Psychiatry Research 282 (2019) 112591

Contents lists available at ScienceDirect

Psychiatry Research

journal homepage: www.elsevier.com/locate/psychres

Short communication

Screening for postpartum hypomania among Chinese women after childbirth

Yuan-Yuan Wang[a,#], Xiaohong Li[b,#], Zhizhou Duan[c,d,#], Meredith R. Wilkinson[a], Renjie Yu[e], Shun Li[f], Liming Huang[b], Yan Guo[e], Ling Ma[b], Qin Dong[b], Jue Sun[f], Xiaonan Yang[e], Ye Tao[b], Yongliang Lv[e], Yong Yang[e,**], Runsen Chen[c,g,*]

[a] Division of Psychology, Faculty of Health and Life Sciences, De Montfort University, Leicester, UK
[b] Suzhou Science & Technology Town Hospital, Jiangsu Province, PR China
[c] The National Clinical Research Center for Mental Disorders, Beijing Key Laboratory of Mental Disorders & Advanced Innovation Center for Human Brain Protection, Beijing Anding Hospital, Capital Medical University, No. 5 Ankang Lane, Dewai Avenue, Xicheng District, Beijing 100088, PR China
[d] School of Health Sciences, Wuhan University, Wuhan, Hubei Province, PR China
[e] Institute of Mental Health, Suzhou Guangji Hospital, Affiliated Guangji Hospital of Soochow University, No. 11 Guangqian Road, Suzhou, Jiangsu Province 215137, PR China
[f] Gusu District Wumenqiao Street Canglang Xincheng Community Health Service Center, Jiangsu Province, PR China
[g] Department of Psychiatry, University of Oxford, Oxford, UK

ARTICLE INFO

Keywords:
Hypomanic symptoms
Personality
China
Screening
Postpartum period

ABSTRACT

This study examines the prevalence and risk factors for postpartum hypomania in women after childbirth as well as examining the potential influence of personality traits in relation to experiencing symptoms of postpartum hypomania. A total of 1022 women no later than 1 month post-birth were recruited in Suzhou, China, between March 2017 and December 2018. Hypomanic symptoms were assessed with the Hypomania Checklist-32 (HCL-32), and a total score of 14 or higher was defined as having hypomanic symptoms. We found 43.6% of the women in our sample had hypomanic symptoms. The results of multiple logistic regression showed that rural residence [$p = 0.01$, odds ratio (OR) = 0.7, 95% confidence interval (CI) = 0.5–0.9], education background ($p = 0.005$, OR = 0.6, 95% CI = 0.5–0.9), marriage satisfaction ($p = 0.048$, OR = 0.9, 95% CI = 0.8–1.0), Pittsburgh Sleep Quality Index (PSQI) ($p = 0.001$, OR = 0.9, 95% CI = 0.9–1.0), Eysenck Personality Questionnaire-Extraversion ($p < 0.001$, OR = 1.2, 95% CI = 1.1–1.2), Eysenck Personality Questionnaire-Lie ($p = 0.01$, OR = 0.9, 95% CI = 0.9–1.0), and General Anxiety Disorder-7 ($p = 0.02$, OR = 1.1, 95% CI = 1.0–1.1) were independently associated with exhibiting hypomanic symptoms. The current study provided insights into hypomanic symptoms in Chinese postpartum women. We also found that extraversion and lie personality were significantly associated with an increased risk of hypomanic symptoms in postpartum women. It is urgent to arrange screening for women at risk of developing postpartum hypomania as soon as possible after giving birth and at regular intervals in the first 6 months to prevent the women developing psychological disorders such as depression and bipolar disorder later on.

1. Introduction

Postpartum hypomania can be classified as experiencing high mood, extraversion, and being open to sensation seeking, which are similar to the characteristics of an extraverted personality. Hypomanic symptoms are common in the postpartum period, with 9.6–20.4% women exhibiting hypomanic symptoms after childbirth (Pingo et al., 2017; Sharma et al., 2017). Postpartum hypomania is associated with the later development of postpartum depression (PPD) and could be an early manifestation of bipolar disorder (BD) (Pingo et al., 2017; Sharma et al., 2010). PPD is a substantial public health concern (Jaeschke et al., 2017), with the prevalence of PPD varying from 1.9–82.1% in developed countries and 5.2–74% in developing countries (Norhayati et al., 2015). The large range among countries could be due to the different measurement tools, various settings, and the specific cultural influence. PPD exhibits the same core symptomatology as major depressive disorder (MDD), which leads to numerous adverse consequences such as psychological distress for the mother, ineffective breastfeeding, and poor bonding between mother and infant (Bobo and Yawn, 2014). PPD is a well-characterized condition, but there is insufficient research in the

