ELSEVIER

Journal of Affective Disorders 89 (2005) 157–166

JOURNAL OF AFFECTIVE DISORDERS

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Research report

Confinement and other psychosocial factors in perinatal depression: A transcultural study in Singapore

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Received 1 April 2005; received in revised form 16 September 2005; accepted 16 September 2005
Available online 28 October 2005

Abstract

Background: To investigate the prevalence, socio-cultural and psychosocial risk factors for perinatal depression in Singaporean women.
Method: A prospective cohort of 559 women was interviewed antenatally and at six weeks' postpartum at a tertiary hospital. Women were interviewed for diagnosis of depression using a two-stage design, with a screening questionnaire and diagnostic interview.
Results: Postnatally, a negative confinement experience was associated with depression. Other independent factors included poor emotional support, a past history of depression, unplanned pregnancy and perceived potential conflicts with relatives over childcare antenatally and dissatisfaction, poor instrumental support postnatally. The prevalence of depression antenatally and postnatally was 12.2% and 6.8%, respectively.
Limitations: Measures of satisfaction with social support were based on self-report; there were high dropout rates at six weeks' postpartum; and other modulating social factors such as pre-existing interpersonal conflicts were not studied.
Conclusions: Perinatal depression in Singaporean women is common. Contrary to expectations, a negative 'confinement' experience is a significant risk factor for postnatal depression, and is not universally welcomed by women. Depression is modulated by dissimilar sets of psychosocial factors antenatally and postnatally.

Keywords: Perinatal; Depression; Singapore; Confinement; Social support

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doi:10.1016/j.jad.2005.09.004

1. Introduction

Psychosocial factors play a large part in depression (Brown et al., 1996), perhaps even more so during the perinatal period than at any other time in a woman's life. Perinatal depression, defined here as depression encompassing pregnancy and the first postpartum year, has potentially profound negative effects on mother and child (Murray and Cooper, 1997). Pillsbury (1978) has pointed towards the protective effects of close social networks and forms of culturally sanctioned social support such as the ritual of confinement or "doing the month" in some Asian cultures, though recent studies have highlighted that ethnoepidemiological factors must also be considered (Lee et al., 2004). Singapore is a small South-East Asian island–nation that presents the opportunity to study a population with easy geographical access to extended family, as well as to traditional social support through confinement practices.

In particular, we were interested to study the confinement experience and its relation to perinatal depression. Singapore is a melting-pot of South-East Asian cultures and influences. It has a predominantly ethnic Chinese population with significant Malay and Indian minorities. The majority of Chinese and Indians of childbearing age are third- or fourth-generation Singaporeans whose ancestors migrated from Southern China and Southern India respectively. The Malay population is indigenous and shares the same culture as their counterparts in Peninsular Malaysia and part of the Riau islands of Indonesia.

In this study, we defined "confinement" to encompass not only the Chinese traditional practice also known as *peiyue*, but also the local Malay and Indian traditions which are intended to increase social support for the mother and to aid her recovery from childbirth. Chinese confinement traditions dictate that the mother is in a state of depletion and needs "warming" tonics and food to redress this imbalance. Special dietary prescriptions and proscriptions may include food that is cooked with ginger, and avoiding "cooling" things such as cold water or drinks. For some women, confinement practices may even include bathing in warm water to which certain herbs have been added or not washing one's hair for the entire month! In addition to or other than having a female relative help with infant care, some Chinese women may hire a "confinement nanny" for the express purpose of cooking the requisite postnatal diet and looking after the physical needs of the baby. There is booming cottage industry of middle-aged Chinese women with practical experience in *peiyue* who have successful careers staying with families a month at a time to care for them. Anecdotally, there have been reports of clashes between confinement caregivers and the new mother over issues such as, say, whether or not to breastfeed the child in which both parties may come with different sets of cultural beliefs and expectations.

