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Relationship between pregnancy discomforts, quality of life, and prenatal attachment

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Abstract

This study aimed to examine the relationship between pregnancy-related discomforts, their impact on quality of life, and prenatal attachment. A descriptive cross-sectional study was conducted among 394 pregnant women followed at a university hospital. Data were collected using a personal information form, the Scale of Complaints Related to Pregnancy and Their Impact on Quality of Life (SCPEQL), and the Prenatal Attachment Inventory (PAI).Sociodemographic factors affecting quality of life included age, place of residence, and economic status, while obstetric factors included gestational trimester, risk status, and psychological well-being. The most frequently reported symptoms were incontinence, frequent urination (pollakiuria), and fatigue.Overall, prenatal attachment showed a weak, negative, and non-significant relationship with quality of life ($p > 0.05$). However, a significant positive association was observed between the "hope" subscale of prenatal attachment—which reflects optimism and positive expectations regarding pregnancy—and the "limitation" subscale of quality of life ($p < 0.05$).The results of this study indicate that pregnant women frequently experience neuropsychological and genitourinary symptoms, which are associated with decreased quality of life and prenatal attachment scores. These findings highlight the essential role of midwives and nurses in implementing targeted interventions to address both physical complaints and psychological well-being of pregnant women.. *(Afr J Reprod Health 2026; 30 [2]: 91-107).*

Keywords: Quality of life during pregnancy, Pregnancy discomforts, Prenatal attachment, Midwifery

Résumé

Cette étude visait à examiner la relation entre les malaises liés à la grossesse, leur impact sur la qualité de vie et l'attachement prénatal. Une étude descriptive et transversale a été menée auprès de 394 femmes enceintes suivies dans un hôpital universitaire. Les données ont été recueillies à l'aide d'une fiche d'informations personnelles, de l'Échelle des plaintes liées à la grossesse et de leur impact sur la qualité de vie (SCPEQL), ainsi que de l'Inventaire de l'attachement prénatal (PAI).Les facteurs sociodémographiques influençant la qualité de vie comprenaient l'âge, le lieu de résidence et le statut économique, tandis que les facteurs obstétricaux incluaient le trimestre de grossesse, le statut de risque et le bien-être psychologique. Les symptômes les plus fréquemment rapportés étaient l'incontinence, la pollakiurie et la fatigue.Globalement, l'attachement prénatal présentait une relation faible, négative et non significative avec la qualité de vie ($p > 0,05$). Toutefois, une association positive significative a été observée entre la sous-échelle « espoir » de l'attachement prénatal — qui reflète l'optimisme et les attentes positives vis-à-vis de la grossesse — et la sous-échelle « limitation » de la qualité de vie ($p < 0,05$).Les résultats de cette étude indiquent que les femmes enceintes présentent fréquemment des symptômes neuro-psychologiques et génito-urinaires, lesquels sont associés à une diminution des scores de qualité de vie et d'attachement prénatal. Ces résultats soulignent le rôle essentiel des sages-femmes et des infirmières dans la mise en œuvre d'interventions ciblées visant à prendre en charge à la fois les plaintes physiques et le bien-être psychologique des femmes enceintes. *(Afr J Reprod Health 2026; 30 [2]: 91-107).*

Mots-clés: Qualité de vie pendant la grossesse, Inconforts de la grossesse, Attachement prénatal, Maïeutique

Introduction

Pregnancy is a transformative experience encompassing a range of physiological, psychological, and social changes. It significantly impacts a woman's physical health, emotional well-being, and her relationship with the developing fetus. [1]These changes, along with associated symptoms, can affect the pregnant woman's quality of life. The pregnant woman's partner and family should be prepared for these changes and provide support.[2,3]

Pregnancy complaints and quality of life

Understanding the factors that affect a woman's quality of life during pregnancy is critical for improving both maternal and fetal health outcomes. Pregnancy-related complaints such as nausea, fatigue, lower back pain, and frequent urination are commonly experienced and often lead to significant physical discomfort. [2,3] Recent studies also highlight that emotional and psychosocial factors substantially influence quality of life during pregnancy.[4,-6]

Prenatal attachment and its importance

Prenatal attachment is defined as the emotional bond a woman establishes with her fetus. It significantly influences maternal acceptance of the maternal role and the fetus's growth and development.[6]

The Prenatal Attachment Inventory (PAI) measures three subdimensions: Curiosity and Excitement (interest and anticipation about the fetus), Acceptance and Enthusiasm (positive feelings and commitment toward pregnancy), and Hope (optimism and positive expectations regarding pregnancy). [7,8,9,10] Investigating these variables concurrently with quality of life provides a comprehensive understanding of the pregnancy experience and informs personalized prenatal care.

Research gap and study aim

Previous research has examined the relationships between pregnancy-related complaints, prenatal attachment, and quality of life; however, these factors are often studied independently or without detailed examination of prenatal attachment's subdimensions. [9,11]

This study aims to fill this gap by exploring the associations among pregnancy-related complaints, prenatal attachment subdimensions, and quality of life during pregnancy, considering trimester stage and psychological well-being.

We hypothesize that increased pregnancy-related discomforts are associated with lower quality of life and weaker prenatal attachment, and that the prenatal attachment subdimensions have distinct relationships with quality of life.

Clinical relevance

Understanding these complex interactions can help prenatal care providers, especially midwives and nurses, develop targeted interventions to improve maternal well-being and optimize pregnancy outcomes.

H_0:Discomforts during pregnancy are not associated with quality of life and prenatal attachment.

H_1: Discomforts during pregnancy are associated with quality of life and prenatal attachment.

