

## Review article

# Perinatal depression in Asian women: prevalence, associated factors, and cultural aspects

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**Background and Objective:** Although perinatal depression is a worldwide problem, most of the studies related to this issue have been conducted in Western countries. This paper summarizes the literature on the prevalence as well as associated factors among Asian countries where the cultural attitudes, customs, and norms are considerably different from those in Western countries.

**Methods:** We conducted a literature search using MEDLINE (PubMed) from 1968, PsychINFO from 1970, and SCOPUS database from 1982 using keywords “depression”, “antenatal”, “antepartum”, “pregnancy”, “postnatal”, “postpartum”, “perinatal”, “after childbirth” and “Asia”. Only the articles published in English were included.

**Results:** The overall prevalence of depression during pregnancy and postnatal period are about 20% and 21.8%, respectively. The factors related to perinatal depression can be grouped into the following categories, individual characteristics, husband/marital relationship, pregnancy-related, infant-related, and other psychosocial issues. While there is considerable overlap between Asian and Western countries with respect to risk factors for perinatal depression, premarital pregnancy, conflict with mother-in-law, and dissatisfaction with infant's gender are more specific to Asian cultures.

**Conclusions:** Studies conducted in Asian countries suggest that the prevalence of perinatal depression is slightly higher than in Western countries. There are several unique culturally related issues that clinicians treating pregnant and postpartum Asian women should be aware as they contribute to an increased risk of depression in these women.

**Keywords:** Asia, cultural, perinatal depression

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The perinatal period typically refers to the time from conception to the end of the first postpartum year [1]. This epoch in woman's life is associated with profound physical and emotional changes, and associated risks for the onset or exacerbation of several mental disorders [2-4]. One of the most common mental health problems occurring in women during their childbearing years is depression. Perinatal depression refers to major and minor depressive episodes that occur either during pregnancy or after delivery, which could be divided into “antenatal depression” and “postnatal (or postpartum) depression”, respectively. Perinatal depression can

have devastating consequences beyond episodes of depression that occur outside childbearing. While the mother is suffering, the impact of her depression on her vulnerable and dependent offspring cannot be overemphasized [5, 6]. There is a growing literature indicating that perinatal depression can adversely affect fetal growth and nutritional status [7-9], the infant's biochemical/physiological profile [10], IQ, and development [11]. Interactions between mothers and their baby are less than optimal [12, 13]. Children of depressed mothers miss more pediatric appointments and have greater use of emergency services [14]. Finally, perinatal depression is associated with higher levels of psychiatric disturbances among children [15], and greater child insecurity in attachment relationships [16].

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An estimate of the prevalence of the perinatal depression from a recent systematic review is 6.5–12.9% across the world [1] with the overall prevalence of 7.4% (during the first trimester), 12.8% (during second trimester), and 12% (during third trimester) [17], and 19.2% in the first three months after delivery [1].

Based upon studies conducted primarily in Western countries, risk factors for both ante and postnatal depression include past history of depression, presence of anxiety, marital difficulties or lack of a partner, low levels of social support, and recent major life events [18, 19]. In addition to the above risk factors, women who are depressed and anxious during pregnancy are at high risk for worsening of these symptoms in the postpartum period [20]. Woman who had a previous abortion or the present pregnancy is unplanned appear to be a risk factors for ante but not postpartum depression. Other factors associated with antepartum depression include substance abuse, family violence, negative cognitive style, ambivalence toward the pregnancy, low income, and history of abuse.

Although studies conducted across the world demonstrate that perinatal depression is a universal experience, cultural attitudes, customs, and norms contribute to differences in identification, prevalence, associated factors, and clinical presentations. Asia is the world's largest continent and contains more than 60% of the world's current population. It encompasses a range of diverging cultural groups. However, Asian people generally espouse a more conservative point of view on reproduction, the role of women, and the nature of mental disorders [21–23]. Moreover, the cultural norms generally limit discussion of reproductive and mental health concerns that may affect identification, prevalence, and associated factors of these disorders [24, 25]. Thus, we are interested to review the diversity in prevalence, associated factors, and culturally sensitive correlates in this population. Once potential cultural factors of perinatal depression are identified, preventative measures and treatment procedures may be developed and integrated to enhance Asian women's well being.