* Corresponding author.
** Corresponding author.
E-mail addresses: runsen.chen@psych.ox.ac.uk, szgjyy@126.com (Y. Yang), runsen.chen@psych.ox.ac.uk (R. Chen).
# These authors contributed equally to the paper.

https://doi.org/10.1016/j.psychres.2019.112591
Received 26 April 2019; Received in revised form 27 September 2019; Accepted 29 September 2019
Available online 30 September 2019
0165-1781/

areas of postpartum hypomania (Pingo et al., 2017). It is important to note the possible triggering role of childbirth for developing bipolar disorder (BD) (Munk-Olsen et al., 2012). As emphasized by Sharma and Penava (2010), for woman, the highest risk period for onset or exacerbation of BD is the postpartum period (Sharma and Penava, 2010).

Previous research by Sharma et al. (2008) found that approximately half of patients with postpartum exacerbation of BD were misdiagnosed as having MDD. The undiagnosed postpartum BD will lead to delays in initial treatment and can lead to difficulties with treatment later on (Celik et al., 2016). Therefore, it is critical to increase the awareness for screening hypomanic symptoms among women after childbirth. There are few studies that have assessed hypomanic symptoms in postpartum women (Pingo et al., 2017; Sharma et al., 2008). In the Chinese population, PPD has been well researched, and women are routinely screened for PPD (Gao et al., 2010; Xie et al., 2007; Yang et al., 2015). There is no comprehensive large-scale assessment for hypomanic symptoms in women who have just given birth in China. Therefore, we aim to investigate the prevalence of hypomanic symptoms among Chinese women post-birth, as well as to investigate the associated socio-demographic and clinical features (including personality factors, sleep quality, depression, and anxiety symptoms) to gain insight into the potential risk factors for developing postpartum hypomania.

2. Method

2.1. Participants

From March 2017 to December 2018, recruitment took place in three Suzhou community health service centers and the obstetric wards, Jiangsu Province, China. The inclusion criteria: (1) women aged 18 years or over, (2) have given birth within the past 1 month, and (3) agreed to participate and provided written informed consent (Duan et al., 2019). Ethical approval was granted by the Ethics Committee of Suzhou Guangji Hospital, Jiangsu, China. The researcher fully explained the study to participants as well as informing them of their right to withdraw. A total of 1034 participants completed the questionnaires. We excluded participants who had missing values in the responses, which left 1022 participants for the final analysis in the current study.

2.2. Materials

The socio-demographic information of participants was collected, including age, education level, ethnicity, and financial situation.

2.2.1. Edinburgh postnatal depression scale (EPDS)

The risk of postnatal depression was measured by the Edinburgh Postnatal Depression Scale (EPDS). The EPDS is a 10-item self-administrated scale for the identification of postpartum depression (Cox et al., 1987). The EPSD has been validated in China (Wang et al., 2009).

2.2.2. Eysenck personality questionnaire (EPQ)

The Eysenck Personality Questionnaire (EPQ) was administered to examine various personality traits. The EPQ is a dichotomous (yes/no) response format scale with 88 items. The EPQ contains three personality subscales including Extraversion, Neuroticism, and Psychoticism (Eysenck and Eysenck, 1975). The EPS also contains an additional Lie scale, which measures self-deception and the extent of answering in a socially desirable way. The EPQ has been applied in China (Gong, 1984; Zeng et al., 2015).

2.2.3. The hypomanic checklist-32 (HCL-32)

The HCL-32 is a 32-item dichotomous (yes/no) response format self-administrated questionnaire for the identification of hypomanic symptoms, and the sum score is calculated by adding the number of yes responses (Angst et al., 2005). The HCL-32 has been validated in China, with a total score of ≥ 14 indicating clinically significant hypomanic symptoms and potentially meeting the criteria for BD (Yang et al., 2011).

2.2.4. The generalized anxiety disorder-7 (GAD-7)

The GAD-7 is a 7-item 4-point Likert scale for screening the symptoms of anxiety. Higher scores indicate higher levels of anxiety symptoms, and a score greater than 5 indicates a mild-to-severe level of anxiety (Spitzer et al., 2006). We used the validate Chinese version (Tong et al., 2016).

