

Social Support and Maternal-Fetal Attachment in Unmarried Pregnant Women in Korea: Does Self-Esteem Play a Mediating Role?

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Abstract

This study examined the association between social support and maternal-fetal attachment and explored the mediating effect of self-esteem on this relationship in unmarried pregnant women in Korea. Data were collected from 105 unmarried, pregnant, Korean women who were residents of 15 welfare facilities. Social support, self-esteem, and maternal-fetal attachment were assessed using structured questionnaires. The mediating effect of self-esteem was analyzed using linear regressions and a Sobel test. Self-esteem partially mediated the relationship between social support and maternal-fetal attachment. Results from this study suggest that interventions focusing on both social support and self-esteem might be more useful for increasing maternal-fetal attachment in this population than interventions that only target either social support or self-esteem.

Keywords: Social support, Attachment, Unmarried mothers

1. Introduction

1.1. Background

The number of single mothers in Korean society is increasing. According to studies on the formation of single-parent families, the number of single mothers increased from 7,774 in 2007 to 9,959 in 2011, and was greater than 13,000 in 2013 [1].

Pregnancy is a natural developmental milestone in a woman's life cycle. However, pregnancy has mental, emotional, and social effects that produce stress and anxiety [2]. In particular, unmarried pregnant women experience pressure and difficulty giving birth because they do not receive support from their families and society because they are thought to have an unconventional sex lifestyle and are perceived negatively.

Unmarried pregnant women are less likely to follow-through with prenatal care, including maintaining supportive relationships, health, and nutrition compared to married pregnant women [3]. Fetal attachment is also lower in unmarried versus married pregnant women [4]. In addition, prenatal care and birth outcomes are not very promising for unmarried pregnant women. Recognition of pregnancy in unmarried pregnant women occurs at 4.3 months on average, and they receive fewer prenatal checkups (3.9 on average) than married pregnant women (11 on average). The average birth weight of babies born to unmarried women is 3.1 kg, which is considerably lower than average birth weight [5].

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Maternal-fetal attachment (MFA) is maintaining a close cognitive, emotional, and sacrificial relationship between mother and fetus. This attachment means the mother has taken on a motherhood role. This attachment also signifies the beginning of their interaction before the birth of that child [6]. Pregnant women's MFA influences the fetal brain, autonomic nerve system development, and the ability to cope with stress [7]. MFA is the strongest determinant of infant attachment after birth, so it is a critical part of prenatal care [8]. In other words, if a mother has attained MFA, she can successfully acquire infant attachment; MFA sets the groundwork for an infant's successful social, emotional, and cognitive development [9].

A pregnant woman's marital status can influence MFA. In previous studies, unmarried pregnant women had lower MFA than married pregnant women. These studies proposed that unmarried pregnant women are at high risk for finding the motherhood role difficult, lack social support, and have low self-esteem [4, 10, 11].

Social support is an environmental factor that not only reduces the shock of daily events, but also reduces the shock of pregnancy and labor [11]. Social support is a strong predictor of MFA [12]. Unmarried pregnant women who receive a lot of social support are better at social adaptation [12]. They also have low levels of anxiety and depression [13]. However, unmarried pregnant women experience a lack of family support and social prejudice because they became pregnant before marriage. In addition, many lost contact with their families. Thus, these women have low levels of social support [14]. Unmarried pregnant women have less social support compared to normal mothers [13].

Pregnant women with higher self-esteem have higher MFA [15]. However, most unmarried pregnant women have low self-esteem, which hinders MFA [10]. Unmarried pregnant women have low self-esteem because of society's negative perception, self-discrimination, and child adoption. In addition, low self-esteem is related to depression and anxiety due to problems with nurturing decisions, economical circumstances, and severance from peers [14]. A previous study found that unmarried pregnant women's self-esteem increased as they received more support from families and friends [15].

As described above, low social support acts as a negative factor in forming MFA for unmarried pregnant women. In addition, support from family, friends, and society is related to unmarried pregnant women's self-esteem. However, previous studies have only shown that social support influences MFA and self-esteem in unmarried pregnant women. How social support impacts MFA has not been clarified.

