

Influence of Social Support and Self-Esteem on Maternal-Fetal Attachment in Unmarried Pregnant Women

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Abstract

The present study aimed to identify factors affecting maternal-fetal attachment behaviors among unmarried pregnant women. The research participants included 105 unmarried pregnant women from 15 shelters for unmarried mothers around the country. The data were collected from January to February 2015 through a survey and descriptive statistics, *t*-tests, ANOVAs, Pearson correlations, and hierarchical regression analysis were analyzed using SPSS 20. The results suggest that current childcare plans and support from friends were significant factors affecting maternal-fetal attachment behaviors. The overall explanatory power of these variables for maternal-fetal attachment behaviors was 30.5%, with friend support being more influential than current childcare plans. This study indicates that prenatal care aimed at enhancing the maternal-fetal attachment of unmarried pregnant women would benefit from taking childcare plans and support from friends into consideration.

Keywords: Attachment, Childcare plan, Friend support, Self-esteem, Unmarried pregnant women

1. Introduction

1.1. Background

Recently, Korean society has increasingly adopted the openness of Western culture sexual attitudes, and stimulations of sexual desire through mass media have become widespread. This has thereby weakened the traditional sexual values in Korean society and has led to an increase in premarital sex [1]. As a result, the number of unmarried, single mothers is gradually rising, numbering 6,459 in 2005, 9,959 in 2011, and 13,000 in 2013 [2]. The factors responsible for this increase in single mothers include the relationship with family and friends and psychological factors [3].

Family-related factors include the parents' conservative attitudes towards sex, friend-related factors include the openness of friends' attitudes toward sex, and psychological factors include low self-esteem [3, 5]. As premarital pregnancy is considered an act of social deviance, unmarried pregnant women often become the subject of social stigma.

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Beyond this, they are also often neglected from societal support and familial support, so it creates a challenging pregnancy experience, including labor and delivery [4-5]. Compared to married pregnant women, unmarried pregnant women are less likely to receive sufficient nutrients needed before delivery, to participate in nursing sessions for health perception and management prior to delivery, and to maintain supportive personal relationships [6]. Additionally, they were less likely to show behaviors of fetal attachment compared to married pregnant women.

Fetal attachment refers to the emotional connectedness felt for the fetus by the pregnant mother during pregnancy. Maternal-fetal attachment, then, represent the level of preparedness in being a mother [7]. Based on Mercer [7], the “mother-becoming” begins at pregnancy and includes the initial social and psychological adaptations regarding pregnancy. Preparedness for becoming a mother largely influences adaptations made concerning the changing role as a mother.

The maternal-fetal attachment affects fetus’ brain development as well as development of the autonomic nervous system and stress coping abilities [8]. Additionally, it predicts the mother’s attachment with the infant after birth [9]. Finally, the maternal-fetal attachment formed during pregnancy appears to influence the child’s social development across the lifespan, beyond infancy, by helping form the foundation required for successfully accomplishing the developmental tasks in social and cognitive areas [8].

Levels of maternal-fetal attachment may vary depending on the marital status of the pregnant women [10]. Maternal-fetal attachments are positively influenced by support from spouses, family, and friends, but in the case of unmarried pregnant women, such support is often lacking and maternal-fetal attachments may be negatively affected [5, 10]. In Mercer’s [11] hypothetical model for mother-becoming, unmarried pregnant women were proposed as one of the higher risk groups due to difficulty of developing fetal attachment and acquiring maternal roles. Related causes were described to be a lack of social support and low self-esteem.

Social support is an important factor for maternal-fetal attachment [10] because it is considered an environmental influence for alleviating the lifestyles and the shock from pregnancy and delivery generally experienced by pregnant women [12]. Unmarried pregnant women tend to have low levels of social support due to issues such as social prejudice against premarital pregnancy, lack of family support, and loss of contact with the baby’s father [13]. Hence, such levels of support reported by unmarried women are lower than those reported by married pregnant women [13]. Further, lower levels of social support among unmarried pregnant women are associated with lower levels of social adaptations [5], and if anxiety and depressive levels are high, maternal-fetal attachment by the mother is less common [14].

