

# High risk of postnatal depression and relevant factors of Chinese mothers in Japan

Jian li, Shizuko Omote, Rie Okamoto, Akie Nakada<sup>1)</sup>, Yukie Mizumoto<sup>2)</sup>

## Abstract

**Background and Purpose:** Postnatal depression (PND) is prevalent in the general population in Japan. However, there are no data on the actual condition and related factors for PND in Chinese women in Japan, which is the largest group of foreign women living in Japan. This study was performed to clarify the tendency of PND and its related factors in Chinese mothers living in Japan. **Methods:** We carried out a mailed self-administered questionnaire survey among Chinese mothers living in Japan who had given birth to a baby in the previous 3-4 months. Survey items included the status of mothers and children, family support, and the Edinburgh Postpartum Depression Scale (EPDS). Logistic regression analysis was utilized for statistical analysis. **Results:** The proportion of high-PND-risk respondents among the 80 participants was 36.3%. The results indicated that the factors affecting PND risk are parenting loneliness (Odds ratio: 7.416,  $p=0.003$ ) and support from the husband (Odds ratio: 0.357,  $p=0.047$ ). **Conclusion:** The loneliness of child-rearing and the support status of the husband in the 3rd-4th month after childbirth are DNP risk factors for Chinese mothers in Japan. The presence of support from the husband will not only be helpful in housework and childcare, but will also support the mother's spirit and alleviate the loneliness of child-rearing. In addition, as the PND risk of Chinese mothers is high in the 3rd-4th month after childbirth, it is necessary to strengthen mental support during this period.

## KEY WORDS

postnatal depression; immigrant mothers; child-rearing loneliness;  
Edinburgh postnatal depression scale migrant mental health

## Introduction

Postnatal depression (PND) is one complication of childbirth<sup>1)</sup>. In addition to causing psychological distress in women, PND is harmful to the formation of affection for the newborn, the mental state of husbands and other family members, and the life quality of the entire family<sup>2)</sup>. Moreover, parenting in a mentally unstable state may influence children's behavioral development and causes attachment formation disorder after childhood. In the case of serious postnatal depressive symptoms, there is a possibility that mothers may have self-injurious behavior, commit suicide, abuse

children and even threaten children's life<sup>3)</sup>. Although most of the studies on PND have been conducted in developed countries, there are only a few investigations regarding the PND of immigrant women. Compared with approximately 10%-15% for aboriginal women, the PND for immigrant women is as high as 42%<sup>4)</sup>. It has been suggested that immigrant women more easily experience PND than those who give birth in their own country<sup>5)</sup>.

In Japan, the "Healthy Parents and Children 21" promotion began in 2001, with the aims of prevention, early detection and treatment of PND. In addition,

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Faculty of Health Science, Institute of Medical, Pharmaceutical and Health Sciences Kanazawa University

1) City of Komatsu Health Division

2) Trantechs clinic

maternal and children support of foreign residents has been addressed as one of the important tasks<sup>6)</sup>. In 2007, as a project of the Ministry of Health, Labor and Welfare, "All Infant Family Visiting" started. In this project, municipalities work on grasping the mental condition of mothers using the Japanese Edinburgh Postnatal Depression Scale (EPDS) as an indicator of the mental state. However, foreign mothers are regarded as in need of direct support because they live in an unfamiliar environment. Furthermore, as foreign mothers are excluded from the survey on PND<sup>7)</sup>, the proportion of PND tendency of foreign women in Japan has not been clarified. The related factors of PND of immigrant mothers have also not been investigated.

According to the report of the Japanese Ministry of Justice Immigration Bureau, the number of registered foreigners in Japan exceeded 2.56 million by December 2017, in which the Chinese occupy 31% of the total population<sup>8)</sup>. According to the statistics in 2009<sup>9)</sup>, the childbirth number of Chinese mothers, who have Chinese nationality (including those who have acquired permanent residency), has become the largest among the foreign residents in Japan. Kawasaki et al. described the region isolation of Chinese mothers<sup>10)</sup>. Li et al. reported the emotional problems during pregnancy of Chinese mothers in Japan<sup>11)</sup>. Ohnishi indicated that there are many female mental problems related to international marriage, among which Chinese women account for the majority of those affected<sup>12)</sup>. It was reported that Chinese mothers in Japan are able to gain support from Chinese families within 3 months after childbirth<sup>13)</sup>. However, this could only be a only temporary reliance, because it is difficult for Chinese families to obtain a Japanese visa for childbirth care and child-rearing and the visa is only for a limited period of time<sup>14)</sup>. Therefore, it is considered that the risk of PND of Chinese mothers in Japan who lost family support from China is high in the 3rd-4th month after delivery. To the best knowledge of the authors, there is no prior research on PND of Chinese mothers in Japan in this period of time, and the current situation has not been clarified. In this research, we aim to clarify the actual status and related factors concerning PND tendencies of Chinese mothers in Japan. The analytical results provide valuable information for antenatal/postnatal child-rearing support and psychological support to