2.2.5. Pittsburgh sleep quality index (PSQI)

The PSQI is a 19-item self-assessed questionnaire with seven dimensions, including subjective sleep quality, sleep duration, sleep latency, sleep disturbances, habitual sleep efficiency, use of sleeping medication, and daytime dysfunction (Buysse et al., 1989). Poor sleep quality is categorized as having a score of 5 or greater. The PSQI has been validated in China (Tsai et al., 2005).

2.3. Statistical analyses

The SPSS Version 20 was used for statistical analysis. The prevalence of clinically significant hypomania was calculated using the established HCL-32 cutoff (≥14). Women with and without hypomanic symptoms were compared in terms of demographic and clinical characteristics using a *t*-test, Mann-Whitney *U*test, or X^2test, accordingly. Using hypomanic symptoms as the dependent variable, variables significantly associated with hypomania were entered into the logistic regression analysis as independent variables. The statistical significance level was set at $p < 0.05$, two-tailed.

3. Results

Table S1 presents the characteristics of participants for the full sample as well as broken down by those with hypomanic symptoms and those without hypomanic symptoms. There were 446 women (43.6%) who had hypomanic symptoms. Women with hypomanic symptoms were more likely to be an urban resident, an only child, have an above college education, have less personal and family income, be living in their own property, have higher body weight, be less satisfied with marriage, and have lower PSQI score, higher EPS score, higher EPS-Extraversion and EPS-Neuroticism score, lower EPS-Lie score, and higher GAD-7 score. In Table 1, the logistic regression analysis showed that residence ($p = 0.01$, OR = 0.7, 95% CI = 0.5–0.9), education ($p = 0.005$, OR = 0.6, 95% CI = 0.5–0.9), marriage satisfaction ($p = 0.048$, OR = 0.9, 95% CI = 0.8–1.0), the PSQI ($p = 0.001$, OR = 0.9, 95% CI = 0.9–1.0), the EPS-Extraversion ($p < 0.001$, OR = 1.2, 95% CI = 1.1–1.2), the EPS-Lie ($p = 0.01$, OR = 0.9, 95% CI = 0.9–1.0), and the GAD-7 ($p = 0.02$, OR = 1.1, 95% CI = 1.0–1.1) were independently associated with exhibiting hypomanic symptoms.

4. Discussion

To the best of our knowledge, this is the first large-scale comprehensive study to assess the presence of hypomanic symptoms and the associated factors in Chinese postpartum women. In the current sample, almost half (43.6%) of women experienced hypomania after childbirth. A previous study in Africa reported that approximately half of physically healthy postpartum women met the criteria for postpartum hypomania (Pingo et al., 2017), whereas a previous Polish study identified that 23.7% of women had hypomanic symptoms (Jaeschke et al., 2017). The discrepancy among different studies could be due to the different scales to measure hypomanic symptoms, different sample sizes, various study settings, or the different characteristics of the participants. The high prevalence of women experiencing postpartum hypomania alerts researchers and health professionals to pay attention to immediate hypomania screening for women after childbirth. It is urgent to increase research attention on the risk of hypomania in the postpartum period (Sharma and Penava, 2010). The logistic analysis showed that women with hypomanic

Table 1
Independent demographic and clinical correlates of hypomania (multiple logistic regression analysis).

	Hypomania		
	p	OR	95% CI
Rural residency	**0.01**	0.7	0.5–0.9
Only child	0.12	0.8	0.6–1.1
Education (below college)	**0.005**	0.6	0.5–0.9
Personal income below 50,000	0.73	0.9	0.7–1.3
Family income below 15, 000	0.06	0.7	0.5–1.0
Living in own property	0.16	1.3	0.9–1.9
Marriage satisfaction	**0.048**	0.9	0.8–1.0
Weight (kg)	0.58	1.0	1.0–1.0
PSQI total	**0.001**	0.9	0.9–1.0
EPDS total(wife)	0.87	1.0	1.0–1.0
EPQ-Extraversion	**<0.001**	1.2	1.1–1.2
EPQ-Neuroticism	0.37	1.0	1.0–1.1
EPQ-Lie	**0.01**	0.9	0.9–1.0
GAD-7 total	**0.02**	1.1	1.0–1.1

Bolded values: $p < 0.05$; GAD-7, General Anxiety Disorder- 7 item.

symptoms were more likely to be dissatisfied with marriage, have a higher EPS-Extraversion score, a lower EPS-Lie score, a lower PSQI score, and a higher GAD-7 score. Marital disharmony was greater when patients expressed manic symptoms, since partners believed that patients should be able to control mood or partners were sexually dissatisfied (Lam et al., 2005). It is difficult to speculate the connection between marital dissatisfaction and hypomanic symptoms. Marital dissatisfaction might work as a risk factor for women's postpartum hypomanic symptoms, in which the marriage dissatisfaction led to the mood state disturbance. It is also could be that couples experienced stress and burden due to women's hypomanic symptoms, which consequently decreased the marital satisfaction. The comorbidities of hypomanic symptoms also should be screened and investigated. We found that compared with women without hypomanic symptoms, women with hypomanic symptoms had significantly better sleep quality as measured by the PSQI.