A pregnant woman’s self-esteem plays an important role in recognizing and carrying out the roles of a mother [12]. The higher the self-esteem of pregnant women, the easier it is for them to adapt to the physical, emotional, and environmental changes and, in turn, show higher levels of maternal-fetal attachment [15]. However, unmarried pregnant women may experience a decrease in their levels of self-esteem due to the struggle, shame, guilt, uncertainty of the future, and depression following their unexpected pregnancy [16]. In particular, research demonstrates that lower levels of support from family and friends are related to lower levels of self-esteem [17].

As described above, it is possible that low social support and low self-esteem in unmarried pregnant women can disrupt the development of healthy fetal attachment. Therefore, there is a need for research to elucidate the effect of social support and self-esteem on maternal-fetal attachment behaviors. Currently, research has examined correlations between maternal-fetal attachment behaviors and levels of anxiety [18] and compared the levels of maternal-fetal attachment between teenage pregnant girls and married pregnant women [19], however, research specifically investigating the influence social support and self-esteem on maternal-fetal attachment is lacking.

In the present study, we investigated the influence of social support and self-esteem on

maternal-fetal attachment among unmarried women, and our data has been subsequently used as baseline data for the development of nursing interventions aimed at enhancing maternal-fetal attachment behaviors among unmarried pregnant women.

1.2. Purpose

The purpose of this study was to verify the influence of social support and self-esteem on maternal-fetal attachment among unmarried pregnant women. Specifically:

- The differences on social support, self-esteem, and fetal attachment of unmarried pregnant women are identified.
- Levels of social support, self-esteem, and fetal attachment among unmarried pregnant women are identified.
- Correlations between social support, self-esteem, and fetal attachment among unmarried pregnant women are identified.
- Factors that influence maternal-fetal attachment in unmarried pregnant women are clarified.

2. Methods

2.1. Study design

This is a descriptive study aimed at analyzing influencing factors of maternal-fetal attachment behaviors among unmarried pregnant women.

2.2. Participants and Data Collection

The participants in this study included 105 unmarried pregnant women who were between the gestation periods of 20 to 40 weeks and were admitted to one of 15 mother-and-child facilities for single mothers within Korea. The sample size was verified using G*Power 3.1 software, and results revealed a requirement of 109 subjects when the following inputs were made: an effect size of 0.15 for the multiple regression, a significance level of 0.05, a statistical power of 0.80, and a predictive variable value of 8. Among the 112 questionnaires completed, 7 were excluded due to unusable data, which left a total of 105 to be analyzed.

2.3. Instruments

2.3.1. Social Support: A tool created by Moon [3], which evaluates single mothers, was used for measuring levels of social support. The questionnaire for the study consisted of 16 items on a 5-point Likert scale, from 1 'not at all' to 5 'very likely.' Total scores ranged from 16 to 80, with higher values representing greater social support. Reliability of the tool has been previously established, with a Cronbach's alpha of 0.93. In this study, participants were categorized into 5 different support groups depending on the support provider, and tests of reliability demonstrated $\alpha=0.96$ for support by family, $\alpha=0.93$ for support by friends, $\alpha=0.96$ for support by teachers, $\alpha=0.96$ for support by religious officials, and $\alpha=0.94$ for support by the unwed father.

2.3.2. Self-esteem: The tool created by Rogenberg [20] and remodeled by Jon [21] was used for measuring levels of self-esteem. The tool consists of 10 questions, 5 positive and 5 negative. It uses a 4-point Likert scale from 1 'generally not true' to 4 'always true.' The total score for the scale has a range of 10 to 40. Due to reverse-coding of the negative statements, higher scores indicate higher levels of self-esteem. The reliability of the tool when first developed was Cronbach's $\alpha=0.85$, and in this study it was Cronbach's $\alpha=0.80$.

2.3.3. Maternal-fetal Attachment (MFA): Cranley [22] created a scale for

measuring maternal-fetal attachment (Maternal-Fetal Attachment Scale, MFAS), which was remodeled and modified by Park [22]. This revised version was used for the present study. The questionnaire consisted of 23 questions on a 4-point Likert scale, from 1 'generally not true' to 4 'always true.' Possible total scores range from 23 to 92 points, with higher scores indicating higher maternal-fetal attachment behaviors. At the time of scale development, the reliability of the tool was Cronbach's $\alpha=0.85$. In the study by Park [22] and in the present study, Cronbach's α was 0.85 and 0.91, respectively.

2.4. Ethical Approval

The research was conducted with approval from the Department of Research Ethics Committee at Kyungpook National University (IRB 2015-0010).