Methods

Research type

This descriptive, cross-sectional study was conducted to determine the relationship between pregnancy-related complaints, their effect on quality of life, and prenatal attachment.

Population and samples of the study

The study population consisted of all pregnant women admitted to the gynecology and obstetrics outpatient clinic and services of a university hospital between April and September 2024. A non-probability sampling method was used for sample selection, and the G*Power 3.1.9.7 program was used for sample size calculation. [10] The sample of the study was calculated by taking into account the data used in the power analysis of the study of Yeşim Derya et al. (2023) (effect size, margin of error, and confidence interval). Accordingly, the effect size was determined as pH1: 0.189, the power as 95%, and the margin of error as 5%, using the two-way hypothesis method and the association test. As a result of the calculation, it was determined that there should be 358 pregnant women, and the study was completed with 394 pregnant women, taking into account possible data losses (calculated with 10% data loss). According to the post hoc analysis performed at the end of the study, a power of 0.96 was reached among 394 pregnant women (1-β: 0.96).

The dependent variables of the study were the total scores obtained from the Prenatal Attachment Inventory (PAI) and the Pregnancy-

Related Complaints and Their Impact on Quality of Life Scale (SCPEQL). Pregnancy-related features included maternal age, gestational week (trimester), parity, history of miscarriage, pregnancy risk status (low or high), educational level, and psychological well-being. These variables were treated as independent factors in the analysis.

Data collection tools

Personal Information Form

This form was created by the researchers based on a literature review and includes 17 questions related to the sociodemographic and obstetric characteristics of pregnant women. [8,11]

Pregnancy-related complaints and their impact on quality of life scale (scpeql)

The validity and reliability study of this scale, which measures complaints during pregnancy and its effect on quality of life, was conducted by Özorhan E.Y. in 2016. The scale has 42 items and consists of two parts. In the first part, it is evaluated how often the complaints that occur during pregnancy have been encountered in the last month, and this part is a 4-point Likert-type scale coded as "never" (0), "rarely" (1), "sometimes" (2), "often" (3). If a marking between 1–3 is made for each complaint in the first part, the second part of the scale is started. The second part is a 3-point Likert-type scale that measures how the complaints affect the activities of daily living and is coded as "not limiting at all" (0), "limiting a little" (1), "limiting a lot" (2). The scale has no cut-off point. Quality of life decreases as the total score increases.

The Cronbach's alpha coefficient was calculated as 0.72. In this study, the mean total score of the participants on the SCPEQL was 107.28±20.22 (range 59–190), and the scale's Cronbach's alpha value was found to be high at 0.82. This scale is a unidimensional scale that assesses the overall impact of complaints and quality of life during pregnancy. The scale has no sub-dimensions, and all items are taken together to calculate a total score. Therefore, the analyses were performed on an overall score, and the sub-dimensions were not analyzed separately.

Prenatal attachment inventory (PAI)

The PAI was originally developed by Müller in 1993 to measure the emotional bond between a pregnant woman and her fetus. [15]The original scale consists of 21 items designed to capture the maternal-fetal attachment during pregnancy. The scale was later adapted and expanded by Türkmen Çevik and Kurnaz (2019) for use in Turkish populations, consisting of 33 items with a three-point Likert response format. Higher total scores indicate stronger prenatal attachment.

The Turkish version of the PAI comprises three sub-dimensions that assess distinct aspects of prenatal attachment:

• Curiosity and Excitement (items 1–13): Reflects the mother's interest and eagerness to learn about and connect with her unborn baby.

• Acceptance and Enthusiasm (items 14–22): Represents the emotional acceptance of pregnancy and feelings of joy and positive anticipation.

• Hope (items 23–33): Encompasses the mother's optimistic expectations and hopeful feelings regarding the fetus and future motherhood.

The total possible score ranges from 33 to 99. In the current study, the mean total score was 91.52 ± 5.29 (range 38–99), indicating a generally high level of prenatal attachment among participants. The scale demonstrated good reliability, with a Cronbach's alpha coefficient of 0.76.

Statistical analysis

Data were analyzed using SPSS version 25.0. For the analysis of descriptive data, frequency, percentage, mean, minimum, maximum, and standard deviation were used. The normality of the data was assessed using the Shapiro-Wilk and Kolmogorov-Smirnov tests. For data that did not show a normal distribution, the Mann–Whitney U test and Kruskal-Wallis variance test were employed. Spearman correlation analyses were performed to examine the relationships between the variables.

Ethical dimensions of the study

Approval was obtained from the Ethics Committee for Non-Interventional Clinical Researches of a university in the Central Black Sea region (Decision

No: 2024/04, Decision Date: 14.03.2024). Additionally, institutional approval was obtained from the hospital where the study would be conducted (Decision No: 415714, Decision Date:01.04.2024the research was conducted in accordance with the rules of the Declaration of Helsinki, and informed consent was obtained from pregnant women who agreed to participate in the study. In addition,permissions were obtained for the scales used.

Results

The study was conducted with a total of 394 pregnant women. The average age of the participants was 27.27±4.73 years (range 18–44). Of the participants, 55.3% resided in a town, 43.4% were high school graduates, 66.2% were housewives, and 54.5% reported that their income exceeded their expenses.Regarding obstetric characteristics, 70.3% were multiparous, 65.5% had planned pregnancies, and 57.6% were in their third trimester (Table 1).

Regarding the frequency of symptoms experienced during pregnancy, the mean scores were as follows: genitourinary system symptoms, 9.59±3.25; gastrointestinal system symptoms, 8.68±3.30; respiratory and cardiovascular system symptoms, 7.28±3.00; skin symptoms, 3.66±2.23; neuro-psychological system symptoms, 16.54±4.59; and musculoskeletal system symptoms, 2.88±1.62 (Table 2).

