

Text: words

Abstract: 231 words

Tables: 4

**A regression analysis of mental health outcomes among Chinese  
prenatal and postpartum women after implementation of the two-child  
policy**

Running head: the second child and mental health outcomes

## **Abstract**

**Background** Poor mental health status among both pregnant and postpartum women is commonly reported worldwide. The association between mental health outcomes and giving birth to the second child since the implementation of China's universal two-child policy has not been identified.

**Methods** A large-scale based mental health survey was conducted between March 2017 and December 2018 in Suzhou, China. The survey evaluated the symptoms of anxiety, hypomania, depression and poor sleep quality among both pregnant and postpartum women.

**Results** A total of 3,113 questionnaires were collected, the prevalence of anxiety, hypomania, depression, and poor sleep quality in our sample was 3.2% (95%CI: 2.6%-3.9%), 51.7% (95%CI: 49.9%-53.4%), 12.4% (95%CI: 11.3%-13.6%) and 37.8% (95%CI: 36.0%-39.5%), respectively. Logistic regression showed that giving birth to the second child was positively associated with women's age, and was negatively correlated with higher educational level and living in rented housing. Women who had a second pregnancy or a second child were more likely to have anxiety symptoms overall (OR=1.75, 95%CI: 1.11-2.75). Among prenatal women anxiety was positively correlated (OR=2.11, 95%CI: 1.16-3.83), while among postpartum women anxiety was inversely correlated with depressive symptoms (OR=0.63, 95%CI: 0.41-0.99).

**Conclusions** Women giving birth for the second were more likely to experience anxiety disorder symptoms as a whole. Prenatal women were less likely to have depressive symptoms than postpartum women. However, due to the high prevalence, reasonable measures are necessary to improve maternal health.

**Keywords** second child, China's universal two-child policy, pregnant and postpartum women, anxiety, hypomanic, depressive symptoms, sleep quality

## 1. INTRODUCTION

Women usually possess positive expectations during the prenatal and postpartum period. As a consequence of raising stress and a breakdown of close ties within their social support network they are increasingly vulnerable to poor mental health (Biaggi *et al.*, 2016, Smith *et al.*, 2011) not only in China but worldwide (Rahman *et al.*, 2013). However, the prevalence rate of poor mental health varied greatly among studies. A meta-analysis showed that 31.4% of perinatal women from low- and middle-income countries were living with a depressive disorder and 17% were living with major depressive disorder (Fellmeth *et al.*, 2017). The pooled prevalence of having at least one type of anxiety disorder during pregnancy and the postpartum period was 20.7% (Fawcett *et al.*, 2019), and for poor sleep quality the figure was 45.7% among pregnant women (Sedov *et al.*, 2018). Studies further report discrepancies in mental health between the prenatal and postpartum periods. Such as pregnant women present as more susceptible to anxiety disorders than postpartum women (Fawcett *et al.*, 2019), and the risk of depressive symptoms are raised in the postpartum period when compared to the prenatal (Top *et al.*, 2016).

Poor mental health during prenatal and postpartum periods can negatively affect both mothers and their children. For example, a mothers' negative beliefs about life (Hoffman *et al.*, 2017) and the quality of life (Emmanuel and Sun, 2014) can reduce mother-child interactions (McLearn *et al.*, 2006). This can further lead to poor cognitive growth and development among the children, malnutrition, and incomplete immunization in infants, etc., (Rahman *et al.*, 2013, Rahman *et al.*, 2004). The risk factors for mental health problems among prenatal and postpartum women include: socioeconomic disadvantage, lack of empathy and support from partner, having pregnancy-related disability or illness, etc. (Fisher *et al.*, 2012, Rahman *et al.*, 2013).

All Chinese couples are allowed to have their second child since the first day of 2016, in which the "The Chinese one-child policy" ended (Feng *et al.*, 2016). Since the introduction of the unprecedented one child policy in 1979 to control

the overgrowing population (Zhang, 2017), the lives of 20% of the world's population have been profoundly affected by the restriction to having one child for 35 years (Hesketh *et al.*, 2015). China's universal two-child policy is inevitably speculative, it allows Chinese couples the freedom to make an informed family planning regarding their preferred number of children (Zeng and Hesketh, 2016). A survey reported that more than half, around 69.3%, of Chinese women expressed an intention to have a second child after the implementation of the new policy (Lau *et al.*, 2018). The preference was affected by various variables, such as the physical aspects of a woman's fertility (e.g., the couple's age), economic factors (e.g., high costs of rearing children), the impacts on a mother's career, and whether the parents' have a well-formed lifestyle (Xiang and Yang, 2015, Zeng and Hesketh, 2016). However, there is inconsistency in the literature, with another study finding income to be inversely correlated with the second pregnancy (Xu *et al.*, 2017), meaning economic factors did not have as much of an impact on the decision to have a second child.

