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A Comparison of Healthy Lifestyle Behaviors and Depression in Pre-Eclampsy Pregnancy

Preeklampsi Gebelerde Sağlıklı Yaşam Biçimi Davranışları ve Depresyonun Karşılaştırılması

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Abstract

Aim: It is thought that there is a relationship between healthy lifestyle behaviors and depression in preeclampsia, which is frequently encountered during pregnancy.

Material and Method: This is a descriptive design study. The sample comprised 168 pregnant women, including pregnant women with preeclampsia and healthy pregnant women. The data were collected with the Descriptive Information Form, the Healthy Lifestyle Behavior Scale-II, and the Beck Depression Scale. Appropriate statistical methods were utilized in the evaluation of the study.

Results: According to the results, the healthy lifestyle behaviors scale mean scores of pregnant women with preeclampsia were higher than those of healthy pregnant women (p=.03). No statistically significant difference was seen between preeclampsia and healthy pregnant women in terms of the mean Beck depression scores (p=.278). A negative, weak, linear relationship was found between Beck scores and healthy lifestyle behaviors scale total scores in pregnant women with preeclampsia (r=.243; p=.026). As Beck scale scores increased, healthy lifestyle behaviors scale total scores decreased.

Conclusion: The mean scores of health responsibility, spiritual development, and stress management sub-scales of healthy lifestyle behaviors were higher in preeclamptic pregnant women than healthy pregnant women. It is recommended to determine women's pre-pregnancy health behaviors and explore their negative behaviors for maternal and infant health.

Keywords: Depression, health behaviors, preeclampsia, pregnancy

Öz

Amaç: Araştırmanın amacı preeklampsi gebelerde sağlıklı yaşam biçimi davranışları ve depresyon bulgularının değerlendirilmesidir.

Gereç ve Yöntem: Çalışma tanımlayıcı niteliktedir. Araştırma örneklemini preeklampsi tanısını alan gebeler ile sağlıklı gebeler olmak üzere toplam 168 gebe oluşturmaktadır. Veriler; Tanıtıcı Bilgi Formu, Sağlıklı Yaşam Biçimi Davranışları Ölçeği II ve Beck Depresyon Ölçeği ile toplandı. Çalışmanın değerlendirilmesinde uygun istatistiki yöntemler yapıldı.

Bulgular: Çalışmada preeklampsi gebelerin sağlıklı yaşam biçimi davranışları ölçek puan ortalamalarının sağlıklı gebelere oranla daha yüksek olduğu tespit edildi (p=.03). Preeklampsi ve sağlıklı gebeler arasında BECK depresyon puan ortalamaları arasında istatistiksel olarak anlamlı bir fark tespit edilmedi (p=.278). Preeklampsi gebelerde BECK puanlarıyla sağlıklı yaşam biçimi davranışları ölçek toplam puanları arasında; negatif yönlü, zayıf derecede, doğrusal bir ilişki saptandı (r=.243; p=.026). BECK puanları arttıkça sağlıklı yaşam biçimi davranışları ölçek toplam puanları azalmaktadır.

Sonuç: Preeklampsi gebelerde sağlıklı yaşam biçimi davranışlarının alt boyutlarından sağlık sorumluluğu, manevi gelişim, stres yönetimi puan ortalamaları sağlıklı gebelere göre daha yüksektir. Kadınların gebelik öncesi sağlık davranışlarının belirlenmesinin, olumsuz davranışlarının sorgulanmasının, anne ve bebek sağlığı için önemli olduğu düşünülmektedir.

Anahtar Kelimeler: Depresyon, gebelik, sağlık davranışları, preeklampsi

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INTRODUCTION

Hypertensive diseases are among the major causes of morbidity and mortality for mothers, fetuses, and newborns in developed and developing countries.[1] It is reported that 14% of all maternal deaths worldwide are due to hypertensive diseases during pregnancy.[2] Diseases accompanied by hypertension in pregnancy adversely influence the health of both the mother and the baby.[3,4] Preeclampsia is a pregnancy hypertensive disease and is one of the three common causes of maternal death worldwide.[5] It is the second leading cause of maternal death in our country.[6]

Preeclampsia, which develops in the second half of pregnancy accompanied by urinary proteinuria and hypertension, affects 3-5% of pregnancies[7,8] and causes the death of approximately 500.000 infants and 70.000 mothers each year.[9]