Therefore, this study will test mediating effects of self-esteem in relation to social support and MFA. This study will provide baseline data for intervention research on promoting MFA in unmarried pregnant women by improving their self-esteem.

1.2. Purpose

The purpose of this study was to examine the relationship between social support and MFA, and to explore the mediating effect of self-esteem in this relationship in unmarried pregnant women.

2. Methods

2.1. Study design

This was a descriptive and cross-sectional study that used a self-report questionnaire. As shown in Figure 1, a variable functions as a mediator when it meets the following criteria: (1) variations in levels of the independent variable significantly account for variations in the dependent variable (Figure 1, path a); (2) variations in levels of the independent variable significantly account for variations in the mediator variable (Figure 1, path b); (3) when paths a and b are controlled for, a previously significant relationship

is no longer significant, with the strongest demonstration of mediation occurring in path c.

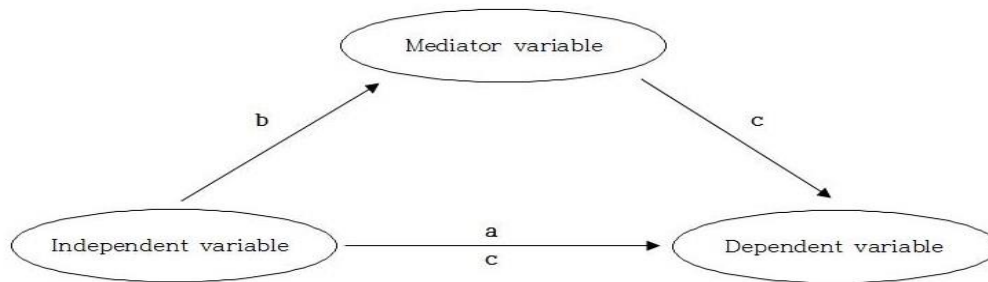


Figure 1. Mediating Model

2.2. Participants and Data Collection

Participants were 105 unmarried pregnant women receiving shelter services from 15 facilities for unmarried mothers in Korea. The inclusion criteria were pregnant women who were in the 24th–38th week of pregnancy who agreed to participate. The exclusion criteria were the presence of a chronic disease and/or any symptoms of pregnancy-induced disease. The required sample size for multiple regression using the .05 significance level (α), .90 statistical power ($1-\beta$), and an effect size (d) of .15 was calculated using G*Power 3.1. The required sample size was 88, but 200 women were invited to participate to account for non-response rate. Two hundred questionnaires and informed consent sheets were mailed to all 33 facilities in Korea, and 112 completed questionnaires from 15 facilities were returned in sealed envelopes to the researcher (response rate = 56.0%). Seven questionnaires with missing data were excluded from the analyses.

2.3. Instruments

2.3.1. Social Support: Social support was measured using the Social Support Inventory developed by Moon [17]. This instrument consists of 16 items rated on a 5-point Likert scale, with higher scores indicating higher perceived social support. Internal consistency/reliability (Cronbach's $\alpha = .93$) and content validity were established for use of this instrument with unmarried Korean mothers [17]. This scale also showed good internal consistency/reliability in this study (Cronbach's $\alpha = .99$).

2.3.2. Self-esteem: Self-esteem was measured using Rosenberg's [18] widely used 10-item instrument, in which each item is rated on a 4-point scale. Total scores range from 10 to 40, with higher scores indicating higher self-esteem. This instrument showed good internal consistency/reliability (Cronbach's $\alpha = .80$). This scale is a validated measure of self-esteem in Korea [19].

2.3.3. Maternal-fetal Attachment (MFA): MFA was measured using the Maternal-Fetal Assessment Scale by Cranley [6]. This scale was translated into Korean by Park [20]. It consists of 23 items rated on a 4-point Likert scale, with higher scores indicating higher MFA. This instrument showed good internal consistency/reliability (Cronbach's $\alpha = .91$).

2.4. Ethical Approval

The study protocol was approved by the Institutional Review Board at the K National University in Korea (IRB 2015-0010).