### Sources, materials and method

We conducted a literature search using MEDLINE (PubMed) from 1968, PsychINFO from 1970, and SCOPUS database from 1982. Additional articles were identified by being cited in retrieved articles. Keywords used were “depression”,

“antenatal”, “antepartum”, “pregnancy”, “postnatal”, “postpartum”, “perinatal”, “after childbirth”, and “Asia”, etc. Only information from the articles published in English language or providing an abstract (with complete information) in English were included.

The studies included have to be the original research articles in the form of observational cohorts, surveys, or database analyses. Outcomes have to be reported as the number of women depressed as a percentage of the total number of women assessed. In addition, the time of the measurement (i.e., weeks of gestation or trimester, weeks, or months postpartum) have to be reported. To eliminate studies that relied on special subgroups (e.g., pregnant or postpartum women with HIV infection), study selection was restricted to research on samples recruited through general obstetric and prenatal units and to population surveys.

### Results

Two hundred seventy five studies were identified for potential inclusion. Of those, nine were excluded because they had inappropriate study design (e.g. comparative, experimental, or qualitative studies), seven were reviews, five were case reports, seven were letters/ editorials, 37 had inappropriate outcome measures, nine could not be retrieved (or provided only non-English full text), 57 had inappropriate patient populations, 40 did not examine the appropriate disease state, and 18 were duplicated (or using the information from the same studied samples). Thus, 86 articles fulfilled all criteria were used for an assessment of the prevalence of perinatal depression in this study.

### *Depression during pregnancy*

It is generally accepted that the signs and symptoms of depression during pregnancy (antenatal depression) do not differ from depression at any other time [19, 26]. They include depressed mood, anhedonia, fatigue or lack of energy, psychomotor retardation or agitation, difficulties concentrating with increased indecisiveness, insomnia or hypersomnia, weight loss or weight gain, feelings of worthlessness or excessive or inappropriate guilt, and recurrent thoughts of death or suicide [27].

Prevalence of depression during pregnancy has been determined by using either several self-rated questionnaires (with different cutoff scores) or structured clinical interviews (or both) [17]. Self-rated questionnaires were used to determine the prevalence

of clinically significant “depressive symptoms”, whereas, structured clinical interviews were used to determine the diagnosis of “depressive disorders” (e.g. major or minor depressive disorder). Most commonly used self-rated questionnaires are the Edinburgh Postnatal Depression Scale (EPDS) with cutoff scores between 10-14 [28-30], and the Beck Depression Inventory (BDI) with cutoff scores from 9-16 [31-33]. The most commonly used structured clinical interview were Schedule for Affective Disorders and Schizophrenia (SADS) [34, 35], Structured Clinical Interview for DSM-IV Axis I Disorders (SCID) [36-38], and Research Diagnostic Criteria (RDC) [39]. However, a recent systematic review [17] found that despite the variation in cutoff scores, the overall prevalence of antepartum depression was 11% with 7.4% during the first trimester, 12.8% during second trimester, and 12% during third trimester. The review included data from only a few Asian countries.

Only during the past decade has depression during pregnancy become a topic of interest in Asian countries. As in Western and Latin countries, investigators in Asia have found higher rates of depression when using self-rated questionnaires (Hospital Anxiety and Depression Scale (HADS),

Center for Epidemiologic Studies Depression Scale (CES-D), EPDS, and BDI) than when using structured clinical interviews. Sixteen studies assessed the prevalence of depression by using these self-rated questionnaires. The prevalence of depression from these studies varies greatly between 8.7% in Hong Kong (using BDI score  $\leq 15$ ) to 45.5% in Iran (using BDI score  $> 10$ ) with overall weighted prevalence of 17% as shown in **Table 1**. When subdivided into trimesters, the weighted prevalence of depression is about 22.2%, 13.5%, and 17.2% during the first, second, and third trimester, respectively, which is considered to be higher than the prevalence from a recent systematic review [17].

