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Comparison of Postpartum Depression and Maternal Attachment Between Planned and Unplanned Pregnancies

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ABSTRACT

This study aims to evaluate postpartum depression and maternal attachment in planned and unplanned pregnancies. The sample of this descriptive study comprised 92 puerperal women, with 46 having unplanned pregnancies and 46 having planned pregnancies, all of whom had recently given birth. The women were interviewed within 24 hours after childbirth and again one month postpartum. Data were collected using a Descriptive Information Form, the Beck Depression Inventory (BDI), and the Maternal Attachment Scale (MAS). The mean scores from the Maternal Attachment Scale did not vary between the first and second measurements in the planned pregnancy group ($p>0.05$). However, there was a significant difference between the first and second measurements in the unplanned pregnancy group ($p=0.022$). The change in Maternal Attachment Scale scores between the first and second measurements differed depending on the pregnancy plan groups ($p=0.044$). The mean maternal attachment scores were lower in the unplanned pregnancy group. The mean BDI scores were lower in the planned pregnancy group compared to the unplanned pregnancy group ($p<0.001$). BDI classification varied based on the pregnancy plan ($p=0.012$). Minimal depressive symptom rates were higher in the planned pregnancy group, while symptoms were generally light or moderate in the unplanned pregnancy group. The study found that maternal attachment was higher and depression levels were lower in planned pregnancies compared to unplanned pregnancies. It is recommended that pregnancies be planned to promote healthier maternal attachment and reduce the risk of postpartum depression.

Planlı ve Plansız Gebeliklerde Doğum Sonrası Depresyon ve Anne Bağlanmasının Karşılaştırılması

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ÖZET

Bu çalışmanın amacı planlı-plansız gebeliklerde doğum sonrası depresyon ve anne bağlanmasının değerlendirilmesidir. Tanımlayıcı olan çalışmanın örneklemini 46 plansız, 46 planlı gebeliği olan, doğum yapmış 92 lohusa kadın oluşturmaktadır. Kadınlar ile doğumdan sonra taburcu olmadan 24 saat içinde ve bir ay sonrasında tekrar görüşüldü. Veri toplamada; Tanıtıcı Bilgi Formu, Beck Depresyon Ölçeği (BECK) ve Maternal Bağlanma Ölçeği (MBÖ) kullanıldı. Planlı gebelik grubunda maternal bağlanma ölçeğine ait birinci ve ikinci ölçüm ortalamaları farklılık göstermemektedir ($p>0,05$). Plansız gebelik grubunda ise maternal bağlanma ölçeğine ait birinci ve ikinci ölçüm ortalamaları farklılık göstermektedir ($p=0,022$). Maternal bağlanma ölçeğine ait birinci ve ikinci ölçümler arasındaki değişim gebelik plan gruplarına göre farklılık göstermektedir ($p=0,044$). Plansız gebelik grubunda maternal bağlanma puan ortalamaları daha düşüktür. Planlı gebelik grubunda BECK puan ortalamaları plansız gebelik grubuna kıyasla daha düşüktür ($p<0,001$). Gebelik plan durumuna göre BECK sınıflaması farklılık göstermektedir ($p=0,012$). Planlı gebelik grubunda minimal depresif belirti oranları daha yüksek iken, plansız gebelik grubunda hafif ve orta düzeydir. Planlı gebeliklerin plansız gebeliklere göre maternal bağlanma durumlarının daha yüksek, depresyon durumlarının ise daha düşük olduğu saptandı. Gebeliklerin sağlıklı bir şekilde geçirilmesi için planlı olmaları önerilmektedir.

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INTRODUCTION

A healthy society requires healthy generations. For healthy generations, women must be in a state of complete mental, social, and physical well-being. A healthy pregnancy is essential for the healthy birth of babies (Tonkuş & Muslu, 2021). Pregnancy brings about significant biological and psychosocial changes in a woman's life, making it crucial for her to be adequately prepared for this period (Arslan & Mete, 2005; Kınık & Özcan, 2020). Pregnancies can be categorized based on their timing as expected, early, late, or unexpected. Planned and desired pregnancies are considered expected, while missed and unplanned pregnancies are classified as unexpected (Abajobir et al., 2017).

