Research Repository UCD

Provided by the author(s) and University College Dublin Library in accordance with publisher
policies. Please cite the published version when available.

Title	Risk Factors of Postpartum Depression in Rural Areas of Isfahan Province, Iran
Authors(s)	Kheirabadi, Gholam-Reza; Maracy, Mohamad-Reza; Barekatain, Majid; Casey, Patricia R.; et al.
Publication date	2009-09
Publication information	Archives Of Iranian Medicine, 12 (5): 461-467
Publisher	Academy of the Medical Sciences of the I.R. Iran
Link to online version	http://www.ncbi.nlm.nih.gov/pubmed/19722767
Item record/more information	http://hdl.handle.net/10197/5809

Risk score of postpartum depression (PPD) in rural areas of Isfahan province, Iran

Abstract:

Background: The hierarchical importance risk factors for post-partum depression is not well-known.

Aims: To determine the risk factors of PPD and their hierarchical importance for developing post-partum depression in a cross sectional study of women living in rural area of Isfahan province in Iran.

Method: We assessed 6627 women in the 2-12 month after delivery for depression and for putative risk factors.

Results: Unemployment, low education, undesired gender of child, unplanned   pregnancy and history of depression were risk factors of post-partum depression. History of depression, low education, prim parity, unplanned pregnancy and undesired gender of child had highest risk score for PPD in order in this group of Iranian women.

Conclusions: Risk factors of PPD in the Isfahan province were very similar to other studies, but the negative impact of low level of education, unplanned pregnancy and undesired gender of child on postnatal depression seems to be a distinguishing aspect of Iranian culture.

Introduction

While there is some debate about the time frame used to delineate the postpartum period, postpartum depression (PPD) is defined in the Diagnostic and Statistical Manual of Mental Disorders IV(American Psychiatric Association, 1996) as a major depressive episode that occurs within 4 weeks after delivery. However, investigators describe a dramatic increase in the incidence of mood disorder after childbirth, with the largest risk in the 90 days after delivery and an associated increase in risk that continues for approximately 2 years postpartum(Harris, 2002). A meta-analysis of community studies found the prevalence of PPD to be 13 percent (Wisner et al., 2002).

Knowledge of factors that predispose women to postpartum depression (PPD) may help identify those who are at higher risk and can benefit from early professional help. Various putative psychosocial and obstetric factors have been studied and suggested as risk factors for the development of PPD. However, these results are inconsistent and do not effectively help predict women at risk (Bloch et al., 2005).

The major risk factor for PPD is a personal history of depression (prior to pregnancy, or postpartum) (Bernazzani et al., 1997;Buesching et al., 1986;Cooper et al., 1999;Da et al., 2000;Evans et al., 2001;Lee et al., 2001;O'Hara et al., 1990;Wilson et al., 1996;Yonkers et al., 2001). Other risk factors for PPD include; family psychiatric history (Brugha et al., 1998), lack of perceived social support from family and friends for the pregnancy (Brugha, Sharp, Cooper, Weisender, Britto, Shinkwin, Sherrif, and Kirwan, 1998;Wilson, Reid, Midmer, Biringer, Carroll, and Stewart, 1996), unemployment in the mother or in the head of household (Warner, 1996), lack of emotional and financial support from the partner (Cooper, Tomlinson, Swartz, Woolgar, Murray, and Molteno, 1999), marital conflict(Kumar et al., 1984;Wilson, Reid, Midmer,

Biringer, Carroll, and Stewart, 1996), stressful life events in the previous 12 months (Areias et al., 1996;Wilson, Reid, Midmer, Biringer, Carroll, and Stewart, 1996), living without a partner (Brugha, Sharp, Cooper, Weisender, Britto, Shinkwin, Sherrif, and Kirwan, 1998;Yonkers, Ramin, Rush, Navarrete, Carmody, March, Heartwell, and Leveno, 2001), unplanned pregnancy (Brugha, Sharp, Cooper, Weisender, Britto, Shinkwin, Sherrif, and Kirwan, 1998;Warner et al., 1996), having contemplated terminating the current pregnancy (Kumar and Robson, 1984), a poor relationship with one's own mother (Murray et al., 1995), not breastfeeding (Misri et al., 1997;Warner, Appleby, Whitton, and Faragher, 1996;Yonkers, Ramin, Rush, Navarrete, Carmody, March, Heartwell, and Leveno, 2001), a lifetime history of depression in the husband or partner, Child-care related stressors(Stowe et al., 1995), sick leave during pregnancy related to hyper emesis, uterine irritability, or psychiatric disorder (Josefsson et al., 2002), high number of visits to prenatal clinic (Josefsson, Angelsioo, Berg, Ekstrom, Gunnervik, Nordin, and Sydsjo, 2002), a congenitally malformed infant (Rona et al., 1998).