In addition for the woman to not leave the house for the first forty days postpartum or so, it is common for Malay women to hire a masseuse who provides postnatal massage, apply traditional herbs and perform abdominal binding designed to aid involution of the uterus and return to the mother's prenatal weight and figure. Indian Hindu women are likely to have certain dietary restrictions during the postnatal period, together with having special prayers and ceremonies designed to protect mother and child from spiritual harm. Owing to the assimilation of such practices across cultures, various elements of these confinement practices have been adopted across the different ethnic groups to varying degrees. For example, it is not uncommon for Chinese or Indian women to hire a Malay masseuse who will come to the house during the confinement month to do the postnatal massage and abdominal binding during the first few weeks post-delivery. We thus sought to study the socio-cultural factors associated with and prevalence of perinatal depressive disorders in Singaporean women.

2. Method

The study design was of a longitudinal cohort study of women delivering at a university-affiliated teaching hospital in Singapore between July 2002 to December 2003. Inclusion criteria included all pregnant women who were available for the 6-week follow-up period after delivery. Potential subjects were approached during their antenatal appointments in the obstetric clinic and written informed consent was first obtained from potential subjects prior to recruitment. Women who were subsequently diagnosed as having a

clinically significant disorder were offered access to counselling or psychiatric services. The study was approved by the local institutional review board.

The study had a two-stage design consisting of a screening questionnaire followed by a diagnostic interview for mood disorders. This was done at both initial and follow-up visits. All women received a detailed questionnaire that included the well-validated Edinburgh Postnatal Depression Scale (EPDS) (Cox et al., 1987). Following a pilot study in which the EPDS was validated in all women, those scoring above a cut-off value of 7 on the EPDS were subsequently interviewed by one of the authors (C.Y.I.C) trained in the use of the mood disorder modules of the Structured Clinical Interview for DSM-IV, non-patient version (SCID-IV) (First et al., 1994). A Mandarin-version EPDS was adapted from the Hong Kong Chinese version of the EPDS (Lee et al., 1998) for Chinese-speaking patients. However, the original English-language version of the EPDS was used instead as the vast majority of respondents preferred to be interviewed in English. The six-week postnatal visit consisted of a brief questionnaire, the EPDS, and the SCID-IV for screen-positive women. If the women did not turn up for their six-week postnatal visits, self-addressed survey forms were mailed to them in addition to telephone reminders if they did not reply within a week.

The mood disorders that were studied in this sample included that of major depressive disorder (MDD) by DSM-IV criteria (American Psychiatric Association, 1994), and minor depressive disorder if their symptoms did not reach five out of the nine criteria specified for MDD. Given that many women had somatic symptoms that were attributable to the perinatal state rather than depression, care was taken to ensure that the symptoms enquired about were distinct from the former. If any doubt existed as to the cause of the symptoms, then we erred on the side of conservatism and it was scored as negative.

We examined the risk factors that were commonly reported in previous studies of postnatal depression. These included:

(a) Demographic and socio-economic factors such as age; marital status; the number, age and gender of other children; educational level; employment status; household income, and whether the woman was living with her extended family or not;
(b) Medical history and past psychiatric history of depression; obstetric history including previous miscarriage or abortion;
(c) Interpersonal relationships such as marital and sexual satisfaction; ratings of emotional and practical support (also known as instrumental support) by various family members, and perceived potential conflicts with other family members over childcare;
(d) Socio-cultural factors such as details of specific confinement practices and the subjects' views on whether or not they found them helpful.

Marital satisfaction was based on a self-reported item on the questionnaire using a five-point Likert scale. Social support was conceptualised as pertaining to emotional support and practical support domains. Respondents rated various specific family members including one's partner, the infant's grandparents, a domestic helper if any, and other relatives such as siblings, according to the amount of the two types of support they could count on, based on a five-point Likert scale ranging from "hardly ever" to " usually". These were assigned raw values ranging from 1 to 5, yielding a total score of between 5 and 35 for each of the emotional and practical support sub-scores and between 10 and 70 on the overall support score, with 70 being the maximum amount of social support scored. Inclusion of a domestic helper into the social support network was deemed important within the Singaporean context, as a substantial number of families employ a live-in foreign domestic helper to aid in childcare and housework. At six weeks' postpartum, additional questions were asked pertaining to the degree of satisfaction with the confinement experience if any, whether the woman was still breastfeeding or not, and how many times they had brought their infants to the doctor on non-routine visits (that is, other than for immunizations or well-baby visits) over the past six weeks.

