

PAPER DETAILS

TITLE: A comparative prospective study with depression, anxiety and quality of life scales in women with induced abortion and miscarriage before pregnancy termination

AUTHORS: Mehmet Ufuk CERAN,Umit TASDEMİR

PAGES: 364-368

ORIGINAL PDF URL: <https://dergipark.org.tr/tr/download/article-file/2083593>

A Comparative Prospective Study with Depression, Anxiety and Quality of Life Scales in Women with Induced Abortion and Miscarriage before Pregnancy Termination

İsteyerek Düşük Yapan ve Spontan Düşük Yapan Kadınlarda Depresyon, Anksiyete ve Yaşam Kalitesi Ölçekleri ile Karşılaştırmalı Prospektif Bir Çalışma

 Mehmet Ufuk Ceran ¹,  Umit Tasdemir ²

¹Department of Gynecology and Obstetrics, Baskent University School of Medicine, Konya, Turkey

²Department of Perinatology, Zeynep Kamil Women and Children Diseases Training and Research Hospital, Istanbul, Turkey

Abstract

Aim: We aimed to compare the pre-termination quality of life (QoL) domains, depression and anxiety symptoms of women whose pregnancy will be terminated due to induced abortion and miscarriage (spontaneous abortion).

Material and Method: This prospective case-control study included women hospitalized for pregnancy termination less than 10 weeks old at a university hospital between January 2020 and December 2020. Self-evaluation questionnaires were presented to 35 women in the induced abortion group and 35 women in the miscarriage group. Women with chronic systemic diseases, those with known psychological disorders and therefore taking medication, women who were offered an abortion with the decision of the health board and who did not want to fill out the questionnaire were excluded from the study. For this, WHOQOL-BREF short-form quality of life questionnaire, Beck Depression and Anxiety Inventory were used to determine psychological stress levels before termination.

Results: Moderate-severe depression symptoms were found to be statistically higher (31.4%, 5.7%, respectively) in induced abortion group than miscarriage group ($p<0.05$). Similarly moderate-severe anxiety symptoms were 34.3% in the induced abortion group and 8.6% in the miscarriage group, and a statistical difference was observed ($p<0.05$). We found the lowest percentages in the environmental domain of QoL in both group. In terms of the psychological domain of QoL and the physical domain of QoL, we obtained statistically significantly lower results in the induced abortion group compared to the miscarriage group ($p<0.05$).

Conclusion: It was observed that women who had induced abortion were more prone to depression and anxiety before pregnancy termination than those who had miscarriage. The low level of environmental domain of QoL was noted in both groups, and the physical and psychological domains of QoL were found to be lower in the induced abortion group. Whether they have a pregnancy plan or not, we believe that supporting women of reproductive age with self-efficacy-enhancing strategies and increasing their psychological resilience will benefit them in the early pregnancy problems and management they will encounter in the future.

Keywords: Induced abortion, miscarriage, depression, anxiety, quality of life

Öz

Amaç: Çalışmamızda isteyerek düşük ve spontan düşük nedeniyle gebeliği sonlandırılacak olan kadınların, gebelik terminasyonu öncesi yaşam kalitesi (YK) düzeyleri, depresyon ve anksiyete belirtileri açısından karşılaştırılmasını amaçladık.

Gereç ve Yöntem: Prospektif vaka-kontrol çalışmamıza, Ocak 2020 ile Aralık 2020 arasında bir üniversite hastanesinde, gebelik yaşı 10 haftadan küçük olan ve gebelik terminasyonu nedeniyle hastaneye yatırılan kadınlar dahil edildi. İsteyerek düşük grubundaki 35 kadına ve spontan düşük grubundaki 35 kadına öz değerlendirme anketleri sunuldu. Kronik sistemik hastalığı olan, daha önce psikolojik rahatsızlığı bilinen ve bu nedenle ilaç kullananlar, sağlık kurulu kararı ile kürtaj önerilen ve anketi doldurmak istemeyen kadınlar çalışma dışı bırakıldı. Terminasyon öncesi yaşam kalitesini değerlendirmek için WHOQOL-BREF kısa form yaşam kalitesi anketi, psikolojik stres düzeyini belirlemek için Beck Depresyon ve Beck Anksiyete envanteri kullanıldı.