A comprehensive Meta analysis by Beck revealed thirteen significant predictors of postpartum depression. Low self esteem, childcare stress, prenatal anxiety and life stress respectively had the greatest effect size (Beck, 1996).

In a comprehensive review we found that risk factors associated with PPD in our society are the same as in other societies with some predictable controversies (Foruzandeh et al., 2001;Ghaffari Nejad et al., 2007;Salehi 2001;Yasemi et al., 2001) but we have no data on the hierarchical importance of these risk factors.

The aim of the present study is to identify the variables associated with the risk of PPD and to assess their relative importance to each other. In addition we aim to develop a screening tool, for use by health workers, based on this information to assist in identifying women at high risk of having PPD.

Material and methods

Setting

The study was conducted in rural areas of Isfahan province (with varied geographical, cultural and socio-economical properties) in central zone of IRAN. The health centers in the area are responsible to provide health care services. They are supported by the Vice-Chancellor for Health of Isfahan University of Medical Sciences.

Resident health workers (Behvarz) in the village health centers (Health Homes) provide comprehensive primary health care. They also assisted the visiting team of general practitioners (GP) and other mental health professionals to conduct periodic visits of the area.

The primary medical care program covers all residents of these villages. The data collection system in Health Home is based on un-computerized records of all family characteristics including pregnant and child rearing women. All villages were selected from whole area, for full coverage of different geographical and socio-economical participants.

Participants and Design:

Participants were all rural women in Isfahan province who had a child ranging from 2 to12 months. About 8000 eligible pregnant women were recruited in this study based on primary information from the Vice-Chancellor for Health of Isfahan University of Medical Sciences, Of these 476 of these were excluded because of literacy problems and the remainder invited to participate. 7300 agreed and completed the self report questionnaires, 673 of questionnaires were excluded because they were incomplete and our final analysis were done with 6627 samples.

This cross-sectional study was carried out jointly between the Behavioral Sciences Research Center (BSRC) and The Vice-Chancellor for Health of Isfahan University of Medical Sciences. Mental health professionals of local departments of the Vice-Chancellor for Health of Isfahan University supervised the data collection as well as training the health workers (Behvarz) in all aspects of the study including its objectives and design. They were the Behvarses who contacted all eligible women and requested them to attend the Health Home at predetermined dates so as to complete the self report questionnaires. Participants who were unable to attend were assessed in their home. The completed questionnaires were collected and then referred to mental health professionals of local departments by Behvarzes. Mental Health workers followed up women who were found to be severely depressed or suicidal at the assessment to ascertain the need for further management.

The first questionnaire covered socio-demographic information (such as: number of children, attitude of parents to the sex of last child, age, occupation, level of education of participant and whether the pregnancy was planned or unplanned) and the second one was Persian version of Beck Depressive Inventory-II.

The BSRC's ethics committee approved the design of the study.

Assessment of depression

The severity of depression was assessed using the Persian version of Beck Depression Inventory (BDI-II) (Ghassemzadeh et al., 2005) since the Persian version of Edinburgh Postnatal Depression Scale (EPDS) was not available at that time. The BDI is 21-item scale with a four-point scale that ranges from 0 to 3 score, it is a self-administered scale that takes 5 to 10 minutes to complete. The severity of depression of a respondent is the sum of the score on each item, ranging from 0 to 63 score. The average internal-consistency of the total scores is 0.86 for psychiatric patients and 0.81 for normal adults. The average correlation of the BDI total scores with clinical ratings of depression was greater than 0.90 for the both psychiatric patients and normal adults. Based on the score obtained, the severity of possible depression was assigned as follows: 0-9 (no depression), 10-16 (mild depression), 17-29 (moderate depression) and 30-63 (sever depression). The cut-off for depression screening in the general population is 17-20 and plus 21+ depression score (Beck et al., 1979;Beck et al., 1984;Beck et al., 1988) .

