A Case-Control Study Evaluating Depression and Quality of Life in High-Risk Pregnant Women

Riskli Gebelerde Depresyon ve Yaşam Kalitesini Değerlendiren Bir Vaka-Kontrol Çalışması

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ABSTRACT Objective: To assess quality of life (QoL), presence of depressive symptomatology and their relationship in normal and high-risk pregnant women. **Material and Methods:** Two hundred ninety seven pregnant women were screened using brief version of the World Health Organization Quality of Life in Turkish (WHOQOL-BREF TR) and Beck Depression Inventory (BDI). **Results:** BDI level was found as 17 and over among 34.3% (n= 102) of all women who took part in our study and 42.6% (n= 49) among high-risk pregnants. The incidence of high-risk pregnancies among the pregnants who had 17 and over BDI score was found significantly higher than the ones who took 16 or lower (p= 0.017). High-risk pregnancies were 3-4 times higher among the pregnants whose husbands had education levels of primary, middle and high school than the level of university [orderly OR, %95 CI; 3.222 (1.546-6.714), 4.474 (1.840-10.879), 3.060 (1.430-6.549)]; 1.7-2.8 times higher among the pregnants whose husbands were workers, unemployed and self-employed than the ones whose husbands were official [orderly OR, %95 CI; 2.804 (1.382-5.689), 1.679 (0.434-6.495), 1.853 (0.955-3.598)]; 1.8 times higher among the pregnants who had 17 and over BDI score than the ones who had 16 and under BDI scores [OR= 1.807, %95 CI; (1.108-2.946)]. High-risk pregnancies among the unemployed pregnant women were 3.1 times higher than the employed [OR 95% CI; 3.167 (1.345-7.460)]. QoL scores in the domains of physical health (p< 0.001), psychological health (p= 0.036), social relationships (p< 0.001) and overall health (p< 0.001) were significantly lower among high-risk pregnants than normal ones. **Conclusions:** In this study a substantial number of pregnant women, especially high-risk ones had depression symptoms, and high-risk pregnancies decreased the quality of life. High-risk pregnant women may need more physical and psychological support.

Key Words: Pregnancy, high-risk; depression; risk factors; quality of life

ÖZET Amaç: Normal ve riskli gebelerde yaşam kalitesini, depresif semptomatoloji varlığını ve bunların birbirleri ile olan ilişkisini değerlendirmek. **Gereç ve Yöntemler:** İki yüz doksan yedi gebe kadına Dünya Sağlık Örgütü Yaşam Kalitesi Ölçeği Kısa Formu Türkçe Versiyonu (WHOQOL-BREF TR) ve Beck Depresyon Ölçeği (BDÖ) uygulandı. **Bulgular:** Çalışmamıza katılan gebelerin %34.3'ünde (n= 102) ve riskli gebelerin %42.6'ında (n= 49) BDÖ düzeyleri 17 ve üzeri olarak bulundu. Onyedi ve üzeri BDÖ düzeyi olanlarda riskli gebelik görülme durumu, 16 ve altı BDÖ düzeyine sahip olanlara göre istatistiksel açıdan anlamlı derecede yüksek bulundu (p= 0.017). Riskli gebelik durumu eşleri ilkokul, ortaokul ve lise mezunu olan gebelerde eşi üniversite mezunu olanlara göre 3-4 kat [sırası ile OR, %95 CI; 3.060 (1.430-6.549), 4.474 (1.840-10.879), 3.222 (1.546-6.714)]; eşleri işçi, serbest ve işsiz olan gebelerde eşleri memur olan gebelere göre yaklaşık 1.7-2.8 kat [sırası ile OR, %95 CI; 2.804 (1.382-5.689), 1.853 (0.955-3.598), 1.679 (0.434-6.495)]; BDÖ düzeyi 17 ve üzeri olanlarda 16 ve altı olanlara göre 1.8 kat artmakta idi [OR= 1.807, %95 CI; (1.108-2.946)]. Çalışmayan gebeler arasında yüksek riskli gebelik, çalışan gebelere göre yaklaşık üç kat fazla bulundu [OR 95% CI; 3.167 (1.345-7.460)]. Riskli gebelerde fiziksel sağlık (p< 0.001) psikolojik sağlık (p= 0.036), sosyal ilişkiler (p< 0.001) ve genel (p< 0.001) alanlarda yaşam kalitesi puanları, risk taşımayan gebelere göre istatistiksel açıdan anlamlı derecede düşük bulundu. **Sonuç:** Bu çalışmada, özellikle riskli gebelerde daha belirgin olmak üzere önemli sayıda gebede depresyon semptomlarının bulunduğu ve yaşam kalitelerinin düştüğü gözlenmektedir. Riskli gebeler, fiziksel ve psikolojik anlamda daha fazla desteğe ihtiyaç duyabilmektedirler.

