

Postpartum Depression and its Correlates among Women Living in Zabol (Iran)

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Objective: To determine the prevalence and risk factors of postpartum depression among women living in Zabol, a city in South-East of Iran.

Method: 2 to 8 weeks after delivery, 408 women were assessed for depression and some of its risk factors.

Results: The prevalence of postpartum depression was (40.4 %). Risk factors for the onset of post-partum depression included younger age, low income families, unemployment, history of depression, lack of family support, formula feeding, relationship difficulties with spouse, parents or parents-in-law. Type of delivery, number of pregnancy, number of delivery, satisfaction with sex of the baby, and number of children, were not associated with occurrence of PPD.

Conclusion: Depression occurs frequently after childbirth. The findings have implications for policies concerning maternal and childcare programs.

Key words:

Demography, Family relation, Obstetric delivery, Personal satisfaction, Postpartum depression

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Postpartum depression (PPD), a depressive episode, starts within the 6 months following childbirth and meets the DSM-IV criteria for major depressive episode without psychotic features (1). Up to 20% of new mothers experience PPD beyond the realm of "maternity blues" (2,3). PPD occurs when heavy demands are placed on a woman's resources and when infant learning and development are occurring. Children whose mothers experience PPD may have increased behavioral, cognitive, and emotional difficulties (4-6). Undetected PPD affects the mother, her infant, her family and further affects the society through illness, social dysfunction, death, and the cost of medical services. Many researchers argue that there is a minute distinction between PPD and other types of depression (7-10). Therefore, any conclusion reached for PPD may also be applicable to other types of depression in general.

Postpartum depression affects approximately 10-15% of all mothers in western societies (11-12). Recent epidemiological inquiries have reported prevalence rates of 15.8% for postpartum depression in Arab women (13), 16% in Zimbabwean women (14), 34.7% in South African women (15), 11.2% in Chinese women (16), 17% in Japanese women (17) and 23% in Goan women in India (18). The reported incidence of postpartum depression was 11% (19). Chaaya et al. studied the prevalence of PPD and its determinants in Lebanon and the incidence of postpartum reported, was 21% (20). Jadresic and Araya reported 36.7% PPD occurrence in Chile (21). The rates of 7.7% to 14% were assessed during the 9-12 weeks postpartum (11, 16, 22-23).

Depressive episodes are characterized by a number of symptoms including depressed or sad mood, marked loss of interest in virtually all activities, significant weight loss/gain, insomnia or hypersomnia, psychomotor agitation or retardation, fatigue or loss of energy, feelings of worthlessness or guilt, diminished ability to think or concentrate, and recurrent thoughts of death (1). For the diagnosis of a DSM IV major depressive episode, at least five of the mentioned symptoms must be present during a two-week period, and one of the symptoms should be either a depressed or sad mood or a markedly diminished interest/pleasure in all (or almost all) activities.

Five factors are consistently found to be related to PPD: lack of social, especially spousal support (12, 24-33), the spouse's lack of support (2, 34-35), prior history of depression and other emotional problems (10, 11, 24, 29, 36-41), obstetric and infant problems (11, 42-43), stressful life events (44-46), maternal unemployment (47), and unwanted pregnancy (13, 47-48). Nevertheless, none of these psychosocial factors can be used to predict which women will develop PPD.

In most cases, postpartum depression is preventable and early identification can lead to early treatment (49). A major part of prevention consists of awareness of the risk factors. In addition; the medical community can play a key role in identifying and treating postpartum depression. Physicians should screen their patients to determine the risks of postpartum depression.

Zabol, an ancient city the history of which goes back to more than 5000 years ago, holds the characteristics of a traditional culture contrasting Iran's major cities like

Shiraz, Esfahan or Tehran (the capital). Therefore, the replication of such studies in major cities may yield dissimilar results in Zabol which has a different social and cultural set-up. Thus, to reach accurate results, a study in the set-up of Zabol was required.

The fact that many other traditionally implicated risk factors were not significantly associated with depression either before or after delivery, suggests that risk factors are likely to vary between cultures, and perhaps even within cultures. Prevalence of depression is related to socio-cultural factors (50).

Our study is the first to assess the prevalence of PPD and some of its contributing factors in Zabol.

