The Influence of Anxiety and Dyadic Adjustment on Maternal–Fetal Attachment in High-Risk Pregnant Women

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Abstract

Purpose: This study attempted using a descriptive survey to elucidate the influence of anxiety and dyadic adjustment on maternal–fetal attachment in high-risk pregnant women.

Methods: The data used in this study were collected from March 3rd, 2015, to March 30th, 2015, and the participants were 118 pregnant women including those undergoing prenatal tests and those admitted to a delivery room in the obstetrics outpatient center of 3 university hospitals located in B, D, and Y after diagnosis with high-risk pregnancy during 20–38 weeks of gestation. Collected data were analyzed using frequency, percentage, mean, standard deviation, t-test, ANOVA, Pearson’s correlation, and stepwise regression analysis using the IBM SPSS 22.0 program. Results: The level of maternal–fetal attachment according to participants’ general and obstetric characteristics showed significant differences in history of childbirth, prenatal tests, and planned pregnancy. The factors that influenced maternal–fetal attachment were history of childbirth, prenatal tests, anxiety, and dyadic adjustment. Lower anxiety and high dyadic adjustment of high-risk pregnant women led to a high maternal–fetal attachment. Among them, anxiety was the factor with the greatest impact, explaining 20.5%. Conclusion: This study presents the need for development and application of prenatal nursing intervention to enhance maternal–fetal attachment by lowering anxiety through prenatal care in high-risk pregnant women and improving dyadic adjustment.

Keywords: Maternal–fetal attachment, High-risk pregnancy, Anxiety, Dyadic adjustment

1. Introduction

1.1. Background

As the age at first marriage has increased for both men and women in Korea, pregnancy in old age is also increasing for women. Old age in pregnant women is an important cause increasing high-risk pregnancy, and the percentage of high-risk pregnancy rapidly increases in pregnant women aged over 35 [1]. According to the statistics from the Health Insurance Review and Assessment Service, the percentage of high-risk pregnancy, which only accounts for 7% in pregnant women aged between 25 and 30, rapidly increases to 24% between 35 and 40 and 39% over 40. Furthermore, for the percentage of high-risk pregnancy, 42.8% of total pregnancies were under high-risk [2].
High-risk pregnancy refers to a case in which the health and life of pregnant women and fetuses are under risk due to abnormal pregnancy such as preterm labor, premature rupture of membrane, cervical incompetence, and placenta previa [3]. Pregnant women who are at high risk experience emotional anxiety during pregnancy such as concern over fetal health as well as their own, physical discomfort, and preterm birth, lowering their maternal confidence and potentially negatively affecting maternal–fetal attachment [4].

Maternal–fetal attachment refers to a behavior of interaction that pregnant women express towards their fetuses based on close relationship and is a critical factor affecting the achievement of a development task that occurs during pregnancy and successful establishment of the relationship between mother and child after birth [5]. Mercer [6] defined “becoming a mother” as an interaction that occurs while mother and fetus establish attachment as well as an expression of pleasure and appreciation for obtaining the ability to take care of an infant. “Becoming a mother” is portrayed as maternal–fetal attachment, which not only helps pregnant women adjust to their change of role as a mother during pregnancy and establish a maternal identity but also positively affects the attachment with their infants after birth [6]. Attachment established during early infancy has continuous effects into adulthood as well as in childhood. It has been proven that those who fail to establish attachment or who form unstable attachment not only have high probability of failing to achieve emotional stability and establish interpersonal relationships but also can develop psychopathological problems [7]. As the maternal–fetal attachment gained spotlight as a continuous aspect of forming attachment with children after birth, the importance of attachment established between mother and fetus at the early stage of life is being emphasized [8].