Chinese mothers in Japan.

## Methods

### 1. Research design

A cross sectional study was conducted to survey Chinese mothers residing in Japan who have given birth within the previous 3-4 months. In this study, the definition of Chinese mothers includes individuals those who have the Chinese nationality or a Japanese-naturalized Chinese mother. The respondents of the survey need to have an infant less than 5 months old, have given birth in Japan and currently live in Japan.

Respondents are excluded if depression or PND is judged. To accurately evaluate the postnatal depressive symptoms of the respondents, the request explanation, EPDS scale, and survey form were prepared in both Chinese and Japanese.

### 2. Instrument

We used self-filled questionnaires to measure the PND of Chinese mothers and their related factors. The questionnaire contents included the EPDS, attributes of the respondents, health status of mothers and children, attributes of husbands, how to spend the first month after childbirth, support situation, what happened at home within the half-year, parenting loneliness, and the presence of absence of childcare consultants. All the attributes of the respondents in this study are self-reported or self-evaluated.

The EPDS is a self-filled questionnaire developed by Cox et al. in 1987 as a quantitative screening for a postnatal depressed state. The EPDS consists of 10 questions regarding the mental condition of the subject mother in the past week. The respondent mother chooses the state that most applies to each question from four choices (0 to 3). The score range is 0 to 30 points. In the original work by Cox et al., the division point of the EPDS was 12/13. Okano et al. introduced the EPDS into Japan in 1996 and set the cut-off score to (8/9) for practical use purposes<sup>15)</sup>. The distribution of the EPDS form in Japan is arranged at the time of the 1st month visit after childbirth and the 4th month health examination<sup>16)</sup>. The PND of migrant women is evaluated by using the cut-off score for the EPDS of the place where they migrated to<sup>17-18)</sup>. This object of this research is the Chinese mother in Japan. They were pregnant in Japan, gave birth, and received

postpartum maternal and children health checkups in Japanese medical institutions under Japanese medical insurance system. They also received guidance and support from Japanese experts. Therefore, in this study, as in the previous study, the Japanese cut-off score 8/9 was used for evaluation.

According to Yoshida et al. the explanation on the 10 items of EPDS is as follow. Q1, Q2, Q8, Q9 are about depressed mood (one of the basic symptoms of depression) , Q3 is about self-blame feeling, Q4 is about anxiety (with no particular reason) , Q5 is about fear (with no particular reason) , Q6 is about degree of dysfunction in daily life (Symptoms of depression that makes unable to concentrate and make judgments) , Q7 is about sleep disorders, Q10 is about suicidal ideation and suicide attempt.<sup>19)</sup>

### 3. Ethical considerations

The consent of the respondents agreeing to the research participation was obtained by receiving the replied survey form. This study was approved by Ethical Committee in Medicine, Kanazawa University, No.786-1, 18-AUG-2017.

### 4. Data collection

The respondents recruitment was carried out by sending research cooperation request letters, research out-line, and survey form samples to the Maternal and Child Health Department of 1,718 municipalities throughout Japan. After receiving consent, we sent the requested number of survey forms to each municipality. The survey forms were subsequently distributed to the corresponding respondents at the time of the 3-4 months infant examination. The investigation period is from September 2017 to April 2018.

### 5. Statistical analyses

To access the relationship between the attributes, we categorized the EPDS by two groups, including 8 points or less and 9 points or more. The Chi-squared test, t-test, Mann-Whitney, and Fisher's exact test were conducted. In addition, logistic regression analysis (likelihood ratio variable increase method) was performed using the EPDS 2 groups as dependent variables and variables with  $p < 0.05$  as independent variables. Data were entered into SPSS version 22.0 for analysis.