Material and Methods

The study sample was derived from big maternity wards in five health centers in Zabol. Convenience sampling technique was used for the selection of the sample. Subjects consisted of 408 women within the age range of 15-46. All of the women in the period of 2 to 8 weeks following their delivery were selected from 2003 to 2005. Data were collected by using structured instruments constructed for measuring depression and demographic variables.

In light of the long-term reliable performance of the BDI (51-52), this study labeled the subjects as either "depressed" or "not depressed" based on the BDI scores alone, with a score of 16 or above on the BDI indicating probable PPD.

This study calculated the relative risk factors which were statistically significant. Significant risk factors were then analyzed using log-linear models, or multidimensional qui square tests. P value at the levels of <0.05 were found to be statistically significant.

Description of the tool

Beck Depression Inventory (BDI)

The original version of the BDI was introduced by Beck et al, (51). The BDI was revised in 1971 and attained copyright in 1978 (53). Both the original and the revised versions have been found to be highly correlated.

The BDI is a 21 item, self-report rating inventory which measures the characteristic attitudes and symptoms of depression (51). The BDI takes approximately 10 minutes to complete and the clients must at least have a fifth or sixth grade education to adequately understand the questions (53). Each item describes a specific behavioral manifestation of depression. Scores on each item can range from 0, indicating no depressive symptomatology, to 3, indicating a severe level of symptomatology. Total scale scores can thus range from 0 to 63. Scores of 17 or above indicate a clinically significant depression.

The internal consistency for the BDI ranges from 0.73 to 0.92 with a mean of 0.86. (54). Meta-analyses of studies on the revised BDI's psychometric properties report advantages of the revised BDI's high content validity, and validity in differentiating between depressed and non-depressed people (55). Beck et al. reported that the revised BDI has been found to include three to seven factors, depending on the method of factor extraction. It includes factors that reflect negative attitudes towards self, performance impairment and somatic disturbances and a general factor of depression (54, 56). The content of the BDI was obtained by clinicians' consensus on the symptoms of depressed patients (51). The revised BDI items are consistent with six of the nine DSM-III categories for the diagnosis of depression (53). Correlations with clinician ratings of depression using the revised BDI range from 0.62 to 0.66 (56). Clinical ratings for Psychiatric patients are reported high to moderate, ranging from 0.55 to 0.96, $r=0.72$ (53-54). Groth-Marnat reported moderate correlations between the revised BDI and other scales measuring depression such as the Hamilton Psychiatric Rating Scale for Depression (0.73) and the Zung Self Reported Depression Scale (.76) and the MMPI Depression Subscale (0.76)(53).

Sensitivity and specificity of Beck Depression Inventory is not high but is reasonable. Beck et al. suggested that a score greater than 9 points to depression symptomatology (54). BDI scores were also categorized in subgroups. The score of 9 and less shows a normal range, a score of 10-15 indicates mild to moderate depressive symptoms, and a score of 16 and above indicates clinical depression (57). The test used was a translated and validated Persian version of Beck's depression Inventory. A full 21-items BDI was administered. This scale is a widely used measure for intensity of depression (58).

In this study, 21 items of BDI were used for data collection. Index score of ≤ 9 is considered normal range, a score of 10 to 15 shows minimal depressive symptomatology, a score of 16-31 points to a mild depression, a score of 32-47 is in favor of moderate depression and a score of >47 indicates severe depression (54).

Results

Beck Depression Inventory administered to 408 women indicated that 165 women (40.4%) experienced depression during 2 to 8 weeks postpartum.

Eighty seven women (21.3%) had minimal depressive symptomatology, 137 (33.6%) had mild depression, 24 (5.9%) had moderate depression, and 4 (1.0%) had severe depression. 156 (38.2) women were found to be within a normal range at 2 to 8 weeks postpartum.

