

Depression and social support trajectories during 1 year postpartum among marriage-based immigrant mothers in Taiwan



Presenter : Chen, Hung-Hui

Co-authors : Chien, Li-Yin; Hwang, Fang-Ming

National Yang-Ming University, Taipei, Taiwan

Postpartum depression (PPD)

- Postpartum depression is an important public health issue
 - High prevalence: 10% - 20% [1]
 - Potential reasons: hormone, birth event, adjustment, parenting
 - Impact of PPD
 - Maternal health [2]
 - Child health [3]
- Postpartum depression of immigrant women
 - Higher prevalence: 24% - 42% in the early postpartum period [4]
 - Higher risk [5]: OR= 4.58 [6]
 - Immigrant mothers vs. native mothers in Taiwan [7]
 - Higher prevalence: 41.1% vs. 8.4%
 - Higher risk: OR=2.59

Immigrant mothers in Taiwan and their social support

- International marriage-based immigration is increasing in many countries.
- Foreign women marries to Taiwanese men and immigrates to Taiwan.
 - About 469,500 [8]
 - Majority: China (67.4%), Vietnam (18.5%)
 - Others: Indonesia (5.9%), Thailand (1.8%), Philippines (1.6%), Cambodia (0.9%)
- Marriage-based immigrants may lack sufficient social support in Taiwan [9].
 - Immigrate alone, away from original family and friends
 - Marriage may lack a basis in affection
 - Cultural challenges
 - Birth shortly after immigration
- Lack of social support has been seen to be a observable problem.
 - Immigrants in Taiwan had lower social support than natives [9, 10].
 - Immigrants need more household help and reassurance/support [11].

Longitudinal study of PPD trajectory

Table. Longitudinal study related to social support and postpartum depression trajectory

	Authors	objective	Participants	Location	time	Findings (HLM analysis)
1.	Edwards RC, Thullen MJ, Isarowong N, Shiu CS, Henson L, Hans SL. (2012) [12]	<p>To examine</p> <p>(1) changes in young mothers' depressive symptoms from pregnancy through the first two postpartum years</p> <p>(2) how supportive relationships with key individuals were related to mothers' depressive symptoms over time</p>	248 young, low-income African American mothers	USA	<p>1) Pregnancy</p> <p>2) 4 months postpartum</p> <p>3) 12 months postpartum</p> <p>4) 24 months postpartum</p>	<p>Depressive symptoms were highest during pregnancy and declined through 24 months postpartum.</p> <p>Supportive relationships with the father of the baby and the mother's parent figure were related to lower levels of depressive symptoms.</p> <p>Although the association between father support and the mother's depressive symptoms remained consistent over time, support from the parent figure became increasingly more important during the young mother's transition to parenting.</p>
2.	Haga SM, Ulleberg P, Slinning K, Kraft P, Steen TB, Staff A. (2012) [13]	To explore how psychological variables such as cognitive emotion regulation strategies, breastfeeding self-efficacy (BSE), and dimensions of social support predicted postpartum depressive symptoms (EPDS).	737 new mothers	Norway	<p>1) 6 weeks postpartum</p> <p>2) 3 months postpartum</p> <p>3) 6 months postpartum</p>	<p>BSE, certain cognitive emotion regulation strategies, perceived available support, and need for support predicted the rate of postpartum depressive symptoms.</p> <p>Only breastfeeding self-efficacy predicted change in postpartum depressive symptoms.</p>
3.	Poehlmann J, Schwichtenberg AJ, Bolt D, Dilworth-Bart J. (2009) [14]	<p>(1) To compare three risk models to predict maternal depressive symptoms at NICU discharge and maternal depression trajectories across PT LBW infants' first two years of life.</p> <p>(2) To examine family support as reported by mothers of PT LBW infants as a covariate of maternal depression to help offer potential explanations for associations identified between risk variables and maternal depression trajectories.</p>	181 mother-infant dyads. (Mother with an infant born preterm or at a low birth weight)	USA	<p>1) just prior to the infant's hospital discharge</p> <p>2) 4 months postpartum</p> <p>3) 9 months postpartum</p> <p>4) 16 months postpartum</p> <p>5) 24 months postpartum</p>	<p>PPD (CESD): Quadratic trajectory</p> <p>Family support as a covariate in the multilevel models with a subsample of families revealed that social support and depression covaried across time.</p> <p>(Family support: emotional, information, household, childcare, financial, rest, and other support)</p> <p>Race (white/ non white) is related to PPD trajectory.</p>

