as well as EPDS and PNRQ scores.

Measures

PNRQ The PNRQ is a 12-item self-report measure developed to assess postnatal women for the presence of psychosocial risk factors known to be associated with the onset of perinatal mental disorders, in particular perinatal depression and anxiety disorders. Items include past mental health history; past history of physical (including domestic violence), sexual or emotional abuse; current level of supports; relationship with mother and partner; anxious and perfectionistic personality traits; stressors in the last year (including bereavement, separation, etc.); frightening or disappointing birth experience; negative parenting experience; and infant feeding and settling problems. The PNRQ is a combination of yes/no questions and rating items. Rating items are scored on a Likert scale from 1 to 5 or 1 to 6, with higher scores indicating a stronger endorsement of the particular risk factor. The PNRQ is based on the validated Antenatal Risk Questionnaire (Austin et al. 2011). However, being the postnatal version, it includes three additional items assessing the birth experience, parenting experience and feeding and settling problems of the infant.

EPDS The EPDS is a ten-item self-report scale designed as a screening instrument for perinatal depression. Respondents are asked to rate on a four-point Likert scale the intensity of depressive symptoms present within the past 7 days (Cox et al. 1987).

Mini-International Neuropsychiatric Interview The Mini-International Neuropsychiatric Interview (MINI)-Plus (version 6.0, 2010) is a structured, diagnostic interview for mental health disorders (Sheehan 1998). It is a reliable and valid instrument that demonstrates good concordance with both the Structured Clinical Interview for DSM diagnoses (SCID-P) (First et al. 2002) and the CIDI for ICD-10 (Kessler and Üstün 2004). The MINI-Plus (version 6.0), with the addition of an adjustment disorder module (MINI-Plus 5.0), was used to examine current and past episodes of the full spectrum of mental health disorders.

Acceptability of the PNRQ For the purposes of comparability, this study drew on questions used in the previous research (Austin et al. 2005; Gemmill et al. 2006) to quantitatively evaluate the acceptability of the PNRQ among participating women. Women were asked ‘How comfortable did you feel in completing the PNRQ?’ Responses were rated using a five-point Likert scale from 1 (not at all comfortable) to 5 (very comfortable).

Additional socio-demographic and health-related information was collected, including parity, age, marital status, family history of mental illness, level of education and employment status. Information relating to maternal medication and obstetric and neonatal information was also collected, including mode of delivery, obstetric complications, gestational age at birth, infant weight and NICU admission. Women were further asked whether they were attending Tresillian for infant feeding or settling difficulties or both.

Data analysis

All data were analysed using IBM SPSS Statistics version 20 (IBM 2010). A logistic stepwise regression was employed to determine the association between risk factors and current mental health diagnosis as assessed by the MINI. All PNRQ variables that are rated on a Likert scale were dichotomised into low scoring (1 to 3) or high scoring (>3). They were then tested for univariate association with the dependent variable; all items with $p < 0.25$ were entered into logistic regression analysis (Hosmer and Lemeshow 2004). All items except item 3 (emotionally supportive partner) and item 12 (baby unsettled or not feeding well) met this criterion and were entered into the logistic regression model. The regression analysis was iterated, and the item that rendered the highest p value in the regression model was excluded from the subsequent iteration; this process was repeated until the model included only items that were significantly associated with the dependent variable ($p \leq 0.05$).

Results

A total of 250 women completed a diagnostic interview. We excluded six women who attended with twins and another 12 women whose diagnostic interview was after more than 2 months after their admission to the Tresillian Family Care Centre. Thus, 232 women were included in the data analysis, 66.4 % from residential unit and 33.6 % from day-stay unit.

Socio-demographic and obstetric characteristics

The average age of participants was 33.6 years (SD=4.7; range 17–45) with most women falling into the age group of

26 to 35 years. Almost two thirds of women were born in Australia. The sample had a high educational level with 88.6 % having some form of tertiary education. The average infant age at presentation to Tresillian was 5.7 months (SD=2.9), and 60.4 % of women attended within the first 6 months post-partum. Almost two thirds of women were primiparous (62.1 %), and most women had a partner (95.7 %). Half of the women had a normal vaginal delivery (50.4 %); 15.1 % had an elective caesarean section, and 35.3 % had experienced at least one complication of pregnancy or delivery, while most pregnancies were full term (95.3 %). Slightly more women presented with male infants (51.7 %) than female infants (see Table 1 for more details).

