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ARAŞTIRMA / RESEARCH

Effects of anxiety and social support levels on the prenatal attachment of pregnant women with preeclampsia

Preeklampsi tanısı alan gebelerin sosyal destek ve anksiyete düzeylerinin prenatal bağlanmaya etkisi

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Abstract

Purpose: This study was carried out to determine the effect of the social support and anxiety levels of pregnant women diagnosed with preeclampsia (PE) on prenatal attachment.
Materials and Methods: The study with a descriptive and case-control design was conducted on 313 pregnant women (PE=101, control=212). The data were collected by using the personal information form, Multidimensional Scale of Perceived Social Support (MSPSS), State-Trait Anxiety Inventory (SAI-TAI), and Prenatal Attachment Inventory (PAI).
Results: The scores of MSPSS in the PE group were found to be lower than in the control group while the SAI scores were found to be higher than in the control group. A positive significant relationship was found between the MSPSS total mean score and the PAI total mean score of the pregnant women in both the preeclampsia group and the control.
Conclusion: This study has demonstrated that preeclamptic pregnant women experience more anxiety and need more social support. It has also shown that social support is effective in increasing prenatal binding levels in both preeclamptic and healthy pregnant women. It is therefore recommended for health care professionals to evaluate the anxiety, social support, and prenatal binding levels of pregnant women at risk and especially those being followed-up at the clinic during the antenatal follow-ups.
Keywords:. Pre-eclampsia, pregnancy, anxiety, social support, prenatal attachment

Öz

Amaç: Bu çalışma, preeklampsi (PE) tanısı alan gebelerin sosyal destek ve anksiyete düzeylerinin prenatal bağlanmaya etkisini belirlenmesi amacıyla yapılmıştır.
Gereç ve Yöntem: Tanımlayıcı ve vaka-kontrol tasarımlı çalışma 313 gebeyle (PE= 101, kontrol= 212) gerçekleştirilmiştir. Veriler, kişisel bilgi formu, "Çok Boyutlu Algılanan Sosyal Destek Ölçeği (MSPSS)", "Durumluk-Sürekli Kaygı Envanteri (SAI-TAI)" ve "Prenatal Bağlanma Envanteri (PAI)" kullanılarak toplanmıştır.
Bulgular: PE grubundaki gebelerin MSPSS puanları kontrol grubundaki gebelere kıyasla düşük bulunurken, SAI puanının ise yüksek olduğu saptanmıştır. Hem preeklampsi hem de kontrol grubundaki gebelerin MSPSS toplam puan ortalaması ile PAI toplam puan ortalaması arasında pozitif yönlü anlamlı bir ilişki olduğu belirlenmiştir.
Sonuç: Bu çalışma, preeklamptik gebelerin daha yüksek düzeyde anksiyete yaşadığını ve daha fazla sosyal desteğe ihtiyacının olduğunu göstermektedir. Ayrıca hem preeklamptik hem de sağlıklı gebelerin prenatal bağlanma düzeylerinin artırılmasında sosyal desteğin etkili olduğunu ortaya koymaktadır. Bu nedenle, sağlık profesyonellerinin özellikle klinikte takip edilen riskli gebelerin ve antenatal takiplerde sağlıklı gebelerin anksiyete, sosyal destek ve prenatal bağlanma düzeylerini önerilmektedir.

Anahtar kelimeler: Preeklampsi, gebelik, anksiyete, sosyal destek, prenatal bağlanma

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INTRODUCTION

Preeclampsia is defined as the presence of *de novo* hypertension after 20 weeks of gestation accompanied by proteinuria and/or evidence of maternal acute kidney injury, liver dysfunction, neurological features, hemolysis or thrombocytopenia, and/or intrauterine growth retardation[1]. The global incidence is reported to be 2.16% (6753/313,030)[2]. Preeclampsia, with a prevalence that varies from 5% to 7%, annually causes more than 70,000 maternal and 500,000 fetal deaths worldwide [3]. It is one of the important causes of maternal-fetal mortality and morbidity among high-risk pregnancies and also prepares a foundation for the development of various complications in the woman (such as cardiovascular and cerebrovascular problems, renal and hepatic failure, and placental abruption) and in the infant (low birth weight, fetal growth retardation with oligohydramnios, preterm birth, and severe birth asphyxia)[4].

