The Relation between Anemia and Postpartum Depression in Pregnant Women Who Referred to Health and Medical Centers of Sanandaj in 2011-2012

Ahdieh Parhizkar

Nursery and Midwifery Department, Nursery and Midwifery Faculty, Kurdistan University of Medical Sciences,sanandaj,iran
parhizkar_a@yahoo.com

Abstract: At reproductive age, women are prone to the risk of postpartum depression. This disease associates with serious complications for mother, baby, and family. The main cause of postpartum depression is unknown. In this regard, a large body of research is devoted to investigating the relation between psychological, social, and nutritional factors. The present study was aimed at determining the relation between women's anemia and their postpartum depression. **Materials and Methods:** The study was analytic-descriptive (cross-sectional). It consisted of 400 women who referred to health and medical centers affiliated to Kurdistan University of Medical Science. Data collection was conducted through cluster sampling. Blood test and Edinburgh Depression Scale were applied to collect data. Blood sampling was carried out on the 7th postpartum day. Afterwards, Edinburgh Depression Scale was completed through interviewing on 28th day. The collected data were analyzed through SPSS 17.0 software. **Results:** Data analysis showed that the mean hemoglobin concentration in non-anemic group was 13.4±0.78 while for anemic group this figure was observed to be 9.75±0.71. This finding shows that in general 78.8% of participant women were depressed. The results showed that there was a significant relation between pregnant mothers' anemia and their postpartum depression ($p<0.005$).**Conclusion:** Results showed that postpartum depression has a significant correlation with anemia intensity. Therefore, anemic women need more attention and are checked regarding their postpartum depression and treated if necessary.

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Introduction

At reproductive age, women are highly at risk of depression. This disease emerges in postpartum period more than any of other time [1]. A large number of mother experience different degrees of postpartum depression. It associates with symptoms like sadness and anxiety that appear in the first days after delivery and lasts 7-10 days. It can form a part of a bipolar or more commonly a unipolar disorder [2]. Postpartum depression is a disorder that associates with feeling of extreme loneliness, irritability, fear, lack of confidence, change in appetite, feeling of guilt, concentration decline, and even extreme cases such as suicide [3]. In general, prevalence of depression has been reported to be 10-15 percent in the world [4]. There is some evidence proving that Asian women are more prone to this disease [5]. Prevalence of depression in Iran was reported to be 27.3% in 2001-2002 [6]. Even though postpartum depression lasts for a short time, it can lead to serious complications for mother, baby, and family [7]. This disease has negative effect on the infant development [8] and results in behavioral, social and emotional problems in babies. In some cases with intense disorder, it has been reported that the baby was killed by the depressed mother [9]. Postpartum depression is usually ignored to be taken into consideration by obstetricians and midwives; therefore, in many cases it is neither diagnosed nor treated [1]. If mother who are prone to the disease are identified, treatment can be conducted [8]. The effects of a lot of social-emotional factors such as adverse events, poor marital relationship, lack of social and economic support, individual and family background, experience of psychiatric illness and postpartum depression, unplanned pregnancy, infertility record, abortion, and vitro fertilization on postpartum depression have been investigated and in some cases positive results were reported [10]. More recently, anemia as a biologic factor leading to depression has been taken into account [11]. Nowadays, anemia which can be observed in 20% of women is considered as the most prevalent medical disorder in pregnancy period [11]. Anemic women are more prone to birth complications compared to pregnant women with normal hemoglobin. It is estimated that 60 percent of women are anemic during pregnancy [13]. In 7.5 percent of pregnancies, the woman will remain anemic if she is not treated