Assessment of risk factors

We constructed a questionnaire for the assessment of risk factors for post-partum depression. This questionnaire was administered to each participant. The questionnaire covered the following areas:

a. Past history of depression.
b. Number of children, attitude of parents to the sex of last child.
c. Age, occupation and level of education of participants.
d. Last child sex, age (month), inborn malformations and method of feeding.
e. PlanNed or unplanned pregnancy.

Data analysis

Data was analysed using STATA version 9.0 (2003). A logistic regression model was used to compute the odds ratio (OR) for dependent risk factors associated with possible PPD in this study. Multiple logistic regression analysis was used to detect PPD as the dependent variable and a score for each significant risk factor was based on the OR's. In order to keep risk score easy to use, interaction terms between variables were not considered. ORs of the models were assigned by a score value for each variable and the composite PPD risk score was calculated as the sum of those scores. Using the ROC curve can be shown how severe the trade-0ff between sensitivity and specificity is for a test and it also can be used to help decide where the best cutoff point should be. The overall accuracy of test can be described as the area under the ROC curve.

Results

6627 pregnant women were identified and screened for possible depression using the BDI. Of these 57.1% were screened possible cases of depression and based on the BDI scores, 20% (1324) fell within the mild range of scores, 18.3% (1211) within the moderate range and 18.9 (1251) within the severe range.

Table 1 shows the frequency of all demographic and other variables measured by severity of depression. From total number of participants (6627) were included in this study their age varied between 13 to 50 years with mean (SD) as 26.03 (5.1) years.

Table 1 about here

The β coefficients, Standard Error, Odds Ratio, and 95% confidence intervals of the ORs for the risk variables in the study are shown in Table 2.

Table 2 about here

The PPD Risk Score value was defined from the ORs as follows: OR=1.20-1.39, the score is 4; OR=1.40-1.59, the score is 7; OR=1.60-1.79, the score is 11; OR=1.80-1.99, the score is 14; OR=2.00-2.19, the score is 19; OR=2.20-2.39, the score is 23; OR=2.40-2.60, the score is 27. Those with OR<1.20 were given a score of 0. The total PPD risk score was calculated as the sum of the individual score and varied for zero to hundred.

ROC curves were constructed to identify to optimum score among participants for determining PPD. Sensitivity and specificity for predicting undiagnosed depression were calculated for different cut-off scores. The AUC for the ROC was 0.57 (95% CI: 0.56-0.58) as shown in Figure 1.

Choosing a cut-point score of greater than 49, the proportion of participants who are considered for PPD is around 57% (sensitivity). The proportion of those who have a negative diagnosis for PPD is around 50% (specificity).

The data also calculated likelihood ratio (LR) for PPD in the presence of positive or negative diagnosis as shown in table 3. A positive diagnosis is about 1.14 times more likely to found in the presence of PPD than in the absence of PPD. If the subject is classified as PPD, the LR for this negative test is around 85%.

Table 3 near here

Table 1: variables associated with postpartum depression (PPD)

PPD	Non-depress N(%)	Mild N(%)	Moderate N(%)	Sever N(%)	p-value
Child sex:					0.45
Boy	1466(42.7)	705(20.5)	634(18.5)	630(18.3)	
Girl	1336(43.1)	605(19.5)	551(16.8)	607(19.6)	
Brest feeding:					0.23
Yes	2623(43.1)	1222(20.1)	108(18.2)	1131(18.6)	
No	159(40.5)	71(18.1)	75(19.1)	88(22.4)	
Inborn malformations:					0.09
No	37(41.1)	11(12.2)	17(18.9)	25(27.8)	
Yes	2755(42.9)	1289(20.1)	1176(18.3)	1206(18.8)	
Number of mother's children:					0.55
1	1422(43.9)	654(20.2)	592(18.3)	571(17.6)	
2	914(42.4)	426(19.8)	389(18.1)	425(19.7)	
3	348(41.2)	162(19.2)	162(19.2)	173(20.5)	
4	96(39.2)	50(20.4)	44(18.0)	55(22.4)	
>=5	52(43.7)	28(23.5)	19(16.0)	20(16.8)	
Mothers Education:					<0.001
Literacy	1292(41.5)	585(18.8)	568(18.2)	669(21.5)	
Primary	684(41.3)	340(20.5)	323(19.5)	309(18.7)	
High School	729(45.0)	358(22.1)	288(17.8)	248(15.2)	
University	130(59.4)	38(17.4)	29(13.2)	22(10.0)	
Mothers Occupation:					0.008
Employee	150(50.2)	61(20.4)	52(17.4)	36(12.0)	
House wife	2676(42.5)	1255(19.9)	1155(18.4)	1206(19.2)	
Parental attitude to child sex:					<0.001
Yes	1110(42.8)	484(18.7)	480(18.5)	518(20.0)	
No	232(32.4)	149(20.8)	147(20.5)	189(26.4)	
No difference	1489(45.2)	687(20.8)	579(17.6)	540(16.4)	
Attitude to pregnancy:					<0.001