Mercer and Walker [9] stated that the transition to motherhood through pregnancy and labor is a vulnerable time when one experiences many challenges. However, “becoming a mother” is a life event that requires various changes and adaptations for women from physical, psychological, social, and behavioral aspects, and pregnant women at this time experience positive emotions such as a sense of achievement, happiness, stability, and control as well as negative emotions such as stress, anxiety, anger, depression, incompetence, and dissatisfaction [9]. Lee et al., [10] and Mercer et al., [11] suggested that negative life events such as high-risk pregnancy makes pregnant women experience anxiety and also affect the dyadic relationship. In particular, pregnant women’s experience of negative emotions such as anxiety not only affects the establishment of maternal–fetal attachment but also can act as a factor that threatens the health of the fetus and the mother [12].

Anxiety is one of the general emotions that high-risk pregnant women experience. Pregnant women’s negative emotional state such as anxiety makes them perceive their relationship with the fetus in a negative way, which also negatively affects the establishment of maternal–fetal attachment [13]. Since high-risk pregnant women experience higher levels of anxiety as their high-risk pregnancy state is more severe, anxiety has an effect on growth development and well-being state of pregnant women and fetuses during pregnancy [10]. Studies by Mercer et al., [11] and Becker [14] showed that high-risk pregnant women exhibit higher levels of anxiety than do normal pregnant women. Because high-risk pregnant women cannot accurately recognize their states regarding high-risk pregnancy and cannot predict fetus health in the future, they have a hard time sharing their emotions with the fetus and show anxious emotion, which eventually makes the establishment of maternal–fetal attachment difficult [15]. Therefore, active interests are required on emotional factors such as anxiety that interfere with maternal–fetal attachment in high-risk pregnant women.

Dyadic adjustment, which reflects the relationship with a spouse, is a behavioral and emotional process that couples go through to resolve various conflicts occurring in a married life environment and is pursued to achieve satisfaction and stability of married life [16]. The dyadic relationship during pregnancy is a relationship in which couples
learn reciprocity and support each other. The level of support from the spouse during this time affects pregnant women’s satisfaction with their marriage and dyadic relationship [17]. The quality of the dyadic relationship affects pregnant women, leading to unsatisfactory dyadic relationship, and pregnant women experience negative emotions as the level of support from the spouse is lower [8]. Studies by Mercer et al., [11] and Chung et al., [18] presented that dyadic relationship quality is a factor that has an important effect on pregnant women and that maternal–fetal attachment will be high as the mother’s relationship with her spouse is favorable and marital satisfaction is high. Thus, dyadic adjustment can be predicted as a crucial factor influencing emotion in high-risk pregnant women and their maternal–fetal attachment.

To date, it is challenging to find precedent studies in Korea that focus on variables of anxiety and dyadic adjustment and examine their effects on maternal–fetal attachment in pregnant women experiencing high-risk pregnancy. Therefore, based on the “becoming a mother” theory by Mercer [6], this study focuses on anxiety and dyadic adjustment variables among factors influencing pregnant women’s maternal–fetal attachment and elucidates their effects on maternal–fetal attachment in high-risk pregnant women. Furthermore, it aims to provide basic data for the development of nursing intervention that can improve maternal–fetal attachment in high-risk pregnant women.

1.2. Purpose

1. Examine the level of anxiety, dyadic adjustment, and maternal–fetal attachment in high-risk pregnant women.
2. Determine the level of maternal–fetal attachment according to general and obstetrical characteristics of high-risk pregnant women.
3. Verify the relationships among anxiety, dyadic adjustment, and maternal–fetal attachment in high-risk pregnant women.
4. Verify the effects of anxiety and dyadic adjustment on maternal–fetal attachment in high-risk pregnant women.

2. Methods

2.1. Study Design

This study used a descriptive survey to examine the effects of anxiety and dyadic adjustment on maternal–fetal attachment in high-risk pregnant women.

2.2. Participants

The study participants were 118 high-risk pregnant women including those who visited obstetrics and gynecology outpatient centers at 3 university hospitals located in the cities of B, D, and Y for prenatal tests after diagnosis with high-risk pregnancy during 20–38 weeks of gestation and those who were admitted to a delivery room. The sample size was calculated using G*power 3.1 with significance level at .05, power of test at 80%, effect size at 0.15, and 3 predictor variables. The result showed that the required minimum number of participants was 77, but taking into account the 20% nonresponse rate from the participants, a total of 120 were recruited. Excluding 2 questionnaires with insufficient responses, 118 collected questionnaires were used for statistical analysis.