The etiopathogenesis of pregnancy-associated preeclampsia is not known precisely, but it is thought to develop as a result of vasospasm, endothelial cell destruction, immunological factors, and secondary decreased organ perfusion.[10,11] Pathology in preeclampsia exists even from the onset of pregnancy, but clinical findings appear in the later stages of pregnancy. The early onset of clinical findings occurs with the aggravation of the pathology.[12]

Health promotion is defined as the individuals' gaining the power to improve their health and increase control over it. The use of health-promoting behaviors is essential to prevent diseases, early diagnosis, and maintenance of health. According to Pender, healthy lifestyle behaviors are classified as spiritual development, health responsibility, exercise, nutrition, interpersonal relationships, and stress management.[13]

It is pivotal for individuals to acquire and maintain healthy lifestyle behaviors at all stages of their lives.[14] During a critical period, such as pregnancy, it is expected that women develop healthy lifestyle behaviors before, during, and after pregnancy.

The healthy lifestyle behaviors of the mother during pregnancy affect the current pregnancy and its outcomes, and the development of the fetus/newborn in the short and long term. Therefore, there are many healthy lifestyle behaviors that the mother is expected to exhibit for a healthy pregnancy.[15]

When a risky situation is detected during pregnancy, not only the physical health of the mother but also her mental health is affected. Antenatal and postnatal anxiety and depression are observed in high-risk pregnant women diagnosed with preeclampsia.[16] Worrying about the baby due to preeclampsia, the threat of premature birth, anomaly birth, and the loss of the baby cause high levels of stress and, thus, depression in women.

Depression, which is a significant mental health problem frequently seen throughout the world, prevents people's functionality, creativity, happiness, and satisfaction, resulting in a reduction in the quality of life and workforce losses.[17] International studies indicate that depression is mostly seen in women aged 18-44, including fertility processes like pregnancy, childbirth, and the puerperium.[18,19] The prevalence of depression is reported to be 13-20% worldwide and 10% in Turkey.[20]

Depression is a significant individual and social health problem due to its high prevalence, chronicity, and recurrence rates, increasing the loss of workforce, maternal and fetal morbidity, mortality, and the risk of suicide. Therefore, early diagnosis and treatment of pregnancy depression are of vital importance.[21]

In this study, the researcher aimed to evaluate healthy lifestyle behaviors and depression findings in pregnant women with preeclampsia.

Research Questions

- What are the healthy lifestyle behaviors in pregnant women with preeclampsia?
- What are the healthy lifestyle behaviors of normal pregnant women?
- Are there symptoms of depression in pregnant women with preeclampsia?
- Do normal pregnant women have symptoms of depression?
- Between healthy lifestyle behaviors in preeclampsia and normal pregnancies is there any difference?
- There is a difference between depression symptoms in preeclampsia and normal pregnancies is it?

MATERIAL AND METHOD

Study Design

This study is in a descriptive design.

Participant and The Universe and Sampling of the Study

The universe of the study included pregnant women attending the Istanbul Kanuni Sultan Süleyman Training and Research Hospital Gynecology Polyclinics. There are two groups in the study: preeclamptic pregnant women and healthy pregnant women. To apply the Healthy Lifestyle Behaviors Scale and Beck Depression Scale with four scales, 286 pregnant women with preeclampsia admitted to the Istanbul Kanuni Sultan Süleyman Training and Research Hospital in 1 year was calculated with ±3 standard deviation, 95% confidence (5% significance level). As a result, 168 pregnant women were involved in the study (84 preeclamptic women and 84 healthy women).

Inclusion criteria were being at the age of 18-45, being at or after the 28th gestational week, being a T.R. citizen, being diagnosed with preeclampsia during pregnancy or being a healthy pregnant, taking part in the study voluntarily, and not being diagnosed any chronic disease.

Data Collection Tools

Validity and Reliability Information of the Study

The data were collected in 3 stages:

The descriptive information form: Developed by the researcher using the literature, the form has 40 questions regarding the socio-demographic information, obstetric history, and health status of pregnant women. The data collection tools were administered by the researcher through face-to-face interviews with volunteer pregnant women. It took about 20-30 minutes to fill out the form.

The healthy lifestyle behavior scale-II (HLBS-II): It was developed (1987) and revised (1996) by Walker et al.[22] The Turkish adaptation study was performed by Bahar et al. in 2008. The scale measures an individual's health-promoting behaviors associated with a healthy lifestyle. The scale consists of 52 items and 6 sub-dimensions;[23] spiritual development, health responsibility, physical activity, nutrition, interpersonal relationships, and stress management. All the items of the scale are positive and in the form of a 4-point Likert scale (never (1), sometimes (2), often (3), regularly (4). The lowest score for the whole scale is 52, and the highest score is 208. The overall score of the scale gives the healthy lifestyle behaviors score. The Alpha reliability coefficient of the scale was reported as 0.94.[23] In this study, the Alpha reliability coefficient was found to be 0.899.