Bulgular: İsteyerek düşük grubunda orta-ağır depresyon belirtileri istatistiksel olarak spontan düşük grubuna göre daha yüksek bulundu (sırasıyla %31,4, %5,7, $p<0,05$). Benzer şekilde, isteyerek düşük grubunda orta-şiddetli anksiyete belirtileri %34,3, spontan düşük grubunda %8,6 idi ve istatistiksel olarak anlamlı fark gözlemlendi ($p<0,05$). Yaşam kalitesi ölçeğinin fiziksel ve psikolojik alanı açısından, isteyerek düşük grubunda spontan düşük grubuna göre istatistiksel olarak anlamlı derecede daha düşük sonuçlar elde ettik ($p<0,05$).

Sonuç: İsteyerek düşük yapan kadınların, gebeliği sonlandırmadan önce, spontan düşük yapanlara göre depresyon ve anksiyeteye daha yatkın oldukları gözlemlendi. İsteyerek düşük grubundaki düşük psikolojik YK skorları ve her iki gruptaki düşük çevresel YK skorları, üreme çağındaki kadınların öz yeterliklerini ve psikolojik dayanıklılıklarını artıracak stratejilerle desteklenmelerinin, ileride yaşanacak erken gebelik sorunlarının yönetiminde onlara fayda sağlayacağını düşündürmektedir.

Anahtar Kelimeler: İsteyerek düşük, spontan düşük, depresyon, anksiyete, yaşam kalitesi

Corresponding (İletişim): Mehmet Ufuk Ceran, Department of Gynecology and Obstetrics, Baskent University School of Medicine, Konya, Turkey

E-mail (E-posta): mehmet.ufuk.ceran@gmail.com

Received (Geliş Tarihi): 16.11.2021 **Accepted (Kabul Tarihi):** 22.02.2022



INTRODUCTION

Induced abortion is common worldwide, but its incidence is not known precisely due to legal differences between countries. It has been reported as 40 per 1000 women between 1990 and 2014, and this rate may differ according to societies and regions. Between 2010 and 2014, approximately 56 million abortions were performed worldwide each year.^[1] Therefore, there are studies examining the relation between induced abortion and psychological and psychiatric disorders, since it is widely related to public health. Studies and their results are likely to be contradictory for local, social and legal reasons. In a study of over 5000 women from China, induced abortion was shown to be associated with increased suicidal ideation.^[2] On the other hand, in a subject conducted for women in the USA, it was noted that there was no relation between induced abortion after the first unwanted pregnancy and symptoms of depression.^[3] It is also stated in the ESHRE workup that it is a safe practice for induced abortion. Evidence is sufficient and reassuring that it does not pose a risk for subsequent fertility, breast cancer, and mental health.

Clinical miscarriage accounts for 12% of all pregnancies, and one out of every four women miscarries by age 39.^[4] After miscarriage follow-up, 34.1 percent of women have positivity in depression screening. Among the risk factors; young age, low education level, advanced gestational age at the time of miscarriage, and the presence of previous miscarriage have been reported.^[5] Although studies are mostly conducted on depression and anxiety screening in the monthly periods after miscarriage, it is reported that there is a 41% increase in anxiety levels immediately after miscarriage as well as women and their partners face clearly increased depression and anxiety.^[6] Women who report adverse life events prior to miscarriage are twice as likely to have a chromosomally normal miscarriage. There are meta-analyses that report an increase in miscarriage in women with a history of exposure to psychological stress, even after adjusting for lifestyle factors, suggesting that psychological stress before and during pregnancy is associated with miscarriage.^[7,8] Although chromosomal abnormalities underlie many cases of early pregnancy loss, psychological stress factors before and during pregnancy have been reported to increase the risk of miscarriage. In the same study, there are suggestions for psychological counseling in routine prenatal care and inferences that it can prevent miscarriage.^[9] In the study of quality of life in women who had miscarriage, there was no deterioration in the general quality of life, but they reported poor results in terms of the psychological domain of quality of life after the miscarriage.^[10]

