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Influencing factors on prenatal depression in unmarried pregnant women

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Abstract---The results of this study is show that the higher the self-control and the lower the anxiety, the higher the self-control and the lower the anxiety level, the higher the level of prenatal depression is assessed and Based on this, the there is a need to develop and apply nursing interventions for unmarried pregnant women. Data were analyzed using IBM SPSS 24.O through mean and standard deviation, t-test, ANOVA, Pearson correlation, and stepwise regression analysis. The results showed that self-control had a negative correlation. In addition, the factors affecting prenatal depression in unmarried pregnant women were self-control and anxiety, and the explanatory power was 24.7%. Based on the results of this study, it is necessary to develop a nursing intervention program to effectively manage the prenatal depression and postpartum depression clusters of unmarried pregnant women.

Keywords---*self-control, anxiety, prenatal depression, unmarried pregnant women.*

Introduction

Overseas, approximately 5–15% of pregnant women experience depression (Koh et al., 2019), and in Korea, it has been reported that 12–36% of pregnant women experience prenatal depression (Lee 2020; Lee et al., 2013). Pregnant women with prenatal depression are five to six times more likely to experience postpartum depression than normal pregnant women (Kim et al., 2012). In addition, prenatal depression is a strong determinant of postpartum depression (Hwang 2020). Prenatal depression is a common problem; similar to postpartum depression, but its importance has been overlooked compared to postpartum depression (Kim et al., 2012).

Recently, premarital sex has become prevalent in our society due to the influx of Western society's open sexual culture and the weakening of traditional sexual relations. However, with the current level of sex education, it is difficult for

unmarried men and women to control pregnancy on their own through appropriate contraceptive management. Hence, the number of single pregnant women in Korea has rapidly increased. Pregnancy and delivery are important events that can cause high stress in a woman's life. During pregnancy, women experience various physical, emotional, social, and role changes (Lindgren 2001). In particular, physical discomfort such as morning sickness and weight gain due to rapid hormonal changes, along with changes in sleep quality, fear of a high-risk pregnancy, uncertainty regarding the child's gender, and the future burden of child rearing, lead to anxiety or depression in pregnant women (Lee et al., 2006).

Pregnant women with prenatal depression have poor health. Prematurity, low birth weight, delayed perinatal growth, and increased fetal activity have been observed in pregnant women who depression during pregnancy (Lee et al., 2006; Kim 2021). Moreover, pregnant women with depression show less interest in the fetus and lower interaction with it (Leigh et al., 2008). In particular, unmarried pregnant women experience difficulties with successful pregnancy and childbirth because they do not receive support from society and family due to the social prejudice against premarital pregnancy and the negative perception that they are sexually promiscuous women. Further, it was found that unmarried pregnant women engage in fewer prenatal nursing activities, such as nutrition, health care, and supportive interpersonal relationships than married women (Lee et al., 2006; Kim 2021), and their level of fetal attachment was also reported to be lower than that of married women (Hwang 2020; Hwang 2005). The prenatal management and childbirth results for unmarried pregnant women were also not positive. The average time it took for unmarried pregnant women to recognize the fact of their pregnancy was 4.3 months, and the average number of prenatal visits was only 3.9, which was significantly lower than the average number of antenatal visits (11 or more) for pregnant women. It was somewhat lower (Lee et al., 2006; Leigh et al., 2006). However, not all pregnant women experience prenatal depression. Mercer et al. reported that the relationship between a pregnant woman and her spouse and a sense of self-control were factors that protected pregnant women from prenatal depression (Lee et al., 2006; Kim 2021). (Mercer et al., 1986) presented a theoretical model in which the level of prenatal depression decreased with a higher quality spousal relationship and a higher sense of self-control. Self-control is the degree to which one considers changes in one's life to be within own control (Kim et al., 2012; Hwang 2020; Hwang 2005). Women with a high sense of self-control experience fewer negative emotions, such as depression, because they evaluate themselves as capable of managing the stress of a life event, such as pregnancy, within their control (Hwang 2020; Hwang 2005; Lee et al., 2006). Studies have reported a low level of postpartum depression in pregnant women with a high sense of self-control (Hwang 2005; Kim et al., 2012).

As discussed above, there is a need for studies to investigate and confirm the degree of prenatal depression in unmarried pregnant women, which negatively affects such women's health as well as the growth and development of the fetus. Such research is important for preventing prenatal depression in unmarried pregnant women and for deriving a nursing intervention to give birth to healthy children. Although self-control and prenatal depression in pregnant women have been reported on, few studies have investigated prenatal depression in pregnant women.