The Beck depression inventory: The Beck Depression Inventory constitutes the third part of the data collection phase. It was used to measure the level of depression in women in our study. It was first developed by Aaron Temkin Beck in 1961 and was revised in 1971.[24] The scale was adapted into Turkish by Hisli (1989). The aim of the scale is not to diagnose, but to determine the severity of depression symptoms numerically. There are 21 items on the scale in the form of a four-point Likert scale. The total score ranges from 0 to 63. Items are scored between 0-3, and the highest score to be obtained is 63. In the validity and reliability article of the scale for Turkish, the cut-off score was reported to be 17. A high score indicates that the severity of depression symptoms increases.[25,26] In the reliability study, the Cronbach Alpha coefficient was found to be 0.80, and the reliability of split-half was found to be r=.74.[25] In our study, the Cronbach' s alpha coefficient was found to be 0.863.

Ethical Approval

To conduct the research, institutional permission was obtained from Istanbul Istanbul Kanuni Sultan Süleyman Training and Research Hospital, and ethics committee approval was received from Health Sciences University Hamidiye Non-invasive Ethics Committee (No: 46418926, Date: 28.06.2019-19/88). Our research was conducted in accordance with the provisions of the 1995 Declaration of Helsinki. The participants were informed about the purpose of the study, that their data would be kept confidential and that they could withdraw the study whenever they wanted, and their oral and written consents were obtained. As the study was conducted only in one hospital, the results cannot be generalized to the whole population, and they are based on the personal reports of pregnant women.

Statistical Analysis and Evaluation of Data

The normality testing of continuous variables was performed with the Shapiro Wilk test. Parametric tests were utilized for the variables conforming to the normal distribution, and non-parametric methods for those that did not. The student's t-test and the Mann Whitney U test were used for the comparison of the mean scores of preeclamptic and healthy pregnant women, and the median comparison methods, respectively. Chi-square test was performed in the comparison of categorical data, and Fisher Exact test was used if the expected value less than 5 was above 20%. To examine the linear relationship between continuous variables, Pearson correlation coefficients were calculated. The data analysis was performed with SPSS 21 program. The statistical significance level was considered 0,05.

This study was created from an article produced from the Master's thesis of the University of Health Sciences, Department of Midwifery (May, 2021).

RESULTS

The mean age of the women with preeclampsia was 30.71±6.13 (min=19, max=44), and the average week of gestation was 33.38±3.45 (min=28, max=41). **Table 1** presents the data regarding the age and gestational week the pregnant women.

Preeclamptic pregnant women had a higher age average and lower gestational week (p<0.05, **Table 1**).

We compared the pre-pregnancy and current weight averages between the groups and we found that the average weight in the preeclampsia group was statistically significantly higher (p<0.005). No statistically significant difference was seen between pre-pregnancy and current weights between preeclamptic and healthy pregnant women (p=.386, **Table 2**).

Table 1. Comparison of the Data Regarding Age and Gestational Weeks of the Groups (N=168)

	Pregnant women with preeclampsia (N=84)		Healthy pregnant women (N=84)		t	p
	Mean±SD	Min-Max	Mean±SD	Min-Max		
Age	30.71±6.13	19-44	27.6±5.59	19-45	3.444	0.001
Week of gestation	33.38±3.45	28-41	38.75±1.8	34-41	-12.652	<0.001

p: Student's t-test

Table 2. Results Regarding Pre-Pregnancy Weight, Current Weight and BMI Characteristics of the Groups

	Pregnant women with preeclampsia		Healthy pregnant women		t	p_{group}
	Mean±SD	Min-Max	Mean±SD	Min-Max		
Pre-pregnancy weight	70.91±14.90	45-110	63.34±12.70	40-95	3.543	0.001
Current Weight	83.72±14.54	54.3-130	77.00±12.33	46-108.75	3.235	<0.001
Difference (%95 GA)	-12.82±6.43	-14.22--11.42	-13.66±6.10	-14.98--12,34	0.870	0.386
pr	t=-18.262 p<0.001		t=-20.537 p<0,001			
Pre-pregnancy BMI	27.85±5.79	17.03-42.06	24.30±5.04	14.34-38.05	4.240	<0.001
Current BMI	32.84±5.35	22.6-48.83	29.52±4.83	16.49-42.16	4.216	<0.001
Difference (%95 GA)	-4.99±2.44	-5.52--4.46	-5.22±2.34	-5.73--4.71	0.635	0.526
pr	t=-18.739 p<0.001		t=-20.438 p<0.001			

p_{group}: Student's t test, pr: Paired t test

Table 2, pre-pregnancy and current BMI averages of pregnant women with preeclampsia were higher than healthy pregnant women (p<0.05). The pregnant women were evaluated separately, and the difference between pre-pregnancy and current BMI values was found to be statistically significant (p<0.05). The difference between pre-pregnancy and current BMI values between preeclampsia and healthy pregnant women was not statistically significant (p=.526).