Pregnancies should be planned to ensure a healthy pregnancy process and the well-being of both the mother and the infant. Unplanned pregnancies pose significant health challenges, affecting medical, social, and public health, and can occur across all segments of society. However, some groups are at higher risk (Ali, 2016). Unplanned pregnancies are more common among women with low socioeconomic status, who may struggle to care for themselves and their infants, and may engage in negative health behaviors (Cheng et al., 2009; Cubbin et al., 2002). Globally, 40 percent of pregnancies are unplanned, with approximately 80 million women experiencing unplanned pregnancies each year (Abajobir et al., 2017; Ersoy et al., 2015). In Turkey, there are 1,183,652 births annually, with 26 percent being unplanned (TÜİK, 2023).

Unplanned pregnancies, which occur against an individual's will, can make it challenging to adapt to the roles of pregnancy and parenthood. A mother who is prepared for motherhood and has given birth voluntarily is more likely to love her infant, meet its needs, and form a positive attachment (Buldur & Göcen, 2021). The acceptance of the role of motherhood during pregnancy is a crucial factor for establishing a strong bond between the mother and newborn in the postpartum period (Baltacı & Başer, 2020; Buldur & Göcen, 2021).

The fetus in the womb has the ability to hear, feel, see, remember, and even learn. Research indicates that while the consciousness of an unborn infant is not as complex as that of an adult, it is still present. The mother’s feelings and thoughts can influence the personality, emotional development, psychology, and consciousness of her unborn child. Given this information, it is understood that whether a pregnancy is planned or unplanned may impact attachment, beginning in the prenatal period and continuing later in life (Baltacı & Başer, 2020; Çimen & Varol, 2021). This study was designed to evaluate postpartum depression and maternal attachment in both planned and unplanned pregnancies.

The research questions

What is the status of mother-baby attachment postpartum in women with planned versus unplanned pregnancies?

What is the level of postpartum depression in women with planned versus unplanned pregnancies?

METHODS

This is a descriptive design study that was done between January to September in 2021 in İstanbul.

Population and Sample of the Study

The population consisted of puerperal women hospitalized in the Gynecology and Postpartum Service at a public hospital. The sample size was determined using the G*Power 3.1.9.2 program. To

detect a small effect size (0.20) with 80% power and a 5% Type I error rate, a total of 82 women were planned to be included in the study. The sample was divided into two groups: planned and unplanned pregnancies, with a 1:1 ratio. After accounting for potential losses, 46 individuals were included in each group (Lenth, 2007).

Inclusion Criteria

Participants were required to be between the ages of 18 and 35, have either a planned or unplanned pregnancy, be able to speak, write, and understand Turkish, have a single pregnancy, give birth to an infant weighing between 2500 and 4000 grams, and have delivered vaginally. Women with a previously diagnosed psychiatric disorder were excluded from the study. Participants were informed about the study's purpose, provided verbal and written consent, and data were collected. The average duration of the interviews was approximately 20-30 minutes.

Data Collection Tools

Data were collected using the Participant Information Form, the Beck Depression Inventory (BDI), and the Maternal Attachment Scale (MAS).

1. *The Participant Information Form*

This form consists of 49 questions regarding the socio-demographic characteristics of pregnantwomen, their obstetric histories, and their knowledge levels about health behaviors during pregnancy.

2. *The BECK Depression Inventory (BDI)*

The BDI, frequently used in psychiatric research, is not intended to provide a definitive diagnosis of depression but rather to assess the degree of depressive symptoms objectively through numerical values. The scale consists of 21 items, each of which asks the individual to select "the sentence that best describes how he/she has been feeling today and in the last seven days." Each item has four response options, scored from 0 to 3. The total score ranges from 0 to 63. Hisli (1989) reported the reliability coefficient of the BDI as α=0.86 and the validity coefficient as α=0.75. In this study, the reliability coefficient for the BDI was found to be 0.83.

3. *The Maternal Attachment Scale (MAS)*

Developed by Mary E. Muller, the Maternal Attachment Scale is used to assess maternal feelings and behaviors in postpartum mothers with babies aged between one and four months. This self-rating scale evaluates maternal feelings and behaviors indicative of love. It is a 4-point Likert-type scale consisting of 26 questions. Responses range from ‘always’ to ‘never,’ with scores assigned as Never (1), Sometimes (2), Often (3), and Always (4). The total score ranges from 26 to 104, with higher scores indicating stronger maternal attachment. The original scale had a Cronbach alpha value of 0.85. The Turkish adaptation study by Kavlak and Şirin reported Cronbach alpha internal consistency reliability coefficients of 0.77 for mothers with 1-month-old infants and 0.82 for those with 4-month-old infants (Kavlak & Şirin, 2009). In this study, the Cronbach alpha internal consistency reliability coefficients were 0.912 for postpartum mothers and 0.892 for mothers with 1-month-old infants.

