RESEARCH

Prevalence and related factors of perinatal depression in Egyptian mothers

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Abstract

Background: Early detection of perinatal depression and its cultural determinants could reduce its sequalae on mothers and their babies. This study investigated the prevalence of perinatal depression in Egyptian mothers and compare women with and without perinatal depression regarding the psychosocial factors.

Three-hundred one women were recruited (166 were pregnant and 135 were in postpartum period) from a primary healthcare unit. Full sociodemographic data, Social Classification Scale, Dyadic Adjustment Scale (DAS), and the Edinburgh Postnatal Depression Scale (EPDS) were completed. Subjects with EPDS score > 9 answered the structured clinical interview (SCID-I) for diagnosis of depression and Hamilton Rating Scale for Depression (HRSD) for depression severity.

Results: Depression with mild to moderate severity was reported in 5.4% and 3.7% of women during pregnancy and postpartum period, respectively. There was a statistically significant association between depression and employment ($p = 0.031$), mother-in-law disputes ($p = 0.002$), stigma of being the second wife ($p = 0.047$), and having financial burdens ($p = 0.001$). Marital satisfaction was a protective factor for depression ($p < 0.001$).

Conclusions: Prevalence of perinatal depression was comparable to other developing countries. It was strongly linked to culturally related factors including marital women's employment, mother-in-law disputes, being the second wife, and socioeconomic burdens. Early detection of perinatal depression and its culturally related factors is important for its management.

Keywords: Depression, Perinatal, Marital satisfaction, Pregnancy, Postpartum

Background

Around 10 to 15% of newly delivered women experience an episode of major depression; 3 to 5% of them have moderate to severe depression. Around 2 out of 1000 women are hospitalized for the postpartum nonpsychotic disorder. In the UK, 50% of the overall suicide reports are related to suicide due to postpartum mental illness either psychosis or severe depression mainly in the first-year postpartum [1]. Perinatal depression or "maternal depression" refers to a major or a minor episode of depression

during pregnancy (termed antenatal) or within the first 12 months after delivery (termed postpartum or postnatal). Antenatal depression is now recognized as problematic (perhaps more) as postpartum depression [2].

Postpartum depression symptoms constitute tearfulness, emotional lability, guilt feeling, sense of hopelessness, loss of appetite, sleep disturbances, poor concentration, fatigue, irritability, and inability to cope with the infant [3]. It usually begins within 1–12 months after delivery [4]. The rate of depression is reported to be 7.4% during the first trimester, rising to 12.8% and remaining at 12% during the third trimester [5]. Among women with postpartum depression, over 50% are declared to have depression identified either before or

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during pregnancy [6]. The strongest predictor of perinatal depression is found to be past history of depression [7] and previous perinatal depression [6, 8].

The etiology of depression is generally accepted to be a combination of neurotransmitter disturbance, hormonal dysregulation, and genetic, and psychosocial factors can be the cause [9]; social risk factors include lack of a partner, marital difficulties (e.g., divorce), and low socioeconomic status (e.g., financial insecurity/hardship), and psychological factors include current depression or anxiety, history of depression, or other psychiatric illness [2].

Being a victim of violence increases the odds of perinatal depression sevenfold, while the older age of mothers decreases the odds by 20%. Exclusive breastfeeding and regular prenatal vitamin intake during pregnancy are associated with 80% and 0.17% decrease in perinatal depression occurrence, respectively [10].

Perinatal depression causes negative consequences for infants that range from immediate risks, such as preterm delivery [11] and neonatal complications [12], to longer term sequelae, such as impaired neurological, cognitive, emotional, and social development [13]. In addition, depressed mothers have more complex behavioral interactions with their children, becoming less responsive, more sensitive, and more intrusive in their care, and children develop an insecure attachment to mothers at age of 36 months [14].

Antenatal depression often goes unrecognized and untreated in part because of concerns about the safety issues of medicating pregnant women and because its symptoms mimic those associated with pregnancy such as changes in mood, cognitive affection, decreased energy level, and appetite change. Depressed women are more likely to have a poor quality of life [15], increased social stress [16], inadequate perinatal care, and persistent complications such as nausea, vomiting, and preeclampsia [17, 18].

Antenatal depression is noted as a strong predictor for postnatal depression [19]; therefore, early screening is mandatory [20], as it is difficult to predict who is having depression by non-detailed history taking [4].

Perinatal depression has been alarming due to the intertwined psychopathological causes and the harmful comorbidities [21]. Risk factors of postpartum depression are culturally determined especially in the developing world [22]. Moreover, culture-related factors are important determinants of occurrence or alleviation of postpartum depression. Thus, for the early detection of perinatal depression, it is mandatory to identify related risk factors in different communities [23].

The current study aimed to identify the rate and severity of major depressive disorder during pregnancy and postpartum period of Egyptian women and to compare women with and without perinatal depression regarding psychosocial factors, obstetric variables, and marital adjustment.

Methods
Participants
This is a comparative cross-sectional study that recruited 301 women by convenient random sampling coming for perinatal care in a primary healthcare unit from September 2014 until August 2015.

The study included women who were pregnant and women during the first 6 months postpartum, and their ages ranged between 18 and 45 years; women with either current psychiatric disorder other than depression or current major physical illness like renal/liver/cardiac diseases were excluded. The study protocol was approved by the Ethical Committee of the Faculty of Medicine. All women were briefed on the study, and a written informed consent was obtained.

