

Elevated Depression, Anxiety and Hopelessness Among Pregnant Individuals with Ovarian Cyst

Mine DAĞGEZ¹ , Cem YENER²

¹Tekirdağ City Hospital, Department of Obstetrics and Gynecology, Division of Gynecologic Oncology, Tekirdağ, Türkiye

²Bağcılar Research and Educational Hospital, Department of Obstetrics and Gynecology, Division of Perinatology, İstanbul, Türkiye

Mine DAĞGEZ
0000-0001-5266-9652

Cem YENER
0000-0002-3976-4492

Correspondence: Dr. Mine Daggez
Tekirdağ City Hospital, Department of Obstetrics and Gynecology, Division of Gynecologic Oncology, Tekirdağ, Türkiye
Phone: +90 533 483 82 37
E-mail: minedaggez@gmail.com

Received: 22.08.2023
Accepted: 05.02.2024

ABSTRACT

Purpose: Anxiety and depression in pregnancy commonly presents between 10 and 25% of pregnant individuals. Increased symptoms of depression and anxiety are coupled with elevated risk of preterm birth, postpartum depression, and behavioral difficulties in children. Detection of ovarian cyst is a potential stressor factor for pregnant individuals. Our objective was to investigate the levels of anxiety, depression and hopelessness in pregnant individuals with ovarian cyst.

Methods: In this comparative and descriptive study, a total of 184 pregnant women were divided into 2 groups. Group 1 encompasses pregnant women with ovarian cyst (n=86), and Group 2 includes healthy pregnant women as control (n=88). Data were collected using Demographic Questionnaire, Beck Depression Inventory (BDI), Beck Anxiety Inventory (BAI), Beck Hopelessness Scale (BHS) and Pregnancy Related Anxiety Questionnaire-Revised 2 (PRAQ-R2).

Results: We found substantially elevated BDI, BAI, BHS AND PRAQ-R2 scores in Group 1 according to Group 2 [(15.16±12.6, 6.45±5.6), (16.44±14.5, 7.61±5.2), (9.44±8.3, 4.10±5.2), (30.99±9.66, 27.2±4.90), respectively] (p<0.05). However, there wasn't significant difference between groups in demographic characteristics (p>0.05).

Conclusion: Anxiety, depression and hopelessness are observed more among pregnant women with ovarian cyst. Nevertheless, approximately 70 percent of all ovarian cysts spontaneously resolve during pregnancy and more than 90 percent of them are benign. Hence, the patient should be informed appropriately by obstetricians before referring them to tertiary centers, and this approach may mitigate their anxiety, depression and hopelessness.

Keywords: Anxiety disorders; depression; ovarian cysts; pregnancy outcome

ÖZET

Amaç: Gebelikte anksiyete ve depresyon genellikle gebe bireylerin %10 ila 25'inde görülür. Artan depresyon ve anksiyete semptomları, gebelerde erken doğum, doğum sonrası depresyon ve çocuklarda davranışsal bozukluklar riskinin artmasıyla birleşir. Yumurtalık kistinin saptanması gebe bireyler için potansiyel bir stres faktörüdür. Amacımız over kisti olan gebelerde anksiyete, depresyon ve umutsuzluk düzeylerini araştırmaktır.

Yöntemler: Bu karşılaştırmalı ve tanımlayıcı çalışmada toplam 184 gebe 2 gruba ayrıldı. Grup 1'de over kisti olan gebeler (n=86), Grup 2'de kontrol (n=88) olarak sağlıklı gebeler yer almaktadır. Veriler, Demografik Anket, Beck Depresyon Envanteri (BDÖ), Beck Anksiyete Envanteri (BAÖ), Beck Umutsuzluk Ölçeği (BHS) ve Gebelikle İlgili Anksiyete Anketi-Gözden Geçirilmiş 2 (PRAQ-R2) kullanılarak toplanmıştır.