The social support perceived by the women has an important role in the prenatal period by preventing anxiety development[5] and decreasing the existing concerns[6]. Inadequate social support increases the probability of depression in the prenatal and postpartum periods. The depression risk was found to increase 3.38 times during pregnancy and 2.85 times after birth in women with low social support compared to those with good support in a prospective cohort study[6]. Women with preeclampsia are also reported to feel more lonely and have a lower perception of support from their mates[7]. Low social support decreases the quality of life of the women[8] and affects health behaviors and positive neonatal outcomes[9]. An increase in perceived social support during this process also raises the level of the woman's attachment to the infant[10] and its quality[11]. Prenatal attachment is defined as the establishment of a positive emotional relationship between the woman and the unborn baby during pregnancy. Prenatal attachment plays a role in facilitating the adaptation to motherhood by mediating the development of the maternal identity[12]. It also supports compliance with prenatal care and decreasing harmful health practices[9]. Anxiety, in contrast, decreases maternal-fetal attachment in both the prenatal[11] and postpartum periods[13].

A history of preeclampsia also results in an increase in the anxiety level and a decrease in the perceived social support level[7]. An increase in anxiety raises the risk of preterm labor and low birth weight babies by itself, even in women without other pregnancy-related risks[14], results in lower mental development scores and problem internalization, and has negative cognitive and psychological effects in both childhood and adulthood[7].

Pregnancy-related risks such as preeclampsia are generally unexpected and lead to the fear of losing the baby, lack of adequate social support, despair, helplessness, and reduced self-esteem. The result can be poor self-care, delayed healing, prolonged duration of treatment and anxiety, and adversely affected prenatal attachment[4,7,15,16]. Nurses and midwives have an active role in the care of pregnant women during the prenatal period. Nurses and midwives should therefore define social support systems in the prenatal period, evaluate anxiety, and make appropriate interventions to support the prenatal establishment of mother-infant attachment[17].

A study on the prenatal attachment levels of women a risk of preterm labor has found decreased values[16]. We did not come across a study investigating the effect of the perceived social support and anxiety levels of preeclamptic women on prenatal attachment with a literature review. Therefore, this study was conducted to determine the effect of the social support and anxiety levels of pregnant women diagnosed with preeclampsia (PE) on prenatal attachment.

MATERIALS AND METHODS

Study design and participants

This descriptive and case-control study was conducted in the obstetric services and outpatients of a university and a state hospital between September 2015 and August 2016 in Turkey. The pregnant women were divided into two groups as a preeclampsia group and a control group with healthy pregnant women. The preeclampsia (PE) group consisted of pregnant women who were hospitalized for treatment.

The control group were composed of women attending the obstetrics outpatients for routine pregnancy care. The sample of the study consisted of the pregnant women who were selected by the random sampling method between the specified dates, who met the inclusion criteria, and volunteered to participate in the study.

The study's sample size was determined using power analysis. We found that at least 84 pregnant women would be required in order to determine a significant correlation between the social support, anxiety, and prenatal attachment scores (with a correlation coefficient of less than -0.3 or more than 0.3) with 80% power while using a 5% error level, in accordance with the study by Pisoni et al[16] (http://www.cct.cuhk.edu.hk/stat/other/correlation.htm). This study was conducted with 313 pregnant women, taking into account the possibility of some of the women leaving the study or refusing to complete the questionnaire. A total of 101 pregnant women were in the PE group with 212 pregnant women in the control group.

The inclusion criteria for the case (PE) group consisted of; (1) ≥ 18 years old; (2) > 20th gestational week; (3) diagnosed with preeclampsia; (4) no other diagnosed pregnancy risk; (5) no visual, auditory or mental disability or diagnosed psychiatric illness and (6) understanding and speaking Turkish. The inclusion criteria for the control group consisted of; (1) ≥ 18 years old; (2) > 20th gestational week; (3) no diagnosed pregnancy risk; (4) no visual, auditory or mental disability or diagnosed psychiatric illness; and (5) understanding and speaking Turkish.

Preeclampsia was defined as the presence of gestational hypertension and ≥2+ proteinuria after 20 weeks of gestation. Gestational hypertension was defined as blood pressure ≥140/90 mm Hg after 20 weeks of gestation. In addition to the common inclusion criteria, the PE group patients were also required to have no other diagnosis and no chronic hypertension, in addition to the presence of a blood pressure ≥140/90 mm Hg and proteinuria ≥2+ after 20 weeks of gestation (n=101).