Social support and postpartum depression among immigrants

- Higher level of postpartum depression symptoms and lower level of social support are significant in immigrants relative to natives [9, 11, 15].
- Previous studies consistently suggested that social support is negatively associated with PPD among immigrant mothers [9, 16, 17].
- Previous longitudinal study for immigrant women (69 people) [18]
 - A significant linear change in depression from pregnancy to postpartum period.
 - Decline was steeper for high-risk women who reported high levels of social support relative to those with low levels of social support.
- Inconsistent associations may exist in the relationship between different sub-dimensional support and PPD.
 - Emotional dependence may protect immigrant women against PPD [19].

Research objective

- To examine trajectory of depression, social support and its 3 sub-dimensional support among marriage-based immigrant mothers in Taiwan
- To examine whether change in social support and its 3 sub-dimensional support over time were related to change in depression within 1 year postpartum among marriage-based immigrant mothers in Taiwan
- To examine risk factors as predictors of PPD during the mother's first year after delivery among marriage-based immigrant mothers in Taiwan

Longitudinal study design

Cooperation with 5 public health centers to receive available name lists of Immigrant mothers who just gave birth within 1 month postpartum

Telephone or face-to-face contact

Immigrant mothers received description of the study and signed a consent form

Face- to-face or telephone interview used a structured questionnaire

Interview 1: 1 month postpartum (2008/09-2009/07)

Face- to-face or telephone interview used a structured questionnaire

Interview 2: 6 months postpartum (2009/02-2009/12)

Telephone interview used a structured questionnaire

Interview 3: 1 year postpartum (2009/08-2010/06)

The study was approved by the **institutional review board** of National Yang-Ming University

Study framework

Background variables (Time-invariant variables)

- Mother country
- Educational level
- Family income
- Parity
- Age

Acculturation (Time-invariant variables)

- Duration of living in Taiwan
- Chinese language ability
- Social assimilation
- Social attitude

Social support (Time-variant variables*)