As mentioned above, studies mostly focused on psychological health problems following early pregnancy loss. However, there is insufficient data on the relationship between symptoms of psychological deterioration and quality of life during pregnancy and prior to termination. We hypothesized that deterioration of pre-pregnancy psychological status

and quality of life may be seen at a higher rate in women who decided to induced abortion during early pregnancy. The primary aim of our study is to compare the women who decided to terminate the pregnancy (induced abortion) and the women who experienced spontaneous abortion (miscarriage) in terms of variables such as quality of life, depression and anxiety symptoms.

MATERIAL AND METHOD

Study Design

This study was designed prospectively and approved by BBBBBB University Institutional Review Board and Ethics Committee (Project no: KA: 18/303). Written informed consent was obtained from the participants. Two-tailed power analysis of two independent groups was performed using the G Power computer program,^[11] and the total number of samples required to detect large effects was 70 using chi-square with 90% power.

Inclusion and exclusion criterias

Women whose pregnancy was terminated between January 2020 and December 2020 were included in the study by dividing them into two groups (induced abortion and miscarriage). Women who had a pregnancy less than 10 weeks and wanted to terminate the pregnancy voluntarily constituted the induced abortion group, and women who resulted in spontaneous pregnancy loss under 10 weeks constituted the miscarriage group. According to country rules, our termination week was up to 10 weeks and therefore those with gestational weeks between 6 and 10 weeks were included. Gestational terminations were performed by applying dilatation and curettage procedures in all patients included in the study.

Women with chronic systemic diseases (chronic renal failure, hypertension, severe endocrine disorders, known diagnosis of thrombosis) or who were recommended to terminate pregnancy (teratogen drug use, radiation exposure, teratogen infections) were excluded from the study. In addition, patients with a diagnosis of psychiatric disease and using medication for this reason were also excluded from the study.

The questionnaires listed below were filled in for the patients who met the inclusion criteria, after their consent was obtained. All patients were literate. Foreign language support was not needed for any patient. 6 patients in the study group and 3 patients in the control group did not fill in the questionnaires and gave up answering the questionnaires.

Questionnaires

The World Health Organization Quality of Life Short Form Turkish Version questionnaire (WHOQOL-BREF-TR): The World Health Organization Quality of Life (WHOQOL) is questionnaire including different domains to evaluate quality of life. This material is modified for diverse societies. WHOQOL-BREF is a short form of the initial material.^[12] WHOQOL-

BREF-TR is specific for Turkey, which was verified by studies.^[13] WHOQOL-BREF-TR consists of 26 items related to the various aspects of life and is related to the following domains; overall (2 items), physical (7 items), psychological (6 items), environmental (8 items) and social ties (3 items). Quality of life score cannot be defined by adding scores from all domains. All areas are evaluated separately and independently reflect different aspects of the quality of life. Scores range from 1 to 5 for each question. The raw score calculated for each domain is converted into computerized scores ranging from 0 to 100. Higher scores indicate better quality of life. This is designed for comparison. There is no cutoff value.

Beck Depression Inventory-Turkish (BDI II-TR): BDI-II is a 21-item self-report inventory designed to assess depressive symptoms as cited in DSM-IV. It was formed for the purpose of evaluating the symptoms, not for diagnosis.^[14] Each item is classified on a 4-point scale ranging from 0 to 3. The total score ranges from 0 to 63, with higher scores indicating more severe depressive symptoms. Cutoff values specific to our society have been determined. Accordingly, a total score of 0-12 is considered to be minimal, 13-18 mild, 19-28 moderate, and 29-63 severe depression.^[15]

Beck Anxiety Inventory (BAI): BAI is designed to assess the level of anxiety symptoms. It is a self-report inventory consisting of 21 items. It measures the physical, emotional and cognitive aspects of anxiety and the fear of losing control.^[16] It has been shown to be valid for the Turkish population. Each item is graded on a 4-point scale ranging from 0 (not at all) to 3 (severely disturbed). The total score ranges from 0 to 63. Higher scores represent higher intensity of anxiety. A total of 0-7 points is interpreted as the minimal anxiety level, 8-15 as mild, 16-25 as moderate and 26-63 as severe anxiety levels.^[17]

Domain scores of QoL were counted as percentiles. Depression and anxiety scales were classified as minimal, mild, moderate-severe.

