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## Fetal Anomali Tanısı Almış Gebeliklerin Maternal Anksiyete ve Depresyon Düzeylerinin Değerlendirilmesi

## Evaluation of Maternal Anxiety and Depression Levels in Pregnancies with Fetal Anomalies

BERGEN LALELİ KOC <sup>1</sup>DUYGU TUGRUL ERSAK <sup>1</sup>BURAK ELMAS <sup>2</sup>KAZIM CİHAN CAN <sup>3</sup>OZGUR KARA <sup>1</sup>DİLEK SAHİN <sup>4</sup> Orcid ID: 0000-0001-8029-7489 Orcid ID: 0000-0001-8591-8395 Orcid ID: 0000-0001-7977-4364 Orcid ID: 0000-0003-1547-0040 Orcid ID: 0000-0002-4204-0014 Orcid ID: 0000-0001-8567-9048<sup>1</sup> Department of Obstetrics and Gynecology, Division of Perinatology, Turkish Ministry of Health Ankara City Hospital, Ankara, Turkey<sup>2</sup> Department of Obstetrics and Gynecology, Turkish Ministry of Health Ankara City Hospital, Ankara, Turkey<sup>3</sup> Department of Psychiatry, Turkish Ministry of Health Ankara City Hospital, Ankara, Turkey<sup>4</sup> University of Health Sciences, Department of Obstetrics and Gynecology, Division of Perinatology, Turkish Ministry of Health Ankara City Hospital, Ankara, Turkey

## ÖZ

Amaç: Bu çalışmada intrauterin fetal anomali tanısı olan gebelerde depresyon ve anksiyete düzeylerinin objektif ölçüm envanterlerine dayalı olarak belgelenmesi, konu hakkında farkındalık yaratılması ve hastalara gerekli desteğin sağlanması amaçlandı.

Gereç ve Yöntem: Çalışma grubuna majör fetal anomali tanısı alan ve gebeliğinin devamına karar veren 18-41 yaş arası 40 gebe dahil edildi. Sağlıklı fetüsü olan benzer yaş aralığı ve gestasyonel haftadaki 40 gebe kontrol grubu olarak alındı. Gebelere Beck Depresyon Envanteri (BDÖ) ve Spielberger Durumluk-Süreklilik Kaygı Envanteri (STAI) uygulandı.

Bulgular: İntrauterin fetal anomali tanısı alan gebeler ile kontrol grubu arasında anksiyete ve depresyon düzeyleri karşılaştırıldı. Ortalama BDÖ skoru çalışma grubunda anlamlı olarak daha yüksekti (P=0.008). STAI puanlamasında, durumluk kaygı düzeyi ortalaması (P<0.001) ve süreklilik kaygı skoru ortalaması (P=0.001) çalışma grubunda kontrol grubuna göre istatistiksel olarak daha yüksek bulundu.

Sonuç: İntrauterin fetal anomalili gebelerin depresif semptom skorları ile durumluk ve süreklilik kaygı düzeyleri sağlıklı gebelere göre artmıştır. Bu gebelere böyle bir zor dönemde profesyonel psikolojik destek ve gerekli tıbbi yardım sağlanmalıdır.

Anahtar kelimeler: Anksiyete, depresyon, fetal anomali, yüksek riskli gebelik

## ABSTRACT

Aim: This study aimed to document depression and anxiety levels in pregnant women with intrauterine fetal anomalies based on objective measurement inventories, raise awareness of this issue and provide the necessary support to patients.

Materials and Method: Forty pregnant women between the ages of 18-41 who were diagnosed with a major fetal anomaly, and decided their pregnancy to continue were included in the study group. Forty pregnant women with a healthy fetus and gestational week and maternal age-matched with the study group were included as the control group. The Beck Depression Inventory (BDI) and the Spielberger State-Trait Anxiety Inventory (STAI) were applied to pregnant women.

