Identifying women at risk of postnatal depression: prospective longitudinal study

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Objective. To identify psychosocial risk factors for postnatal depression among Hong Kong Chinese women.

Design. Prospective longitudinal study involving self-report questionnaires and face-to-face interviews.

Setting. University teaching hospital, Hong Kong.

Participants. Two hundred and twenty consecutive Chinese women who were admitted to the postnatal ward of the Department of Obstetrics and Gynaecology from 6 November 1996 to 18 January 1997.

Main outcome measures. Psychiatric diagnoses were established using the clinician-administered Structured Clinical Interview for the Diagnostic and Statistical Manual of Mental Disorders. Psychosocial risk factors were ascertained by conducting face-to-face interviews and using psychometric rating scales.

Results. Of the 330 women who delivered during the study period, 220 (66.7%) agreed to participate in the study. The 220 participants had a mean age of 29 years (range, 16-42 years). Postnatal depression was associated with depression during pregnancy, elevated depression score at delivery, and prolonged postnatal 'blues'. Other correlates of postnatal depression were temporary housing accommodation, financial difficulties, two or more induced abortions, past psychiatric disorders (including depression), and an elevated neuroticism score. Postnatal depression was more likely if the spouse was disappointed with the gender of the newborn.

Conclusion. Some risk factors are similar to those found in the West, whereas others (spouse disappointment and history of abortion) may be unique to the local population. To help identify women who are at particularly high risk of developing postnatal depression, obstetricians and midwives in Hong Kong should consider codifying the identified risk factors into a check-list.

Introduction

Postnatal depression is a common and serious disorder, which affects approximately 12% of women after delivery.[1-4] Apart from inflicting profound psychological suffering on new mothers, postnatal depression estranges marital relationships and adversely affects the emotional and cognitive development of the infant.[5] Furthermore, severe cases of postnatal depression may deteriorate into postpartum psychosis, which may eventually lead to suicide or infanticide.[6]

In contrast to many mental disorders, postnatal depression is eminently treatable,[7] and early detection and treatment are strongly advocated.[8] Given prompt intervention, most sufferers can recover fully and return to normal lives.[9] Hence, to detect women who have substantial depressive symptomatology, 'paper-and-pencil' questionnaires such as the Edinburgh Postnatal Depression Scale (EPDS)[1,10] are routinely administered in postnatal clinics in some countries. Because of administrative and financial obstacles, however, it may not be possible to adopt universal screening to detect postnatal depression.

In those circumstances, it would be useful to provide screening for women who are at a particularly high risk of developing postnatal depression. Selective screening may also be applied as a transitional

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measure, thereby permitting a more realistic appraisal of the logistics and feasibility of a universal screening programme.

A selective screening programme necessitates the accurate identification of women who are at a high risk of developing depression in the post-partum period. To help predict those at risk, western studies have identified a consistent array of psychosocial risk factors.[3] Such research shows that new mothers are particularly vulnerable to depression, if social support is inadequate and the marital relationship is unsatisfactory.[3] Given that new mothers are confronted with an overwhelming nexus of changes, any concurrent stress factors (including obstetric or neonatal complications) can trigger decompensation. Maternal depression is also likely to occur if there is underlying personal vulnerability, such as a maladaptive personality or a past history of depression. Other factors have also been implicated—for example, childhood sexual abuse, juvenile or unplanned pregnancy, antenatal depression, prolonged postnatal 'blues', and bottle feeding.[3,11-14] Few researchers, however, have examined the relevance of these risk factors among Asian women.

A Hong Kong study of 150 women has reported that high levels of postnatal depression are associated with coincidental life events, housing, or financial problems.[15] Although that study has provided useful preliminary data, it was cross-sectional and examined only a limited number of risk factors. This prospective longitudinal study was conducted to determine additional risk factors that could be used to identify Chinese women who are at a risk of developing postnatal depression.

Methods

Participants
Approval to conduct this study was obtained from the Human Research Ethics Committee of The Chinese University of Hong Kong. Two hundred and twenty consecutive Chinese women who were admitted to the postnatal ward of the Department of Obstetrics and Gynaecology at the Prince of Wales Hospital were recruited from 6 November 1996 to 18 Janury 1997. Women who were not Chinese were excluded from the study.