2.3. Instruments

2.3.1. Anxiety: To measure anxiety, an anxiety state measurement tool developed by Spielberger et al. [19] and adapted by Kim and Shin [20] was used. This tool consists of 20 questions with a 4-point Likert scale: for each question, 1 point was allocated to
“strongly agree,” 2 points to “generally agree,” 3 points to “slightly agree,” and 4 points to “hardly agree.” Total scores ranged from 20 to 84, and reverse coding was used for negatively worded questions. Higher score indicates higher anxiety. Reliability of the tool at the time of development was Cronbach's $\alpha = .92$, and our study showed Cronbach's $\alpha = .92$.

2.3.2. Dyadic Adjustment: To measure dyadic adjustment, a dyadic adjustment scale developed by Spanier [21], supplemented and revised by Busby et al. [22], and adapted by Choi [23] was used. This tool consists of a total of 14 questions with 5 questions on agreement on opinions, 4 on satisfaction with relationship, 2 on cohesiveness, and 3 on expression of affection. A Likert scale was used with 1 point allocated to “not always” and 6 points to “always” for each question. Total scores ranged from 14 to 84, and reverse coding was used for negatively worded questions. Higher score indicates higher dyadic adjustment. Reliability of the tool at the time of development was Cronbach's $\alpha = .93$, and our study showed Cronbach's $\alpha = .90$.

2.3.3. Maternal–Fetal Attachment: To measure maternal–fetal attachment, a maternal–fetal attachment measurement tool developed by Cranley [5] and adapted and modified by Kim [24] was used. This tool consists of 24 questions comprising 5 subcategories including differentiation between oneself and a fetus, interaction with the fetus, speculation of fetal characteristics and intentions, achievement of roles, and self-provision. A Likert scale was used for each question with 1 point allocated to “disagree” and 4 points to “agree” according to response categories. Total scores ranged from minimum 24 to maximum 96, and higher score indicates higher maternal–fetal attachment. Reliability of the tool at the time of development was Cronbach's $\alpha = .85$ in Cranley’s study [5], and our study showed Cronbach's $\alpha = .90$.

2.4. Data Collection

Data collection for this study was conducted between March 3rd, 2015, and March 30th, 2015, with an agreement from chairs of 3 university hospitals and cooperation from obstetrics and gynecology outpatient center and delivery room. The researcher directly conducted the survey, and approximately 10 minutes were spent to finish a questionnaire. A total of 120 questionnaires were collected, and excluding 2 with unreliable responses, 118 questionnaires were used for the final analysis.

2.5. Data analysis

Collected data were analyzed using IBM SPSS Statistics 22. Means and standard deviations were used for general participant characteristics and each variable. To determine differences in the level of maternal–fetal attachment according to general characteristics, t-test and one-way ANOVA were used, and Duncan test was used for post-hoc analysis. Relationships among anxiety, dyadic adjustment, and fetal–maternal attachment in the participants were verified using Pearson's correlation coefficient, and stepwise multiple regressions were performed to confirm the factors influencing fetal–maternal attachment.

3. Results

3.1. Participants’ General And Obstetrical Characteristics

Participants’ mean age was 33.13 years with 66.1% below age 35 and 33.9% over age 35. For education level, 83.1% graduated from college, and 51.7% did not have occupations. Pregnant women with religion accounted for 60.2%, exceeding those without, and those with household monthly income ranging from 2,000,000 to 4,000,000 won.
made up 49.2%, marking the highest percentage. Mean gestational age was 30.4 weeks, with 35.6% in the second trimester and 64.4% in the third trimester. Pregnant women without history of childbirth accounted for 52.5%, those who planned pregnancy 85.5%, those who received regular prenatal tests 71.2%, and those who had experienced complication during previous pregnancy 39.8% (Table 1).