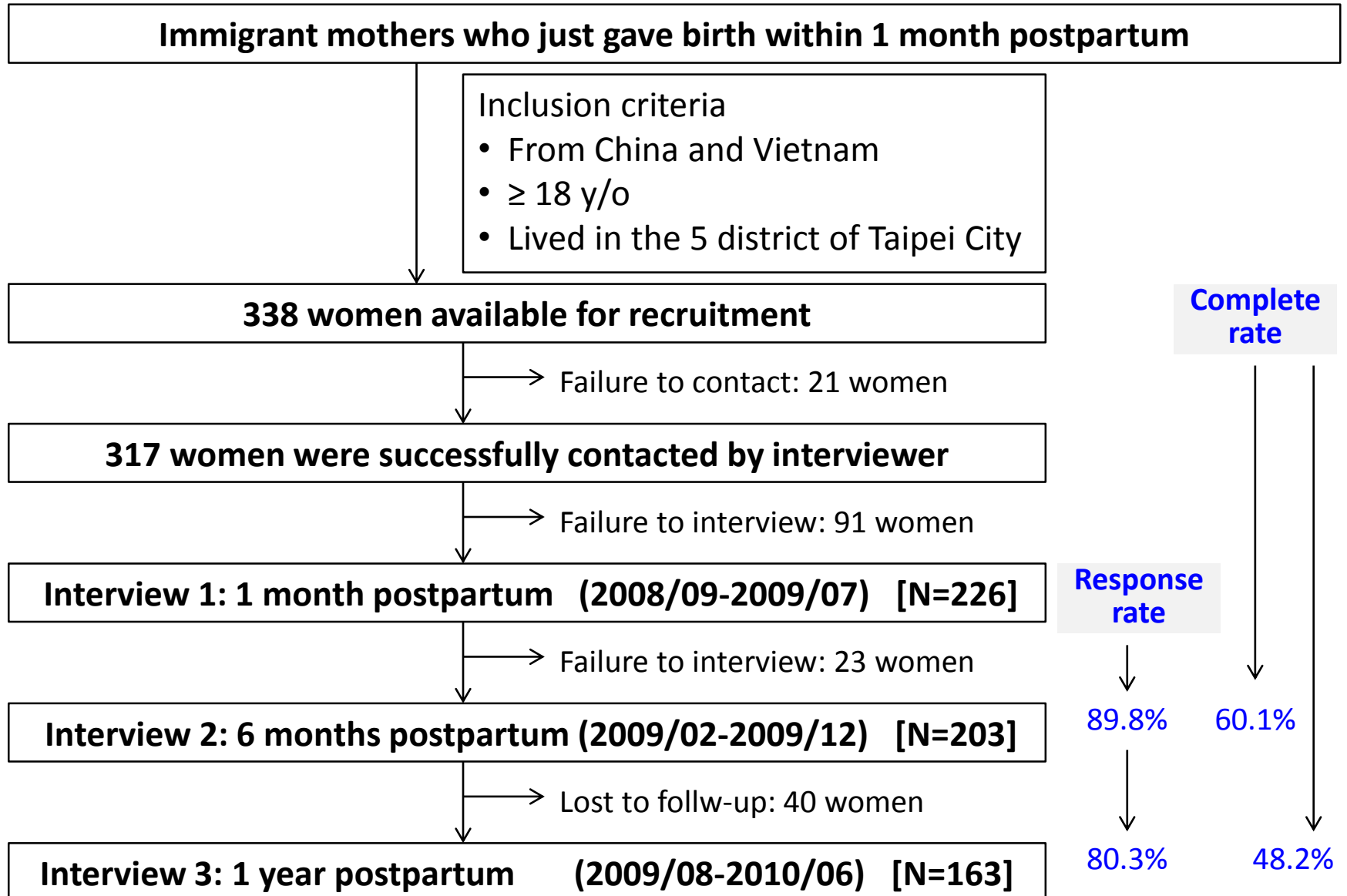
- Emotional support
- Instrumental support
- Informational support

Postpartum depression
(Time-variant variables*)

*Time-variant:

- Time 1: 1month postpartum
- Time 2: 6 months postpartum
- Time 3: 1 year postpartum

Sample



Measurement

Table. Factors assessed for association with postpartum depression

Domain	Factor	Measure
Background variables	Mother country	China, Vietnam
	Educational level	Ninth-grade or lower, high school or above
	Family income	Very insufficient, insufficient, adequate, sufficient, very sufficient
	Parity	Primiparous (1), multiparous (>1)
	Age	Maternal age
Acculturation	Duration of living in Taiwan	The number of months living in Taiwan
	Chinese language ability	4-item, 5-point Likert scale for listening, speaking, reading, and writing (0-16)
	Social assimilation ^a (integration into mainstream society)	2-item, 4-point Likert-scale (0-6) Higher scores indicated higher social assimilation
	Social attitude ^b (accepting attitudes toward mainstream society)	6-item, 4-point Likert-scale (0-18) Higher scores indicated greater acceptance of mainstream society
Social support ^c		12-item, 5-point Likert-scale (0-48) Higher scores indicated better support
	3 sub-dimensional support	
	Emotional support	4-item, 5-point Likert-scale (0-16)
	Instrumental support (household activity)	4-item, 5-point Likert-scale (0-16)
	Informational support	4-item, 5-point Likert-scale (0-16)
Postpartum depression ^d		Edinburgh Postnatal Depression Scale (EPDS) 10-item, 4-point Likert-scale (0-30) Higher scores indicated higher depression