Statistical Analysis

The Statistical Package for the Social Sciences software package (SPSS version 25.0, IBM, United States, licensed by Baskent University) was used. Shapiro-Wilk test was used to determine whether the data conformed to normal distribution and Levene test was used for variance homogeneity. Independent Sample t test and Mann-Whitney U test was used to compare variables of two independent groups. Pearson's Chi-square test (with exact results) was used to compare categorical variables and Cramer's V for Pearson's Chi square test was calculated to assess effect size. Reliability analysis was performed for the internal consistency of the items in the questionnaires, and Cronbach's alpha was calculated for each scale. Quantitative variables were shown as mean \pm SD (standard deviation) and median (25% Percentile/75% Percentile), and categorical variables as n (%). Variables were analyzed at a 95% confidence level, and a p value of less than 0.05 was considered significant.

RESULTS

There was no statistically significant difference between the two groups in terms of age, parity and educational status ($p>0.05$ for all).

When the domains of quality of life scale (QoL) were examined (Cronbach's coefficients=0.89) there was no statistical difference in the overall domain of QoL, social domain of QoL (SDQoL) and environmental domain of QoL (EDQoL), ($p>0.05$ for all). In terms of psychological domain of QoL (PDQoL), the result was 67% in the induced abortion group, while it was 75% in the miscarriage group, and a statistically significant difference was observed ($p<0.05$). Likewise, a statistically significant decrease was observed in the induced abortion group compared to the miscarriage group for physical domain of QoL (PhDQoL), (69.5 ± 14.4 and 75.4 ± 12.9 , respectively, $p<0.05$) (Table 1). A weak but significant negative correlation was observed between PDQoL and induced abortion (CC: 0.312, $p<0.05$) (Table 2).

Table 1. Comparison of depression score, anxiety score, quality of life domains and other examined variables according to type of abortion

	Type of Abortion		P Value
	Miscarriage (n=35) Mean \pm SD or Median (Q1-Q3)	Induced Abortion (n=35) Mean \pm SD or Median (Q1-Q3)	
Age	31.4 \pm 5.4	32 \pm 4.9	0.605
Parity	2 (1/3)	2 (2/3)	0.121
Educational status			0.546
Less than high-school	7 (20)	6 (17.6)	
High-school	11 (31.4)	15 (44.1)	
University	17 (48.6)	13 (38.2)	
General QoL (%)	75 (63/83)	75 (50/79)	0.150
Physical domain of QoL (%)	75.4 \pm 12.9	69.5 \pm 14.4	0.046
Psychological domain of QoL (%)	75 (67/83)	67 (58/75)	0.019
Social domain of QoL (%)	75 (58/75)	75 (50/83)	0.972
Environmental domain of QoL	63.4 \pm 15.7	57 \pm 16.5	0.935
Depression (score)	5 (2/9)	10 (5/24)	0.014
Anxiety (score)	6 (4/10)	10 (5/26)	0.016
	n(%)	n(%)	
Depression			<0,01
Minimal	27 (77.1)*	15 (42.9)	
Mild	6 (17.1)	9 (25.7)	
Moderate-Severe	2 (5.7)	11 (31.4)*	
Anxiety			0.032
Minimal	25 (71.4)	18 (51.4)	
Mild	7 (20)	5 (14.3)	
Moderate-Severe	3 (8.6)	12 (34.3)*	

