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Evaluation of psychosocial health and anxiety levels of high-risk and healthy pregnant women: a observational case-control study

Pelin Palas Karaca^{1*} , Hülya Türkmen¹ , Selvihan Tozan² and Sevinç Güler³

Abstract

Purpose This study was conducted to compare psychosocial health and anxiety levels of high-risk and healthy pregnant women.

Methods The study is a observational case-control type and was implemented in Türkiye between September 1, 2022 and July 31, 2023. The study sample consisted of pregnant women diagnosed with high-risk pregnancy ($n=255$) and healthy pregnant women ($n=275$). The Pregnancy Psychosocial Health Assessment Scale (PPHAS) and the Pregnancy-related Anxiety Scale (PrAS) were used to assess the psychosocial health and anxiety levels of the participants in the study.

Results It was determined that those with high-risk pregnancies had higher total PrAS scores ($p < 0.001$, effect size = 1.551) and lower total PPHAS scores ($p < 0.001$, effect size = 0.514) compared to healthy pregnant women. In the study, it was determined that as the PPHAS score decreased in both the high-risk and healthy pregnant groups, the PrAS score increased. As a result of the linear regression analysis, it was determined that high-risk pregnancy ($p < 0.001$), experiencing a stressful event during pregnancy ($p < 0.001$), and regular antenatal control ($p = 0.005$) affected psychosocial health during pregnancy. Moreover, it was found that high-risk pregnancy ($p < 0.001$), regular antenatal control ($p = 0.014$), relationship status with the spouse ($p = 0.013$), and psychosocial health level during pregnancy ($p < 0.001$) affected the anxiety level during pregnancy.

Conclusion According to the results of this study, high-risk pregnant women are at risk in terms of psychosocial health and anxiety. It is recommended that healthcare professionals assess women with high-risk pregnancies for psychosocial health and anxiety. Midwives should use assessment tools, provide counseling, and provide holistic care to protect the psychosocial health of high-risk pregnant women and to diagnose psychological distress at an early stage.

Keywords Pregnancy, High-risk pregnancy, Anxiety, Psychosocial health

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Introduction

Pregnancy is a period in which physical and psychological changes as well as changes in work and family roles occur. Although this period is considered physiologically normal, 10–25% of pregnancies may result in high-risk pregnancies (HRP) [1–3]. HRP is caused by a medical condition that occurs before pregnancy or first occurs during pregnancy [2]. Pregnancies under the age of 18 and over the age of 35 are HRP. The reasons of HRP include obesity, infections, diabetes, preeclampsia, autoimmune diseases. Additionally, risk of premature birth, psychiatric diseases, premature rupture of membranes, bleeding, Rh incompatibility, intrauterine growth retardation are considered as HRP [1, 3–5]. Such risky situations are important problems threatening the health of the mother and the fetus [1–3]. Therefore, women with HRP should be closely monitored for risk factors. Moreover, their social support systems should be questioned [2, 6]. Furthermore, care for these women should be provided with a culturally sensitive holistic approach [2, 6].

HRP can negatively affect women's well-being and cause mental and social problems [7]. It is reported in the literature that women's emotional and psychological findings are evident during HRP and anxiety levels are higher in high-risk pregnancies than in normal pregnancies [8, 9]. Even a slight deviation from the normal situation negatively affects the psychosocial health of the pregnant woman. In the presence of a high-risk pregnancy diagnosis, high levels of anxiety and stress can be observed [8]. In addition to being at high-risk, hospitalization, isolation, and being away from home are unwanted situations for pregnant women [10]. Loss of control, physical discomfort, separation from family, limitations requiring bed rest, tests, and treatments can also increase stress in pregnant women [10]. Moreover, emotions experienced by pregnant women at risk can lead to a decrease in coping ability, consume energy, and lead to a sense of hopelessness [2, 11, 12]. These emotions include uncertainty, intense fear, sense of loss, anger, anxiety, insecurity, and guilt [2, 11, 12]. It is extremely important to treat the psychosocial health and anxiety conditions of high-risk pregnant women. If treatment is not provided, the risk of pregnancy may increase further [13, 14]. For example, baby loss may occur, postpartum depression may develop, and behavioral problems and psychiatric disorders may be observed in the baby [13, 14]. Therefore, knowing the psychosocial health levels of women with HRP and assessing and meeting their psychological needs is important for both women's and children's health.