Therefore, in this study, the relationship between self-control, anxiety, and prenatal depression, as well as the factors affecting prenatal depression, were identified and provided as basic data for a nursing intervention program for the management of prenatal depression in unmarried women.

Research design

The main purpose of this study was to determine the relationship between self-control, anxiety, and prenatal depression for single pregnant women.

- 1) Measure the degree of self-control, anxiety, and prenatal depression among unmarried pregnant women.
- 2) Identify the differences in fetal attachment behaviors according to the general characteristics of unmarried pregnant women.
- 3) Identify the relationship between self-control, anxiety, and prenatal depression in single pregnant women.
- 4) Analyze factors influencing prenatal depression in unmarried pregnant women.

3 Research definition

The definitions of the terms used in this study are as follows.

1) Sense of

The sense of self-control is the feeling that an individual can control the problems they encounter, such as life situations or the environment (Pearlin et al., 1981). This was measured using a tool adapted from the Korean Gerontological Forum (2010).

2) State-Trait Anxiety Inventory (STAI)

The STAI is a 20-item 4-step scale that Kim adapted and used. The scale was developed by (Spielberger et al., 1970).

3) Antepartum

Prenatal depression or depression during pregnancy is a mood disorder caused by aggravating difficult situations, along with hormonal changes that occur during [16] This study measured antepartum depression using the Korean version of the Edinburgh Postnatal Depression Scale (EPDS) developed by (Cox et al., 1987) which Han, Kim, and Park modified for the Korean context.

Research subject

The participants in this study were five single-mother and child facilities located in cities D, K, and P. The questionnaire and purpose of the study were explained in advance, and the questionnaire and research consent form were sent by e-mail. Among the 15 facilities that consented to completing the questionnaire, the researcher visited D (1 site) and K (1 site), distributed the questionnaires to the respondents directly, and collected 46 completed copies on the spot. In P, the questionnaire was distributed to the person in charge of the facility by mail, and 36 copies were returned also via mail. Respondents took approximately 15 minutes to complete the questionnaire. Among unmarried pregnant women

between 12 and 40 weeks of gestation, 76 who understood the purpose of this study and consented to participate were enrolled.

The number of subjects required for this study was confirmed using G*Power 3.1.92 subjects were required for multiple regression analysis, with an effect size of .15, significance level of .05, power of .80, and five predictors. Only subjects who understood the purpose of the study and agreed to participate were included.

Research tool

1) Sense of mastery

To measure the degree to which one considers changes in one's life to be under one's own control, sense of mastery, developed by (Pearlin et al., 1981) was used as a measuring tool in the form adapted by the Korean Gerontological Forum (2010). The measurement instrument for the sense of self-control consists of seven questions, five of which are about feelings of helplessness, while two questions address feelings of self-control. Each item is measured on a 4-point Likert scale ranging from 1 = *strongly agree* to 4 = *strongly disagree*. The two questions about self-control were inversely converted. The higher the score on the self-control scale, the higher the respondent-control werself-control. At the time of development, the reliability of the tool was Cronbach's $\alpha = .61-.67$. In Kim et al.'s (2001) study on the elderly, Cronbach's $\alpha = .75$. In this study, the reliability was Cronbach's $\alpha = .80$.

2) State-Trait Anxiety Inventory

The STAI is a 20-item 4-step scale developed by Spielberger et al., which Kim adapted for the Korean context. The reliability at the time of development was Cronbach's $r = .91$, and in this study, it was $.89$ (Spielberger et al., 1970).

3) Antepartum depression

(Cox et al., 1987) developed a measure of emotional instability involving crying for no apparent reason, becoming upset easily and experiencing irritability due to emotional crisis caused by mental and physical tension during pregnancy. The Korean version of the EPDS, which was adapted and modified by (Gwiwon Han et al. 2004), was used. Although the EPDS was developed as a tool to measure postpartum depression, its validity and reliability have been proven for depression in pregnant women; therefore, it is widely used as a tool to measure depression in perinatal women (Gwiwon Han et al. 2004). The EPDS evaluates using a total of 10 items about the mother's emotional state, such as depression, anxiety, and suicidal thoughts, during the past week. Items are assessed on a 4-point Likert scale. Scores range from 0 to 30, with higher scores indicating higher levels of depression. At the time of development, the reliability of the tool was Cronbach's $\alpha = .87$. In (Gwiwon Han et al. 2004), Cronbach's $\alpha = .85$. In Eun-ju Lee (2014), who measured prenatal depression, Cronbach's $\alpha = .82$. In this study, the tool's reliability was Cronbach's $\alpha = .82$.

Data analysis

The collected data were analyzed using IBM SPSS Statistics 20 as follows.