^aCronbach's alpha= 0.75

^bCronbach's alpha= 0.71

^cCronbach's alpha= 0.84 at 1 month postpartum, 0.83 at 6 months postpartum, and 0.89 at 1 year postpartum

^dCronbach's alpha= 0.85 at 1 month postpartum, 0.82 at 6 months postpartum, and 0.85 at 1 year postpartum

Data analysis

- Descriptive statistics: Percentage, mean, standard deviation (SD)
- Inferential statistics: **Hierarchical linear modeling analyses (HLM)**
 - $Y_{it} = \pi_{0i} + \pi_{1i}(\text{linear})_{it} + \pi_{2i}(\text{quadratic})_{it} + e_{it}$
 - π_{2i} captured temporal instability
 - π_{1i} captured sustained rates of change in PPD
 - e_{it} represented internal inconsistency in the PPD scale
 - Use of two parallel scales per person per time point [20]
 - Two scales would have approximately the same reliability and variances.
 - Split-half reliability of EPDS: 0.73-0.85
- Software: SPSS, HLM 6.06

LEVEL 1 MODEL (bold: group-mean centering; bold italic: grand-mean centering)

$$E12345 = \pi_0 + \pi_1(\text{LINEAR}) + \pi_2(\text{QUADRA}) + \pi_3(\text{SS}) + e$$

LEVEL 2 MODEL (bold italic: grand-mean centering)

$$\pi_0 = \beta_{00} + \beta_{01}(\text{NATIVE_M}) + \beta_{02}(\text{EDU_MEAN}) + \beta_{03}(\text{MONEY_ME}) + \beta_{04}(\text{PARITY_M}) + \beta_{05}(\text{AGE_MEAN}) + \beta_{06}(\text{DURATION}) + \beta_{07}(\text{CHINESE}) + \beta_{08}(\text{ASS_MEAN}) + \beta_{09}(\text{ATT_MEAN}) + r_0$$

$$\pi_1 = \beta_{10} + r_1$$

$$\pi_2 = \beta_{20} + r_2$$

$$\pi_3 = \beta_{30} + r_3$$

Table 1. Characteristics of the study participants ($N = 203$)

Characteristic	n (%)	
Time-invariant variables		
Mother country		
China	137	(67.5)
Vietnam	66	(32.5)
Educational level		
Ninth-grade or lower	74	(36.5)
High school or above	129	(63.5)
Family income ^a		
Very insufficient	11	(5.4)
Insufficient	40	(19.8)
Just making a living	99	(49.0)
Sufficient	43	(21.3)
Very sufficient	9	(4.5)
Parity		
1	126	(62.1)
>1	77	(37.9)

^a $n = 202$ because of missing data.

Characteristic	M (SD)	
Time-invariant variables		
Age	27.00	(4.23)
Duration living in Taiwan (months)	33.80	(30.30)
Chinese language ability	11.63	(3.86)
Social assimilation	2.39	(2.12)
Social attitude	10.10	(3.70)
Time-variant variables		
Postpartum depression		
1 month	6.67	(5.80)
6 months	4.02	(4.64)
1 year ^b	4.23	(4.51)
Emotional support		
1 month postpartum	9.59	(4.21)
6 months postpartum	10.70	(4.15)
1 year postpartum ^b	10.02	(4.12)
Instrumental support		
1 month postpartum	11.76	(3.96)
6 months postpartum	8.12	(4.65)
1 year postpartum ^b	7.54	(4.88)
Informational support		
1 month postpartum	8.41	(4.27)
6 months postpartum	10.09	(4.00)
1 year postpartum ^b	10.03	(4.50)

Note: SD = standard deviation.

^b $n = 163$ because of missing data.

