

Depression Risk Factors in Different Trimesters of Pregnancy in Iranian Women

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Zinatossadat Bouzari¹, Mojgan Naeimi Rad²,
Elham Tayebi³, Farzan Kheir Khah^{**} and
Mahmoud Hajiahmadi⁵

¹Fatemeh Zahra Infertility and Fertility Reproductive Health Research Center, Cellular & Molecular Biology Research Center, Associate of Obstetrics & Gynecology Department, Babol University of Medical Science, Babol, Iran

²Clinical Research Development Unite of Rouhani Hospital, Master of Midwifery, Babol University of Medical Sciences, Babol, Iran

³Student Committee Research, Babol University of Medical Sciences, Babol, Iran

⁴Health Research Institute, Associate of Psychiatry and Neurology Department, Babol University of Medical Sciences, Babol, Iran

⁵Non-Communicable Pediatric Diseases Research Center, Assistant of Biostatistics and Epidemiology Department, Babol University of Medical Sciences, Babol, Iran

Abstract

Objective: Depression and other psychological problems are a major health problem during pregnancy and after delivery. Thus, we decided to investigate risk factors of depression in different trimesters.

Methods: This cross-sectional study was conducted in 2011 on eligible women with depression. Standard questionnaire EPDS was used to screen for depression in the first, second and the third trimesters.

Results: The mean age of pregnant women was 26.1 ± 5.12 years. 25.3% experienced depression in the first trimester, 28% in each of the second and third, 23.7% had depression in both first and second trimesters, 22% in all three. A significant relationship in all three trimesters between depression, old age and poor education was showed. Regression analysis showed previous history of depression as the strongest depression risk factor in all trimesters.

Conclusion: Considering the well-known role of previous history of depression, its timely treatment can largely prevent its persistence.

Keywords: Depression, Pregnancy, Prenatal, Risk factor

Introduction

Depression and other psychological problems are a major health problem during pregnancy and after delivery [1]. Nearly 50% of pregnant women with Postpartum depression have also experienced Prenatal Depression [2]. Undiagnosed or inadequately treated perinatal depression can lead to increased maternal mortality, gestational hypertension and inability to complete perinatal care, which endangers maternal and fetal health and increases the risk of postpartum depression [3,4]. A study reported depression rate the same as that in general population in the first trimester of pregnancy, and twice that in the second and third trimesters [5]. Few studies have investigated the rate of depression in all three trimesters. Some studies have found no difference in depression rate between trimesters [6,7]. But, others have shown progressively descending depression during pregnancy [8-10]. Oxford Psychiatric Department generally considers psychiatric disorders in the first and the third trimesters more common than in the second trimester [11].

In a study conducted in Iran, the highest rate of depression was reported in the third trimester [12]. In pregnant women, depression risk factors can include history of depression, education level, low income, being a housewife, physical illness, history of infertility, history of abortion, and smoking [10,13,14].

The majority of studies and clinical works to find a treatment for depression have mainly focused on postpartum depression [15], and few studies have addressed depression in all three trimesters. Thus, we decided to investigate related and risk factors of depression in different trimesters in pregnant women attending prenatal clinic of Rohani Hospital in Babol.

Method

This cross-sectional study was conducted in 2011 on eligible women with singleton pregnancy attending perinatal clinic in the first trimester. Inclusion criteria were:

***Corresponding author:** Dr. Farzan Kheir Khah, Ganafrouz Street, Babol University of Medical Science, Babol, Iran, Tel: 0111-2238264, 09111128368, Email: dfarzankh@yahoo.com

singleton pregnancy with depression attending perinatal clinic in the first trimester.

Exclusion criteria were:

- 1- Divorce, husband's death, or husband's substance abuse
- 2- Pregnant woman's substance abuse
- 3- Death of a first degree relative in the course of the study
- 4- Detection of fetal anomalies at the start, during and at the end of the study
- 5- Failure to follow-up prenatal cares
- 6- Failure to complete the questionnaire

First, a demographic questionnaire was completed, which contained questions on age, economic status, employment, education, and other information such as gravidity, parity, abortion, smoking by either parents, planned or unplanned pregnancy, history of low mood and depression, history of physical illness, and history of psychiatric disorders in the family. Next, a standard questionnaire with confirmed validity and reliability was used to screen for depression EPDS (Edinburgh Pre & postnatal Depression Scale) [16]. All participating women were assessed in terms of depression by completing EPDS three times in the first, second and the third trimesters. Data were analyzed in SPSS-18, using Chi-square and Fisher's exact tests to compare qualitative variables, Mann-Whitney for quantitative

variables, and Pairwise comparison and Bonferroni tests to compare trimesters in pairs.

It is worth noting that EPDS scores ≥ 12 were taken to mean depression.