Table 1. Maternal–fetal attachment according to Participants’ General and Obstetrical Characteristics

<table>
<thead>
<tr>
<th>Variables</th>
<th>Categories</th>
<th>n (%)</th>
<th>Maternal–fetal attachment</th>
<th>M ± SD</th>
<th>t or F</th>
<th>p Duncan</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age(years)</td>
<td>&lt;35</td>
<td>78(66.1)</td>
<td></td>
<td>72.23 ± 12.02</td>
<td>−.560</td>
<td>.577</td>
</tr>
<tr>
<td></td>
<td>≥35</td>
<td>40(33.9)</td>
<td></td>
<td>73.50 ± 10.91</td>
<td>.</td>
<td></td>
</tr>
<tr>
<td>Education level</td>
<td>High school or less</td>
<td>20(16.9)</td>
<td></td>
<td>74.28 ± 12.29</td>
<td>−.446</td>
<td>.656</td>
</tr>
<tr>
<td></td>
<td>Above college</td>
<td>98(83.1)</td>
<td></td>
<td>72.87 ± 11.51</td>
<td>.</td>
<td></td>
</tr>
<tr>
<td>Occupation</td>
<td>Yes</td>
<td>57(48.3)</td>
<td></td>
<td>71.09 ± 10.79</td>
<td>−1.428</td>
<td>.156</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>61(51.7)</td>
<td></td>
<td>74.13 ± 12.25</td>
<td>.</td>
<td></td>
</tr>
<tr>
<td>Religion</td>
<td>Yes</td>
<td>71(60.2)</td>
<td></td>
<td>74.00 ± 12.79</td>
<td>−1.646</td>
<td>.102</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>47(39.8)</td>
<td></td>
<td>70.63 ± 9.37</td>
<td>.</td>
<td></td>
</tr>
<tr>
<td>Family income (Ten thousand won)</td>
<td>&lt;200</td>
<td>10(8.5)</td>
<td></td>
<td>77.2 ± 10.58</td>
<td>.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>200~400</td>
<td>58(49.2)</td>
<td></td>
<td>72.95 ± 12.10</td>
<td>1.067</td>
<td>.348</td>
</tr>
<tr>
<td></td>
<td>&gt;400</td>
<td>50(42.3)</td>
<td></td>
<td>71.42 ± 11.21</td>
<td>.</td>
<td></td>
</tr>
<tr>
<td>Gestational age (weeks)</td>
<td>20–28</td>
<td>42(35.6)</td>
<td></td>
<td>71.83 ± 12.80</td>
<td>−.573</td>
<td>.567</td>
</tr>
<tr>
<td></td>
<td>29–38</td>
<td>76(64.4)</td>
<td></td>
<td>73.11 ± 10.98</td>
<td>.</td>
<td></td>
</tr>
<tr>
<td>History of childbirth</td>
<td>0(^a)</td>
<td>62(52.5)</td>
<td></td>
<td>73.94 ± 10.17</td>
<td>.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1(^b)</td>
<td>44(37.3)</td>
<td></td>
<td>73.19 ± 12.82</td>
<td>3.795</td>
<td>.025</td>
</tr>
<tr>
<td></td>
<td>≥2(^c)</td>
<td>12(10.2)</td>
<td></td>
<td>64.17 ± 11.48</td>
<td>.</td>
<td></td>
</tr>
<tr>
<td>Prenatal tests</td>
<td>Regular</td>
<td>84(71.2)</td>
<td></td>
<td>74.32 ± 11.84</td>
<td>.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Irregular</td>
<td>34(28.8)</td>
<td></td>
<td>68.56 ± 10.10</td>
<td>.</td>
<td></td>
</tr>
<tr>
<td>Planned pregnancy</td>
<td>Yes</td>
<td>94(85.5)</td>
<td></td>
<td>74.04 ± 11.51</td>
<td>2.619</td>
<td>.010</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>24(14.5)</td>
<td></td>
<td>67.25 ± 10.63</td>
<td>.</td>
<td></td>
</tr>
<tr>
<td>Previous pregnancy complication</td>
<td>Yes</td>
<td>47(39.8)</td>
<td></td>
<td>71.30 ± 11.46</td>
<td>1.037</td>
<td>.302</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>71(60.2)</td>
<td></td>
<td>73.56 ± 11.72</td>
<td>.</td>
<td></td>
</tr>
</tbody>
</table>
3.2. Participants’ Level Of Anxiety, Dyadic Adjustment, And Maternal–Fetal Attachment