2.5. Data Analyses

Data was analyzed using IBM SPSS Statistics Version 20. Means and standard deviations were calculated to analyze general characteristics as well as each variable. To determine differences in levels of maternal-fetal attachments *t*-tests and ANOVAs were conducted. The relationships between social support, self-esteem, and maternal-fetal attachments were analyzed using Pearson correlation. Finally, in order to verify the factors that influence maternal-fetal attachments, hierarchical multiple regressions were performed.

3. Results

3.1. Maternal-Fetal Attachment According to General and Obstetrical Characteristics of Participants

Most participants were in their 20s (61.9%) and the next abundant age group was 10–19 years (23.8%). Regarding level of education, 44.8% of participants had attained a middle school education or less, and 72.4% had at least graduated high school. Nearly half (48.6%) of our sample indicated that they had future parenting plans to raise the baby themselves, while 36.2% said they would not raise the baby and 15.2% reported they had not made a decision yet. A current gestational period of 29–40 weeks accounted for 76.2% of participants and 20–28 weeks accounted for 23.8%. Participants who had previous experiences with childbirth comprised 20% of the sample, and the amount of participants who received prenatal care for the first time before 4 months of pregnancy was 44.8%. Further, the remaining 55.2% of the subjects had received prenatal care for the first time past 4 months of pregnancy. The percentage of participants whose child's father knew of the pregnancy was 78.1%, therefore, 21.9% did not know about the pregnancy.

We conducted an examination of the differences in maternal-fetal attachment scores according to both general and obstetric characteristics. Results revealed that unmarried pregnant women who indicated they wanted to raise the baby themselves had higher levels of maternal-fetal attachment compared to those who did not want to raise the baby themselves ($F=4.79$, $p=0.010$). The maternal-fetal attachment levels were also higher among unmarried pregnant women who had previous childbirth experience than among those who did not ($t=2.79$, $p=0.006$). Unmarried pregnant women who had received their first prenatal care before 4 months of pregnancy also had higher levels of maternal-fetal attachment compared to those who received first prenatal care after 4 months of having been pregnant ($t=2.31$, $p=0.023$; see Table 1).

Table 1. Maternal-Fetal Attachment According to General and Obstetrical

Characteristics of Participants (N=105)

Variables	Categories	n (%)	Maternal-fetal attachment		
			M±SD	t or F	P Scheffe
Age (years)	≤19	25 (23.8)	59.13±12.88	0.34	.714
	20–29	65 (61.9)	60.74±14.33		
	≥ 30	15 (14.3)	62.84±12.45		
Education	≤Middle school	47 (44.8)	61.44±12.19	0.60	.547
	≥high school	58 (55.2)	60.01±14.52		
Both parent survival	Yes	76 (72.4)	59.82±13.80	-.10	.321
	No	29 (27.6)	62.87±12.88		
Current baby plan	Nurture ^a	51 (48.6)	70.25±15.25	4.79	.010 (a) b,c
	Non-nurture ^b	38 (36.2)	62.75±13.25		
	Not decided yet ^c	16 (15.2)	59.50±12.50		
Gestational period (weeks)	20–28	25 (23.8)	57.33±12.24	-1.85	.670
	29–40	80 (76.2)	61.87±13.83		
Childbirth experience	Yes	21 (20.0)	67.92±14.49	2.79	.006
	No	84 (80.0)	58.93±12.65		
First prenatal checkup (months of pregnancy)	<4	47 (44.8)	63.94±12.64	2.31	.023
	≥4	58 (55.2)	57.71±12.18		
Baby's father's awareness of pregnancy	Yes	82 (78.1)	64.21±12.19	1.96	.053
	No	23 (21.9)	55.81±14.95		

3.2. Social Support, Self-Esteem, and Maternal-Fetal Attachment Scores

The mean scores ($\pm SD$) for social support and family support were 43.2±84.32 and 56.0±17.76, respectively. Additionally, the score for friend support was 56.00±14.08 and the score for teacher support was 51.2±13.76 points. Religious support had a score of 41.60±19.20 and support from the child's father had the lowest score, 38.4±4.95. Self-esteem was 26.4±4.95, and maternal-fetal attachment behavior was 47.4±10.59 (Table 2).