- 1) Participants' general characteristics, sense of self-control, anxiety, and prenatal depression were analyzed using frequency, percentage, mean, and standard deviation.
- 2) Student's t-test and one-way analysis of variance were used to investigate

differences in the degree of prenatal depression according to the subjects' general characteristics.

- 3) The relationship between subjects' sense of self-control, anxiety, and prenatal depression was verified using Pearson's correlation coefficient.
- 4) Stepwise multiple regressions was performed to identify factors affecting subjects' prenatal depression.
- 5) The statistical significance level was set to .05.

General characteristics and Obstetrical Characteristics of Subjects

Among the 76 subjects in the study, women in their age range of 20 to 25 years were 55.82%. Regarding educational background, 39.5% graduated from middle school or lower, and 60.5% graduated from high school or higher. Regarding future baby plans, 40.8% indicated having a parenting plan, 50% had a non-parenting plan, and 9.2% had not yet decided. Regarding current gestation in weeks, 29-40 weeks accounted for 61.8%, and 12-28 weeks accounted for 38.2%. Of the participants, 48.7% had their first antenatal visit before 4 months of pregnancy, and 51.3% had their first antenatal visit after 4 months of pregnancy (1).

Table 1

Variables	Categories	N (%)	M(%)D
Age (years)	≤ 19	19(27.18)	
	20-25	28(55.82)	
	25-29	25(54.2)	
	≥8(6	9(11.8)	
Education	≤ Middle school	30(39.5)	
	≥ high school	46(60.5)	
Occupation	Professional job	10(13.2)	
	Service job, etc.	22(29.9) 44(55.9)	
Current baby plan	Nurture	31(40.8)	
	Non-nurture	38(50)	
	Undecided	7(9.2)	
Gestational age (weeks)	12~28	29(38.2)	31.99.2)3
	29~40	47(61.8)	8
Pregnancy	1	50(65.8)	

experience	≥0	26(34.2)
Childbirth experience	Yes	21(20.0)
	No	84(80.0)
Time of first prenatal checkup (month of pregnancy)	< 4	37(48.7)
	≥ 4	39(51.3)

Subjects' degree of self-control, anxiety, and prenatal depression

The sense of self-control score was 17.41 (Self-control of 28 points, and their anxiety score was 49 out of 80 (tro of 28 points, and ession 28 weeks accounted for 38.2out of 30 (Table 2).

Table 2.

Variable	Meanean	Min.	Max.
Sence of mastery	17.41ryf bl10.0	27.0	
Anxiety	56.00=-/17.76	16.0	67.0
Antepartum depression	22.23artum 8.0	24.0	

Prenatal depression by general characteristics of subjects

Having confirmed differences in the prenatal depression scores according to the subject so general and obstetric characteristics, it was found that unmarried pregnant women who planned to raise children under a current baby plan had higher rates of prenatal depression than those who planned not to raise children. The difference was significant ($F = 3.79, p = .010$).

Table 3.

Variables	Categories	Antepartum depression	
		Mnptept or F	p Scheffe
Age (years)	≤ 19	59.13fe2.8 8	0.34 .714
	20-29	60.74fe4.3 3	
	≥.33	62.84fe2.4 5	
Education	≤ Middle	61.44e	.547

	school	school	0.60	
	≥ High school	60.011 school		
Occupation	Professional job	46.7355 1.19		
	Service jobs, etc.	50.37ce jobs	.316	
Current baby plan	Nurture ^a	70.25re jobs3.79	.010	
	Non-nurture ^b	62.75retur es	(a) b	
	Undecided ^c	59.50idede d	,c)	
Gestational age (weeks)	12~28	57.33tiona l		
	29~40	61.87±1.8 73	-1.85	.670
Pregnancy experience	1	59.1nancy e-1.61		
	≥11	63.7±3.77 3	.112	
Childbirth experience	Yes	67.92birth e2.79		
	No	58.93birth e	.116	
Time of first prenatal checkup (month of pregnancy)	<4	65.12 of pre.76		
	≥4	60.52 of pre	.450	

Correlation between sense of self-control, anxiety, and prenatal depression

Regarding self-control and anxiety in single pregnant women, analysis of the correlation with prenatal depression revealed that sense of self-control had a significant negative correlation with prenatal depression ($r = -0.24$, $p = .05$), as did

anxiety ($r = -0.16, p < .01$)(Table 4).

Table 4.