When examining the distribution of symptoms in terms of their impact on daily life: incontinence was the most common genitourinary symptom (1.80±0.75), reflux was the most common gastrointestinal symptom (1.79±0.76), edema in the hands and feet was the most common respiratory and cardiovascular symptom (1.58±0.46), stretch marks were the most common skin symptom (1.27±0.56), insomnia was the most common neuro-psychological symptom (1.70±0.74), and hip and pelvic pain was the most common musculoskeletal symptom (1.65±0.70) (Table 3).

Significant differences were observed between educational status and trimester in the total scores of the PAI ($p < 0.05$). Furthermore, a significant difference was found between the 'curiosity and excitement' sub-dimension of the PAI and educational status, parity, trimester, pregnancy planning, and psychological status ($p < 0.05$). The 'hope' sub-dimension of the PAI showed a significant association with age, abortion history, and trimester ($p < 0.05$).

Regarding the SCPEQL scale, significant differences were found in total scores according to sociodemographic and obstetric characteristics, including age, place of residence, perceived economic level, trimester, psychological status, risk status during pregnancy, and presence of pregnancy-related risks ($p < 0.05$) (Table 4). A negative, very low, and non-significant relationship was observed between the Prenatal Attachment Scale and the Complaints During Pregnancy and Its Effect on Quality of Life Scale ($p > 0.05$) .

It was determined that curiosity and excitement, acceptance and enthusiasm, and hope increased with prenatal attachment in pregnant women ($p < 0.05$) (Table 5). It was observed that there was a strong positive and significant relationship between the hope sub-dimension of prenatal attachment and the limitation sub-dimension of the Scale of Complaints During Pregnancy and Its Effect on Quality of Life ($p < 0.05$) (Table 5)

Discussion

This study seeks to answer the following question: Is there a relationship between complaints during pregnancy and their impact on quality of life with prenatal attachment? The literature shows that there are many physiological and psychological complaints during pregnancy.[15]These complaints also affect many factors during pregnancy. [18,20]

In our study, the most common symptoms experienced by pregnant women were incontinence (1.80±0.75), frequent urination (2.16±0.82), and fatigue (2.15±0.81). These findings align with existing literature, which highlights the significant negative impact of physical discomforts during pregnancy on quality of life. Lacasse et al. reported that symptoms like nausea and vomiting during pregnancy negatively affect quality of life, with incontinence also being a contributing factor.[20]Akpınar and Apay emphasized that symptoms such as frequent urination not only affect physical health but also impact psychological well-being, leading to a decline in quality of life.[21]

Table 1: Sociodemographic characteristics of pregnant women (n:394)

		N	%
Age Group	18-22	61	15.5
	23-27	158	40.1
	28-35	155	39.3
	35+	20	5.1
Average Age X̄±SS (min-max)27.27 ± 4.73 (18-44)			
Where They Live	Province	138	35.0
	District	218	55.3
	Village/town	38	9.7
Education Status	Primary education	89	22.6
	High School	171	43.4
	Unıversty	134	34.0
Job	Housewife	261	66.2
	Officer	64	16.2
	Employee	69	17.6
Spouse's Profession	Does not work	21	5.3
	Officer	101	25.6
	Employee	235	59.6
	Small business	37	9.5
Family Type	Core	309	78.4
	Wide	85	21.6
Perception of Economic Level	İncome less than the expenses	31	7.9
	İncome equals expenses	148	37.6
	İncome more than the expenses	215	54.5
Pregnancy Status	Primiparity	117	29.7
	Multiparity	277	70.3
Misscarriage Status	Yes	254	64.5
	No	140	35.5
Current Trimester	First trimester	34	8.6
	Second trimester	133	33.8
	Third trimester	227	57.6
Pregnancy Planning Status	Planned	258	65.5
	Unplanned	136	34.5
Smoking During Pregnancy	Using	91	23.1
	Not using	303	76.9
Presence of any chronic disease	Yes	70	17.8
	No	324	82.2
İf there is (n=64)	Diabetes	18	4.6
	Hypertansion	18	4.6
	Thyroid	12	3.0
	Heart Disease	5	1.3
	Neurological diseases	8	2.0
	Other (Asthma. İnfection)	3	0.8
Psychological State	Good	194	49.2
	Middle	170	43.1
	Bad	30	7.7
Risk status during pregnancy	Yes	126	32.0
	No	268	68.0
İf. Then	Amniotic Fluid Embolism	5	1.3
	Hypertensive Disorders	20	5.1
	Risk of Premature Birth	60	15.2
	Placental Anomalies	8	2.0
	Other (Multiple pregnancy. Fetal anomaly vb)	24	6.1
TOTAL		**394**	**100.0**

Table 2: Distribution of the Frequency of Symptoms Experienced by Pregnant Women (n: 394)