Table 2. Social Support, Self-esteem, and MFA Scores (N = 105)

Variable	Mean	SD	Range	Min	Max
Social support	24	84.32	80–400	81.6	39
Family support	3.2	17.76	16–80	16.0	0.4
Friends support	56.0	14.08	16–80	16.0	78.4
Teachers support	56.0	14.08	16–80	17.6	78.4
Religious support	51.2	19.20	16–80	16.0	76.8
Baby father's support	41.6	19.20	16–80	16.0	78.4
Self-esteem	26.4	10.59	10–40	24.23	37.0
MFA	47.4		23–92		68.9

3.3. Correlations between Social Support, Self-Esteem, and Maternal-Fetal Attachment

Correlations were run between social support and maternal-fetal attachment as well as self-esteem and maternal-fetal attachment. A positive association was found for both social support and self-esteem on maternal-fetal attachment. Specifically, friend support ($r=0.498, p<0.01$), facility personnel support ($r=0.314, p<0.01$), and baby father support ($r=0.270, p<0.01$) had significant positive relationships with maternal-fetal attachment. Conversely, family support and religious support were not related to maternal-fetal attachment (Table 3).

Table 3. Correlations between Social Support, Self-Esteem, and Maternal-Fetal Attachment (N=105)

	Social support	Family support	Friends support	Teacher support	Religious officials support	Baby father's support	Self-esteem
	<i>r (p)</i>						
MFA	.341 (.01)	.224 (.05)	.498 (.01)	.498 (.01)	.114 (.325)	.270 (.01)	.388 (.01)

3.4. Influencing Factors of MFA

To test the influence of having baby plans, planning (or not) to raise the baby by oneself, the timing of prenatal care, previous childbirth experience, and the baby's father knowledge of the pregnancy on maternal-fetal attachment, the variables were treated as dummy variables in the regression analysis. Among the domains of social support, friend support, teacher support, and baby father support, which had a correlation with maternal-fetal attachment, were integrated into the analysis.

Three stages were used to perform the hierarchical regression analysis. In Model 1, the primary influencing factors of maternal-fetal attachment, including having current plans for raising the baby, having plans not to self-raise the baby, the timing of prenatal care, previous childbirth experience, and the father's knowledge of the pregnancy, were included in the analysis. It was found that having current plans for raising a baby ($\beta=0.43, p=0.003$) and previous childbirth experience ($\beta=0.21, p=0.014$) significantly influenced maternal-fetal attachment. The explanatory power of Model 1 was 19.7% ($F=5.21, p<0.001$). In Model 2, social support factors including friend support, teacher support, and baby's father support were included. Results demonstrated that having plans for raising baby, plans of self-raising the baby ($\beta=0.31, p=0.027$) and friend support ($\beta=0.34, p=0.008$) had a significant influence on maternal-fetal attachment. The explanatory power of Model 2 was 31.1% ($F=5.32, p<0.001$). In Model 3, self-esteem was included, and results revealed that current plans for having a baby, plans for raising a baby ($\beta=0.29,$

$p=0.048$) and friend support ($\beta=0.30$, $p=0.035$) had a significant influence. The overall explanatory power was 30.5% ($F=4.78$, $p<0.001$; see Table 4).

Table 4. Influencing Factors of Maternal-Fetal Attachment (N=105)

Variables	Model 1			Model 2			Model 3		
	β	t	p	β	t	p	β	t	p
Current childcare plan (Non-nurture)	.12	.86	.391	.01	.035	.972	-.01	-.10	.922
Current childcare plan (Nurture)	.43	3.09	.003	.31	2.26	.027	.29	2.01	.048
Childbirth experience (Yes)	.25	2.51	.014	.17	1.80	.076	.16	1.65	.103
First prenatal checkup (4 months pregnant)	.09	.84	.405	.11	1.08	.283	.10	1.00	.320
Baby's father's awareness of pregnancy (Yes)	-.01	-.04	.970	-.01	-.02	.981	.01	.06	.954
Friend support				.34	2.71	.008	.30	2.15	.035
Teacher support				.03	.24	.809	.04	.36	.720
Baby's father's support				.00	.00	.998	-.00	-.03	.973
Self-esteem							.07	.60	.552
R^2		.243			.383			.386	
Adj. R^2		.197			.311			.305	
F (p)		5.21 (<.001)			5.32 (<.001)			4.78 (<.001)	