Analysis and Interpretation of Data

The data were analyzed using the SPSS (Statistical Package for the Social Sciences) version 26. Error checks, tables, and statistical analyses were conducted. To evaluate the data, frequency, percentage, mean, and standard deviation were used. Normality of continuous variables was assessed using the Shapiro-Wilk test. Student's t-test was applied based on normality analysis. For categorical data, Chi-Square and Fisher Exact tests were used, and Pearson correlation coefficients were calculated for continuous variables. The statistical significance level was set at 0.05.

RESULTS

One-third of the women were older than 30 years. Approximately 38% were primary school graduates. A high proportion, around 91.3%, were unemployed. The majority of the participants lacked social security and were related to their husbands. A comparison of some socio-demographic characteristics of the groups is given in Table 1.

Table 1

Comparison of Some Socio-Demographic Characteristics of the Groups

		Planned		Unplanned		Total		
		n	%	n	%	n	%	p
Age groups	18-25	16	34.8	15	32.6	31	33.7	0.966
	26-30	13	28.3	14	30.4	27	29.3	
	>30	17	37.0	17	37.0	34	29.3	
Education Level	Primary school	5	10.9	13	28.3**	18	19.6	**0.013**
	Secondary school	14	30.4	21	45.7	35	38.0	
	High school	16	34.8**	7	15.2	23	25.0	
	University	11	23.9	5	10.9	16	17.4	
Occupation	Unemployed	40	87.0	44	95.7	84	91.3	0.240
	Worker	2	4.3	0	0.0	2	2.2	
	Civil servant	4	8.7	2	4.3	6	6.5	
Family type	Nuclear	31	67.4	36	78.3	67	72.8	0.241
	Extended	15	32.6	10	21.7	25	27.2	
Social Insurance	Yes	45	97.8	40	87.0	85	92.4	0.111*
	No	1	2.2	6	13.0	7	7.6	
Education level of your spouse	Primary school	8	17.4	11	23.9	19	20.7	0.088
	Secondary school	11	23.9	20	43.5	31	33.7	
	High school	17	37.0	9	19.6	26	28.3	
	University	10	21.7	6	13.0	16	17.4	
Your spouse's occupation	Unemployed	1	2.2	2	4.3	3	3.3	0.434
	Worker	40	87.0	42	91.3	82	89.1	
	Civil servant	5	10.9	2	4.3	7	7.6	
Income status	Income less than expenses	6	13.0	18	39.1**	24	26.1	**0.015**
	Income more than expenses	6	13.0	3	6.5	9	9.8	
	Income equal to expenses	34	73.9	25	54.3	59	64.1	
Place of residence	City	18	39.1	21	45.7	39	42.4	0.520
	District	27	58.7	25	54.3	52	56.5	
	Village	1	2.2	0	0.0	1	1.1	
Blood relations with your spouse	Yes	6	13.0	4	8.7	10	10.9	0.527*
	No	40	87.0	42	91.3	82	89.1	

*p: Chi-Square test *Fisher Exact test **indicates the higher rate*

Comparison of some descriptive characteristics of women according to their pregnancy planning status is given in Table 2.

Table 2

Comparison of Some Descriptive Characteristics of Women According to Their Pregnancy Planning Status

	Planned		Unplanned		Total		
	Mean±SD	**Min-Max.**	**Mean±SD**	**Min-Max.**	**Mean±SD**	**Min-Max.**	**p**
Age	28.00±4.98	19-35	28.39±5.04	20-35	28.20±4.98	19-35	0.709
Height	1.60±0.07	1.44-1.78	1.62±0.07	1.5-1.8	1.61±0.07	1.44-1.8	0.457
Weight	75.91±12.51	49-103	74.02±11.95	47-97	74.97±12.2	47-103	0.460
BMI	29.32±3.78	20.2-36.93	28.33±4.07	20.31-35.76	28.83±3.93	20.2-36.93	0.227
Spouse age	31.43±5.48	23-47	32.3±5.3	24-43	31.87±5.38	23-47	0.441
Duration of marriage	5.37±4.78	1-18	7.11±4.57	1-17	6.24±4.73	1-18	0.078

p: Student's t-test, BMI: Body Mass Index

The mean age, height, weight, and BMI of women did not differ according to the pregnancy planning status ($p>0.05$). The mean age and duration of marriage did not show any difference according to pregnancy planning status ($p>0.05$). No significant difference was found between pregnancy planning status and age classification, occupation, family structure, presence of social security, spouse education level, spouse occupation, place of residence, and blood relations status of the spouse ($p>0.05$).