Symptoms	**Symptom Frequency**								**X̄±SD**
	Never		**Rare**		**Sometimes**		**Often**		
	N	**%**	**N**		**n**	**%**			
Leukorrhea	78	19. 8	96	24.4	116	29.4	104	26.4	1.62±1.07
Vaginal candidiasis	225	57.1	93	23.6	58	14.7	18	4.6	0.66±0.89
Changes in sexual desire	75	19.0	119	30.2	105	26.6	95	24.1	1.55±1.05
Breast tenderness	179	45.4	124	31.5	78	19.8	13	3.3	0.80±0.86
Pain in the fingertips	188	47.7	133	33.8	59	15.0	14	3.6	0.74±0.83
Discoloration of the nipple	112	28.4	133	33.8	84	21.3	65	16.5	1.25±1.04
Frequent urination	11	2.8	74	18.8	149	37.8	160	40.6	2.16±0.82
İncontinence	198	50.3	106	26.9	71	18.0	19	4.8	0.77±0.90
Nausea	105	26.6	164	41.6	74	18.8	51	12.9	1.18±0.97
Vomiting	130	33.0	142	36.0	77	19.5	45	11.4	1.09±0.98
Reflux	158	40.1	102	25.9	134	34.0	-	-	0.85±0.85
Constipation	149	37.8	125	31.7	79	20.1	41	10.4	1.03±0.99
Hemorrhoids	249	63.2	83	21.1	40	10.2	22	5.6	0.58±0.88
Dry mouth	89	22.6	149	37.8	97	24.6	59	15.0	1.31±0.98
Cravings	125	31.7	130	33.0	92	23.4	47	11.9	1.15±1.00
Changes in taste and smell	108	27.4	98	24.9	117	29.7	71	18.0	1.38±1.07
Painful veins in the vagina	250	63.5	101	25.6	29	7.4	14	3.6	0.51±0.78
Head Rotatıon	158	40.1	132	33.5	87	22.1	17	4.3	0.90±0.88
Fainting	305	77.4	62	15.7	25	6.3	2	0.5	0.29±0.60
Palpitations	141	35.8	141	35.8	90	22.8	22	5.6	0.98±0.90
Varicose Veins	184	46.7	119	30.2	65	16.5	26	6.6	0.82±0.93
Edema of the hands and feet	29	7.4	135	34.3	159	40.4	71	18.0	1.69±0.85
Snoring	223	56.6	107	27.2	49	12.4	15	3.8	0.63±0.84
Respiratory Distress	81	20.6	118	29.9	140	35.5	55	14.0	1.42±0.96
Acne on the skin	175	44.4	137	34.8	59	15.0	23	5.8	0.82±0.89
Pregnancy Mask	174	44.2	129	32.7	69	17.5	22	5.6	0.84±90
Itching of the skin	191	48.5	104	26.4	72	18.3	27	6.9	0.83±0.95

Cracked	122	31.0	137	34.8	85	21.6	50	12.7	1.15±1.00
Leg cramps	67	17.0	115	29.2	110	27.9	102	25.9	1.62±1.04
Carpal Tuners	148	37.6	150	38.1	67	17.0	29	7.4	0.94±0.91
Sciatica	124	31.5	142	36.0	84	21.3	44	11.2	1.12±0.98
Headache	140	35.5	142	36.0	82	20.8	30	7.6	1.00±0.93
Fatigue	8	2.0	81	20.6	145	36.8	160	40.6	2.15±0.81
Insomnia	65	16.5	86	21.8	141	35.8	102	25.9	1.71±1.02
Restless leg	52	13.2	144	36.5	146	37.1	52	13.2	1.41±0.88
Forgetfulness	136	34.5	107	27.2	96	24.4	55	14.0	1.17±1.05
Feeling Depressed	65	16.5	124	31.5	153	38.8	52	13.2	1.48±0.91
Concern	65	16.5	112	28.4	111	28.2	106	26.9	1.65±1.04
Vivid dreams	175	44.4	122	31.0	74	18.8	23	5.8	0.86±0.92
Changes in body image	112	28.4	117	29.7	101	25.6	64	16.2	1.29±1.05
Back Pain	109	27.7	127	32.2	97	24.6	61	15.5	1.27±1.03
Pain in the hip or pelvis	73	18.5	99	25.1	131	33.2	91	23.1	1.60±1.03

Table 3: Distribution and means of limitation of daily life status of symptoms experienced by pregnant women according to systems (n=394)

