The Relationship of the Prenatal Distress with Health Literacy and Health Perception of Pregnant Women

*Meltem Ugurlu [1], Arzu Kul Uctu [2]

1. *Department of Midwifery, Health Sciences Faculty of Gulhane, University of Health Sciences, Ankara, Turkey*
2. *Department of Midwifery, Health Sciences Institute of Gulhane, University of Health Sciences, Ankara, Turkey*

*Corresponding Author: Email: meltemugurlu17@gmail.com

Abstract

Background: The effects of health-literacy and health-perception on prenatal distress levels of pregnant women were not investigated. We aimed to examine the relationship between pregnant women's prenatal distress levels with their health-literacy and health-perception and affecting factors.

Methods: This descriptive and correlational study was conducted with 223 pregnant women in Ankara, Turkey in 2021. Data were collected with a personal information form, Health Literacy Scale (HLS), Health Perception Scale (HPS), and Prenatal Distress Scale (PDS).

Results: Participants' mean score on the PDS was 11.39±6.17. Participants who had a high level of education ($P=0.040$), working ($P=0.026$), no history of miscarriage/abortion ($P=0.040$), and a bad relationship with their spouses ($P<0.001$) had significantly higher mean scores on the PDS. There was a significant negative correlation between total PDS and HLS scores ($P<0.001$) and a positive correlation between total PDS and HPS scores ($P<0.001$). Total HLS and HPS scores, spousal relationship status, education level, and employment had an effect on the mean PDS score and that the explanatory power of the model was found 21.5% ($R^2=0.215$).

Conclusion: Pregnant women had a moderate level of prenatal distress. While the prenatal distress levels of pregnant women with high health-literacy levels decreased, the levels of those who were employed, had a higher level of education, and had a bad relationship with their spouses increased. Awareness of the factors affecting pregnant women's prenatal distress can guide the provision of adequate care and support interventions during pregnancy.

Keywords: Pregnant women; Health literacy; Prenatal distress; Health perception

Introduction

Pregnancy is a period when women are very sensitive in terms of psychosocial as well as physiological changes in their bodies (1-3). Anxiety levels that increase due to changes in a woman's body image/lifestyle, concerns about parenting roles, and changes in social relations/responsibilities with pregnancy can cause stress (3). Difficulties adapting to stressful situations brought about by pregnancy and ineffective

coping behaviors may cause prenatal distress in pregnant women (2).

Prenatal distress is defined as pregnancy-specific emotional discomfort and stress (3), and is seen in one out of every four pregnant women (2). Some factors such as low socio-economic level, marital status, education level, age, and spousal support affect prenatal distress (4). Preterm birth, low birth weight and developmental retardation, weak mother-baby attachment, and postpartum depression can be seen due to prenatal distress (4). Therefore, managing the stress level during pregnancy is critical in terms of reducing prenatal stress levels and maintaining well-being.

The level of health-literacy is also one of the notable factors that contribute to individuals making right decisions about their health (5,6). Recently, health-literacy has become one of the key factors in providing good healthcare (7). There was a significant relationship between health-literacy and health behaviors (5,6). Masoudiyekta et al. (8) found a significant relationship between maternal health-literacy levels and prenatal care, pregnancy outcomes, and birth weight. Pregnant women's good health-literacy levels make it easier for them to understand the risks that pregnancy may bring and increase their willingness to follow health and treatment recommendations (8). It is emphasized that individuals with low health-literacy cannot benefit from health services adequately, so they cannot make the right decisions about their health (5).

Another important factor affecting prenatal distress in pregnancy is the perception of health. Health-perception is defined as the combination of an individual's feelings, thoughts, expectations, and prejudices about their health (6). Considering that stress during pregnancy is quite common (7), determining how pregnant women's health-literacy and health-perception affect prenatal distress can be an effective source of information and an opportunity in the management of prenatal distress.

We aimed to examine the relationship between pregnant women's prenatal distress levels, health-literacy and health-perception, and the factors affecting them.