A statistically significant relationship was found between planned pregnancy status and education level ($p<0.05$). While the ratio of primary school graduates was higher in the unplanned pregnancy group, the ratio of high school graduates was higher in the planned pregnancy group. A statistically significant relationship was found between planned pregnancy status and income status ($p<0.05$). The ratio of those whose income is less than their expenses was higher in the unplanned pregnancy group.

Table 3

Comparison of The Scores of the 1st and 2nd Measurements of the Maternal Attachment Scale by Pregnancy Planning Status

	Planned		Unplanned		
	Mean±SD	**Min-Max. %95 GA**	**Mean±SD**	**Min-Max. %95 GA**	**p_{group}**
1st Measurement	99.83±4.85	82-104	94.48±8.6	67-104	**<0.001**
2nd Measurement	99.83±3.22	94-104	92.02±5.84	78-102	**<0.001**
Difference	0.00±4.16	-1.23-1.23	2.46±7.00	0.38-4.54	**0.044***
P_{time}	1.00		**0.022**		

*p_{grup}: Student's t-test, P_{time}: Paired t-test *Repeated Measured Analysis of Variance (timexgroup interaction)*

The 1st and 2nd measurement values of the maternal attachment scale were observed to be higher in planned pregnancy compared to the unplanned pregnancy group ($p<0.001$). There was no difference between the 1st and 2nd measurement averages of the maternal attachment scale in planned pregnancy. However, in unplanned pregnancies, there was a statistically significant difference between the 1st and 2nd measurement averages of the maternal attachment scale, and a decrease was observed ($p=0.022$).

Table 4
Comparison of BDI Scores and Classification by Pregnancy Planning Status

	Planned		Unplanned		
	Mean±SD	**Min-Max.**	**Mean±SD**	**Min-Max.**	**p1**
BDI	4.7±3.45	1-13	8.85±6.4	1-30	<0.001
	N	**%**	**n**	**%**	**p2**
Minimal depression	41	89.1**	28	60.9	0.012
Mild depression	5	10.9	13	28.3**	
Moderate depression	0	0.0	4	8.7**	
Severe depression	0	0.0	1	2.2	

*p1: Student's t-test, p2: Chi-square test **indicates the higher ratio*

The mean BDI score in planned pregnancy was found to be lower than in the unplanned pregnancy group (p<0.001). While minimal depression rates are higher in planned pregnancy, mild and moderate depression rates are higher in unplanned pregnancies.

Table 5

The Relationship Between the BDI and the MAS

		Planned		Unplanned		Total	
		1st Measurement	**2nd Measurement**	**1st Measurement**	**2nd Measurement**	**1st Measurement**	**2nd Measurement**
BDI	**r**	-0.193	-0.209	0.277	-0.044	0.008	**-0.300**
	p	0.198	0.164	0.062	0.772	0.937	**0.004**

r: Pearson Correlation

There was no significant relationship between the BDI and maternal attachment scale 1st and 2nd measurement scores in planned and unplanned pregnancy groups (p>0.05). While no significant correlation was observed in the 1st measurement between the BDI and maternal attachment scale mean scores in the postpartum period, a negative linear relationship was found in the 2nd measurement (r=-0.300; p=0.004).

DISCUSSION

This study, which examined maternal attachment and depression outcomes in the postpartum period, revealed a statistically significant relationship between planned pregnancy status and education level (p<0.05). The proportion of primary school graduates was higher in the unplanned pregnancy group, while the proportion of high school graduates was higher in the planned pregnancy group. Ersoy et al. (2015) highlighted in their study of women with unplanned pregnancies that education level plays a significant role in unplanned pregnancies (Ersoy, 2015). Similarly, Şenoğlu et al. (2019) reported a relationship between low education levels and unplanned pregnancies (Şenoğlu, 2019). Our findings are consistent with the literature, showing that as education level increases, the likelihood of planning pregnancies also increases.

