



MATERNAL-FETAL ATTACHMENT LEVELS IN THE PRENATAL PERIOD AND THE FACTORS AFFECTING IT

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Abstract: Attachment, which begins in the prenatal period, is an important determinant for maternal and fetal/infant health. The mother, who is attached to her baby with love, contributes positively to the healthy growth and development of the baby. This study aimed to determine maternal-fetal attachment levels in the prenatal period and the factors affecting it. The study, which used a cross-sectional design, was conducted on women with pregnancy presenting to the obstetrics outpatient clinic of a state hospital. The study consisted of a total of 170 women with pregnancy who presented to the outpatient clinic for general control. The study data were collected face-to-face using a questionnaire and the Prenatal Attachment Inventory (PAI). The findings also indicated that the mean age of women with pregnancy was 27.26±5.62 (years), the mean current gestational week was 33.48±3.12 (week), and the mean PAI score was 65.54±10.40. A statistically significant relationship was determined between the mean PAI scores of the women with pregnancy and their income level, employment status, sex of baby, and getting the support of the spouse during pregnancy ($P<0.05$). In this study, the prenatal attachment level of women with pregnancy was found to be at a good level. The women with pregnancy who had a good income level, employed, had a baby with the desired sex, and had good support from their spouse during pregnancy were found to have better prenatal attachment levels. Knowing the factors that can affect attachment and assessing the attachment levels of women with pregnancy can help identify risky mothers-babies.

Keywords: Prenatal attachment, Maternal-fetal attachment, Pregnant, Midwife

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1. Introduction

Attachment is defined as the strong emotional bond that a person develops towards another person who they consider important (Çıldır et al., 2020; Çelik and Ergin, 2020). Prenatal attachment, on the other hand, is defined as the emotional intimacy between the mother and her unborn baby (Muller, 1993; Salehi et al., 2019; Ranjbar et al., 2020). Attachment begins in the prenatal period, increases as birth approaches, and continues to develop after birth (Akbarzade et al., 2017).

Attachment, which is a bi-directional process, increases the quality of emotional communication to the extent that the mother and baby can respond to each other's emotions (Palma et al., 2020). The establishment of a safe connection between mother and baby significantly affects the social and mental development of the baby's subsequent well-being (Dağlar and Nur, 2018; Hicks et al., 2018). The mother plays a key role in establishing a safe mother-baby bond (Palma, et al. 2020). Attachment, which begins in the prenatal period, is an important determinant for maternal and fetal/infant health (Smorti et al., 2020; Ponti et al., 2021). The mother, who is attached to her baby with love, can contribute positively to the healthy growth and development of the baby

(Çıldır et al., 2020; Ponti et al., 2021). On the other hand, in case of an inadequate attachment, an increased risk of anxiety and depression in the mother and neglect and abuse of the fetus/baby have been reported (Akbarzade et al., 2017; Dağlı, 2018; Salehi et al., 2019).

It is important to be aware of the factors that can affect prenatal attachment to develop a healthy mother-baby attachment (Camarneiro and Justo, 2017; Akbarzade et al., 2017; Vedova et al., 2019; Coşkun et al., 2019; Özdemir et al., 2020). In their study on 1473 women who were between their 17th and 32nd gestational week and who had at least one delivery before, Garthus-Niegel et al. (2019) reported that there was a negative relationship between fear of birth and prenatal attachment. In their study on 370 women with pregnancy, Coşkun et al. (2019) stated that experiencing distress in pregnancy negatively affected prenatal attachment but that compliance with the spouse and the planned pregnancy affected it positively. Karabulutlu et al. (2020) found in their study on 5173 women with pregnancy that the prenatal attachment levels of women with pregnancy who were older, were unemployed, had low income, lived in an extended family, and had a long marriage period were found lower. However, Palma et al. (2020)



determined that socio-demographic variables had no effect on attachment. In the same study, a negative correlation was reported between prenatal attachment and depression. Depression may form the basis of negative emotions and thoughts towards the unborn baby of the mother by affecting her approach to the fetus (Dagklis et al., 2016). In other studies conducted in the literature, the prenatal attachment level of women with pregnancy who are conceived by assisted reproductive techniques, have a baby of the desired sex, and have high social support have been reported to be high (Vedova et al., 2019; Ranjbar et al., 2020).

Studies carried out on mother-infant attachment in our country mostly address the postpartum period, and studies examining mother-infant attachment in the prenatal period are quite limited. This study was carried out to determine the level of prenatal attachment in women with pregnancy and the factors affecting it. The results of the study were thought to contribute to early diagnosis and timely intervention.

