

# The Comparison of Depression Anxiety and Quality of Life Levels Among Trimesters of Pregnancy

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**OBJECTIVE:** To compare the levels of depression, anxiety and quality of life among trimesters of pregnancy.

**STUDY DESIGN:** A total number of 200 patients; 50 pregnant women from each trimester and 50 control group women who are not pregnant but with similar sociodemographic characteristics were included. To determine the levels depressive and anxiety symptoms and quality of life were performed the Beck Depression Inventory (BDI) the Beck Anxiety Inventory (BAI) and the World Health Organization Quality of Life Assessment Brief (WHOQOL-BREF), respectively.

**RESULTS:** While BDI and BAI points in pregnant were indifferent between trimesters; these points were found significantly higher compared with control group. There were significant differences for WHOQOL-BREF and the lowest quality of life was present at 3<sup>rd</sup> trimester.

**CONCLUSION:** The levels of anxiety and depression were high, and quality of life was low in all trimesters, especially at 3<sup>rd</sup> trimester. Especially at advanced stages of pregnancy; the health care givers should evaluate pregnant women for depression and anxiety.

**Key Words:** Pregnancy, Depression, Anxiety, Quality of Life

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## Introduction

The hormonal cycle periods at which biological and social changes are observed has important place in life of women. Pregnancy also is one of these reproductive health periods. In this period, important changes are observed at psychological conditions, besides social health and physical structures.

There are variations for depression and anxiety disorder ratios at pregnancies among studies, but generally reported ratios are higher than population ratios. Besides, depression and anxiety disorders are more often seen during pregnancy compared with postpartum period.<sup>1-3</sup>

Anxiety and depression in pregnant women affects not only their life at that period but also psychological condition at delivery and the physical development of fetus. Studies indicate that the presence of depression and anxiety during pregnancy is one of the major risk factors for the development of

postpartum depression.<sup>4</sup> Maternal depression also is found to be in relation with birth of lower birth weight fetuses.<sup>5</sup>

Somatic symptoms, depression and anxiety symptoms at pregnancy are usually evaluated with hormonal and physical changes of pregnancy and are rarely recognized. It is not clearly known whether these psychological disorders that may lead to important results for maternal and fetal health threatens which period of pregnancy more often. It is important to know at which period of pregnancy, depression and anxiety are observed more often, also to awaken the doctor for these risky periods and to start treatment. There are lots of studies about the levels of anxiety and depression in pregnant women. However, studies comparing pregnancy trimesters for anxiety and depression are insufficient.

Although is a happy life event for most women, pregnancy is usually a physically and psychologically stressful period. Physical and psychological changes in normally progressing pregnancies also may decrease the capability for routine daily activities. Previous studies also indicate that changes during pregnancy decrease general quality of life (QoL)<sup>6</sup> and depressive symptoms negatively affect quality of life in pregnant.<sup>7</sup> Nonetheless, studies about QoL in pregnant women are fewer than those about psychiatric disorders; and those about variations of QoL between pregnancy trimesters are insufficient.

For this reason; present study aims to compare the levels

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of quality of life, anxiety and depression symptoms in pregnant women first of all and secondly to investigate the related factors (or correlated factors with quality of life) with quality of life in pregnant women.

## Material and Method

A total number of 200 patients who had admitted to Selcuk University Meram Medicine Faculty Hospital Obstetrics outpatient clinic between 1 May 2006 and 15 October 2006 consisting of 50 pregnant women from each trimester and 50 control group women who are not pregnant but have similar sociodemographic characteristics with pregnant women were included into the study.

Pregnant women and all control group patients were married, and they were randomly selected from among subjects without any medical disease. The study protocol was explained to the participants, and written informed consent was provided from them. Pregnancies between 0-13 weeks were accepted as 1<sup>st</sup> trimester, those between 14-26 weeks were as second, 27 and over weeks of gestation were accepted as 3<sup>rd</sup> trimester. In order to decide the gestational week, ultrasonography was used on basis of last menstrual date.

All participants were given the Beck Depression Inventory (BDI)<sup>8,9</sup> to determine depressive symptom levels, and the Beck Anxiety Inventory<sup>10,11</sup> to determine anxiety levels and the World Health Organization QOL Assessment Brief (WHOQOL-BREF) to determine QoL levels.<sup>12,13</sup>

All statistical analysis was done with 13.0 version of SPSS programme. For comparisons among four groups, chi square test was used for categorical variables, one way analysis of

variance test (ANOVA) for numeric variables. In variables that were found to be significant in ANOVA tests; for multiple comparisons Tukey's honestly significant difference test (HSD) was used. For analysis of variables related to BAE and BDE and quality of life in pregnant women, Pearson's correlation analysis was used. The significant value was accepted as  $p < 0.05$  in all tests.