Regarding the studies using structured clinical interview, there are only nine studies as seen in **Table 2**. The prevalence of major depressive episode varies between 3.2% in Hong Kong (using SCID) to 12.9% in Taiwan (using MINI). When subdivided into trimesters, the weighted prevalence for major depressive episode is about 12% and 6.1% during second and third trimester, respectively, and 16.7% and 5.9% for minor depressive episode during first and third trimester, respectively.

**Table 1.** Details of studies that determined the prevalence of depression during pregnancy by self-report questionnaire, by trimester

Trimester	Author	Year published	Country	N	Instrument	Cutoff score	Depressed (%)
1	Lee AM et al	2007	Hong Kong	332	HADS	$\geq 7$	22.1
	Caliskan D et al	2007	Turkey	12	BDI	$\geq 18$	25.0
2	Lee AM et al	2007	Hong Kong	333	HADS	$\geq 7$	18.9
	Caliskan D et al	2007	Turkey	24	BDI	$\geq 18$	25.0
3	Lau Y et al	2007	Hong Kong	2,178	EPDS	$> 14$	9.9
	Glasser S et al	1998	Israel	288	BDI	$\geq 10$	34.0
	Lee AM et al	2007	Hong Kong	333	HADS	$\geq 7$	21.6
	Caliskan D et al	2007	Turkey	30	BDI	$\geq 18$	30.0
	Andajani-Sutjahjo S et al	2007	Indonesia	488	EPDS	$> 12$	12.5
	Gulseren L et al	2006	Turkey	125	EPDS	N/A	21.6
	Iranfar S et al	2005	Iran	163	BDI	$> 10$	45.4
	Limlomwongse N et al	2005	Thailand	610	EPDS	$\geq 10$	20.5
	Leung SS et al	2005	Hong Kong	385	EPDS	$\geq 13$	16.6
	Chung TK et al	2001	Hong Kong	767	BDI	$\geq 15$	8.7
Not separated by trimester	Kazi A et al	2006	Pakistan	292	CES-D	$\geq 16$	39.4
	Chen H et al	2004	Singapore	382	CES-D	$\geq 4$	20.0

N/A = Information unavailable, HADS = Hospital Anxiety and Depression Scale, EPDS = Edinburgh Postnatal Depression Scale, BDI = Beck Depression Inventory, CES-D = Center for Epidemiologic Studies Depression Scale

**Table 2.** Details of studies that determined the prevalence of depression during pregnancy by structured interview, by trimester

Trimester	Author	Year Published	Country	N	Instrument	Type of Depression	Depressed (%)
1	Kitamura T et al	1994	Japan	108	SADS	Minor	16.7
2	Su KP et al	2007	Taiwan	92	MINI	Major	12.0
3	Su KP et al	2007	Taiwan	93	MINI	Major	12.9
	Rahman A et al	2007	Pakistan	632	SCAN	ICD-10 for Depressive disorder	25.3
	Kitamura T et al	2006	Japan	286	SCID	Major	5.5
	Lee DT et al	2004	Hong Kong	157	SCID	Major	3.2
						Minor	1.3
	Chandran M et al	2002	India	359	CIS-R	ICD-10 for Depressive disorder	16.2
	Kitamura T et al	1994	Japan	98	SADS	Minor	13.3
Not separated by trimester	Chee CY et al	2005	Singapore	559	SCID	Major	4.3
						Minor	7.9

SADS = Schedule for Affective Disorder and Schizophrenia, SCAN = the Schedule for Clinical Assessment in Neuropsychiatry, SCID = Structured Clinical Interview for DSM-IV or DSM-III-R Axis I Disorders, MINI = the structural interview Mini-International Neuropsychiatric Interview, CIS-R = the revised Clinical Interview Schedule

As depicted in **Table 3**, there are many factors associated with depression during pregnancy in Asian countries. They are divided into four categories; individual factors (e.g. age, education, history of psychiatric illness, etc.), husband/ marital relationship factors (e.g. husband's education, marital conflicts, support from husband, sexual relationship, etc.), pregnancy-related factors (planned/unplanned, complications, attitude toward pregnancy, etc.), and other psychosocial factors (adverse life events, family, friends, in-laws, etc.). While not all of these factors were evaluated in each study, the breadth of issues was found to be associated with perinatal depression across a wide array of Asian cultures.