## Results

The flow chart of the participant recruitment is displayed in Fig. 1. 382 copies of the survey form were sent to 78 municipalities willing to provide cooperation. 84 copies of the survey form were collected finally. The collection rate was 21.9%. We excluded those who did not fill out the survey form, and those who had a history of postpartum depression or depression, and were still diagnosed as postpartum depression or depression. The remaining 80 were included in the investigation object. The effective response rate was 20.9%.

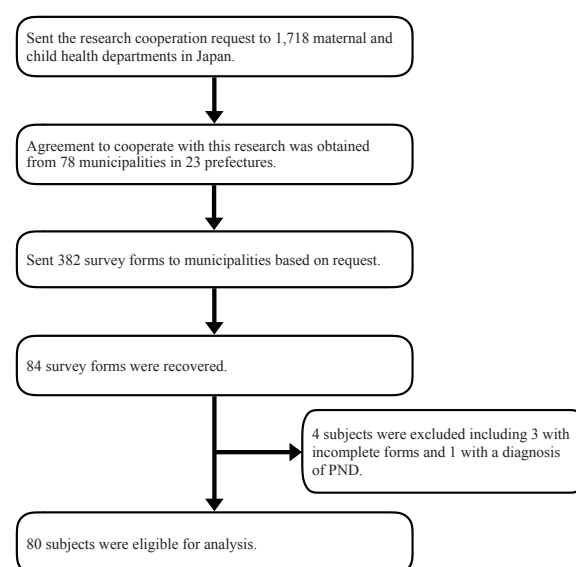


Fig. 1 Flowchart of participant recruitment

### 1. Attributes of respondents and the relation with EPDS score

The attributes of the respondents are shown in Table 1. The average age of the Chinese mothers is  $31.5 \pm 4.0$  years old. The average month of residence in Japan is  $71.6 \pm 45.1$ . The average EPDS score is  $7.1 \pm 4.6$  points. Twenty-nine respondents (36.3%) scored 9 points or more. There were thirty-five respondents (43.8%) in a bad or relatively bad economic condition. Sixty-seven (83.8%) respondents indicated that they are fluent in Japanese or have a daily conversation level. Twenty-four respondents had a tendency of depression before childbirth this time, and thirteen respondents among these individuals had EPDS 9 points or more.

The mothers with an EPDS score of 9 or more have a significantly shorter staying time in Japan than

those with a score of 8 or less. The proportion of the respondents in a bad or relatively bad economic condition and those who had a depression tendency before delivery with an EPDS score of 9 or more is significantly higher than those with an EPDS score of 8 or less ( $p<0.05$ ). There was no statistically significant difference identified between the other items and EPDS scores.

The average score of each item in the EPDS is shown in Fig. 2. Questions 3, 4, and 6 scored 1.0 or higher. Question 4, “Feeling anxious or worried with no particular reason”, scored  $1.3 \pm 0.9$ , which is the highest one. Question 10, “Thought about hurting yourself”, scored  $0.1 \pm 0.3$ , which includes 6 respondents (7.5%).

Table 1 Mother’s basic attributes, maternal and children health status

	Overall (n=80)		EPDS ≤ 8 (n=51)		EPDS ≥ 9 (n=29)		p-value
	N	%	N	%	N	%	
Age (year) <sup>a</sup>	31.5±4.0		31.6±4.1		31.4±3.7		.805
Stay period in Japan (month) <sup>a</sup>	71.6±45.1		81.8±44.9		53.5±40.3		.006**
<b>Reason for visiting Japan<sup>b</sup></b>							
Studying abroad, working, migrant working of parents	51	63.7	35	68.6	16	55.2	.229
Marriage	29	36.3	16	31.4	13	44.8	
<b>Employment status<sup>b</sup></b>							
Non-regular employment or unemployed	51	63.7	30	58.8	21	72.4	.224
Regular employment or self employed	29	36.3	21	41.2	8	27.6	
<b>Educational Level<sup>b</sup></b>							
Up to Middle/secondary	31	38.8	21	41.2	10	34.5	.555
Higher education	49	61.3	30	58.8	19	65.5	
<b>Economic situation<sup>b</sup></b>							
In bad or relatively bad condition	35	43.8	17	33.3	18	62.1	.013*
In good or relatively good condition	45	56.2	34	66.7	11	37.9	
<b>Japanese Level<sup>b</sup></b>							
Proficient or ordinary conversation	67	83.8	44	86.3	23	79.3	.417
Greetings level or have difficulty even in daily conversation	13	16.3	7	13.7	6	20.7	
<b>Having depression trend before childbirth<sup>b</sup></b>							
Yes	24	30.0	11	21.6	13	44.8	.029*
No	56	70.0	40	78.4	16	55.2	
<b>Having disease being treated currently<sup>b</sup></b>							
Yes	1	1.3	0	0.0	1	3.4	.362
No	79	98.8	51	100.0	28	96.6	
<b>Primiparity<sup>b</sup></b>							
Primipara	50	62.5	31	60.8	19	65.5	.674
Multipara	30	37.5	20	39.2	10	34.5	
<b>Number of children (person)<sup>b</sup></b>							
One	49	61.3	29	56.9	20	69	.285
Two or more	31	38.8	22	43.1	9	31	
<b>Childbirth weight (gram)<sup>c</sup></b>							
Above 2500	76	95.0	48	94.1	28	96.6	.999
Below 2500	4	5.0	3	5.9	1	3.4	
<b>Child health status<sup>c</sup></b>							
Healthy	79	98.8	51	100.0	28	96.6	.362
Having or have had sickness	1	1.3	0	0.0	1	3.4	

