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Evaluation of the effect of prenatal attachment and perceived stress on the adjustment process during pregnancy

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Abstract

This cross-sectional study was conducted to examine the effects of prenatal attachment and perceived stress on the adaptation process during pregnancy. The study was completed with 302 pregnant women who applied to the obstetrics and gynecology clinic. Data were collected face-to-face using the "Pregnancy Information Form", "Perceived Stress Scale", "Prenatal Attachment Scale" and "Prenatal Self-Assessment Scale-Pregnancy Acceptance Subscale". Number, percentage distribution, Mann Whitney U Test, Kruskal Wallis Test, Bonferroni and Spearman correlation tests were used in the analysis of data. A significant and negative relationship was found between the Prenatal Attachment Scale and other scales. As the participants' prenatal attachment levels increase, their perceived stress levels decrease and their pregnancy acceptance levels increase. It is recommended that pregnant women be supported psychosocially, evaluated in terms of attachment, stress and depression, childbirth preparation training be expanded and more research be conducted. *(Afr J Reprod Health 2026; 30 [1]: 13-20).*

Keywords: Midwifery, prenatal care, prenatal attachment, stress, pregnancy acceptance

Résumé

Cette étude transversale a été menée afin d'examiner les effets de l'attachement prénatal et du stress perçu sur le processus d'adaptation pendant la grossesse. L'étude a été réalisée auprès de 302 femmes enceintes qui se sont présentées à la clinique d'obstétrique et de gynécologie. Les données ont été recueillies en face à face à l'aide du "formulaire d'information sur la grossesse", de l' "échelle de stress perçu", de l' "échelle d'attachement prénatal" et de l' "échelle d'auto-évaluation prénatale - sous-échelle d'acceptation de la grossesse". Le nombre, la distribution en pourcentage, le test U de Mann Whitney, le test de Kruskal Wallis, les tests de corrélation de Bonferroni et de Spearman ont été utilisés dans l'analyse des données. Une relation significative et négative a été observée entre l'échelle d'attachement prénatal et les autres échelles. À mesure que le niveau d'attachement prénatal des participantes augmente, leur niveau de stress perçu diminue et leur niveau d'acceptation de la grossesse augmente. Il est recommandé d'apporter un soutien psychosocial aux femmes enceintes, d'évaluer leur niveau d'attachement, de stress et de dépression, de développer les formations à la préparation à l'accouchement et de mener davantage de recherches. *(Afr J Reprod Health 2026; 30 [1]: 13-20).*

Mots-clés: Sage-femme, soins prénataux, attachement prénatal, stress, acceptation de la grossesse

Introduction

The prenatal attachment process considered as a period when mother-infant attachment begins is and contributes to the establishment of a relationship between mother and baby, which brings them closer. Therefore, Pregnant women with high levels of attachment during the prenatal period to their babies makes an effort to meet and feels responsible the physiological, psychological needs[1].+

Not only individual characteristics but also social and familial factors, environmental affect the process during which the woman adapts herself to motherhood and accepts the motherhood role[2]. In the first trimester of pregnancy, physiological and psychological changes occur in the center of thought in the brain of the expectant mother. With the realization of fetal movements in the second trimester, this situation intensifies on the baby, and in the third trimester, her concerns and fears about

the birth and the baby's health condition begin to increase. While there is a positive relationship between prenatal distress level and attachment in the first trimester, this relationship is negative in the third trimester[3].

Psychological stress during pregnancy is a process that should not be ignored because of its harmful effects on the health of the mother and her baby[4,5]. This changes that occur during pregnancy vary according to trimesters, affect prenatal attachment cause stress. The management of these processes affects the adaptation process to pregnancy[4,6].

Our search for studies in which effects of prenatal attachment and perceived stress on the adjustment process during pregnancy were investigated revealed a gap in the literature. Thus, the present study was conducted to investigate the effects of prenatal attachment and perceived stress on the adjustment process during pregnancy.