This is the first study to look at the association between women's mental health and pregnancy status during the second pregnancy after implementing the Chinese two-child policy. The present study aimed to further understand the sociodemographic factors associated with a second birth by examining the prevalence of four mental health outcomes: anxiety, hypomania, depression, and poor sleep quality. These sociodemographic factors were then correlated with the clinical factors among prenatal and postpartum women in or after their second pregnancy since the launch of China's two-child policy. Based on findings from previous studies, it was hypothesized that economic factors and wife's age may affect the decision to have a second child among the Chinese family, and it was hypothesized that giving birth to a second child would have a greater impact on the woman's mental health.

## **2. METHODS**

### **2.1 Study design and participants**

The prenatal and postpartum women were consecutively recruited from Suzhou, China between March 2017 and December 2018 in three local community service centers (Shuangqiao, Canglang and Youlian) and Town Hospital of Suzhou Science & Technology. The inclusion criteria were: (1) women were 18 years old or above; (2) women were pregnant during the survey administration or that they had given birth within the past 12 months. Participation in the survey was completely voluntary and all participants provided informed consent in writing. The participants were also reassured of their anonymity and confidentiality. The validated scales were distributed to participants by a trained researchers and were collected by the researcher after completion. The study was approved by the Research Ethic Committee of Suzhou Hospital, China.

## **2.2 Assessment tools**

Self-designed questionnaire were used in this study this included six parts.

### *2.2.1 Socio-demographic characteristics*

This included information on age (years), ethnic group (e.g. Han/others), educational level (e.g. high school, above college), annual family income (e.g. <150 000 CNY or ≥150 000 CNY), residence (e.g. urban, rural areas), housing status (e.g. self-owned housing, rented housing), whether the mother was only child (yes/no question) and physical disorder (yes/no question) were collected.

### *2.2.2 Pregnancy status*

Women's pregnancy status was assessed as an outcome based on whether it was the first or second pregnancy/child (Xu *et al.*, 2017).

### *2.2.3 The Generalized Anxiety Disorder*

The Chinese version of Generalized Anxiety Disorder-7 (GAD-7) (the Cronbach alpha coefficient: 0.89) (Tong *et al.*, 2016) was used to assess anxiety symptoms. It consists of seven items and each one is scored from 0 to 3. The total score ranges from 0 to 21 with the higher the total score the more serious the level of anxiety symptoms (Spitzer *et al.*, 2006). A score of 10 or greater is an indicator

of high anxiety symptoms (Xiang and Yang, 2015).

#### 2.2.4 *Hypomanic symptoms*

The 32 item Hypomanic Checklist-32 (HCL-32) (Angst *et al.*, 2005), which has been verified in China (the Cronbach alpha coefficient: 0.89), was used to measure hypomanic symptoms (Yang *et al.*, 2011). The total score ranges from 0 to 32, with a higher score indicating a greater level of hypomanic symptoms. The threshold value used in this study was 13 (Yang *et al.*, 2011).

#### 2.2.5 *Depressive symptoms*

The Edinburgh Postnatal Depression Scale (EPDS) is a 10-item and 4-point Likert scale (Cox *et al.*, 1987). The Chinese version (with satisfactory psychometric properties; the Cronbach alpha coefficient: 0.79) was used to assess the women's potential depressive symptoms in the prenatal and postnatal periods (Wang *et al.*, 2009). Each item was scored from 0 to 3, and the total scale was 0-30. Higher scores represent a higher level of depressive symptoms and the cut-off value of 13 was selected to identify depressive symptoms (Wang *et al.*, 2017).

#### 2.2.6 *Sleep Quality*

The Chinese version of the 19-item Pittsburgh Sleep Quality Index (CPSQI) questionnaire, which has been validated with good psychometric properties (Tsai *et al.*, 2005), was used to assess the seven dimensions of sleep quality (Buysse *et al.*, 1989). The total score ranging from 0 to 21 with a higher score representing poorer sleep quality (Buysse *et al.*, 1989). In our study women with a CPSQI score greater than 6 indicated poor sleep quality (Tsai *et al.*, 2005).