The current study has several limitations. First, the study was conducted in one Chinese city, which limits the generalizability of the research findings. Second, self-reported questionnaires rather than structured clinical diagnosis were used. Third, women with HCL-32 scores above the cutoff value were not monitored or provided with clinical assessment. Finally, due to the nature of the cross-sectional design, we cannot interpret causalities among the variables.

In conclusion, this large study provided insights about hypomanic symptoms in Chinese postpartum women. Further research could look at developing interventions to provide support to women experiencing hypomania.

Funding

The study was supported Young Medical Talent of Jiangsu Province (QNRC2016229), Suzhou Key Diagnosis and Treatment Program (LCZX201616), Suzhou Key Medical Center for Psychiatric Diseases (SZZX201509), Suzhou Municipal Sci-Tech Bureau Program (SYSD2012125), Health City “531″ action plan of Suzhou Municipal and Suzhou Clinical Medicine Expert Team(SZYJTD201715). The funders had no role in study design, data collection, data analysis, data interpretation and writing of the manuscript.

Declaration of Competing interest

There is no conflict of interest concerning the authors in conducting this study and preparing the manuscript.

Supplementary materials

Supplementary material associated with this article can be found, in the online version, at doi:10.1016/j.psychres.2019.112591.

Reference

Angst, J., Adolfsson, R., Benazzi, F., Gamma, A., Hantouche, E., Meyer, T.D., Skeppar, P., Vieta, E., Scott, J., 2005. The HCL-32: towards a self-assessment tool for hypomanic symptoms in outpatients. J. Affect. Disord. 88 (2), 217–233.
Bobo, W.V., Yawn, B.P., 2014. Concise review for physicians and other clinicians: postpartum depression. Mayo Clin. Proc. 89 (6), 835–844.
Buysse, D.J., Reynolds 3rd, C.F., Monk, T.H., Berman, S.R., Kupfer, D.J., 1989. The Pittsburgh sleep quality index: a new instrument for psychiatric practice and research. Psychiatry Res. 28 (2), 193–213.
Celik, S.B., Bucaktepe, G.E., Uludag, A., Bulut, I.U., Erdem, O., Altinbas, K., 2016. Screening mixed depression and bipolarity in the postpartum period at a primary health care center. Compr. Psychiatry 71, 57–62.
Cox, J.L., Holden, J.M., Sagovsky, R., 1987. Detection of postnatal depression. development of the 10-item Edinburgh postnatal depression scale. Br. J. Psychiatry 150, 782–786.
Duan, Z., Wang, Y., Tao, Y., Bower, J.L., Yu, R., Wang, S., Wu, Z., Lv, Y., Yang, X., Li, X., Huang, L., 2019. Relationship between trait neuroticism and suicidal ideation among postpartum women in China: Testing a mediation model. J. Affect. Disord. 256, 532–535.
Eysenck, H.J., Eysenck, S.B.G., 1975. Manual of the Eysenck Personality Questionnaire (Junior and Adult). Hodder and Stoughton, Stoughton.
Gao, L.L., Chan, S.W.C., You, L.M., Li, X.M., 2010. Experiences of postpartum depression among first-time mothers in mainland China. J. Adv. Nurs. 66 (2), 303–312.
Gong, Y., 1984. Use of the Eysenck personality questionnaire in China. Pers. Individ. Dif. 5, 431–438.
Jaeschke, R.R., Dudek, D., Topor-Madry, R., Drozdowicz, K., Datka, W., Siwek, M., Rybakowski, J., 2017. Postpartum depression: bipolar or unipolar? analysis of 434 Polish postpartum women. Braz. J. Psychiatry 39 (2), 154–159.
Lam, D., Donaldson, C., Brown, Y., Malliaris, Y., 2005. Burden and marital and sexual satisfaction in the partners of bipolar patients. Bipolar Disord. 7 (5), 431–440.