Results: Anxiety and depression levels were compared between pregnant women diagnosed with an intrauterine fetal anomaly and the control group. The mean BDI score was significantly higher in the study group (P=0.008). In the STAI scoring, the mean state anxiety level (P<0.001) and the mean trait anxiety score (P=0.001) were found to be statistically higher in the study group compared to the control group.

Conclusion: The depressive symptom scores and the state and trait anxiety levels of pregnant women with the intrauterine fetal anomaly, increased compared to the healthy pregnant women. These pregnant women should be provided with professional psychological support and necessary medical assistance during this difficult period.

Keywords: anxiety, depression, fetal anomaly, high-risk pregnancy

**Sorumlu Yazar/ Corresponding Author:** Bergen Laleli Koc

**Adres:** Department of Obstetrics and Gynecology, Division of Perinatology, Turkish Ministry of Health, Ankara City Hospital, universities district, 1604th Street, No: 9, Cankaya/Ankara,

**E-mail:** bergen.laleli@gmail.com

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## INTRODUCTION

While pregnancy is a desired and planned situation for many women, pregnancy is a physiological condition that also includes some risks for the mother and the infant. Pregnancy is a process in which there may be factors that can cause many anxiety and stress. Anxiety disorder is a psychiatric condition characterized by the continuous or intermittent intense and disturbing state of concern, distress, fear, and feelings of fear and anxiety during the day. Depression is a mood disorder with deep sadness, loss of interest in the environment, pessimistic thoughts, and an increased risk of suicide. It has been found that the frequency of anxiety and depression during pregnancy increases compared to the normal population (1). Depression is a common complication of pregnancy and the postpartum period. Maternal depression, anxiety, and stress are reported to be associated with preterm delivery, low birth weight, fetal growth retardation, and adverse fetal neurodevelopmental outcomes (2, 3). Factors such as the psychosocial status of the pregnant woman, socioeconomic condition, exposure to trauma, unplanned pregnancy, advanced age pregnancy, high-risk pregnancy, and the lack of social support are among the etiological causes (3).

The frequency of detecting major fetal congenital anomalies during pregnancy or the postpartum period is 2-3%. These anomalies generally include chromosomal or structural anomalies. Recently, the rate of intrauterine detection of fetal anomalies increases due to the development of antenatal screening tests and obstetric ultrasonography techniques. Some studies reported that women whose pregnancy has been terminated due to fetal anomaly experience significant emotional stress (4). There is also a systematic review stating that 20 to 100% of pregnant women with obstetric complications had increased levels of state anxiety, and high maternal anxiety levels might be associated with poor maternal outcomes (5). Pregnancy is a special period when the physical and mental health of the mother and fetus are closely related. It requires careful consideration of mental well-being while taking care of the physical health of the mother and the fetus. Pregnancies with fetal or maternal risk, adversely affect the antepartum and postpartum periods of patients and may even cause them to spend their reproductive years under psychological and physiological stress. This study aimed to determine depression and anxiety levels in pregnant women who continue their pregnancies with intrauterine fetal anomalies, raise awareness of this issue, and provide patients with the necessary support during the antenatal and postpartum periods.

## MATERIALS AND METHOD

### Study Design

This study was designed as a prospective case-control study.

### Participants

Forty pregnant women between the ages of 18-41 who presented to Ankara City Hospital Perinatology outpatient clinic which is a tertiary referral center, between January 2022 and April 2022, were diagnosed with major fetal anomalies during their antenatal follow-ups (congenital heart disease, central nervous system anomaly, chromosomal anomaly), were in the second and third trimesters of their pregnancy, were included in this case-control study. Fetal anomaly diagnosis was con-