Participants’ level of anxiety, dyadic adjustment, and maternal–fetal adjustment had mean scores of 39.02 ± 8.61, 64.56 ± 12.45, and 72.66 ± 11.62, respectively (Table 2).

Table 2. Participants’ Levels of Anxiety, Dyadic Adjustment, and Maternal–Fetal Attachment

<table>
<thead>
<tr>
<th>Variables</th>
<th>Mean ± SD</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anxiety</td>
<td>39.02 ± 8.61</td>
<td>20.00</td>
<td>60.00</td>
</tr>
<tr>
<td>Dyadic adjustment</td>
<td>64.56 ± 12.45</td>
<td>33.00</td>
<td>84.00</td>
</tr>
<tr>
<td>Maternal–fetal attachment</td>
<td>72.66 ± 11.62</td>
<td>41.00</td>
<td>94.00</td>
</tr>
</tbody>
</table>

3.3. Maternal–Fetal Attachment According to Participants’ General and Obstetrical Characteristics

Verifying differences in maternal–fetal attachment scores according to participants’ general and obstetrical characteristics showed a difference dependent on childbirth history; pregnant women with a history of more than 2 childbirths showed lower maternal–fetal attachment than those with less than 1 childbirth ($F = 3.795, p = .025$). Pregnant women who received regular prenatal tests showed higher maternal–fetal attachment than those who did not, and the difference was statistically significant ($t = 2.493, p = .014$). Maternal–fetal attachment in pregnant women with planned pregnancy was higher than in those who did not plan the pregnancy, and the difference was statistically significant ($t = 2.619, p = .010$) (Table 1).

3.4. Relationships Among Participants’ Anxiety, Dyadic Adjustment, And Maternal–Fetal Attachment

Correlation among anxiety, dyadic adjustment, and maternal-fetal attachment in high-risk pregnant women showed that anxiety had a significant inverse correlation with maternal–fetal attachment ($r = −.305, p < .004$). Dyadic adjustment showed a significant positive correlation with maternal–fetal attachment ($r = .265, p < .001$) (Table 3).

Table 3. Relationships among Participants’ Anxiety, Dyadic Adjustment, and Maternal-fetal Attachment

<table>
<thead>
<tr>
<th>Variables</th>
<th>Anxiety</th>
<th>Dyadic adjustment</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$r(p)$</td>
<td></td>
</tr>
<tr>
<td>Maternal–fetal attachment</td>
<td>−.305</td>
<td>.265</td>
</tr>
<tr>
<td></td>
<td>(.004)</td>
<td>(.001)</td>
</tr>
</tbody>
</table>
3.5. Influence of Anxiety and Dyadic Adjustment on Participants’ Maternal–Fetal Attachment

To determine the factors influencing maternal–fetal attachment, childbirth history, prenatal tests, and planned pregnancy, which showed significant differences in maternal–fetal attachment among general and obstetrical characteristics, were treated as dummy variables and analyzed. Anxiety and dyadic adjustment that were correlated with maternal–fetal attachment were introduced as independent variables.

Test of regression analysis assumptions showed that all conditions were satisfied. In an error autocorrelation test, the Durbin-Watson statistic was 1.83, suggesting that there was no autocorrelation among independent variables. Tolerance of variables was in the range of 1.00–0.87, all above 0.1, showing that the regression model was suitable. The Variation Inflation Factor (VIF) was in the range of 1.00–1.14, lower than the standard 10, indicating that there were no issues of multicollinearity.