The common individual factors associated with depression during pregnancy included younger age [37, 40], less education [41], suffering from medical problems [42], having a personal/ familial history of psychiatric illness [43], and having a history of premenstrual symptoms [40, 43, 44].

The factors related to husband/ marital relationship that were demonstrated to be associated with depression during pregnancy are having husband who is uneducated [45] or unemployed [46], having marital conflict [47], lack support from husband [43, 46], and poor quality of sexual relationship [43].

The pregnancy-related factors included unplanned pregnancy especially, during premarital period [38, 40,

43, 44, 46, 48], pregnancy-related concerns [41], having negative attitude toward current pregnancy [37, 44], having pregnancy symptoms [41], having a history of obstetric complication(s) [42], and having current obstetric complication(s) [42, 43].

Regarding psychosocial factors, financial difficulties [43, 45-47], having many children [45], experiencing stressful life event(s) [47], having family member with chronic illness [46], lack of support from family networks or friends [38, 45-47], and having conflicts with in-laws especially mother in-law [40, 41] were important as seen in **Table 3**.

### **Postnatal depression**

Postnatal (or postpartum) depression, which includes symptoms such as low mood, anhedonia, forgetfulness, irritability, anxiety, sleep disturbance, and poor functioning, generally occurs within four to six weeks after childbirth [27]. Description, symptoms, course, and outcome of postnatal depression are similar to any clinically significant major depressive disorder. [27].

Postnatal depression is of concern to primary and mental health care professionals because it may severely affect the health of the mother as well as the health and development of her baby [39]. Depressed mothers tend to express behaviors that have a negative impact on their children, including



being intrusive or withdrawn, disengaged, not interacting with their babies [49], and being less sensitively attuned to their infants [50]. Infants may have adverse cognitive, behavioral, and emotional outcomes, as well as long-term developmental disturbances as a result of poor mother-child

interactions [50, 51]. Furthermore, maternal postnatal depression not only affect the infant, but influences her entire family, since it has been demonstrated that partners of postnatally depressed women are more likely to become clinically depressed [52] and the marital relationship can be strained.

**Table 3.** Factors that were demonstrated to be associated with depression during pregnancy among Asian countries

Factors	Country							
	Hong Kong	Turkey	Indonesia	Pakistan	Japan	Thailand	Singapore	Lebanon
<b>Individual factors</b>								
- age	✓ <sup>a</sup>			✓ <sup>b</sup>	✓ <sup>a</sup>	✓ <sup>a</sup>	✓ <sup>a</sup>	
- education				✓				
- having medical problem								
- Past history of psychiatric illness	✓	✓					✓	✓
- Familial history of psychiatric illness	✓	✓						✓
- smoking/alcohol use							✓	
- household work				✓				
- history of premenstrual symptoms	✓					✓		✓
<b>Husband/marital relationship factors</b>								
- uneducated husband				✓				
- husband's unemployment			✓					
- marital conflict	✓		✓	✓				
- lack of support from husband			✓					✓
- poor quality of sexual relationship								✓
<b>Pregnancy – related factors</b>								
- unplanned/unwanted pregnancy	✓						✓	✓
- premarital pregnancy			✓			✓		
- pregnancy related concerns				✓				
- negative attitudes toward current pregnancy					✓	✓		
- pregnancy symptoms				✓				
- Past history of obstetric complication (s)							✓	
- Current obstetric complication (s)							✓	✓
<b>Other psychosocial factors</b>								
- in-laws conflict	✓			✓				
- adverse life event (s)		✓		✓				
- illness in the family			✓	✓				
- lack of support from family networks			✓	✓			✓	
- significant other made redundant				✓				
- financial difficulties			✓	✓				✓
- having many children				✓				
- lack of confidant or friend				✓				
- perceived potential conflicts with relatives over childcare							✓	

a = young age, b = older age



**Table 4.** Details of studies that determined the prevalence of postnatal depression by self-report questionnaire.  
(Continued)