Measures
A predesigned sheet
It included the demographic data (age, educational level, occupation, and number of children), psychiatric history (past history of perinatal depression, other psychiatric illnesses, family psychiatric history), subjective feeling of stress (mother-in-law disputes, child responsibility, stigma of being the second wife, financial burdens), and obstetric data (natal period either pregnancy or postpartum, history of infertility/induction of labor/abortion/stillbirth, if pregnancy, the baby or its gender was wanted or not, and attitude toward the gender of the baby).

Fahmy and El Sherbini social classification
It includes items on the age, sex, level of education and occupation of the parents, family size, estimated economic level, and sanitation in the house. The total score is 30; 25 or higher scores indicate high social class, 20–24 middle class, 16–19 low social class, and 15 or less very low social class [24].

The Dyadic Adjustment Scale (DAS)
It is a 32-item self-administered questionnaire to assess marital adjustment, composed of four subscales: dyadic consensus, dyadic satisfaction, dyadic cohesion, and affection expression. The total score ranges from 0 to 151. The Arabic version of the scale was used [25].

Edinburgh Postnatal Depression Scale (EPDS)
It is validated to be used in the antenatal and postnatal periods. It is a 10-item self-rating instrument, whereas each item has a 4-point scale. The minimum and maximum total scores are 0 and 30, respectively. It focuses on

the cognitive and affective features of depression [26]. The study used the Arabic version of EPDS [27].

The Structured Clinical Interview for DSM-IV (SCID-I)
It is a semi-structured diagnostic interview updated for the DSM-IV. The study used the Arabic version [28].

Hamilton Rating Scale for Depression (HAM-D)
It is 21-item questionnaire used to rate the severity of major depression. Scores between (0–6), (7–17), (18–4), and > 24 indicate no depression, mild, moderate, and severe depression, respectively [29].

Procedure
The study was performed by a stratified random sampling of 301 women who were initially assessed using the predesigned sheet for assessing the demographic, psychiatric, and obstetric items hypothesized to be risk factors for maternal depression. All subjects were asked to complete the EPDS for the possibility of perinatal depression. Among the 301 women, 33 women (22 pregnant women and 11 in postpartum period) scored > 9 on the EDPS, so they were further interviewed by the structured clinical interview (SCID-I) for diagnosis of major depressive disorder. Only 14 (9 pregnant women and 5 in the postpartum period) women warranted a current major depressive episode diagnosis, so they answered the HAM-D to detect the severity of depression.

Statistical analysis
All data were recorded and entered in a statistical package on a compatible computer. Analysis was done using the statistical package for the social sciences (SPSS, 17th version). Comparison between two independent populations was done using an independent t-test. Fisher's exact and χ^2 tests were used to compare qualitative data. The results were tabulated, grouped, and statistically analyzed. The level of significance was $p < 0.05$ (significant) and $p < 0.01$ (highly significant).

Results
Sociodemographic and subjective feeling of stress among pregnant and postpartum women
The sample consists of 301 women: 166 (55.1%) in pregnancy and 135 (44.9%) in postpartum periods. Their mean age was 23.7 ± 4.9 and 24.7 ± 5.3 years, respectively. Finishing secondary and high education was the most prevailing educational levels. Most of participants were housewives (77.7%), and more than two-thirds had very low socioeconomic level (75.2%). Most of the pregnant women (44.6%) were having their first child, while a greater portion of postpartum women (69.6%) had two or more previous children (Table 1).

There were statistically significant differences regarding number of children ($p < 0.001$), occupation ($p < 0.031$), and educational level ($p < 0.001$) between pregnant and postpartum women. Considering the subjective feeling of stress items, disputes with mother-in-law and financial burdens were the highest stressful situations recorded by both groups (Table 1).

Psychiatric and obstetric history among pregnant and postpartum women
Regarding the psychiatric history, perinatal depression was reported in 6.6% and 4.4% of pregnant and postpartum women, respectively (Table 2). Around 80.7% and 84.4% of pregnant and postpartum women had planned pregnancies, respectively. All their babies were wanted. There was a statistically significant difference among the two groups regarding the attitude of parents toward the gender of the baby ($p < 0.001$), with negative attitude in 22.9% of pregnant women.

There were statistically significant differences among the two groups regarding history of induction of labor ($p = 0.009$) and history of abortion/stillbirth ($p = 0.012$) with higher rates shown in pregnant women (4.8% had history of induction and 13.9% had history of abortion) than women in postpartum period. There was no statistically significant difference considering the history of infertility (Table 2).

Depression and marital satisfaction among pregnant and postpartum women
The rate of depressive symptoms during pregnancy and postpartum period was 13.2% and 8.1%, respectively, using the EPDS. Subjects who had a cutoff score > 9 answered the SCID-I questionnaire showing major depressive disorder with mild to moderate severity measured by the Hamilton Depression Scale in 5.4% and 3.7% of pregnant and postpartum subjects, respectively.

Using the Dyadic Adjustment Scale, the rate of marital satisfaction was 93.4% during pregnancy and 97% in postpartum period. There were no statistically significant differences regarding marital satisfaction, EPDS, SCID-I, and HAM scores between the two groups (Table 3).