Materials and Methods

Aim and type of the study
The aim of this descriptive and correlational study was to examine the relationship between pregnant women's prenatal distress levels and their health-literacy levels and health-perceptions, and the factors affecting them.

Research questions
• What is the level of prenatal distress, health-literacy, and health-perception of pregnant women?
• Is the prenatal distress level of pregnant women related to their health-literacy and health-perception?
• Do the characteristics of pregnant women affect the level of prenatal distress?

Population and sample of the study
This study was carried out between January and June 2021 in Ankara, Turkey. The snowball sampling method was used and pregnant women were contacted via WhatsApp. The sample size of this research was calculated on the G.Power 3.1.9.7. Multiple regression analyses were performed at a significance level of 0.05, a power value of 99%, and a medium effect size (f2=0.15). The necessary sample size was determined to be 174. The study sample included 223 pregnant women.

The inclusion criteria were women who were aged ≥18 years and agreed to participate in the study. Pregnant women diagnosed with risky pregnancy and psychiatric disorders were not included in the study.

Data collection tools
The researchers developed a 13-item descriptive information form in line with the literature to determine the sociodemographic and obstetric characteristics of participants. The Prenatal Distress Scale (PDS) was developed by Yali and Lobel (9) to improve pregnant women's prenatal distress levels. It consists of 17 items and has a

three-point Likert-type scale. Scores on the scale range between 0 and 34. The scale does not have a cutoff score. High total scores on the PDS indicate a high level of prenatal distress. The Turkish validity and reliability study of the scale was conducted by Yüksel et al. (10) and Cronbach's α value was found to be 0.85. The alpha value was calculated as 0.85 in this study.

The Health Literacy Scale (HLS) was developed by Sorensen (11) in 2013 to evaluate the health-literacy levels of individuals. It consists of 25 items and scores range between 25 and 125. The Turkish validity and reliability study of the scale was conducted by Aras et al. (12) and Cronbach's α value was found to be 0.92. The alpha value was calculated as 0.92 in this study.

The Health Perception Scale (HPS) was developed by Diamond et al. (13). It has a five-point Likert-type scale and 15 items. Scores on the scale vary between 15 and 75. The Turkish validity and reliability study of the scale was conducted by Kadıoğlu et al. (14) and Cronbach's α value was found to be 0.77, which was calculated as 0.71 in this study.

Data analysis

SPSS (Windows 22.0) (IBM Corp., Armonk, NY, USA) software was utilized to analyze the data. Descriptive statistics were used for data analysis. Independent samples *t*-test and one-way ANOVA test were used to compare the mean PDS scores of participants according to their descriptive characteristics. Pearson's correlation test was used to compare scale scores. Multiple linear regression analysis was employed to evaluate the effect of independent variables on the PDS score.

Ethical considerations

Ethical approval of the ethics committee of a university (date:16.12.2020, No.:16/33) and other necessary permissions were obtained. The study was conducted in accordance with the Principles of the Declaration of Helsinki.

Results

The mean age of the participants in the study was 28.48 ± 5.07 years, the majority (83%) had at least more than eight years of education, more than half (67.3%) were employed, and most (79.4%) were in the last trimester. 74.9% of the participants had a planned pregnancy, 48% had attended birth preparation classes, and the majority (88.3%) evaluated their relationship with their spouse as good (Table 1).

According to participants' PDS scores, their stress levels were moderate (11.39 ± 6.17), health-literacy levels were very high (111.63 ± 12.45), and health-perceptions (39.09 ± 6.93) were moderate.

Participants who had a high level of education ($P=0.040$), were employed ($P=0.026$), had no history of miscarriage/abortion $(P=0.040)$, and had a bad relationship with their spouse ($P<0.001$) had significantly higher mean PDS scores (Table 1).

There was a significant negative correlation between participants' mean scores on the total PDS and HLS (r: -0.24, $P<0.001$). A significant positive correlation was found between total PDS and HPS scores (r: 0.25, $P<0.001$). Accordingly, as pregnant women's health-literacy levels increased, their prenatal distress levels decreased, and as the level of health-perception increased, prenatal distress levels increased, as well (Table 2).