We estimated that a sample size of 500 would give a 95% confidence estimate of DSM-IV major depressive disorder at 10% prevalence with a 2.5% point precision. The Obstetrics and Gynaecology department of the National University Hospital of Singapore oversees approximately 2500 deliveries per year.

2.1. Statistical analysis

Statistical analysis was done using the Statistical Package for Social Sciences Version 12.0 (SPSS v12.0 for Windows XP). Univariate analysis for the various independent variables that might be associated with perinatal mood disorders was performed using the independent Student's *t*-test for continuous variables and chi-square tests for dichotomous and categorical variables. Logistic regression analysis was used to estimate the univariate odds ratios and their corresponding 95% confidence intervals. Multiple logistic regression analysis was used to explore the important independent associations between variables and mood disorders after adjustment for confounders.

3. Results

During the first phase of the study when 724 mothers were approached antenatally for recruitment into the study, 128 (17.7%) declined to participate in the study and 37 (5.1%) were excluded because they would not be available during the follow-up period. The remaining 559 (77.2%) patients were recruited into the study. Limited information about the refusals was obtained from their patient registration data. However, comparison of baseline data between refusals and subjects showed that the two groups appeared to be comparable in terms of age and ethnic group. During the second phase of the study, 278 mothers gave follow-up interviews at six weeks' postpartum. Of the dropouts, 279 either declined follow-up or were un-contactable, one mother had had a stillbirth and one mother had died from medical complications of pregnancy. Patients who dropped out did not differ significantly from patients who were available for six-week follow-up in all the studied variables except for ethnic group and mean EPDS scores (Table 1), with follow-up patients having lower EPDS scores than dropouts.

The mean age of the women was 31 years (±4.7 y). 47.2% were Chinese, 24.9% were Malay, 19.0% were Indian and 8.9% were classified under other

Table 1
Comparison between dropouts and follow-ups

Variable ($n=599$)	Dropouts ($n=281$)		Follow-ups ($n=278$)		p value
	n	%	n	%	
	Mean ± SD		Mean ± SD		
Male infant	150	53.4	128	46.0	0.08
Age ≤20 and ≥35 y	74	26.3	68	24.5	0.61
Ethnic group — non-Chinese	164	58.4	131	47.1	0.008
Low educational level	94	33.8	78	28.2	0.15
Employed	175	62.9	167	60.5	0.55
Low household income	127	46.5	102	38.6	0.07
First child	127	45.7	110	40.3	0.20
Living arrangements — Husband and in-laws	38	13.9	40	14.5	0.99
— Husband and parents	38	13.9	28	10.1	0.18
Unplanned pregnancy	108	38.7	87	32.0	0.10
Marital dissatisfaction	32	11.6	22	8.0	0.16
Low instrumental support	95	33.8	97	34.9	0.79
Low emotional support	108	38.4	102	36.7	0.67
No relative/friend having baby at the same time	132	47.7	117	42.4	0.21
Conflicts over childcare with relatives foreseen	77	27.8	68	24.6	0.40
No history of abortion	244	90.4	235	87.7	0.32
No history of miscarriage	228	83.8	221	82.8	0.74
No depression during previous pregnancy	177	80.1	179	77.5	0.50
No past history of depression	230	83.0	226	82.2	0.79
Family history of mental disorder	11	3.9	6	2.2	0.23
EPDS score ($n=559$)	8.13 ± 4.45		7.21 ± 4.58		0.018

Table 2
Number of cases of major and minor depressive disorders in antenatal and postnatal mothers

	n	MDD[a]+MIN[b]	MIN		MDD	
		Prevalence, %	n	%	n	%
Antepartum	68	12.2	44	7.9	24	4.3
6 weeks' postpartum	19	6.8	7	2.5	12	4.3

[a] MDD=Major depressive disorder; [b] MIN=Minor depressive disorder.

ethnic groups. 556 (99.5%) of the women were married at the time of recruitment into the study, with 510 (91.2%) having completed secondary school education and above. 224 (40.4%) of the sample were university graduates, reflecting a relatively high level of education compared with the general population. 342 (61.8%) were either working full-time (56.9%) or part-time (4.9%), with the remaining either stay-at-home mothers or unemployed. 405 (72.5%) women were living with their partners without any extended family members in the same household.