Study design and procedure
A research nurse recruited the study participants on the second day after delivery. With informed consent, the nurse collected basic demographic, obstetric, and psychiatric data by using a semi-structured interview.

Participants were then asked to complete the Beck Depression Inventory (BDI)[16] and the 30-item General Health Questionnaire (GHQ).[17] The GHQ is a self-report questionnaire that measures psychological well-being and the BDI is a widely used rating scale that quantifies the intensity of depression. Both scales have demonstrated satisfactory psychometric properties in the local Chinese population.[18,19] Although the EPDS allows a greater extent of international comparison to be made, the BDI was preferred in this study because it measures the intensity of depression; in contrast, the EPDS is designed to screen for depression.

At 6 weeks post-partum, the participants repeated the BDI and GHQ, and they were assessed using the Chinese translation of the non-patient version of the Structured Clinical Interview for the Diagnostic and Statistical Manual of Mental Disorders (DSM; 3rd revision)[20] [SCID-NP].[21] The SCID-NP was used to establish the psychiatric diagnosis. As the participants were assessed 6 weeks after delivery, the SCID-NP was modified to make 6-week diagnoses, instead of 1-month diagnoses. The SCID-NP was also modified to allow the diagnosis of DSM (4th revision) minor depressive disorder (a 2-week period of at least two, but less than five, symptoms of depression; depressed mood or anhedonia being mandatory).[22] Although the SCID-NP is a semi-structured interview, it allows the interviewer to use additional questions to enquire about idioms of distress that are specific to the local context. The additional material ensures that the interviewer is culturally informed.

Risk factors of postnatal depression
To identify risk factors that have been reported to be associated with the development of postnatal depression, a computerised literature search was conducted using the following databases: *Medline*, *PsyInfo*, *Current Contents*, and *Psychological Abstracts*. Because it was impossible to study every reported risk factor, only the consistently reported ones were included (Table 1).

As far as possible, the risk factors were evaluated at the baseline assessment. Some putative risk factors were also quantified by using standardised rating scales. Neuroticism was measured by using the neuroticism subscale of the Eysenck Personality Questionnaire,[23] and the level of social support was assessed by using the Medical Outcome Study Social Support Survey.[24] Life events were measured according to the Life Event Scale,[25] while marital relationship was rated on a five-point Likert scale.[26] Past depressive episodes, as defined by the DSM criteria,[21] were ascertained by a trained research nurse.

Table 1. Putative risk factors for postnatal depression

Domain	Risk factors
Socio-demographics	Age <18 years or ≥35 years, single/cohabiting marital status, number of children, born outside Hong Kong, shorter length of stay in Hong Kong, recent immigrant
Socio-economic status	Lower level of education, unskilled or semi-skilled occupation, unemployment, lower social class, deprived living condition, lower family income, and financial difficulties
History	Medical history, gynaecological history, history of infertility, number of previous miscarriages, number of previous induced abortions, psychiatric history, history of depression, history of deliberate self-harm, history of hypnotic or anxiolytic use for ≥4 weeks, family psychiatric history
Circumstances surrounding pregnancy	Pregnancy unplanned, considered induced abortion, partner unwelcome pregnancy, antenatal admission for non-obstetric reasons, depression symptoms/syndrome during pregnancy
Perinatal factors	Low baby body weight, baby gender, mother's negative attitude to gender of the infant, father's negative attitude to gender, admission to neonatal intensive care unit,* prolonged postnatal depression,* severe postnatal depression,* lactation problem,* bottle feeding,* level of depression at delivery
Psychosocial factors	Unsatisfactory marital relationship, coincidental life event, poor social support and neuroticism

* Risk factors assessed at 6 weeks post-partum

Data processing and analysis

Data were processed and analysed using the Statistical Package for Social Science (Windows version 7.5; SPSS Inc., Chicago, United States). The postnatal depression status (major or minor depression) was used as a dependent variable, against which putative risk factors were analysed. Minor depression was defined as a case of postnatal depression, because it has been shown that more than 50% of cases of first-onset major depression are associated with the earlier presence of minor depression.[27] Screening for minor depression would thus identify individuals who had subthreshold illness, as well as those whose illness would progress to major depression. The Chi squared test for independence was used for the univariate analysis of nominal data and the Wald test was used to analyse continuous data. A logistic regression model was used to calculate odds ratios and associated confidence interval at the 95% level of confidence.