Bulgular: Grup 1'de BDÖ, BAÖ, BHS VE PRAQ-R2 puanlarını Grup 2'ye göre [(15,16±12,6, 6,45±5,6), (16,44±14,5, 7,61±5,2), (9,44±8,3, 4,10±5,2)] oldukça yüksek bulduk, (sırasıyla 30,99±9,66, 27,2±4,90)] (p<0.05). Ancak gruplar arasında demografik özellikler açısından anlamlı fark yoktu (p>0.05).

Sonuç: Yumurtalık kisti olan gebelerde kaygı, depresyon ve umutsuzluk daha fazla gözlemlendi. Bununla birlikte, tüm yumurtalık kistlerinin yaklaşık yüzde 70'i hamilelik sırasında kendiliğinden düzelir ve yüzde 90'dan fazlası iyi huyludur. Hastalar üçüncü basamak merkezlere sevk edilmeden önce kadın doğum uzmanları tarafından uygun şekilde bilgilendirilmelidir. Bu yaklaşım hastaların anksiyete, depresyon ve umutsuzluk düzeylerini azaltabilir.

Anahtar Kelimeler: Anksiyete bozuklukları, depresyon, yumurtalık kistleri, gebelik sonuçları

The incidence of adnexal masses in pregnancy ranges from 0.05% to 2.4%, and approximately 1% to 6% of these masses are malignant (1). Before the widespread use of ultrasound, most ovarian cysts in pregnant women could be detected during cesarean delivery or when they gave symptoms in the postpartum period. Today, many asymptomatic ovarian cysts can be detected incidentally on antenatal ultrasound performed in the first trimester (2). Most of the ovarian cysts noticed in pregnancy are benign simple cysts smaller than 5 cm (3). Approximately 70% of adnexal masses encountered in the first trimester disappear spontaneously in the early second trimester (4).

Anxiety and depression in pregnancy may lead to preterm labor and also have negative implications for fetal neurodevelopment (5). In addition, mental problems during pregnancy might be associated with pregnancy complications such as abortus imminens (6).

Herein, we endeavored to elucidate whether ovarian cysts in pregnant individuals could bring about negative psychological reactions. Hence, we performed questionnaires and aimed to investigate the levels of anxiety, depression and hopelessness in pregnant individuals with ovarian cyst.

Material and Methods

This prospective descriptive-comparative research was conducted with a total of 184 pregnant women between April and July, 2023. Group 1 consists of pregnant individuals with ovarian cyst (n=86) who were referred to the Gynecologic Oncology outpatient Clinic in a tertiary medical center and Group 2 includes healthy ones as controls (n=88) who were followed-up routinely at this reference center in the Thrace Region of Turkey. A random sampling method was implemented to elect the control participants. All of the participants accomplished a consent form which apparently defines the purpose of the present study. The power analysis was performed at a 95% confidence interval. While the power of the study was ascertained as 0.96, its effect size was moderate (0.5) and it was deduced that the sample size was a good representative of the population. Half of both groups were composed of nulliparous pregnancies. [Group 1 (n=43), Group 2 (n=44)]. The study was approved by the local institutional ethics committee (protocol number: 2023/039). All participants were older than 18 years old, under 16th weeks of gestation and without past history of any chronic medical diseases or mental issues. We excluded patients with

increased tumor markers, ovarian cyst bigger than 10 cm, cysts containing solid components with septum and papillary projections (n=1). Besides, patients who were illiterate, non-Turkish citizens and also who did not opt to attend were excluded.

The study data were obtained applying the Personal Information Form, Beck Depression Inventory (BDI) (7), Beck Anxiety Inventory (BAI) (8), Beck Hopelessness Scale (BHS) (9) and Pregnancy Related Anxiety Questionnaire-Revised 2 (PRAQ-R2) (10) by utilizing face to face interview technique.