Desired	2320(46.0)	982(19.5)	881(17.5)	589(17.0)	
Desired but not that time	255(31.6)	175(21.7)	176(21.8)	201(24.9)	
Undesired	203(32.9)	124(20.1)	1269(20.4)	164(26.6)	
History of depression:					<0.001
Yes	200(25.1)	140(17.5)	169(21.2)	289(36.2)	
No	2622(45.4)	1172(20.3)	1030(17.8)	954(16.5)	
Mother age (year)					0.47
<=20	370(42.9)	182(21.1)	158(18.3)	153(17.7)	
21-25	1088(42.4)	533(20.3)	474(18.5)	470(18.3)	
26-30	801(42.1)	363(19.1)	349(18.3)	389(20.5)	
>=31	569(45.1)	243(19.3)	220(17.4)	230(18.2)	
Child age(month)					0.53
2-4	802(44.9)	350(19.6)	321(18.0)	313(17.5)	
4-6	541(42.5)	252(19.8)	221(17.4)	259(20.3)	
6-8	428(41.4)	210(20.3)	200(19.3)	197(19.0)	
8-10	452(40.4)	234(20.9)	215(19.2)	217(19.4)	
10-12	565(44.2)	243(19.0)	234(18.3)	237(18.5)	

Table 2: Logistic regression analysis of variables with postpartum depression (PPD)

PPD	β	SE.	P-value	OR	95%CI for OR	Risk score
Child gender:	Ref. (Male)					
Female	0.03	0.05	0.53	1.03	0.93-1.15	0
Brest Feeding:	Ref. (Yes)					
No	0.14	0.11	0.22	1.15	0.92-1.44	0
Inborn malformations:	Ref. (Yes)					
No	0.32	0.19	0.16	1.37	0.88-2.14	4
Number of mother's children:	Ref. (>=5)					
1	0.65	0.24	0.007	1.92	1.20-3.07	14
2	0.49	0.23	0.038	1.62	1.03-2.56	11
3	0.37	0.23	0.102	1.46	0.93-2.28	7
4	0.29	0.25	0.249	1.34	0.82-2.19	4
Mother Education:	Ref.(University)					
Literacy	0.77	0.18	<0.001	2.15	1.50-3.11	19
Primary	0.66	0.19	0.001	1.94	1.33-2.81	14
High School	0.49	0.19	0.010	1.63	1.12-2.34	11
Mother Occupation:	Ref. (Employee)					
House wife	0.26	0.14	0.076	1.29	0.97-1.72	4
Parental attitude to child gender:	Ref. (No difference)					
desired	0.20	0.06	0.001	1.22	1.08-1.37	4
No desired	0.59	0.09	<0.001	1.81	1.52-2.17	14
Attitude to pregnancy:	Ref. (planned)					
unplanned	0.54	0.07	<0.001	1.73	1.51-1.98	14
History of depression:	Ref. (No)					
Yes	0.91	0.08	<0.001	2.48	2.11-2.92	27
Mother's age (year):	Ref. (>30)					

<20	0.11	0.13	0.367	1.12	0.87-1.44	0
20-25	0.15	0.10	0.144	1.16	0.95-1.42	0
25-30	0.18	0.09	0.048	1.20	1.00-1.43	4
Child age (month):	Ref. (2-4)					
4-6	0.06	0.08	0.49	1.05	0.90-1.24	0
6-8	0.05	0.09	0.56	1.06	0.89-1.25	0
8-10	0.10	0.09	0.22	1.11	0.94-1.31	0
10-12	0.07	0.08	0.42	1.07	0.91-1.25	0
Total Score						**100**

Figure 1: ROC curve of Risk score for postpartum depression (PPD) in all rural women in Isfahan province, Iran that had a child ranging from 2 to 12 months.