Variables	Sense of mastery	Anxiety	Antepartum depression
Sense of mastery	1	-0.45(<.001)	-.024(.05)
Anxiety		1	-.016(.004)
Antepartum depression			1

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Table 5.
N = 76

Variable	B	β	t	p	R ²	Adj. R ²	F(p)	VIF
(Constants)	36.82		5.50	<.001	.277	.247	24.65 (<0.001)	
Sense of mastery	0.422	0.431	4.965	0.001				
Anxiety	5.146	0.223	2.631	0.010				
Current baby plan	0.563	0.220	2.174	0.032				

Note- VIF: variation inflation factor

Having tested the assumption of the regression analysis, all conditions of the regression equation were satisfied. In the autocorrelation test of the error, the Durbin-Watson statistic was 1.942, and there was no autocorrelation between the independent variables. The tolerance limit for the variables was 0.676, which was over 0.1, and the variation inflation value was 1.596, which did not reach the standard of 10, indicating the absence of a multicollinearity problem.

A step-by-step regression analysis was performed with independent variables, such as self-control, anxiety, and parenting plans that were significantly correlated with prenatal depression. Self-control, anxiety, and current baby-rearing plan were found to be factors independently influencing prenatal depression, and these variables accounted for 24.7% of the overall model.

Discussion

In this study, the degree of self-control, anxiety, and prenatal depression, correlations among these variables, and their effects on prenatal depression were investigated in unmarried pregnant women. A discussion based on the main research results follows.

Subjects of average prenatal depression score was 22.23. (Lee et al., 2013) conducted a study involving pregnant women using the same tool and found that prenatal depression scores were significantly higher than 6.33 points.

(Lee et al., 2013; Leigh et al., 2008) who studied married pregnant women using the same tool, reported an average of 69.4. However, observing the actual conditions of single mothers, unwed mothers often avoided pregnancy after recognizing that they were pregnant and did not meet again after discovering that they were pregnant (Choi, 2004; Jeong et al., 2000; Moon, 2003). Moreover, when the level of social support for unmarried pregnant women was investigated by support source, support for single mothers was found to be the lowest among family, friends, facility officials, and support for single mothers (Kim et al., 2007). In addition, prenatal depression was thought to be higher than in normal pregnant women because of unexpected pregnancy and lack of familial support. In the future, single mothers should be provided with psychiatric counseling and treatment through specialists.

In this study, unmarried pregnant women' unmarried pregnant women score was found to be 17.41 points. [8]study involving normal pregnant women using the same tool showed an average score of 20.2. Self-control is a measure of quality of life and satisfaction, and it acts as a functional factor to maintain a sense of well-being and efficacy in stressful and changing environments. In addition, it is necessary to provide individual nursing interventions to increase the sense of self-control in single pregnant women.

In this study, unmarried pregnant women degree of anxiety score was 56. In (Hwang 2005) study involving single mothers using the same tool, the score was 52.8. After a single mother becomes aware of her pregnancy as a result of irresponsible sexual behavior, due to the tendency to place the responsibility for pregnancy and childbirth solely on women, single mothers also feel guilty about the loss of their baby, and the reparation they will face from family and society. This explains the high degree of anxiety, as it is related to psychological pain, such as anxiety and alienation felt when hiding and in isolation during pregnancy due to fear (Choi et al., 2009).

Among subjects general and obstetric characteristics, pregnant single mothers who planned to raise their baby showed a significant difference regarding prenatal depression. The prenatal depression score of unmarried pregnant women who planned to raise their children was 66.2, which was higher than that of pregnant women who did not plan to raise their children. Even the government, which has been passive about supporting single mothers, has espoused the importance of support for child-rearing single mothers and is making an effort to support them actively, which seems to be a factor in the recent increase in the number of single

mothers who want to raise children (Kim et al., 2012) However, from the standpoint of single mothers who must be raised in a single-parent family, it is thought that prenatal depression was higher because anxiety and depression about child-rearing overlap. Prenatal depression intervention is necessary to promote psychological and emotional stability in unmarried pregnant women (Hwang 2020; Hwang 2005; Kim et al., 2012).

The significance of this study is the confirmation that it is necessary to develop a program to combat prenatal depression in unmarried women, provide information about pregnancy and childbirth, and develop and implement a prenatal management program so that unmarried women can manage prenatal depression well. However, it was difficult to generalize the results of this study to all unmarried pregnant women because only unmarried pregnant women in protective facilities were targeted.

Results

The results of this study show that the higher the self-control and the lower the anxiety, the higher the level of prenatal depression. Based on this, there is a need to develop and apply nursing interventions for unmarried pregnant women. Based on the findings of this research, the following suggestions are offered. First, it is necessary to repeat the study, adding various variables that affect the prenatal management of unmarried pregnant women. Second, further research is needed to develop a nursing intervention program for the prenatal management of unmarried pregnant women and verify its effectiveness.

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