Table 1: Comparison of pregnant women's mean prenatal distress scale scores according to their descriptive/obstetric characteristics

Variable	Frequency (%)	PDS Mean±SD	Test and P-value
Age (Mean±SD) 28.48±5.07			
≤25	61 (27.4)	11.16 ± 6.22	0.061*
26-30	89 (39.9)	11.45 ± 6.08	0.941
≥30	73 (32.7)	11.52 ± 6.32	
Education level			
Primary	38 (17.0)	9.13 ± 6.01	3.265*
High school	57 (25.6)	11.53 ± 6.34	0.040
Undergraduate and above	128 (57.4)	12.01 ± 6.03	
Employment status			
Yes	73 (67.3)	12.71 ± 5.7	-2.244**
No	150 (32.7)	10.75 ± 6.31	0.026
Planned pregnancy			
Yes	167 (74.9)	11.16 ± 5.94	0.998**
No	56 (25.1)	12.11 ± 6.82	0.319
Gestational age			
Second trimester	46 (20.6)	11.26 ± 4.99	-.061**
Third trimester	177 (79.4)	11.43 ± 6.46	0.869
History of miscarriage/abortion			
Yes	35 (15.7)	9.43 ± 4.92	2.068**
No	188 (84.3)	11.76 ± 6.32	0.040
Participation in birth preparation education			
Yes	107 (48.0)	11.4 ± 6.75	-0.005**
No	116 (52.0)	11.39 ± 5.51	0.996
Evaluation of spousal relationship			
Good	197 (88.3)	10.84 ± 5.85	3.822**
Bad	26 (11.7)	15.62 ± 7.00	<0.001

*One Way ANOVA, **Independent samples t-test

Table 2: Examination of the relationship between pregnant women's mean health literacy and health perception total scores and their mean prenatal distress scores

Variable	Mean prenatal distress scores	
	r*	P
Total health literacy scale score	-.24	<0.001**
Total health perception scale score	.25	<0.001**

**P < 0.001

The multiple linear regression analysis was performed to examine the effects of variables, such as participants' total HPS and HLS scores, evaluation of their relationship with their spouses, education levels, employment status, and history of abortion/miscarriage on the total PDS score. The explanatory power of the linear regression model created using the Enter method was 27.4%, and it was statistically significant (*P*<0.001) (Table 3).

Table 3: Multiple linear regression analysis results on factors affecting the total PDS score

Variable	B (%95 CI)	Beta	t	P	Zero-order	Partial
(Constant)	17.847 (6.544 - 29.150)		3.112	.002		
HPS	0.204 (0.079 - 0.330)	.229	3.217	.001	.268	.215
HLS	-0.096 (-0.166 - -0.026)	-.193	-2.718	.007	-.205	-.183
Good spousal relations	-4.061 (-6.388 - -1.733)	-.212	-3.439	.001	-.250	-.229
Level of education*						
Primary school	-4.041 (-6.269 - -1.813)	-.247	-3.575	<.001	-.166	-.238
High school	-0.195 (-2.06 - 1.670)	-.014	-.206	.837	.013	-.014
Employed	2.721 (0.966 - 4.476)	.206	3.056	.003	.149	.205
History of miscarriage/abortion	-1.298 (-2.797 - 0.202)	-.103	-1.706	.089	-.145	-.116

B: non-standardized coefficient, Beta: standardized coefficient, F=9.628, *P*=<0.001, Adj.R²=0.215, SE=5.488
*reference: university and above

Discussion

The prenatal distress level of women who had high education levels and had a job was higher. Contrary to the findings of this study, it was determined in the literature that low education level was a factor that increased prenatal distress (4,15,16) and that the prenatal distress level of pregnant women was not affected by working status (3,4,17,18). Our findings differed from those of the literature. In the study conducted by Yüksel et al. (19), those who had work-related distress or difficulties during pregnancy experienced more prenatal distress than those who did not. Günaydın et al. (20) on the other hand, emphasized that working pregnant women received less social support from their environment and that they should be supported more. Our findings showed that women who had higher education levels and had a job experienced prenatal stress more intensely. Different results obtained in the literature were due to the participation of women with higher education levels in working life more than others and their work stress. Our findings revealed that working pregnant women should be supported.