2.5. Data Analysis

Data were analyzed with SPSS software (version 20; IBM Corporation, Armonk, NY, USA). Descriptive statistics (frequencies, means, and standard deviations) were used to describe the general and obstetric characteristics and major variables. Pearson correlation coefficients were used to identify relationships between MFA and influencing variables. Stepwise multiple regression analysis was used to test the mediating effect of self-esteem on the relationship between social support and MFA. Finally, a Sobel test was used to test the statistical significance of the meditating effect.

3. Results

3.1. General and Obstetric Participant Characteristics

Almost all subjects (61.9%) were in their 20s. About half of the participants (55.2%) had completed high school or more, and 48.6% reported that they decided to raise their baby after delivery (versus giving the baby up for adoption). More than two-thirds of the sample (76.2%) were 29–40 weeks pregnant, and 80.0% were expecting their first baby. Twenty-one-point-nine percent of women reported that their partner did not know about the baby (Table 1).

Table 1. General and Obstetric Subject Characteristics (N = 105)

Variables	Categories	n (%)
Age (year)	≤19	25 (23.8)
	20–29	65 (61.9)
	≥30	15 (14.3)
Education	≤Middle school	47 (44.8)
	≥High school	58 (55.2)
Baby plan	Nurture	51 (48.6)
	Non-nurture	54 (51.4)
	Not decided yet	
Gestational age (week)	20–28	25 (23.8)
	29–40	80 (76.2)
Childbirth experience	Yes	21 (20.0)
	No	84 (80.0)
Unmarried partner's knowledge of the baby	Yes	82 (78.1)
	No	23 (21.9)

3.2. Social Support, Self-esteem, and MFA Scores

Mean social support score was 50.90 (SD = 12.43), mean self-esteem score was 26.4, and mean MFA score was 47.40 (SD = 10.59) (Table 2).

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

Variable	Mean	SD	Range	Min	Max
Social support	50.90	12.43	16–80	21.10	74.10
Self-esteem	26.40	4.59	10–40	12.00	37.00
MFA	47.40	10.59	23–92	24.23	68.90

3.3. Correlation between Social Support, Self-esteem, and MFA

Pearson's correlation coefficients were calculated to assess the relationship between all variables of interest. There was a significant positive correlation between social support and self-esteem ($r = .351, p < .001$), and there was a significant positive correlation between social support and MFA ($r = .341, p < .001$). In addition, there was a significant positive correlation between self-esteem and MFA ($r = .388, p < .001$).

Table 3. Correlations between Social Support, Self-esteem, and MFA (N=105)

Variable	Social support	Self-esteem	MFA
	r(p)		
Social support	1		
Self-esteem	.351 (<.001)	1	
MFA	.341 (<.001)	.388 (<.001)	1

3.4. Mediating Effects of Self-esteem and Sobel Test

To confirm whether self-esteem mediates the relationship between social support and MFA, three separate regression equations were calculated. The first regression equation showed that social support significantly influenced MFA ($\beta = .341, p < .001$). The second regression equation showed that social support significantly influenced self-esteem ($\beta = .351, p < .001$). The third regression equation showed that social support and self-esteem significantly influenced MFA ($\beta = .243, p < .001$), and when social support was controlled for, self-esteem significantly influenced MFA ($\beta = .306, p < .001$).

The effect of social support on MFA was less in the third equation than in the first equation ($\beta = .243$ vs. $\beta = .351$). This indicates partial mediation, such that social support had direct effects on MFA, but indirectly affected it via self-esteem (Table 4) (Figure 2). A Sobel test was performed to assess mediation. The results revealed that self-esteem was a significant mediator ($z = 2.81, p < .001$) (Table 5).

Table 4. Mediating Effects of Self-esteem (N = 105)

	B	β	R ²	R ² Adj.	F	p
Step 1						
Social support → MFA	.258	.341	.116	.108	13.553	<.001
Step 2						
Social support → Self-esteem	.208	.351	.123	.115	14.503	<.001
Step 3						
Social support → MFA	.177	.243	.198	.183	12.625	<.001
Self-esteem → MFA	.392	.306				