## Results

The mean age of all pregnant women included into the study was  $27.23 \pm 5.41$  (17-43); whereas it was  $28.72 \pm 5.37$  (19-42) in control group patients. Among four study groups; there was no significant difference for age, educational level, economical status, number of children, number of miscarriages, duration of marriage and employment status (Table 1).

Among 4 groups, there was significant difference regarding mean BDE ( $F=7.08$ ,  $P=0.000$ ) and BAE ( $F=5.18$ ,  $P=0.002$ ) points (Table 2). As a result of multiple comparisons conducted by using Tukey's HSD test; BDE (for 1<sup>st</sup>-2<sup>nd</sup> trimester  $P=0.406$ , for 1<sup>st</sup>-3<sup>rd</sup> trimester  $P=0.112$ , for 2<sup>nd</sup>-3<sup>rd</sup> trimester  $P=0.897$ ) and BAE (for 1<sup>st</sup>-2<sup>nd</sup> trimester  $P=0.839$ , for 1<sup>st</sup>-3<sup>rd</sup> trimester  $P=0.839$ , for 2<sup>nd</sup>-3<sup>rd</sup> trimester  $P=1.000$ ) scores were indifferent among trimesters. Pregnant women at 2<sup>nd</sup> and 3<sup>rd</sup> trimesters had significantly higher BDE (for 2<sup>nd</sup> trimester-control  $P=0.003$ , for 3<sup>rd</sup> trimester-control  $P=0.000$ ) and BAE (for 2<sup>nd</sup> trimester-control  $P=0.004$ , for 3<sup>rd</sup> trimester-control  $P=0.004$ ) compared with control group. Although there was no significant difference regarding BDE scores between first trimester pregnancies and controls ( $P=0.197$ ); there was marginal significant difference regarding BAE scores ( $P=0.053$ ).

Table 1: The sociodemographic characteristics of study groups

	1 <sup>st</sup> trimester	2 <sup>nd</sup> trimester	3 <sup>rd</sup> trimester	Control		p
Age, mean $\pm$ SD	27.18 $\pm$ 4.65	27.90 $\pm$ 6.75	26.60 $\pm$ 4.58	28.72 $\pm$ 5.37	F=1.43	0.234
Education, n (%)					c2=6.88	0.332
Primary school	32 (64)	31 (62)	34 (68)	25 (50)		
Middle-high school	8 (16)	10 (20)	8 (16)	17 (34)		
University	10 (20)	9 (18)	8 (16)	8 (16)		
Economical status, n (%)					c2=5.52	0.479
Low(500 dolar and below)	18 (36)	15 (30)	18 (36)	20 (40)		
Middle(500-1000 dolar)	20 (40)	26 (52)	26 (52)	18 (36)		
High (1000 dolar and high)	12 (24)	9 (18)	6 (12)	12 (24)		
Occupational status, n (%)					c2=2.141	0.544
housewife	40 (80)	41 (82)	45 (90)	41 (82)		
working	10 (20)	9 (18)	5 (10)	9 (18)		
History of miscarriage, n (%)	23 (46)	16 (32)	13 (26)	15 (30)	c2=5.095	0.165
Duration of marriage, n (%)	79.28 $\pm$ 56.59	87.24 $\pm$ 84.06	63.28 $\pm$ 50.29	82.06 $\pm$ 66.03	F=1.24	0.295
Number of children, s (%)	1.94 $\pm$ 0.81	2.12 $\pm$ 1.06	2.00 $\pm$ 1.06	1.40 $\pm$ 0.92	F=0.73	0.528

Table 2: Mean BDE and BAE scores of groups, mean  $\pm$  SD

Variable, mean $\pm$ SD	1 <sup>st</sup> trimester	2 <sup>nd</sup> trimester	3 <sup>rd</sup> trimester	Control	F	p
BDE	11.66 $\pm$ 5.68	13.84 $\pm$ 6.30	14.82 $\pm$ 9.59	8.88 $\pm$ 5.64	7.08	0.000
BAE	16.56 $\pm$ 10.44	18.26 $\pm$ 11.14	18.26 $\pm$ 11.60	11.32 $\pm$ 6.93	5.18	0.002

According to BDE scores; the prevalence of depression in 1st trimester pregnancies was 22%, in 2<sup>nd</sup> trimester pregnancies 32% and in 3<sup>rd</sup> trimester pregnancies 36% and in control group it was found to be 10%. The difference between groups was statistically significant ( $\chi^2=10.77$ ,  $P=0.013$ ). We found no statistically significant difference in terms of depression rates between trimesters in pregnant women ( $\chi^2=2.47$ ,  $P=0.290$ ). When depression ratios are compared between pregnant women and control group; there was no significant difference between 1<sup>st</sup> trimester women and controls ( $\chi^2=2.67$ ,  $P=0.102$ ), but depression ratio in women at 2<sup>nd</sup> and 3<sup>rd</sup> trimesters were significantly higher compared with control group ( $\chi^2=9.54$ ,  $P=0.002$ ).