Author	Year Published	Country	N	Instrument	Cutoff score	Duration after childbirth	Depressed (%)
Lee DT et al	2004	Hong Kong	781	EPDS	≥ 10	3 months	15.6
Wang SY et al	2003	Taiwan	309	BDI	≥ 10	6 weeks	49.2
		China	196				25
Hau FW et al	2003	Hong Kong	88	SDSS	≥ 8	1 week	44.3
Heh SS et al	2003	Taiwan	407	EPDS	≥ 10	4 weeks	19.7
Rodrigues M et al	2003	India	252	EPDS	≥ 12	6-8 weeks	23.4
Chaaya M et al	2002	Lebanon	396	EPDS	≥ 13	3-5 months	21
Leung WC et al	2002	Hong Kong	694	EPDS	≥ 10	6 weeks	7.2
Sakumoto K et al	2002	Japan	172	EPDS	≥ 13	1 month	4.1
Patel V et al	2002	India	252	EPDS	≥ 12	6-8 weeks	23
			235			6 months	22
Inandi T et al	2002	Turkey	2,514	EPDS	≥ 13	within 1 year	27.2
Danaci AE et al	2002	Turkey	257	EPDS	≥ 13	0-6 months	14
Regmi S et al	2002	Nepal	100	EPDS	≥ 13	2-3 months	12
Suzuki H	2001	Japan	1,864	EPDS	> 9	1 month	14.8
Huang YC et al	2001	Taiwan	101	EPDS	≥ 13	0-3 months	19
Chen CH et al	2000	Taiwan	414	BDI	≥ 10	3 weeks	27.8
Affonso DD et al	2000	Taiwan	99	EPDS	≥ 10	4-6 weeks	73.7
			97			10-12 weeks	60.8
		Korea	94			4-6 weeks	37.2
			97			10-12 weeks	36.1
		India	110			4-6 weeks	35.5
			102			10-12 weeks	32.4
Zhang R et al	1999	China	866	EPDS	N/A	7 days	15.01
Glasser S et al	1998	Israel	288	EPDS	≥ 10	6 weeks	22.6
Fisch RZ et al	1997	Israel	327	EPDS	N/A	1-2 days	9.9-22.3
						6-12 weeks	5.2-12.4
Ghubash R et al	1997	UAE	90	EPDS	≥ 12	7 days	17.8
Tamaki R et al	1997	Japan	627	EPDS	≥ 9	1 month	18.2
						3 months	12.1
						4 months	6.7
Abou-Saleh MT et al	1997	UAE	95	EPDS	≥ 11	7 days	18
Kit LK et al	1997	Malaysia	154	EPDS	N/A	6 weeks	3.9
Guo SF	1993	China	425	EPDS	N/A	6-12 months	17.9

N/A= Information unavailable, HADS = Hospital Anxiety and Depression Scale, EPDS = Edinburgh Postnatal Depression Scale, BDI = Beck Depression Inventory, CES-D= Center for Epidemiologic Studies Depression Scale, SDSS= Stein's Daily Scoring System