<sup>a</sup>t-test. <sup>b</sup>Chi-squared test. <sup>c</sup>Fisher’s exact test  
\*p<.05. \*\*p<.01

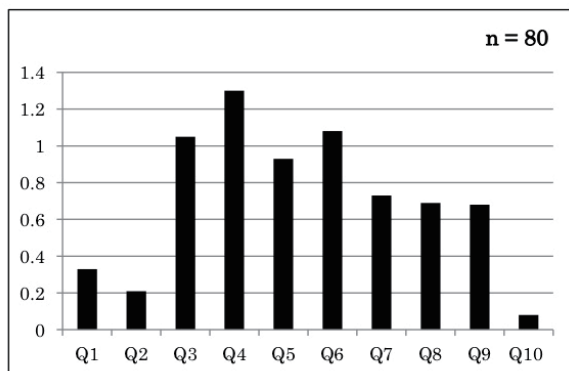


Fig. 2 EPDS average score of each item

## 2. Relationship between the attributes of husband and EPDS

The average age of the husband of the respondents is  $35.8 \pm 7.1$  years. Twenty-seven husbands (33.8%) are Japanese and fifty-three husbands (66.2%) are Chinese or other nationalities. Sixty-eight husbands (85.0%) have a formal job or are self-employed. In addition to the husband's age, nationality, and employment, we also collected and analyzed the data of their educational background, the resident status and the period of stay in Japan of the non-Japanese husbands. There is no significant difference between the attributes of the husbands and the EPDS 2 groups.

## 3. How to spend the first month after childbirth, the support situation, and the relation with EPDS

Table 2 shows how the first month after childbirth was spent, the support situation, and the relation with the EPDS. There were thirty-eight respondents (47.5%) who did not do household work other than breastfeeding or general care of children in the first month after childbirth.

Moreover, 91.3% of the respondents had assistants within one month after childbirth, whereas 75.0% of the mothers had assistants at the time of this investigation, which was significantly reduced compared with the data of the 1st month ( $p<0.05$ ). In addition, compared to the mothers who had helpers, the proportion of those with EPDS 9 points or more is significantly higher than those who did not have helpers ( $p<0.05$ ).

For the mothers who had no assistance from their husband in the 1st month ( $p<0.01$ ) or 3rd-4th month ( $p<0.05$ ), the proportion of the respondents with EPDS 9 points or more is significantly higher than those who could obtain help from their spouses. The number of respondents who can obtain help from their mothers is significantly reduced from thirty-eight at the 1st month to ten at the time of this investigation, the 3rd or 4th month after childbirth ( $p<0.00$ ). It should be noted that the number of respondents who can obtain help from relatives or Chinese or Japanese friends is very small whether assessed at the 1st month or later. In addition, no one used a Mama-helper service in this survey.

