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ASSOCIATION BETWEEN MATERNAL ANEMIA AND POSTPARTUM DEPRESSION

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ABSTRACT

The aim of this prospective study was to determine the relationship between anemia during pregnancy and postpartum depression. Two hundred eighty-one non-anemic mothers with singleton and low-risk pregnancy and no history of antidepressant-use were studied. Demographic and reproductive data at week 24 were obtained. Mothers were followed up and hemoglobin (Hb) was checked at delivery. (20-24) Edinburgh postpartum. Depression Scale (EPDS) was completed 4-6 weeks after delivery. Mean age of the mothers was 26.6±4 years. The prevalence of postpartum depression according to EPDS was 5.5%. Binary logistic regression analysis showed that Hb <11 g/dl at delivery would increase the chance of postpartum depression (OR 4.64; 95% CI 1.33-16.08). The results show that diagnosis and treatment of physiologic factors, especially anemia, would reduce the risk of postpartum depression.

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INTRODUCTION

Childbirth is usually time of great joy for all involved (Cooper and Murray, 1998). Postpartum depression (PPD) is a major episode that most emerges within 6 to 12 weeks after delivery (Doucet, 2009 and Leung, 2009). Unfortunately, PPD is uncommon the prevalence of PPD is about 10-15% depending on timing of screening instruments used (Marcus, 2009). Postpartum depression disturbs family relationships, effect mental health of a child (Gjerdingen, 2007 and Wójcik, 2006). Many psychosocial factors including low self-esteem, poor social support, prenatal depression may lead to the development of PPD (Corwin, 2003). IDA is common during pregnancy and postpartum period, can lead to fetal and maternal complications prevalence of iron-deficiency anemia during pregnancy is around 7.5% (Corwin, 2003 and Murray-Kolb, 2009). Anemia in adults can cause fatigue, apathy irritability, changes in cognition, emotions and depressive symptoms (Murray-Kolb, 2009 and Ludwig, 2001). The aim of our study was to determine the relationship between anemia during pregnancy and postpartum depression.

MATERIALS AND METHODS

Two hundred eighty on healthy pregnant woman were included in our steady from February to December 2017.

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The study consisted of primipara female aged (18 - 35) years with singleton pregnancy and BM (19.8 - 26). Ladies with history of chronic disease, antidepressant – use, iron – deficiency anemia HB < 10.5 g/dl were not recruited.

Sample: The participants were registered at private clinic in Al-Kut city and Al-Kut hospital for Gynecology, obstetric and pediatrics (friend of children).

Design: During a the study, low-risk pregnant mothers with parity ≤ 2 and singleton pregnancy were enrolled in the first prenatal visit at (20-26) weeks of gestation. Demographic and obstetric data and laboratory test results were collected. The mothers were examined for iron deficiency anemia, and women with Hb < 11 g/dl and ferritin < 15 mcg/dl were not recruited. All mothers received prenatal vitamin and mineral supplementation and followed up during the prenatal period till delivery. Maternal blood hemoglobin and ferritin concentrations were determined at birth. The women were divided into anemic and non-anemic groups. They were followed up till 4-6 weeks after delivery. Edinburgh postpartum Depression Scale (EPDS) was employed 4-6 weeks after delivery. The EPDS Score (Wolf, 2002) was used as cutoff point for screening depression in the mothers under study. Edinburgh postpartum depression (EPDS) was used as screening too for postpartum depression. This scale was used successfully in previous studies (10.1). Cronbach's alpha coefficient was found to be 0.77. Validity as performed using

comparison among known groups showed satisfactory results. The questionnaire discriminated well between subgroups of women differing in mode of delivery. The factor analysis indicated a three-factor structure accounted for 58% of variance cutof score of (Wolf, 2002) provided 95.3% sensitivity and 87.9 Specifically for clinical depression (Montazeri, 2007). Maternal Hb values were determined by the cyanmethohaemoglobin method. A complete blood count was done using an automatic cell counter (T890, Coulter), and serum ferritin was assessed by radioimmunoassay (Gamma Counter System, Kontron).

Data collection

Data were collected in the prenatal clinic and labor ward of Al-Kut Hospital for Gynecology obstetric and pediatrics (friend of children). A venous blood sample at the time of delivery was obtained and was immediately assessed for anemia. Then, mothers were followed for 4-6 weeks after delivery.

Statistical analysis

All statistical analyses were performed using SPSS (version 11.5) for Windows (SPSS Inc., Chicago, II. Based on Hb concentration at delivery participants were divided into anemic and non-anemic groups, and all comparisons were performed accordingly, Mothers were grouped into three educational levels based on the completed years of academic education. The results were presented as mean∓SD. Comparisons between groups were performed using unpaired t-test, x^2-test, and binary regression. Statistical significance was set at the 95% level $p < 0.05$.

RESULTS

Overall, 254 women were included in the final analysis. There were no obstetric complications in the final sample studied. The sociodemographic and obstetric characteristics of the study women are shown in (Table 1).