firmed by ultrasonographic anomaly screening or an invasive prenatal diagnostic test (amniocentesis, CVS, cordocentesis). Pregnant women who wanted to continue their pregnancy were included in the study group. Their diagnoses were categorized as structural multiple malformations (40%), central nervous system anomalies (25%), congenital heart anomalies (27.5%), and chromosomal anomalies (7.5%). We could not include first-trimester pregnancies in the study, because of waiting for invasive prenatal test results and waiting 4 weeks after diagnosis to apply the questionnaires. Forty pregnant women with a singleton pregnancy who presented to the antenatal outpatient clinic for routine check-ups did not have any chronic disease or suspected fetal anomaly and were in the same age range and gestational week were included as the control group. Pregnant women who did not volunteer to participate in the study had a diagnosis of mental illness, and had a chronic or pregnancy-related systemic disease were excluded from the study. The study protocol was approved by the Ministry of Health of the Republic of Turkey and was performed in line with the Declaration of Helsinki. The ethics committee approval was obtained from Ankara City Hospital No. 2 clinical research ethics board with the decision number E2-22-1261 and dated 19/01/2022. All study participants were informed and their consent was obtained.

### Data collection

The age, height, weight, education and employment status, monthly income level, history of smoking and alcohol use, and sociodemographic characteristics of the patients who volunteered to participate in the study were recorded. The number of pregnancies, the history of miscarriage, the number of living children, whether the pregnancy was planned or not, the history of a fetal anomaly in previous pregnancies, and kinship with the spouse were questioned and recorded. The form of the detected fetal anomaly was examined and classified. Obstetric ultrasonographic examinations of all patients were performed. The case follow-up form was prepared and filled out separately for both groups. The Beck Depression Inventory (BDI) and the State-Trait Anxiety Inventory (STAI) were applied to pregnant women. These questionnaires were applied to pregnant women in the study group 4 weeks after the diagnosis of a fetal anomaly to rule out possible symptoms related to an acute stress reaction.

### Study Instruments

**Beck Depression Inventory (BDI):** It is a depression rating scale consisting of 21 questions, which was developed by Aaron T. Beck in 1961 and revised in 1996, and whose validity and reliability study was conducted in Turkey by Hisli et al. (6). By the score ranges corresponding to the patient's answers, the scale is rated as minimal depressive symptoms between 0-9 points, mild depressive symptoms between 10-16 points, moderate depressive symptoms between 17-29 points, and severe depressive symptoms between 30-63 points.

**State-Trait Anxiety Inventory (STAI):** Its original form was developed by Charles Spielberger et al. and revised over the years. It was adapted to Turkey by Öner and LeCompte (7). Individuals respond to each 20-item scale with the instruction of how he/she "usually" feels. The STAI has two types of statements. Direct statements express negative emotions, and reversed statements express positive emotions. After the total weights of

the direct and reversed statements are found separately, the total weight score of the reversed statements is subtracted from the total weight score obtained for the direct statements. Scores range from 20 (low anxiety) to 80 (high anxiety). High scores indicate high anxiety levels and low scores indicate low anxiety levels. The State Anxiety Inventory (SAI) is used to evaluate reactions due to sudden excitement. The Trait Anxiety Inventory (TAI) is a sensitive scale used to measure the continuity of anxiety experienced by a person.

## Statistical analysis

Statistical analyses were performed using IBM SPSS for Microsoft Windows 25.0 (SPSS Inc., Chicago, IL, USA). For categorical variables, frequency (n) and percentage (%), and for numerical variables, mean (X) and standard deviation (sd) statistics were calculated. The conformity of the variables to the normal distribution was examined using visual (histogram and probability graphs) and analytical methods (Kolmogorov-Smirnov test). Descriptive analyses were given using the mean and standard deviations for normally distributed variables. Independent groups were compared using the Student's t-test. The ratios among independent groups were given using the chi-squared test and cross tables. Cases with a p-value less than 0.05 were considered statistically significant results. Correlation coefficients and statistical significance were calculated with Spearman's test for the relationships between the non-normally distributed variables. Type-1 error level was used as 5% for statistical significance.