Methods

The study was conducted between February 01 and May 30, 2023, at the Obstetrics and Gynaecology Clinic of Bolu İzzet Baysal State Hospital. The study population consisted of pregnant women admitted to the clinic who had given birth in 2022 (N=1139). The minimum number of people to be included in the sample was calculated as 287 in the EpiInfo 2022 program using the sampling method for known population [confidence interval: 95% (α=0.05)]. During the data collection period, the sample consisted of 302 women who were reached and completed the questionnaires in full.

Inclusion criteria

Being primiparous, literate, having no communication problems, having an uninduced pregnancy, having a single fetus, not being a high-risk pregnant woman, and having no mental health problems.

Data collection

After the pregnant women were informed about the purpose of the study and those who accepted to participate in the study they filled in data collection forms using the face-to-face interview technique. It took them about 10-15 minutes to fill in data collection forms.

Data collection tools

Pregnant women information form

The form consists of 22 items questioning the participants' demographic characteristics such as age, education level, and employment status, and their pregnancy-related characteristics related to their previous pregnancies and current pregnancy.

Perceived Stress Scale (PSS)

The PSS developed by Cohen, Kamarck, Mermelste in 1983 was adapted into Turkish by Bilge, Ogce, Genc, and Oran in 2009. In the present study, the Turkish version of the scale was used. The Cronbach's Alpha value was calculated as 0.86 in Cohen, Kamarck, Mermelste's study and 0.81 in the present study. The PSS has eight items whose answers are rated on a 5-point Likert type scale ranging from 0 to 4 (0=never, 1=almost never, 2=sometimes, 3=fairly often, 4=very often).Items 4,5,6 are reversed scored. The minimum and maximum possible scores to be obtained from the PSS are 0 and 32, respectively. The PSS has two subscales: perceived stress (items 1,2,3,7,8) and perceived coping (items 4,5,6). Participants' perceived stress and coping levels are measured based on the scores they obtain from the overall PSS and its subscales. The higher the score obtained from the overall PSS and its sub-scales is the higher the person's level of perceived stress is[5,6].

Prenatal attachment scale (PAS)

The 33-item Prenatal Attachment Scale was developed by Turkmen Cevik and Kurnaz in 2019. Responses give to the items are rated on a three-point scale ranging from 1 to 3 (1:strongly disagree, 2:somewhat agree, 3:strongly agree). The higher the score obtained from the scale is the higher the woman's prenatal attachment level is. No item in the scale is reverse scored. The minimum and maximum possible scores to be obtained from the "curiosity and excitement", "acceptance and enthusiasm", and "hope" factors are 13 and 39,9 and 27 and 11 and 33, respectively. The lowest

possible score that can be obtained from the overall scale is 33 whereas the highest possible score is 99. The Cronbach's Alpha coefficient of the original scale was 0.90[8]. In this study, the Cronbach's alpha value of the scale was found to be 0.96.

Prenatal self-assessment scale-pregnancy acceptance sub-scale (PSAS-PASS)

The PSAS-PAS developed in 1979 by Lederman et al. consists of 79 items whose responses are rated on a 4-point Likert-type scale ranging from 1 to 4 (1=describes a lot, 2=describes partially, 3=describes a little, 4=does not describe at all)[9,10]. Of the 79-items, 47 are reverse scored. The PSAS-PAS has no cut-off point. The PSAS-PAS consists of the following seven subscales: well-being of self and baby, pregnancy acceptance, identification with motherhood role, preparation for labor, help/control relationship with the spouse and relationship with the mother. The highest and lowest possible scores that can be obtained from the PSAS-PAS are 316 and 79, respectively[9]. The lower the score obtained from the PSAS-PAS is the better the mother's adaptation to pregnancy and motherhood role is. The Cronbach alpha coefficients of the Prenatal Self-Assessment Questionnaire (PSEQ) scale range from 0.75 to 0.92, while the coefficient for the pregnancy acceptance subscale is reported as 0.75[11].