Table 1. Sociodemographic and obstetric characteristics of the study woman

Characteristics	Anaemic	Non-animic	P value
Age (years)			0.79
<21	2	16	
21-30	30	171	
>30	4	31	
Age[1]: mean (SD)	25.50 (4.37)	26.11 (4.03)	0.40*
Education			0.88
Primary	8	46	
Secondary	27	162	
University	1	10	
Education[2] mean (SD)	9.44 (3.59)	9.21 (3.49)	0.57*
Housewives (%)	97.2	97.7	0.87**
BMI[3]: mean (SD)	23.19 (1.78)	23.54 (1.72)	0.27*
Gestational age at birth[4]: mean (SD)	273.58 (1.313)	274.26 (1.148)	0.64*
Caesarean dilvery: (%)	50	59.6	0.27**
Pregnancy weight gain[5]: mean (SD)	12.87 (2.10)	12.80 (1.97)	0.80*
Newborn sex (male): (%)	55.6	49.1	0.47**
Hb[6] at delivery: mean (SD)	11.57 (0.67)	11.93 (0.71)	0.004*
Ferritin[7] at delivery: mean (SD)	58.6 (43.8)	55.6 (35.5)	0.74***
EPDS score < 13: (%)	13.9	4.1	0.018*

[1]year, [2]year of completed academic education, [3]kg/m^2, [4]Days, [5]kg, [6]g/dl, [7]mcg/dl, *t-test, **x^2-test, ***Mann-Whitney test

The women in two groups were not significantly different in terms of age, job, education, BMI, and gestational age at delivery.

The mean age of mothers was 26.6+4.0 years, and the mean schooling of formal education was 9.24+3.5 years. Most of the study women were housewives (97.6%); 14 of 254 women (5.5%) had postpartum depression according to EPDS. The incidence of anemia (Hb <11 g/ dl) at delivery was 14% without hypo ferritin anemia. Table I shows the probability of PPD at 4-6 weeks postpartum in anemic and non-anemic mothers at delivery. The mean values of ferritin were not different in anemic and non-anemic mothers. Binary logistic regression analysis showed that Hb <11 (OR 4.64; 95% CI 1.33-16.08) at delivery and secondary level of education (OR 6.76; 95% CI 1.10-11.16) would increase the chance of postpartum depression (Table 2).

Table 2. Results of logistic regression analysis with the odds ratios of postpartum depression for cach risk factor adjusted for other variables in the model

	Adjusted OR	95% CI
Age[1]		
<21: 18**	1	
21-30: 201**	0.40	0.02-7.29
>30: 35**	0.45	0.05-3.78
Educational level		
University 54**	1	
Secondary 189**	6.76	1.10-41.16*
Primary: 11**	3.70	0.51-26.37
Type of delivery		
NVD[2]: 106**	1	
Casarean[3]: 148**	1.81	0.55-6.01
Newborn's sex		
Male: 127**	1	
Female: 127**	0.61	0.19-1.94
Gestational age at Delivary[4]		
≥ 37:38**	1	
< 37:216**	2.93	0.33-25.43
Hb at delivery[5]		
≥ 11:218**	1	
<11:36**	4.64	1.33-16.08*

[1]Years; [2]Normal vaginal delivery: [3]Caesarean sertion; [4]Weeks, [5]g/dl; *p<0.05; **Distribution of sample in each category

DISCUSSION

Anemia, as a physiological cause of PPD, has recently received attention from scholars in both the fields. Findings of this study and other similar works could provide evidence for this. The aim of the study was to evaluate the effect of iron-deficiency anemia on postpartum depression. However, since the study sample was derived from a low-risk population and according to national iron supplementation program, all pregnant mothers should receive iron supplements during pregnancy, regardless of ferritin or Hb levels, no mothers at the time of delivery had iron-deficiency anemia (low hemoglobin and ferritin values). Our study demonstrated 5.5% prevalence of postpartum depression, which is much lower than the figures described previously (Doucet, 1998; Leung, 2009; Homeus Ment Health, 2007). This may be due to the different tools and the cut of points used by others. In the present study, we used EPDS because it has been proven as an acceptable, reliable, and valid measure of postnatal depression. Also, we used a cutoff value of 13 to signify depression. This cutoff has been shown to have high sensitivity and specificity (Mazhari, 2011). Moreover, the selected sample was very healthy and of low risk for any complication, including postpartum depression. Research suggests several psychosocial risk factors for postpartum depression but few from cited studies examined the relationship between physiological factors, specifically anemia and postpartum depression. This

topic is a relatively new one in the field. There is a large body of literature on postpartum depression and its risk factors but these did not focus on physiological factors, such as anemia to the desired extent. There are some controversial studies in this field. Wolf and colleagues (Homeus Ment Health, 2007) did not find an association between maternal iron status and depression symptoms at 1 year postpartum in a large sample of mothers from Chile and Costa Rica, Corwin and co-workers (Wolf, 2013). If demonstrated a significant relationship between anemia and depressive symptoms in the postpartum period. The results of our study suggest that Hb <11 g/dL at delivery, but not iron deficiency, Would increase the chance of postpartum depression. This vide confidence interval might be explained by small sample-size or homogeneous low-risk mothers we studied. Based on routine prenatal care at the national level, all mothers received iron supplement during pregnancy, and we did not detect any hypoferritinaemia in our samples. This suggests that anemia regardless of iron status might affect emotions in postpartum PTIX Considering the negative consequences of depression on the mother, her offspring and whole family, diagnosis and treatment of anemia should be an essential part of maternity care during pregnancy and after delivery.

Limitations

Our study had a few limitations that should be considered. As it can be seen from (Table 1), the study sample came from an urban population of low socioeconomic status. We excluded all the mothers who had stressful life-experiences, history of using antidepressant drugs and mental or physical disorders. There were no maternal or neonatal complications or birth of even LBW neonates. most mothers were young and had their first or second pregnancy However, we did not assess the social support to the study mothers. Several studies showed that the lack of social support can increase the incidence of PPD. Therefore, we tried to remove as many as possible factors influencing the level of stress and receiving support from the family and society.

Conclusions

Hb concentrations at delivery were used as an indicator of maternal anemia during early postpartum period. While some studies showed that the con-current Hb values might be more practical, others showed that anemia at delivery usually continues during postpartum period. Although the Sample size was relatively small, the relationship between anemia and PPD was evident in the present study.

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