Research Article

Socioeconomic, Psychiatric and Materiality Determinants and Risk of Postpartum Depression in Border City of Ilam, Western Iran

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Background. Postpartum depression (PPD) is considered as one of the mood disturbances occurring during 2-3 months after delivery. The present study aimed to determine the prevalence of PPD and its associated risk factors in border city of Ilam, western Iran. Methods. Through a descriptive cross-sectional study in 2011, overall, 197 women who attended Obstetrics & Gynecology clinics postpartum in the border city of Ilam, western Iran, were randomly recruited. A standard questionnaire that was completed by a trained midwife through face to face interviews was used for data gathering. Results. Mean age ± standard deviations was 27.9 ± 5.2 years. Prevalence of PPD was estimated to be 34.8% (95% CI: 27.7–41.7). A significant difference was observed among depression scores before and after delivery (P ≤ 0.001). Type of delivery (P = 0.044), low socioeconomic status (P = 0.011), and women having low educational level (P = 0.009) were the most important significant risk factors associated with PPD. The regression analysis showed that employed mothers compared to housekeepers were more at risk for PPD (adjusted OR = 2.01, 95% CI: 1.22–2.28, P = 0.003). Conclusions. Prevalence of PPD in western Iran was slightly higher than the corresponding rate from either national or international reports.

1. Introduction

Pregnancy, delivery, and adaptability with newborn babies are the most sensitive phases in women's life [1]. In this period of time, women usually suffer from physiological, spiritual, and psychological crises leading to change of their positions. The first six weeks after delivery is a vulnerable period for postpartum depression (PPD) [2]; of 4 million births that occur in the world annually, approximately 40 percent of new mothers are affected with different types of postpartum mood disorders including depression symptoms before and during pregnancy [3]. Prevalence of PPD is closely linked with socioeconomic and cultural factors and it varies among different countries, ethnicities, and races [4]. The global prevalence of PPD has been estimated to be between 10–25 percent [5–7] and between 27–39 percent in Iran [8, 9].

Various putative psychosocial and obstetric factors have been studied and suggested as risk factors for the development of PPD; if these results are inconsistent and do not effectively help predict women at risk, knowledge of these factors may help identify those who are at higher risk and can benefit from early professional help [10]. Personal history of depression (prior to pregnancy or postpartum) is the major risk factor for PPD [11–14]. Family psychiatric history [15], lack of perceived social support for the pregnancy from family and friends [16, 17], unemployment of the mother or head of the household [18], lack of emotional...
and financial support from the partner [19], marital conflict [20], stressful life events in the previous 12 months [21], living without a partner [21], unplanned pregnancy [22], not breastfeeding [23], childcare-related stressors [23], sick leave during pregnancy related to uterine irritability, psychiatric disorders, high number of visits to prenatal clinic [24], and a congenitally malformed infant [25], are other risk factors of PPD.

Due to adverse effects of increased PPD prevalence in Iran, all health care workers and nurses in particular should be able to manage postpartum psychological disorders. The present study aimed to determine prevalence of PPD and its associated risk factors in the border city of Ilam, western Iran.

2. Methods

Through a descriptive cross-sectional study in 2009, overall, 215 women who attended ten obstetrics and gynecology clinics postpartum in the border city of Ilam, western Iran, were randomly selected, of which 197 women (90.2%) were recruited. All women gave their informed consent. A standard questionnaire containing Socioeconomic factors and psychiatric and materiality characteristics was completed by a trained midwife. Face to face interviews were used for data gathering. Interviews took place between the 6th and the 8th week after delivery from 10 March 2009 to 20 July 2009. Due to methodological issues, such as questionnaire errors or missing data, 18 (9.8%) women were excluded.

The main outcome of the present study was PPD assessed by the use of the Edinburgh postpartum depression scale [26, 27]. The scale consisted of 10 questions with four response categories scored from 0 to 3, whereby the greatest values represent depressed moods. Mothers who obtained an Edinburgh postpartum depression scale total score of 13 or greater were labeled as having PPD [28]. Score of 0–9 inclusively indicates no risk of experiencing symptoms of PPD, a score of 10–12 indicates a minor/major risk of experiencing symptoms of PPD; and a score of 13 or greater indicates a major risk of experiencing symptoms of PPD [29]. The sensitivity and specificity of the EPDS have been found to be 75% and 97% respectively, reported in Persian version at a cutoff of 13 [30] and have been used and found to be valid in Iranian studies [30–32]. Major depression is defined as a clinical syndrome that has a clinical treatment process.