3.1. Prevalence of depressive disorders and associated factors

Antenatally, 68 (12.2%) women were diagnosed as having a clinically significant mood disorder, of which 24 (4.3%) women were diagnosed with major depressive disorder and 44 (7.9%) as having minor depressive disorder. The rate of depressive disorders fell to 6.8% at six weeks postpartum, with the percentage of mothers diagnosed with MDD remaining the same at 4.3% (Table 2). Significant factors on univariate analysis associated with depression in antenatal women are tabulated in Table 3, together with the results for the stepwise logistic regression modelling. Four factors that were statistically significant included an unplanned pregnancy, poor emotional support, a past history of depression and anticipating potential conflicts with family members over childcare. Postnatally, logistic regression analysis with adjustment for confounding showed that the presence of depressive disorder was independently

Table 3
Multiple logistic regression analysis of factors associated with antenatal depressive disorders

	Yes (n=68)		No (n=491)		Crude OR[a] (95% CI[b])	p value	Adjusted OR (95% CI)	p value
	n	%	n	%				
Female infant	38	13.5	243	86.5	1.29(0.78–2.15)	0.32		
Age ≤20 and ≥35 y	23	16.1	120	83.9	1.58(0.92–2.72)	0.10		
Ethnic group — non-Chinese	37	12.5	258	87.5	1.08(0.65–1.79)	0.77		
Low educational level	22	12.8	150	87.2	1.10(0.64–1.90)	0.73		
Employed	27	12.7	185	87.3	1.10(0.65–1.86)	0.75		
Low household income	31	13.5	198	86.5	1.15(0.69–1.91)	0.60		
Two or more living children	44	14.0	270	86.0	1.45(0.85–2.45)	0.17		
Living arrangements — Husband and in-laws	5	6.4	73	93.6	0.54(0.21–1.39)	0.20		
— Husband and own parents	14	21.2	52	78.8	2.10(1.08–4.09)	0.029		
Unplanned pregnancy	35	17.9	160	82.1	2.22(1.32–3.71)	0.002	2.56(1.18–5.52)	0.017
Marital dissatisfaction	19	35.2	35	64.8	4.95(2.63–9.31)	0.001		
Low instrumental support	25	13.0	167	87.0	1.13(0.67–1.91)	0.65		
Low emotional support	37	17.6	173	82.4	2.83(1.54–5.21)	0.001	2.53(1.07–6.02)	0.035
No relative/friend having baby at the same time	36	14.5	213	85.5	1.44(0.86–2.39)	0.16		
Conflicts over childcare with relatives foreseen	28	19.3	117	80.7	2.26(1.34–3.84)	0.002	2.43(1.12–5.30)	0.025
History of abortion	7	11.9	52	88.1	1.02(0.44–2.35)	0.97		
History of miscarriage	15	16.7	75	83.3	1.60(0.85–2.99)	0.14		
Depression during previous pregnancy	19	19.8	77	80.2	2.26(1.23–4.17)	0.009		
Past history of depression	30	31.3	66	68.8	5.47(3.15–9.50)	0.001	4.49(2.03–9.93)	0.001
Family history of mental disorder	6	35.3	11	64.7	4.21(1.51–11.80)	0.006		

[a] OR: odds ratio; [b] CI: confidence intervals.

associated with a negative confinement experience, a past history of depression, low instrumental support and marital dissatisfaction (Table 4).

3.2. Confinement experiences and depressive disorders

We found that while having a negative confinement experience was associated with the risk of having a depressive disorder (Table 4). Antenatally, 78% of the respondents indicated that they were intending to undergo confinement, with 79.2% of respondents reporting that they had done so at the postnatal follow-up. 61.9% expected their confinement to be a positive experience when interviewed antenatally, and 67.2% of those who eventually underwent confinement reported that they had found it a positive experience, with the rest replying "not sure" or "no". The majority of women described the confinement experience to include practices such as not leaving the house for the first few weeks' postpartum (69.4%), eating certain foods (66.9%), avoiding certain foods (58.6%) and having postnatal massage (52.2%). Only one in three women reported that the confinement experience included having someone help with looking after the newborn during the day (31.8%) or the night (29.0%). 18% indicated that their mothers-in-law would be the main caregivers during their confinement; however there was