The sociodemographic differences among depressed and nondepressed women
There was a statistically significant difference between major depressive disorder and occupation; depression was higher in employed females than in housewives ($p = 0.031$). There were no statistically significant differences between depression and variables like age, number of children, social status, and educational level (Table 4).

Table 1 Comparison between pregnant and postpartum women regarding the sociodemographic data and subjective feeling of stress scores

Variable		Pregnant (N = 166)	Postpartum (N = 135)	X^2	P	Odd ratio
Age		23.7 ± 4.9	24.7 ± 5.3	1.547[a]	0.123	
Education	Illiterate	43 (25.9%)	34 (25.2%)	28.311	< 0.001*	
	Primary	26 (15.7%)	21 (15.6%)			
	Secondary	68 (41%)	24 (17.8%)			
	High education	29 (17.5%)	56 (41.5%)			
Occupation	Housewife	153 (92.2%)	132 (97.8%)	Fisher's exact test	0.031*	0.267 (0.075–0.959)
	Employed	13 (7.8%)	3 (2.2%)			
Number of children	0	74 (44.6%)	0 (0.0%)	Fisher's exact test	< 0.001*	
	1	41 (24.7%)	41 (30.4%)			
	≥ 2	51 (30.7%)	94 (69.6%)			
Socioeconomic level	Very low	129 (77.7%)	100 (75.2%)	5.897	0.117	
	Low	18 (10.8%)	18 (13.5%)			
	Middle	16 (9.6%)	7 (5.3%)			
	High	3 (1.8%)	8 (6.0%)			
Subjective feeling of stress	Absent	146 (88.0%)	124 (91.9%)	3.565	0.468	
	Mother in low disputes	13 (7.8%)	9 (6.7%)			
	Child responsibility	3 (1.8%)	0 (0.0%)			
	Stigma of being 2nd wife	1 (0.6%)	0 (0.0%)			
	Financial burdens	3 (1.8%)	2 (1.5%)			

[a] *t*-test used as test of significance. X^2, chi-square test. *Significant

Table 2 Comparison between pregnant and postpartum women regarding the psychiatric and obstetric variables

Variable		Pregnant (N = 166)	Postpartum (N = 135)	X^2	P	Odds ratio
History of perinatal depression	Absent	155 (93.4%)	129 (95.6%)	0.665	0.462	
	Present	11 (6.6%)	6 (4.4%)			
Past psychiatric history other than PDD	Absent	166 (100.0%)	135 (100.0%)			
Family psychiatric history	Absent	166 (100.0%)	135 (100.0%)			
Planned pregnancy	No	32 (19.3%)	21 (15.6%)	0.711	0.448	
	Yes	134 (80.7%)	114 (84.4%)			
Wanted baby	Yes	166 (100.0%)	135 (100.0%)			
Attitude towards the gender of baby	Negative	38 (22.9%)	0 (0.0%)	Fisher exact test	< 0.001*	
	Positive	128 (77.1%)	135 (100.0%)			
History of infertility	Absent	164 (98.8%)	134 (99.3%)	Fisher exact test	1.000	
	Present	2 (1.2%)	1 (0.7%)			
History of induction of labor	Absent	158 (95.2%)	135 (100.0%)	Fisher exact test	0.009*	
	Present	8 (4.8%)	0 (0.0%)			
History of abortion/stillbirth	Absent	143 (86.1%)	128 (94.8%)	6.237	0.012*	0.340 (0.141–0.819)
	Present	23 (13.9%)	7 (5.2%)			

X^2, chi-square test. *Statistically significant

The psychiatric and obstetric variables among depressed and nondepressed women

There were no statistically significant differences regarding the psychiatric and obstetric history and depression. There was a statistically significant difference in depression occurrence and marital satisfaction ($p < 0.001$). The most common causes of stress reported in depressed women were disputes with the mother-in-law, stigma being the 2nd wife, and financial strains with statistically significant relation with

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Table 3 Comparison between pregnant and postpartum females using EPDS, SCID-I, HAM-D, and DAS

Scale		Pregnancy (N = 166)	Postpartum (N = 135)	Test	*p*-value
EPDS	Cutoff < 9	144 (86.2%)	124 (93.3%)	$X^2 = 1.988$	0.195
	Cutoff ≥ 9	22 (13.3%)	11 (8.1%)		
SCID-I	No depression	157 (94.6%)	130 (96.3%)	$X^2 = 1.988$	0.195
	Major depression	9 (5.4%)	5 (3.7%)		
HAM-D[a]	Mild depression	4 (2.4%)	3 (2.2%)	Fisher's exact	1.000
	Moderate depression	5 (3.0%)	2 (1.5%)		
DAS	< 97	11 (6.6%)	4 (3.0%)	Fisher exact	0.187
	≥ 97	155 (93.4%)	131 (97.0%)		

EPDS Edinburgh Postnatal Depression Scale, *DAS* the Dyadic Adjustment Scale, *HAM-D* Hamilton Rating Scale for Depression, *SCID-I* the Structured Clinical Interview for DSM-IV; [a] total number = 14; X^2, chi-square test

Table 4 Demographic data, psychiatric and obstetric history in relation to depression by SCID-I among the total sample