Anahtar Kelimeler: Riskli gebelik; depresyon; risk faktörleri; yaşam kalitesi

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Although pregnancy is a physiological event, it is confronted with a pathological status threathening mother's and baby's health in 5-20% of pregnancies. Pregnant women react differently according their individualities, defence mechanisms and demands of social support. Distress, displeasure and fears may appear. Moreover, maternal awareness of risk increases the anxiety.[1]

The incidence of depression in pregnancy differs between 5% and 51%[2-8] and 24% and 41%[3,9-11] in high-risk pregnancy. Antenatal complications may stimulate the development of depression and high-risk pregnancies are associated with increased stress and anxiety.[9,12,13] In addition, when undergoing treatment for high-risk pregnancy, bed rest is often the treatment of choice. Bed rest is associated with numerous adverse physiological and psychological side effects. Depressive symptoms are high during hospital bed rest treatment.[9,14]

The symptoms of depression in pregnancy accompany the symptoms of major depression such as sleep disturbance, agitation or psychomotor retardation, depressed mood during the day, fatigue or loss of energy, appetite disturbances, concentration difficulties, diminished esteem or feelings of guilt, suicidal or recurrent thoughts of death.[15]

The stimulus for depressive symptoms is unclear. A variety of temporal and/or environmental factors may influence depressive symptoms, including maternal awareness of risk, hospitalization, bed rest treatment, or a combination of these factors. American Psychiatric Association (APA) (1994) described a mood disorder due to the presence of a general medical condition. The criteria for this disorder include: (a) depressed mood; (b) directly related to the presence of a medical condition; (c) when another disorder does not better explain the mood disturbance; (d) that is present when the person is not delirious; and (e) the symptoms are the cause of great distress or difficulty in functioning. This disorder may be present in women hospitalized with perinatal complications.[9,16]

Quality of life (QoL) is a descriptive term that refers to people's emotional, social and physical wellbeing, and their ability to function in the ordinary tasks of living.[17] In pregnancies, physical and emotional changes can alter the ability of women to carry out their usual roles. Wells et al. found that depressive disorder and depressive symptoms in the absence of disorder are associated with limitations in multiple dimensions of patient well-being.[18] In recent years, studies evaluating QoL in chronic patients have increased. However only a few studies have studied out about QoL and depression in high-risk pregnant women.[10,18,19]

This study was carried out among high-risk and normal pregnant women to search the sociodemographical characteristics, levels of depressive symptomatology and QoL, and to assess relationship between them in Gynecology and Obstetrics Department of Meram Medical Faculty, Selçuk University.

MATERIAL AND METHODS

SAMPLE

Two hundred ninety-seven pregnant women were included in the study in Gynecology and Obstetrics Department of Meram Medical Faculty, Selçuk University. One hundred fifteen of these pregnant women had high-risk factors determined during pregnancy included the following: pre-eclampsia, severe hyperemesis gravidarum, infections, high fever, Rh incompatibility, gestational diabetes, vaginal bleeding, intrauterine growth restriction, poly-/oligohydramnios, preterm labor, multiple pregnancies, disorders that require emergency, presentation anomalies.[20] One hundred and eighty-two pregnant women were selected for the control group by group-matching among pregnant women who had no risk factors determined during pregnancy and applied to hospital for control, taking into consideration the age-group distribution and number of marriage.

All participants were asked to complete three questionnaires: sociodemographical information form, Beck Depression Inventory (BDI) and Brief Version of World Health Organisation Quality of Life in Turkish (WHOQOL-BREF-TR) written informed consent was obtained from all participants. The study was approved by Selçuk University Ethics Committee.

INSTRUMENTS

We collected socio-demographic data (age, education, occupational status, marital status, previous pregnancy histories, smoking status of patients and their husbands, risk factors detected during pregnancy) using sociodemographical information forms.