### **2.3 Statistical analyses**

Chi-square ( $\chi^2$ ) tests and t test were appropriately used to compare the demographic and clinical characteristics between women who had given birth for a first or second time. First a multivariate logistic regression was conducted by setting pregnancy status as the dependent variable and all the eight

social-demographic and clinical characteristics (age, ethnic group, educational level, annual family income, residence place, housing status, whether the mother was only child, having physical disorder) as the independent variables to explore the associated factors to giving birth a second time.

A second multivariate logistic regression was then performed on the whole sample by setting the four interested mental health outcomes as dependent variables separately, against the independent variables of pregnancy status, postpartum and postpartum status, and the other eight variables sociodemographic variables to examine the correlated factors to mental health outcomes. Finally, multivariate logistic analyses were also conducted in the prenatal and postpartum phase separately. All data was analysed using SPSS 20.0 and the level of statistical significance was set at  $p < 0.05$  (two-tailed).

### **3. RESULTS**

#### **3.1 Basic characteristics**

A total of 3,182 questionnaires were distributed and 3,113 of them were returned providing a response rate of 97.8%. There were 2,086 (67.0%) prenatal women and 1,027 (33.0%) postpartum women who participated in the study. The proportion of women in their second pregnancy in our sample was 52.4%. The basic demographic and clinical characteristics of the participants are shown in Table 1. The prevalence of anxiety, hypomania, depressive symptoms, and poor sleep quality were 3.2% (99/3,110; 95%CI: 2.6%-3.9%), 51.7% (1,606/3,108; 95%CI: 49.9%-53.4%), 12.4% (387/3,113; 95%CI: 11.3%-13.6%) and 37.8% (1,138/3,013; 95%CI: 36.0%-39.5%), respectively.

#### **3.2 Predictors of giving birth to second child**

The multivariate logistic regression showed that women's age (OR=1.25, 95%CI: 1.22-1.29) was positively associated with the second pregnancy. While women with an educational level at college or above (OR=0.39, 95%CI: 0.33-0.46),

living in rented housing (OR=0.78, 95%CI: 0.64-0.96) and other (OR=0.56, 95%CI: 0.39-0.81) were negatively correlated with the second pregnancy (Table 2).

### **3.3 Multivariate logistic regression for mental health outcomes**

When adjusted for the interested socio-demographic and clinical characteristics, it showed that women with the second pregnancy or child were more likely to have anxiety symptoms (OR=1.75, 95%CI: 1.11-2.75) than those giving birth for the first time. Postpartum women were less likely to present with hypomanic symptoms (OR=0.63, 95%CI: 0.54-0.74) than prenatal women, and were more prone to have poor sleep quality (OR=1.43, 95%CI: 1.22-1.68) (Table 3).

Table 4 shows the results of the logistic regressions of both prenatal and postpartum women separately. After adjusting for the interested social-demographic and clinical variables, a second birth was positively associated with anxiety symptoms among prenatal women (OR=2.11, 95%CI: 1.16-3.83), while it was inversely correlated with depressive symptoms among postpartum women (OR=0.63, 95%CI: 0.41-0.99).

## **4. DISCUSSION**

This study investigates the related factors between prenatal and postpartum women giving birth for a second time and the association of poor mental health outcomes in relation to pregnancy status (the first/second pregnancy). After the implementation of "Chinese selective two-child policy" 52.4% of our participants made the decision to give birth to a second child, which was inconsistent with the figure of 25.2% reported by another Chinese study conducted (Xu *et al.*, 2017). The discrepancy may partly due to the content of the "selective two-child policy", which only allows couples to have their second child if either marital partner was an only-child (Zeng and Hesketh, 2016), while the universal two-child policy allows all Chinese couples to give birth to their second child (Feng *et al.*, 2016).