during pregnancy [13]. Generally, prevalence of anemia in Iran was reported to be 28.5% in 2002-2003 [14]. Anemia can result in different complications in pregnancy like an increase in preterm birth number and inter-uterine development complication [15]. Recently, anemia has been distinguished to play role in postpartum depression, so that it causes depression by changing inflammatory cytokinins [1]. In their study, Paterson et al (1994) have investigated the relation between anemia and postpartum depression among 1010 English pregnant women who had undergone complication-free vaginal delivery. This study was conducted in a cohort way, so that hemoglobin level was checked on the 34th day of pregnancy and the individuals were divided into an anemic group (500 women whose hemoglobin level was less than 12 gr/dl) and a non-anemic group (510 women). Afterwards, depression level was assessed in the first four weeks after delivery through Edinburgh Depression Scale. The results proved that there was no significant relation between anemia and depression [6]. However, Bergman et al have investigated the relation between anemia and postpartum depression in 1200 women in 2004. First, the participants' hemoglobin level was checked in the 34th week. Afterwards, their depression level was determined through Center for Epidemiologic Studies Depression Scale. The results of this study showed that low level of hemoglobin during pregnancy is a factor causing postpartum depression because reduction of interleukins especially interleukins 2 is observable in anemic individuals and reduction of inflammatory cytokinins can result in behavior changes in anemia. Therefore, it seems that depression in anemic pregnant women was caused by change of inflammatory cytokinins [17]. Bearing in mind whatever has been said and because mothers play an important role in training, education, economy, health, family and the whole society nutrition, special attention needs to be devoted to mothers' nutrition. Mothers' malnutrition during pregnancy that associates with different infections is the most important issue especially in developing countries and poor regions of the world. Malnutrition has put mothers and millions of children's health at risk; and it is an important factor affecting children's development delay and death [18]. Generally, WHO considers health care as the best way to prevent diseases and guarantee fragile groups of society. Moreover, training mothers about the first care of their children is one of the first aims of first care and mothers' thorough awareness especially about health and nutritional issues can be of great help to them and reduce irretrievable damages they have faced with [19]. The aim is to enhance mothers and their children's health and give birth to healthy children and minimize the existent problems by training mothers before and during pregnancy.

Materials and Methods

The study was analytic-descriptive (cross-sectional). According to Ali Akbari who reported that prevalence of depression among anemic and non-anemic women was respectively 38% and 14% [14] and considering the first type of error as 5% and the second type as 10% and reliability of 95%, 400 women were selected as the study participants. In the present study, Sanandaj was divided into 4 regions of North, South, West, and East an in each region two health centers were chosen in a cluster way. Cluster sampling was applied in data collection. Factors based on which the participants were selected included all Iranian women aged 20-35 who had a planned singleton pregnancy and were undergone complication-free vaginal delivery. None of the participants needed to experience infertility and stillbirth. Moreover, they did not have complications such as preeclampsia, thyroid disorder, diabetes, and depression experience during lifetime or previous pregnancies, did not face with any adverse events in the past two years, and were not diagnosed to have an extreme or chronic disease in them and their children. Participants who faced with adverse events or chronic diseases such as thalassemia or they were unwilling to participate in the study were crossed out from the study. Then, the women's consent was gained and afterwards they were divided into an anemic group (hemoglobin level lower that 12 gr/dl) and a non-anemic group (hemoglobin level higher than or equal to 12 gr/dl) through blood sampling. Then, Edinburgh Postpartum Depression Scale the reliability of which is confirmed by different scholars in university of medical sciences in Tabriz, Hamadan, and Ardabil was applied. This scale includes ten four-option sections in some of which the questions are organized from low to high intensity (questions 1, 2, and 4) and in other sections the organization is from high to low intensity (questions 3, 5, 6, 7, 8, 9, and 10). Base on the intensity of the mark, options in each question are devoted a score from 0 to 3 and the total score gained by the individual is the sum of these 10 questions and it varies from 0 to 3. Mothers who gain scores higher than ten may suffer from depression with different intensity [21]. Using interview method, the scale was completed after 28 days with the help of selected centers because on the 28th day after delivery reduction in interleukins especially interleukin 2 that emerges as a result of behavioral changes like depression [17]. All required data were collected during about 6 months. Then, collected data were analyzed using descriptive analysis and t-test.