Independent Sample t test / Mann Whitney U test (Monte Carlo)/Pearson Chi-Square Test (Exact) / Q1: %25 Percentile, Q3: %75 Percentile, SD: Standard Deviation, bold values means $p<0.05$, * significant to compare the other group

Table 2. Correlation between induced abortion and depression score, anxiety score and quality of life domains

Variables	Induced	abortion
Psychological Domain of QoL	r:-0,312	p:0.013
Physical Domain of QoL	r:-0,218	p:0.070
Anxiety score	r:0,336	p:0.013
Depression score	r:0.410	p:0.001

Spearman's rho Test (two-tailed), r: Correlation coefficient, bold value means $p<0.05$, QoL: Quality of Life

In this study BDI-II-TR questionnaires showed high consistency with cronbach coefficients (0.85). Depression scores as pure score median values were statistically significantly higher in the induced abortion group than the miscarriage group (10 points, 5 points, respectively, $p < 0.05$). When categorically analyzed according to depression scores, moderate-severe depression was found to be statistically higher (31.4 %, 5.7%, respectively) and minimal depression was found to be statistically lower (42.9 %, 77.1%, respectively) in induced abortion group than miscarriage group ($p < 0.01$, Cramer's $V = 0.313$) (**Table 1**). A weak but significant positive correlation was observed between depression scores and induced abortion ($CC: 0.410$, $p < 0.05$) (**Table 2**).

Anxiety scores were statistically significantly higher in the induced abortion group, similar to the results of depression scores, when the median values of the pure score were examined ($p < 0.05$). When the anxiety scores are examined according to categorized BAI questionnaires (cronbach a coefficients=0.80) while moderate-severe anxiety was 34.3% in the induced abortion group, it was 8.6% in the miscarriage group, and a statistical difference was observed ($p < 0.05$). Although the result of minimal anxiety in miscarriage group was higher than induced abortion group, it was not statistically significant (71.4%, 51.4%, respectively). A weak but significant positive correlation was observed between anxiety scores and induced abortion ($CC: 0.336$, $p < 0.01$) (**Table 2**).

There was no statistically significant relationship between depression scores, anxiety scores, quality of life domains and variables such as age, parity, and educational status.

DISCUSSION

Early pregnancy loss is often accompanied by various psychological problems.^[6,7,9] This situation can sometimes be in the form of an anxiety disorder due to a desired baby, or sometimes it can be due to the inability to easily overcome the stress experienced during miscarriage. On the other hand, women who want to terminate their pregnancy voluntarily also may experience psychological stress, depression and anxiety symptoms. Considering the social, legal and regional changes, while this rate is high in women who decide to have an abortion in some parts of the world, it is said that it does not affect mental health in the publications made in some other countries.^[2,3,18]

Our results report that there is a statistically significant increase in the raw score of depression and anxiety symptoms in the induced abortion group, and in addition, high results such as 31.4% and 34.3% in the percentages of moderate-to-severe depression and anxiety, respectively. Different authors from different countries have reported conflicting results on this issue. In a study involving 57770 women from 2013 to 2017 in Germany, a significant positive association was found between psychiatric disorders and spontaneous (OR 2.16 -2.60) and induced abortion (OR 1.75 - 2.01).^[19] In the strong

evidence study by Munk-Olsen et al., it was reported that the incidence of first psychiatric contact per 1000 person-years in women with first induced abortion was similar before abortion (14.6%) and after abortion (15.2%), but increased compared to women with first birth (3.9% before delivery and 6.7% postpartum).^[20]