Table 1. Age categories, BDI scores for women at 2 to 8 weeks after delivery

BDI	Cases Scored < 16		Cases Scored ≥16		df	P
	numbers	percentages	numbers	percentages		
age					3	.016*
<20	35	45.5%	42	54.5%		
20-30	138	64.2%	77	35.8%		
31-40	61	61.0%	39	39.0%		
>40	6	85.7%	1	14.3%		

There is a significant reverse relationship between age and occurrence of PPD (P<.05). Younger women have higher rates of PPD (54.5%). *P<.05

Table 2. Job, History of Depression, and Breastfeeding categories, BDI scores for women at 2 to 8 weeks after delivery

Variable	Job				History of Depression				Breastfeeding			
	Employed		Unemployed		yes		no		Yes		no	
BDI Scores	Score <16	Score ≥16	Score <16	Score ≥16	Score <16	Score ≥16	Score <16	Score ≥16	Score <16	Score ≥16	Score <16	Score ≥16
Number of cases	44	17	199	148	55	76	188	89	225	141	16	24
Percentages	72.1%	27.9%	57.3%	42.7%	42.0%	58.0%	67.9%	32.1%	61.5%	38.5%	40.0%	60.0%
df	1				1				1			
p	.034*				.000**				.011*			

Employment is associated with a significantly lower occurrence of PPD than unemployment (P<.05). There is significant difference in the occurrence of PPD between women who had a history of depression noted in their records and those without a history of depression (P<.0001). Breastfeeding is associated with a significantly lower occurrence of PPD than formula feeding only (P<.05). *P<.05 **P<.01

Other findings:

Type of delivery (P=.426), number of pregnancy (P=.431), number of delivery (P=.925), satisfaction with sex of the baby (P=.431), and number of children (P=.267) were not related to the occurrence of PPD.

Discussion

This study provides information on the percentage of the assessed risk factors for the development of postpartum depression in a consecutive series of women in Zabol, in the South-East of Iran. In this study, the prevalence of PPD assessed by BDI score ≥ 16 was 40.4%, while the prevalence of minimal depressive (10-15) was 21.3%, mild depression (16-31) was 33.6%, moderate depression (32-47) was 5.9%, severe depression (>47) was 1.0%, 156 (38.2%) women were found to be within the normal range at 2 to 8 weeks postpartum.

The prevalence of post-partum depression in Iran is also reported by other studies. Jahanmiri et al. reported the rate of 51.3% post-partum, Ghaffarinejad et al. reported 31.1%; Abadian Sharifabad reported that the rate of PPD among women in Tehran (capital of Iran) is close to 2.39% (59-61).

There was a significant reverse relationship between the PPD occurrence and age (Table 1); younger women in

the age range of <20 years had higher rate of PPD (54.50%).

The present findings are in accordance with the findings of other researchers who have found a higher incidence of PPD in teenage or adolescent mothers compared to older mothers (62-64).

In contrast to present findings, Sarah et al. stated that no significant difference was found in patients' age or marital status at 4-weeks postnatal (65). In addition, Paykel et al.; Hopkins et al.; Campbell and Cohn.; Gotlib et al.; Salehie Kasai; Ghaffarinejad; Khamseh, stated that age is not reliably associated with PPD (2, 24, 30,60, 66, 67, 68).

Sierra Manzano and co researchers used the Edinburgh Postnatal Depression Scale (EPDS) in a study of 306 women. They treated age as a continuum instead of dividing the subjects into two or more distinct age groups. Mother's age was one of the several independent variables associated with PPD (63).

The same result was observed in our study. Since women most commonly experience depression during their primary reproductive years (25 to 45), they are particularly vulnerable to develop depression during pregnancy and after childbirth.

Table 3. Quality of Relationship with Spouse, Parents, Parents-in-law, and Family Support, BDI scores for women at 2 to 8 weeks after delivery

Quality of relationship	bad		mild		good		excellent		df	p
BDI scores	Number of cases scored <16	Number of cases scored ≥16	Number of cases scored <16	Number of cases scored ≥16	Number of cases scored <16	Number of cases scored ≥16	Number of cases scored <16	Number of cases scored ≥16		
relationship with husband	0	0	6	25	162	99	75	35	3	.000**
relationship with father	0	4	28	21	116	97	96	38	3	.001**
relationship with mother	0	4	19	15	135	105	83	38	3	.010**
relationship with parents-in-law	1	11	26	28	141	90	75	32	3	.000**
family support	0	0	16	36	137	99	90	28	2	.000**

Unsatisfactory relationships with spouse, parents, parents-in-law, and lack of family support are associated with a significantly higher occurrence of PPD (P<.01). *P<.05 **P<.01

One possible reason for the discrepancy could relate to cultural factors or societal views of young mothers.