Among four study groups, there was significant difference between groups regarding physical health area of WHOQOL-BREF scale ( $F=9.32$ ,  $P=0.000$ ), psychological health area ( $F=2.89$ ,  $P=0.037$ ) and environmental areas ( $F=2.79$ ,  $P=0.41$ ), besides there was borderline significance regarding social relationship ( $F=2.65$ ,  $P=0.050$ ) (Table 3). In multiple comparisons done between groups; mean physical health score was similar in 1st, 2<sup>nd</sup> trimester pregnant women and control group women ( $P>0.05$  for all comparisons) and was significantly lower in 3<sup>rd</sup> trimester women compared with other 3 group of patients (for 3<sup>rd</sup> trimester-1st trimester  $P=0.003$ , for 3<sup>rd</sup> trimester-2<sup>nd</sup> trimester  $P=0.008$ , 3<sup>rd</sup> trimester-control group  $P=0.000$ ). Mean scores of psychological health ( $P=0.023$ ) and environmental areas were significantly lower in 3<sup>rd</sup> trimester pregnant women compared with first trimester pregnant women. There was no significant difference between other coupled groups ( $P>0.05$  for all comparisons). Regarding social relationships, there was no significant difference between other coupled group comparisons ( $P>0.05$  for all comparisons).

While there was significant positive correlation between BDE scores and number of children ( $r=0.266$ ,  $P=0.000$ ) and duration of gestation ( $r=0.174$ ,  $P=0.033$ ) in pregnant women

( $n:150$ ), there was no correlation with age ( $r=0.010$ ,  $P=0.886$ ). Although BAE scores were significantly and positively correlated with number of children ( $r=0.193$ ,  $P=0.006$ ), those were found not to be related to age ( $r=0.004$ ,  $P=0.952$ ) and duration of gestation ( $r=0.099$ ,  $P=0.228$ ).

Duration of marriage, age, and number of children were unrelated to QoL level in pregnant women. There was a negative correlation between all subscores of WHOQOL-BREF and duration of gestation, BDE and BAE scores.

## Discussion

In our study, compared with controls, anxiety and depressive symptom levels were found significantly higher in 2<sup>nd</sup> and 3<sup>rd</sup> trimester pregnant women. Between control group and 1st trimester pregnant women, the absence of any statistically significant difference regarding BDE and BAE points may be related to the fact that pregnancies were hopefully accepted; and mother relieves from the pressure of partner, family and population for infertility, interfamilial happiness increases and since these periods are the early periods at which physical and psychological limitations of pregnancy are all lacking.

Depression ratios reported for first trimester show variations related to the variations of methodology and sampling. The depression ratios are higher in studies carried out among low socioeconomic level pregnant women and done by scales. Mckee et al. reported 51.4% depression rates for 1st and 2<sup>nd</sup> trimester pregnant women. In a study carried out among pregnant women who had low socioeconomic levels and done using BDE.<sup>14</sup> Some authors report 29-38% of depression rate in low socioeconomic level 3<sup>rd</sup> trimester gestations using Edinburg Postnatal Depression Scale (EPDS).<sup>15,16</sup> In other studies done by BDE, Birndof et al.<sup>17</sup> reported 24.6% depression rates in 1st trimester pregnancies; Gotlib et al.<sup>18</sup> reported 21.4% depression rates for 2<sup>nd</sup> trimester and 25.8% for 3<sup>rd</sup> trimester, Seguin et al.<sup>19</sup> reported 29.6% depression rates for 2<sup>nd</sup> trimester.