After written approval of the ethics committee and of the institutions permission in which the study was to be performed were obtained the study started (decision no: 2015/41-1, date: September 7, 2015). All pregnant women provided informed verbal consent. Before collection of the study data, the ethical principles of "Informed Consent," "Confidentiality and its Protection," and "Respect for Autonomy" were respectively considered by explaining the aim of the study to the pregnant women, declaring that the information obtained would be kept confidential, and including only the individuals who volunteered to participate. In addition, the questions of the women were answered following questionnaire administration and the necessary information was provided. The study was conducted in conformity with the principles of the Declaration of Helsinki. The data were collected by using the face-to-face interview method. The interviews lasted approximately 20 minutes.

Measures

The personal information form, the Multidimensional Scale of Perceived Social Support, the State-Trait Anxiety Inventory, and the Prenatal Attachment Inventory were used for data collection.

Personal information form

This form was developed by the investigators based on the literature[2,16,18,19]. It contains 9 items on socio-demographic characteristics (age, education level, employment status, marriage duration, family type, longest place of residence, and economic situation) and obstetric characteristics (number of pregnancies, gestational week).

Multidimensional Scale of Perceived Social Support (MSPSS)

This scale was developed by Zimet et al. in 1988. The Turkish validity and reliability study was conducted by Eker and Akar in 1995. The scale has 12 items in 3 subscales (family, friends, and a special person). The scale is a 7-point Likert type and point of each item range from 1 to 7. The possible score from the scale is 12 to 84. Increased scores of MSPSS indicate high percived social support. Cronbach's alpha value was 0.66 in the Turkish reliability and validity study[20]. Cronbach's alpha value was found to be 0.89 in the PE group and 0.87 in the control group in the current study.

State-Trait Anxiety Inventory (STAI)

This inventory was developed by Spielberger et al. in 1970 and adapted to Turkish in 1983 by Öner and Le Compte. The 4-point Likert-type scale has 40 items equally divided into 2 subscales: State Anxiety Inventory (SAI) indicates anxiety about an event and Trait Anxiety Inventory (TAI) indicates anxiety as a personal characteristic[21]. Possible scores on each subscale range from 20 to 80, with high anxiety indicated by high scores as follows: 20-39 points signifies mild, 40-59 points moderate, and 60-79 points severe anxiety. Scores of 60 or more indicate a need for professional help. In the reliability study of the scale, Cronbach's alpha values were found to be

for SAI and TAI 0.94 to 0.96 and 0.83 to 0.87 respectively[21]. In the current study, Cronbach's alpha values of the SAI for the PE group and control group were 0.93 and 0.88 respectively, and the TAI for the PE group and control group were 0.88 and 0.86 respectively.

Prenatal Attachment Inventory (PAI)

This inventory was developed by Muller in 1993 and adapted to Turkish by Dereli Yılmaz and Kızılkaya Beji in 2009. It has 21 items. The 4-point Likert-type scale is scored as 1-always, 2-frequently, 3-sometimes, and 4-never. Possible scores range between 21 and 84. High scores indicate higher prenatal attachment. In the reliability study of the scale the Cronbach's alpha value was determined as 0.84[22]. Cronbach's alpha values for the PE group and control group were 0.88 and 0.89 in the current study, respectively.

Statistical analysis

The study data were evaluated using the SPSS software (IBM Corp., Armonk, NY, v. 24.0). The suitability of the data for normal distribution was evaluated by the Kolmogorov Smirnov test before starting the analysis. Descriptive statistics were given number (n), percentage (%), mean, and standard deviation (Mean ± SD) values.

The chi-square test was used to determine the relationships between categorical variables, independent sample t-test was used to compare the variables between two groups. Pearson's correlation test was used to determine the correlation between numerical variables. The statistical significance level was identified as $p<0.05$ for all the analyses.