New mother's age was positively associated with giving birth for the second

time. This was consistent with a previous study, which showed that the older a Chinese woman's age the more aware she was that her fertility diminished, decreasing the intention to give birth to a second baby (Lau *et al.*, 2018). Without considering the physiological factors of female fertility, there is a debate in the literature around the willingness versus the practical behaviour in regards to age's effect on the decision to give birth to a second child. One such study that included 17,093 Chinese women, who already had one child, identified a negative association between mothers' education level, fertility, and intentions to have a second child (Zheng *et al.*, 2016). In contrast, in the present study the decision to have a second child occurred despite the woman's age. The difference being this study was determined by practice, rather than only intentions, which may explain the discrepancy. A correlation between family income and fertility preference was not identified in our study. Women living in rented housing were less likely to have a second birth. Financial ability is one of the non-negligible factors of giving birth. Housing inequality is currently a main source of wealth inequality in Chinese urban areas (Zhu, 2018) that could affect couples decisions on whether to have a second child.

The prevalence of anxiety, hypomania, depressive symptoms, and poor sleep quality in our sample was: 3.2% (95%CI: 2.6%-3.9%), 51.7% (95%CI: 49.9%-53.4%), 12.4% (95%CI: 11.3%-13.6%) and 37.8% (95%CI: 36.0%-39.5%), respectively. A meta-analysis showed that 20.7% (95%CI: 16.7%-25.4%) of prenatal and postpartum women had at least one type of anxiety disorder (Fawcett *et al.*, 2019), this was much greater than our result of 3.2%. The existing discrepancies could be attributed to various assessment tools and heterogeneities of sample selection, etc. Poor mental health status is very common in Chinese prenatal and postpartum women, which could also explain the findings. Among the whole sample, women with the second pregnancy or child were 1.75 times and 2.11 times more likely to have anxiety disorder than those giving the first birth, respectively. Little is known about the incidence of anxiety symptoms among women who give birth to a second child

after the implementation of the new family planning policy. Fetal health (Fetene *et al.*, 2017, Harpel, 2008) and unknown changes to daily life may be the origin of new mother's anxiety. For example, prior to the birth of their second child, many mothers worry about the changes of the psychological health of their first child. Evidentiary data (3.1%) shows a weak tendency for pregnant women to be more susceptible to anxiety disorders than postpartum women (Fawcett *et al.*, 2019), however further studies are necessary.

The study had a higher prevalence of hypomania, 51.7%, in comparison to previous research. Our result was inconsistent with one longitudinal study showing that more minor hypomanic states increased from pregnancy to the postpartum period (Heron *et al.*, 2009). It is also not in agreement with the indication that 39.6% of pregnant and post-partum Italian women, who tested positively with HCL-32, had hypomanic symptoms. This higher prevalence could be partly interpreted as a result of mood expansion (D'Oria *et al.*, 2012). Compared with prenatal women, postpartum women were less likely to have hypomanic symptoms, but more likely to have poor sleep quality. However, a relationship was not found in this study between hypomanic symptoms, poor sleep quality, and giving birth for the second time. Respective studies are needed to prove the causal relationship between statuses of prenatal and postpartum, hypomanic symptoms, and poor sleep quality. There is a lack of research to explain these results, however, this is a point of replication for future research to explore.

Our figure of depression, 12.4%, was not consistent with the prevalence of depressive symptoms for perinatal women in low- and middle-income countries (31.4%, 95%CI: 23.2%-40.2%). Our result showed that giving birth to the second child was negatively associated with depressive symptoms among postpartum women. This is in agreement with a previous study in Poland that showed no correlation between number of pregnancies and postpartum depression (Malus *et al.*, 2016). One speculation is that Chinese women who had the second child under the new policy may have better social support (Reid and

Taylor, 2015) and have useful experiences when compared to those women who have given birth previously. Giving birth previously could then be considered a protective factors for women's postpartum depression.

Poor sleep quality during pregnancy was defined as PSQI $\geq$ 5 (45.7%, 95% CI: 36.5%-55.2%) (Fellmeth *et al.*, 2017). A previous study revealed that sleep complaints were relevant to concurrent mood disorders during the perinatal period (Bei *et al.*, 2015), which was not identified in our participants. Poor sleep quality is common in the postpartum period, which is likely to have a positive relationship, resulting in a greater total mean activity (Wu *et al.*, 2019). It is likely poor sleep could be the daily states of most new mothers since they need to care for the new infant. It is unlikely that any further investigation of sleep quality will reveal good sleep, suggesting poor sleep should be explored only in relation to other variables as a causal factor.