Table 3: The comparison of WHOQOL-BREF points of groups

WHOQOL-BREF	1 <sup>st</sup> trimester	2 <sup>nd</sup> trimester	3 <sup>rd</sup> trimester	Control	F	P
Physical health	62.60 $\pm$ 15.97	61.72 $\pm$ 15.26	52.34 $\pm$ 14.06	67.30 $\pm$ 12.48	9.32	0.000
Psychological health	63.58 $\pm$ 14.68	59.36 $\pm$ 15.52	55.30 $\pm$ 13.30	57.84 $\pm$ 14.10	2.89	0.037
Social Relationships	69.28 $\pm$ 18.28	65.92 $\pm$ 18.89	60.62 $\pm$ 22.11	59.78 $\pm$ 18.63	2.65	0.050
Environment	65.14 $\pm$ 15.50	62.42 $\pm$ 16.63	56.54 $\pm$ 15.39	60.42 $\pm$ 13.49	2.79	0.041

In this study, according to BDE, the prevalence of depression in 1st, 2nd and 3rd trimester pregnancies were 22%, 32% and 36% respectively. Our results were obtained from low-medium socioeconomic level pregnant women, and show similarities with some reports. In previous studies also,<sup>14,20, 21</sup> it was reported that quality of life decreased at last periods of pregnancy and mostly the physical health was affected.

In this study, when table 3 is examined, the highest scores for psychological health and environmental areas of quality of life scale was present in 1st trimester pregnancies and the lowest scores were detected in 3rd trimester pregnancies. There was statistical difference only between 3rd trimester and 1st trimester pregnancies. Especially in psychological health area, quality of life was high at first trimester and was found to be related to happiness due to pregnancy, on the other hand was low at 3rd trimester and was found to be related to suspicions and stress about approximating birth, newborn care and adaptation period. In this study, when BDE and BAE scores are compared between 1st and 3rd trimester pregnancies, 3rd trimester pregnancies had higher depressive and anxiety symptom levels.

Hueston and Kasik-Miller<sup>22</sup> in a study carried out among pregnancies progressing normally, reported that variations related to quality of life were at physical area rather than psychological area. Our results show that QoL decreases not only in physical health area but also in psychological health area at last periods of gestation.

Results of this study indicate that QoL decreases in pregnant women as duration of gestation, levels of depression and anxiety increases. In our findings, relationship between depression and QoL is in agreement with those of Mckee et al. .<sup>14</sup> It can also be thought that suspicions about birth psychologically, increasing pain, sleeplessness, numbness, gaining weight and limitations for movement at last stages of gestation all physically affect quality of life in pregnancy.

In our study, number of children in pregnant women was also found to be significantly related to anxiety and depression points. This can be evaluated as increasing number of children in pregnancy increases anxiety and depression, and this can also be related with the fact that mother tries hard and gets stress while giving care to all those children.

This study has some limitations. First of all, study is cross-sectional. This does not let us to evaluate changes in depression, anxiety and quality of life levels in all trimesters in same pregnant women. Secondly, sampling is relatively small and taken from a single health center and consists of women only admitted for medical controls. So; our sample does not stand for all pregnant women in the population. Besides, in our study all pregnant women were selected among people without any physical health problem, this let us to control effects

of other physical diseases on anxiety, depression and quality of life levels of pregnant women.

As a result, our findings show that depression is more common at 2nd and 3rd trimesters of gestation and that there is no significant difference between trimesters with respect to depression and anxiety symptom levels, and that QoL, particularly physical health is negatively affected primarily on at 3rd trimester of gestation.

## Gebelikte Trimesterler Arası Depresyon Anksiyete ve Yaşam Kalitesinin Karşılaştırılması

**AMAÇ:** Gebelikte trimesterler arası depresyon, anksiyete ve yaşam kalitesinin değerlendirilmesi.

**GEREÇ VE YÖNTEM** Çalışmaya, her trimesterden 50 gebe hasta ve gebe kadınlarla benzer sosyodemografik özelliklere sahip 50 gebe olmayan kontrol hastası olmak üzere toplam 200 hasta dahil edildi. Depresyon seviyesini, anksiyete semptomlarını ve yaşam kalitesini belirlemek üzere sırasıyla, Beck Depresyon Envanteri (BDE), Beck Anksiyete Envanteri (BAE), ve Dünya Sağlık Organizasyonu Yaşam Kalitesi Değerlendirme Ölçeği (WHOQOL-BREF) kullanıldı.

**BULGULAR:** Trimesterler arası BDE and BAE puanları gebelerde benzer iken; bu puanlar ikinci ve 3. trimester gebeliklerinde kontrol grubuna göre belirgin yüksek idi. Klinik depresyon oranları kontrol grubunda %10.1, ilk trimesterde %22, ikinci trimesterde %32, üçüncü trimesterde %36 olarak bulundu. WHOQOL-BREF skorları arasında belirgin farklılıklar bulunurken, en düşük yaşam kalitesi 3. trimesterde idi.