Table 1. The socio-demographic characteristics of the pregnant women (n=313)

Characteristics	PE (n=101) n %	Control (n=212) n %	*p* value
Age Groups (years)			
20-24	23 22.8	55 25.9	
25-29	30 29.7	59 27.8	0.769
30-34	31 30.7	56 26.5	
≥ 35	17 16.8	42 19.8	
Education Level			
Primary school graduate	32 31.7	84 39.6	
Secondary school graduate	18 17.8	32 15.1	0.660
High school graduate	24 23.8	64 30.2	
University graduate	27 26.7	32 15.1	
Employment Status			
Employed	29 28.7	46 21.7	0.174
Unemployed	72 71.3	166 78.3	
Marriage Duration (years)			
1-2	32 31.7	63 29.7	
3-4	21 20.8	36 17.0	0.467
5-6	16 15.8	27 12.7	
≥ 7	32 31.7	86 40.6	
Family Type			
Nuclear	88 87.1	187 88.2	
Extended	13 12.9	25 11.8	0.785
Longest Place of Residence			
Village/County	14 13.9	16 7.5	0.103
District	32 31.7	58 27.4	
City	55 54.4	138 65.1	
Perception of Economic Status			
Income less than expenses	50 49.5	134 63.2	0.021*
Income equal to expenses	51 50.5	78 36.8	

†PE, Preeclampsia. *$p<0.05$

Table 2. MSPSS and their subscales, State-Trait Anxiety Inventory and Prenatal Attachment Inventory scores of the pregnant women

Scales	PE Mean ± SD	Control Mean ± SD	*p* value
MSPSS			
Family Subscale	24.07 ± 4.01	25.29 ± 3.27	0.005**
Friend Subscale	19.88 ± 6.32	21.43 ± 6.06	0.037*
A Special Person Subscale	25.18 ± 3.53	25.20 ± 3.01	0.970
Total	69.14 ± 11.20	71.93 ± 10.10	0.029*
State Anxiety Inventory	48.46 ± 2.13	39.63 ± 9.67	<0.001**
Trait Anxiety Inventory	41.45 ± 9.98	42.20 ± 9.12	0.509
Prenatal Attachment Inventory	62.31 ± 10.19	62.13 ± 11.28	0.892

†MSPSS, The Multidimensional Scale of Perceived Social Support; ‡PE, Preeclampsia. §SD, Standard deviation. *p<0.05, **p<0.01

Table 3. The correlation between MSPSS and their subscales, State-Trait Anxiety Inventory, and Prenatal Attachment Inventory

Scales	Test and *p* value	Prenatal Attachment Inventory	
		PE	Control
MSPSS			
Family Subscale	r	0.247	0.284
	p	0.013*	0.001**
Friends Subscale	r	0.208	0.322
	p	0.037*	0.001**
A Special Person Subscale	r	0.312	0.274
	p	0.001**	0.001**
Total	r	0.305	0.367
	p	0.002**	0.001**
State Anxiety Inventory	r	-0.040	-0.086
	p	0.694	0.210
Trait Anxiety Inventory	r	0.007	-0.045
	p	0.942	0.512

†MSPSS, The Multidimensional Scale of Perceived Social Support.
‡PE, Preeclampsia. §r, Bivariate correlation coefficient. *p<0.05, **p<0.01

RESULTS

The mean age was 29.06±5.93 in the PE group and 29.31±5.43 in the control group. The socio-demographic characteristics were homogeneous in the groups. There was no statistically significant difference between the PE and the control group (except perception of the economic situation, p=0.021) (p>0.05) (Table 1). We found that the percentage of women currently in the second trimester, currently in the third trimester, and primigravida was 12.9% (n=13), 87.1 (n=88), and 35.6% (n=36), respectively, in the PE group; and 43.4% (n=92), 56.6% (n=120), and 25.9% (n=55), respectively, in the control group. There was no statistically significant difference between the two groups for the number of previous births but such a difference was present for the trimesters (p>0.05).

The MSPSS total, family and friend subscale mean scores of the pregnant women in the control group were statistically significantly higher than in the PE group (p<0.05). The mean SAI score of the PE group was statistically significantly higher than in the control group (p<0.05). No statistically significant difference was found between the mean TAI and PAI scores of the PE and control groups (p>0.05) (Table 2). Significant positive correlations were found between the PAI scores and the MSPSS total and all subscale scores of the PE and control groups (p<0.05). However, the SAI and TAI scores showed no significant relationship with the PAI score (p>0.05) (Table 3).