There are few studies examining the psychosocial health of HRP and healthy pregnant women in Türkiye [1, 15, 16]. The literature indicates that studies that determine the dimensions of psychosocial health in high-risk pregnancies with different diagnoses are needed. Such

studies may contribute to the early identification of risk factors (sociodemographic and obstetric factors). These risk factors may predict the development of high-risk pregnancies by explaining multidimensional stressors from a psychosocial perspective [1, 15, 16]. Therefore, this study aimed to compare HRP and healthy pregnant women in terms of psychosocial health and anxiety levels.

Methods

Research questions

The primary aim of this study was to examine whether high-risk pregnancy affects psychosocial health and anxiety levels and to explore the relationship between these two variables. The secondary aim was to determine the factors associated with psychosocial health and anxiety during pregnancy and to assess whether these outcomes differ according to high-risk pregnancy diagnoses.

Design and settings

This study was conducted to determine the difference between the psychosocial health and anxiety levels of those with high-risk pregnancies and healthy pregnant women. The study, which is an observational case-control study, was conducted between September 1, 2022 and July 31, 2023, in the perinatology with gynecology and obstetrics outpatient clinic of a hospital located in the Western Region of Türkiye.

Participants

The sample size was determined using G* Power 3 power calculations, considering previous studies comparing high-risk pregnancies and healthy pregnant women. The effect estimate was obtained from the findings of the study reporting that the mean stress level during pregnancy was $= 26.53 \pm 6.81$ in healthy pregnant women and $= 23.27 \pm 7.28$ in high-risk pregnancies [1]. This study aimed to find a similar difference. Therefore, the target sample size for each group was at least 173. Since it was thought that there might be data loss in the study and in order to increase the quality of the study, the sample size was taken more than calculated. The study was completed with a total of 530 pregnant women, including 255 high-risk pregnant women and 275 healthy pregnant women, who agreed to participate in the study and filled out the consent form. The post-hoc power analysis of the study revealed an effect size of 1.55 and a power of 100%.

The scales used in this study were not restricted to specific gestational age or trimester. However, to ensure sample homogeneity, healthy and at-risk pregnant women over 20 weeks of gestation were included. This ensured that participants were assessed at similar gestational ages and minimized the possibility of anxiety and psychosocial health scores being affected by trimester differences.

The inclusion criteria of the study were as follows: pregnant women who had no psychiatric diagnosis in their current pregnancy, 20th week of pregnancy and above, were 18 years of age or older.

Pregnant women who filled out the data collection forms incompletely were excluded from the study. 5 pregnant women were excluded from the study because they filled out the forms incompletely.

Data collection

The participants were administered the Personal Information Form, the Pregnancy Psychosocial Health Assessment Scale (PPHAS), and the Pregnancy-related Anxiety Scale (PrAS). The study data were collected through face-to-face interviews based on the participants' self-reports. The participants were informed about the study, the study purpose was explained, and their written consent was obtained. Interviews lasted approximately 20 min for each participant.

Measures

Personal information form

The form, prepared by the researchers in line with the literature, consists of a total of 20 questions questioning the participants' sociodemographic characteristics, obstetric histories, and their current pregnancy status [17–19].

Pregnancy psychosocial health assessment scale (PPHA)

PPHAS was developed by Yıldız (2011) to assess psychosocial health during pregnancy [20]. The scale consists of 46 items and is a 5-point Likert type scale. The scale consists of 6 sub-dimensions (pregnancy and spousal relationship characteristics, anxiety and stress characteristics, domestic violence characteristics, psychosocial support needs characteristics, familial characteristics, and pregnancy-related physical-psychosocial changes characteristics). In the evaluation of the scale, the total score is divided by the number of items to obtain a mean item score between 1 and 5. As the total score moves away from 5 and approaches 1, it indicates a relevant level of psychosocial health problems during pregnancy, and a score of 1 indicates a very poor psychosocial health status. The same evaluation method is used for the sub-dimensions. The lowest possible value that can be obtained from the scale is 1, and the highest is 5. The Cronbach's alpha reliability coefficient of the scale was reported as 0.93 [20]. In this study, the Cronbach's alpha reliability coefficient was found to be 0.76.