A statistically significant difference was found between the pre-pregnancy and current weights of pregnant women (p<0.05). Pre-pregnancy weight, current weight, pre-pregnancy BMI, and current BMI values were found to be higher in preeclamptic pregnant women than healthy pregnant women.

Healthy Lifestyle Behaviors sub-scales of health responsibility, spiritual development, stress management and scale total scores were found to be higher in pregnant women with preeclampsia (p<0.05, **Table 3**).

There was no statistically significant difference between preeclamptic and healthy pregnant women according to the mean Beck depression scores (p>0,05, **Table 4**).

A negative, weak, linear relationship was found between Beck scores and health responsibility scores in pregnant women with preeclampsia (r=.267; p=.014). As Beck scores increased, health responsibility scores decreased.

Table 5, a negative, weak, linear relationship was also found between Beck scores and healthy lifestyle behaviors scale total scores in pregnant women with preeclampsia (r=.243; p=.026). As Beck scores increased, healthy lifestyle behaviors scale total scores decreased.

Table 3. The Healthy Lifestyle Behaviors Scale II Scores of the Participants

HLBS-II Sub-Scales	Pregnant women with preeclampsia		Healthy pregnant women		t	p
	Mean±SD	Min-Max	Mean±SD	Min-Max		
Nutrition	24.17±3.71	17-32	23.76±4.1	16-36	0.672	0.503
Physical activity	14.63±4.01	8-26	14.42±4.31	8-28	0.334	0.739
Interpersonal relations	27.43±4.73	17-36	26.68±4.02	18-36	1.107	0.270
Spiritual development	29.15±4.16	19-36	27.71±4.19	19-36	2.235	0.027
Health responsibility	23.46±4.47	10-33	21.14±4.75	13-32	3.262	0.001
Stress management	21.31±3.86	12-30	20.11±4.02	13-32	1.977	0.050
HLBS-II Total Score	140.15±17.97	100-180	133.82±19.4	98-187	2.195	0.030

Table 4. Comparison of the Data of Preeclampsia and Healthy Pregnant Women According to the BECK Depression Scale

	Pregnant women with preeclampsia		Healthy pregnant women		t	p
	Mean±SD	Min-Max	Mean±SD	Min-Max		
BECK	13.29±8.65	1-42	14.85±9.89	0-55	-1.088	0.278

Table 5. Comparison of the Total Scores of the Groups' According to the Healthy Lifestyle Behaviors Scale II and BECK Depression Scale

BECK		Health responsibility	Physical activity	Nutrition	Spiritual development	Interpersonal relations	Stress management	Total
Preeclamptic pregnant	r	-0.267	-0.024	-0.161	-0.186	-0.191	-0.208	-0.243
	p	0.014	0.826	0.145	0.090	0.081	0.058	0.026
Healthy pregnant	r	0.020	-0.019	-0.022	-0.156	-0.191	-0.169	-0.112
	p	0.857	0.865	0.844	0.157	0.082	0.125	0.311

p: Pearson Correlation

DISCUSSION

Advanced age is reported to be a risk factor for preeclampsia in the literature. According to Pandian et al., the risk of placental abruption increases with the risk of diabetes mellitus and preeclampsia in advanced age pregnancies.[27] The mean age of pregnant women in the preeclampsia group was also high in our study (**Table 1**).

Physiological changes during pregnancy, insufficient or excessive intake of nutrients are believed to cause epigenetic modifications in the fetus by showing short and long-term effects.[28] Rapid weight changes can be seen during pregnancy. A high Body Mass Index (BMI) can have negative outcomes for the mother and the baby. Pre-pregnancy obesity leads to the development of systemic diseases such as pregnancy-related hypertension, preeclampsia, gestational diabetes, and pregnancy complications such as neonatal death and cesarean section.[29] In the study of Sak et al., it was highlighted that the mean BMI of the preeclampsia group was higher than that of the control group, and the difference was significant.[30] Yurtsever determined that the BMI before and during pregnancy in pregnant women with preeclampsia, and in Dursun's study, the mean BMI of pregnant women with preeclampsia was significantly higher.[31,32] Consistent with the literature, in our study, we found that pre-pregnancy and current BMI averages of pregnant women with preeclampsia were higher than healthy pregnant women, and the difference between pre-pregnancy and current BMI values was statistically significant when evaluated separately in preeclampsia and healthy pregnant women ($p<0.05$, **Table 2**).