**Table 5.** Details of Studies That Determined the Prevalence of Postnatal Depression by Clinical Interview

Author	Year Published	Country	N	Instrument	Type of Depression	Duration after childbirth	Depressed (%)
Kim YK et al	2008	South Korea	239	SCID	Major	6 weeks	12.6
Liabsuetrakul T et al	2007	Thailand	400	SCID	Major	6-8 weeks	1
					Minor		9
Akman C et al	2007	Turkey	302	SCID	Major	6 weeks	6.3
Pitanupong J et al	2007	Thailand	351	SCID	Major	6-8 weeks	1
					Minor		10
Mazhari S et al	2007	Iran	200	SCID	Major	N/A	21.5
					Minor		13
Rahman A et al	2007	Pakistan	632	SCAN	ICD-10 depressive disorder	6 weeks	25
Kitamura T et al	2006	Japan	280	SCID	Major	N/A	5
Chee CY et al	2005	Singapore	278	SCID	Major	6 weeks	4.3
					Minor		2.5
Teng HW et al	2005	Taiwan	203	MINI	Major	6 weeks	8.4
Bloch M et al	2005	Israel	210	SCID	Major+ Minor	6-8 weeks	19
Aydin N et al	2004	Turkey	341	SCID	Major	within 1 year	14.4
Rahman A et al	2003	Pakistan	541	SCAN	ICD-10 depressive disorder	10-12 weeks	28
Chandran M et al	2002	India	359	CIS-R	ICD-10 depressive disorder	6-12 weeks	19.8
Regmi S et al	2002	Nepal	100	SCID	Major	2-3 months	5
Lee D et al	2001	Hong Kong	959	SCID	Major	1 month	5.5
					Minor		4.7
					Major	3 months	6.1
					Minor		5.1
Yamashita H et al	2000	Japan	88	SADS	Major	3 months	8
					Minor		9
Lee DT et al	1998	Hong Kong	145	SCID	Major	6 weeks	5.5
Okano T et al	1992	Japan	47	SADS	Major	1 month	4.25
					Minor		4.25

N/A= Information unavailable, SADS= Schedule for Affective Disorder and Schizophrenia, SCAN = the Schedule for Clinical Assessment in Neuropsychiatry, SCID = Structured Clinical Interview for DSM-IV or DSM-III-R Axis I Disorders, MINI = the structural interview Mini-International Neuropsychiatric Interview, CIS-R = the revised Clinical Interview Schedule

When using self-rated questionnaires, the overall weighted prevalence of postnatal depression is about 27.9%, with the point prevalence of 23.7%, 16.5%, and 17.4% around six weeks, three months, and six months after childbirth, respectively, which is considered to be higher than that among studies conducted in Western countries (13%) [53, 54]. Regarding studies using structured clinical interview, the overall weighted prevalence of major and minor depressive episode is about 6.6% and 6.3%, respectively.

Concerning the associated factors, we also categorized in four categories as listed for antenatal depression, individual, husband/ marital relationship, pregnancy-related, and other psychosocial factors, with an additional fifth category "infant-related factors".

The individual factors that were associated with PPD are age [55], religion [44], having health problems [56], age at marriage [55], history of premenstrual symptoms [57, 58], previous depression or having depression during pregnancy [59-61], poor self body image with weight conscience [55], personality disorders (e.g. avoidant, dependent, and obsessive-compulsive) [62], insecure attachment style [63], history of postpartum depression [64], history of maternity blues [58, 65], smoking [59], and negative attitudes toward their work or unemployment [66].

Regarding husband/marital relationship, the factors that were related to PPD are husband's psychiatric illness [67], alcoholism [59], uneducated [45], uncertain about husband's work [46], husband's polygamy [59], relationship problems with husband or



marital conflict [60, 66], lack of husband's support [68], and regret for marriage [46].

Concerning pregnancy-related factors, parity [45, 62], unplanned/unwanted or negative attitude toward pregnancy [46, 66], pregnancy complication [44], history of pregnancy loss [60], and negative confinement experience [38] were associated with PPD.

Other psychosocial factors that were associated with postnatal depression are being migrants [65, 69], living in mixed/conflicting influences of culture [70], poor accommodation [37], lack of social support [61, 71, 72], lack of instrumental support or medical resources [38], stressful life events [59], financial difficulties [60], lack of confidant/friend [56], and conflicts/ being abused by in-laws [55, 60, 73].