Results

Participants' characteristics

Of the 330 women who delivered during the study period, 220 (66.7%) agreed to participate in the study. The 220 participants had a mean age of 29 years (range, 16-42 years). Two hundred and thirteen (96.8%) women were married and seven (3.2%) women were cohabiting with their partner. The median number of children was one (range, 0-6 children). Six (2.7%) participants were illiterate in Chinese. Five (2.3%) had no formal education, 99 (45.0%) had primary education only, 101 (45.9%) had completed secondary education, and 15 (6.8%) had received tertiary education. Ninety-six (43.6%) participants had full-time employment, two (0.9%) worked part-time, 109 (49.5%) were housewives, and 13 (5.9%) were unemployed. The socio-economic status of the women, as rated by the Registrar General Classification[28] was as follows: class 1, 0.9%; class 2, 15.0%; class 3, 78.2%; class 4, 5.0%; and class 5, 0.9%. Fourteen (6.4%) participants reported a personal history of psychiatric illness. Twenty (9.1%) participants had one or more past depressive episodes and 19 (8.6%) participants had a family history of psychiatric illness. One hundred and twenty (54.5%) participants were born in Hong Kong, whereas 87 (39.5%) were born in mainland China.

At the 6-week follow-up, 145 (65.9%) participants returned for assessment and 17 (11.7%) of them met the DSM criteria for postnatal depression.[21] Seventy-five (34.1%) participants defaulted two follow-up appointments, but they completed the GHQ and BDI questionnaires by telephone. Compared with those who returned for follow-up, women who could not attend the face-to-face interview had lower BDI and GHQ scores at 6 weeks (P<0.005, Mann-Whitney U test). Otherwise, in terms of baseline GHQ and BDI scores, and demographic and psychosocial characteristics, the non-attendees were not different from those who received face-to-face assessment.

Risk factor analysis

The putative risk factors were analysed against the postnatal depression status for univariate association, and 10 factors were found to be significant. Table 2 summarises the odds ratios and P values of the significant risk factors. A complete list of the odds ratios and P values of the non-significant risk factors is available from the authors.

Table 2 . Significant risk factors for postnatal depression (n=145)

Risk factors	Odds ratio (95% CI)	P value
Temporary housing	16.9 (1.4-198.1)	0.003
Financial difficulties	3.4 (1.3-11.4)	0.051
Two or more previous induced abortions	8.5 (2.2-31.9)	0.004
Past history of depression	6.3 (1.8-22.1)	0.009
Past psychiatric history	4.6 (1.2-17.4)	0.036
Syndromal depression during pregnancy	13.5 (2.1-87.8)	0.012
Spouse disappointed with baby gender	5.3 (1.4-20.5)	0.027
Prolonged postnatal 'blues'*	5.0 (1.1-23.1)	0.059
BDI† score at delivery	1.4 (1.3-1.4)	<0.001
Neuroticism	1.3 (1.2-1.5)	<0.001

* Marginally significant at the P=0.05 level
†BDI   Beck Depression Inventory

Discussion

Some of the correlates identified in this study are well recognised among western women. These risk factors include personal psychiatric history, history of depression, substantive poverty (temporary accommodation and financial difficulties), and vulnerable personality (neuroticism). Indigenous cultural issues that were pertinent to postnatal depression among Chinese women in Hong Kong were also found. Specifically, the results showed that if the father was dissatisfied with the gender of the newborn, postnatal depression was more likely to occur. Despite past decades of westernisation and modernisation, patriarchal traditions and gender prejudices remain entrenched in the Hong Kong population. Thus, when a baby girl is delivered, the new mother may be subjected to antipathy, criticism, and even hostility from her spouse and extended family. This response is a cogent reminder that childbirth is more than a biological event, and that the personal experience of childbirth is deeply embodied in the socio-moral values of the local culture.