This is the first study to investigate the associations between four types of poor mental health and giving birth a second time among Chinese prenatal and postpartum women after the implementation of the universal two-child policy. Some limitations should be noted, firstly, potential new mothers were recruited from a single city rather than multiple-cities, which could limit the generalization of the results to population from other parts of China. Secondly, some potential factors, such as the sex of first child, chronic diseases conditions and the history of mental illness, etc., could be influencing women during or after giving birth to a second child. In addition, the causality between interested clinical symptoms and giving birth to a second child cannot be verified due to the cross-sectional design of the study. Lastly, a major limitation is that the two child policy has not been in effect long, this limits the comparison within generations and any longitudinal comparison across future generations.

## **5. CONCLUSION**

In conclusion, poor mental health outcomes were still very common for women at the prenatal and postpartum status after the implementation of

China's universal two-child policy. Compared to women with the first pregnancy or child, those having a second birth were more likely to experience anxiety symptoms in the whole sample and among prenatal women, and less likely to have depressive symptoms among postpartum women. Since China is now making efforts to adjust and optimize the population composition, universal screening and reasonable measures should be conducted and taken by the government and policymakers to prevent Chinese mothers from the possibilities of experiencing poor mental health caused by giving birth a second time. Currently, intervention strategies do not exist as a consequences of limited resources and unsound guidelines. Effective measures, such as mental health interventions delivered by supervised non-specialists, have been identified as more beneficial than routine care (Rahman *et al.*, 2013). These interventions should be further explored and implemented in a cost effective manner to improve new mothers' mental health status to benefit both mother and their children.

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**Competing interests**

None declared.

**Patient consent**

Not required.

**Ethics approval**

The study was approved by the Research Ethic Committee of Suzhou Hospital, China.

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Table 1 Demographic and clinical characteristics of the participants (N=3,113).

Variables	Total	Women with the first children	Women with the second children	t / $\chi^2$ (P)
	<b>M<math>\pm</math>SD</b>	<b>M<math>\pm</math>SD</b>	<b>M<math>\pm</math>SD</b>	
<b>Age (years)</b>	29.08 $\pm$ 3.42	28.02 $\pm$ 3.06	30.04 $\pm$ 3.45	-17.24 (< <b>0.001</b> )
	<b>n (%)</b>	<b>n (%)</b>	<b>n (%)</b>	
<b>Ethnic group</b>				0.83 (0.36)
Han	3,078 (98.9)	1,469 (99.1)	1,609 (98.7)	
Others	35 (1.1)	14 (0.9)	21 (1.3)	
<b>Educational level</b>				96.10 (< <b>0.001</b> )
High school or below	1,890 (60.7)	767 (51.7)	1,123 (68.9)	
College or above	1,221 (39.2)	715 (48.2)	506 (31.0)	
Missing	2 (0.1)	1 (0.1)	1 (0.1)	
<b>Annul family income (CNY)</b>				1.97 (0.16)
<150,000	1,322 (42.5)	610 (41.2)	712 (43.7)	
$\geq$ 150,000	1,789 (57.4)	871 (58.7)	918 (56.3)	
Missing	2 (0.1)	2 (0.1)	-	
<b>Residence place</b>				0.24 (0.62)
Urban	1,541 (49.5)	741 (50.0)	800 (49.1)	
Rural	1,572 (50.5)	742 (50.0)	830 (50.9)	
<b>Housing status</b>				13.01 ( <b>0.001</b> )
Self-owned housing	2,385 (76.6)	1,096 (73.9)	1,289 (79.1)	
Rented housing	582 (18.7)	303 (20.4)	279 (17.1)	
Other	146 (4.7)	84 (5.7)	62 (3.8)	
<b>Whether the mother was only child</b>				18.49 (< <b>0.001</b> )
No	1,849 (59.4)	822 (55.4)	1,027 (63.0)	
Yes	1,264 (40.6)	661 (44.6)	603 (37.0)	
<b>Having physical disorder</b>				0.95 (0.33)
No	2,976 (95.6)	1,424 (96.2)	1,552 (95.2)	
Yes	131 (4.2)	57 (3.7)	74 (4.6)	
Missing	6 (0.2)	2 (0.1)	4 (0.2)	
<b>Anxiety symptoms</b>				7.23( <b>0.01</b> )
No (Score<10)	3,011 (96.7%)	1,447 (97.6)	1,564 (96.0)	
Yes (Score $\geq$ 10)	99 (3.2%)	34 (2.3)	65 (3.9)	
Missing	3 (0.1)	2 (0.1)	1 (0.1)	
<b>Hypomanic symptoms</b>				9.87 ( <b>0.002</b> )
No (Score<13)	1,502 (48.2)	672 (45.3)	830 (50.9)	
Yes (Score $\geq$ 13)	1,606 (51.6)	809 (54.6)	797 (48.9)	
Missing	5 (0.2)	2 (0.1)	3 (0.2)	
<b>Depressive symptoms</b>				0.002 (0.97)
No (Score<13)	2,726 (87.6)	1,299 (87.6)	1,427 (87.5)	
Yes (Score $\geq$ 13)	387 (12.4)	184 (12.4)	203 (12.5)	
<b>Sleep quality</b>				1.96 (0.16)
Normal (Score<6)	1,875 (60.2)	875 (59.0)	1,000 (61.3)	
Poor (Score $\geq$ 6)	1,138 (36.6)	561 (37.8)	577 (35.4)	
Missing	100 (3.2)	47 (3.2)	53 (3.3)	
<b>Total</b>	3,113 (100%)	1,483 (47.6%)	1,630 (52.4)	