Pregnancy-related anxiety scale (PrAS)Pre

PrAS was developed by Bruton et al. [21] to determine anxiety status during pregnancy, and its validity and reliability in Türkiye were performed by Şolt and Kanza Gül [22]. PrAS is a 4-point Likert-type scale (1-.... 4....)

consisting of a total of 33 questions and 9 sub-dimensions (childbirth concerns, body image concerns, attitudes towards childbirth, worry about motherhood, acceptance of pregnancy, anxiety indicators, attitudes towards medical staff, avoidance, and baby concerns). As scores on the scale increase, pregnancy-related anxiety increases. The Cronbach's alpha was found to be 0.85 [22]. In this study, the Cronbach's alpha coefficient was found to be 0.86.

Statistical analysis

Sample size was determined using G* Power 3 power calculations. Frequency, percentage, mean, and standard deviation values were used in the data analysis of the study. According to the Kolmogorov-Smirnov Test result, it was determined that the data showed a normal distribution. Chi-square test and independent sample t-test methods were used to determine the differences between the groups in terms of sociodemographic and obstetric characteristics. Anova was used to determine the difference between the psychosocial health and anxiety levels of high-risk pregnancies in terms of their diagnoses. Independent sample t-test was used to determine the differences in PPHAS and PrAS scores between the high-risk and healthy pregnant groups. A Cohen's d value of 0.20 is interpreted as a small effect size, a value of 0.50 as a medium effect size, and a value of 0.80 and above as a large effect size [23]. The relationships between the scale scores were examined using Pearson correlation coefficient. Linear regression analysis was used to determine the independent effects of multiple predictors on the outcome variable, and in this context, factors affecting PPHAS (Model 1) and PrAS (Model 2) were identified.

Ethical considerations

In order to conduct the study, approval was obtained from the University Health Sciences Non-Interventional Ethics Committee and written permission (2022/51) was obtained from the institution where the study would be conducted. Written permission to conduct the study was obtained from the relevant institution (08/2022). To use the scales in the study, permission was obtained from the scale owners via e-mail. The pregnant women who agreed to participate in the study were informed of the study's purpose and that their identities would be kept confidential. Participants were informed about the purpose and procedures of the study. Written informed consent was obtained from participants using a Volunteer Information Form. This research was conducted in accordance with the Helsinki Declaration.

Results

Table 1 shows the sociodemographic and obstetric characteristics of the participants. No significant difference was found between high-risk and healthy pregnant

Table 1 Sociodemographic and obstetric characteristics of pregnant women

Variables	Healthy Pregnant Women (n = 275)		High-Risk Pregnant Women (n = 255)		X ² /t p
	Mean ± SD		Mean ± SD		
Age Mean*	27.19 ± 5.14		28.16 ± 6.33		-1.944 0.052
Parity*	1.18 ± 1.05		1.22 ± 1.24		-0.420 0.675
Number of Abortions *	0.37 ± 0.70		0.34 ± 0.69		0.611 0.541
BMI*	28.84 ± 4.33		28.61 ± 6.08		0.512 0.609
	n	%	n	%	
Education**	164	59.6	145	56.9	1.290
Primary School	82	29.8	75	29.4	0.525
High School	29	10.6	35	13.7	
University					
Being employed with income**	51	18.5	39	15.3	0.992
Yes	224	81.5	216	84.7	0.355
No					
Income Status**	91	33.1	101	39.6	5.130
High	176	64.0	152	59.6	0.077
Medium	8	2.9	2	0.8	
Low					
Residence	175	63.7	163	63.9	3.914
Province	79	28.7	61	23.9	0.141
District	21	7.6	31	12.2	
Village					
Smoking**	28	10.2	30	11.8	0.340
Yes	247	89.8	225	88.2	0.580
No					
Having a stressful event during pregnancy**	30	10.9	80	33.4	33.687
Yes	245	89.1	175	68.6	< 0.001
No					
Regular antenatal care during pregnancy**	229	83.3	236	92.5	10.581
Yes	46	16.7	19	7.5	0.001
No					
Relationship status with partner during pregnancy**	268	97.5	227	89.0	15.263
Positive	7	2.5	28	11.0	< 0.001
Negative					