Turkish version of the BDI which encompasses 21-item scale was performed (11). The minimum and maximum attainable scores to be acquired from the total scale are 0 and 63, respectively. According to the scores acquired from the BDI in the validity and reliability study, depression levels are defined as follows: 0 to 9 = minimal depression, 10 to 18 = mild depression, 19 to 29 = moderate depression, and 30 to 63 = severe depression. Turkish version of the BAI which consists of 21-item scale was applied (12). Anxiety levels are classified as minimal-low (0-15 points), moderate (16-25 points), and high (26 points and more) in respect to the scores. Turkish version of the 20-item BHS scale was performed (13). The BHS contains 20 dichotomous "true/false" items that objected to evaluate three major aspects of hopelessness: feelings about the future, loss of motivation, and expectations. Total scores were calculated by first reverse-coding nine items (items 1, 3, 5, 6, 8, 10, 13, 15, 19) and then summing the item scores. Higher total scores display greater hopelessness (range 0–20). Turkish version of the PRAQ-R2 scale which consists of 11 items for nulliparous women and 10 items for primiparous/multiparous women was employed (14). The scale has three subscales, including "fear of giving birth (items 1, 2, 6 and 8)", "worries of bearing a physically or mentally handicapped child (items 4, 9, 10 and 11)" and "concerns about own appearance (items 3, 5 and 7)". The 8th item in the scale (I fear giving birth, because I have never experienced this before) is employed to solely nulliparous women. The scale items are scored between 1 and 5 (1-Absolutely not relevant and 5-Very relevant). The lowest and highest scores are 11 and 55 for nulliparous women, and 10 and 50 for primiparous/multiparous women, respectively. A higher scale score shows a higher level of anxiety in pregnancy. For each scale the Cronbach's alpha internal consistency value was calculated.

SPSS 25 (Statistical Package for Social Science, Chicago, IL, USA) Windows package program was applied for statistical analysis. Descriptive statistical methods (mean, standard deviation) were used when evaluating study data. Fisher's exact test, t-test, χ^2 test, Kruskal-Wallis test, Mann-Whitney U test, and stepwise regression analysis were applied in the comparison of the distribution of the data acquired from the groups. To evaluate the mean scale scores and intergroup differences, one-way ANOVA was performed. Differences were defined as significant when $p < 0.05$.

Results

The mean age of Group 1 and Group 2 was 26.70 ± 4.72 and 27.08 ± 4.10 , respectively. The mean gestational age was 11.4 ± 3.12 for Group 1 and 11.1 ± 2.68 for Group 2. Half of both groups were composed of nulliparous pregnancies. [Group 1 (n=43), Group 2 (n=44)]. Gravida was found to be 2.1 ± 1.1 and 2.3 ± 0.4 in Group 1 and Group 2, respectively. There was no significant difference in terms of age, spouse's age, education level, working status, economic situation and partner relationship/support ($p > 0.05$) (Table 1).

Table 1. Comparison of the descriptive characteristics of the groups.

	Group 1 (n=86) Mean \pm SD or n (%)	Group 2 (n=88)	t-test and p value
Age (years)	26.70 \pm 4.72	27.08 \pm 4.10	t=0.783 p=0.562
Spouse's age (years)	34.70 \pm 5.30	33.91 \pm 5.38	t=1.224 p=0.286
Education			$\chi^2=3.459$ p=0.294
Primary school	12 (13.9)	10 (11.3)	
High school	73 (84.8)	76 (86.3)	
University	1 (1.4)	2 (2.4)	
Job			$\chi^2=0.186$ p=0.669
Working	2 (2.8)	4 (4.8)	
House-wife	84 (97.2)	84 (95.2)	
Economic situation			$\chi^2=4.121$ p=0.122
Income more than expenses	20 (23.2)	19 (21.5)	
Income equivalent or less than expenses	66 (76.8)	69 (78.5)	
Partner relationship and support			$\chi^2=3.446$ p=0.082
Positive	80 (91.6)	77 (86.8)	
Negative	1 (1.4)	1 (1.2)	
Neutral	5 (7)	10 (12)	

t: Independent samples t- tests χ^2 =Pearson's Chi-Squared Test.

Cronbach's alpha coefficients were found as 0.93, 0.94, 0.91 and 0.87 for BDI, BAI, BHS and PRAQ-R2, respectively.