Anxiety, history of more than 2 childbirths, prenatal tests, and dyadic adjustment were shown as the factors influencing maternal–fetal attachment, explaining 20.5% ($F = 8.56, p < .001$). Among them, the variable with the greatest influence was anxiety ($\beta = -.243, p < .009$) (Table 4).

**Table 4. The Influence of Anxiety and Dyadic Adjustment on Maternal–Fetal Attachment**

(N = 118)

<table>
<thead>
<tr>
<th>Variables</th>
<th>B</th>
<th>$\beta$</th>
<th>t</th>
<th>p</th>
<th>$R^2$</th>
<th>Adj.$R^2$</th>
<th>F(p)</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Constants)</td>
<td>76.614</td>
<td>9.672</td>
<td>.000</td>
<td>.232</td>
<td>.205</td>
<td>8.56</td>
<td>(.000)</td>
</tr>
<tr>
<td>Anxiety</td>
<td>-.328</td>
<td>-.243</td>
<td>-.2813</td>
<td>.009</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>History of childbirth†</td>
<td>-8.779</td>
<td>-.229</td>
<td>-.2720</td>
<td>.001</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Prenatal tests²†</td>
<td>-5.831</td>
<td>-.228</td>
<td>-.2717</td>
<td>.007</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dyadic adjustment</td>
<td>.177</td>
<td>.190</td>
<td>2.156</td>
<td>.033</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

† Dummy coded.
Reference ¹) None or one time ²) Irregular
4. Discussion

Participants’ mean score for maternal–fetal attachment was 72.66. This is similar to the mean score of 70.56 in a study by Son and Park [25], who studied pregnant women who were hospitalized to maintain pregnancy due to preterm labor, and the mean score of 74.39 in a study by Kim [26], who studied high-risk pregnant women. However, it is lower than the mean maternal–fetal attachment score of 80.11 reported in a study by Kim [24], likely because the participants in Kim’s study [24] were normal pregnant women who did not have pregnancy complications or other diseases and therefore scored higher in maternal–fetal attachment. Hence, this study can support the previous study [4] suggesting that high-risk pregnant women have decreased or lower maternal–fetal attachment.

Among participants’ general and obstetric characteristics, maternal–fetal attachment showed significant differences in childbirth history, prenatal tests, and planned pregnancy. For childbirth history, the mean score of maternal–fetal attachment in high-risk pregnant women with history of more than 2 childbirths was 64.16, which was lower than the mean maternal–fetal attachment score of 73.13 in high-risk pregnant women with history of less than 1 childbirth. This supports the study results of Mercer et al., [11] and Chung et al. [18], showing that maternal–fetal attachment is higher in primigravida than in multigravida. The mean maternal–fetal attachment score of high-risk pregnant women who received irregular prenatal tests was 68.56, which was lower than the mean score of 74.32 in high-risk women who received regular prenatal tests. This supports the study result of Yarcheski et al., [12], showing that pregnant women who receive regular prenatal tests have higher maternal–fetal attachment. For maternal–fetal attachment of the subjects according to planned pregnancy, the mean score of high-risk pregnant women who planned the pregnancy was 74.04, higher than the mean score of 62.75 in high-risk pregnant women who did not plan the pregnancy. This is consistent with the results of previous studies by Chung et al., [18], Hwang [27], and Yarcheski et al., [12], showing a higher level of maternal–fetal attachment in planned pregnancy.

The result of this study confirmed that childbirth history, prenatal tests, anxiety, and dyadic adjustment were the factors influencing maternal–fetal attachment of high-risk pregnant women. Maternal–fetal attachment of high-risk pregnant women was shown to be higher with less history of childbirth, which supports the study results of Mercer et al., [11] and Chung et al., [18], suggesting that maternal–fetal attachment is higher in primigravida than in multigravida. Ahn [28] stated that pregnant women with history of more than 1 childbirth have lower intimacy, mystique, and expectation towards the fetus than do primigravida, and because they are distracted and cannot spend much time on maternal–fetal attachment because they have to take care of other children, their maternal–fetal attachment is lower than in primigravida. Maternal–fetal attachment was lower in high-risk pregnant women who received irregular prenatal tests, which supports the result of a meta-analysis on factors influencing maternal–fetal attachment [12], showing that prenatal test was one of the variables with the greatest influence on maternal–fetal attachment. Especially ultrasonography, which is included in prenatal tests, is used as a mediator that improves the relationship between pregnant women and fetuses and enhances maternal–fetal attachment in pregnant women [29].