Table 4
Multiple logistic regression analysis of factors associated with depressive disorders in mothers at 6 weeks' postpartum

	Yes ($n=19$)		No ($n=259$)		Crude OR (95% CI)	p value	Adjusted OR (95% CI)	p value
	n	%	n	%				
Male infant	9	7.0	119	93.0	1.06 (0.42–2.69)	0.90		
Age ≤20 and ≥35 y	6	8.8	62	91.2	1.47 (0.54–4.02)	0.46		
Ethnic group — Chinese	12	8.2	135	91.8	1.58 (0.60–4.13)	0.36		
High educational level	15	7.5		184	92.5	2.04 (0.57–7.25)	0.27	
Unemployed	12	7.2	155	92.8	1.33 (0.48–3.65)	0.58		
High household income	14	8.6	148	91.4	1.84 (0.64–5.26)	0.26		
Two or more living children	13	8.0	150	92.0	1.50 (0.55–4.08) 0.43			
Living arrangements — Husband and in-laws	1	2.5	39	97.5	0.36 (0.05–2.78)	0.32		
— Husband and own parents	4	14.3	24	85.7	2.31 (0.70–7.59)	0.17		
Unplanned pregnancy	8	9.2	79	90.8	1.77 (0.67–4.66)	0.25		
Spouse unhappy with the gender of baby	1	10.0	9	90.0	1.54 (0.18–12.81)	0.69		
Marital dissatisfaction	8	22.9	27	77.1	6.22 (2.30–16.82)	0.001	9.42 (2.19–40.52)	0.003
Confinement — Negative experience	7	12.1	51	87.9	3.78 (0.75–19.02)	0.11	19.41 (2.03–185.58)	0.010
— Positive experience	7	4.8	139	95.2	1.39 (0.28–6.87)	0.69		
Low instrumental support	13	14.4	77	85.6	5.12 (1.88–13.97)	0.001	23.43 (3.68–149.16)	0.001
Low emotional support	10	11.0	81	89.0	2.44 (0.96–6.24)	0.062		
No relative/friend having baby at the same time	8	6.8	109	93.2	1.01 (0.39–2.60)	0.98		
Conflicts with relatives foreseen	3	18.8	13	81.3	3.53 (0.91–13.68)	0.068		
Non-routine child visits to doctors — 3 and above	6	17.1		29	82.9	3.28 (1.16–9.30)	0.026	
Currently breastfeeding	15	7.5	184	92.5	1.53 (0.49–4.76)	0.46		
History of abortion	4	12.1	29	87.9	2.02 (0.63–6.51)	0.24		
History of miscarriage	4	8.7	42	91.3	1.31 (0.41–4.14)	0.65		
Depression during previous pregnancy	7	13.5	45	86.5	2.38 (0.87–6.48)	0.091		
Past history of depression	8	16.3	41	83.7	3.81 (1.45–10.06)	0.007	4.91 (1.08–22.28)	0.039
Family history of mental disorder	1	16.7	5	83.3	2.82 (0.31–25.46)	0.36		

no association detected between this subset of women and increased prevalence of depressive disorders ($\chi^2 = 1.691$, $p = 0.193$).

4. Discussion

To our knowledge, this is the first study to show that confinement practices can be a risk factor for postnatal depression, a form of culturally sanctioned support which is widely practiced in South-East Asia among the Chinese, Malay and Indian populations. Furthermore, a third of women surveyed did not consider confinement a positive experience. In our sample, a positive confinement experience was also not associated with a lower risk of developing a depressive disorder in our study population. One possible explanation of this finding is that the study was insufficiently powered to detect a significant association between a positive confinement experience as a protective factor against depression. Another explanation is of course that a positive confinement experience in itself is not enough to ameliorate depression and that there are many complex inter-related variables involved. Our interpretation of the data is that confinement per se should no longer be counted upon to be a factor that might lessen or delay the onset of depressive disorder (Pillsbury, 1978) and that a negative confinement experience might actually contribute towards a new mother's distress. Our survey of confinement practices that mothers reported also indicates that instrumental support such as having a family member or "confinement lady" looking after the baby during the day and/or night occurred in only a third of mothers. Thus though the more common elements of the confinement experience would include dietary proscriptions and prescriptions as well as restrictions on a woman leaving the home, actual instrumental support was only provided in a minority of mothers. The heterogeneity and quality of the confinement experience are thus an important factor to take into account when considering its effects on the woman's postpartum experience.