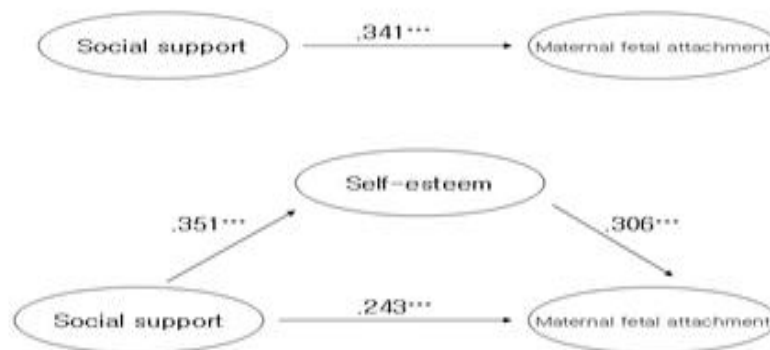


Figure 2. Relationship between Social Support and MFA: The Mediating Effect of Self-esteem

Table 5. Sobel test for Mediating Effects of Self-esteem

Path	a (SEa)	b (SEb)	Zab
Social support → Self-esteem	.208	.497	2.81
→ MFA	(.056)	(.116)	(<i>p</i> < .001)
Social support → MFA			

4. Discussion

A study on 105 unmarried pregnant women revealed that their self-esteem partially plays a mediating role in the relationship between social support and MFA. The main results are discussed below.

In this study, participants' average MFA score was 47.40. This is considerably lower than the average MFA score in married pregnant women of 68.5 [2] and 69.4 [9] measured using the same tool in Korea. In addition, the results from other countries are quite similar to the Korean study results, *i.e.*, marriage is a predictor of MFA [10], and adolescent pregnant women in stage 1 pregnancy have lower MFA scores than married pregnant women. Mercer [15] suggested that partners' supportive behaviors can be highly correlated with MFA in pregnant women. The higher the marriage adjustment, the greater the increase in MFA [19].

However, in unmarried pregnant women, the fathers are rarely aware of the pregnancy, and, in most cases, fathers severed contact with the mothers after they found out [14]. Fathers shift responsibility for the pregnancy and labor to mothers. For this reason, unmarried pregnant women rarely receive support from their partners [17, 21]. One study measured level of social support in unmarried pregnant women by social support group (*i.e.*, family, friends, facility managers, and partners). The results showed that unmarried pregnant women received very little support from their partners [13]. In that study, 21.9% of participants' partners knew about the pregnancy. As mentioned above, unmarried pregnant women are considered to be at high risk for facing difficulties acquiring MFA. Partner support is a critical factor for acquiring MFA.

Pregnant women's perception of social support directly affects MFA, but this attachment is also affected by their self-esteem. Research on the relationship between social support and self-esteem reveals that as elders' perception of social support increased, their self-esteem increased [22]. In addition, support from parents and teachers can help increase self-esteem in adolescents [23]. Finally, self-esteem in unmarried pregnant women increased as their perception of social support increased [24]. Therefore, the perception of social support in unmarried pregnant can affect their self-esteem.

According to social ego theory, children develop self-esteem by internalizing feedback and appraisal from interacting with their parents, teachers, and peers. In other words, experiencing recognition and being accepted builds self-esteem. In contrast, experiencing rejection and being despised can damage self-esteem [23]. Therefore, acts of acceptance and recognition may improve self-esteem in unmarried pregnant women. It has been suggested that social support can reduce negative effects of stress on self-esteem, and can have a positive effect on adapting to a changing environment [16]. Adapting to the postnatal motherhood role is important for unmarried pregnant women. It may be that they are able to adapt to the motherhood role because of social support and improved self-esteem.

The partially mediating role of self-esteem on the relationship between social support and MFA implies that nursing interventions that increase self-esteem may be effective. Although self-esteem does not fully mediate the relationship between social support and MFA, the results suggest that strategies that increase mothers' self-esteem can be more effective than those that only focus on social support.

This is the first study to find that self-esteem mediates the relationship between social support and MFA. However, the results may not generalize to all unmarried pregnant women because participants were limited to unmarried pregnant women in welfare facilities.

5. Conclusion

The above results demonstrate that self-esteem partially mediated the relationship between social support and MFA. These findings suggest that interventions focusing on both social support and self-esteem might be more effective for enhancing MFA in unmarried pregnant women in Korea than interventions that only target either social support or self-esteem.

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