The ratio of preterm birth in pregnant women diagnosed with preeclampsia is reported to be higher.[31,33,34] Likewise, in our study (**Table 1**), the preeclampsia group had also higher preterm birth ratios in their previous pregnancies.

The mean score of HLBS of pregnant women with preeclampsia was 140.15±17.97, and the mean score of healthy pregnant women was 133.82±19.4. In our study, in both preeclampsia and healthy pregnant women, the lowest and the highest scores were obtained in the physical activity and the spiritual development sub-scales in HLBS respectively (**Table 3**). In a similar study conducted by Onat and Aba with pregnant women, it was reported that the lowest score in HLBS belonged to the physical activity sub-scale and the highest score belonged to spiritual development sub-scales.[35] No significant difference was found between total scale scores in a study by Aksoy et al. in which healthy life behaviors of high-risk pregnant women and healthy pregnant women were evaluated. However, there was a significant difference between the groups in the sub-dimensions of stress management, physical activity, and health responsibility. Health behavior scores are higher in risky pregnant women.[13] Auerbach et al. reported that health controls during pregnancy directly affect the health of the mother and baby.[36] Health responsibility and spiritual development are of vital importance in the acquisition of health behaviors. In our study, health responsibility, spiritual development, and stress management scores were higher in pregnant women with preeclampsia. Our study results are consistent with the literature, and the highest health behavior is spiritual development, and the lowest health behavior is physical activity, especially in risky groups. This shows us that in high-risk pregnancies, health searches and pregnancy follow-ups are performed more frequently, and pregnant women are effective in managing the process by avoiding stress.

The psychopathological symptoms experienced during pregnancy cause negative outcomes on the fetus. It has also been reported that preeclampsia and eclampsia, hypertensive diseases of pregnancy, are associated with depression.[21] In the study by Pişirgen with risky pregnancies, it was noted that the mean anxiety and depression in cases with risky pregnancies were significantly higher than in non-risky cases.[37] Contrary to the literature, in our study, no significant difference was found between depression scores in preeclampsia and healthy pregnant women, which may be due to the successful stress management of the pregnant women in the study (**Table 4**). A relevant study emphasizes that depression causes negative health behaviors in pregnant women and contributes to the occurrence of obstetric risks.[38]

According to our study results, the increase in depression status in pregnant women with preeclampsia decreased the responsibility for health, suggesting that the increase in the severity of depression symptoms in women harms their health behaviors during pregnancy. There was also a negative relationship between the Beck scores and healthy lifestyle behaviors scale total scores in pregnant women with preeclampsia (**Table 5**). As healthy lifestyle behaviors decreased, depression levels increased in pregnant women.

Study Limitation

In this study, in terms of research generalizability, only this constitutes the limitations of the study because it was conducted in the gynecology ward of a university hospital.

CONCLUSION

As a result, pregnancy is a unique experience for every woman. Therefore, the negative health behaviors of the woman during this period may endanger the development of the baby. Particularly, in preeclampsia, a high-risk disease for pregnancy, maternal stress is high. Primary health care services have significant functions in questioning the risky pregnancy history and early interventions to detect negative health behaviors (such as obesity, smoking, exercise status) before pregnancy.

To eliminate the complaints in pregnant women with preeclampsia, the lifestyle of the pregnant woman should be reviewed, and healthy lifestyle behaviors should be developed. Evaluation of depression before and during pregnancy and early intervention is important for maternal-fetal health. Therefore, women in the risk group should be supported to gain positive health behaviors in their daily lives. During prenatal, antenatal, and postnatal follow-ups, it is essential to approach pregnant women as a whole, both physically and mentally.

ETHICAL DECLARATIONS

Ethics Committee Approval: This study was evaluated by Turkey Istanbul Kanuni Sultan Süleyman Training and Research Hospital, and ethics committee approval was received from Health Sciences University Hamidiye Non-invasive Ethics Committee (Decision No: 46418926, Date: 28.06.2019-19/88).

Informed Consent: Because the study was designed retrospectively, no written informed consent form was obtained from patients.

Referee Evaluation Process: Externally peer-reviewed.

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