BDI is a self-administered 21-item questionnaire that reflects depression level of the patients by their own feelings.[21] The reliability and validity of BDI, including the Turkish version, have been established in previous studies. We adjusted the cut off point to17 for the definition of depression.[22,23]

The WHOQOL-BREF is a 26-item version of WHOQOL-100 assessment. The questionnaire consists of 26 questions, scored into four domains: physical health (seven items), psychological well-being (six items), social relationship (three items) and satisfaction with the environment (eight items). It also includes one facet on overall QoL and general health. Each item is rated on a 5-point scale and the domain scores are transformed to lie between 0 and 20.[24,25] The WHOQOL-BREF-TR is a 27-item questionnaire including one more question that reflects the patient's relationships with her close environment (i.e., husband, colleagues, relatives, friends) defining the difficulties related to the pressure and control on her.[26]

Raw scores for the domains of WHOQOL-BREF were calculated by adding values of single items and transformed on the scale ranging from 0 to 100, where 100 was the highest and 0 the lowest health related quality of life (HRQOL).[25]

Quantitative data were managed and analyzed with WHOQOL-BREF SPSS Syntax. The four domain scores of the WHOQOL BREF were calculated by summating the scores of the corresponding questions in each subscale.

DATA ANALYSIS

Data were studied using statistical analysis software (SPSS 13.0 for Windows). Mean values and standard deviations of age, income, BDI and QOL domains were compared using Mann Whitney U Test. Associations between two categorical variables were analyzed by Chi-square. Data found significant by chi-square test were analyzed using logistic regression analysis, which was able to estimate the odds ratios (ORs) (95% CI). Spearman correlation was used to assess the relationship between WHOQOL BREF scores and BDI scores of high-risk pregnant women. Statistical significance level was accepted as $p< 0.05$.

RESULTS

Table 1 shows the distribution of diagnoses of high-risk pregnant women.

The comparison of sociodemographical characteristics of study and control groups can be seen in Table 2. No statistically significant differences related mean age (case group; 27.12 ± 5.67, control group; 26.50 ± 4.53, $t= 1.37$, $p= 0.302$), education levels, marriage age, number of marriages, civil marriage, family type, number of friends, smoking status of the women and their husbands, or habitation places were determined between two groups. High-risk pregnancy among the pregnant women whose husbands were university or academy graduates, was lower than the others risk factors of pregnant women were analysed according to education levels of their husbands, when ($p= 0.003$). High-risk pregnancies among the employed pregnant women were statistically lower than the unemployed ones ($p= 0.010$). High-risk pregnancies among the pregnant women whose husbands were officials were significantly lower ($p= 0.038$).

The distribution of depression levels in study

TABLE 1: Distribution of diagnoses of high-risk pregnant women.

Diagnoses	n	%
Vaginal bleeding	30	26.1
Poly/oligohydramnios	22	19.1
Pre-eclampsia	16	13.9
Preterm labor	15	13.0
Intrauterine growth retardation	14	12.2
Multiple pregnancy	11	9.6
Gestational diabetes	4	3.5
Severe hyperemesis gravidarum	3	2.6
Total	**115**	**100.0**

TABLE 2: Sociodemographical characteristics of study and control groups.

Sociodemographical characteristics	Case (n= 115)		Control (n= 182)		Total (n= 297)			
	n	%	n	%	n	%	Chi-square	p
Pregnant's education level								
Primary and lower	81	43.1	107	56.9	188	100.0		
Secondary	10	40.0	15	60.0	25	100.0		
High school	16	34.0	31	66.0	47	100.0		
University	8	21.6	29	78.4	37	100.0	6.519	0.089
Husband's education level								
Primary and lower	47	43.1	62	56.9	109	100.0		
Secondary	20	51.3	9	48.7	39	100.0		
High school	36	41.9	50	58.1	86	100.0		
University	12	19.0	51	81.0	63	100.0	14.116	0.003
Pregnant' employment status								
Unemployed	108	41.7	151	58.3	259	100.0		
Employed	7	18.4	31	81.6	38	100.0	6.618	0.010
Husband's occupational status						100.0		
Unoccupied	4	36.4	7	63.6	11	100.0		
Official	16	25.4	47	74.6	63	100.0	8.449	0.038
Blue-collar worker	42	48.8	44	51.2	86	100.0		
Self employed	53	38.7	84	61.3	137	100.0		
Age at marriage for age groups								
18 years	34	42.0	47	58.0	81	100.0	0.327	0.568
19 years-34 years	81	37.5	135	62.5	216	100.0		
Number of marriage						100.0		
First marriage	110	38.5	176	61.5	286	100.0		
Second and over	5	45.5	6	54.5	11	100.0	0.023	0.879
Civil marriage						100.0		
No	6	54.5	5	45.5	11	100.0		
Yes	109	38.1	177	61.9	286	100.0	0.612	0.434
Type of family						100.0		
Nuclear family	80	40.4	118	59.6	198	100.0		
Large family	35	35.4	64	64.6	99	100.0	0.513	0.474
Number of living children						100.0		
0	65	44.8	80	55.2	145	100.0		
1	23	28.8	57	71.3	80	100.0	5.712	0.126
2	18	38.3	29	61.7	47	100.0		
3 and higher	9	36.0	16	64.0	25	100.0		
Pregnant's smoking status								
Current smoker	7	63.9	4	36.4	11	100.0		
Former smoker	8	34.8	15	65.2	23	100.0		
Never smoked	100	38.0	163	62.0	263	100.0		
Husband's smoking status						100.0		
Current smoker	79	41.6	111	58.4	190	100.0		
Former smoker	2	14.3	12	85.7	14	100.0	4.360	0.113
Never smoked	34	36.6	59	63.4	93	100.0		