The mean BDI, BAI and BHS score of Grup1 and Group 2: [(15.16 \pm 12.6, 6.45 \pm 5.6), (16.44 \pm 14.5, 7.61 \pm 5.2), (9.44 \pm 8.3, 4.10 \pm 5.2), respectively. Group 1 scores were significantly found to be higher than Group 2 ($p < 0.05$) (Table 2).

Table 2. Comparison of the scores between groups.

	Mean \pm SD	t-test and p value
Beck Depression Inventory		t=3.56 p= .000*
Group 1	15.16 \pm 12.6	
Group 2	6.45 \pm 5.6	
Beck Anxiety Inventory		t=3.67 p= .000*
Group 1	16.44 \pm 14.5	
Group 2	7.61 \pm 5.2	
Beck Hopelessness Scale		t=3.59 p= .000*
Group 1	9.44 \pm 8.3	
Group 2	4.10 \pm 5.2	

t: Independent samples t- tests * $p < 0.05$

The mean PRAQ-R2 scores of Group 1 and Group 2 were 30.99 ± 9.66 , 27.2 ± 4.90 , respectively. ($p < 0.05$). According to subscales of PRAQ-R2 test, "worries about bearing a handicapped child" and "concern about one's own appearance" scores were observed higher in Group 1 (10.4 ± 3.09 and 7.54 ± 2.80 , respectively) than Group 2 (10.2 ± 2.60 and 7.02 ± 2.90 , respectively), yet not statistically substantial ($p > 0.05$) (Table 3).

Table 3. Total and subscales PRAQ-R2 scores of the groups

	Group 1 (n=86)	Group 2 (n=88)	t-test and p value
Total score	30.99 \pm 9.66	27.2 \pm 4.90	t=4.085 p=*.01
PRAQ-R2 Subscales			
Fear of giving birth	11.82 \pm 3.89	7.44 \pm 2.43	t=4.620 p=*.001
Worries about bearing a handicapped child	10.4 \pm 3.09	10.2 \pm 2.60	t=0.447 p=0.657
Concern about one's own appearance	7.54 \pm 2.80	7.02 \pm 2.90	t=-1.146 p=0.254

t: Independent samples t- tests * $p < 0.05$

Discussion

In this study, we observed higher levels of anxiety, depression and hopelessness in pregnant individuals with ovarian cyst. Prevalence of depression during pregnancy differs depending on the criteria used, albeit may be as high as 16% or more women symptomatic and 5% with major depression (15). Some of the stressors that generally influence women in pregnancy are low income, adverse working conditions, heavy family and household responsibilities, strain in intimate relationships, and pregnancy complications such as threatened abortus. Zhu et al. (16) in their study found out significantly higher levels of major depression and anxiety among women facing threatened miscarriage compared to those with uneventful pregnancies.

Anxiety in pregnancy is connected with preterm delivery and has adverse implications for fetal neurodevelopment. It may provoke child impaired cognitive development and behavioral problems such as: autism and schizophrenia (5,17). Several studies showed that premature delivery and low-birth weight babies are seen more in pregnancies with anxiety and depression (18-20). Goedhart et al. (21) in their multiethnic cohort study consisted of 8,052 women showed that maternal depressive symptoms during pregnancy are associated with preterm delivery, small for gestational age and low Apgar score.

The prevalence of ovarian cysts in pregnant individuals is 0.05-3.2% of live births (1, 22-23). Most ovarian cysts in pregnancy seem to have a low risk of malignancy and consequently they may be managed expectantly for the reason that most of them resolve during pregnancy. Bernard et al. (24) in their study with 422 patients with ovarian cyst 320 (76%) of them were simple cyst and also 70 of 102 large or complex cyst resolved (24). In another observational study with 803 women, the cysts resolved in 707 (88.1%) and it was deduced that ovarian masses detected during pregnancy can be serially monitored without intervention (25).