Socioeconomic factors, such as maternal educational level (illiterate, less than high school (primary), diploma, university graduate), household income by Iranian toman per month (low < 400,000, middle 401,000–600,000, high > 601,000), occupation during pregnancy (housekeeper, employed), and partners’ occupation (unemployed, employed), were examined. Information about maternal characteristics including parity, type of delivery (Cesarean section, normal vaginal), pregnancy weight gain guidelines (inadequate, recommended, excessive), family planning (all pregnancies, unplanned), and psychiatric determinants like previous diagnosis of depression/prescription antidepressants, mother’s stress level during pregnancy (very, somewhat, no), satisfaction from living with husband (very high, moderate, and very poor), and satisfaction from living with husband/partner (very high, moderate, very poor) were explored. All the variables were directly self-reported by the mother. Household income was calculated based on the number of people in the household and the total household income before taxes and deductions earned by all household members from all sources in the past one year. A mother’s stress level during pregnancy was based on the amount of stress reported during the one year prior to the baby’s birth. A logistic regression model was used to compute the odds ratios (ORs) for dependent risk factors associated with PPD. To demonstrate the initial results, univariate ORs with 95% confidence intervals (CIs) for demographic variables and psychological risk factors were conducted. A multiple logistic regression analysis was executed to detect PPD as the dependent variable and risk factors as independent variables. SPSS version 16 was used for all analyses. Probability values equal or less than 0.05 were considered statistically significant.

3. Results

Mean maternal and paternal ages were 27.9 ± 5.2 years and 35.4 ± 27.6 years, respectively. The mean maternal marriage age was 22.3 ± 4.1 years. Majority of husbands had informal jobs and small business (60.4%). Mean duration of hospitalization for delivery was 1.96 ± 0.28 days, and the mean birth weight was 3344 ± 384 grams. More than half of mothers were satisfied (54.8%), and their pregnancies were previously planned. One in every five pregnancies (20.3%) was totally unplanned. Prevalence of severe maternal sadness during pregnancy was 6.1%, and 5.6% of mothers had a severe form of grief and depression after pregnancy. Almost one fourth of mothers (24.4%) had consumed medication(s) during pregnancy. Unpleasant and stressful life events occurred in 10.7% of cases. Severe mental disorders had occurred for 6.6% of cases. Prevalence of PPD was 34.8% (95% CI: 27.7–41.7). However, almost all mothers (99.5%) had no history of PPD, but 2.5% of partners had a history of mental disorders. Method of delivery in 52.3% of cases was Cesarean section. In general, 91.9% of mothers had a term delivery and 97% had no delivery complications. Almost all (95.4%) of the newborns were breastfed.

In Table 1, we present results of the logistic regression model for each variable and univariate ORs with 95% CIs risk of depression in postnatal period by socioeconomic characteristics. Compared with employment, unemployment was significantly related to a reduced risk of PPD and women whose husbands were employed (OR = 1.03, 95% CI: 0.87–1.44); both differences were statistically no significant. We also found a significant declining trend by economic status. Women with low economic status had a more than two times higher risk of depression than those with high economic status (OR = 2.45, 95% CI: 1.56–4.13).

We observed significant results for the psychiatric determinants risk factors (Table 2). Women with poor family relationships in their current family had a higher risk of depression (OR = 1.37, 95% CI: 1.07–1.92). Significant excess risk also appeared with insufficient family support during the pregnancy (OR = 2.03, 95% CI: 1.16–3.31), and we also observed an excess risk of depression among women with
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### Table 1: Univariate odd ratios (ORs) for sociodemographic characteristic risk factors of postpartum depression.

| Factors                                      | Responses (%) | OR (95% CI)       | P value |
|----------------------------------------------|---------------|-------------------|---------|
| Socioeconomic status (Iranian toman/month)   |               |                   |         |
| Low (<400.000)                              | 45.7          | 2.45 (1.56–4.13)  | 0.011   |
| Moderate (401.000–600.000)                  | 45.3          | 1.77 (1.22–2.39)  |         |
| High (>601.000)                             | 9.0           | 1                 |         |
| Mothers’ educational level                  |               |                   |         |
| Illiterate                                  | 1.5           | 1.29 (1.11–1.77)  | 0.009   |
| Primary (less than high school)             | 56.5          | 1.17 (1.07–1.45)  |         |
| Diploma                                     | 42.0          | 1.03 (0.77–1.42)  |         |
| University graduate                         | 2             | 1                 |         |
| Mothers’ occupation                         |               |                   | 0.008   |
| Housekeeper                                 | 86.3          | 1                 |         |
| Employed                                    | 13.7          | 2.01 (1.22–2.88)  |         |
| Partners’ occupation                        |               |                   | 0.212   |
| Unemployed                                  | 39.6          | 1                 |         |
| Employed                                    | 60.4          | 1.03 (0.87–1.44)  |         |
| Partners’ age                               |               |                   | 0.444   |
| < 25                                        | 32.1          | 1                 |         |
| 25–35                                       | 35.9          | 1.15 (1.00–1.67)  |         |
| > 35                                        | 32.0          | 1.23 (1.03–1.73)  |         |