In the validity and reliability study of the PSAS-PAS conducted by Beydag, Mete in Turkey in 2008, the internal consistency coefficient was determined as 0.81. The test-retest reliability coefficient of the scale is 0.84. Scale sub-items can be used as a measurement tool alone. In the present study, we used only the "pregnancy acceptance" subscale of the PSAS-PAS. In the validity and reliability study conducted in Turkey, the internal consistency coefficient of the pregnancy acceptance subscale was 0.80. The pregnancy acceptance subscale consists of 14-items (items 1,3,9,22,32,58,61,62,66,69,74,76,77 and 79). While the highest possible score to be obtained from the subscale is 56, the lowest one is 14. As the score obtained from this subscale decreases, the level of pregnancy acceptance increases[10]. In this study, the Cronbach's alpha value of the scale was found to be 0.84.

Statistical analysis

Descriptive data of the participants were given as numbers, percentage distribution and arithmetic mean. The statistical significance was considered $p<0.05$.Kolmogorov Smirnov test was used to find out whether the data were distributed normally. Because the data were not distributed normally, nonparametric tests were used. Mann Whitney U Test was used to compare two independent groups where as Kruskal Wallis Test was used to compare more than two groups. According to the results of Kruskal Wallis Test, the "Bonferroni test" was performed to determine from which group the difference stemmed, Spearman's correlation test was used to test the relationship between the scales..

Results

The participants demonstrated that of them, were in the age group of 25-29 years. The mean total scores of the study scales were as follows: PAS: 93.23±10.38, PSS:12.55±4.04 and PSAS-PAS: 22,33+7.48.

There was a statistically significant difference between the participants in terms of the relationship between the mean scores they obtained from the overall PAS and the variables such as whether the pregnancy is a planned one, what their relationship with their husbands is like, whether their husbands want pregnancy, whether they are anxious about pregnancy, whether they feel they are ready to care for the baby and whether they have received training about pregnancy ($p<0.05$) (Table 2).There was a statistically significant difference between the participants in terms of the relationship between their scores for the overall PSS and the variables such as monthly income status, family type (Table 1), gestational age, whether their husbands want pregnancy, what their relationship with their husbands is like, whether they are anxious about pregnancy, and whether they feel they are ready to care for the baby ($p<0.05$) (Table 2).

There were statistically significant differences between the participants relationship between their PSAS-PAS Scale scores and the age group, education status, monthly income status, family type variable ($p<0.05$) (Table 1).

Table 1: Comparison of Socio-Demographical Characteristics and Mean Scale Scores (n=302)

Variables	n	(%)	PAS	PSS	PSAS-PASS
Age group					
18-19	10	3.3	90.50+12.66	14.70+3.09	30.40+9.92
20-24	48	15.9	93.87+10.56	12.81+3.80	22.89+7.26
25-29	109	36.1	94.33+7.06	11.88+4.13	20.57+5.65
30-34	86	28.5	92.63+11.95	12.69+4.09	22.55+8.25
35 and above	49	16.2	91.77+12.79	13.14+4.01	23.63+8.08
KW			0.88	7.07	13.09
P			0.64	0.13	**0.01**
Education status					
Primary education	48	15.9	89.70±15.13	13.35±4.08	26.89±9.52
High school	114	37.7	93.96±8.54	12.40±4.20	22.57±7.52
University and above	140	46.4	93.85±9.56	12.41±3.89	21.98±7.53
KW			0.88	0.97	15.11
P			0.64	0.61	**0.00**
Occupational status					
Housewife	126	41.7	92.93±10.58	12.44±4.22	23.17±7.79
Officer	72	23.8	93.16±10.39	12.77±4.33	21.55±6.78
Employee	104	34.4	93.64±10.20	12.54±3.63	21.98±7.53
KW			0.48	0.41	2.60
P			0.78	0.81	0.27
Monthly income status					
Income less than expenses	62	20.5	92.51±11.74	14.04±3.79	24.96±8.23
Income balanced against expenses	201	66.6	93.18±9.90	11.91±3.74	21.62±7.23
Income more than expenses	39	12.9	94.61±10.61	13.53±5.09	22.10±6.74
KW			1.32	16.50	10.55
P			0.51	**0.00**	**0.00**
Year of marriage					
1-2 years	93	30.8	94.09±8.40	12.10±4.21	21.51±7.41
3-4 years	78	25.8	92.73±11.80	13.15±3.80	22.47±7.01
5-6 years	58	19.2	92.77±12.27	12.62±4.62	22.87±8.10
7 years and above	73	24.2	93.04±9.50	12.45±3.55	22.98±7.61
KW			0.48	2.82	2.59
P			0.92	0.42	0.45
Family type					
Nuclear family	249	82.5	93.99±8.82	12.31±4.05	21.42±6.43
Extended family	53	17.5	89.67±15.39	13.69±3.83	26.79±10.09
U			5827.50	5389.50	8584.00
P			0.17	**0.03**	**0.00**