Prenatal education is carried out in many countries, yet it differs in content, quality and format (26). Prenatal education may have a paramount role in ameliorating perinatal psychological disorders (27). Although, Cochrane qualitative review exhibited that prenatal care information is inadequate to fulfill women's information request (28). In our research, we noticed higher levels of anxiety among

pregnant women with ovarian cyst. We deemed that these women weren't informed precisely about ovarian cysts by obstetricians due to the excess number of patients, lack of examination time and also the shortage of medical staff.

A major strength of the present study is that: to our knowledge it is the novel study which evaluates psychological reactions of pregnant individuals with ovarian cyst. The limitations of our study are that it was a single-center study and the study population was small. In addition, we don't have maternal-fetal outcomes of the study population.

Conclusion

We showed that pregnant individuals with ovarian cysts have higher levels of anxiety, depression and hopelessness. Nevertheless, ovarian cyst during pregnancy mostly benign and they disappear spontaneously. Hence, obstetricians should give comprehensive information before referring patients to the tertiary centers. Contemplating national health programs to ease the burden of the staffing shortages and providing more time for patient's counsel can be helpful. These approaches may hinder their needless anxiety and hopelessness and adverse maternal-fetal outcomes might be diminished subsequently.

Declarations

Funding

Not applicable

Conflicts of interest/ Competing interests

The authors declare no competing interests related to the subject matter or materials discussed in this article.

Ethics approval

The study is approved by Institutional Review Board of Tekirdag City Hospital with approval number 2023/039

Availability of data and material

Data can be shared if requested.

Authors' contributions

Conceived and designed the experiments: CY; Performed the experiments: MD; Analyzed the data: CY; Contributed reagents/ materials/ analysis tools: CY; Wrote the manuscript: CY, MD; Final edit of paper: MD.