## RESULTS

Sociodemographic characteristics were compared between the study and control groups. Considering the educational status, the educational level was found to be similar between the groups ( $P=0.479$ ). It was observed that the pregnant group with fetal anomaly mostly consisted of multiparous pregnant women by 67.5% (27/40), while the control group mostly consisted of primiparous pregnant women by 57.5% (23/40). This result was a statistically significant difference ( $P=0.004$ ). When the case group was compared with the control group, it was observed that pregnant women constituting the case group contributed statistically less to their working life ( $P=0.032$ ). There was no difference between the groups in terms of consanguineous marriage ( $P=1.0$ ) and the history of abortus ( $P=0.655$ ). However, when the history of infants with an anomaly was examined, it was determined that there was a history of infants with an anomaly at a level that would cause a statistically significant difference in the group with intrauterine fetal anomaly ( $P=0.040$ ). The mean age between the groups was similar by 28.67±6.33 in the case group and 26.55±5.57 in the control group ( $P=0.115$ ), and there was no difference in monthly income level ( $P=0.584$ ) (Table 1).

**Table 1.** The intergroup comparison of sociodemographic characteristics

		Fetal anomaly group N:40 n (%)	Control group N:40 n (%)	P value
Education				0.479 <sup>a</sup>
N (%)	illiterate	1 (2.5%)	1 (2.5%)	
	primary	14 (35%)	8 (20%)	
	High school	16 (40%)	18 (45%)	
	University and above	9 (22.5%)	13 (32.5%)	
Parity				<b>0.004<sup>a</sup></b>
N (%)	primiparity	13 (32.5%)	23 (57.5%)	
	multiparity	27 (67.5%)	17 (42.5%)	
Employment				<b>0.032<sup>a</sup></b>
Status	employed	5 (12.5%)	13 (32.5%)	
N (%)	housewife	35 (87%)	27 (67.5%)	
Consanguineous				1.00 <sup>a</sup>
Marriage	yes	9 (22.5%)	9 (22.5%)	
N (%)	no	31 (77.5%)	31 (77.5%)	
Previous fetal				<b>0.040<sup>a</sup></b>
anomaly history	yes	4 (10%)	0 (0%)	
N (%)	no	36 (90%)	40 (100%)	
Abortion history				0.655 <sup>a</sup>
N (%)	yes	9 (22.5%)	12 (30%)	
	no	31 (77.5%)	28 (70%)	
Monthly** income				0.584 <sup>a</sup>
N (%)	1*	20 (50%)	18 (45%)	
	2*	15 (37.5%)	19 (47.5%)	
	3*	5 (12.5%)	3 (7.5%)	
Age				0.115 <sup>b</sup>
Mean±std.		28.67±6.33	26.55±5.57	

\*\* Prepared according to the data of TurkStat on June 15, 2021 (22).

\*1= minimum wage and below income, 2= income between minimum wage and poverty threshold, 3= income above the poverty threshold. Bold values indicate statistical significance at the  $p<0.005$  level. <sup>a</sup> Chi-squared test; <sup>b</sup> Student's T-test.

The BDI score was found to be statistically significantly higher in the pregnant group with a diagnosis of a fetal anomaly compared to the control group ( $P=0.008$ ). While the mean score was compatible with minimal depressive symptoms by 8.17/6.34 (28/40 70%) in the control group, it was found to be compatible with mild depressive symptoms by 12.42/7.59 (16/40 40%) in the pregnant group with fetal anomaly ( $P=0.008$ ). In the STAI scoring, state anxiety ( $P=0.000$ ) and trait anxiety ( $P=0.001$ ) scores were found to be statistically significantly different from the control group (Table 2).

**Table 2.** The intergroup comparison of the BDI, STAI-S, STAI-T inventories

	Fetal anomaly group mean $\pm$ std.	Control group mean $\pm$ std.	P value <sup>b</sup>
BDI score	12.42 $\pm$ 7.59	8.17 $\pm$ 6.34	<b>0.008</b>
STAI-S score	50.65 $\pm$ 10.03	35.95 $\pm$ 9.97	<b>0.000</b>
STAI-T score	46.00 $\pm$ 7.93	39.90 $\pm$ 7.70	<b>0.001</b>
Total	40	40	

BDI: Beck Depression Inventory; STAI-S: State-Trait Anxiety Inventory-State; STAI-T: State-Trait Anxiety Inventory- Trait. Bold values indicate statistical significance at the  $p<0.005$  level. <sup>b</sup> Student's T-test.