Results

The mean age of the 300 participating pregnant women with depression was 26.1 ± 5.12 years, with the youngest 16 years and the oldest 41 years of age. Demographic details of participants are presented in Table 1.

Of all participants, 76 women (25.3%) experienced depression in the first trimester, and 84 women (28%) in each of the second and third, of whom, 71 (23.7%) had depression in both first and second trimesters, and 66 (22%) in all three. Mean scores of depression in different trimesters are compared in Table 2. Depression was found significantly higher in the second trimester compared to the first, but no significant difference was observed between the second and the third, or the first and the third trimesters. The results obtained showed a significant relationship in all three trimesters between depression, old age and poor education. However, no significant relationship was found in any trimester between depression, employment and income.

A significant relationship was also observed between gravidity and depression, such that depression was higher in primigravida in all three trimesters. A significant relationship between depression and history of abortion was only observed in the first trimester. This significant relationship was also the case in all trimesters between history of infertility and depression. The relationship between depression and history of physical illness was significant only in the first trimester. In all trimesters, there was a significant relationship between depression and history of depression and low mood. This was also the case between depression and history of depression in the family. No significant relationship was observed between depression and planned pregnancy in any trimester. None of the participating women were smokers, but a significant relationship was found in all trimesters between depression and husband's smoking (Table 3).

Trimesters of pregnancy		P-value	C95%	
			Upper	Lower
1	2	0.006	0.079	-0.634
	3	0.312	0.0109	-0.596
2	1	0.006	0.634	0.079
	3	1	0.453	-0.199
3	1	0.312	0.569	-0.0109
	2	1	0.199	-0.453

Table 1: Compare the mean score of depression in Trimesters of pregnancy

Variable	Number (%)	Variable	Number (%)
Gravid	1	history of depression and low mood	No
	2		258 (86%)
	3		Yes
	4		42 (14%)
Abortion	1	History of treat depression	No
	2		20 (47.6%)
	3		Yes
			22 (52.4%)
Education	Illiterate	History of depression in the family	No
	Under Diploma		274 (91.3%)
	Diploma		Yes
	University Student		26 (8.7%)
Job	housewife	planned pregnancy	No
	Services and unofficial		48 (16%)
	Employment and public		Yes
			252 (84%)
Economic Status	Unfavorable	History of smoking	No
	Partly Favorable		300 (100%)
	Favorable		Yes
			0 (0%)
		husband's smoking	No
			258 (86%)
			Yes
			42 (14%)

Table 2: Demographic characteristics of pregnant women participating in the study

Regression analysis showed previous history of depression as the strongest depression risk factor in all trimesters. Moreover, depression risk factors also included husbands' smoking in the first trimester, untreated previous depression in the second, and illiteracy and elementary school education in the third (Table 4).

Discussion

Given mean depression scores in three trimesters, depression was significantly higher in the second trimester compared to the first. But, comparing other trimesters showed no significant

differences. Although some studies have reported no significant difference in depression between trimesters [6,7], others revealed progressively descending depression in the course of pregnancy [8-10]. Oxford Psychiatric Department generally considers psychiatric disorders in the first and third trimesters more common than in the second trimester [11], which disagrees with the present study results. The difference may be attributed to specifically assessing depression in the present study.

In the present study, depression risk factors included previous history of depression in all trimesters, followed by

Variable	Frequency of depression (%)			
		First Trimester	Second Trimester	Third Trimester
Gravid	1	35 (20%)	41(23.4%)	38(21.7%)
	2	25 (30.9%)	27(33.3%)	27(33.3%)
	3	10 (29.4%)	10(29.4%)	13(38.2%)
	4	6 (6%)	6(6%)	6(6%)
	P- Value	0.014		0.01
Abortion	0	55 (23.4%)	62(26.4%)	60(25.5%)
	1	15 (27.3%)	16(29.1%)	20(36.4%)
	2	3 (42.9%)	3(42.4%)	3(42.9%)
	3	3(100%)	3(100%)	1(33.3%)
	P- Value	0.031	0.58	0.132
Education	Illiterate	7(50%)	8(57.1%)	8(57.1%)
	Under Diploma	22(34.9%)	26(41.3%)	24(38.1%)
	Diploma	27(20.5%)	27(2.5%)	32(24.2%)
	University Student	20(22%)	23(25.3%)	20(22%)
	P- Value	0.019	0.001	0.008
Economic Status	Unfavorable	42(33.1%)	47(37%)	47(37%)
	Partly Favorable	29(20.3%)	32(22.4%)	32(22.4%)
	Favorable	5(17.9%)	5(17.9%)	5(17.9%)
	P- Value	0.068	0.019	0.019
	history of depression and low mood	No	49(19%)	57(22.1%)
Yes		27(64.3%)	27(64.3%)	31(73.8%)
P- Value		0.0001	0.0001	0.0001
husband's smoking	No	56(21.7%)	64(24.8%)	64(24.8%)
	Yes	20(47.6%)	20(47.6%)	20(47.6%)
	P- Value	0.001	0.003	0.003