* Student-t test was used. Chi-square test was used for the others.

and control groups can be seen in Table 3. BDI levels were found as 17 or higher in 34.3% (n= 102) of pregnant women participating in our study. BDI levels of pregnant women were analysed according to presence of high-risk pregnancies, depression levels in the study group (42.6%) were found higher than the control group (29.1%) (p= 0.017).

Logistic regression analysis of the variables that were found to be significant according to the chi-square test can be seen in Table 4. High-risk pregnancies among the pregnant women whose husbands were graduated from primary, secondary or high school were 3-4 times higher than the pregnant women whose husbands graduated from a university [orderly OR, 95% CI; 3.222 (1.546-6.714), 4.474 (1.840-10.879), 3.060 (1.430-6.549)]. High-risk pregnancies among the unemployed pregnant women were 3.1 times higher than the employed [OR 95% CI; 3.167 (1.345-7.460)]. High-risk pregnancies among the pregnant women whose husbands were blue-collar workers, self employed, and unoccupied, were 1.7-2.8 times higher than the ones whose husbands were officials [orderly OR, 95% CI; 2.804 (1.382-5.689), 1.853 (0.955-3.598), 1.679 (0.434-6.495)]. High-risk pregnancy among the pregnant women whose BDI level 17 and over was 1.8 times higher than the ones with BDI level 16 and below [OR 95% CI; 1.807 (1.108-2.946)].

In Table 5, comparison of the QoL scores between study and control groups can be seen. WHOQOL-BREF domain scores obtained from high-risk pregnant women were lower than normal pregnant women. In study group, selected aspects of HRQOL were impaired significantly with decreased physical, psychological, social, enviromental and general health domain scores.

It was found that WHOQOL-BREF (TR) scale physical health (p= 0.000), psychological (p= 0.000), social relationships (p= 0.000), environment (p= 0.000), and environment (TR) domain (p= 0.000), and general health (p= 0.000), quality of life total scores obtained from the pregnant women who had 17 and over BDI score were significantly lower than the pregnant women who had 16 and below (Table 6). Additionally, a negatively significant correlation was found between WHOQOL-BREF total scores and BDI scores (Table 7).

TABLE 3: The distribution of depression levels in study and control groups.

Beck depression level	Case (n= 115)		Control (n= 182)			p
BDI (Mean±Std)	16.40 ± 8.03		12.68 ± 9.21			**0.000**
	n	%	n	%	x^2	
16 and lower	66	57.4	129	70.9		
17 and higher	49	42.6	53	29.1	5.103	**0.017**
Total	115	100.0	182	100.0		

TABLE 4: Logistic regression analysis of the variables that were found to be significant according to the chi-square test.

Variable	Odds ratio	%95 CI	p
Husband's education level			
University	1.000 (referent)		0.004
High school	3.060	1.430-6.549	0.004
Secondary school	4.474	1.840-10.879	0.001
Primary school and lower	3.222	1.546-6.714	0.002
Employing status			
Employed	1.000 (referent)		
Unemployed	3.167	1.345-7.460	0.008
Husband's occupational status			
Official	1.000 (referent)		0.042
Blue-collar worker	2.804	1.382-5.689	0.004
Self employed	1.853	0.955-3.598	0.068
Unoccupied	1.679	0.434-6.495	0.453
BDI			
16 and lower	1.000 (referent)		
17 and higher	1.807	1.108-2.946	0.018

TABLE 5: Comparison of quality of life scores between case and control groups.