*Independent Sample t- test **Chi Square Test Note:The bold values represents $as p < 0.05$

women in terms of age, educational level, working status, income status, place of residence, parity, BMI, number of abortions, and smoking ($p > 0.05$). Regular antenatal care was found to be significantly higher in the high-risk pregnant group than in the healthy pregnant group ($p = 0.001$). The participants in the high-risk pregnant group were found to be significantly more likely to experience a stressful event during their pregnancies and to have a negative relationship with their spouses than the healthy pregnant group ($p < 0.001$).

Table 2 Psychosocial health and anxiety levels of high-risk pregnant women

Diagnoses of Pregnant Women	n	%	PPHA (n = 255)	PrAS (n = 255)
			Mean ± SD Median/ Mean Rank	Mean ± SD Median/ Mean Rank
Vaginal bleeding/Placental anomaly	14	5.5	3.16 ± 0.28	78.92 ± 11.77
Preeclampsia	28	11.0	3.19 ± 0.23	82.85 ± 9.00
Oligohydramnios/ Polyhydramnios	27	10.6	3.06 ± 0.21	86.18 ± 10.52
Fetal malpresentation	9	3.5	3.32 ± 0.12	77.33 ± 14.57
Gestational diabetes mellitus (GDM)	32	12.5	3.26 ± 0.18	85.65 ± 10.16
Fetal distress	10	3.9	3.39 ± 0.12	78.30 ± 6.16
Premature membrane rupture/ Preterm labor	76	29.8	3.17 ± 0.27	75.59 ± 11.97
Multiple pregnancy	7	2.7	3.05 ± 0.20	81.28 ± 11.65
High fever	6	2.4	3.11 ± 0.19	78.00 ± 10.69
Chronic disease (anemia, thyroid, diabetes)	18	7.1	3.15 ± 0.26	73.38 ± 8.68
Intrauterine growth restriction	25	9.8	3.19 ± 0.27	77.68 ± 11.18
Toxoplasmosis	3	1.2	3.13 ± 0.39	84.66 ± 20.00
F/P*			2.085/0.022	3.635/<0.001
Feelings of guilt**				
Yes	41	16.1	3.12 ± 0.26	82.92 ± 13.30
No	214	83.9	3.19 ± 0.24	78.83 ± 11.15
t/p			-	2.082/0.038
			1.746/0.082	
Spouse-blaming **				
Yes	11	4.3	3.13 ± 0.26	80.81 ± 14.57
No	244	95.7	3.18 ± 0.24	79.43 ± 11.47
t/p			0.411/0.499	0.391/0.700

*ANOVA **Independent samples t-test

Table 2 presents psychosocial health and anxiety levels by diagnosis in the high-risk pregnancy group. The study found that women who felt guilty about their high-risk pregnancy had higher anxiety levels ($p = 0.038$).

Table 3 shows the psychosocial health and anxiety levels of high-risk and healthy pregnant women. The participants in the high-risk group had significantly lower scores on the total PPHAS ($p < 0.001$, Cohen's $d = 0.514$), pregnancy and spousal relationship ($p = 0.006$, Cohen's $d = 0.239$), anxiety and stress ($p = 0.008$, Cohen's $d = 0.236$), domestic violence ($p < 0.001$, Cohen's $d = 0.640$), familial characteristics ($p = 0.003$, Cohen's $d = 0.249$) sub-dimensions than those in the healthy group. The pregnant women in the high-risk group had significantly higher scores on the total PrAS ($p < 0.001$, Cohen's $d = 1.551$) and mean birth anxieties ($p < 0.001$, Cohen's $d = 1.203$), body image concerns ($p = 0.002$, Cohen's $d = 0.473$), anxiety indicators ($p < 0.001$, Cohen's $d = 1.023$), and avoidance