Table 3: Frequency of depression (EPDS ≥ 12) according to the variables in the three trimesters

Variable	First Trimester			Second Trimester			Third Trimester		
	OR ¹	CI ² 95%	PV ³	OR	CI 95%	PV	OR	CI 95%	PV
Age	1.027	0.956-1.105	0.463	1.026	0.960-1.098	0.449	1.015	0.949-1.086	0.66
Gravid	1.415	0.794-2.525	0.239	1.328	0.914-1.930	0.137	1.22	0.835-1.783	0.304
Abortion	1.085	0.538-2.189	0.819	-	-	-	-	-	-
Education 1	3.243	0.861-12.215	0.082	3.572	0.981-13.010	0.054	5.139	1.401-18.847	0.014
2	1.590	0.657-3.852	0.304	2.008	0.870-4.632	0.102	0.969	0.864-4.883	0.115
3	0.707	0.335-1.492	0.363	0.622	0.304-1.272	0.193	1	0.474-1.983	0.932
4	1			1					
History of Physical disease	1.229	0.537-2.811	0.625	-	-	-	-	-	-
history of depression and low mood	4.622	2.099-10.733	0.0001	11.172	3.142-39.723	0.0001	9.009	3.803-21.342	0.0001
History of treat depression	-	-	-	0.211	0.046-0.967	0.045	-	-	-
History of infertility	1.661	0.373-7.398	0.505	2.119	0.494-9.087	0.312	1.074	0.247-4.674	0.924
History of depression in the family	1.993	0.752-5.280	0.165	1.287	0.473-3.500	0.621	1.284	0.474-3.477	0.623
husband's smoking	2.355	1.048-5.291	0.038	2.064	0.943-4.521	0.070	1.989	0.894-4.428	0.092

¹ OR:Odd Ratio

² CI: Confidence Interval

³ PV: P- Value

Table 4: Regression analysis to determine the risk factors for depression in pregnant women in three trimesters

husband's smoking in the first, untreated depression in the second and elementary education or illiteracy in all trimesters. Furthermore, depression was also found related to older age, low income, history of infertility, abortion, physical illness, and family history of depression. In agreement with the present study, previous studies also identified history of depression as the strongest risk factor. Similar studies have proposed education level and low income as pregnancy depression risk factors, which agree with the present study findings [10,13,17,18].

In the present study, no relationship was observed between depression and employment status. Some studies have considered being a housewife among depression risk factors in pregnant women [17,19,20]. The difference may be attributed to the fact that job satisfaction, working hours and shifts, legal and social supports during pregnancy, or dissatisfaction with income were not accounted for in this study.

In their study, Perlen, et al. proposed a relationship between physical illness and pregnancy depression, and found incidence of depression in physically ill pregnant women three times more likely [13]. However, in the present study, this relationship was found in the first trimester, which may be due to the stress of physical illness in pregnant women.

In agreement with the present study, in Olshansky study, a relationship was found between history of infertility and depression in pregnant women, but history of infertility was not considered a risk factor for depression [10].

Nusrat and Porte, et al. also considered history of abortion among depression risk factors [17,20]. In the present study, depression was related to history of abortion only in the first pregnant women compared to non-smokers, but none of the participating women smoked in the present study [14,21].

The results obtained showed greater depression rate in women with smoker husbands compared to women with non-smoker husbands. No study has yet been conducted on this relationship, and the present study is the first to have made such a comparison. In agreement with the present study, Hejrati, et al. found no relationship between unplanned pregnancy and depression [22].

Unlike the present study, Marcos argues that there is no difference between women with history of treated depression and women with any history of depression in terms of depression [23]. The difference in results may be due to the lack of complete follow-up during and after treatment and unidentified completion of treatment period in the present study.

Conclusion

The results obtained showed various levels of depression during pregnancy. Considering the well-known role of previous history of depression, as the strongest pregnancy depression risk factor; early detection of depression before or as soon as it emerges during pregnancy and its timely treatment can largely prevent its persistence.