2. Materials and Methods

2.1. Participants

This cross-sectional and descriptive study was carried out between March 06, 2015 and July 30, 2015 in the obstetrics outpatient clinic of a state hospital. The study consisted of a total of 170 women with pregnancy who presented to the outpatient clinic for general control and who met the sample selection criteria.

Inclusion Criteria; Women with pregnancy who were in the third trimester (between 27th-40th gestational weeks), had no speech, hearing, or visual impairment, were aged 18 or older, and volunteered to participate in the research were determined as participants. It has been reported in the literature that prenatal attachment increases as the trimester progresses during pregnancy and the expectant mother begins to feel the baby's movements more intensely (Tunçel and Süt, 2018; Güney and Uçar, 2018). For this reason, third trimester pregnant women were included in the study.

Exclusion Criteria; Women with pregnancy who were in the first or second trimester, had speech, hearing or vision impairment, had multiple pregnancies, were aged under 18, had serious health problems were not included in the research.

2.2. Data Collection Tools

Two separate forms were used to collect the data.

The introductory information form, which was designed by the researchers, aimed to collect information about the socio-demographic characteristics and obstetric-gynecological features of the women with pregnancy. Also, the Prenatal Attachment Inventory (PAI) was used to measure the attachment level of women with pregnancy.

The Prenatal Attachment Inventory (PAI): The inventory was developed by Muller in 1993 to measure the prenatal attachment level and adapted to the Turkish context by Yılmaz and Beji (2013). There are 21 items in the PAI

that aim to measure emotional attachment to the fetus. The inventory has a 4-Point Likert-type scale. The minimum and maximum scores that can be obtained from the scale range between 21 and 84. High scores indicate high prenatal attachment, while low scores mean low prenatal attachment (Muller, 1993; Yılmaz and Beji, 2013).

2.3. Procedure

To fill out the questionnaires face-to-face, the women with pregnancy were taken to a room in the obstetrics outpatient clinic by the researcher, and each session took nearly 10-15 minutes.

2.4. Statistical Analysis

The statistical analysis of the data was done with the SPSS (IBM SPSS Statistics 24) software package. Descriptive statistics for continuous variables in our study included mean, standard deviation, and minimum and maximum values, and categorical variables were expressed as numbers and percentages. Kolmogorov-Smirnov ($n>50$) and Skewness-Kurtosis tests were conducted to see whether the scale scores in the study were normally distributed, and parametric tests were applied because the scores were normally distributed. Independent t-test or One-Way Analysis of Variance (ANOVA) was conducted to compare the mean measurements according to categorical data. Following the variance analysis, Duncan test was used to identify different groups. Pearson correlation coefficients were calculated to determine the relationship between continuous measurements. Statistical significance was accepted $P<0.05$.

3. Results

According to the findings, 38.9% of the women with pregnancy were determined to be primary school graduates, 71.2% were unemployed, 72.4% had a middle-income level, and 70.6% had a nuclear family type. Of the women with pregnancy, 73.5% stated that their pregnancy was not planned, and 84.7% stated that their baby's sex met their expectations. Also, 78.2% of them were found to receive support from their spouse during pregnancy, and 71.2% did not experience any problems during pregnancy (Table 1).

The findings also indicated that the mean age of women with pregnancy was 27.26 ± 5.62 (years), the mean length of marriage was 5.57 ± 4.59 (years), the mean number of pregnancies was 2.12 ± 1.25 , the mean current gestational week was 33.48 ± 3.12 (week), and the mean PAI score was 65.54 ± 10.40 (Table 2). No statistically significant relationship was observed between the PAI scores of the women with pregnancy and their age, duration of the marriage, number of pregnancies, and gestational weeks ($P>0.05$) (Table 3). On the other hand, a significant relationship was found between the PAI scores of the women with pregnancy and their employment status, income level, having a baby with the desired sex, and the support of the spouse during pregnancy ($P<0.05$). The women with pregnancy who were employed, had an

income that was more than expenses, had a baby with the desired sex, and received the support of the spouse had higher PAI scores (Table 4). Moreover, no significant

relationship was found between the PAI scores and the level of education, family type, planned pregnancy, and having problems during pregnancy ($P>0.05$) (Table 4).