Regarding infant-related factors, preterm delivery [74], infant's health problem [57, 61], dissatisfaction with infant's gender (with mostly a baby girl) [37, 60, 61], infant's birth defect [46], infant's difficult temperament [57], stress with child care [75, 76], infant's feeding difficulties [56], short period of rest/exhaustion after childbirth [68], low involvement of husband over child care [77], and conflicts with relatives over child care [38] were associated with PPD.

## Discussion

The prevalence of perinatal depression varies greatly among Asian countries with slightly higher than the prevalence examined in a systematic review using the data from across regions including western countries [1, 17]. These differences in reported prevalence might be due to differences in the type of instrument and cutoff score used, cultural variables, reporting style, differences in perception of mental health, differences in socioeconomic environments, levels of social support or its perception, as well as biological vulnerability factors [24].

The use of standardized "Western" methods and diagnostic classification systems, may be culturally insensitive and increase the risk of missing symptoms or signs prevalent in non-Western cultures [24] since Asian people (e.g. Japanese and Chinese) tend to express depression more as somatic symptoms, whereas Western people tend to express more affective symptoms [78]. Therefore, culturally sensitive cut-off points have been recommended by the instruments developers [24].

In terms of associated factors with perinatal depression, most factors seem to be similar to other studies conducted in western countries (e.g. financial difficulties, low social support, stressful life events, and marital difficulties for antenatal depression, and having a history of depression during pregnancy, low social support, poor marital adjustment, and parenting stress for postnatal depression) [18-20]. However, there are some unique Asian cultural-related factors. In specific, premarital pregnancy, conflict with in-laws (especially, mother in-law), and dissatisfaction with infant's gender (mostly, a baby girl) are never mentioned as risk factors for perinatal depression in studies conducted among Western women.

Financial difficulty or poverty was found to be associated with depression and low rate of recovery in several studies both in Asia and western countries [45, 79]. Although pregnancy and childbirth are generally viewed as a joyful time to most families, they also put on economic burden (including increased expenses for antenatal care and delivery and expenses for a new member of the family), especially, among low-income families or nuclear families, where the husband is the only one who provides family income. In contrast, an ability to control the family finances by the woman seems to exert a protective influence. This could be related to issues of empowerment. Women who have more personal freedom and autonomy tend to be less stressed than those who have little [47]. Moreover, previous study also explained that poverty has an indirect effect to depression and may be mediated by a lower sense of control over life events [80].

Social support was demonstrated to be important in transition to motherhood and has an impact on emotional coping [61]. It gives direct effects on emotional stability, attenuated effects of stressful life events, and prevents depression [81]. Lack of social support has been demonstrated as an independent predictor for postpartum depression in some previous studies [71]. It predisposes persons, making them vulnerable to stress, worthlessness, and hopelessness [82]. Moreover, a study reported that social support is a successful treatment for postpartum depression [83].

Marital dissatisfaction or marital conflict was also significantly associated with both depression during pregnancy and postpartum period [40, 60]. This includes the low level of interaction and companionship experience [84], the deterioration of social support

from partners, and poor intimacy with partners [85]. Some pregnant women feel insecure about bodily changes and regarded themselves as sexually unattractive and need extra support from their partner [86]. They may monitor their partners' affection and task support as indicators of love and acceptance [87]. A lack of these expected supports from the partner could have impact on depressive symptoms [88].

In the other hand, some studies have proposed that antenatal depressive symptoms may precede marital conflict [89]. Depressed women may loath others (including their partners) [90]. Their family, partner, as well as friends may try but fail to alleviate their negative emotions, leading others to avoid them. Thus, the relationship between marital conflict and depressive symptoms is considered to be very complicated and depression and marital conflict are likely to influence each other [90].

For unique Asian cultural-related factors, premarital pregnancy is considered as very unacceptable in most Asian countries. This might be due to a much more conservative attitude toward sex among Asian cultures than western countries. Being a pregnant woman before marriage may reflect that this woman had experienced a premarital sexual relationship, which is considered as a shame or taboo in most Asian countries [91-95].