	Limitation of Daily Life by Symptoms						**X̄±SD**
	Never restricted		**Less restricted**		**Very restricted**		
	N	**%**	**N**	**%**	**N**	**%**	
Leucorrhea	200	50.8	138	35.0	56	14.2	1.63±0.71
Changes in sexual desire	311	78.9	57	14.5	26	6.6	1.27±0.57
Breast Tenderness	336	85.3	45	11.4	13	3.3	1.47±0.66
Pain in the fingertips	320	81.2	65	16.5	9	2.3	1.21±0.46
Discoloration of the nipple	343	87.1	49	12.4	2	0.5	1.13±0.35
Frequent urination	322	81.7	59	15.0	13	3.3	1.21±0.48
İncontinence	157	39.8	157	39.8	80	20.3	1.80±0.75
Vaginal candidiasis	296	75.1	71	18.0	27	6.9	1.31±0.59
Nausea	265	67.3	89	22.6	40	10.2	1.42±0.67
Vomiting	265	67.3	93	23.6	36	9.1	1.41±0.65
Reflux	165	41.9	145	36.8	84	21.3	1.79±0.76
Constipation	275	69.8	97	24.6	22	5.6	1.35±0.58
Haemorroid	319	81.0	50	12.7	25	6.3	1.25±0.56
Dry mouth	285	72.3	88	22.3	21	5.3	1.32±0.57
Cravings	324	82.2	65	16.5	5	1.3	1.19±0.42
Taste/smell changes	234	59.4	118	29.9	42	10.7	1.51±0.68
Painful Veins in the Vagina	336	85.3	45	11.4	13	3.3	1.18±0.46
Dizziness	281	71.3	102	25.9	11	2.8	1.31±0.52
Fainting	362	91.9	16	4.1	16	4.1	1.12±0.43
Palpitations	294	74.6	87	22.1	13	3.3	1.28±0.52
Varicose Veins	311	78.9	70	17.8	13	3.3	1.24±0.50
Edema of the hands and feet	208	52.8	143	36.3	43	10.9	1.58±0.46
Snoring	354	89.8	37	9.4	3	0.8	1.10±0.33
Respiratory distress	211	53.6	152	38.6	31	7.9	1.54±0.63
Skin Symptoms							
Acne on the skin	336	85.3	53	13.5	5	1.2	1.15±0.40
Pregnancy mask	339	86.0	47	11.9	8	2.0	1.15±0.41
İtching of the skin	318	80.7	65	16.5	11	2.8	1.22±0.47
Cracks	307	77.9	64	16.2	23	5.8	1.27±0.56
Leg cramps	185	47.0	149	37.8	60	15.2	1.68±0.72
Carpal Turners	306	77.7	76	19.3	12	3.0	1.25±0.50
Sciatica	257	65.2	107	27.2	30	7.6	1.42±0.63
Headache	285	72.3	89	22.6	20	5.1	1.32±0.56
Fatigue	133	33.8	192	48.7	69	17.5	1.83±0.69
İnsomnia	183	46.4	144	36.5	67	17.0	1.70±0.74
Restless leg	224	56.9	142	36.0	28	7.1	1.50±0.62
Forgetfulness	266	67.5	103	26.1	25	6.3	1.38±0.60
Feeling depressed	225	57.1	135	34.3	34	8.6	1.51±0.65
Anxiety	191	48.5	138	35.0	65	16.5	1.68±0.74
Vivid dreams	318	80.7	56	14.2	20	5.1	1.24±0.53
Changes in body image	293	74.4	76	19.3	25	6.3	1.31±0.58
Back Pain	238	60.4	104	26.4	52	13.2	1.52±0.71
Pain in the buttocks and pelvis	190	48.2	150	38.1	54	13.7	1.65±0.70

Table 4: Comparison of the mean scores of SCPEQL and PAI with sociodemographic characteristics of pregnant women (n:394)

	Sociodemographic characteristics	**Curiosity and excitement subdimension** $\bar{x}\pm$ **SD**	**Acceptance and enthusiasm Subdimension** $\bar{x}\pm$ **SD**	**Hope Subdimension** $\bar{x}\pm$ **SD**	**PAI Totel** $\bar{x}\pm$ **SD**	**Complaint Sub-Dimension** $\bar{x}\pm$ **SD**	**Limitation Sub-Dimension** $\bar{x}\pm$ **SD**	**SCPEQL Totel** $\bar{x}\pm$ **SD**
Age	18-22[a]	34.77±2.84	23.21±1.25	33.21±2.21	91.19±5.27	46.86±10.51	58.11±9.76	104.98±18.79
	23-27[b]	34.82±2.64	23.39±0.98	33.35±1.84	91.58±4.34	47.70±11.15	57.31±10.24	105.01±19.41
	28-35[c]	34.59±3.15	23.21±1.63	33.67±2.57	91.49±6.30	50.65±11.88	59.89±9.92	110.54±19.06
	35+[d]	34.60±2.90	23.40±0.88	34.40±1.23	92.40±3.57	46.20±21.85	60.70±13.73	106.90±33.77
	Test value/ p* value significant difference	*0.411/0.938*	*0.608/0.895*	***11.638/0.009 (a<d. b<d)***	*0.519/0.915*	***8.957/0.030 (a<b<c)***	***8.275/0.041 (b<c)***	***11.088/0.011 (b<c)***
	Where They Live							
	Province[a]	35.17±2.58	23.28±1.08	33.68±2.01	92.13±4.49	47.47±13.75	58.10±9.26	111.18±20.95
	District[b]	34.51±2.98	23.27±1.50	33.38±2.36	91.17±5.79	48.19±12.18	56.90±9.44	105.10±19.59
	Village/ town[c]	34.18±3.20	23.52±0.79	33.63±1.88	91.34±4.88	49.71±11.65	61.47±11.22	105.57±19.48
	Test value / p* significant difference	*5.980/0.050*	*0.949/0.622*	*2.163/0.339*	*3.821/0.148*	1.900/0.387	**18.115/0.001 (b<c)**	**8.998/0.011 (b<c)**
	Education Status							
	Primary Education[a]	33.95±2.56	23.25±1.22	33.48±1.62	90.69±4.18	47.35±13.10	58.06±9.94	105.42±20.28
	High School[b]	34.75±3.25	23.32±1.55	33.44±2.54	91.52±6.40	49.33±12.47	59.02±11.06	108.36±21.72
	Üniversty[c]	35.17±2.48	23.29±1.00	33.61±2.06	92.08±4.25	48.65±11.06	58.47±9.49	107.12±18.16
	Test value / p* significant difference	***11.979/0.003 (a<c)***	2.516±0.284	1.719/0.423	***8.220/0.016 (a<c)***	*0.812/0.666*	*0.112/0.945*	*0.412/0.814*
	Perception of Economic Level							
	Income less than expenses[a]	34.58±3.04	23.54±0.85	33.48±1.87	91.61±4.88	46.74±9.84	56.41±6.91	103.16±14.09
	Income equals expenses[b]	34.45±2.98	23.30±1.62	33.39±2.48	91.14±6.07	47.37±12.77	57.22±9.73	104.60±20.26
		34.91±2.80	23.26±1.11	33.60±2.04	91.77±4.75	49.82±11.94	59.89±10.90	109.72±20.68