Munk-Olsen, T., Laursen, T.M., Meltzer-Brody, S., Mortensen, P.B., Jones, I., 2012. Psychiatric disorders with postpartum onset: possible early manifestations of bipolar affective disorders. Arch. Gen. Psychiatry 69 (4), 428–434.
Norhayati, M.N., Hazlina, N.H., Asrenee, A.R., Emilin, W.M., 2015. Magnitude and risk factors for postpartum symptoms: a literature review. J. Affect. Disord. 175, 34–52.
Pingo, J., van den Heuvel, L.L., Vythylingum, B., Seedat, S., 2017. Probable postpartum hypomania and depression in a South African cohort. Arch. Womens Ment. Health 20 (3), 427–437.
Sharma, V., Burt, V.K., Ritchie, H.L., 2010. Assessment and treatment of bipolar II postpartum depression: a review. J. Affect. Disord. 125 (1–3), 18–26.
Sharma, V., Doobay, M., Baczynski, C., 2017. Bipolar postpartum depression: an update and recommendations. J. Affect. Disord. 219, 105–111.
Sharma, V., Khan, M., Corpse, C., Sharma, P., 2008. Missed bipolarity and psychiatric comorbidity in women with postpartum depression. Bipolar Disord. 10 (6), 742–747.
Sharma, V., Penava, D., 2010. Screening for bipolar disorder during pregnancy and the postpartum period. J. Obstet. Gynaecol. Can. 32 (3), 278–281.
Spitzer, R.L., Kroenke, K., Williams, J.B., Lowe, B., 2006. A brief measure for assessing generalized anxiety disorder: the GAD-7. Arch. Intern. Med. 166 (10), 1092–1097.
Tong, X., An, D., McGonigal, A., Park, S.-P., Zhou, D., 2016. Validation of the generalized anxiety disorder-7 (GAD-7) among Chinese people with epilepsy. Epilepsy Res. 120, 31–36.
Tsai, P.S., Wang, S.Y., Wang, M.Y., Su, C.T., Yang, T.T., Huang, C.J., Fang, S.C., 2005. Psychometric evaluation of the Chinese version of the Pittsburgh Sleep Quality Index (CPSQI) in primary insomnia and control subjects. Qual Life Res 14 (8), 1943–1952.
Wang, Y., Guo, X., Lau, Y., Chan, K.S., Yin, L., Chen, J., 2009. Psychometric evaluation of the Mainland Chinese version of the Edinburgh postnatal depression scale. Int. J. Nurs. Stud. 46 (6), 813–823.
Xie, R.H., He, G.P., Liu, A.Z., Bradwejn, J., Walker, M., Wen, S.W., 2007. Fetal gender and postpartum depression in a cohort of Chinese women. Soc. Sci. Med. 65 (4), 680–684.
Yang, F., Gardner Jr., C.O., Bigdeli, T., Gao, J., Zhang, Z., Tao, M., Liu, Y., Li, Y., Wang, G., Shi, J., Gao, C., Zhang, K., Li, K., Wang, X., Liu, L., Sun, J., Du, B., Shi, S., Zhang, J., Wu, W., Wang, X., Shen, J., Liu, T., Gu, D., Liang, W., Deng, H., Pan, J., Yang, L., Jian, H., Jiang, G., Meng, H., Miao, G., Li, Y., Hu, C., Huang, G., Zhang, Y., Chen, Y., Ha, B., Gao, S., Fang, X., Mei, Q., Hong, X., Yang, D., Liu, T., Fengyu, Y., Zhong, H., Sang, H., Chen, G., Cai, M., Song, Y., Dong, J., Shen, Z., Zhang, W., Wang, X., Pan, R., Liu, X., Li, Y., Liu, Z., Zhang, Q., Li, G., Flint, J., Kendler, K.S., 2015. Clinical features of and risk factors for major depression with history of postpartum episodes in Han Chinese women: a retrospective study. J. Affect. Disord. 183, 339–346.
Yang, H.C., Yuan, C.M., Liu, T.B., Li, L.J., Peng, H.J., Liao, C.P., Rong, H., Fang, Y.R., Angst, J., 2011. Validity of the 32-item hypomania checklist (HCL-32) in a clinical sample with mood disorders in China. BMC Psychiatry 11 (1), 84.
Zeng, Y., Cui, Y., Li, J., 2015. Prevalence and predictors of antenatal depressive symptoms among Chinese women in their third trimester: a cross-sectional survey. BMC Psychiatry 15 (1), 66.