4. Discussion

In the present study, the influence of social support and self-esteem on maternal-fetal attachment among unmarried pregnant women was examined. The mean score for maternal-fetal attachment was 47.4. This result is lower than that reported by Park (69.9) [23] and Lee, *et al.*, (69.4) [15]. However, this finding is consistent with research by Hwang [18] stating that the level of maternal-fetal attachment of unmarried pregnant women is lower than that of married pregnant women. Unmarried pregnant women, may

experience difficulty in developing maternal-fetal attachment due to shock and the lack of support from the father and family [5, 13, 18]. Unmarried pregnant women may not form a stable attachment with the fetus due to low social support and, in turn, may not perform the maternal role required [13, 18]. Pregnant women with low maternal-fetal attachment often lack the ambition for good health and, as a result, the newborn's health is often poor as well [28]. Kang [29] found that if stable attachment between mother and baby is not formed during pregnancy, the attachment towards an infant also fails and may eventually lead to factors associated with child abuse. There is also the possibility that if the maternal-fetal attachment is not stabilized during pregnancy, the newly born child's cognitive and social developmental process may be undermined. Therefore, an intervention for the promotion of maternal-fetal attachment in unmarried pregnant women is needed.

With regard to factors influencing the maternal-fetal attachment of unmarried pregnant women, plans for raising a baby and friend support were found to have the largest effects on maternal-fetal attachment.

In a qualitative study by Lim, *et al.*, [24], it was reported that unmarried pregnant women tend to acquire increasingly ambivalent feelings in response to the unexpected pregnancy, but the thought of raising the baby during the process of engagement with the moving fetus encouraged the pregnant women to feel more attachment towards the baby in the womb. In the context of unmarried pregnant women who decide to raise the baby themselves, engagement through fetal movement usually increasing and the urge to protect the baby also grows. Needless to say, maternal-fetal attachment is also strengthened and leads to increased adoption of maternal roles.

Unmarried pregnant women who received greater support from friends were reported as more likely to strengthen maternal-fetal attachment than those with less friend support. The relationship with friends differs from family relationships in their voluntary and mutually dependent nature [24]. Friends can be sources of social support as a different nature compared to family [14]. The social support received from friends contributes to one's self-concept and cognitive development and also has an effect on the social adjustments later on in adulthood [25]. Particularly in the case of unmarried pregnant women with negative support from family and the child's father, most of their friends were other unmarried pregnant women in the facilities [4, 25]. These women suffered similar pains and sufferings of being an unmarried pregnant woman and also experienced an emotionally and psychologically hard time together, so they were an effective source of aide and help to each other [4]. Hence, it is believed that on behalf of the lacking family and spouse support, the support unmarried pregnant women receive from friends is considered an important factor in influencing maternal-fetal attachment.

In this study, self-esteem was not a factor influencing maternal-fetal attachment, and these results did not coincide with the results of previous studies [11, 15] asserting that higher self-esteem translated to higher maternal-fetal attachment. The β value of friend support on maternal-fetal attachment was 0.30, and this was lower than the second stage β value of 0.34. This addresses the possibility that the mediator effects [26] of self-esteem could have acted on the relationship between social support and maternal-fetal attachment. This should be further investigated in future studies to verify the presence of mediator effects of self-esteem in the relationship between social support and maternal-fetal attachment.

In the present study, the primary factors influencing the maternal-fetal attachments of unmarried pregnant women were friend support and the plans to raising a child. Of the two factors, the variable that had a greater influence was friend support. The results of this study became the basis for verifying that unmarried pregnant women's friend support and plans of raising a baby contributes to the strengthening of maternal-fetal attachment, and we will be able to use these results as baseline data for the development of maternal-fetal nursing interventions. However, this study considered only unmarried pregnant women at

the care facility, thus generalizability of the study results is limited.

5. Conclusion

The purpose of this study was to better understand the influence of social support and self-esteem on maternal-fetal attachment in unmarried pregnant women and to offer baseline data for the development and implementation of nursing interventions promoting maternal-fetal attachment. Findings suggest that plans to raise a baby and support from friends positively influence maternal-fetal attachment in unmarried pregnant women. Overall, this study indicates the need for maternal-fetal nursing interventions. We recommend that future research investigates the mediating effect of self-esteem on the relationship between social support and maternal-fetal attachment. Further, we suggest that nursing intervention programs be developed for the promotion of maternal-fetal attachment and to further investigate the effects of friend support and plans of raising a child among unmarried pregnant women.

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