Income more than expenses[c]							
Test value / p* significant difference	2.672/0.263	3.160/0.206	1.082/0.582	1.926/0.381	3.823/0.148	5.241/0.073	**6.183/0.045 (b<c)**
Pregnancy Status							
Primipar[a]	35.15±2.84	23.41±0.93	33.64±1.85	92.22±4.66	47.33±11.39	59.80±11.39	107.13±20.85
Multipar[b]	34.53±2.894	23.24±1.44	33.45±2.33	91.23±5.51	49.22±12.44	58.12±9.76	107.34±19.99
Test value/ p** value significant difference	**-2.291/0.022 (a>b)**	-0.641/0.522	-0.527/0.598	-1.702/0.089	-1.617/0.106	-1.449/0.147	-0.486/0.627
Misscarriage Status							
Yes[a]	34.60±3.01	23.21±1.70	33.25±2.03	91.07±5.05	50.41±10.76	58.53±9.86	108.95±18.49
No[b]	34.77±2.82	23.34±1.31	33.65±2.28	91.77±5.41	47.69±12.77	58.66±10.53	106.36±21.10
Test value/ p** value significant difference	-0.561/0.575	-0.322/0.747	**-2.348/0.019 (a<b)**	-1.301/0.193	**-2.346/0.019 (b<c)**	-0.185/0.854	-1.410/0.159
Trimester							
First Trimester[a]	33.23±3.20	23.14±1.37	33.91±1.91	90.29±5.10	44.23±17.35	57.00±13.25	101.23±29.55
Second Trimester[b]	34.12±3.05	23.18±1.68	33.09±2.68	90.40±6.43	46.84±10.94	55.36±7.74	102.20±16.84
Third Trimester[c]	35.28±2.58	23.38±1.01	33.70±1.87	92.37±4.36	50.38±11.62	60.77±10.58	111.16±19.55
Test value/ p* value significant difference	**23.394/0.001 (a<b. b<c. a<c)**	1.724/0.422	**8.747/0.013 (b<c)**	**17.700/0.001 (a<b<c)**	**19.501/0.001 (a<b<c)**	**27.116/0.001 (b<c)**	**28.067/0.001 (a<b<c)**
Pregnancy planning status							
Planned[a]	34.88±2.99	23.23±1.40	33.47±2.42	91.59±5.79	48.18±11.60	58.89±10.75	107.08±20.44
Unplanned[b]	34.39±2.66	23.41±1.11	33.58±1.71	91.40±4.19	49.56±13.13	58.09±9.33	107.66±19.87
Test value / p *	**-2.289/0.022 (a>b)**	-1.956/0.051	-0.050/0.960	-1.421/0.155	-1.415/0.157	-0.346/0.730	-0.636/0.525

significant difference							
Psychological state							
Good[a]	35.15±2.66	23.34±1.01	33.53±1.97	92.03±4.47	46.66±11.38	57.31±9.21	103.98±18.44
Middle[b]	34.44±2.88	23.30±1.23	33.45±2.50	91.15±6.09	49.80±10.95	58.90±10.32	108.71±18.73
Bad[c]	33.36±3.70	23.24±1.60	33.70±1.70	90.36±5.14	55.06±19.08	65.43±13.68	120.50±31.15
Test value / p*	**9.638/0.008**	0.005/0.997	1.165/0.921	4.397/0.111	**13.391/0.001**	**10.474/0.005**	**13.786/0.001**
significant difference	**(a>b>c)**				**(a<b<c)**	**(a<c)**	**(a<b<c)**
Risk status in pregnancy							
Yes[a]	34.48±3.45	23.16±1.78	33.52±2.75	91.17±6.80	52.65±13.45	62.80±11.85	115.46±22.64
No[b]	34.82±2.58	23.36±1.01	33.50±1.89	91.69±4.41	46.77±11.02	56.65±8.81	103.43±17.76
Test value/ p*	-0.551/0.581	-0.425/0.671	-1.031/0.303	-0.137/0.891	**-4.489/0.001**	**-5.187/0.001**	**-5.251/0.001**
value					**(a>b)**	**(a>b)**	**(a>b)**
significant difference							
Risks of pregnancy							
Amniotic Fluid Embolism[a]	35.60±1.81	23.80±0.44	34.80±0.83	94.20±2.04	39.00±7.03	63.40±14.69	102.40±12.66
Hypertensive Disorders[b]	34.45±3.21	23.25±1.48	33.95±2.66	91.65±6.40	56.10±10.96	66.65±11.78	122.75±20.25
Risk of premature birth[c]	34.15±4.07	22.86±2.31	33.36±3.27	90.38±8.31	52.10±14.60	62.18±11.51	114.28±24.06
Placental Anomalies[d]	35.25±1.83	23.87±0.35	33.62±1.30	92.75±2.43	48.37±11.43	55.25±3.41	103.62±13.01
Other (Multiple pregnancy. Fetal anomaly etc)[e]	34.95±3.08	23.41±1.01	33.29±2.42	91.66±5.46	56.20±13.90	65.00±13.76	121.20±24.82
Test value / p*	1.003/0.909	6.687/0.153	5.559/0.235	3.084/0.544	**13.610/0.009**	6.512/0.164	**10.165/0.038**
significant difference					**(a<b)**		**(b>d)**

* Kruskal–Wallis test; ** Mann–Whitney U test. X̄: Mean Value. SD: Standart Deviation

Table 5: The relationship between the PAI, pregnancy complaints and their effect on the quality of life scale