Table 2 How to spend the first month after childbirth; Support situation

		Overall (n=80)		EPDS ≤ 8 (n=51)		EPDS ≥ 9 (n=29)		P-value
		N	%	N	%	N	%	
<b>Postpartum/Confinement<sup>a</sup></b>								
Doing nothing except breastfeeding or taking care of newborn		38	47.5	28	54.9	10	34.5	.079
Doing chores other than taking care of newborn		42	52.5	23	45.1	19	65.5	
<b>Having someone who can help in the first month after childbirth</b>								
Yes		73	91.3	47	92.2	26	89.7	.700
No		7	8.8	4	7.8	3	10.3	
Husband <sup>a</sup>	Yes	44	55.0	34	66.7	10	34.5	.005**
	No	36	45.0	17	33.3	19	65.5	
Real mother <sup>a</sup>	Yes	38	47.5	27	52.9	11	37.9	.196
	No	42	52.5	24	47.1	18	62.1	
Real father <sup>b</sup>	Yes	17	21.3	12	23.5	5	17.2	.581
	No	63	78.8	39	76.5	24	82.8	
Mother-in-law <sup>a</sup>	Yes	22	27.5	12	23.5	10	34.5	.292
	No	58	72.5	39	76.5	19	65.5	
<b>Having someone who can help in the 3rd-4th month after childbirth<sup>b</sup></b>								
Yes		60	75.0	42	82.4	18	62.1	.044*
No		20	25.0	9	17.6	11	37.9	
Husband <sup>a</sup>	Yes	48	60.0	35	68.6	13	44.8	.037*
	No	32	40.0	16	31.4	16	55.2	
Real mother <sup>b</sup>	Yes	10	12.5	9	17.6	1	3.4	.061
	No	70	87.5	42	82.4	28	96.6	
Real father <sup>b</sup>	Yes	3	3.8	3	5.9	0	0.0	.550
	No	77	96.3	48	94.1	29	100.0	
Mother-in-law <sup>a</sup>	Yes	16	20.0	11	21.6	5	17.2	.775
	No	64	80.0	40	78.4	24	82.8	

<sup>a</sup>Chi-squared test. <sup>b</sup>Fisher's exact test  
\*p<.05. \*\*p<.01

#### 4. What happened within half a year, loneliness of child-rearing, person to consult with when in trouble, and the relation with EPDS

The analyses regarding about “What happened within half a year”, “Child-rearing loneliness”, and “Having person to consult with when in trouble” are shown in Table 3. The respondents who experienced house-moving (p<0.05) or death of relatives (p<0.01) had a significantly higher proportion of EPDS points 9 or more than those who did not have these experiences. Sixty-five (81.2%) respondents did not feel or occasionally feel child-raising loneliness, and they had a significantly higher proportion of EPDS points 9 or more than those who always or sometimes feel child-raising loneliness (15 respondents, 18.8%).

Table 3 What happened within half a year; Child-raising loneliness; Having person to consult with when in trouble

		Overall (n=80)		EPDS ≤ 8 (n=51)		EPDS ≥ 9 (n=29)		P-value
		N	%	N	%	N	%	
<b>What happened within half a year</b>								
Moving	Yes	18	22.5	7	13.7	11	37.9	.013*
	No	62	77.5	44	86.3	18	62.1	
Divorce	Yes	1	1.3	1	2.0	0	0.0	.999
	No	79	98.8	50	98.0	29	100.0	
Death of relatives	Yes	5	6.3	0	0.0	5	17.2	.005**
	No	75	93.8	51	100.0	24	82.8	
<b>Child-raising loneliness</b>								
Could not feel or feel occasionally		65	81.2	47	92.2	18	62.1	.002**
Sometimes or always feel		15	18.8	4	7.8	11	37.9	
<b>Having person to consult with when in trouble</b>								
Yes		71	88.8	48	94.1	23	79.3	.066
No		9	11.3	3	5.9	6	20.7	

Fisher's exact test  
\*p<.05. \*\*p<.01

#### 5. The factors related to EPDS

Table 4 shows the factors related to EPDS. The variables “Assistance from husband” (Odds ratio =

0.357, p = 0.047) and “Loneliness of child-rearing” (Odds ratio = 7.416, p = 0.003) are significant. The classification correctness is 72.5%.

Table 4 The factors related to EPDS

	β	p	Odds ratio	95% confidence interval	
				lower limit	upper limit
Assistance from husband currently	-1.030	.047	0.357	0.129	0.987
Loneliness of child-rearing Constant	2.004	.003	7.416	2.008	27.384
	-0.380	.329	0.684		

Logistic regression analysis p<.05.

Discriminative hit ratio 72.5%.