Table 1. Specifying and Comparing the Participants' Hemoglobin Level

Index \ Group	Number	Mean	Standard Deviation
Anemic	200	9.75	0.78
Non-anemic	200	13.14	0.71

Table 2. Specifying Frequency of the Participants' Level of Depression

Depression	Number	Percentage
Doesn't have	85	21.2
Has	315	78.8
Total	400	100

Table 3. The Relation between the Participants' Postpartum Depression and their Anemia

Anemic \ Depression	Doesn't have		Has		Total	
	Number	Percentage	Number	Percentage	Number	Percentage
Yes	54	27	146	73	200	100
No	31	15.5	169	84.5	200	100
Total	85	21.2	315	78.8	400	100

Findings

Data analysis showed that the mean hemoglobin concentration in non-anemic group was 13.4±0.78 while for anemic group this figure was observed to be 9.75±0.71. T-test showed this difference at a level of P<0.00001 (See Table 1). Collected data shows that in general 78.8% of women in anemic and non-anemic groups were depressed (See Table 2). The results also proved that there was a significant relation between pregnant mothers' anemia and their postpartum depression (P<0.005) (See Table 3). The results of the study showed that most of the participants in anemic and non-anemic groups respectively aged 25-29 (53.9%) and over 25 (53.4%). There was no significant relation between mothers' age and postpartum depression (P<0.08).

Discussion and Conclusion

The results of the study showed that hemoglobin level was low in anemic women, about half of the studied individuals suffered from postpartum depression, and there was a significant relation between anemia and postpartum depression. The results of the study conducted by Corwin *et al* in 2003 in Pennsylvania showed that level of hemoglobin on the 7^{th} day after delivery had correlation with depression level on the 28^{th} day after birth; however, there was no relation between levels of hemoglobin on 14^{th} and 28^{th} days after delivery and depression. In the present study, it was concluded that low level of hemoglobin in early days after pregnancy was considered as the risk factor causing postpartum depression and this relation is observable on the 7^{th} day after delivery [19]. In addition, Beard *et al* (2005) have stated that there is a significant relation between anemia and postpartum depression [22]. The results of the study conducted by Ali Akbari in 2006-2007 showed that 14.6% of individuals in anemic group and 38.6% in non-anemic group were depressed in the weeks of 38-40 after pregnancy and that there was a significant relation between intensity of anemia in the weeks of 38-40 after pregnancy and postpartum pregnancy (P<0.001). It also showed that anemia increase postpartum depression probability about 1.8 times (P<0.05) and this increase was 1.2 to 2.7 times with 95% confidence intervals [20]. Corwin *et al* stated that anemia can cause depression by changing neurotransmitters and oxidation stages of thyroid hormones. Moreover, anemia reduces interleukin 2 by changing inflammatory cytokinins and reduction of these inflammatory cytokinins, in turn, leads to behavioral changes in anemia. Sudden emotional-social change caused by childbirth and becoming a mother is a potential risk factor for depression and in fact is a nonspecific motivation among other probable causes. The nature of delivery motivation is not known yet. However, other factors such as psychiatric, social, and biological factors have their special effect. Genetic factors are also mentioned. A lot of studies have investigated the role of hormones; however, no major physiological hormonal differences were observed in women with postpartum depression [19]. Therefore, it can be stated that depression is one of the most prevalent emotional complications and considered as a global health problem in all nations. Because of having special circumstances, some individuals are more fragile to this complication. Moreover, due to stress caused by

social and environmental changes and some physical diseases, number of depressed individuals is increasing. Depression has been considered as an emotional problem among adults for centuries [23 & 24]. The present study investigated the relation between anemia and postpartum depression and hemoglobin assessment was used to diagnose anemia. Other factors like minor thalassemia can also cause anemia, which was not considered in the present study and can be included in future research. Since anemia is one of the commonest diseases among pregnant women and young women account for the vast population of a country, and through a long period of their lifetime they suffer different forms of anemia because of specific physical and sexual reasons, providing appropriate educational, investigative, care, and health programs is necessary. Therefore, one of the most major needs of any society is informing and holding classes and workshops for midwives, gynecologists, students of the field, and even young girls and pregnant women.