Variables		SCID-I		Total	X^2	P	OR
		No depression (N = 287)	Depression (N = 14)				
Age		24.09 ± 5.1	25.64 ± 4.8		1.114	0.266¶	
Natal period	Pregnancy	15 (94.6%)	9 (5.4%)	166 (100.0%)	0.495	0.588	
	Postpartum	130 (96.3%)	5 (3.7%)	135 (100.0%)			
Education	Illiterate	72 (93.5%)	5 (6.5%)	77 (100.0%)	1.273	0.736	
	Primary	46 (97.9%)	1 (2.1%)	47 (100.0%)			
	Secondary	22 (95.7%)	1 (4.3%)	23 (100.0%)			
	High education	147 (95.5%)	7 (4.5%)	154 (100.0%)			
Occupation	Housewife	274 (96.1%)	11 (3.9%)	285 (100.0%)	7.574	0.031*	5.7 (1.4–23.1) 32
	Employed	13 (81.2%)	3 (18.8%)	16 (100.0%)			
Number of children	0	71 (95.9%)	3 (4.1%)	74 (100.0%)	1.756	0.416	
	1	80 (97.6%)	2 (2.4%)	82 (100.0%)			
	≥ 2	136 (93.8%)	9 (6.2%)	145 (100.0%)			

SCID-I the Structured Clinical Interview for DSM-IV; ¶independent *t*-test; *statistically significant

depression (*p* = 0.002, 0.047, and 0.001, respectively) (Table 5).

Discussion

This study provides considerable evidence that women experience deterioration in their psychological adjustment during the perinatal period where they should be taught coping strategies to reduce stress and depression. In the current study, the rate of perinatal depression during pregnancy was 13.2% by the EPDS, comparable to previous studies [30, 31]. Previous studies showed higher prevalence of depression during pregnancy in developing countries (19–25%) compared to developed countries (7–15%) [32].

The rate of major depressive disorder during pregnancy based on the SCID-1 scale was 5.4%. Consistently, previous studies reported a point prevalence of depression at the first trimester to be 1.0–5.6% [33] and with similar results in Japan (6%) [34].

The rate of depressive symptoms in postpartum period was 8.1% by using the EPDS. This can affect the mother's ability to care for her baby and can limit her capacity to engage positively in social interactions [35]. Higher rates of depression were also reported in other areas in Egypt like El-Minia city (49.5%) [36], Sohag (39%) [37], and in Mansoura (17.9%) [30].

The rate of major depression in the postpartum period in our results was 3.7% by the SCID-I. It has been noted that the prevalence of postpartum depression varied from 1.9 to 82.1% in developing countries and from 5.2 to 74.0% in developed countries [38]. These differences might be due to differences in the type of the screening instrument used, cutoff scores, cultural variables, and

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Table 5 Psychiatric, obstetric, and subjective feeling of stress and marital satisfaction variables in relation to depression by SCID-I among the total sample

Variables		SCID-I (*N* = 301)		Total	X^2	*P*	OR
		No depression (287)	Depression (14)				
History of perinatal depression	No	272 (95.8%)	12 (4.2%)	284 (100.0%)	2.056	0.183	
	Yes	15 (88.2%)	2 (11.8%)	17 (100.0%)			
Past psychiatric history	Absent	287 (95.3%)	14 (4.7%)	301 (100.0%)			
Family psychiatric history	Absent	287 (95.3%)	14 (4.7%)	301 (100.0%)			
History of infertility	No	284 (95.3%)	14 (4.7%)	298 (100.0%)	0.148	1.000	
	Yes	3 (100.0%)	0 (0.0%)	3 (100.0%)			
History of induction of labor	No	279 (95.2%)	14 (4.8%)	293 (100.0%)	0.401	1.000	
	Yes	8 (100.0%)	0 (0.0%)	8 (100.0%)			
History of abortion/stillbirth	No	259 (95.6%)	12 (4.4%)	271 (100.0%)	0.305	0.638	
	Yes	28 (93.3%)	2 (6.7%)	30 (100.0%)			
Mother-in law disputes	Yes	17 (77.3%)	5 (22.7%)	22 (100.0%)	17.487	0.002*	0.113 (0.034–0.379)
	No	270 (96.8%)	9 (3.2%)	279 (100.0%)			
Child responsibility	Yes	2 (66.7%)	1 (33.3%)	3 (100.0%)	5.621	0.134	
	No	285 (95.6%)	13 (4.4%)	298 (100.0%)			
Stigma of being 2nd wife	Yes	0 (0.0%)	1 (100.0%)	1 (100.0%)	20.568	0.047*	23.07 (13.6–39.3)
	No	287 (95.7%)	13 (4.3%)	300 (100.0%)			
Financial burdens	Yes	2 (40.0%)	3 (60.0%)	5 (100.0%)	35.122	0.001*	0.026 (0.004–0.170)
	No	285 (96.3%)	11 (3.7%)	296 (100.0%)			
DAS scale	Dissatisfaction	7 (46.7%)	8 (53.3%)	15 (100.0%)	84.364	< 0. 001*	0.019 (0.005–0.069)
	Satisfaction	280 (97.9%)	6 (2.1%)	286 (100.0%)			

DAS the Dyadic Adjustment Scale, *SCID-I* the Structured Clinical Interview for DSM-IV; *statistically significant

differences in socioeconomic environments. The current study showed higher rate of depression in pregnant women (13.3%) than the postpartum (8.1%). This was consistent with findings by other studies [39–41], referring to the high levels of depression in pregnant women compared to postpartum.