Table 1. Distribution of socio-demographic and obstetric features of pregnant women

| Variables (N=170) | n | % |
|--|-----|------|
| Level of education | | |
| Primary | 66 | 38.9 |
| Secondary | 46 | 27.0 |
| University | 58 | 34.1 |
| Employment | | |
| Yes | 49 | 28.8 |
| No | 121 | 71.2 |
| Economic status | | |
| Income less than expenses | 26 | 15.3 |
| Equal income and expenses | 123 | 72.4 |
| Income is more than expenses | 21 | 12.4 |
| Family type | | |
| Core | 120 | 70.6 |
| Extended | 50 | 29.4 |
| Planned pregnancy | | |
| Yes | 120 | 70.6 |
| No | 50 | 29.4 |
| Having a baby with the desired sex | | |
| Yes | 144 | 84.7 |
| No | 26 | 15.3 |
| The support of the spouse during pregnancy | | |
| Yes | 133 | 78.2 |
| No | 27 | 15.9 |
| Partial | 10 | 5.9 |
| Problem with pregnancy | | |
| Yes | 49 | 28.8 |
| No | 121 | 71.2 |

Table 2. Distribution of mean scores by some introductory characteristics of the women with pregnancy

| Variables (n=170) | Mean | Std. Dev. | Min. | Max. |
|-----------------------------|-------|-----------|-------|-------|
| Age | 27.26 | 5.62 | 18.00 | 45.00 |
| Duration of marriage (year) | 5.57 | 4.59 | 1.00 | 19.00 |
| Number of pregnancies | 2.12 | 1.25 | 1.00 | 6.00 |
| Gestational age | 33.48 | 3.12 | 26.00 | 40.00 |
| PAI total score | 65.54 | 10.40 | 41.00 | 84.00 |

Table 3. Comparison of PAI scores and some personal characteristics of the women with pregnancy (n=170)

| | | (1) | (2) | (3) | (4) |
|---------------------------------|---|--------|--------|--------|--------|
| PAI total score (1) | r | 1 | | | |
| | P | | | | |
| Age (2) | r | 0.095 | 1 | | |
| | P | 0.217 | | | |
| Duration of marriage (year) (3) | r | -0.009 | 0.697 | 1 | |
| | P | 0.908 | 0.000* | | |
| Number of pregnancies (4) | r | -0.068 | 0.550 | 0.700 | 1 |
| | P | 0.379 | 0.000* | 0.000* | |
| Gestational age (5) | r | 0.097 | 0.005 | -0.003 | -0.061 |
| | P | 0.210 | 0.949 | 0.965 | 0.432 |

*Statistical significance ($P<0.05$), r= Pearson's correlation coefficient.

Table 4. Comparison of socio-demographic and obstetric characteristics of the women with pregnancy by their PAI total scores

| Variables (N=170) | Mean | Std. Dev. | Min. | Max. | *P |
|------------------------------------|---------|-----------|-------|-------|-------|
| Level of education | | | | | |
| Primary | 64.39 | 10.91 | 41.00 | 84.00 | .249 |
| Secondary | 67.09 | 9.91 | 46.00 | 84.00 | |
| University | 66.55 | 10.38 | 44.00 | 84.00 | |
| Employment status | | | | | |
| Yes | 69.29a | 9.52 | 46.00 | 84.00 | .003* |
| No | 64.02b | 10.40 | 41.00 | 84.00 | |
| Level of income | | | | | |
| Income less than expenses | 60.65b | 12.11 | 41.00 | 81.00 | .002* |
| Equal income and expenses | 65.59b | 9.51 | 44.00 | 84.00 | |
| Income is more than expenses | 71.24a | 10.67 | 43.00 | 84.00 | |
| Family type | | | | | |
| Core | 65.18 | 10.69 | 42.00 | 84.00 | .496 |
| Extended | 66.38 | 9.73 | 41.00 | 84.00 | |
| Planned pregnancy | | | | | |
| Unplanned | 64.04 | 11.32 | 41.00 | 84.00 | .263 |
| Planned | 66.07 | 10.04 | 43.00 | 84.00 | |
| Having a baby with the desired sex | | | | | |
| Yes | 66.06a | 10.16 | 41.00 | 84.00 | .024* |
| No | 58.08b | 13.11 | 42.00 | 84.00 | |
| The support of the spouse | | | | | |
| Yes | 66.59a | 10.29 | 41.00 | 84.00 | .032* |
| No | 61.00b | 9.75 | 42.00 | 75.00 | |
| Partial | 63.70ab | 11.10 | 47.00 | 81.00 | |
| Problems with pregnancy | | | | | |
| Yes | 64.96 | 9.49 | 41.00 | 81.00 | .647 |
| No | 65.77 | 10.78 | 42.00 | 84.00 | |

Significance levels according to ANOVA Test results; ^a, ^b, ^cShows the difference between groups (Dunca post-hoc test), *Statistical significance (P<0.05).