Area under ROC curve = 0.5696
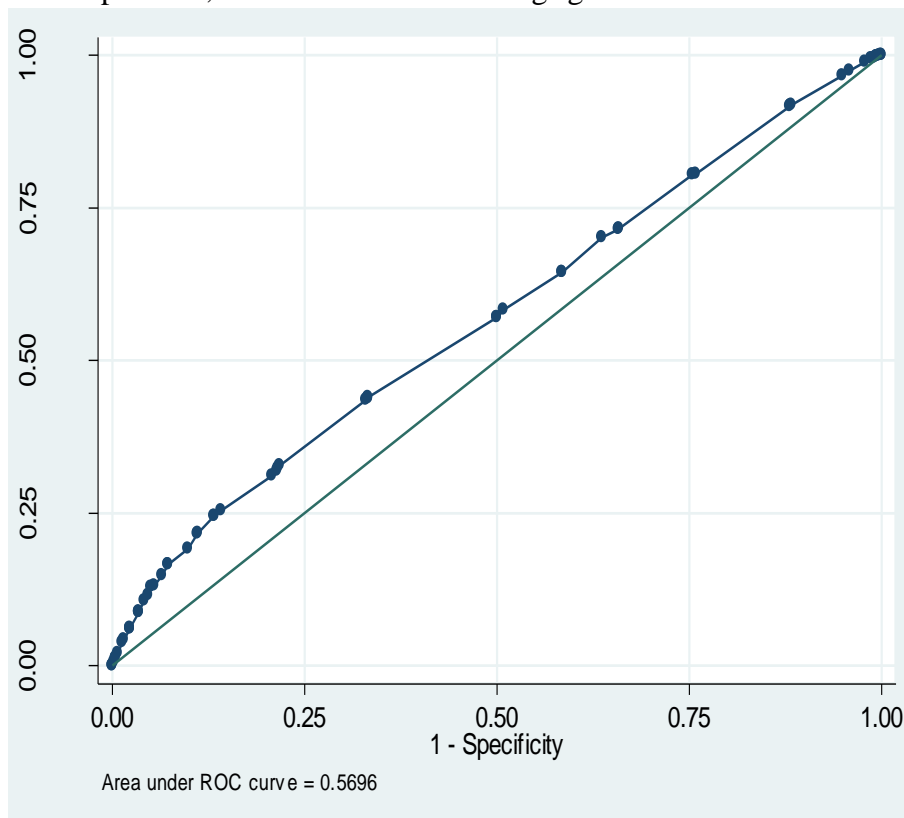
Table 3: sensitivity, specificity, and LR test of all rural women in Isfahan province, Iran that had a child ranging from 2 to12 months.

Cutpoint	Sensitivity	Specificity	Classified	LR+	LR-
(>= 43)	64.48%	41.51%	50.04%	1.10	0.85
(>= 45)	64.44%	41.53%	50.04%	1.10	0.85
(>= 46)	58.31%	49.13%	52.54%	1.14	0.84
(>= 47)	57.10%	49.97%	52.62%	1.14	0.85
(>= 49)	**57.10%**	**50.00%**	**52.64%**	**1.14**	**0.85**
(>= 50)	43.98%	66.71%	58.27%	1.32	0.83
(>= 51)	43.89%	66.76%	58.27%	1.32	0.84
(>= 52)	43.72%	66.76%	58.20%	1.31	0.84
(>= 53)	43.55%	67.04%	58.31%	1.32	0.84

Discussion:

This study is the first of its kind on Iranian women. Our findings revealed that risk factors of PPD in this study were very similar to studies in other countries, but the negative impact of low level of education, unplanned pregnancy and undesired gender of child on postnatal depression seems to be a distinguishing aspect of Iranian culture.

However EPDS is prefer to BDI for detection of PPD but since the Persian version of EPDS was not available at that time the severity of depression was assessed using the Persian version of Beck Depression Inventory BDI-II.

Past depression has been consistently found to be a strong risk factor for PPD(Beck, 2001;Beck, 1996;Stowe and Nemeroff, 1995) and women with a history of an affective disorder have a 30% chance of developing PPD(Appleby et al., 1994). We have also found 35.8% prevalence rate of severe depression (based on BDI score) in women with a past history of depression, a figure that is significantly greater than in women without such history. In addition Steiner reported that 78.3% of the women with PPD had a past and/or family psychiatric history(Steiner, 2002).These data confirm the importance of these variables when screening women who may be at risk for postnatal depression and highlight the importance of assessing family history, symptoms of depression and anxiety during pregnancy and the early postpartum period, in order to facilitate timely identification of women at risk for developing postpartum depression.