The mean age of our sample was early 20s, and there was no significant difference between depressed and nondepressed mothers. This was consistent with the previous studies [42–44].

In this study, there was a significant difference between pregnant and postpartum women with the majority having modest educational level (secondary and high education) with no significant correlation with depression in consistent with previous studies [42, 45, 46]. Previous studies reported that education is a predictor of postpartum depression [47], and that mothers who had a higher level of education were more at risk of postpartum depression [48, 49], being sensitive and embarrassed to admit depressive symptoms [50]. Yet, other studies found that educated mothers have supportive social networking and high self-esteem [51].

Furthermore, the rate of depression was higher among employed Egyptian mothers. These data were similar to previous studies which detected higher depression in

working females than housewives [46, 52]. This could be explained by the increasing workload on women to meet the economic needs of their household besides the negative attitude of relatives towards their work in lower and middle social classes [53]. However, investigating other confounders related to employment is warranted. On the contrary, employment was related to a lower prevalence of depressive symptoms mainly during pregnancy [54, 55].

Most of the pregnant women in the current study (44.6%) were having the first child, while a greater portion of postpartum women (69.6%) had two or more previous children with significant difference, but with no significant association with depression, which can be explained by the meshwork of social support received in that specific culture, similar to the previous studies [42, 56]. The number of children was not a significant factor for developing depression in this study. However, a study in UAE reported a significant association between depression and the number of children [57].

Disputes with the mother-in-law were one of the risk factors of depression among our cohort. This was in line with findings of previous studies on eastern women, due to having to live with the husband's family and be responsible to take care of them [58–60]. The woman is

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supposed to follow the advice of her mother-in-law in different aspects of her life, and this consequently makes women struggle in silence to control their life lacking self-autonomy. Depressive symptoms become prominent if women gain no support from their husbands.

Another determinant factor of depression was the financial burdens, which reflects the lack of self-sufficiency in face of one self's and home needs, as financial security protects against depression [61]. This agrees with studies reflecting the high perinatal depression triggered in low-income women [62, 63]. Furthermore, there was a significant relation between depression and being a second wife due to the social stigma and stress women continuously get that may lead to a sense of alienation, anxiety, and depression.

In consistent with prior studies, marital satisfaction was reached in almost all the pregnant and postpartum women, as guidance and affection given by husbands help women manage their stress positively [64, 65]. On the other hand, women who did not receive sufficient support from their husbands were vulnerable to depression [30, 36, 51, 66].

The previous history of depression is considered a strong predictor of postpartum depression [7, 39]. In contrast, the current study showed no correlation between the history of mental illness and perinatal depression. In rural areas, mental problems are still considered "family secrets" that should not be disclosed to outsiders. The stigma associated with mental disorders is considered a shame for the entire family [67]. Some women who took part in our study did not recognize depression as a psychological issue but considered the problems a result of the "evil eye."

Moreover, the satisfaction by the baby gender was one of the culturally related determinant factors of depression. This could be attributed to the religious beliefs of giving compassion, acceptance, and contentment with God's providence that overrides the engrained cultural stereotype of male gender preference for financial benefits and heritage concepts. In the current study, a low incidence of previous abortion was reported from recruited women that were not associated with perinatal depression in consistent with previous studies [68].

Limitations
The current study is limited by its cross-sectional design which cannot provide reliable causal correlations. The small sample size recruiting mothers attending a single public primary health service can affect the ability of reliable generalization to the whole Egyptian population. Also, the small number of depressed women and reported psychosocial factors such as the second wife. Another limitation is the lack of medical records that can give more detailed data on the psychiatric and family histories of patients.

Conclusions
Perinatal depression with mild to moderate intensity was reported in 5.4% and 3.7% of Egyptian women during pregnancy and the postpartum period, respectively. Moreover, it was strongly linked to cultural factors including marital women's employment, mother-in-law disputes, being the second wife, and socioeconomic burdens. Assessment of marital dynamics and thorough psychiatric history taking can identify high-risk mothers for early diagnoses and management of perinatal depression.

Declarations

Ethics approval and consent to participate
The ethical committee of the faculty of medicine, Ain Shams University, has allowed doing this study. The authors assert that all procedures contributing to this work comply with the ethical standards of the relevant national and institutional committees on human experimentation and with the Helsinki Declaration of 1975, as revised in 2008. A written consent was obtained from all participants.

Competing interests
The authors declare that they have no competing interests.