In regards to maternal age, infant age, marital status or type of stay, participants were comparable to the sample of dropouts (i.e. did not complete a diagnostic interview). Furthermore, our participants were comparable to women who gave birth in New South Wales (NSW) in 2009, in regards to gestation (92.5 % full term) and NICU admission rates (14.2 %). However, rates of vaginal delivery were slightly lower in our sample compared to NSW data (58.6 % noon, instrumental vaginal) (Li et al. 2011).

Mental health status

The results of the EPDS and MINI assessments are summarised in Table 2. The average EPDS score at admission was 9.8 (SD=5.1), with 29.9 % of participants scoring above the clinical cut-off point of 12. This was similar to the average EPDS score of dropouts (M=9.9; SD=5.3).

A total of 31.9 % of participants reported having a family member with a mental illness; 9.5 % ($n=22$) of our participants were taking psychotropic medication at the time of assessment, mostly selective serotonin reuptake inhibitors ($n=19$). A MINI diagnostic interview was conducted with each participant when attending the care facility (19.4 %) or via phone (80.6 %). The MINI interview identified 27.6 % of women meeting criteria for a current mental health diagnosis, mostly anxiety disorders (22.8 %); 43.5 % of women met criteria for the past mental health diagnosis, mostly major depression (40.1 %). There was no difference between women attending the residential and those attending the day-stay programme in regards to current diagnosis, EPDS scores or medication status. However a higher proportion of women attending the day-stay programme met criteria for any past mental health problem when compared to women in the residential programme (52.6 vs. 39.0 %; $\chi^2=3.897$; $p=0.051$).

As expected, women who scored above the EPDS clinical cut-off of 12 were more likely to meet criteria for any current MINI diagnosis ($\chi^2=29.409$; $p<0.001$) and any current anxiety disorder ($\chi^2=23.466$; $p<0.001$). Because of small cell sizes ($n<5$), the association between

EPDS score and current depressive disorder could not be tested.

Psychosocial risk profile

The results of the PNRQ assessment are summarised in Table 3. We have only reported those responses that were defined as a previously developed algorithm as 'significant', i.e. for the Likert scale items those scoring >3 (as per Priest et al. 2008). For questions 2 and 4, with an initial dichotomous 'yes/no' prompt, we have further characterised the following as significant: question 2 (past mental health episode) required either endorsement of the episode (a) as interfering with work/relationships (i.e. score of >3) or (b) requiring professional help ('yes'). Question 4 (presence of major stressors, losses in the last 12 months) was considered significant if, additionally, the degree of distress was scored above 3.

A total of 53 % of women endorsed three or more and 35.8 % endorsed four or more significant PNRQ risk factors. Only 9.1 % did not endorse any significant risk factors. The mean total score for the PNRQ was similar for the residential (33.12; SD=13.17) and day-stay groups (31.8; SD=11.51), and there was no difference to the dropouts (32.7; SD 12.6).

As would be expected, most mothers (93.8 %) reported having a baby with settling and/or feeding problems as the reason for attending, but interestingly, only 47 % of women reported significant settling or feeding difficulties on the PNRQ. The other risk factors of significant magnitude (scores of >3 on Likert scale items) were high trait anxiety (40.9 %), significant past mental health episode (38.1 %) and perfectionistic traits (39.3 %). When these are combined, 54.7 % of the women had high anxiety or perfectionistic personality traits. In terms of 'trauma' history, 18.5 % reported an emotionally unsupportive mother when growing up; 12.9 %, emotional abuse when growing up; and 17.3 %, having ever been physically or sexually abused.

A total of 66 women (28.4 %) reported experiencing a stressor(s) (in addition to having an unsettled baby) in the past 12 months that was significantly distressing (Likert scores 4–5). The most common stressors were bereavement ($n=16$), followed by illness of family members or close friends ($N=13$), changes to the woman's work situation or unemployment ($N=5$). Multiple stressors were reported by 11 women. Only six women described their relationship with their partner as emotionally unsupportive (2.7 %).