		SCPEQL Total	Complaint Sub Dimension	Limitation subdimensions	Total PAI	Curiosity and Excitement Sub-categories Dimension	Acceptance and enthusiasm subdimension	Hope Sub Dimension
SCPEQL Total	**R**	1	*0.916*	*0.853*	*0.049*	*0.015*	*-0.027*	*0.085*
	p*		*0.000*	*0.000*	*0.334*	*0.766*	*0.590*	*0.091*
Complaint Sub Dimension	**R**		*1*	*0.600*	*0.004*	*0.003*	*-0.039*	*0.019*
	p*			*0.000*	*0.931*	*0.948*	*0.440*	*0.704*
Limitation subdimensions	**R**			*1*	*0.077*	*0.028*	*-0.013*	***0.126***
	p*				*0.126*	*0.582*	*0.800*	***0.013***
Total PAI	**R**				1	***0.837***	***0.563***	***0.683***
	p*					***0.000***	***0.000***	***0.000***
Curiosity and Excitement Subdimensions	**R**					1	***0.312***	***0.286***
	p*						***0.000***	***0.000***
Acceptance and enthusiasm subdimension	**R**						1	***0.369***
	p*							***0.000***
Hope sub-dimension	**R**							1
	p*							

*Spearman Correlation Analiyzing

Additionally, Şahan and Ege identified fatigue as a common symptom in pregnancy that adversely affects quality of life. [22]In this context, our findings further support the idea that these symptoms—continence issues, frequent urination, and fatigue—are significant factors that diminish pregnant women's overall quality of life, underlining the importance of support and interventions from healthcare professionals.

In our study, the mean total score of the Quality of Life Impact Scale was found to be 107.28±20.22, with the mean score of the symptom subscale being 48.65±12.15 and the mean score of the limitation subscale being 58.62±10.28, all of which are considered high. These findings suggest that quality of life is significantly affected during pregnancy. In a study by Derya et al., the mean total score was 74.1±27.5, indicating a moderate impact on quality of life during pregnancy. [13]Similarly, another study found the mean score for pregnant women on the Quality of Life Impact Scale to be 48.67±26.69, which also suggested a moderate impact on their quality of life. [20]On the other hand, in the study by Yılmaz et al., the quality of life of pregnant women was found to be highly affected, with mean scores of 132.67±33.10 in the first trimester, 132.46±28.90 in the second trimester, and 134.21±28.93 in the third trimester. [4]These data indicate that the negative impact on quality of life increases during pregnancy, becoming more pronounced in relation to symptoms and limitations.

When the sociodemographic factors affecting quality of life during pregnancy were analyzed in our study, it was observed that age, place of residence, and economic status had an effect. Some studies have found that the age, economic status, and place of residence of pregnant women significantly affect their quality of life. For example, a study by Arslan et al. reported that younger pregnant women experience fewer health problems and better adaptation to pregnancy, resulting in higher quality of life scores.[1]In contrast, women experiencing pregnancy at an advanced age women are more likely to encounter health issues and pregnancy-related complications, which negatively affect their quality of life. Furthermore, Yılmaz et al. emphasized that economic status is an important factor affecting quality of life during pregnancy, with lower-income individuals facing difficulties accessing healthcare, which negatively impacts their quality of life. [4]Similarly, in a study by Monterrosa Castro et al., it was found that pregnant women with higher income levels had better access to healthcare, which positively influenced their quality of life during pregnancy. [7]Derya et al. (2018) examined the impact of the place of residence on quality of life and concluded that pregnant women living in urban areas had better access to healthcare services and social opportunities, leading to higher quality of life. [6]In contrast, pregnant women living in rural areas faced difficulties accessing healthcare services, which resulted in lower quality of life. [18]These findings highlight the importance of considering factors such as age, economic status, and place of residence in strategies aimed at improving the quality of life during pregnancy.

In our study, obstetric factors such as trimester, pregnancy risk status, and psychological condition during pregnancy were found to significantly impact quality of life. The trimester in which a woman is pregnant plays a crucial role in determining her quality of life.

For instance, studies have shown that women in the first trimester often experience more physical discomfort and fatigue due to hormonal changes, which may negatively impact their quality of life. [5]On the other hand, the second trimester is usually associated with a relative improvement in physical symptoms, leading to a higher quality of life during this period. [4]However, in the third trimester, the physical burden increases as the pregnancy progresses, with many women experiencing discomfort, fatigue, and difficulty in daily activities, which can decrease their quality of life. [6]Additionally, the pregnancy risk status has been identified as an important determinant of quality of life. High-risk pregnancies, including those with gestational diabetes, preeclampsia, or other complications, tend to result in poorer outcomes in terms of the mother's physical and emotional well-being.[7]These women may experience higher levels of anxiety, stress, and health-related worries, which can significantly reduce their quality of life. [18]In contrast, low-risk pregnancies generally correlate with higher quality of life scores, as these women tend to experience

fewer complications and better physical health during their pregnancy. [1]Furthermore, the psychological state of a pregnant woman plays a critical role in shaping her quality of life. Psychological conditions such as anxiety, depression, and stress have been found to be associated with lower quality of life during pregnancy.[4]Derya et al. found that women with higher levels of prenatal anxiety and depression reported lower quality of life scores . [6]The emotional and psychological well-being of a pregnant woman is often influenced by her support system, coping mechanisms, and her ability to manage stress, all of which are essential in determining her overall pregnancy experience and quality of life. In conclusion, our findings suggest that obstetric factors such as trimester, pregnancy risk status, and psychological well-being significantly influence the quality of life during pregnancy.