KW: Kruskal Wallis
U: Mann Whitney

Table 2: Comparison of Obstetric Characteristics and Scale Score Means (n=302)

Variables	n	(%)	PAS	PSS	PSAS-PASS
Gestational age					
1st trimester	50	16.6	92.88±12.40	13.58±4.20	23.16±9.37
2nd trimester	88	29.1	92.07±12.21	12.85±4.08	23.01±7.96
3rd trimester	164	54.3	93.96±8.47	12.09±3.92	21.79±6.52
KW			0.79	7.18	0.56
p			0.67	**0.02**	0.75
The number of pregnancies					
1st pregnancy	147	48.7	93.70±11.15	12.40±4.41	21.70±7.42
2nd pregnancy	92	30.5	92.80±9.66	12.40±3.15	22.42±7.23
3rd pregnancy and above	63	20.8	92.76±9.60	13.15±4.29	23.91±7.89
KW			2.86	2.54	4.76
p			0.23	0.28	0.09
Having a planned pregnancy					
Yes	180	59.6	95.01±5.90	12.48±4.09	21.30±6.09
No	122	40.4	90.61±14.31	12.66±3.98	23.95±8.95
U			9230.00	10688.50	12424.0
p			**0.01**	0.69	**0.03**
Whether their husbands want pregnancy					
Yes	292	96.7	94.16±8.36	12.42±3.92	21.78±6.56
No	10	3.3	66.10±22.22	16.40±5.62	39.40±12.04
U			432.50	777.50	2601.50
p			**0.00**	**0.01**	**0.00**
Relationship status with their husbands					
Good	261	86.4	94.41±8.66	12.16±3.96	21.54±6.59
Middle	37	12.3	88.43±12.77	14.64±3.48	26.24±8.67
Bad	4	1.3	61.00±23.50	18.75±4.34	40.50±16.25
KW			27.37	17.31	17.59
p			**0.00**	**0.00**	**0.00**
Anxiety about pregnancy					
Yes	68	22.5	90.63±11.93	14.64±3.56	25.29±8.50
No	234	77.5	94.15±9.46	11.94±3.99	21.31±6.84
U			6292.00	4783.50	5096.50
p			**0.00**	**0.00**	**0.00**
Whether they feel they are ready to care for the baby					
Yes	270	89.4	94.19±8.76	12.26±3.94	21.72±6.64
No	32	10.6	85.15±17.45	15.03±4.09	27.81±11.21
U			2211.00	2867.50	5007.50
p			**0.00**	**0.00**	**0.02**
Whether they have received training about pregnancy					
Yes	228	75.5	94.13±8.96	12.38±3.97	21.92±6.75
No	74	24.5	90.38±13.63	13.09±4.25	23.75±9.36
U			6891.50	7756.00	8849.50
p			**0.02**	0.38	0.34
Baby's gender (n:275)					
Girl	146	53.1	92.47±11.04	12.58±4.20	22.44±7.79
Boy	129	46.9	93.60±10.48	12.51±3.93	22.30±7.40
U			8861.00	9105.50	9331.50
p			0.38	0.63	0.97