Table 3 PPHA ve PrAS levels of pregnant women

	Healthy Pregnant Women (n = 275)	High-Risk Pregnant Women (n = 255)	t p*	Effect Size
	Mean ± SD	Mean ± SD		
PPHA Total Scores ^a	3.30 ± 0.19	3.18 ± 0.24	5.982 < 0.001	0.514
PPHA Dimensions				
Pregnancy and spousal relationship	1.85 ± 0.38	1.76 ± 0.37	2.750 0.006	
Anxiety and stress	3.66 ± 0.76	3.48 ± 0.76	2.652 0.008	0.236
Domestic violence	4.82 ± 0.28	4.58 ± 0.45	7.351 < 0.001	0.640
Psychosocial support needs	3.91 ± 0.45	3.86 ± 0.54	1.105 0.269	
Familial characteristics	1.40 ± 0.43	1.30 ± 0.37	2.997 0.003	0.249
Pregnancy-related physical-psychosocial changes characteristics	4.49 ± 0.59	4.46 ± 0.63	0.608 0.543	
PrAS Total Scores	59.43 ± 14.15	79.49 ± 11.59	-17.765 < 0.001	1.551
PrAS Dimensions				
Childbirth concerns	11.10 ± 5.79	17.53 ± 4.85	-13.807 < 0.001	1.203
Body image concerns	11.25 ± 5.21	12.66 ± 5.08	-3.163 0.002	0.274
Attitudes towards childbirth	6.25 ± 3.31	6.20 ± 3.42	0.173 0.863	
Worry about motherhood	4.04 ± 2.23	4.26 ± 2.76	-1.007 0.314	
Acceptance of pregnancy	3.76 ± 2.04	3.96 ± 2.21	-1.109 0.268	
Anxiety indicators	7.05 ± 3.20	10.37 ± 3.29	-11.771 < 0.001	1.023
Attitudes towards medical staff	5.12 ± 2.88	5.54 ± 2.85	-1.688 0.092	
Avoidance	5.41 ± 3.82	9.44 ± 2.82	-13.717 < 0.001	1.200
Baby concerns	5.42 ± 3.36	9.48 ± 2.12	-16.489 < 0.001	1.445

*Independent Samples t-test ^a= Low scores indicate poor psychosocial health

Table 4 Correlations between the PPHA and PrAS scores of the participants

Healthy Pregnant Women	Scales	PrAS	
		r	p
	PPHA Total	-0.300	< 0.001
High-Risk Pregnant Women	PrAS Total	-0.186	0.003

r = Pearson correlation coefficient, p < 0.05 statistically significant

($p < 0.001$, Cohen's $d = 1.200$) sub-dimensions scores than those of the pregnant women in the healthy group.

Table 4 shows the relationship between PPHAS and PrAS scores of pregnant women. It was determined that

as the PPHAS score of pregnant women in the high-risk and healthy groups decreased, the PrAS score increased (Table 4).

Linear regression analysis, Model 1, consists of features affecting PPHAS. It was determined that there was a significant relationship between being a high-risk pregnant, experiencing a stressful event during pregnancy, frequent antenatal care, relationship with the spouse and PPHAS, explaining 9.9% of the variance (Table 5, $R^2 = 0.099$; $p < 0.001$). In Model 2, a significant relationship was found between high-risk pregnancy, frequent antenatal control, relationship with the spouse, PPHAS and PrAS, explaining 42.3% of the variance (Table 5, $R^2 = 0.222$; $p < 0.001$).

Discussion

In this study, the psychosocial health and anxiety levels of high-risk and healthy pregnant women were determined. It was found that high-risk pregnant women experienced more anxiety and had worse psychosocial health than healthy pregnant women. In the regression analysis, it was determined that the diagnosis of high-risk pregnancy affected anxiety status and psychosocial health. This finding is significant because it demonstrates that high-risk pregnancies negatively impact psychosocial health of women. Similarly, there are a number of studies reporting that high-risk pregnancy negatively impacts psychosocial health [1, 2, 9, 24, 25]. In this context, it is thought that it is important for midwives and nurses to monitor psychosocial health symptoms in high-risk pregnant women and include psychosocial care in prenatal processes.