Studies looking at the possible effect of pregnancy number on PPD are controversial. Kendel reported on a two-fold increase in the incidence of postpartum psychosis in prim Para compared to multi-Para women, with no age correlation, but no difference in PPD(Kendell, 1985). Some studies show a possible association between 1st childbirth and PPD(Tamaki et al., 1997). Other studies did not find an association between number of deliveries and PPD(Posner et al., 1997) or, alternatively, that high parity is associated with PPD(Righetti-Veltema et al., 1998). In our study

we found that in the order of pregnancies, earlier ones entail a higher risk of PPD. This result may reflect the possibility that women who develop PPD are less inclined to become pregnant again after experiencing depression, and thus women with multiple pregnancies may represent a group of women with a relatively lower vulnerability for PPD(Bloch, Rotenberg, Koren, and Klein, 2005). Alternatively, it is possible that the vulnerability to PPD diminishes with multiple deliveries due to a nonspecific decrease in stress associated with the pregnancy and delivery, or for other yet unexplained reasons.

Gender of the infant and parental attitude to it are two controversial and interacting risk factors of PPD. Based on (Adewuya et al., 2005) study gender of the infant was a determinant of PPD. In the study of Patel(Patel et al., 2002) should that unhappy about infant's gender was a significant risk factor but birth of a daughter when she already had a female child was more important (Patel, Rodrigues, and DeSouza, 2002). Also Chandran clamed that birth of a daughter when a son was desired is more important risk factor for depression(Chandran et al., 2002).

In current study child gender initially was not correlated to prevalence of PPD but undesired gender of child was an important risk factor of PPD with relatively high risk score. Review of literature related to PPD and infant's gender shows that it may be a culture bound risk factor of PPD.

Unemployment and low education reported as another risk factors of PPD in many studies(Chandran, Tharyan, Muliyil, and Abraham, 2002;Inandi et al., 2002). but not in others(Chaaya et al., 2002;YASEMI and RAZJOOYAN, 2001) while other studies reported that high education and employment are protective against PPD(Chaaya, Campbell, El, Shaar, Harb, and Kaddour, 2002;Warner, Appleby, Whitton, and Faragher, 1996;YASEMI and RAZJOOYAN, 2001). Unemployment and low education were identified in this study to be significantly associated with PPD. It may be these factors in turn are related to poverty, also a risk factor must be considered and it would be necessary to do more study.

As in other studies, (Beck, 2001;Bloch, Rotenberg, Koren, and Klein, 2005) this study also identified an unplanned pregnancy or unwanted pregnancy as another risk factor of PPD. While an unplanned pregnancy does not necessarily an unaccepted one, the women still has to cope with the long term ramifications such as financial demands that are likely to occur.

In summary these findings revealed that risk factors of PPD in the Isfahan province were very similar to other studies, but the negative impact of low level of education, unplanned pregnancy and undesired gender of child on postnatal depression seems to be a distinguishing aspect of Iranian culture.

The PPD risk score above 49 has been designed to be a screening tool for identifying women at risk of depression. We believe that the public health benefit of this PPD risk score is considerable. Despite of the relatively low sensitivity and specificity in this study, it is a cost-effective and practical way to identify individual at high risk for PPD treatment in the population. In conclusion, this simple, safe and inexpensive screening instrument can be easily used by health workers (Behvarz) in the health centers. This study show that the PPD risk score is a useful screening tool which can be applied to demographically similar populations in different parts of

the world. This study has identified a risk score specifically for Iranian pregnant women. More studies are required to replicate these findings or to adjust the cut-off scores so as to achieve greater sensitivity and specificity.

Acknowledgments

Reference

2003. Stata User's Guide. Stata Press.

Adewuya,A.O., Fatoye,F.O., Ola,B.A., Ijaodola,O.R., Ibigbami,S.M., 2005. Sociodemographic and obstetric risk factors for postpartum depressive symptoms in Nigerian women. J. Psychiatr. Pract. 11(5), 353-358.

American Psychiatric Association,A., 1996. Diagnostic and Statistical Manual of Mental Disorder:DSM-IV.

Appleby,L., Gregoire,A., Platz,C., Prince,M., Kumar,R., 1994. Screening women for high risk of postnatal depression. J. Psychosom. Res. 38(6), 539-545.