A study on Chinese women who had migrated to Sydney, Australia also found that 18% of the subjects felt ambivalent about their confinement, with the impression that their adherence to such practices were more a result of family or in-law expectations than their own wishes (Matthey et al., 2002). This is likely to have been the case for the women in our sample as well, given that 38% were not sure or did not think that confinement would be helpful even during the antenatal visit. Future research would be useful in elucidating the actual specific components of the confinement experience that are perceived as helpful and go towards ameliorating or preventing postnatal depression. A further clinical implication for physicians involved in the care of antenatal women would be to identify women who do not think confinement will be a positive experience, and to possibly involve the family early to reduce the potential stress on the mother by not insisting that she undergo confinement practices that are a stressor rather than a source of emotional and instrumental support for her.

The caregiver during the confinement period was another variable we looked at. Lee et al (2004) had earlier pointed towards the possibility of this period being like a double-edged sword, providing much-needed practical support on one hand, and being an additional source of interpersonal conflict, particularly if the mother-in-law was the one responsible for looking after the woman during the first postpartum month. Given women in confinement, as the name implies, are not encouraged to step out of the home during the first few weeks postpartum, this could lead to an increased chance of unwanted interpersonal friction with family members, particularly among women who did not have a good initial relationship with the relative responsible for helping out during confinement. We did not detect any association between the mother-in-law being involved in confinement and depressive disorders as was suggested in Lee's ethnoepidemiological study; however, our study was not sufficiently powered to detect such associations.

We also did not find any protective effect of having one's mother being involved in the confinement experience, unlike an earlier Taiwanese study (Heh et al., 2004). However, comparisons between the two populations are limited due to differences in the two populations' characteristics. While a Taiwanese woman might travel back to her parental home for the confinement period and receive practical support largely from her parents, a woman in Singapore might be able to access multiple sources of practical support

owing to geographical proximity to one's parents, parents-in-law and the ease of hiring a live-in domestic helper. This once again highlights the need to take the social and cultural context into account when considering the effect of cultural and psychosocial practices on perinatal depression.

It can also be argued that postnatal depression could also cause a woman to be more likely to perceive her confinement experience as a negative one. There may indeed be some women who fall into this group. However, about four in ten women in the sample had misgivings about their confinement experience being a positive one even before they had delivered, and this would have included women who were not depressed prior to delivery. While a negative confinement experience is obviously not the only factor involved in postnatal depression, it may very well be the proverbial straw that breaks the camel's back in some cases.

In all likelihood, the relationship between the confinement experience and postnatal depression is a complex one, the specific pathways of which this study has picked up but is unable to address adequately. Future qualitative studies would be needed to further explore and elucidate the nature of the relationship between depression and the confinement experience. Ultimately, what is important is that a woman undergoing a confinement experience should not be simplistically assumed to enjoy it and benefit from it, and that it can be a source both of much-needed support as well as stress.

4.1. Emotional and instrumental support across delivery

After controlling for various factors, we found a strong statistical association between the presence of depressive disorder and emotional support antenatally. Postnatally, instrumental support became more highly associated with depressive disorder than emotional support. This is perhaps not surprising, given the importance of practical help required in caring for a newborn infant. Furthermore, poor marital satisfaction was independently associated with depression at six weeks' postpartum. It would thus appear that antenatal depression and postnatal depression share dissimilar risk factors with diverse relevance during the antenatal and postnatal period.

4.2. Prevalence of depression

We found that the prevalence of antenatal depressive disorders in our sample of women was comparable to that of Western populations (O'Hara and Swain, 1996; Gorman et al., 2004). There was a drop in prevalence rates of depression after delivery as has been described in other studies (Evans et al., 2001). Strikingly, prevalence rates of major depressive disorder remained stable as the declines in prevalence rates of depressive disorder postnatally were largely due to a drop-off in minor depressive disorder prevalence rates.