Author's roles

Bouzari Zinatossadat, Naeimi rad Mojgan, Elham Tayebi, Farzan Kheir Khah, Mahmoud Hajiahmadi have made substantial contributions to conception and design, or acquisition of data, or

analysis and interpretation of data. have been involved in drafting the manuscript or revising it critically for important intellectual content; 3) have given final approval of the version to be published; and 4) agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

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References

1. Rubertsson C, Wickberg B, Gustavsson P, Radestad I. Depressive symptoms in early pregnancy, two months and one year postpartum-prevalence and psychosocial risk factors in a national Swedish sample. *Arch Womens Ment Health*. 2005;8(2):97-104.
2. Lovisi GM, Lopez JR, Coutinho ES, Patel V. Poverty, violence and depression during pregnancy: a survey of mothers attending a public hospital in Brazil. *Psychol Med*. 2005;35(10):1485-1492.
3. Kurki T, Hiilesmaa V, Raitasalo R, Mattila H, Ylikorkkala O. Depression and anxiety in early pregnancy and risk for preeclampsia. *Obstet Gynecol*. 2000;95(4):487-490.
4. Robertson E, Grace S, Wallington T, Stewart DE. Antenatal risk factors for postpartum depression: a synthesis of recent literature. *Gen Hosp Psychiatry*. 2004;26(4):289-295.
5. Bennett HA, Einarson A, Taddio A, Koren G, Einarson TR. Prevalence of depression during pregnancy: systematic review. *Obstet Gynecol*. 2004;103(4):698-709.
6. Bodecs T, Horvath B, Szilagyi E, Gonda X, Rihmer Z, Sandor J. Effects of depression, anxiety, self-esteem, and health behaviour on neonatal outcomes in a population-based Hungarian sample. *Eur J Obstet Gynecol Reprod Biol*. 2011;154(1):45-50.
7. Spozak L, Gotman N, Smith MV, Belanger K, Yonkers KA. Evaluation of a social support measure that may indicate risk of depression during pregnancy. *J Affect Disord*. 2009;114(1-3):216-223.
8. Teixeira C, Figueiredo B, Conde A, Pacheco A, Costa R. Anxiety and depression during pregnancy in women and men. *J Affect Disord*. 2009;119(1-3):142-148.
9. Figueiredo B, Conde A. Anxiety and depression symptoms in women and men from early pregnancy to 3-months postpartum: parity differences and effects. *J Affect Disord*. 2011;132(1-2):146-157.
10. Olshansky E, Sereika S. The transition from pregnancy to postpartum in previously infertile women: a focus on depression. *Arch Psychiatr Nurs*. 2005;19(6):273-280.
11. Gelder M, Mayou R, Geddes J. *Oxford Psychiatry: Oxford Core Text*. 2011.
12. Lalooei A, Kashani zadeh N. The frequency of depression among pregnant women admitted to Baqiyatallah and Najmieh hospitals. *Journal of Medical Council of IRI*. 2007;25(3):317-323.
13. Perlen S, Woolhouse H, Gartland D, Brown SJ. Maternal depression and physical health problems in early pregnancy: findings of an Australian nulliparous pregnancy cohort study. *Midwifery*. 2013;29(3):233-239.
14. Zhu SH, Valbo A. Depression and smoking during pregnancy. *Addict Behav*. 2002;27(4):649-658.

15. Flynn HA, Blow FC, Marcus SM. Rates and predictors of depression treatment among pregnant women in hospital-affiliated obstetrics practices. *Gen Hosp Psychiatry*. 2006;28(4):289-295.
16. Ji S, Long Q, Newport DJ, et al. Validity of depression rating scales during pregnancy and the postpartum period: impact of trimester and parity. *J Psychiatr Res*. 2011;45(2):213-219.
17. Husain N, Cruickshank K, Husain M, Khan S, Tomenson B, Rahman A. Social stress and depression during pregnancy and in the postnatal period in British Pakistani mothers: a cohort study. *J Affect Disord*. 2012;140(3):268-276.
18. Pottinger AM, Trotman-Edwards H, Younger N. Detecting depression during pregnancy and associated lifestyle practices and concerns among women in a hospital-based obstetric clinic in Jamaica. *Gen Hosp Psychiatry*. 2009;31(3):254-261.
19. Karacam Z, Ancel G. Depression, anxiety and influencing factors in pregnancy: a study in a Turkish population. *Midwifery*. 2009;25(4):344-356.
20. La Porte LM, Kim JJ, Adams M, Du H, Silver RK. The pattern of depression screening results across successive pregnancies. *Am J Obstet Gynecol*. 2012;206(3):261.e1-4.
21. Eisenbruch S, Benson S, Rucke M, et al. Social support during pregnancy: effects on maternal depressive symptoms, smoking and pregnancy outcome. *Hum Reprod*. 2007;22(3):869-877.
22. Hejrati P, Jenabi E. The study of relationship between depression with the type of pregnancy (wanted and unwanted) in Tamine Ejtemaee Hospital in Iran. *Procedia-Social and Behavioral Sciences*. 2011;28:87-91.
23. Marcus SM, Flynn HA. Depression, antidepressant medication, and functioning outcomes among pregnant women. *Int J Gynaecol Obstet*. 2008;100(3):248-251.