The correlation between the patients' sociodemographic characteristics and their anxiety and depression states was examined. There was a positive correlation between the state anxiety level and the patient's age and gravity. It was determined that the state anxiety scores of the patients increased as their age increased ( $P=0.036$ ) and the state anxiety levels of the patients increased as gravity increased ( $P=0.034$ ). No correlation was found between educational status, gestational week, and anxiety and depression scores (Table 3).

**Table 3.** Correlation of sociodemographic characteristics with anxiety, depression, and stress states

	BDI score		STAI-S score		STAI-T score	
	r	p	r	P	r	p
Age	0.138	0.224	0.235	<b>0.036</b>	-0.018	0.876
Gestational Age	0.063	0.580	0.082	0.470	-0.015	0.895
Education	-0.108	0.340	-0.131	0.246	-0.199	0.078
Gravida	0.167	0.140	0.237	<b>0.034</b>	0.102	0.366

BDI: Beck Depression Inventory; STAI-S: State-Trait Anxiety Inventory-State; STAI-T: State-Trait Anxiety Inventory- Trait. Bold values indicate statistical significance at the  $p<0.005$  level. Spearman's correlation test.

Depression and anxiety scores between the second and third trimesters were compared in the study group. There was no difference in depression score and trait anxiety level. However, the state anxiety level was significantly higher in the third trimester of pregnancy compared to the second trimester ( $P=0.018$ ) (Table 4).

**Table 4.** Depression and anxiety levels between the trimesters

	Second trimester Mean $\pm$ std. N:22/40 (55%)	Third trimester Mean $\pm$ std. N:18/40 (45%)	P value <sup>b</sup>
BDI score	10.77 $\pm$ 4.47	14.44 $\pm$ 9.99	0.130
STAI-S score	47.31 $\pm$ 9.17	54.72 $\pm$ 9.76	<b>0.018</b>
STAI-T score	45.27 $\pm$ 6.53	46.88 $\pm$ 9.49	0.528

BDI: Beck Depression Inventory; STAI-S: State-Trait Anxiety Inventory-State; STAI-T: State-Trait Anxiety Inventory- Trait. Bold values indicate statistical significance at the  $p<0.005$  level. <sup>b</sup> Student's T-test.

## DISCUSSION

This study aimed to compare the depression and anxiety levels of pregnant women diagnosed with intrauterine fetal anomaly and pregnant women with healthy fetuses. The present study showed that depression, state, and trait anxiety levels of pregnant women diagnosed with intrauterine fetal anomaly increased compared to pregnant women with healthy fetuses.

According to the present study, carrying a fetus with an anomaly was found to be associated with an increased level of anxiety during pregnancy. This result is consistent with previous studies (8-10). One of these studies was based on retrospective reporting and children included in the study follow-up to three years old. These points were different from the present study (8). According to the results of the survey conducted 6 weeks after the termination, it was observed that more post-traumatic stress symptoms occurred in women who had a pregnancy termination in the second trimester due to fetal anomaly compared to first-trimester terminations. This study reported that state anxiety levels were higher in pregnant women with a diagnosis of fetal anomaly requiring surgery in the neonatal period 6 weeks after termination compared to pregnant women with a healthy fetus (10). In this study, questionnaires were applied to the individuals just after the diagnosis. In the present study, we applied the tests 4 weeks after the diagnosis of a fetal anomaly to rule out possible symptoms related to an acute stress reaction. A study indicated that undergoing a prenatal screening test independently of the diagnosis of fetal anomaly did not affect the level of anxiety, but pregnant women with a positive screening test result had higher state anxiety levels (11). In another study, the anxiety levels of 60 pregnant women with positive biochemical Trisomy 21 screening results before and after the amniocentesis procedure were measured, and it was observed that the state anxiety levels of patients increased significantly more during the waiting period for karyotype results (12).