High-risk pregnancy can negatively affect women's mental health and trigger feelings of guilt [8, 9]. In this study, it was determined that those with high-risk pregnancies felt guilty and that those who felt guilty had higher anxiety scores. This may be related to the woman's feeling responsible for the complications that arose during pregnancy and the thought that she could not protect her baby. Therefore, we believe it is important for midwives and nurses to meet the psychosocial needs of high-risk pregnant women without judgment and to explain to women that a high-risk pregnancy is not their fault.

Medical problems experienced during high-risk pregnancies, such as bed rest and activity restriction, cause problems at home and tension between spouses [26, 27]. In this study, it was determined that high-risk pregnancy negatively affected the relationship with the spouse and the "Pregnancy and spouse relationship" sub-dimension score of these pregnant women was significantly lower compared to that of healthy pregnant women. Another striking point in our study is that women in the high-risk group had worse familial characteristics and were more exposed to violence. In contrast, in high-risk pregnancies, emotional closeness with the partner positively

Table 5 Evaluation of the effects of pregnancy on psychosocial health and anxiety using linear regression analysis

	β	t	p	%95 CI		Collinearity statistics	
Model 1: PPHA						Tolerance	VIF
High-Risk Pregnancy	-0.085	-40.172	<0.001	-0.124	-0.045	0.894	1.119
Experiencing Stressful Events	0.090	30.673	<0.001	0.042	0.138	0.924	1.082
Regular Antenatal Checkups	0.085	20.831	0.005	0.026	0.144	0.971	1.030
Relationship with Partner	-0.079	-20.025	0.043	-0.156	-0.002	0.969	1.032
F = 15.415 R = 0.325 R ² = 0.099 df1 = 4 df2 = 523 Durbin-Watson = 1.786 (p < 0.001)							
Model 2: PrAS							
High-Risk Pregnancy	17.298	14.860	<0.001	15.011	19.584	0.865	1.156
Experiencing Stressful Events	-1.600	-1.140	0.255	-4.357	1.158	0.901	1.110
Regular Antenatal Checkups	-4.202	-2.462	0.014	-7.556	-0.849	0.956	1.046
Relationship with Partner	5.534	2.496	0.013	1.178	9.891	0.962	1.040
PPHA	-12.097	-4.894	<0.001	-16.953	-7.241	0.895	1.118

B: Regression Coefficient df: degrees of freedom Note: The bold values represents $\alpha < 0.05$

Model 1: The effect of PPHA on high-risk pregnancies, experiencing a stressful event during pregnancy, regular antenatal care during pregnancy, and relationship with partner

Model 2: The effect of PrAS on high-risk pregnancies, experiencing a stressful event during pregnancy, regular antenatal care during pregnancy, relationship with spouse, and PPHA

Bold Values: $p < 0.05$. PPHA = Pregnancy Psychosocial Health Assessment Scale, PrAS = Pregnancy-related Anxiety Scale

F = 76.435 R = 0.650 R² = 0.423 df1 = 5 df2 = 522 Durbin-Watson = 1.775 (p < 0.001)

impacts the marital relationship [7]. Therefore, assessing the adequacy of spousal support in antenatal care, supporting communication between couples, and increasing fathers' awareness of the process may positively contribute to the psychosocial health of high-risk pregnancies.

High-risk pregnant women are in the risk group in terms of stress, and in the literature, psychological problems such as anxiety and stress are reported to be more common in high-risk pregnancies [1, 17]. Anxiety levels increase in women experiencing high-risk pregnancies due to the fact that they have concerns about the health of the fetus and fear of complications during birth; uncertainty; and physical activity restrictions [7, 28]. In this study, the "Anxiety and stress" sub-dimension scores were lower in the high-risk pregnancy group compared to the healthy pregnancy group, indicating that high-risk pregnant women experienced more anxiety and stress. Additionally, the women diagnosed with oligohydramnios/polyhydramnios, GDM, and toxoplasmosis in the study had the highest anxiety scores. Contrary to this finding, in the study by Türkmen et al. [1], no difference was found in the stress levels of high-risk pregnant women in terms of obstetric complications. This difference may be due to the sample size or the characteristics of the participants. Additionally, this finding is important because it shows that risky situations that directly threaten fetal health can cause intense anxiety in mothers. Midwives and nurses should assess the anxiety levels of at-risk pregnancies through regular individual meetings, support their sense of control, and refer them to counseling services, contributing to their safe preparation for birth.