Relationship between PNRQ risk factors and mental health morbidity

Logistic regression was conducted to assess whether psychosocial risk factors, as assessed with the PNRQ, are significantly associated with a current diagnosis on the MINI. The variables that remained in the final model were item 5 (high

Table 1 Participant characteristics at admission ($N=232$)

	No.	Percent	M (SD)
Maternal age			
17–25 years	13	5.6	33.6 (4.7)
26–35 years	131	56.5	
36–45 years	87	37.5	
Missing	1	0.4	
Country of birth			
Australia	145	62.5	
Overseas	41	17.7	
Missing	46	19.8	
Highest level of education			
Year 2010/2012	26	11.2	
TAFE	48	20.7	
University	158	68.1	
Employment status			
Employed	61	25.9	
Maternity leave	119	51.3	
Unemployed	52	22.4	
With partner/married	222	95.7	
Type of stay			
Residential	154	66.4	
Day stay	78	33.6	
Index infant gender			
Male	120	51.7	
Female	105	45.3	
Missing	7	3.0	
Index infant: age			
0–3	63	27.2	5.7 (2.9)
4–6	77	33.2	
7–9	63	27.2	
10–12	29	12.5	
Parity			
Primiparous	144	62.1	
Delivery			
Normal vaginal	117	50.4	
Elective caesarean	35	15.1	
Emergency caesarean	50	21.6	
Instrumental (e.g. vacuum, forceps)	27	11.6	
Missing data	3	1.3	
Gestation: full term (≥ 37 weeks)	221	95.3	
Complications of pregnancy and delivery ^a	82	35.3	
Infant settling or feeding difficulties ^b	228	98.3	
Infant admitted to NICU	31	13.4	

^aIncludes threatened miscarriage, hypertension, gestational diabetes, pre- and post-partum haemorrhage, breech (2 missing values)

^bReason for attending parentcraft facility

trait anxiety), item 8 (emotional childhood abuse) and item 10 (frightening/disappointing birth experience). The associations remained significant when adjusted for maternal and infant age at admission as well as parity and the time interval between admission and the diagnostic interview. This model showed a good fit as assessed by the Hosmer–Lemeshow test ($\chi^2=1.816$, $p=0.986$) and explained 17.5 % of the variance of the dependent variable (current MINI diagnosis).

For women with high trait anxiety, the odds of meeting the criteria for a current MINI diagnosis were 2.6 times higher (adj. odds ratio (OR)=2.632; confidence interval (CI) 1.386–4.999; $p=0.003$) when compared to women without these traits. For women with childhood emotional abuse, the odds of having a current mental health disorder were 3.4 times higher compared to those of women without emotional abuse during childhood (adjusted OR=3.386; CI

Table 2 Mental health status of mothers with unsettled infants ($N=232$)

	Total				Residential				Day stay				<i>p</i>
	Mean	SD	<i>N</i>	%	Mean	SD	<i>N</i>	%	Mean	SD	<i>N</i>	%	
EPDS total score	9.8	5.1			10.1	5.0			9.4	5.2			0.351
EPDS total score													
≤12			162	70.1			103	67.3			59	75.6	
>12			69	29.9			50	32.7			19	24.4	
Current psychotropes use			22	9.6			14	9.2			8	10.3	0.748
Family history			74	31.9			43	28.1			31	39.7	0.076
Current MINI diagnoses													
Any			64	27.6			44	28.6			20	25.6	0.756
Depression			13	5.6			8	5.2			5	6.4	0.765
Anxiety			53	22.8			37	24.0			16	20.5	0.621
Past MINI diagnoses													
Any			101	43.5			60	39.0			41	52.6	0.051
Depressive			95	40.9			57	37.0			38	48.7	0.092
Anxiety			5	2.2			2	1.3			3	3.8	0.338

1.425–8.045; $p=0.006$). For women who had a disappointing or frightening birth experience, the adjusted odds of having a current mental health disorder were increased 2.8 times when compared to women without this kind of birth experience (adj. OR=2.777; CI 1.215–6.348 7; $p=0.015$).

Detection of past mental health problems with the PNRQ

A significantly higher proportion of women who self-reported significant past mental health problems on the PNRQ (interference with work/relationships of >3 and/or requiring professional help) met diagnostic criteria for the past mental health episode (as assessed by the MINI) compared with that of women who did not self-report significant past mental health problems ($\chi^2=18.01$; $p<0.001$).