Areias,M.E., Kumar,R., Barros,H., Figueiredo,E., 1996. Correlates of postnatal depression in mothers and fathers. Br. J. Psychiatry 169(1), 36-41.

Beck,A.T., Rush,A.J., Shaw,B.F., Emery,G., 1979. Cognitive therapy of depression. Cuilford Press., New York., New York.

Beck,A.T., Steer,R.A., 1984. Internal consistencies of the original and revised Beck Depression Inventory. J. Clin. Psychol 40(6), 1365-1367.

Beck,A.T., Steer,R.A., Carbin,M.G., 1988. Psychometric properties of the Beck Depression Inventory: Twenty-five years of evaluation. Clinical Psychology Review 8(1), 77-100.

Beck,C.T., 2001. Predictors of postpartum depression: an update. Nurs. Res. 50(5), 275-285.

Beck,C.T., 1996. A meta-analysis of the relationship between postpartum depression and infant temperament. Nurs. Res. 45(4), 225-230.

Bernazzani,O., Saucier,J.F., David,H., Borgeat,F., 1997. Psychosocial predictors of depressive symptomatology level in postpartum women. J. Affect. Disord. 46(1), 39-49.

Bloch,M., Rotenberg,N., Koren,D., Klein,E., 2005. Risk factors associated with the development of postpartum mood disorders. J. Affect. Disord. 88(1), 9-18.

Brugha,T.S., Sharp,H.M., Cooper,S.A., Weisender,C., Britto,D., Shinkwin,R., Sherrif,T., Kirwan,P.H., 1998. The Leicester 500 Project. Social support and the development of postnatal depressive symptoms, a prospective cohort survey. Psychol Med. 28(1), 63-79.

Buesching,D.P., Glasser,M.L., Frate,D.A., 1986. Progression of depression in the prenatal and postpartum periods. Women Health 11(2), 61-78.

Chaaya,M., Campbell,O.M., El,K.F., Shaar,D., Harb,H., Kaddour,A., 2002. Postpartum depression: prevalence and determinants in Lebanon. Arch. Womens Ment. Health 5(2), 65-72.

Chandran,M., Tharyan,P., Muliyil,J., Abraham,S., 2002. Post-partum depression in a cohort of women from a rural area of Tamil Nadu, India. Incidence and risk factors. Br. J. Psychiatry 181, 499-504.

Cooper,P.J., Tomlinson,M., Swartz,L., Woolgar,M., Murray,L., Molteno,C., 1999. Post-partum depression and the mother-infant relationship in a South African peri-urban settlement. Br. J. Psychiatry 175, 554-558.

Da,C.D., Larouche,J., Dritsa,M., Brender,W., 2000. Psychosocial correlates of prepartum and postpartum depressed mood. J. Affect. Disord. 59(1), 31-40.

Evans,J., Heron,J., Francomb,H., Oke,S., Golding,J., 2001. Cohort study of depressed mood during pregnancy and after childbirth. BMJ 323(7307), 257-260.

FORUZANDEH,N., DASHTEBOZORGI,B., 2001. PREVALENCE AND PREDISPOSING FACTORS OF POST-PARTUM DEPRESSION AMONG WOMEN REFERRED TO THE HEALTH CARE CENTERS OF SHAHREKORD. SHAHREKORD UNIVERSITY OF MEDICAL SCIENCES JOURNAL 1(2), 43-51.

Ghaffari Nejad,A.R., Khobyyari,F., Pouya,F., 2007. Prevalence of postpartum depression in Kerman. IRANIAN JOURNAL OF PSYCHIATRY AND CLINICAL PSYCHOLOGY (ANDEESHEH VA RAFTAR) 17-18(5), 24-29.

Ghassemzadeh,H., Mojtabai,R., Karamghadiri,N., Ebrahimkhani,N., 2005. Psychometric properties of a Persian-language version of the Beck Depression Inventory--Second edition: BDI-II-PERSIAN. Depress. Anxiety. 21(4), 185-192.

Harris,B., 2002. Postpartum depression. Psychiatr Ann 32, 405-416.

Inandi,T., Elci,O.C., Ozturk,A., Egri,M., Polat,A., Sahin,T.K., 2002. Risk factors for depression in postnatal first year, in eastern Turkey. Int. J. Epidemiol. 31(6), 1201-1207.