From a different perspective, Steinberg et al.^[21] reported that induced abortion did not increase mental disorder and that higher incidences were due to some pre-existing psychological problems in women who had abortions. They provided strong evidence against the claim that abortion significantly harms women's mental health after adjusting for confounding factors (anxiety, mood, impulse control, substance use, eating disorders, and suicidal ideation). Our results agree with those of Steinberg et al for induced abortion. The significant increase in depression and anxiety levels in this group before termination suggests that the negative psychological outcomes in women after induced abortion mentioned in the literature may be related to a pre-existing psychological stress. However, our moderate-severe depression and anxiety rates are quite low in the miscarriage group compared to the induced abortion group. Therefore, psychological negativities before termination may have an effect on decisions in women in the induced abortion group. Steinberg et al.^[22] stated in another study that pre-abortion psychological health was the best predictor of post-abortion psychological health. They also stressed that helping women feel less stigmatized about having an abortion may be important for reducing pre-abortion symptoms of depression, anxiety, and stress. They also reported younger age, higher education, and childhood problems as predictors of increased pre-abortion depression, anxiety, and stress. In our study, age, educational status and parity were not correlated with pre-termination depression and anxiety symptoms.

It is clear that the quality of life of women is as important as the need for medical treatment during both unwanted pregnancies and miscarriages. Previous studies in this area have reported low post-abortion PDQoL levels, but high results in terms of SDQoL and PhDQoL.^[10,23,24] While the studies covered the post-abortion period, we submitted pre-abortion quality of life questionnaires to women's self-assessment. Results for all quality of life domains were not above 75 percent on average. We found the lowest percentages in the EDQoL domain in both group. This result made us think that women had a lack of environmental support and an inability to feel safe in this process. In addition, considering that the PDQoL and PhDQoL levels, which we found even lower in the induced abortion group, are added to the symptoms of anxiety and depression, it is clear that women who decide to abort should receive psychological support primarily before termination. Because this deterioration in psychological health can be challenging in their decision process and worsening of these results can be observed after termination. It has been reported that the quality of life of women who receive support in coping with health-related problems or

who develop self-efficacy with their previous experiences is positively correlated, especially in terms of PDQoL.^[10] Strategies to increase the self-efficacy of women with low quality of life, which can be considered as a general health problem, may be important in terms of having a higher quality of life during a miscarriage or termination period they will experience in the future.

There is a need to report some limitations of our study. Although our aim in this prospective study was to evaluate pre-termination psychological health criteria and compare them between the two groups, it would be useful to include them in the long-term outcomes after abortion. In addition, this research is in the form of a symptom study as a result of the self-assessment of the patients, not on a diagnostic basis.

CONCLUSION

As a result, we report higher depression and anxiety scores, increased rate in terms of moderate-severe depression and anxiety symptoms, lower psychological and physical quality of life results in women who have induced abortion due to unwanted pregnancy compared to miscarriage in the pre-termination period. We also draw attention to the low environmental quality of life in both groups. With these results, we emphasize the importance of pre-pregnancy psychological counseling and increasing self-efficacy with the support to be provided during pregnancy, especially for women who decide to have abortion.

ETHICAL DECLARATIONS

Ethics Committee Approval: This study was design prospectively and approved by Baskent University Institutional Review Board and Ethics Committee (Project no: KA: 18/303)

Informed Consent: All patients signed the free and informed consent form.

Referee Evaluation Process: Externally peer-reviewed.

Conflict of Interest Statement: The authors have no conflicts of interest to declare.

Financial Disclosure: The authors declared that this study has received no financial support.

Author Contributions: All of the authors declare that they have all participated in the design, execution, and analysis of the paper, and that they have approved the final version.