CNY: Chinese Yuan.

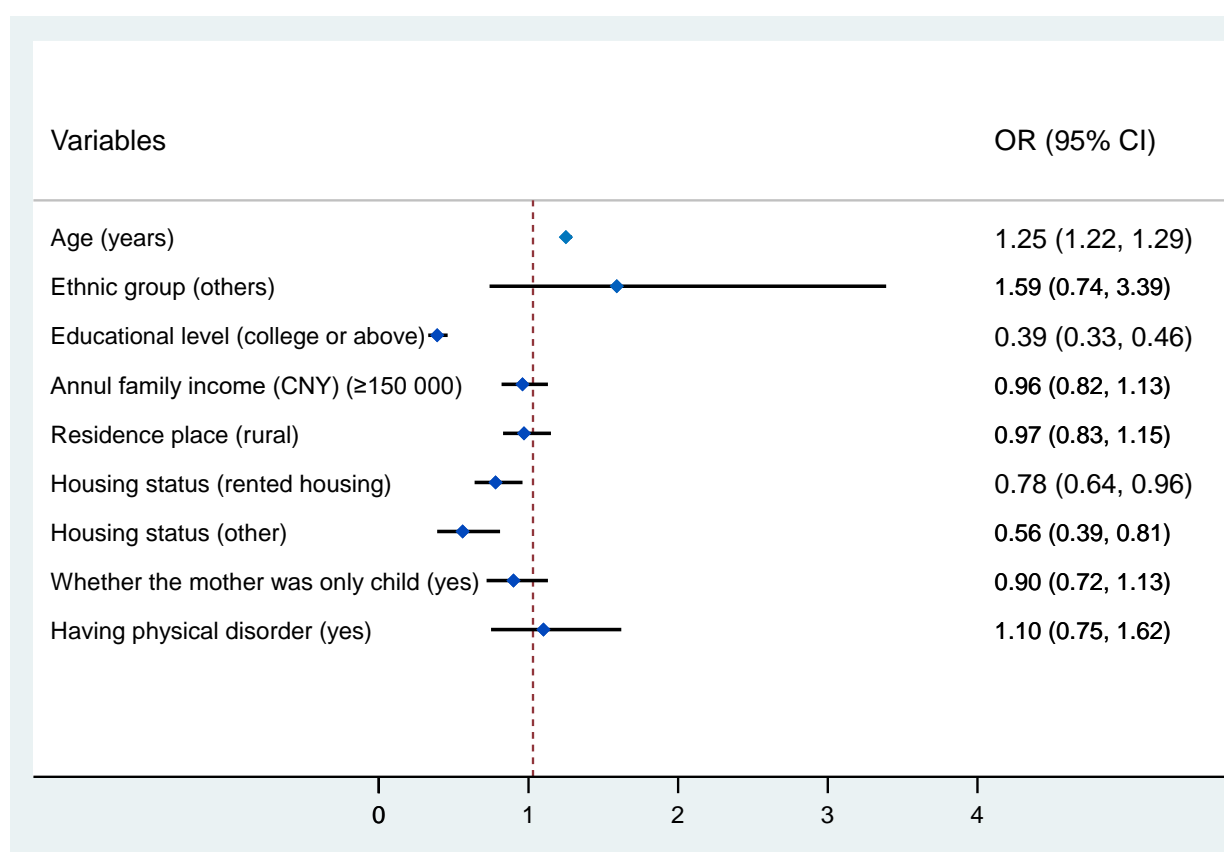
Table 2 The association between demographic characteristics and giving the second birth (N=3 103)