For factors influencing maternal–fetal attachment in high-risk pregnant women, anxiety was shown to be the factor with the greatest influence. Higher anxiety levels in high-risk pregnant women were shown to have a negative effect on maternal–fetal attachment, which supports the results of previous studies by Hwang [17], Lee et al., [10] and Moon et al., [4], showing that maternal–fetal attachment is lower as anxiety is higher. Maternal–fetal attachment is the source of good interaction between mother and child after birth. Based on our study’s result that anxiety is a factor interfering with maternal–fetal
attachment, providing nursing intervention to reduce anxiety of high-risk pregnant women is required.

Higher dyadic adjustment of high-risk pregnant women was shown to have a positive effect on maternal-fetal attachment. This is consistent with the study results of Lee et al., [10] and Mercer et al., [11] who investigated paternal- and maternal-fetal attachment in depth showing that higher dyadic adjustment led to higher paternal- and maternal-fetal attachment. Furthermore, it is also consistent with the study results of Chung et al. [18] who examined the relationship between the quality of dyadic relationship and maternal-fetal attachment in couples during pregnancy showing that higher quality of dyadic relationship led to higher maternal-fetal attachment. Therefore, in order to improve the quality of dyadic relationship of high-risk pregnant women, nursing staff needs to be educated so that they can promote emotional support and positive communication between the couples in order to have a positive influence on the improvement of maternal-fetal attachment in high-risk pregnant women.

This study confirmed that anxiety, dyadic adjustment, history of childbirth, and prenatal tests were the factors that influence maternal-fetal attachment in high-risk pregnant women. Based on this, this study holds significance as we verified the need for development and application of prenatal nursing intervention program that can improve maternal-fetal attachment by reducing anxiety of high-risk pregnant women, which is currently showing a tendency to increase, and enhancing dyadic adjustment. However, because the subjects of this study are the high-risk pregnant women from 3 university hospitals, a limitation exists to generalize the result of this study to represent the entire high-risk pregnant women.

5. Conclusion

Examination of differences in maternal-fetal attachment according to participants’ general and obstetrical characteristics showed that pregnant women with history of more than 2 childbirths had significantly lower maternal–fetal attachment than those with history of less than 1 childbirth, pregnant women who received regular prenatal tests had significantly higher maternal–fetal attachment than those who received irregular prenatal tests, and pregnant women who planned the pregnancy showed significantly higher maternal–fetal attachment than those who did not. Participants’ maternal–fetal attachment showed a significant reverse correlation with anxiety and a significant positive correlation with dyadic adjustment of high-risk pregnant women. History of childbirth, planned pregnancy, anxiety, and dyadic adjustment were found to be factors influencing maternal–fetal attachment of high-risk pregnant women. As the anxiety of high-risk pregnant women was lower and dyadic adjustment was higher, their effects on maternal–fetal attachment were greater. Total explanatory power of these influence factors in maternal–fetal attachment was 20.5%, and the variable with the greatest influence among these factors was anxiety.

This study assesses the level of maternal–fetal attachment considering anxiety, dyadic adjustment, history of childbirth, and planned pregnancy during the prenatal care of high-risk pregnant women. These results present a need for the development and application of nursing intervention for high-risk pregnant women.

Based on our study results, we propose the following:

First, the study needs to be repeated with the addition of diverse variables that affect maternal–fetal attachment in high-risk pregnant women.
Second, further studies on the development of a nursing intervention program to enhance maternal–fetal attachment in high-risk pregnant women and validation of its effect are required.

References


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