In this study, the prenatal distress level of pregnant women who did not have a history of miscarriage/abortion was higher than the levels of those who did. According to a study, while the prenatal distress level of pregnant women with a history of miscarriage increased in the first and second trimesters, it did not affect the prenatal distress levels of those in the third trimester (18). In another study, a history of previous stillbirth-preterm birth increased prenatal distress by 0.69-1.17 times (3). In the regression model established in our study, miscarriage/abortion did not affect prenatal distress levels. More study results are needed to say anything clear about the impact of miscarriage/abortion history on prenatal distress.

In this study, the prenatal distress levels of women who had bad relationships with their spouses were higher than those of women with good relationships. Similar to our study result, Yılmaz et al. (4) emphasized that spousal support was an important factor in reducing prenatal distress. Psychosocial care in addition to physiological care in

the prenatal period is important, and the arrival of a new member of the family affects not only the pregnant woman but also her spouse and all family members (4). In the literature, the importance of including spouses in prenatal care processes is emphasized (2), and high marital adjustment during pregnancy is effective in reducing depression and difficulties (21). It is recommended to include spouses in antenatal care services and to carry out training and counseling programs that will increase the awareness of society about the importance of positive marital relations.

Similar to the findings of this study, prenatal distress was shown to not change by pregnant women's age in three studies (4,15,19) conducted in Turkey. Contrary to our findings, in Indonesia, maternal age was the most important factor affecting prenatal distress (2). In this study, prenatal distress did not differ according to gestational week, income status, and planned pregnancy. There are studies in the literature showing the opposite (4,15,19). The reason for the differences in the findings may be due to study populations with different living conditions and sociodemographic characteristics and the use of different distress assessment tools.

In our study, as pregnant women's health-literacy levels decreased, the level of prenatal distress increased. No other study on the examination of this issue was found in the literature. Aramide et al. (7) reported that women with children in Nigeria could not control maternal anxiety and health choices because of poor health-literacy levels. Considering the negative effects of prenatal distress on pregnancy outcomes (22), pregnant women's health-literacy levels should be taken into account. Health professionals should provide counseling for pregnant women on accessing and using the right information resources and their awareness should be raised.

According to our study findings, as the health-perception levels of pregnant women increased, the level of their prenatal distress increased, as well. A similar study could not be found in the literature. Studies on the examination of health-perception in pregnant women have frequently addressed the relationship between health-perception and health-literacy, and it has been reported that there is a positive relationship between them (5,6,23). We would expect pregnant women with high health-perception to manage stressful situations better and the level of prenatal distress to decrease as the level of health-perception increases. In the regression model, it was concluded that as the health-perception of pregnant women increased, the level of prenatal distress increased, as well. It is thought that distress levels may have increased because most of the pregnant women were in the last trimester and due to uncertainties regarding the delivery and postpartum period.

This study has some limitations. Women who did not use smartphones and did not have internet access were not included in the study. On the other hand the scales used were filled in based on self-report.

Conclusion

Pregnant women had moderate levels of prenatal distress and health-perceptions and very high levels of health-literacy. As pregnant women's health-literacy levels increased, prenatal distress levels decreased, and as health-perceptions increased, prenatal distress levels increased, as well. While working women and women with higher education levels experienced more prenatal distress, the prenatal distress level of pregnant women who had a good relationship with their spouses was lower. Our findings suggest that pregnant women with prenatal distress and low health-literacy levels can be identified using simple scales, appropriate care and interventions can be planned early for these pregnant women, and that better pregnancy outcomes can be achieved.

Journalism Ethics considerations

Ethical issues (Including plagiarism, informed consent, misconduct, data fabrication and/or falsification, double publication and/or submis-

sion, redundancy, etc.) have been completely observed by the authors.

Conflict of interest

The authors declare no conflict of interest.

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