When comparing the total scores of the Prenatal Attachment Scale with socio-demographic and obstetric characteristics in the study, a significant difference was found between education level and trimester ($p < 0.05$). Numerous studies in the literature have reported that education and socioeconomic status affect the level of prenatal attachment.[23,25,27]One study indicated that factors such as the economic status of pregnant women, family type, and whether the pregnancy was planned or wanted influence prenatal attachment. [28]Conversely, another study found that the woman's age, education level, employment status, and income did not affect prenatal attachment. [29]Our findings suggest that having a higher education level and being in the third trimester positively affect attachment. Reviewing the literature on the relationship between education level and prenatal attachment reveals that women with higher education tend to have greater knowledge about pregnancy, better stress coping skills, and easier access to healthcare services, all of which may positively influence attachment. [30,32]These factors may explain why women with higher education levels exhibit higher prenatal attachment scores. However, this study did not fully explore the reasons behind this association, and future research should delve deeper into how education influences prenatal attachment, potentially through mediators such as health literacy or social support.

In addition to all this, the literature has examined the prenatal attachment levels of women experiencing negative emotions such as anxiety and depression, and it has been reported that women with these emotions have lower prenatal attachment levels. [33,34] There are also studies showing the opposite. [35,36]

The study also found significant differences in comparing the total scores of the Quality of Life Impact Scale with sociodemographic and obstetric characteristics in terms of age, place of residence, perceived economic level, trimester, psychological state, risk status during pregnancy, and existing risks ($p < 0.05$). Tuncer et al. (2022) determined that education, occupational status, and gestational age influenced the average scores of the Quality of Life Impact Scale. [37]Another study indicated that the employment status, perceived economic level, family type, years of marriage, age of the spouse, and education level of pregnant women affected the average scores of the Quality of Life Impact Scale. [19]Küçükkaya et al., research found significant differences in the average scores of the Quality of Life Impact Scale based on age and education level. [23]Our findings saliently align with the literature, particularly indicating that pregnant women with risky pregnancies experience more complaints and that this affects their quality of life.

The study found a weak negative and insignificant relationship between overall prenatal attachment and the Quality of Life Impact Scale ($p > 0.05$). However, a significant positive relationship was observed between the "hope" subscale of prenatal attachment and the "limitation" subscale of the Quality of Life Impact Scale ($p < 0.05$). This suggests that women with higher hope levels in prenatal attachment reported more limitations in daily activities due to pregnancy symptoms.

This result may indicate that hope, as part of prenatal attachment, acts as a resilience factor, helping women adapt to pregnancy changes. Women with higher hope might accept physical limitations more easily, focusing on their unborn child and navigating pregnancy challenges with greater positivity. However, the exact nature of the

"hope" subscale remains somewhat ambiguous, as it could represent either an optimistic outlook towards motherhood or a direct emotional bond with the fetus. This ambiguity makes it challenging to firmly contextualize our findings within the existing literature.

Moreover, the discussion does not fully explore potential confounders such as social support, anxiety, or depression, which could influence both prenatal attachment and quality of life. The omission of these factors limits the interpretation of the results, and future research should consider these variables to clarify the mechanisms linking hope and maternal well-being.

These findings are consistent with previous studies, such as one by Yılmaz et al. (2023), which showed a weak relationship between pregnancy adaptation and quality of life[4], and another by Kazemi et al. (2017), which found a negative and insignificant relationship between self-perception and quality of life during pregnancy [5], similar to these studies, our research suggests the relationship between prenatal attachment and quality of life is likely indirect and influenced by other factors.

In addition to the above, our study reported significant relationships between prenatal attachment and factors such as trimester, psychological state, and pregnancy planning. However, these findings were not explored in depth. Comparing our results with previous research would strengthen the study's contributions and provide a clearer understanding of how these factors interact with prenatal attachment.

From a practical perspective, these results highlight the importance of integrating psychosocial assessment and support into prenatal care. Healthcare providers, such as midwives and gynecologists, should consider assessing pregnant women's levels of hope and psychological well-being, as these may impact their coping mechanisms during pregnancy. Implementing targeted psychosocial interventions may enhance prenatal attachment and improve overall quality of life.

Lastly, the discussion section has been restructured to follow the sequence of the findings for clarity, beginning with symptom frequency, followed by quality of life limitations, then sociodemographic and obstetric characteristics in relation to prenatal attachment and complaints, and concluding with the correlation results. Repetitive content related to the relationship between quality of life and sociodemographic features has been removed to improve flow and comprehension.

Conclusion

In our study, although no significant correlation was found between the total scores of the PBI and SCPEQL, a strong relationship emerged between the hope subscale of the PBI and the limitation subscale of the SCPEQL. This finding indicates that pregnant women with higher levels of hope reflecting optimism and positive expectations regarding their pregnancy experience fewer limitations in daily activities despite pregnancy-related complaints. These findings highlight the critical role of midwives in providing individualized care that addresses both physical and psychosocial needs. Early assessment of quality of life and pregnancy-related complaints can enable timely interventions, while a holistic prenatal care approach integrating emotional, psychological, and physical support is essential for optimizing maternal well-being and enhancing the overall pregnancy experience.

Consent to participate

The research was conducted in accordance with the rules of the Declaration of Helsinki, and informed consent was obtained from pregnant women who agreed to participate in the study. In addition, permissions were obtained for the scales used.

Conflict of interest

The authors have no relevant financial or non-financial interests to disclose.

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Authors contribution

Concept: GC, HB; Design: GC, HB; Supervision: GC, HB; Analysis and/or Interpretation: GC;

Literature Review: GC, HB; Writing: GC, HB; Critical Review: GC. All authors read and approved the final manuscript.

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