In general, therapeutic abortions are thought to have no adverse psychological consequences. While women who request that a pregnancy be terminated commonly experience guilt and sorrow, their negative emotions usually subside spontaneously after the operation.[29] Furthermore, Brewer[30] has shown that psychosis in women following abortion occurs no more commonly than it does among the general population. This study, however, showed that a history of previous therapeutic abortions was associated with postnatal depression. As therapeutic abortions are not uncommon among Hong Kong parturients, this finding is a potentially important one. Because the confidence interval of the odds ratio is wide, however, more research is needed to validate this finding.

The existence of risk factors for postnatal depression that may be unique to Chinese women in Hong Kong suggest that quality patient-centred care should include an informed assessment of the socio-cultural milieu to which the new mothers have to adapt. For this assessment to be an objective and scientific process, further research is needed. For example, the interplay between various traditional post-partum customs and postnatal maternal psychological well-being clearly needs to be elucidated.

Specific psychosocial correlates of postnatal depression can be used to identify women who are at a particularly high risk for postnatal depression. Without incurring additional work or the need for psychiatric input, many of the risk factors identified in this study can be ascertained in routine obstetric care. In fact, while information about housing, the number of previous therapeutic abortions, and psychiatric history is obtained routinely in most obstetric units in Hong Kong, this information is not generally used in predicting the particular risk of postnatal depression of the patient concerned. Furthermore, the psychiatric services are rather overburdened in Hong Kong, so most of them would not be ready to support a universal postnatal depression screening programme, which would generate a heavy case-load.[9] Hence, in some settings, universal screening for postnatal depression may not be feasible and indeed may even be unethical.

In light of the findings of this study, we advocate that Hong Kong obstetricians and midwives consider using the reported risk factors to help identify women who are at a particularly high risk of developing postnatal depression. These risk factors could be codified into a check-list, which could be used to identify women who need more clinical attention. These women could then be screened antenatally and postnatally for depression using psychometric rating scales. When universal postnatal depression screening is not possible, obstetricians and midwives could administer the EPDS to women who have one or more of these risk factors at their postnatal follow-up visits.

While selective screening will identify fewer cases than universal screening, it is nonetheless important that obstetricians liaise with nearby psychiatric services so that an adequate backup is available.

The association among postnatal depression, ante-partum depression, and peri-delivery BDI score indicates that some 'postnatal' depression is antenatal in origin. This connection is well recognised[7] and in some developed countries, antenatal screening for 'peri-natal' depression is gaining popularity. In this study, there were few difficulties in training the research nurse to ascertain major depression using the DSM criteria. Hence, it may be possible and indeed worthwhile to provide training for local midwives to increase the detection rate of depression. This strategy would be particularly useful in antenatal clinics and postnatal settings, such as maternal and childcare centres. We also advocate training of midwife counsellors to provide treatment for the less severe cases of postnatal depression.[9]

Not all identified risk factors may be directly applicable in clinical practice. For example, because a neurotic personality carries pejorative meanings, non-judicious use of the construct of neuroticism may lead to misunderstanding and undesirable labelling. Personality assessment also involves tedious evaluation, and its interpretation is usually not straight-forward. And because the majority of parturients in Hong Kong are discharged home before puerperal 'blues' appear, prolonged postnatal 'blues' is not likely to be relevant in the local clinical context.

This study would have benefited from a larger sample population recruited from several hospitals. Because the confidence limits of the odds ratios are unsatisfactorily large for many putative risk factors, the estimated odds ratios should be interpreted with caution. For the same reason, only risk factors with substantial effect size can be identified in this study. A multi-site sampling frame would increase the generalisability of the findings. As some postnatal depressions may develop later in the post-partum period, any future study should have a study period longer than 6 weeks. In addition, face-to-face assessment is preferable: non-attendees were traced by telephone surveys in this study, which may have limited the validity of the data.

In conclusion, this study has identified several psychosocial risk factors that can be used to define a subgroup of Hong Kong women who are at a substantial risk of developing postnatal depression. We propose that in circumstances where universal screening of postnatal depression is not feasible or practicable, clinical resources should be targeted and screening provided for this subgroup of high-risk women. Health care professionals should attempt to use routinely gathered epidemiological and clinical data to identify those at high risk for postnatal depression for targeted screening.

Acknowledgement

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