Variables	Coefficient	OR <sup>a</sup> (95% CI)
Age (years)	0.22	<b>1.25 (1.22, 1.29)</b>
Ethnic group (others)	0.46	1.59 (0.74, 3.39)
Educational level (college or above)	-0.95	<b>0.39 (0.33,0.46)</b>
Annul family income (CNY) ( $\geq 150,000$ )	-0.04	0.96 (0.82,1.13)
Residence place (rural)	-0.03	0.97 (0.83,1.15)
Housing status (rented housing)	-0.25	<b>0.78 (0.64, 0.96)</b>
Housing status (other)	-0.57	<b>0.56 (0.39, 0.81)</b>
Whether the mother was only child (yes)	-0.11	0.90 (0.72,1.13)
Having physical disorder (yes)	0.10	1.10 (0.75, 1.62)

CNY: Chinese Yuan.

<sup>a</sup>: Giving the first birth as the reference group.

# OR figure



CNY: Chinese Yuan.

OR: Giving the first birth as the reference group.

Table 3 The associations between mental health outcomes and pregnancy status (the first/second pregnancy) and postpartum and postpartum status in the whole sample.

Clinical symptoms	Postpartum women <sup>a</sup>			Second pregnancy or child <sup>b</sup>		
	n <sup>c</sup> (%)	Coefficient	OR <sup>e</sup> (95% CI)	n <sup>d</sup> (%)	Coefficient	OR <sup>f</sup> (95% CI)
Anxiety symptoms	41 (4.0)	0.37	1.45 (0.94, 2.22)	65 (4.0)	0.56	<b>1.75 (1.11, 2.75)</b>
Hypomaniac symptoms	480 (47.0)	-0.46	<b>0.63 (0.54, 0.74)</b>	797 (49.0)	-0.06	0.94 (0.81, 1.10)
Depressive symptoms	115 (11.2)	-0.05	0.96 (0.75, 1.22)	203 (12.5)	-0.01	0.99 (0.78, 1.25)
Poor sleep quality	425 (43.1)	0.36	<b>1.43 (1.22, 1.68)</b>	577 (36.6)	-0.09	0.92 (0.78, 1.08)

<sup>a</sup>: Prenatal women as the reference group.

<sup>b</sup>: Giving the first birth as the reference group.

<sup>c</sup>: Number of postpartum women

<sup>d</sup>: Number of women giving the second birth.

<sup>e</sup>OR adjusted for age, ethnic group, educational level, annul family income, residence place, housing status, whether the mother was only child, having physical disorder and postpartum and postpartum status.

<sup>f</sup>OR adjusted for age, ethnic group, educational level, annul family income, residence place, housing status, whether the mother was only child, having physical disorder and pregnancy status (the first/second pregnancy).

Table 4 The associations between mental health outcomes and pregnancy status (the first/second pregnancy) in prenatal and postpartum women separately.

Clinical symptoms	Prenatal women			Postpartum women		
	n <sup>a</sup> (%)	Coefficient	OR <sup>b</sup> (95% CI)	n <sup>a</sup> (%)	Coefficient	OR <sup>b</sup> (95% CI)
Anxiety symptoms	40 (3.7)	0.74	<b>2.11 (1.16, 3.83)</b>	25 (4.7)	0.19	1.21 (0.59, 2.48)
Hypomanic symptoms	555 (50.8)	-0.01	0.98 (0.81,1.19)	242 (45.2)	-0.10	0.91 (0.68, 1.20)
Depressive symptoms	153 (14.0)	0.15	1.16 (0.88, 1.53)	50 (9.3)	-0.46	<b>0.63 (0.41, 0.99)</b>
Poor sleep quality	369 (34.8)	-0.02	0.98 (0.81, 1.19)	208 (40.2)	-0.20	0.82 (0.62, 1.10)

<sup>a</sup>: Number of women giving the second birth.

<sup>b</sup>: OR for the second pregnancy, adjusted for age, ethnic group, educational level, annul family income, residence place, housing status, whether the mother was only child, having physical disorder.