**SONUÇ:** Gebeliğin tüm trimesterlerinde, özellikle de 3. trimesterde olmak üzere, anksiyete ve depresyon seviyeleri yüksek iken, yaşam kalitesi düşük idi. Özellikle gebeliğin ilerleyen dönemlerinde; sağlık hizmeti verenlerin gebe kadınları depresyon ve anksiyete yönünden dikkatli değerlendirmesi uygun olacaktır.

**Anahtar Kelimeler:** Gebelik, Depresyon, Anksiyete, Yaşam kalitesi

## References

1. Josefsson A, Berg G, Nordin C, Sydsjo G. Prevalence of depressive symptoms in late pregnancy and postpartum. *Acta Obstet Gynecol Scand* 2001;80:251-5.
2. Evans J, Heron J, Francomb H, Oke S, Golding J. Cohort study of depressed mood during pregnancy and after childbirth. *BMJ* 2001;323:257-60.
3. Andersson L, Sundström-Poromaa I, Wulff M, Ström M, Bixo M. Depression and anxiety during pregnancy and six months postpartum: a follow-up study. *Acta Obstet Gynecol.* 2006;85:937-44.
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: 289-95.
5. Rahman A, Bunn J, Lowel H, Creed F. Association between antenatal depression and low birthweight in a developing country. *Acta Psychiatr Scand* 2007;115:481-6.
  6. Gjerdingen D, Froberg DG, Fontaine P. The effects of social support on women's health during pregnancy, labor and delivery, and the postpartum period. *Fam Med* 1991;23:370-5.
  7. Nicholson KW, Setse R, Hill-Briggs F, Cooper LA, Strobino D, Powe NR. Depressive symptoms and health-related quality of life in early pregnancy. *Obstet Gynecol* 2006;107:798-806.
  8. Beck AT, Ward CH, Mehdelson M, Mosk J, Erbaugh J. An inventory for measuring depression. *Arch Gen Psychiatry* 1961; 4:561-71.
  9. Hisli N. The validity and reliability of Beck Depression Inventory in university students. *Journal of Psychology* 1989;7:2-13
  10. Beck AT, Epstein N, Brown G, Steer RA. An inventory for measuring clinical anxiety: psychometric properties. *J Consult Clin Psychol* 1988;56:893-7.
  11. Ulusoy M, Şahin NH, Erkmen H. Turkish version of the Beck Anxiety Inventory: Psychometric properties. *J Cogn Psychother* 1998;12:163-72.
  12. WHOQOL Group. The World Health Organization WHOQOL-BREF Quality of Life Assessment. *Psychol Med* 1998;28:551-8.
  13. Eser E, Fidaner H, Fidaner C, Eser SY, Elbi H, Göker E. Psychometric characteristics of WHOQOL-100 and WHOQOL-Brief. *Journal of Psychiatry Psychology Pscopharmacology* 1999;7(Suppl 2):23-40
  14. Mckee MD, Cunningham M, Jankowski KRB, Zayas L. Health-related functional status in pregnancy: Relationship to depression and social support in a multi-ethnic population. *Obstet Gynecol* 2001;97:988-93.
  15. Da Silva VA, Moraes-Santos AR, Carvalho MS, Martins ML, Teixeira NA. Prenatal and postnatal depression among low income Brazilian women. *Braz J Med Biol Res* 1998;31:799-804.
  16. Bolton HL, Hughes PM, Turton P, Sedgwick P. Incidence and demographic correlates of depressive symptoms during pregnancy in an inner London population. *J Psychosom Obstet Gynaecol* 1998;19:202-9.
  17. Birmendorf CA, Madden A, Portera L, Leon AC. Psychiatric symptoms, functional impairment, and receptivity toward mental health treatment among obstetrical patients. *Int J Psychiatry Med* 2001;31:355-65.
  18. Gotlib IH, Whiffen VE, Mount JH, Milne K, Cordy NI. Prevalence rates and demographic characteristics associated with depression in pregnancy and the postpartum. *J Consult Clin Psychol* 1989;57:269-74.
  19. Seguin L, Potvin L, St-Denis M, Loiselle J. Chronic stressors, social support, and depression during pregnancy. *Obstet Gynecol* 1995;85:583-9.
  20. Haas JS, Jackson RA, Fuentes-Afflick E, Stewart AL, Dean ML, Brawarsky P, et al. Changes in the health status of women during and after pregnancy. *J Gen Intern Med* 2005;20:45-51.
  21. Otchet F, Carey MS, Adam L. General health and psychological symptom status in pregnancy and the puerperium: what is normal? *Obstet Gynecol* 1999;94:935-41.
  22. Hueston WJ, Kasik-Miller S. Changes in functional health status during normal pregnancy. *J Fam Pract* 1998;47:209-212.