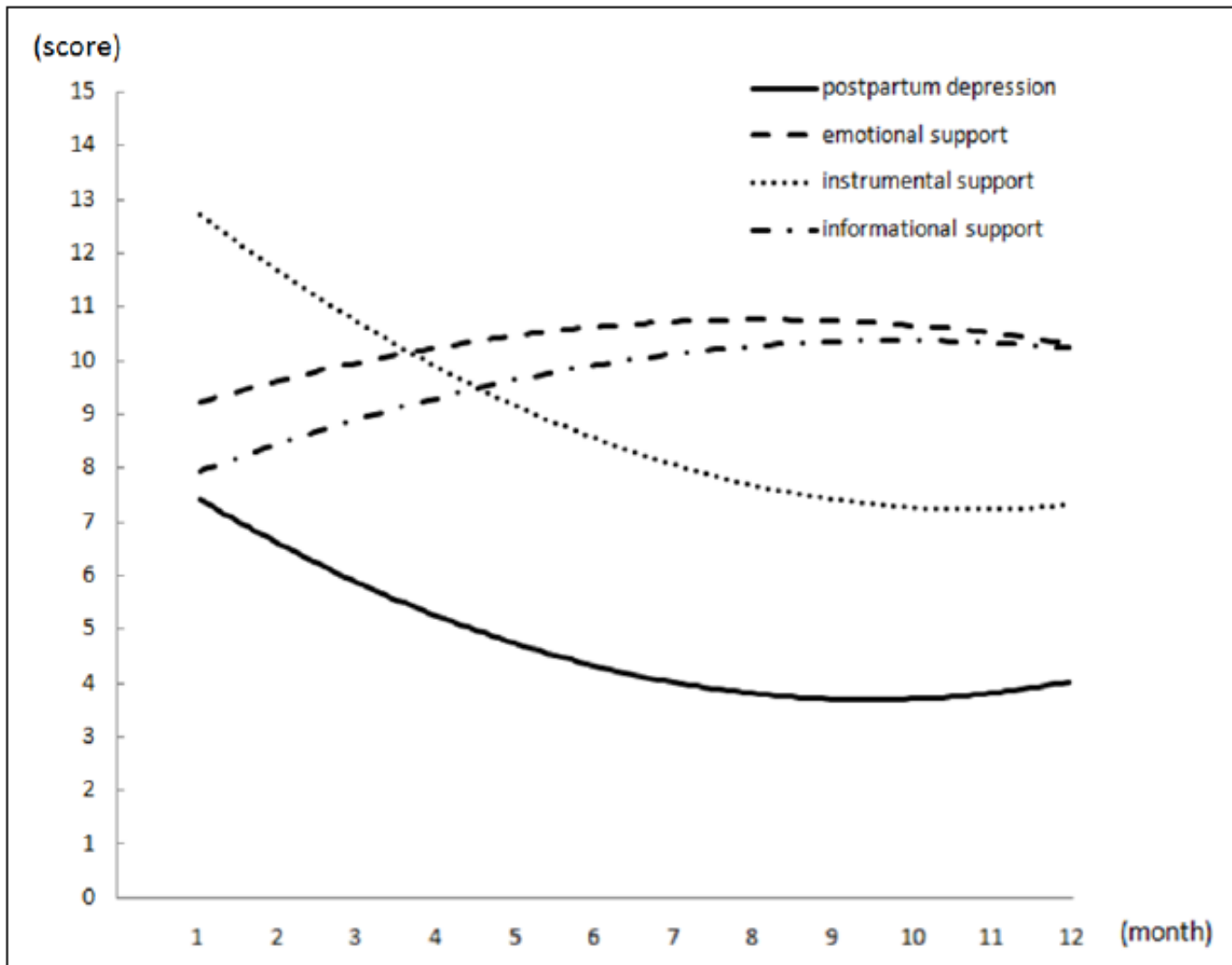


Figure 1. Time trends of depression and three dimensional supports within one year postpartum.