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References
1. Healey C, Morriss R, Henshaw C, Wadoo O, Sajjad A, Scholefield H et al (2013) Self-harm in postpartum depression and referrals to a perinatal mental health team: an audit study. Arch Womens Ment Health 16(3):237–245. https://doi.org/10.1007/s00737-013-0335-1

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2. Leung WC, Kung F, Lam J, Leung TW, Ho PC (2002) Domestic violence and postnatal depression in a Chinese community. Int J Gynaecol Obstet 79(2):159–166

3. Robinson GE, Stewart DE (2001) Postpartum disorders. In: Scotland NL, Stewart DE (eds) Psychological aspects of women's health care. American Psychiatric Press, Washington (DC), pp 117–139

4. Wisner KL, Parry BL, Piontek CM (2002) Clinical practice. Postpartum depression. N Engl J Med 347(3):194–199. https://doi.org/10.1056/NEJMcp011542

5. Bennett HA, Einarson A, Taddio A, Koren G, Einarson TR (2004) Prevalence of depression during pregnancy: systematic review. Obstet Gynecol 103(4):698–709. https://doi.org/10.1097/01.AOG.0000116689.75396.5f

6. Dietz PM, Williams SB, Callaghan WM, Bachman DJ, Whitlock EP, Hornbrook MC (2007) Clinically identified maternal depression before, during, and after pregnancies ending in live births. Am J Psychiatry 164(10):1515–1520. https://doi.org/10.1176/appi.ajp.2007.06111893

7. Leigh B, Milgrom J (2008) Risk factors for antenatal depression, postnatal depression and parenting stress. BMC Psychiatry 8:24. https://doi.org/10.1186/1471-244X-8-24

8. Howell EA, Mora P, Leventhal H (2006) Correlates of early postpartum depressive symptoms. Matern Child Health J 10(2):149–157. https://doi.org/10.1007/s10995-005-0048-9

9. Kalia M (2005) Neurobiological basis of depression: an update. Metabolism. 54(5 Suppl 1):24–27. https://doi.org/10.1016/j.metabol.2005.01.009

10. Khalifa DS, Glavin K, Bjertness E, Lien L (2016) Determinants of postnatal depression in Sudanese women at 3 months postpartum: a cross-sectional study. BMJ Open 6(3):e009443. https://doi.org/10.1136/bmjopen-2015-009443

11. Suri R, Altshuler L, Hellemann G, Burt VK, Aquino A, Mintz J (2007) Effects of antenatal depression and antidepressant treatment on gestational age at birth and risk of preterm birth. Am J Psychiatry 164(8):1206–1213. https://doi.org/10.1176/appi.ajp.2007.06071172

12. Alder J, Fink N, Bitzer J, Hosli I, Holzgreve W (2007) Depression and anxiety during pregnancy: a risk factor for obstetric, fetal and neonatal outcome? A critical review of the literature. J Matern Fetal Neonatal Med 20(3):189–209. https://doi.org/10.1080/14767050701209560

13. Milgrom J, Westley D, Gemmill AW (2004) The mediating role of maternal responsiveness in some longer-term effects of postnatal depression on infant development. Infant Behav Dev 27:443–454

14. Campbell SB, Brownell CA, Hungerford A, Spieker SI, Mohan R, Blessing JS (2004) The course of maternal depressive symptoms and maternal sensitivity as predictors of attachment security at 36 months. Dev Psychopathol 16(2):231–252

15. Orr ST, Blazer DG, James SA, Reiter JP (2007) Depressive symptoms and indicators of maternal health status during pregnancy. J Womens Health (Larchmt) 16(4):535–542. https://doi.org/10.1089/jwh.2006.0116

16. Flynn HA, Walton MA, Chermack ST, Cunningham RM, Marcus SM (2007) Brief detection and co-occurrence of violence, depression and alcohol risk in prenatal care settings. Arch Womens Ment Health 10(4):155–161. https://doi.org/10.1007/s00737-007-0188-6

17. Kim HG, Mandell M, Crandall C, Kuskowski MA, Dieperink B, Buchberger RL (2006) Antenatal psychiatric illness and adequacy of prenatal care in an ethnically diverse inner-city obstetric population. Arch Womens Ment Health 9(2):103–107. https://doi.org/10.1007/s00737-005-0117-5

18. Yonkers KA, Wisner KL, Stewart DE, Oberlander TF, Dell DL, Stotland N et al (2009) The management of depression during pregnancy: a report from the American Psychiatric Association and the American College of Obstetricians and Gynecologists. Obstet Gynecol 114(3):703–713. https://doi.org/10.1097/AOG.0b013e3181ba0632

19. Skouteris H, Wertheim EH, Rallis S, Milgrom J, Paxton SJ (2009) Depression and anxiety through pregnancy and the early postpartum: an examination of prospective relationships. J Affect Disord 113(3):303–308. https://doi.org/10.1016/j.jad.2008.06.002

20. Dossett EC (2008) Perinatal depression. Obstet Gynecol Clin North Am 35(3):419–434, viii. https://doi.org/10.1016/j.ogc.2008.04.004

21. Miller LJ (2002) Postpartum depression. JAMA. 287(6):762–765

22. Mehta S, Mehta N (2014) An overview of risk factors associated to postpartum depression in Asia. Ment Illn 6(1):5370. https://doi.org/10.4081/mi.2014.5370

23. Bina R (2008) The impact of cultural factors upon postpartum depression: a literature review. Health Care Women Int 29(6):568–592. https://doi.org/10.1080/07399330802089149

24. Fahmy SI, El Sherbini AF (1983) Determining simple parameters for social classification for health research. Bull High Inst Public Health 8(5):95–107

25. Spanier GB (1976) Measuring dyadic adjustment: new scales for assessing the quality of marriage and similar dyads. J Marriage Fam 38(1):15–28

26. Cox JL, Holden JM, Sagovsky R (1987) Detection of postnatal depression. Development of the 10-item Edinburgh Postnatal Depression Scale. Br J Psychiatry 150:782–786