Acceptability of the PNRQ

Respondents were asked to rate how comfortable they felt completing the PNRQ; 14.2 % felt somewhat comfortable, and 78.0 % felt ‘comfortable’ or ‘very comfortable’. There was no significant difference in the acceptability ratings of women who attended the residential programme and women who attended the day-stay programme.

Discussion

Our results found a prevalence of current anxiety disorders comparable to that of a previous study of mothers of unsettled infants (Phillips et al. 2007) and almost twice that of the general postnatal population (Matthey et al. 2003). Furthermore, the

EPDS score was significantly associated with endorsement of criteria for any current anxiety disorder. This is in line with previous research studies (Matthey 2008; Rowe et al. 2008; Phillips et al. 2009) suggesting that the EPDS is useful in screening for possible anxiety disorders.

The prevalence of depressive disorders in our sample was considerably lower than what might be expected in a sample of post-partum mothers, especially those with unsettled infants (McMahon et al. 2001; Phillips et al. 2007). The Tresillian admission policy, that mothers who are ‘acutely’ unwell with a mental illness should not be admitted into the day-stay and residential programmes, may have contributed to this low rate. In our sample, an EPDS score above 12 identified a rate of ‘possible’ depression in 29.9 % of women which is within the lower end of the range of what other residential parentcraft studies have identified using the EPDS (25.7 to 48 %) (McMahon et al. 2001; Fisher et al. 2002; Phillips et al. 2007, 2010; Rowe et al. 2008; Rowe and Fisher 2010).

Surprisingly, only 47 % of our sample reported significant (Likert scores 4–5) infant settling or feeding problems on the PNRQ, despite being self-reported (yes/no) by almost all women (98.3 %) on admission. We thus need to consider the possibility that a good proportion of mothers, presenting with unsettled infants, is presenting primarily with psychological distress, which may be amplified by infant feeding or settling difficulty. Conversely, maternal psychological distress may arise as a result of an unsettled infant or temperamental difficulty as noted by McMahon et al. (2001) and Armstrong et al. (1998).

Over one third of our sample endorsed four or more significant risk factors, and 53.8 % endorsed three or more significant risk factors putting them in the ‘high-risk’ group of women as defined by Priest et al. (2008). This was compared

Table 3 Psychosocial risk factors of mothers with unsettled infants $N=232$

PNRQ item	No.	Percent
Overall unsettled or poorly feeding baby ^a	109	47.0
High trait anxiety ^a (being a worrier)	95	40.9
Past mental health problems (involving professional help or significant interference with work and relationships) ^b	92	40.7
Perfectionistic traits ^a	88	38.1
Major stresses, changes or losses in the last 12 months ^c	66	28.4
Lack of support with the baby ^a	48	20.7
Growing up with emotionally unsupportive mother ^a	43	18.5
Past sexual or physical abuse	40	17.3
Disappointing or frightening birth experience ^a	34	14.8
Emotional abuse in childhood	30	12.9
Negative experience of parenting the baby ^a	27	11.6
Emotionally unsupportive partner ^a	6	2.7

^aItems were dichotomised into low scoring (1–3) and high scoring (>3) women

^bIf yes to depression or other past mental health problem and degree of interference with work/relationships of >3 and/or requiring professional help

^cIf yes to stresses and degree of distress of >3

to a much lower proportion of high-risk pregnant women (11.1 % with three or more significant risk factors measured in the same way) in a general population sample (Priest 2010). Risk factors showing a significant association with current mental health diagnosis included childhood emotional abuse, high trait anxiety and a frightening or disappointing birth experience. These risk factors identified increased vulnerability to a postnatal psychiatric diagnosis beyond what unsettled infant behaviour alone may be contributing.

In our sample, 18.5 % reported an emotionally unsupportive mother, and 17.3 % reported having ever been physically or sexually abused. This is almost twofold greater than that reported in a general population sample using the same questionnaire items (10.3 and 11.1 %, respectively) (Priest 2010), while similar proportions reported emotional abuse when growing up. When women with one or more of these risk factors were combined into a single group, almost one third (31.6 %) of our sample reported some kind of antecedent trauma. The rationale for grouping these risk factors into a trauma cluster was underpinned by the reports that not only physical and sexual abuse (Mullen et al. 1988) but also adverse early caretaking experiences (including emotional abuse or neglect) (Parker 1981) are associated with vulnerability to depression and significant rates of mental health morbidity in adulthood (Gladstone and Parker 2005). The association between childhood emotional abuse and mental health problems in the postnatal period is supported by evidence that any childhood abuse experience (sexual, physical and emotional) is linked to a higher risk of developing anxiety or depressive symptoms in the post-partum period (Buist 1998), with emotional neglect being highlighted as a particular risk factor in some studies (Lang et al. 2006; Grant et al. 2012). The association between high trait anxiety and mental health problems post-partum is supported by studies that found that neuroticism (being a worrier, shy or self-conscious) is a risk factor for developing depression and