Since women's perceptions of motherhood and their bodies are affected by changes they experience, it is

difficult for women to adapt to physical and psychological changes in a high-risk pregnancy [29]. In this study, it was determined that the high-risk pregnant women had more concerns about "body image" than healthy pregnant women. When a pregnant woman is concerned about her body image, this can lead to prenatal anxiety, depression, attachment problems, and reluctance to breastfeed [30]. Therefore, midwives and nurses should support body awareness in women with high-risk pregnancies, use supportive communication language emphasizing women's strengths, question pregnant women's concerns about their body image, and refer them to a specialist when necessary.

The literature emphasizes that women with high-risk pregnancies worry about the health of their fetuses and babies and experience fear of fetal death [8, 31]. This study found that high-risk pregnant women experience more anxiety about their babies than healthy pregnant women. In this context, it is important for midwives and nurses to strengthen pregnant women's coping strategies during antenatal care and plan interventions that support attachment in the postpartum period.

Complications experienced during pregnancy or birth increase the risk of women having negative perceptions about birth [32]. In this study, it was observed that high-risk pregnant women had concerns about birth and avoided vaginal birth. This may be due to the fear of harming the baby or herself due to the high-risk pregnancy. In this regard, it is important for the midwives and nurses to listen to the concerns of high-risk pregnant women who tend to avoid giving birth, to take initiatives to reduce their fear of birth, and to provide prenatal education and counseling.

Strengths and limitations

The strengths of this study are the presence of a control group. The limitation of this study is that it can only be generalized to the region where the study was conducted. The study findings cannot be generalized to the entire pregnant Turkish female population. Another limitation of the study is that the pre-pregnancy anxiety and psychosocial health levels of the participants, which would affect their current situation, were not measured in the study and long-term outcomes could not be monitored. This study lacks data on whether pregnancies were conceived spontaneously or through assisted reproductive technologies (IVF). This is a significant limitation of the study, as the literature suggests that anxiety levels may be higher in pregnancies conceived through IVF [33]. Furthermore, the study did not assess the physical activity levels of pregnant women; however, physical activity has been shown to be associated with anxiety and mood during pregnancy, which constitutes another limitation [34].

Conclusion and recommendations

This study determined that high-risk pregnancies negatively impact the psychosocial health and anxiety levels of pregnant women. Women in the case group were observed to experience more difficulties in areas related to spousal relationships, stressful life events, body image, childbirth, and the health of their babies. Therefore, it is important for midwives and nurses to closely monitor high-risk pregnancies from a psychosocial perspective, assess their social support resources, include their partners in their care, and provide appropriate counseling when necessary. Based on the findings of this study, it is recommended that further research with larger samples address anxiety and psychosocial health variables in high-risk pregnancies more comprehensively.

Abbreviations

HRP	High-risk pregnancies
PRAS	Pregnancy-related Anxiety Scale
PPHA	Pregnancy Psychosocial Health Assessment Scale
BMI	Body Mass Index
GDM	Gestational Diabetes Mellitus

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Authors' contributions

Study conception/design: Tozan, Palas Karaca, Türkmen; Data collection: Tozan, Güler; Data analysis: Türkmen; Drafting of manuscript: Türkmen, Palas Karaca; Critical revisions for important intellectual content: Türkmen, Palas Karaca; Supervision: Türkmen, Palas Karaca.

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Data availability

The datasets used and/or analysed during the current study are available from the corresponding author on reasonable request.

Declarations

Competing interests

The authors declare no competing interests.

Conflict of interest

None.

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