27. Matthey S, Barnett B (1997) Translation and validation of the Edinburgh Postnatal Depression Scale into Vietnamese and Arabic. In: Ferguson B, Barnes D (eds) transcultural mental health. Transcultural Mental Health Center, Sydney, pp 77–84

28. First MB, Spitzer RL, Gibbon MW, Janet BW (2002) In: Institute NYSP (ed) Structured Clinical Interview for DSM-IV-TR Axis I Disorders, research version, non-patient edition. (SCID-I/NP). Biometrics Research, New York

29. Hamilton M (1980) Rating depressive patients. J Clin Psychiatry 41(12 Pt 2):21–24

30. Saleh el S, El-Bahei W, Del El-Hadidy MA, Zayed A (2013) Predictors of postpartum depression in a sample of Egyptian women. Neuropsychiatr Dis Treat 9:15–24. https://doi.org/10.2147/NDT.S37156

31. Sidebottom AC, Hellerstedt WL, Harrison PA, Hennrikus D (2014) An examination of prenatal and postpartum depressive symptoms among women served by urban community health centers. Arch Womens Ment Health 17(1):27–40. https://doi.org/10.1007/s00737-013-0378-3

32. O'Keane V, Marsh MS (2007) Depression during pregnancy. BMJ. 334(7601):1003–1005. https://doi.org/10.1136/bmj.39189.662581.55

33. Gavin NI, Gaynes BN, Lohr KN, Meltzer-Brody S, Gartlehner G, Swinson T (2005) Perinatal depression: a systematic review of prevalence and incidence. Obstet Gynecol 106(5 Pt 1):1071–1083. https://doi.org/10.1097/01.AOG.0000183597.31630.db

34. Kitamura T, Yoshida K, Okano T, Kinoshita K, Hayashi M, Toyoda N et al (2006) Multicentre prospective study of perinatal depression in Japan: incidence and correlates of antenatal and postnatal depression. Arch Womens Ment Health 9(3):121–130. https://doi.org/10.1007/s00737-006-0122-3

35. Poobalan AS, Aucott LS, Ross L, Smith WC, Helms PJ, Williams JH (2007) Effects of treating postnatal depression on mother-infant interaction and child development: systematic review. Br J Psychiatry 191:378–386. https://doi.org/10.1192/bjp.bp.106.032789

36. Mohammed ES, Mosalem FA, Mahfouz EM, ElHameed MA (2014) Predictors of postpartum depression among rural women in Minia, Egypt: an epidemiological study. Public Health 128:817–824

37. Hassanein IM, Fathalla MM, Rahim TA (2014) The role of newborn gender in postpartum depressive symptoms among women in Upper Egypt. Int J Gynaecol Obstet 125:138–140

38. Norhayati MN, Hazlina NH, Asrenee AR, Emilin WM (2015) Magnitude and risk factors for postpartum symptoms: a literature review. J Affect Disord 175:34–52. https://doi.org/10.1016/j.jad.2014.12.041

39. Rich-Edwards JW, Kleinman K, Abrams A, Harlow BL, McLaughlin TJ, Joffe H et al (2006) Sociodemographic predictors of antenatal and postpartum depressive symptoms among women in a medical group practice. J Epidemiol Community Health 60(3):221–227. https://doi.org/10.1136/jech.2005.039370

40. Silva R, Jansen K, Souza L, Quevedo L, Barbosa L, Moraes I et al (2012) Sociodemographic risk factors of perinatal depression: a cohort study in the public health care system. Rev Bras Psiquiatr 34(2):143–148

41. Johnstone SJ, Boyce PM, Hickey AR, Morris-Yatees AD, Harris MG (2001) Obstetric risk factors for postnatal depression in urban and rural community samples. Aust N Z J Psychiatry 35(1):69–74

42. Cantilino A, Zambaldi CF, Albuquerque T, Paes JA, Montenegro ACP, Sougey EB (2010) Postpartum depression in Recife-Brazil: prevalence and association with bio-socio-demographic factors. J Bras Psiquiatr 59:1–9

43. Eastwood JG, Phung H, Barnett B (2011) Postnatal depression and sociodemographic risk: factors associated with Edinburgh Depression Scale scores in a metropolitan area of New South Wales, Australia. Aust N Z J Psychiatry 45(12):1040–1046. https://doi.org/10.3109/00048674.2011.619160

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44. Sabri Y, Nabel H (2015) The impact of anxiety and depression during pregnancy on fetal growth and the birth outcome. Egypt J Psychiatry 36:95–100

45. Ozbasaran F, Coban A, Kucuk M (2011) Prevalence and risk factors concerning postpartum depression among women within early postnatal periods in Turkey. Arch Gynecol Obstet 283(3):483–490. https://doi.org/10.1007/s00404-010-1402-8

46. Alharbi AA, Abdulghani HM (2014) Risk factors associated with postpartum depression in the Saudi population. Neuropsychiatr Dis Treat 10:311–316. https://doi.org/10.2147/NDT.S57556

47. Grussu P, Quatraro RM (2009) Prevalence and risk factors for a high level of postnatal depression symptomatology in Italian women: a sample drawn from ante-natal classes. Eur Psychiatry 24(5):327–333. https://doi.org/10.1016/j.eurpsy.2009.01.006