### Table 2: Univariate odd ratios (ORs) for psychiatric risk factors of postpartum depression.

| Factors                                      | Responses (%) | OR (95% CI)       | P value |
|----------------------------------------------|---------------|-------------------|---------|
| History of infertility                       |               |                   | 0.113   |
| All pregnancies                              | 24.9          | 1                 |         |
| Planned                                      | 54.8          | 0.66 (0.19–1.02)  |         |
| Unplanned                                    | 20.3          | 2.11 (1.44–2.56)  |         |
| Receiving family support during pregnancy    |               |                   | 0.042   |
| Yes/always                                   | 46.7          | 1                 |         |
| No/occasionally                              | 53.3          | 2.03 (1.16–3.31)  |         |
| Mother’s stress level during pregnancy       |               |                   | 0.085   |
| Very                                         | 21.1          | 1.01 (0.88–1.13)  |         |
| Somewhat                                     | 40.9          | 1.06 (0.67–1.27)  |         |
| No                                           | 39.0          | 1                 |         |
| History of depression during pregnancy       |               |                   | 0.002   |
| Mild                                         | 42.1          | 2.61 (1.67–3.11)  |         |
| Moderate/severe                              | 5.6           | 2.10 (1.37–2.81)  |         |
| No/never                                     | 52.3          | 1                 |         |
| Satisfaction from living with husband        |               |                   | 0.214   |
| Very high                                    | 46.7          | 0.66 (0.25–0.87)  |         |
| Moderate                                     | 11.2          | 1.28 (1.00–1.55)  |         |
| Very poor                                    | 42.1          | 1                 |         |

Emotional stress during the pregnancy (OR = 2.61, 95% CI: 1.67–3.11).

Adjusted ORs by materiality factors are presented in Table 3. There was a significant excess risk of depression for women who have Caesarean section (OR = 1.66, 95% CI: 1.09–2.0). There was a significant excess risk of depression for unplanned pregnancies (OR = 2.11, 95% CI: 1.44–2.56).

Women who had a parity 3 ≤ (OR = 1.41, 95% CI: 1.18–2.03), showed an excess risk of depression.

Based on the likelihood ratio test, risk factors such as education, occupation, history of depression, parity, and type of delivery were kept in the final multilogistic regression model (Table 4). The regression analysis showed that employed mothers compared to housekeepers were more at risk for...
Table 3: Univariate odd ratios (ORs) for materiality risk factors of postpartum depression.

| Factors                        | Responses (%) | OR (95% CI)     | P value |
|-------------------------------|---------------|-----------------|---------|
| Family planning               |               |                 |         |
| Planned                       | 54.8          | Overall 1       | 0.113   |
| Unplanned                     | 55.2          | 2.11 (1.44–2.56)|         |
| Parity                        |               |                 |         |
| 1                             | 6.1           | Overall 1       | 0.084   |
| 2                             | 32.5          | 1.35 (1.01–1.89)|         |
| ≥3                            | 61.4          | 1.41 (1.18–2.03)|         |
| Type of delivery              |               |                 |         |
| Cesarean section              | 52.3          | Overall 1.66 (1.09–2.00)| 0.044 |
| Normal vaginal                | 47.7          | 1               |         |
| Pregnancy weight gain guidelines |         |                 |         |
| Inadequate                    | 32.1          | Overall 1       | 0.240   |
| Recommended                   | 60.5          | 1.01 (0.89–1.11)|         |
| Excessive                     | 7.4           | 1.03 (0.66–1.31)|         |

Table 4: Adjusted odds ratios (ORs) from the multiple logistic regression analysis of postpartum depression risk factor.

| Factors                                             | Responses (%) | OR (95% CI)     | P value |
|-----------------------------------------------------|---------------|-----------------|---------|
| Educational levels                                  |               |                 | <0.001  |
| Illiterate                                          | 1.5           | Overall 1.29 (1.11–1.77)| 0.002  |
| Primary                                             | 56.5          | 1.17 (1.07–1.45)| 0.125   |
| Diploma                                             | 42.0          | 1.03 (0.77–1.42)| 0.002   |
| University graduate                                 | 2             |               |         |
| Job status                                          |               |                 | <0.001  |
| Housekeeper                                         | 86.3          | Overall 2.01 (1.22–2.88)| 0.003  |
| Employed                                            | 13.7          | 1               |         |
| Receiving family support during pregnancy           |               |                 | <0.001  |
| Mild                                                | 42.1          | Overall 2.61 (1.67–3.11)| 0.009  |
| Moderate/severe                                     | 5.6           | 2.10 (1.37–2.81)| <0.001  |
| No/never                                            | 52.3          |               |         |
| Parity                                              |               |                 | 0.004   |
| 1                                                   | 6.1           | Overall 1       |         |
| 2                                                   | 32.5          | 2.35 (1.91–3.77)| 0.224   |
| ≥3                                                  | 61.4          | 3.41 (2.88–4.09)| 0.008   |
| Type of delivery                                    |               |                 | 0.044   |
| Cesarean section                                    | 52.3          | Overall 1.66 (1.09–2.00)| 0.003  |
| Normal vaginal                                      | 47.7          | 1               |         |