The correlation matrix table was confirmed, and none of the correlation coefficients were close to 1 or -1. Selection criteria of independent variables (p<.05) are: Stay period in Japan, economic situation, whether have depression trend before childbirth, current assistance, assistance from husband, moving, death of relatives, child-rearing loneliness, and having person who can consult with when in trouble.

## Discussion

### 1. Risk of PND

This research, for the first time, investigated the PND risk of Chinese mothers in Japan who gave birth to a baby in the previous 3-4 months. The analytical results show that the proportion of PND risk, corresponding to an EPDS score of 9 or greater, of the respondents is 36.3%, which is higher than that of Japanese mothers who give childbirth in Japan, i.e., 8.5-18.5%<sup>20-23)</sup>, at the time of 3rd-4th month after delivery.

The PND investigation of Japanese mothers has been conducted from several weeks to several months after childbirth. It was reported that in general the incidence of PND is approximately 3-20% depending on the time of EPDS test<sup>20-23)</sup>. This work, which targets Chinese mothers in Japan, indicates that the proportion of postnatal depressive symptoms is higher than that of Japanese mothers who give birth in their own country at any time. The PND proportion of Canadian immigrant women using the same EPDS scale is 15.0% (7.0% for native-born Canadian women)<sup>17)</sup>, 28.8% for Australian immigrant women (15.0% for native-born Australian women)<sup>24)</sup>, and 22.6% for Israeli women in Russian<sup>18)</sup>. Most of the previous studies indicated that immigrant women have a higher risk of PND than native-born women who give birth in their own country. The study of the ratio of the PND risk of Chinese mothers in Japan in this research draws the same conclusion.

There were six respondents who scored one or more points in EPDS question 10 ‘Thought about hurting yourself’. This question is designed to investigate suicidal tendencies. The respondents need to be followed if they scored more than one point in this question regardless of the total score of the EPDS.

Many studies have reported that PND occurs more often within 3 months after delivery. According to a survey of abnormal deaths of pregnant women that occurred in 23 special wards of Tokyo during the decade of 2005-2014 in a joint research study with Takeda and the Tokyo Metropolitan Government Inspectorate of Medical Treatment, there were forty cases of suicide within one year in the postnatal period. In addition, it was reported that suicide occurred more often in the 3rd or 4th month after childbirth, and 60% of mothers experienced mental illnesses, including PND<sup>25)</sup>. It worth noting that the risk of PND will not reduce after three months since childbirth. At the time of the 3rd or 4th month after delivery, both Japanese and Chinese mothers have a high risk of depression. Therefore, it is necessary to enhance mental support and follow the mothers who require mental health care.

In addition, same as in the previous research, the survey items in [What happened within half a year], "Death of relatives", "Divorce" and "Moving", were regarded as having significant differences<sup>26)</sup>.

## 2. Factors related to EPDS

The probability of scoring 9 points or more on the EPDS of those who always or sometimes feel child-rearing loneliness is 7.4 times than those who do not feel child-rearing loneliness or feel it occasionally. It is found that this is the PND risk factor most related to Chinese mothers in Japan. Previous studies reported that mothers during the time of child-rearing are in a situation that is likely to feel loneliness due to the lack of connection with society<sup>27)</sup>. In Japan, as the birthrate is declining and nuclear families are progressing, the number of Koiku mothers (mothers who raise children alone) have been increasing due to the absence of a childcare supporter, isolation from neighboring communities, and dilution of interpersonal relations<sup>28)</sup>. In a study on childcare loneliness of Japanese women giving birth and rearing children in Japan, it was reported that the average score of the Ando-Osada-Kodama (AOK) loneliness scale in the 3rd month is significantly higher than that in the 1st month after childbirth<sup>29)</sup>. At the time of this survey (3rd or 4th month after childbirth), the help from parents and parents-in-law has decreased compared with that of the 1st month. The number of respondents who had assistance from their mothers significantly

decreased from thirty-eight to ten ( $p < 0.01$ ). This result is anastomotic with the short-term assistance from the relatives due to the stay period of a visiting-based visa<sup>14)</sup>. It is also found that Chinese mothers in Japan have little support from extended families (such as parents and married children). Among the immigrant women giving birth in Australia, those who are less proficient in English have a higher risk of PND, feeling lonely (39%) and isolated (17%)<sup>24)</sup>. In this research, among the mothers with 9 points or more on the EPDS, 79.3% of the respondents are proficient in Japanese or a daily conversation level. Therefore, the EPDS score does not depend on the Japanese level of the respondents. Both Japan and China use Chinese characters. Even if there is no influence of language on the PND of Chinese mothers in Japan, it is clear that Chinese mothers feel the loneliness of child-rearing and this is a postpartum depression risk factor.