48. Ersek JL, Brunner Huber LR (2009) Physical activity prior to and during pregnancy and risk of postpartum depressive symptoms. J Obstet Gynecol Neonatal Nurs 38(5):556–566. https://doi.org/10.1111/j.1552-6909.2009.01050.x

49. Vernon MM, Young-Hyman D, Looney SW (2010) Maternal stress, physical activity, and body mass index during new mothers' first year postpartum. Women Health 50(6):544–562. https://doi.org/10.1080/03630242.2010.516692

50. Zimmerman FJ, Katon W (2005) Socioeconomic status, depression disparities, and financial strain: what lies behind the income-depression relationship? Health Econ 14(12):1197–1215. https://doi.org/10.1002/hec.1011

51. Nasreen HE, Kabir ZN, Forsell Y, Edhborg M (2011) Prevalence and associated factors of depressive and anxiety symptoms during pregnancy: a population based study in rural Bangladesh. BMC Womens Health 11:22. https://doi.org/10.1186/1472-6874-11-22

52. Pereira PK, Lovisi GM, Pilowsky DL, Lima LA, Legay LF (2009) Depression during pregnancy: prevalence and risk factors among women attending a public health clinic in Rio de Janeiro. Brazil Cad Saude Publica 25(12):2725–2736

53. Waqas A, Raza N, Lodhi HW, Muhammad Z, Jamal M, Rehman A (2015) Psychosocial factors of antenatal anxiety and depression in Pakistan: is social support a mediator? PLoS One 10(1):e0116510. https://doi.org/10.1371/journal.pone.0116510

54. Koleva H, Stuart S, O'Hara MW, Bowman-Reif J (2011) Risk factors for depressive symptoms during pregnancy. Arch Womens Ment Health 14(2):99–105. https://doi.org/10.1007/s00737-010-0184-0

55. Miyake Y, Tanaka K, Arakawa M (2012) Employment, income, and education and prevalence of depressive symptoms during pregnancy: the Kyushu Okinawa Maternal and Child Health Study. BMC Psychiatry 12:117. https://doi.org/10.1186/1471-244X-12-117

56. Giardinelli L, Innocenti A, Benni L, Stefanini MC, Lino G, Lunardi C et al (2012) Depression and anxiety in perinatal period: prevalence and risk factors in an Italian sample. Arch Womens Ment Health 15(1):21–30. https://doi.org/10.1007/s00737-011-0249-8

57. Hamdan A, Tamim H (2011) Psychosocial risk and protective factors for postpartum depression in the United Arab Emirates. Arch Womens Ment Health 14(2):125–133. https://doi.org/10.1007/s00737-010-0189-8

58. Mohammad KI, Gamble J, Creedy DK (2011) Prevalence and factors associated with the development of antenatal and postnatal depression among Jordanian women. Midwifery. 27(6):e238–e245. https://doi.org/10.1016/j.midw.2010.10.008

59. Gupta S, Kishore J, Mala YM, Ramji S, Aggarwal R (2013) Postpartum depression in north Indian women: prevalence and risk factors. J Obstet Gynaecol India 63(4):223–229. https://doi.org/10.1007/s13224-013-0399-x

60. Haque A, Namavar A, Breene KA (2015) Postpartum depression in Middle Eastern/Arab women. J Muslim Ment Health 9:1

61. Srinivasan N, Murthy S, Singh AK, Upadhyay V, Mohan SK, Joshi A (2015) Assessment of burden of depression during pregnancy among pregnant women residing in rural setting of chennai. J Clin Diagn Res 9(4):LC08–LC12. https://doi.org/10.7860/JCDR/2015/12380.5850

62. Shidhaye P, Giri P (2014) Maternal depression: a hidden burden in developing countries. Ann Med Health Sci Res 4(4):463–465. https://doi.org/10.4103/2141-9248.139268

63. Podvornik N, Globevnik Velikonja V, Praper P (2015) Depression and anxiety in women during pregnancy in Slovenia. Zdrav Var 54(1):45–50

64. Kargar Jahromi M, Zare A, Taghizadeganzadeh M, Rahmanian KA (2015) A study of marital satisfaction among non-depressed and depressed mothers after childbirth in Jahrom, Iran, 2014. Global J Health Sci 7(3):140–146. https://doi.org/10.5539/gjhs.v7n3p140

65. Lara MA, Navarrete L, Nieto L (2016) Prenatal predictors of postpartum depression and postpartum depressive symptoms in Mexican mothers: a longitudinal study. Arch Womens Ment Health. https://doi.org/10.1007/s00737-016-0623-7

66. Al Dallal FH, Grant IN (2012) Postnatal depression among Bahraini women: prevalence of symptoms and psychosocial risk factors. East Mediterr Health J 18(5):439–445

67. Lim A, Hoek HW, Ghane S, Deen M, Blom JD (2018) The attribution of mental health problems to Jinn: an explorative study in a transcultural psychiatric outpatient clinic. Front Psych 9:89. https://doi.org/10.3389/fpsyt.2018.00089 PMID: 29643820; PMCID: PMC5882841

68. Lancaster CA, Gold KJ, Flynn HA, Yoo H, Marcus SM, Davis MM (2010) Risk factors for depressive symptoms during pregnancy: a systematic review. Am J Obstet Gynecol 202(1):5–14. https://doi.org/10.1016/j.ajog.2009.09.007

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