KW: Kruskal Wallis
U: Mann Whitney

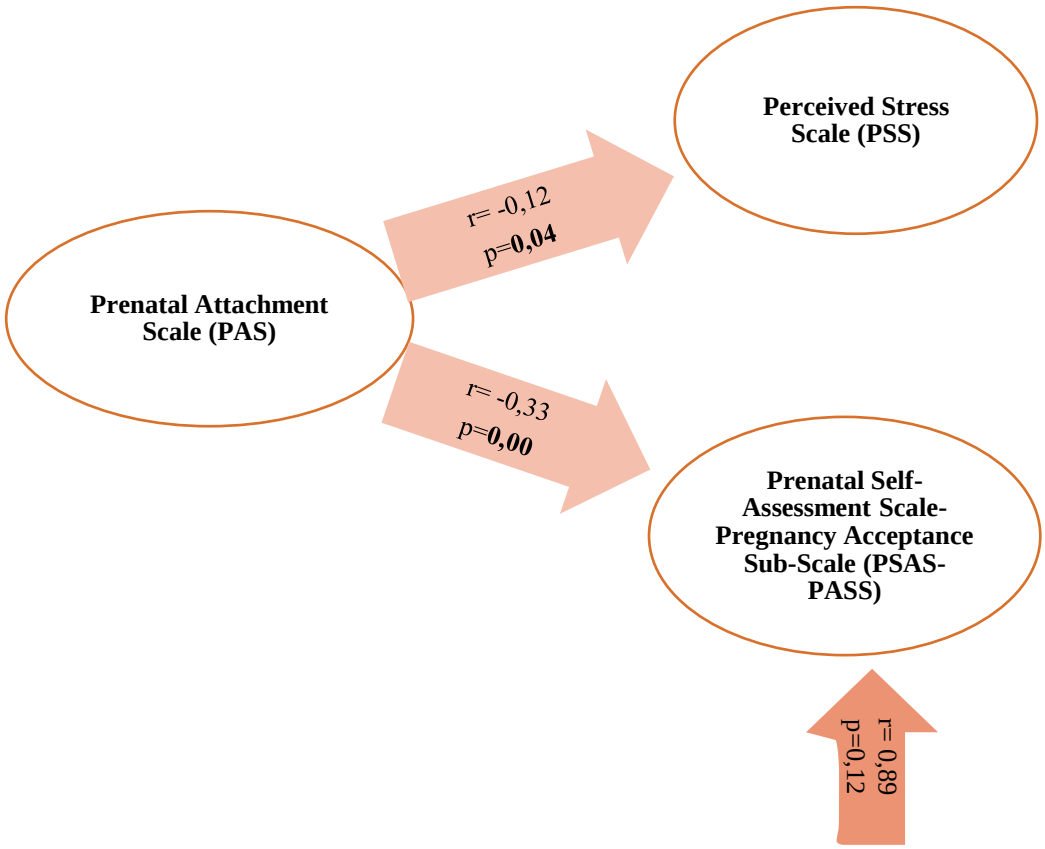

Figure 1: The relationship between the mean scores obtained from the overall Prenatal Attachment Scale, Perceived Stress Scale and Prenatal Self-Assessment Scale-Pregnancy Acceptance

Moreover there was a statistically significant difference between the participants in terms of the relationship between their scores for the overall PSAS-PAS and the having a planned pregnancy, whether their husbands want pregnancy, what their relationship with their husbands is like, anxiety about pregnancy, whether they feel they are ready to care for the baby variable ($p<0.05$) (Table 2).
The analysis of the relationships between the mean scores obtained from the scales revealed a statistically significant negative relationship between the PAS and PSS ($r= -0.12$, $p<0.00$), and between the PSAS-PAS $r= -0.33$, $p<0.00$)
(Figure 1).