PPD (adjusted OR = 2.01, 95% CI: 1.22–2.28, P = 0.003). After adjusting for the other independent variables, a prior diagnosis of mild and moderate/severe depression remained significant for major PPDs (OR: 2.61, 95% CI: 1.67–3.11 and OR: 2.10, 95% CI: 1.37–2.81, resp.). The ORs and 95% CIs of the ORs and probability of the significant level for the risk variables are shown in Table 2. All reference categories had ORs = 1.

4. Discussion

In the present study, the prevalence of PPD was 34.8%. In the present study, the prevalence of PPD was 34.8%. In a similar study conducted in Shiraz city southern Iran 20.3%, [20] corresponding rate was 22% in Sari city northern, [33] 34% in Tabriz city northwest, [34] 23% in Tehran capital, [35] and 32% in Hamadan city western the country [36] (Figure 1). This result is similar to other reports in Middle East developing countries such as Iraq, Erbil city, Kurdistan region prevalence of PPD was 28.4% [37], and 37.1% in Bahraini women [38]. In African countries (Nigerian women 27.2%) [39] and South America (Brazilian women 24.3%) [40], similar result has been reported. The present study was undertaken in Ilam city, western Iran, and nearby Iraqi border. Participants were mothers who almost gave birth during the eight-year bloody war of Iraq against Iran starting from 1981 onward. So they have seen all war-related problems and difficulties directly and therefore this may have effects on
high prevalence of PPD in this region (Figure 2). Of course
we are not claiming that increased PPD in border cities is
solely due to the war issue, but this could be one of several
known and unknown risk factors. However, differences in
PPD among regions or countries can be partially explained
by the effect of income on the mediation of risk factors.

Previous studies in different parts of Iran have shown
significant association between PPD and age of partner,
[33] socioeconomic status [20], number of children [8],
parity [8], and pregnancy interval [32]. The current study
showed that, compared with unemployment, employment
was significantly associated with a positive risk of PPD. There
were relationships between household income or educational
levels and the risk of postpartum depression. A study in India
showed a significant positive relationship between employ-
ment and PPD [41]. Null findings regarding employment have
been observed in studies conducted in the United States [17],
Brazil [42], Turkey [43], and Sweden [23]. The current find-
ings are in agreement with these observations. In contrast,
significant positive association was observed between unem-
ployment and postpartum depression in research conducted
in France [44], Sweden [24], Turkey [45], Ireland [46], and
the United Kingdom [22]. The significant positive association
that we observed between employment and PPD was likely to
be ascribed to job stress and its limitations for women in Iran.
In a meta-analysis of 46 studies, employees with low levels
of job satisfaction were more likely to have raised levels of
depression [18].

No relationship was found between household income
and PPD in the United States [17] and Australia [47]. The
present results are variant with these findings but consistent
with those reports of a positive association between low
income and PPD in research that was conducted in the United
States [5, 16, 19], Brazil [42], and Turkey [48]. Our finding
of a positive association between educational level and PPD
disagrees with results of research in the United States [13,
17], Brazil [42], Turkey [43], Australia [47], and Italy [6].
However, studies conducted in the United States [19], Turkey
[45], and India [41] reported that a low educational level was
positively related to the risk of PPD.

The present study was limited by using a questionnaire to
determine PPD. The diagnosis of PPD was established with
the EPDS, a self-report rating scale, rather than a clinician-
administered structured diagnostic interview. Moreover, the
validity and reliability of such tools have already been docu-
mented [30]. Due to significant association between prenatal
and postnatal maternal depressions, it can be recommended
that the Edinburgh questionnaire should routinely be used
in the third trimester of pregnancy to diagnose susceptible
mothers and to undertake preventive strategies and control-
ling approaches.

In conclusion, prevalence of PPD in western Iran was
slightly higher than the corresponding rate from either
national or international reports which could be in part due to
socioeconomic status or cultural differences. Women should
be routinely evaluated for postnatal depression, and those
with lower education or income are likely to require further
care from health services and should be given the benefit
of mental health prevention programs. However, promotion
of education and increasing the social welfare result in
improving the socioeconomic program and may reduce the
risk of PPD.

Conflict of Interests
The authors declare no conflict of interest.

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