In the study, a statistically significant relationship was found between planned pregnancy and income status (p<0.05). The income level was higher in the group with planned pregnancies, which aligns with existing literature. Şenoğlu et al. (2019) and Uzun and Orhon (2013) also reported a relationship between low economic status and unplanned pregnancies (Şenoğlu, 2019; Uzun & Orhon, 2013). This suggests a clear relationship between higher education levels, increased employment status, and the planning of pregnancies. Women who are employed and have a higher level of education are

more likely to plan their pregnancies.

According to the results, the initial maternal attachment scale scores were higher in the planned pregnancy group compared to the unplanned pregnancy group. There was no significant difference between the first and second measurements of the maternal attachment scale in the planned pregnancy group. However, in the unplanned pregnancy group, there was a statistically significant decrease between the first and second measurements (p=0.022). Perry et al. reported a significant relationship between the desire for pregnancy and maternal attachment, noting that the level of attachment was lower in unplanned pregnancies (Perry et al., 2011). Şahin and Erbil also highlighted that factors such as planned pregnancy, traumatic birth experiences, and listening to birth stories play crucial roles in maternal attachment (Şahin & Erbil, 2024). These findings suggest that whether a pregnancy is planned or unplanned is a significant indicator of the mother-infant relationship. Women with planned pregnancies are more likely to feel prepared for motherhood, which may explain their higher maternal attachment scale scores.

In the study, the mean Beck Depression Inventory (BDI) scores were lower in the planned pregnancy group compared to the unplanned pregnancy group. The rate of minimal depression was higher among women with planned pregnancies, while those with unplanned pregnancies exhibited mild to moderate depression. Although the overall evaluation of pregnant women did not show a significant relationship between the BDI and the first measurement scores of the maternal attachment scale, a negative linear relationship was observed with the second measurement results (r=-0.300; p=0.004). This finding is consistent with other research that indicates postpartum depression negatively impacts baby care, nutrition, and maternal attachment (Abajobir, 2017). Despite this alignment, our study highlights that unplanned pregnancies are associated with higher BDI depression rates, which adversely affect maternal attachment.

Regarding the relationship between postpartum depression and maternal attachment, various studies have examined how maternal depression affects the bond between mothers and their infants. One study found that infants of depressed mothers exhibited a decrease in secure attachment and an increase in avoidant attachment (Rollè et al., 2020). These findings underscore the importance of addressing postpartum depression as it significantly impacts both maternal-infant attachment and the intergenerational transmission of attachment styles. Our study reveals that depression, particularly in the postpartum period, is associated with the planning status of the pregnancy and negatively affects the attachment between mother and infant.

CONCLUSION AND SUGGESTIONS

In this study, women with planned pregnancies demonstrated better health practices, higher levels of secure maternal attachment, and fewer symptoms of depression. To ensure a healthy pregnancy process, it is crucial for pregnancies to be planned to support the health of both the mother and the infant. Since unplanned pregnancies can lead to physical and mental health issues, early diagnosis and appropriate counseling are recommended. Maintaining health practices is vital for a healthy pregnancy, and women should be supported in incorporating these practices into their daily lives. Additionally, it is important to monitor postpartum depression and maternal attachment, identify risk factors, highlight the significance of maternal attachment, and organize training programs on pregnancy planning.

LIMITATIONS

The study is limited by its focus on women from a specific region, which may affect the generalizability of the findings.

Ethics Approval

Institutional and ethical committee permissions were obtained for conducting the study. Approval was granted by the Health Scıences University Hamidiye Non-Interventional Research Ethics Committee (No: 46418926-050.03.04 Date:18.10.20219). All information was gathered in accordance with the Helsinki Declaration. Permission was obtained from the researchers for the scales used in the study. Data collection proceeded only after receiving ethics committee and institutional approvals. Patients were provided with necessary information, and their consent was obtained.

Conflict of Interest

The authors declare that there is no conflict of interest.

Financial disclosure

No person/institution contributed financially for this study.

Author Contribution

Design: B.O.T., H.O., Data Collection or Processing: B.O.T., Analysis or Interpretation: B.O.T., H.O., Literature Search: B.O.T., Writing: B.O.T., H.O.,

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