As an example in Korea, a pregnant unmarried woman is considered a shame and stigma not only for herself, but also for her entire family. She would be confronted with indifference, rejection, and abandonment by her family. Even if her family accepts her, she has to witness her family being shunned by villagers and friends. Moreover, her sister or brother could also be rejected by future parents-in-law due to her pregnancy [96]. This may create a pressure and guilt feelings on unmarried pregnant women, which may lead to poor maternal adjustment if not clinical depression.

Conflicts between mother- and daughter-in-law are notoriously common in most Asian societies [73]. In traditional Asian societies, marriage means bringing in a daughter-in-law to join the family rather than composing a new household for the newly-weds. The daughter-in-law was commonly entrusted to the supervision and control of her mother-in-law, who was generally portrayed as tyrannical [73].

In Chinese cultures, married women are compelled to be agreeable towards their mother in-

law as well as the older generation by accepting their recommendations regarding perinatal and baby care [73]. Consequently, women may have to struggle in silence to control their frustration and lack of decision-making power [97]. Moreover, a high percentage of Chinese couples considered the in-law relationships to be difficult [98], and in-law conflict was reported in nearly a third of young women who attempted suicide [99].

Studies in Hong Kong, India, Japan, Korea, and Turkey also demonstrated mother-in-law conflicts as a significant problem among married women in those countries [67, 96]. Moreover, they also demonstrated mothers-in-law play a significant role in domestic violence inflicted on married women [100].

The modern relationship between daughter- and mother-in-law is embedded as much in the traditional patri-lineal culture as in the growing economic independence of younger generations. The stereotypical representation of an oppressive mother-in-law and a submissive daughter-in-law is rarely seen nowadays as improved education opportunities and economic independence among younger women have remade the in-law relationships which the shift of power to the younger generation [73]. This shift in power, however, does not necessarily reduce the tension imbued in the in-law relationship. However, most of the depressed daughters-in-law and their families may regard the conflicts as "familial secrets" that should not be disclosed to outsiders. This happens even in the clinical or research context, or when daughters-in-law would like to talk about this issue. Most mothers-in-law would hover suspiciously nearby while interviewing or would not come for assessment, making this issue difficult to deal with [73].

In terms of infant's gender, as we seen in many studies that dissatisfaction in infant's gender (baby girl) is amongst the risk factors for postnatal depression. This implies the significance of infant's gender in Asian Family. In some Asian cultures dominated by Confucianism (e.g. Chinese, Taiwanese, Korean, Hong Kong, etc.), married couples are expected by their family to have at least one son to maintain the continuity of the bloodline [96]. In Turkey, which is a Muslim country in western Asia, a baby boy is seen as a source of income. Women who cannot give birth to a baby boy may be considered incapable, leading to serious problems in the marriage [60].

In India, the influence of boy preference has a major effect on new mothers. The baby girl is viewed

as a heavy economic drain on the family. This is partly due to the perception that most girls marry and thus contribute little economically to the family. Thus, dowry payments made at the time of marriage are crucial. The baby boy, on the other hand will one day be an earning member of the family. If women give birth to a baby girl, they are faced with a lack of support and hostility from their husband and mother-in-law [77]. These expectations may play a role in modulating emotional response of the mother who gave birth to the baby girl.

### Limitations

This study only estimates the prevalence of perinatal depression and demonstrates the associated factors among Asian women in a descriptive way. The meta-analytical methods were not used to examine these factors due to the natures of the articles included (most of them have a different methodology and have examined a different group of risk factors). Although several Asian countries share some of attitudes and cultural norms, Asians is a rather broad category encompassing a range of diverging cultural groups. The results of this study may not be generalized to Asian women in all of Asian countries.

### Conclusion

Perinatal depression (including antenatal and postnatal depression) in Asian countries is relatively common, with slightly higher prevalence than in a recent systematic review that did not include many Asian countries. The associated factors are mostly similar to the studies conducted in Western countries with the exception of several important Asian culture-related factors. Understanding the culture-related issues that contribute to perinatal depression risk in Asian women may help health care professionals (especially who have to deal with Asian patients) more readily detect depression in these women and provide appropriate support and treatment.

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