Table 2. Null model of depression and three dimensional support trajectories within one year postpartum

Variable	Depression		Emotional support		Instrumental support		Informational support	
	β	(SE)	β	(SE)	β	(SE)	β	(SE)
Intercept	3.34	(0.20)**	9.59	(0.30)**	11.76	(0.28)**	8.41	(0.30)**
Linear	-2.02	(0.31)**	1.99	(0.62)**	-5.21	(0.73)**	2.52	(0.65)**
Quadratic	0.69	(0.14)**	-0.88	(0.30)**	1.57	(0.35)**	-0.84	(0.32)*

Note: SE = standard error.

* $p < .05$, ** $p < .01$.

Table 3. HLM model for depression trajectory within one year postpartum

Variable	Model 1		Model 2		Model 3		Model 4	
	Model of		Model of		Model of		Model of three-	
	emotional support		instrumental support		informational support		dimensional support	
	β (SE)		β (SE)		β (SE)		β (SE)	
Intercept	3.29	(0.19) **	3.47	(0.19) **	3.29	(0.19) **	3.37	(0.19) **
Mother country	-0.25	(0.58)	-0.27	(0.59)	-0.33	(0.58)	-0.20	(0.59)
Educational level	-0.18	(0.26)	-0.21	(0.27)	-0.22	(0.27)	-0.17	(0.26)
Family income	-0.36	(0.14) *	-0.42	(0.14) **	-0.45	(0.14) **	-0.35	(0.14) *
Parity	0.10	(0.26)	0.13	(0.27)	0.15	(0.27)	0.10	(0.26)
Age	0.01	(0.03)	0.02	(0.03)	0.02	(0.03)	0.01	(0.03)
Duration living in Taiwan	-0.01	(0.01)	-0.01	(0.01)	-0.01	(0.01)	-0.01	(0.01)
Chinese language ability	-0.10	(0.07)	-0.10	(0.07)	-0.11	(0.07)	-0.10	(0.07)
Social assimilation	0.07	(0.07)	0.07	(0.07)	0.08	(0.07)	0.07	(0.07)
Social attitude	-0.08	(0.03) *	-0.09	(0.03) **	-0.09	(0.03) *	-0.08	(0.03) *
Linear	-1.83	(0.33) **	-2.30	(0.31) **	-1.91	(0.34) **	-2.02	(0.34) **
Quadratic	0.61	(0.15) **	0.78	(0.14) **	0.66	(0.15) **	0.67	(0.15) **
Emotional support	-0.10	(0.03) **					-0.09	(0.03) **
Instrumental support			-0.05	(0.02) *			-0.03	(0.02)
Informational support					-0.05	(0.03)	0.004	(0.02)

Note: SE = standard error.

* $p < .05$, ** $p < .01$.

Discussion

- PPD trajectory: A downward curvilinear trajectory
 - Similar to most of previous studies in Western countries
 - More studies are needed to explore this phenomenon in different population.
- Social support vs. PPD trajectory
 - Trajectory of instrumental support was different from that of emotional and informational support.
 - Emotional and instrumental support, but not informational support, each was significantly associated with PPD.
 - Emotional support was the most important of the dimensions of social support in terms of its association with PPD
- Limitations
 - Reverse causality
 - Only three time-points to capture the time trend
 - Lack of enough confounder adjustment
 - Potential selection bias: attrition bias
 - Generalization: China & Vietnam, 5 districts of Taipei, lost to follow up

Conclusions

- The most significant contribution of this study is that it added the findings of longitudinal study to the literature among immigrant women in Asia.
 - Social support over time as it co-varied with postpartum depression.
- Recommendation for policy
 - Strategies should be developed to increase emotional and instrumental support during the postpartum depression, especially emotional support.
- Recommendations for future study
 - More data point to yield more accurate estimates of time trends
 - More predictors of PPD trajectory among immigrant women

Thank You.

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