DISCUSSION

Preeclampsia is a quickly developing pregnancy

complication and may cause maternal and fetal risks. This process may lead to anxiety, a decrease in the perception of social support, and worry about losing the baby in pregnant women[4,16]. We found the social support level of pregnant women with PE to be low compared to those who constituted the control group in our study. Sarmasti et al. have reported similar results from their study comparing women with and without preeclampsia ($p<0.05$)[23]. Javid et al. found the perceived social support total score of women with a high-risk pregnancy to be statistically significantly higher ($p<0.05$)[24]. Although the social support levels of women with a high-risk pregnancy differs among studies[7,24], the results of the Sarmasti et al. study were similar to ours[23]. Our study result suggests that preeclamptic pregnant women could have unmet social support needs. We therefore believe that the social support levels of pregnant women with a high-risk condition such as preeclampsia should be evaluated in the prenatal period.

Preeclampsia, one of the causes of a high-risk pregnancy, threatens maternal and fetal health and may lead to unfavorable results in the short and long term[4]. The recommended antepartum bed rest treatment is accompanied by intense fear, lack of control, weakness, anger, and anxiety[15]. While serious psychopathological symptoms can be rapidly identified during pregnancy, emotional problems are often ignored or underestimated although they are seen frequently[18]. We found that the state anxiety levels were higher in the PE group than the control group, while the trait anxiety levels were similar. The number of studies evaluating the anxiety levels of women with or without high-risk pregnancy is limited. However, the present studies shows that a high-risk pregnancy increases the level of anxiety[16,25]. Similar to our study, Mommersteeg et al.'s study reported that anxiety levels increased in pregnant women with preeclampsia[7]. Our study results suggest that the anxiety levels of the pregnant women in our study could have increased due to preeclampsia. We therefore believe it is necessary to define prenatal anxiety and to take the appropriate measures in all pregnant women, and especially those with a high-risk pregnancy and high anxiety level.

Hospitalization of pregnant women due to a high-risk pregnancy causes them to think that they cannot continue the pregnancy in a healthy way because of the existing risks and that there could be unfavorable developments that will result in the death of their baby[15]. We found that the prenatal attachment level of the PE group and the control group was similar and both groups had a high level of prenatal attachment in our study. A study conducted on women with or without a high-risk pregnancy had results similar to ours[26]. A study has reported that high-risk pregnancy does not affect maternal-fetal attachment ($p>0.05$)[27]. Some studies have reported statistically significantly higher mean prenatal attachment scores in women with a high-risk pregnancy[16,28] while others report scores similar to healthy pregnant women[25]. All these results demonstrate that a positive bond does develop between the mothers and infants during the prenatal period. Our study results suggest that preeclamptic pregnant women have high prenatal attachment.

Prenatal attachment and social support ensure that women have a more positive pregnancy experience, adopt the role of motherhood more quickly, and have fewer problems after childbirth. Therefore, it is important to assess prenatal attachment for adapting to the roles of motherhood and for the child's growth and development[18]. The current study demonstrated that the prenatal attachment increased in both groups as the social support levels of the pregnant women increased. Various studies report that social support has a positive correlation with prenatal attachment in both at risk and healthy pregnant women[11,19,29,30]. The emotional fluctuations that women with a high-risk pregnancy could experience must not be overlooked[18]. Our study results indicate that interventions to increase the social support level of all pregnant women and especially preeclamptic pregnant women will increase the prenatal attachment levels. We therefore believe that social support, as provided to both preeclamptic and healthy pregnant women, can serve as the crucial link to increase prenatal attachment levels and ensure better perinatal health and neonatal outcomes.

This study has some limitations. Our study was conducted at a single province in Turkey and the results can therefore be generalized only to pregnant women who live in that province and have similar characteristics.

In conclusion, we determined that the social support levels were lower and the state anxiety level higher in the PE group than the control group in this study. Prenatal attachment was found to increase as the social support increased. We therefore recommend evaluating the anxiety, social support and prenatal attachment levels of pregnant women, especially

those with a high-risk pregnancy being followed-up at the hospital. It is also recommended to determine the psychosocial factors with negative effects, plan the relevant interventions, and provide consultancy services. It is believed that the evaluations and interventions will increase the healthcare standard of all pregnant women and especially those who are at risk during their pregnancy and increase prenatal attachment. The current study could guide healthcare professionals who care for pregnant women as regards optimum and holistic care presentation.

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