REFERENCES

- Sedgh G, Bearak J, Singh S, et al. Abortion incidence between 1990 and 2014: global, regional, and subregional levels and trends. *Lancet*. 2016;388(10041):258-67.
- Luo M, Jiang X, Wang Y, et al. Association between induced abortion and suicidal ideation among unmarried female migrant workers in three metropolitan cities in China: a cross-sectional study. *BMC Public Health*. 2018;18(1):1-11.
- Gomez A. Abortion and subsequent depressive symptoms: an analysis of the National Longitudinal Study of Adolescent Health. *Psychologic Med*. 2018;48(2):294.
- Blohm F, Fridén B, Milsom I. A prospective longitudinal population-based study of clinical miscarriage in an urban Swedish population. *BJOG: An Int J Obstet Gynaecol*. 2008;115(2):176-83.
- Mutiso SK, Murage A, Mwaniki AM. Factors associated with a positive depression screen after a miscarriage. *BMC psychiatry*. 2019;19(1):1-6.
- Farren J, Mitchell-Jones N, Verbakel JY, Timmerman D, Jalmbrant M, Bourne T. The psychological impact of early pregnancy loss. *Human Reproduction Update*. 2018;24(6):731-49.
- Hamilton Boyles S, Ness RB, Grisso JA, Markovic N, Bromberger J, CiFelli D. Life event stress and the association with spontaneous abortion in gravid women at an urban emergency department. *Health Psychology*. 2000;19(6):510.
- Neugebauer R, Kline J, Stein Z, Shrout P, Warburton D, Susser M. Association of stressful life events with chromosomally normal spontaneous abortion. *Am J Epidemiol*. 1996;143(6):588-96.
- Qu F, Wu Y, Zhu Y-H, et al. The association between psychological stress and miscarriage: a systematic review and meta-analysis. *Scientific Reports*. 2017;7(1):1-8.
- Iwanowicz-Palus G, Mróz M, Bień A. Quality of life, social support and self-efficacy in women after a miscarriage. *Health and Quality of Life Outcomes*. 2021;19(1):1-8.
- Faul F, Erdfelder E, Buchner A, Lang A-G. Statistical power analyses using G* Power 3.1: Tests for correlation and regression analyses. *Behav Res Methods*. 2009;41(4):1149-60.
- Group W. Development of the World Health Organization WHOQOL-BREF quality of life assessment. *Psychologic Med*. 1998;28(3):551-8.
- Eser E, Fidaner H, Fidaner C, Eser SY, Elbi H, Göker E. WHOQOL-100 ve WHOQOL-BREF'in psikometrik özellikleri. *Psikiyatri Psikoloji Psikiyatrisi*. 1999;7(Suppl 2):23-40.
- Beck AT, Ward C, Mendelson M, Mock J, Erbaugh J. Beck depression inventory (BDI). *Arch Gen Psychiatry*. 1961;4(6):561-71.
- Kapci EG, Uslu R, Turkcapar H, Karaoglan A. Beck Depression Inventory II: evaluation of the psychometric properties and cut-off points in a Turkish adult population. *Depression Anxiety*. 2008;25(10):E104-E10.
- Beck AT, Epstein N, Brown G, Steer RA. An inventory for measuring clinical anxiety: psychometric properties. *J Consult Clin Psychol*. 1988;56(6):893.
- Ulusoy M, Sahin NH, Erkmen H. The Beck anxiety inventory: psychometric properties. *J Cogn Psychother*. 1998;12(2):163-72.
- Group ECW. Induced abortion. *Human reproduction* (Oxford, England). 2017;32(6):1160-9.
- Jacob L, Gerhard C, Kostev K, Kalder M. Association between induced abortion, spontaneous abortion, and infertility respectively and the risk of psychiatric disorders in 57,770 women followed in gynecological practices in Germany. *J Affect Dis*. 2019;251:107-13.
- Munk-Olsen T, Laursen TM, Pedersen CB, Lidegaard Ø, Mortensen PB. Induced first-trimester abortion and risk of mental disorder. *N Engl Med*. 2011;364(4):332-9.
- Steinberg JR, McCulloch CE, Adler NE. Abortion and mental health: findings from the national comorbidity survey-replication. *Obstet Gynecol*. 2014;123(2 0 1):263.
- Steinberg JR, Tschann JM, Furgerson D, Harper CC. Psychosocial factors and pre-abortion psychological health: The significance of stigma. *Soc Sci Med*. 2016;150:67-75.
- Couto ER, Couto E, Vian B, et al. Quality of life, depression and anxiety among pregnant women with previous adverse pregnancy outcomes. *Sao Paulo Med J*. 2009;127(4):185-9.
- Tavoli Z, Mohammadi M, Tavoli A, et al. Quality of life and psychological distress in women with recurrent miscarriage: a comparative study. *Health Qual Life Outcomes*. 2018;16(1):1-5.