	Case (n= 115)	Control (n= 182)	
Domains	Mean ± Std, Median	Mean ± Std, Median	p
Physical	54.00 ± 22.59, 56.00	67.64 ± 17.19, 69.00	0.000
Psychological	52.60 ± 18.32, 56.00	57.46 ± 19.95, 63.00	0.010
Social	56.44 ± 23.70, 56.00	66.60 ± 23.08, 69.00	0.000
Environmental	64.13 ± 13.89, 69.00	74.29 ± 70.13, 72.00	0.001
Environmental(TR)	65.52 ± 12.83, 69.00	74.81 ± 69.97, 75.00	0.002
General health	56.61 ± 13.46, 56.00	65.41 ± 14.24, 69.00	0.000

TABLE 6: Distribution of quality of life total scores according to BDI scores in pregnant women.

Domains	BDI ≤ 16 (n=195) Mean ± Std, Median	BDI ≥ 17 (n= 102) Mean ± Std, Median	p
Physical	68.80 ± 18.76, 69.00	50.05 ± 18.0.6, 50.00	0.000
Psychological	64.34 ± 13.29, 63.00	38.84 ± 18.40, 44.00	0.000
Social	69.54 ± 21.88, 69.00	49.53 ± 21.81, 50.00	0.000
Environmental	76.61 ± 67.20, 75.00	58.42 ± 14.50, 63.00	0.000
Environmental (TR)	77.35 ± 67.00, 75.00	59.48 ± 13.55, 63.00	0.000
General health	68.63 ± 11.08, 69.00	49.33 ± 11.79, 50.00	0.000

DISCUSSION

This study analyzes the sociodemographic factors affecting high-risk pregnancies and evaluates depressive symptoms, quality of life during pregnancy, and the relationship between them.

It was found that high-risk pregnancies among the pregnant women whose husbands graduated from primary, middle or high schools were higher than the ones graduated from university. Similarly, some studies have examined that lower education level of father entertains a risk for fetus and pregnant, and is associated with high morbidity and mortality among infants.[27-29] Education influences the ability to solve problems. Thus, women who have husbands with low education level are not only more exposed to difficult health conditions, but also have less social support to limit the impact of such stressors.[29,30]

High risk pregnancies were found to be high in unemployed pregnant women in our study. The increase in high-risk pregnancies and decrease in socio-economic status observed in our sample suggest that unemployed women may experience greater rates of high-risk pregnancies. Some studies on the influence of unemployment on pregnancy outcome emphasize that unemployment is strongly associated with an increased risk of morbidity and mortality, and unemployed people use general health services more and have more physical and mental health problems.[9,31-33]

High-risk pregnancy among the pregnant women whose husbands were workers, unemployed or self-employed was higher than the ones whose husbands were officials. Previous studies similarly found that low socio-economic status as measured by the fathers' occupational status was is associated with high-risk pregnancies.[29,33] High occupational status of husband is associated with increased income, and prosperity index reduces the possible disadvantages that occur during pregnancy. Both maternal and paternal characteristics such as education and occupation are important determinants of pregnancy outcomes.

In the control group, 29.1% showed elevated levels of depressive symptoms and approximately half (42.6%) of high-risk pregnant women were categorized as depressed. Our results are similar to some studies in which high-risk pregnancies are strongly correlated with depression[9] and not similar to others.[10,11] This dissimilarity may be attributed to different cut off points that were adjusted for BDI and use of different depression scales. For example, Maloni et al. found that 41.5% of high-risk pregnant women had increased levels of depressive symptoms as proved by a Center for Epidemiologic Studies Depression (CES-D) score of 16 or greater.[9] In the study of Pesavento et al all women with high-risk pregnancy (24%) showed a significant level of depressive symptomatology (BDI score17 or greater).[10] Nicholson et al found that 23.4% of high-risk pregnant women were classified as having elevated depressive symptomatology (CES-D score ≥16).[11] Nevertheless, the score in our sample is substantially higher than the previous studies[29,34] suggesting that there is more distress in this pregnant population. When the severity of maternal

TABLE 7: Relationship between WHOQOL-BREF total scores and BDI scores in high-risk pregnant women.

Domains	Physical		Psychological		Social		Environmental		Environmental (TR)		General health	
	r	p	r	p	r	p	r	p	r	p	r	p
BDI	-0.485	<0.01	-0.664	< 0.01	-0.430	<0.01	-0.375	< .0.01	-0.404	< 0.01	-0.636	< 0.01

complications increases, women are hospitalized for increased medical surveillance and intervention, including antepartum bed rest. Bed rest, however, is associated with numerous physiological and psychosocial changes that alter the function of every major organ system.[9,12] A growing body of literature investigating the effects of not treating depression on mother and developing fetus suggests that untreated depression is associated with adverse fetal outcomes and a higher risk of maternal morbidity, including suicide ideation and attempts, and postpartum depression.[35-37] On the basis of these facts, physicians providing care to pregnant women must be aware of depressive symptoms, and provide timely intervention.