Discussion

The present study, the participants' prenatal attachment levels were high, and their perceived stress levels and pregnancy acceptance levels were hight. PAS of the pregnant women were at a high level in Badem & Zeyneloglu's at a good level in other studies and at a moderate level in some studies[1,2,4,7,12-14]. The pregnant women experienced psychological distress at a low level in some studies and at a moderate level in Yıldız Çiltaş's study[4,15,16].

In the present study, of the participants, those who were primary school graduates had lower levels of prenatal attachment and pregnancy acceptance, higher levels of perceived stress.In some studies, as the participants' education level increased so did their prenatal attachment levels[1,4,17]. The results are similar to the literature. Of the participants, those who had income less than their expenses and an extended family obtained a higher score from both the PSS and the PSAS-PASS, thus their pregnancy acceptance level was higher.

Of the participants, those who had a planned pregnancy, who had a good relationship with their spouse, who did not have any worries about pregnancy, who felt they were ready for baby

care, or who received training on pregnancy had a high level of prenatal attachment ($p>0.05$).

Planned pregnancies positively influence a woman's preparedness for pregnancy, directly affecting factors such as participation in prenatal education and readiness for infant care; thus, they are important determinants of prenatal maternal-fetal attachment[16]. Although the literature shows that women with planned pregnancies tend to have higher levels of prenatal maternal-fetal attachment1[7,17,18], there are also studies reporting no significant effect[19]. The results of our study are consistent with those of the studies in the literature. Participants with income lower than their expenses and those living in extended families scored higher on the PSAS-PASS, whereas those in the third trimester, whose husbands wanted them to become pregnant, who had good relationships with their husband, who were not anxious about their pregnancy, or who felt prepared for baby care scored lower on the PSS.

Among participants aged 25–29 with university or higher education, balanced income, living in a nuclear family, and those with a planned pregnancy, supportive partner, good partner relationship, no pregnancy-related worries, readiness for infant care, and prenatal education, PSAS-PAS scores were low and pregnancy acceptance was high.

In Turan et al.'s (2020) study of the participants, primigravidae had lower levels of prenatal attachment in the third trimester than they had in the other trimesters of the pregnancy[13]. In other studies, primiparae participants had a higher level of prenatal attachment[1,4,7,,20-24].

It is expected that prenatal attachment will increase as the fetal movements are felt more as the pregnancy progresses. While social support is important, women who perceive spousal support experience lower stress, which in turn is associated with higher levels of attachment and adaptation to pregnancy. In the literature, during pregnancy, the level of prenatal attachment increased as the level of anxiety increased[4,23,25,26]. We are the results, as the participants' prenatal attachment levels increased, their perceived stress levels decreased and pregnancy acceptance levels increased.

The limitation is that pregnant women were selected from a single institution and did not represent the general population.

Conclusion

Research findings indicate that planned pregnancy, spousal support, and education enhance maternal–fetal attachment, while low income and extended family structures may increase stress. To improve maternal health, healthcare professionals should conduct psychosocial screenings each trimester, provide education and counseling to strengthen attachment, and encourage practices such as fetal movement counting and partner involvement. Socioeconomic risks and family dynamics should be considered in designing support programs, and at-risk pregnant women should be identified early to ensure timely and appropriate interventions.

Ethics

Before the present study was conducted, ethical approval was obtained from Sakarya University Rectorate Faculty of Medicine Dean's Faculty Non-Interventional Ethics Committee (decision date: January 31,2023; decision number:14) and permission was obtained from the Bolu Governorship Provincial Health Directorate Bolu İzzet Baysal State Hospital. Permission to use the scale was obtained from the scale developers. The study was carried out in accordance with the ethical standards established in the Declaration of Helsinki and Publication Ethics. Verbal informed consent was obtained from all the participants.

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