The incidence of antenatal depression is considered to vary between 7 and 19% (13, 14). Another important result of the present study was that the diagnosis of the fetal anomaly was associated with increased depression symptoms in pregnant women. We found only one study evaluating the relationship between the diagnosis of fetal anomaly and depressive symptoms during pregnancy. Similar to the results of our study, it revealed that the diagnosis of the fetal anomaly was associated with increased depressive symptoms and increased anxiety, and depression symptoms also continued after delivery (8).

Studies evaluating anxiety and depression levels between the trimesters of pregnancy have reported that depression and anxiety scores are higher in the third trimester compared to other trimesters (15, 16). Another study reported that anxiety levels were high in the first and third trimesters during pregnancy, and depressive symptoms were high in the first trimester and gradually decreased in the following trimesters (17). Our study observed that the state anxiety levels of pregnant women with a fetal anomaly in the third trimester were higher than those in the second trimester. Higher anxiety levels in the third trimester of pregnancy may be explained by the fact that the upcoming childbirth and/or the anticipations about being a parent. To face with an unknown situation about the condition of the fetus could be one of the possible reasons. Further research should be carried out to clarify this finding. The present study demonstrated a positive correlation between maternal age, parity, and state

anxiety levels in pregnant women with a diagnosis of intrauterine fetal anomaly. This result is different from the results of some studies in the literature. Contrary to our results, some studies evaluating the relationship between maternal age and anxiety level in pregnant women associated young maternal age with increased anxiety levels during pregnancy (18-20). But, these studies evaluated only healthy pregnant women. On the other hand, it was reported that advanced age was associated with increased depression and anxiety symptoms in women who continued their pregnancy with a diagnosis of a fetal anomaly as in our study (8, 10). When evaluated with the studies in the literature, the result of our study may be useful in identifying high-risk groups and receiving the necessary support in the early period.

There are studies indicating that low educational level and socioeconomic level, insufficient social support, early gestational age, and first pregnancy are risk factors for the diagnoses of anxiety disorders and depression in pregnancy (17, 18, 21). No significant difference was identified between the two groups included in our study in terms of age, educational level, and monthly income levels. Only the difference between the groups in terms of parity numbers was significant. The small sample size is one of the major limitations of the study. The small sample size may have limited the generalizability of the study results by causing low statistical power. Fetal anomaly diagnoses were not confirmed in the postnatal period. Furthermore, the fact that the postpartum period and spouse anxiety and depression levels were not included in the evaluation can be considered among the other limitations.

## CONCLUSION

In conclusion, diagnosis of a fetal anomaly is almost always an unexpected and difficult situation to cope with for pregnant women and increases the risk of depression and anxiety in expectant mothers during pregnancy. Considering these factors and the physiology of pregnancy, mood and anxiety disorders in expectant mothers within high-risk fetal situations should be addressed carefully, and an attempt should be made to provide patients with maximum benefits through a multidisciplinary approach. Emotional state screening in the prenatal period among high-risk pregnancies may help physicians better identify the potential psychological distress. The early and accurate identification of pregnant women at risk, is critically important for providing adequate professional psychological support at the time.

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### Declaration of interest

The authors declare that they have no conflicts of interest.