4. Discussion

This study aimed to determine maternal-fetal attachment levels in the prenatal period and the factors affecting it. In this study, the prenatal attachment level of pregnant women was found to be at a good level (65.54±10.40). In similar studies, prenatal attachment scale scores of women with pregnancy were found as follows: Smorti et al. (2020), 64.90±8.57; Coşkun et al. (2019), 62.35±11.28; Küçükkaya et al. (2020), 64.89±21.15; Tunçel and Süt (2019), 60.1±12.6; Ponti et al. (2021), 66.78±7.41. In our study, the attachment level of women with pregnancy was similar to those of the literature, and this was evaluated as a positive result.

In our study, the prenatal attachment levels of women with pregnancy who were employed were higher than those who were not. Similarly, Karabulutlu et al (2020), Dağlar and Nur (2018), Metin and Pasinlioğlu (2016), Kartal and Karaman (2018), and Çınar et al. (2017) reported that women with pregnancy who were employed had higher prenatal attachment levels than those who were unemployed. In the literature, in the majority of the studies conducted on this subject, the attachment levels of women who spent their pregnancy

working actively were reported to have higher attachment levels than those who did not. The contribution of women with pregnancy who were employed to the family economy and the satisfaction of working life were thought to affect prenatal attachment positively. On the other hand, the economic burden that a new individual would bring to the family was thought to negatively affect attachment among women with pregnancy who were unemployed because it increased anxiety.

Another factor that affected prenatal attachment was the income level. In our study, as the income level of the women with pregnancy increased, a significant increase was found in attachment scores (P=0.002). Similarly, Karabulutlu et al. (2020), Dağlar and Nur (2018), and Metin and Pasinlioğlu (2016) reported that prenatal attachment increased as the income status increased. Increased income level was thought to have a positive effect on attachment since the economic concerns of the mother would decrease.

The women with pregnancy who had a baby with the desired sex were found to have higher PAI scores (P=0.024). Vedova et al. (2019) and Durualp et al. (2017)

reported similar results. Having a baby with the desired sex and mother's preparations according to the sex of the baby were thought to have a positive effect on strengthening the maternal-fetal attachment.

The support of the spouse during the prenatal period relieves the woman with pregnancy psychologically and can help her cope with stressors. This support positively affects the mother-infant attachment by facilitating the adaptation of the woman with pregnancy to pregnancy and motherhood (Ponti et al., 2021). In the present study, the attachment scores of women who received full support from their husbands were higher ($p=0.032$). Similarly, Coşkun et al. (2019), Vedova et al. (2019), and Hopkins et al. (2018) reported higher prenatal attachment in women with pregnancy as the support of the spouse increased.

5. Conclusion

In this study, the women with pregnancy who had a good income level, had a baby with the desired sex, and had good support from their spouse during pregnancy were found to have better prenatal attachment levels. We think that the findings of our study can contribute to the literature about factors that may affect prenatal attachment.

Knowing the factors that can affect attachment and evaluating the attachment levels of women with pregnancy can help identify risky mothers and babies. Early diagnosis and timely intervention can improve attachment experience and the well-being of the child. Midwives/nurses and have important roles in initiating and maintaining attachment in the prenatal period. For midwives/ nurses, knowing the prenatal attachment levels of women with pregnancy during pre-natal routine follow-up and determining the factors affecting them is of significance in the planning and implementation of the education and care of the women.

Limitations

This study has some limitations. First of all, the results of the study apply to mothers included in the study; therefore, it cannot be generalized to all mothers. Second, mothers may have given unrealistic answers. For this reason, the reliability of the data is limited to the accuracy of the information provided by the mothers. Finally, the sample size was small because the study was conducted in a single center.

Author Contributions

The percentage of the author(s) contributions is present
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below. All authors reviewed and approved final version of the manuscript.

| | E.D. | S.İ. |
|-----|------|------|
| C | 50 | 50 |
| D | 50 | 50 |
| S | 50 | 50 |
| DCP | 50 | 50 |
| DAI | 50 | 50 |
| L | 50 | 50 |
| W | 50 | 50 |
| CR | 50 | 50 |
| SR | 50 | 50 |
| PM | 50 | 50 |
| FA | 50 | 50 |

C=Concept, D= design, S= supervision, DCP= data collection and/or processing, DAI= data analysis and/or interpretation, L= literature search, W= writing, CR= critical review, SR= submission and revision, PM= project management, FA= funding acquisition.

Conflict of Interest

The authors declared that there is no conflict of interest.

Ethical Approval/Informed Consent

All procedures performed in studies involving human participants are performed under the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. Ethics committee approval was obtained from the Ethics Committee of the university (issue: 050.00-2240, date: 29.01.2015) for the implementation of the research. Then, the written permission of the state hospital was obtained (issue: 50990011/770, date: 05.03.2015). The women with pregnancy who agreed to participate in the study were informed about the study, and their written consent was obtained.

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