Josefsson,A., Angelsioo,L., Berg,G., Ekstrom,C.M., Gunnervik,C., Nordin,C., Sydsjo,G., 2002. Obstetric, somatic, and demographic risk factors for postpartum depressive symptoms. Obstet. Gynecol. 99(2), 223-228.

Kendell,R.E., 1985. Emotional and physical factors in the genesis of puerperal mental disorders. J. Psychosom. Res. 29(1), 3-11.

Kumar,R., Robson,K.M., 1984. A prospective study of emotional disorders in childbearing women. Br. J. Psychiatry 144, 35-47.

Lee,D., Yip,A., Chiu,H., Leung,T., Chung,T., 2001. A psychiatric epidemiological study of postpartum Chinese women. Am. J. Psychiatry 158(2), 220-226.

Misri,S., Sinclair,D.A., Kuan,A.J., 1997. Breast-feeding and postpartum depression: is there a relationship? Can. J. Psychiatry 42(10), 1061-1065.

Murray,D., Cox,J.L., Chapman,G., Jones,P., 1995. Childbirth: life event or start of a long-term difficulty? Further data from the Stoke-on-Trent controlled study of postnatal depression. Br. J. Psychiatry 166(5), 595-600.

O'Hara,M.W., Zekoski,E.M., Philipps,L.H., Wright,E.J., 1990. Controlled prospective study of postpartum mood disorders: comparison of childbearing and nonchildbearing women. J. Abnorm. Psychol 99(1), 3-15.

Patel,V., Rodrigues,M., DeSouza,N., 2002. Gender, poverty, and postnatal depression: a study of mothers in Goa, India. Am. J. Psychiatry 159(1), 43-47.

Posner,N.A., Unterman,R.R., Williams,K.N., Williams,G.H., 1997. Screening for postpartum depression. An antepartum questionnaire. J. Reprod. Med. 42(4), 207-215.

Righetti-Veltema,M., Conne-Perreard,E., Bousquet,A., Manzano,J., 1998. Risk factors and predictive signs of postpartum depression. J. Affect. Disord. 49(3), 167-180.

Rona,R.J., Smeeton,N.C., Beech,R., Barnett,A., Sharland,G., 1998. Anxiety and depression in mothers related to severe malformation of the heart of the child and foetus. Acta Paediatr. 87(2), 201-205.

SALEHI,L., 2001. POSTPARTUM DEPRESSION PREVALENCE IN PRIMIPAROUS AND MULTIPAROUS WOMEN. MEDICAL JOURNAL OF HORMOZGAN UNIVERSITY 2(5), 22-25.

Steiner,M., 2002. Postnatal depression: a few simple questions. Fam. Pract. 19(5), 469-470.

Stowe,Z.N., Nemeroff,C.B., 1995. Women at risk for postpartum-onset major depression. Am. J. Obstet. Gynecol. 173(2), 639-645.

Tamaki,R., Murata,M., Okano,T., 1997. Risk factors for postpartum depression in Japan. Psychiatry Clin. Neurosci. 51(3), 93-98.

Warner,R.A.l.w.A.F.B., 1996. Demographic and obstrtric risk factors for postnatal psychiatric morbidity. Br J Psychiatry 168, 607.

Warner,R., Appleby,L., Whitton,A., Faragher,B., 1996. Demographic and obstetric risk factors for postnatal psychiatric morbidity. Br. J. Psychiatry 168(5), 607-611.

Wilson,L.M., Reid,A.J., Midmer,D.K., Biringer,A., Carroll,J.C., Stewart,D.E., 1996. Antenatal psychosocial risk factors associated with adverse postpartum family outcomes. CMAJ. 154(6), 785-799.

Wisner,K.L., Parry,B.L., Piontek,C.M., 2002. Clinical practice. Postpartum depression. N. Engl. J. Med. 347(3), 194-199.

YASEMI,M.T., RAZJOOYAN,K., 2001. RELATIONSHIP OF MENTAL DISORDER ANXIETY AND DEPRESSION WITH CESSATION OF BREASTFEEDING. JOURNAL OF MEDICAL FACULTY GUILAN UNIVERSITY OF MEDICAL SCIENCES 10(39-40), 1-7.

Yonkers,K.A., Ramin,S.M., Rush,A.J., Navarrete,C.A., Carmody,T., March,D., Heartwell,S.F., Leveno,K.J., 2001. Onset and persistence of postpartum depression in an inner-city maternal health clinic system. Am. J. Psychiatry 158(11), 1856-1863.