Table 3 shows that unemployed women scored significantly higher on postpartum depression compared to employed women (P<.01). It was also found that there is a significant reverse relationship between PPD occurrence and income level (P<.01).

The present findings are in accordance with the findings of other studies which have found that unemployment is associated with the risk of developing PPD (13, 20, 47, 48, 59). In some studies, lack of income showed a positive significant relationship to increase rate of PPD (19, 68). On the other hand, Ghaffarinejad et al. failed to find significant differences in PPD amongst employed and unemployed women (60).

The present result is also in accordance with the findings of Asadi Sadeghi Azar and Vasudeva who have studied hardiness among women in Zabol. They reported that compared to unemployed women, employed women had a significant higher hardiness and its three dimensions (commitment, control, and challenge) (69). According to Peterson et al., cognitive hardiness is the strongest predictor of depression occurrence (70).

In general, the fact that employed women occupy more than just one role seems to buffer them from the stress of their each role and this may be the reason for a lower occurrence of PPD among them (71). Role accumulation hypothesis has received significant empirical support (72) and it, generally, suggests that, multiple role involvement is psychologically beneficial for women (73). Women who have multi roles may actually lead more stressful lives, but they may reduce stress by redefining what they consider as stressful, by changing their expectations or by adaptation of coping strategies.

Table 2 indicates a positive significant difference in the occurrence of PPD and history of depression (P=.000). The present findings are concordant with the findings of other researchers who have found that history of depression is a moderate predictor of PPD (12, 20, 24, 29, 33, 38, 65, 74, 75).

Prior history of depression or other emotional problems are consistently illustrated along with the occurrence of PPD by other researchers (10, 22, 26, 29, 36-40, 59, 67). Further analysis of the data on postpartum depression showed that prepartum depression was the major risk factor for postpartum depression (76, 77).

Considering the link between PPD and the prior history of depression, it is possible that women suffering from PPD may be more likely to recall pregnancy as a bad experience and to over report symptoms of depression. Literature confirms that the connection between previous depression and PPD holds true irrespective of the study design. Chronic medical conditions were also associated with PPD (20). This confirms previous findings concerning mother's general health and PPD occurrence (24). Medical disorders can alter or disrupt neurotransmitter functions or simply act as a severe stressor. Both mechanisms predispose the mother to general depression or may also be associated PPD.

Breastfeeding was associated with a significantly lower occurrence of PPD compared to formula feeding only (table 2).

This result was found by other researchers as well. Misri and colleagues observed an association between PPD and cessation of breastfeeding (78). Fergerson and coauthors reported that a failed attempt to breastfeed or an early cessation of breastfeeding was found to be significantly associated with higher EPDS scores in the patients (79). Abou-Saleh and colleagues reported that women who

breastfed their infants had significantly lower scores than their nonlactating counterparts on the EPDS, standard measure of anxiety, and the Present State Examination (80). The findings of Sarah (2006) strongly supported the results of earlier studies (78-80).

Additional support for the association of breastfeeding with a lower incidence of PPD is provided by Labbok, who found out that in countries where exclusive breastfeeding is the norm, the incidence of PPD peaks at around 9-months postpartum; whereas, in countries where formula feeding is the norm, the incidence of PPD peaks at 3-months postpartum (81). If research could demonstrate conclusively that women who breastfeed are less likely to experience PPD, those data might provide additional motivation for women to choose breastfeeding over formula feeding for their infants.

This Study found that lack of family support, poor relationships with spouse, parents, and parents-in-law have a significant positive relationship with PPD occurrence. Other studies supported the above results. Some studies found a correlation between PPD and the listed factors: poor relationship with the baby's father (82), less help from spouse (2, 25, 34-35); less communication with spouse (36); poor communication with spouse (2, 68); difficulties in relationship with mother (11), difficulties in relationship with father (68); and lack of father's support and lack of mother's support (34).

These results may be due to the fact that human infants require an extraordinary degree of parental care. Lack of support by fathers or other family members will increase the costs borne by mothers, whereas infant health problems will reduce the gained evolutionary benefits (32). If ancestral mothers did not receive enough support by their husbands or other family members, they may not have been able to afford raising the new infant without harming any existing children, or damaging their own health (nursing depletes mothers' nutritional stores, placing the health of poorly nourished women in jeopardy).

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