The analytical results of this study show that the mothers in the 3rd-4th month after childbirth without support from their husbands have a significantly higher PND risk than those with support. It is clear that this is a risk factor of PND. Previous studies reported that when raising children in a cross-cultural society, lack of support is likely to result in postpartum depression. In addition, it was revealed that the support from the husband is same important for native mothers. Therefore, the importance of support from husbands does not change to immigrant mothers or negative mothers in any country.

On the other hand, compared to Chinese mothers in Japan, with daily support from either parents, the mothers in China can secure free time other than housekeeping and work<sup>11)</sup>. However, in the case of Chinese mothers in Japan, the husband's presence becomes even more important in the separation from the extended family and social isolation. It is considered that the lack of support from the husband affects the PND of mothers. It was reported that child-rearing mothers tend to have PND in a cross-cultural society in the case of lacking support<sup>30)</sup>.

Based on the above, it is clear that the loneliness of child-rearing and the support status of the husband for the 3rd-4th month after childbirth are DNP risk factors for Chinese mothers in Japan. It was reported that the support from the husband is the most effective

way to alleviate DNP. The presence of support from the husband will not only be helpful in the housework and childcare but also support the mother's spirit and alleviate the loneliness of child-rearing.

### 3. Limitations

First, the recovery rate of the questionnaire in this study is 21.9%. Among the survey forms that were not returned, there is a possibility that the samples that scored 9 points or more in the EPDS were included. Second, 61.3% of the respondents have received higher education, and the investigation subject may be biased due to the education background. Third, the risk of PND was high compared to other studies, but it could not be compared to the recent results (a study on the same objects, i.e., in the 3rd-4th month after childbirth, and with the same scale) . It is necessary to improve the recovery rate in future studies and improve the clarity of the analytical results. Finally, this study is a cross-sectional investigation and is limited to the PND tendency of Chinese mothers in the 3rd to 4th month after childbirth. Evaluations of the PND risks of other periods of time after childbirth should also be

considered in future work.

### Conclusions

In this research, the proportion of respondents who scored 9 or more points on the EPDS is 36.3%. The loneliness of child-rearing and the support status of the husband for the 3rd-4th month after childbirth are DNP risk factors for Chinese mothers in Japan. The presence of support from the husband will not only be helpful in the housework and childcare but also support the mother's spirit and alleviate the loneliness of child-rearing. In addition, since the PND risk of Chinese mothers is high in the 3rd-4th month after childbirth, it is necessary to strengthen mental support during this period.

### Acknowledgement

We would like to extend our heartfelt gratitude to the municipalities, who graciously cooperated with and supported this study.

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## 在日中国人母親の産後うつ傾向の実態及び関連要因

李 劍, 表 志津子, 岡本 理恵, 中田 明恵<sup>1)</sup>, 水本 ゆきえ<sup>2)</sup>

### 要 旨

背景・目的：日本における産後うつ病（postnatal depression 以下 PND）の有病率は知られている。しかし、日本に住んでいる外国人女性の中で最も人口が多い中国人女性の PND の実態と関連要因に関するデータはない。本研究の目的は、日本で暮らす中国人の母親における PND の傾向とその関連要因を明らかにすることである。方法：過去 3 ～ 4 か月に出産した日本在住の中国人の母親を対象とした郵送自記式質問紙調査を実施した。調査項目は母親と児の状況、家族のサポート、エジンバラ産後うつ病スケール（EPDS）などである。統計解析はロジスティック回帰分析を行った。結果：分析対象者は 80 名で、そのうち高 PND リスクの者の割合は 36.3%であった。PND リスクに影響する要因は、子育ての孤独（オッズ比 7.416  $p=0.003$ ）と夫からの支援（オッズ比 0.357,  $p=0.047$ ）であった。結論：夫からのサポートは生活、家事育児面だけではなく、母親心の支え、子育ての孤独感の軽減にも繋がると考える。また、PND のリスクは、出産後 4 か月の中国人母親で高いことから、この時期の母親に精神的サポートを強化する必要があると考える。