In this study among the pregnant women who had depressive symptomatology, high-risk pregnancy was higher than the ones who did not. Similarly, previous studies found that high-risk pregnancies were associated with depression during pregnancy.[9-11] Depressed mood during pregnancy is associated with adverse obstetric outcomes including low birth weight and preeclampsia.[19] Every major psychiatric disorder occured previously or recently increases the complications of pregnancy and delivery. In such cases, self-help, adaptation to delivery, and performing the advices become difficult.[1]

We analyzed the HRQOL in study group in comparison to control group. High risk pregnancies affected negatively all of the domains of the WHOQOL-BREF (TR) except environment and environment (TR) domains. Although assessments of QoL in high-risk pregnant women are limited, a few studies reported that HRQOL decreased in high-risk pregnant women.[10,38-40] Pesavento et al used WHOQOL in 50 women experiencing a high-risk pregnancy (50 experiencing a normal pregnancy). The study showed that the women with normal pregnancy had a good perception of their quality of life; instead women with high-risk pregnancy did not think so.[10] In a study of 21 asymptomatic HIV-positive pregnants (and 21 HIV-negative controls) in USA, Larrabee et al used an abbreviated 30-item version of the SF-36. They concluded that perceived QoL was lower in HIV-positive pregnants.[39] Rumbold & Crowther used the SF-36 in Australian women diagnosed with gestational diabetes. They found that women had with gestational diabetes had lower health perceptions than women who tested negative.[40] The results showed that normal pregnant women appeared to be psychologically healthier and have better QoL than the high-risk pregnant women. In high-risk pregnancy, both of changes related with pregnancy such as in physical and, mental fields (fatigue, emotions, limitations) and symptoms derived from the risk factor can make the pregnancy a stressful period.[41] Overall quality of life can be affected negatively. As a result of these, women's power of endurance can decrease in terms of daily difficulties and existing complications. This suggests that health care providers have to offer interventions, strategies and support in order to achieve the best possible maternal and fetal outcome and to facilitate women's transition to motherhood. And further studies are required to assess well-being in high-risk pregnant women.

One of the findings of this research is that high risk pregnant women, who had higher BDI scores, had poor QoL in which all of the domains of the WHOQOL-BREF (TR) were affected negatively. In a few studies this inverse relationship has also been demonstrated with elevated levels of depressive symptomatology being strongly correlated with perceived well-being in pregnant women.[19] McKee et al found that elevated levels of depressive symptomatology were strongly correlated with lowered health-related functioning and perceived well-being in pregnant women.[19] Similarly, Wells et al established that depression was strongly related to a global reduction in the dimensions of perceived well-being.[18] Depressive women may have worse perception of their HRQOL due to symptoms related to medical conditions, physical discomfort during pregnancy and depressive mood. Depression and being aware of presence of the risky condition had additional effects on well-being of pregnant women. Alternatively, depression has been proved to be associated with a decrease in natural killer cell activity and lymphocyte proliferation.[11,42] This process could also lead to alterations in physical

functioning during pregnancy and affect women's perception of physical and social functioning.[11,41,43]

In conclusion, elevated levels of depressive symptomatology and having high-risk pregnancy are strongly correlated with lowered quality of life. Health care professionals including nurses, midwives and physicians can provide support consistent with their professional scopes of practice. Empathy focused interventions can help to reduce stress and create a more confident approach to the management of high-risk pregnancies. Untreated depression is associated with higher maternal depressive symptomatology and lower QoL so that treatment efficacy will be important. Clinical interventions to address common symptoms associated with diagnosis and treatment of depression should be considered to improve mood and QoL during high-risk pregnancies.

The highlights of this study are relatively acceptable sample size and inclusion of a control group. It provides epidemiological data to enable the provision of suitable management strategies for these patients. Further only, a few studies have been conducted about QOL and depression in high-risk pregnant women.[10,18,19] To our knowledge, this study has been the first national study searching depression and quality of life in high-risk pregnant women in Turkey. Our results confirm that elevated levels of depressive symptomatology and low quality of life scores are correlated with high-risk pregnancy. Further studies are required to assess depression and quality of life in high-risk pregnant women.

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