References

1. Webb KE, Sakhel K, Chauhan SP, et al. Adnexal mass during pregnancy: a review. *Am J Perinatol*. 2015;32(11):1010-1016. doi:10.1055/s-0035-1549216
2. Palmer J, Vatish M, Tidy J. Epithelial ovarian cancer in pregnancy: a review of the literature. *BJOG*. 2009;116(4):480-491. doi:10.1111/j.1471-0528.2008.02089.x
3. Schmeler KM, Mayo-Smith WW, Peipert JF, et al. Adnexal masses in pregnancy: surgery compared with observation. *Obstet Gynecol*. 2005;105(5 Pt 1):1098-1103. doi:10.1097/01.AOG.0000157465.99639.e5
4. Giuntoli RL 2nd, Vang RS, Bristow RE. Evaluation and management of adnexal masses during pregnancy. *Clin Obstet Gynecol*. 2006;49(3):492-505. doi:10.1097/00003081-200609000-00009
5. Dunkel Schetter C, Tanner L. Anxiety, depression and stress in pregnancy: implications for mothers, children, research, and practice. *Curr Opin Psychiatry*. 2012;25(2):141-148. doi:10.1097/YCO.0b013e3283503680
6. Madhavanprabhakaran GK, D'Souza MS, Nairy KS. Prevalence of pregnancy anxiety and associated factors. *Int J Afr Nurs Sci*. 2015;3:1-7.
7. Beck AT, Warc CH, Mendelson M, et al. An inventory for measuring depression. *Arch Gen Psychiatry*. 1961;4:561-571.
8. Beck AT, Epstein N, Brown G, et al. An inventory for measuring clinical anxiety: psychometric properties. *J Consult Clin Psychol*. 1988;56:893-897.
9. Beck AT, Weissman A, Lester D, et al. The measurement of pessimism: the hopelessness scale. *J Consult Clin Psychol*. 1974;42(6):861-865.
10. Huizink AC, Delforterie MJ, Scheinin NM, et al. Adaption of pregnancy anxiety questionnaire-revised for all pregnant women regardless of parity: PRAQ-R2. *Arch Womens Ment Health*. 2016;19(1):125-132. doi:10.1007/s00737-015-0531-2
11. Hisli N. Validity and reliability of Beck Depression Inventory for university students. *Psikoloji dergisi*. 1989;7(23):3-13.
12. Ulusoy M, Sahin NH, Erkmen H. Turkish version of the Beck Anxiety Inventory: psychometric properties. *J Cogn Psychother*. 1998;12(2):163-172.
13. Seber G, Dilbaz N, Kaptanoğlu C, et al. Hopelessness scale: validity and reliability. *Crisis J*. 1993;1(3):139-142.
14. Derya, YA, Taşhan, S.T, Duman, M, et al. Turkish adaptation of the pregnancy-related anxiety questionnaire-revised 2: validity and reliability study in multiparous and primiparous pregnancy. *Midwifery* 62, 61–68, 2018.
15. Leight KL, Fitelson EM, Weston CA, et al. Childbirth and mental disorders. *Int Rev Psychiatry*. 2010;22(5):453-471. doi:10.3109/09540261.2010.514600
16. Zhu CS, Tan TC, Chen HY, et al. Threatened miscarriage and depressive and anxiety symptoms among women and partners in early pregnancy. *J Affect Disord*. 2018;237:1-9. doi:10.1016/j.jad.2018.04.012
17. O'Donnell K, O'Connor TG, Glover V. Prenatal stress and neurodevelopment of the child: focus on the HPA axis and role of the placenta. *Dev Neurosci*. 2009;31(4):285-292. doi:10.1159/000216539
18. Grote NK, Bridge JA, Gavin AR, et al. A meta-analysis of depression during pregnancy and the risk of preterm birth, low birth weight, and intrauterine growth restriction. *Arch Gen Psychiatry*. 2010;67(10):1012-1024. doi:10.1001/archgenpsychiatry.2010.111
19. Fransson E, Ortenstrand A, Hjelmstedt A. Antenatal depressive symptoms and preterm birth: a prospective study of a Swedish national sample. *Birth*. 2011;38(1):10-16. doi:10.1111/j.1523-536X.2010.00441.x
20. Orr ST, Reiter JP, Blazer DG, et al. Maternal prenatal pregnancy-related anxiety and spontaneous preterm birth in Baltimore, Maryland. *Psychosom Med*. 2007;69(6):566-570. doi:10.1097/PSY.0b013e3180cac25d
21. Goedhart G, Snijders AC, Hesselink AE, et al. Maternal depressive symptoms in relation to perinatal mortality and morbidity: results from a large multiethnic cohort study. *Psychosom Med*. 2010;72(8):769-776. doi:10.1097/PSY.0b013e3181ee4a62
22. Zanetta G, Mariani E, Lissoni A, et al. A prospective study of the role of ultrasound in the management of adnexal masses in pregnancy. *BJOG*. 2003;110(6):578-583.
23. Whitecar MP, Turner S, Higby MK. Adnexal masses in pregnancy: a review of 130 cases undergoing surgical management. *Am J Obstet Gynecol*. 1999;181(1):19-24. doi:10.1016/s0002-9378(99)70429-1
24. Bernhard LM, Klebba PK, Gray DL, et al. Predictors of persistence of adnexal masses in pregnancy. *Obstet Gynecol*. 1999;93(4):585-589. doi:10.1016/s0029-7844(98)00490-6
25. Brady PC, Simpson LL, Lewin SN, et al. Safety of conservative management of ovarian masses during pregnancy. *J Reprod Med*. 2013;58(9-10):377-382.
26. Gagnon AJ, Sandall J. Individual or group antenatal education for childbirth or parenthood, or both. *Cochrane Database Syst Rev*. 2007;2007(3):CD002869. Published 2007 Jul 18. doi:10.1002/14651858.CD002869.pub2
27. Stoll K, Swift EM, Fairbrother N, et al. A systematic review of nonpharmacological prenatal interventions for pregnancy-specific anxiety and fear of childbirth. *Birth*. 2018;45(1):7-18. doi:10.1111/birt.12316
28. Downe S, Finlayson K, Tunçalp Ö, et al. Provision and uptake of routine antenatal services: a qualitative evidence synthesis. *Cochrane Database Syst Rev*. 2019;6(6):CD012392. Published 2019 Jun 12. doi:10.1002/14651858.CD012392.pub2