anxiety disorders post-partum (Robertson et al. 2004). Finally, there is some evidence that a traumatic birth experience is a risk factor for developing mental illness in the post-partum period, especially posttraumatic stress disorder which is a subset of anxiety disorders (Fairbrother and Woody 2007; Zaers et al. 2008; Alcorn et al. 2010).

As for other studies examining the acceptability of psychosocial risk assessment (Carroll et al. 2005; Matthey et al. 2005; Austin et al. 2011), the use of the PNRQ was well accepted by women and staff. This confirms the notion that psychosocial risk assessment is an acceptable method to identify women who are vulnerable to poorer perinatal mental health outcomes.

While overall recruitment rate was low with large loss to follow-up, dropout was not selective. A potential source of bias—in terms of diagnostic representation—lies within the Tresillian parenting facilities' policy of excluding women with acute mental health problems which may be contributing to the under-representation of women with a diagnosis of depression where risk of self-harm was an issue. The fact that the MINI diagnostic interview does not identify any past anxiety disorders other than panic disorder might be a reason for the likely underestimation of lifetime anxiety disorder in our sample. Finally, the high proportion of women with tertiary education in our sample is not representative of same-age women in the wider community. However, our sample's clinical profile was comparable to community samples of mothers of unsettled infants, suggesting that our findings are generalizable to that setting (Armstrong et al. 1998). The high education level of the sample might be indicative of the access issues to tertiary parentcraft services as these require a referral from a GP, paediatrician or child and family health nurse as well as knowledge about the existence of such a service.

Due to the exclusion of non-English-speaking women from the study, cultural differences in how post-partum women deal with unsettled infants and related psychological

distress have not been accounted for, and thus, the implications of this study cannot be applied to this population group. There is a need for research to help to understand the cultural nuances in this context.

Given that over 80 % of Australian mother–infant dyads with psychological difficulty are admitted to a parentcraft setting (Fisher et al. 2011), we would recommend that routine psychosocial assessment be undertaken in these settings (residential and day stay). In addition, community nurses and paediatricians, to whom these mothers present, are ideally placed to assess for these commonly associated risk factors.

The study has several strengths in terms of knowledge translation. The use of a psychosocial risk profiling tool enriches the clinician's understanding of their client and allows better tailoring of interventions for these mother–infant dyads. Furthermore, this study confirms that psychosocial risk assessment can be implemented within the routine work of the nursing staff at the parentcraft service and thus can be easily sustained beyond the study duration. However, the usefulness of a clinical assessment tool will be diminished if nurses and other health professionals are not prepared to translate the findings into interventions that are co-designed with the woman. Creating an environment that enables women to make decisions based on evidence and using the PNRQ to explore their feelings and experiences will ensure that they are capable of engaging in appropriately tailored interventions with resulting successful outcomes (Fowler et al. 2012).

Conclusion

Our findings of a greatly increased number of mothers with a 'high psychosocial risk' profile, in particular a trauma history and vulnerable personality style, together with the high prevalence of current anxiety disorders, support the need to accurately identify psychosocial risk profiles in women presenting with 'unsettled infants'. In particular, our study suggests that there is a need for interventions beyond simple parenting skills for a large proportion of these mothers. Using integrated psychosocial assessment (e.g. combined EPDS and psychosocial risk self-report tools) (Priest et al. 2008) has the potential to allow clinicians to offer tailored interventions whether it be anxiety management and cognitive restructuring or those addressing mother–infant interaction difficulties.

The early identification of women at risk of developing post-partum depression or anxiety or difficulties in the parent–infant interaction is important in preventing negative mental health outcomes in mothers and the risk of poor emotional adjustment in the next generation (Austin et al. 2005).

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