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Corresponding Author: Ahdieh Parhizkar
Nursery and Midwifery Department, Nursery and Midwifery Faculty, Kurdistan University of Medical Sciences,sanandaj,iran,
E mail: parhizkar_a@yahoo.com

References

1-Bondar M , Rotenberg N, Koren D, Klein E. Risk factor for early postpartum depressive symptoms . General Hospital Psychiatry . 2006 , 28(1) 3-8.
2- Sadock BJ , VA .Comprehensive textbook of psychiatry . 17 th ed . Philadelphia : Lippincott Williams &Wilkins :2000 ,pp.2,1282
3- Asltoghiri M , Ghodsi Z . Study of the Relation between Sleep Disorder and Depression at Late Stage of Pregnancy. World Conference on Educational Technology. 2011 , 28,430-434.
4- Bloch M ,Koren D, Klein E, Rotenberg N.RISK factor for early postpartum depressive symptoms .General American Psychiatry .2006, 28 (1) 3-8.
5- Werret J, Clifford , C. Validation of Punjabi version of the Edinburgh postnatal depression scale (EPDS). international journal of nursing studies . 2006, 43(2) 227- 236.
6-Behboudi Z .Study of Rang Frequency postnatal Depression . MS Thesis, University of Shahid Beheshtie, Tehran, 2001.
7- Honey K .Prediction postnatal depression .Journal of Affective Disorder .2003,76 (3-1)201-210.
8- Denis C L .Can we identify mother a risk for postpartum depression in the immediate postpartum period using the Edinburgh postnatal scale .Journal of Affective Disorder .2004, 78(2)163-169.
9-Stowe Z N, Hostetter A L, Newport D J. The onset of postpartum depression: implications for clinical screening obstetrical and
primary case. American Journal of Obstetric Gynecology.2005 192, 522–526.
10- Canny P. Maternal depression and child development. Pediatrics and Child Health .2004 , 9(8) 575-583.
11- Thoppil J, Terri L, Riutcel S. Early intervention for prenatal depression .American Journal of Obstetrics and Gynecology .2005,192(5)1446-1448.
12- Aghamohamadi M .Education of maternal for anemia of prevention.
The congers of Education of client . Booshehr Medical of university science . 2000.pp:17-18.
13- Corwin E , Murray K .Low hemoglobin level is a risk factor for post partum depression . The American Society for Nutrition Science Journal of Nutrition . 2003, 133 (12) 4139-4142.
14- Karimi M .Assessment of the prevalence of iron deficiency anemia .Medical Science Monitoring. 2002.8(7)488-492.
15-Levy A Fraser D, Katz M ,Mazor M, Sheiner E .Maternal anemia during pregnancy is an independent risk for low birth weight and preterm delivery .European Journal of Obstetrics and Gynecology and reproductive Biology . 2005 , 122(2)182 -186.
16- Paterson A, Davis J, Gregory M, Holt SJ, Pachulski A, Stamford DE, Wothers JB . A study on the effects of low hemoglobin on postnatal woman .Midwifery .2005,10(2) 77-86.
17- Bergman Kp, O'Connor TG, Modi N, Glover V. Maternal stress during pregnancy predicts cognitive ability and fearfulness in infancy. J. Am. Acad. Child. Adolesc. Psychiatr 2007, 46, 1454-1463.
18-Machelle M . The role of nutrition and nutritional supplements in women's health.1999.72(4),579-591.
19- Corin E,Murray K,Beard J. postpartum Depression .J NUTR 2003 Dec : 133(12):4139-42.
20- Ali Akbari S, Kariman, N, Tooghiri M , Alavi , H. Relation between gestational anemia and postpartum Depression . MS Thesis ,University of Tehran ,2006.
21-Source K L,Wisner B L, Parry C . Postpartum Depression. N Engl J Med vol. 347, No 3, July 18, 2002,194-199.

22-Beard J , Michael K,Hendricks M. Maternal iron deficiency anemia affects postpartum emotions & cognition. The American society for Nutrition .2005.135(2)267-272.
23- Lotfabadie S. Developmental psychology . 2th ed. Volume 2Tehran :Samt publishers Inc :1998.pp:34.
24-Kaplan HI, Sadock BJ. Synopsis of psychiatry. Behavioral science clinical psychiatry. 5th ed. London: Williams and Wilkins Co.1998: 524-73.