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### Abbreviations

BDI: Beck Depression Inventory

STAI: State-Trait Anxiety Inventory

CVS: Chorion Villus Sampling

## REFERENCES

1. Tunc S, Yenicesu O, Cakar E, Ozcan H, Pekcetin S, Danisman N. Anxiety and depression frequency and related factors during pregnancy. *The Journal of Gynecology-Obstetrics and Neonatology*. 2012;9(35):1431-5.
2. Becker M, Weinberger T, Chandy A, Sch mukler S. Depression During Pregnancy and Postpartum. *Curr Psychiatry Rep*. 2016;18(3):32.
3. Dunkel Schetter C, Tanner L. Anxiety, depression and stress in pregnancy: implications for mothers, children, research, and practice. *Curr Opin Psychiatry*. 2012;25(2):141-8.
4. Steinberg JR. Later abortions and mental health: psychological experiences of women having later abortions--a critical review of research. *Womens Health Issues*. 2011;21(3 Suppl):S44-8.
5. Fischbein RL, Nicholas L, Kingsbury DM, Falletta LM, Baughman KR, VanGeest J. State anxiety in pregnancies affected by obstetric complications: A systematic review. *J Affect Disord*. 2019;257:214-40.
6. Hisli N. Beck Depresyon Envanterinin gecerlilik uzerine bit calisma (A study on the validity of Beck Depression Inventory.). *Psikoloji Dergisi*. 1988;6:118-22.
7. Öner N, LeCompte A. State and Trait Anxiety Inventory-Manual (Turkish). 1983.
8. Horsch A, Brooks C, Fletcher H. Maternal coping, appraisals and adjustment following diagnosis of fetal anomaly. *Prenat Diagn*. 2013;33(12):1137-45.
9. Titapant V, Chuenwattana P. Psychological effects of fetal diagnoses of non-lethal congenital anomalies on the experience of pregnant women during the remainder of their pregnancy. *J Obstet Gynaecol Res*. 2015;41(1):77-83.
10. Wilpers AB, Kennedy HP, Wall D, Funk M, Bahtiyar MO. Maternal Anxiety Related to Prenatal Diagnoses of Fetal Anomalies That Require Surgery. *J Obstet Gynecol Neonatal Nurs*. 2017;46(3):456-64.
11. Kleinveld JH, Timmermans DR, de Smit DJ, Adér HJ, van der Wal G, ten Kate LP. Does prenatal screening influence anxiety levels of pregnant women? A longitudinal randomised controlled trial. *Prenat Diagn*. 2006;26(4):354-61.
12. Leung WC, Lam YH, Wong Y, Lau ET, Tang MH. The effect of fast reporting by amnio-PCR on anxiety levels in women with positive biochemical screening for Down syndrome--a randomized controlled trial. *Prenat Diagn*. 2002;22(3):256-9.
13. Vesga-López O, Blanco C, Keyes K, Olfson M, Grant BF, Hasin DS. Psychiatric disorders in pregnant and postpartum women in the United States. *Arch Gen Psychiatry*. 2008;65(7):805-15.
14. Woody CA, Ferrari AJ, Siskind DJ, Whiteford HA, Harris MG. A systematic review and meta-regression of the prevalence and incidence of perinatal depression. *J Affect Disord*. 2017;219:86-92.
15. 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):146-57.
16. Kaya Zaman F, Özkan N, Toprak D. Gebelikte depresyon ve anksiyete. 2018.
17. 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):142-8.
18. Andersson L, Sundström-Poromaa I, Wulff M, Åström M, Bixo M. Implications of antenatal depression and anxiety for obstetric outcome. *Obstet Gynecol*. 2004;104(3):467-76.
19. Lee AM, Lam SK, Sze Mun Lau SM, Chong CS, Chui HW, Fong DY. Prevalence, course, and risk factors for antenatal anxiety and depression. *Obstet Gynecol*. 2007;110(5):1102-12.
20. Rezaee R, Framarzi M. Predictors of mental health during pregnancy. *Iran J Nurs Midwifery Res*. 2014;19(7 Suppl 1):S45-50.
21. O'Hara MW. Social support, life events, and depression during pregnancy and the puerperium. *Arch Gen Psychiatry*. 1986;43(6):569-73.
22. TÜİK. 2021 [Available from: <https://data.tuik.gov.tr/Kategori/GetKategori?p=Gelir,-Yasam,-Tuketim-ve-Yoksulluk-107>]