5. Limitations

One limitation of the study was the high dropout rate during the second phase of the study. This is perhaps not surprising, given that high rates of refusals in excess of 50% and dropouts of up to 36% were also seen in other studies of perinatal women (Morris-Rush et al., 2003). These dropout and refusal rates may thus reflect a widespread problem in the perinatal period where there are extra demands placed on the woman's time due to preparing for the arrival and caring for the new infant. Patients who dropped out of the study also had significantly higher EPDS scores, suggesting a possibly higher rate of depression in this group. Another factor to consider in our study is that we also offered screen-positive women referrals for counselling and towards appropriate channels of help. It is likely that this would have resulted in lower rates of perinatal depression than if no interventions were offered. However, the take-up rate of women who were depressed and agreed to be referred to social workers or psychiatrists for treatment was extremely low. Thus on balance, our reported rate is unlikely to reflect a positive bias towards reporting psychological distress.

A further limitation of the study was that although care was taken to diagnose women who screened as positive on the EPDS with a diagnostic interview schedule using the SCID, a small proportion of women with low EPDS scores (false negatives) may actually have had clinically diagnosable depressive disorder. Including these women in the control group of non-depressed women would thus bias the estimates of association towards the null.

A note also needs to be made about the clinical versus statistical significance of a negative confinement experience and its association with postnatal depression. While statistically significant, the confidence intervals were very large, largely due to the small absolute numbers of postnatally depressed women in the six-week postnatal sample. Given that the prevalence of depression is likely to be underestimated in the follow-up sample, we think that this association is still likely to be clinically significant.

Other possible factors that might modulate psychosocial support were also not addressed in this study. For example, although the majority of women lived in nuclear family units in their own households, governmental policies encouraging young couples to live within a kilometre of their parents and good transport links mean that the woman's parents or parents-in-law could be living in close proximity and are able to provide reliable practical support for the new parents. Also, pre-existing interpersonal conflicts were not assessed in this study as well.

6. Conclusions

Perinatal depression in Singaporean women is common, though it appears that antenatal and postnatal depression are modulated by dissimilar sets of psychosocial factors. Some of these factors are well known, such as poor marital satisfaction, unplanned pregnancy and a past history of depression. Clinicians should thus be alert to enquiring about women's emotional as well as instrumental support during the perinatal period, bearing in mind that different aspects of such support may emerge as differentially important depending on the time-point the woman is seen at.

Contrary to expectations, we also found that a negative confinement experience actually increases the risk of postnatal depression. The nature of the confinement experience is complex and heterogenous, possibly involving factors that can increase postnatal depression by increasing unwelcome interpersonal contact or are perceived as an obligation or series of restrictions which the mother does not find helpful. It should certainly no longer be taken at face value as a uniformly helpful practice. Future research could elucidate which particular aspects of the confinement experience are helpful, rather than contributing towards depressive disorder, and to study interventions that could tip the balance in favour of the mother's psychiatric and emotional well-being.

6.1. 3 clinical implications

1. A negative confinement experience is associated with depression at six weeks' postpartum;
2. Culturally mandated social support is a complex phenomenon which cannot be assumed to be always helpful to the mother;
3. Prevalence rates of depression drop after delivery, mainly accounted for by a reduction in the prevalence of minor depressive disorder.

6.2. 3 limitations

1. High dropout rates at 6 weeks' postnatal follow-up;
2. Only self-report measures of psychosocial support and marital satisfaction were obtained;
3. Other possible factors that might modulate psychosocial support such as proximity to extended family and pre-existing interpersonal conflicts were not assessed.

Acknowledgements

We would like to thank Mrs R. Rajaram for her generous assistance in recruiting and following up with patients for the study. The authors acknowledge the Medical Publications Support Unit of the Medical Affairs Department of National University Hospital, Singapore, for their assistance in the preparation of this manuscript.

Declaration of Interest: This work was funded by the National Healthcare Group of Singapore (NHG grant no. STP-02021).

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