

## Assesment of Prenatal Distress and Depressive Symptoms in Women with Gestational Diabetes

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### ABSTRACT

**Aim:** Diabetes Mellitus is one of the most common health problem in pregnancy. The study was designed to assess the prenatal distress and depression symptoms prevalence during pregnancy with or without gestational diabetes mellitus (GDM).

**Material and Methods:** This study was a comparative descriptive. Three hundred and eight pregnant women (155 healthy and 153 with GDM) attending at The Health Science University Hospital in Istanbul, Turkey, participated in the study. A semi-structured questionnaire form were used for sociodemographic, obstetric and diabetic data. Multidimensional Scale of Perceived Social Support (MSPSS) were used to measure social support, Perinatal Distress Scale (PDS) were used to measure perinatal distress and Edinburgh Postpartum Depression Scale (EPDS) were used to measure depression symptoms.

**Results:** PDS and EPDS score was significantly higher in GDM subjects compare to healthy (without GDM) subjects. A significant negative correlation was found between MSPSS and EPDS scores in both groups. There was a significant positive correlation between the PDS and EPDS scores in both groups.

**Conclusion:** The women with GDM have more distress and depression symptoms. Higher rate of depression and distress in pregnancy deserves medical attention especially women with GDM, so awareness of health care professional should be increased.

**Key Words:** *Pregnancy, Gestational diabetes, Depression, Social support*

## Gestasyonel Diyabetli Kadınlarda Prenatal Distres ve Depresyon Düzeylerinin Belirlenmesi

### ÖZET

**Amaç:** Gestasyonel diabetes mellitus (GDM) gebelikte en yaygın görülen sağlık problemlerinden biridir. Bu çalışmanın amacı gestasyonel diyabetli kadınlarda prenatal distres ve depresyon düzeylerinin belirlenmesidir.

**Gereç ve Yöntemler:** Çalışma karşılaştırmalı tanımlayıcı türdedir. İstanbul'da bir üniversite hastanesinde takip edilen 308 gebe (155 sağlıklı, 153 gestasyonel diyabetli) dahil edilmiştir. Sosyodemografik, obstetrik ve diyabetik veriler için yarı yapılandırılmış görüşme formu kullanılmıştır. Ayrıca Çok Boyutlu Algılanan Sosyal Destek Ölçeği (ÇBASDÖ), Perinatal Distres Ölçeği (PDÖ) ve Edinburgh Doğum Sonrası Depresyon Ölçeği (EDSDÖ) kullanılmıştır.

**Bulgular:** PDÖ ve EDSDÖ skoru GDM'li gebelerde sağlıklı gebelere göre anlamlı derecede yüksek bulundu. Her iki grupta da ÇBASDÖ ile EDSDÖ arasında negatif yönde anlamlı bir ilişki bulundu. PDÖ ve EDSDÖ arasında pozitif yönde anlamlı bir ilişki olduğu belirlendi.

**Sonuç:** GDM'li kadınlar daha fazla distres ve depresyon belirtileri gösterirler. Gebelikte distres ve depresyon düzeyinin yüksek olması özellikle diyabetli kadınlarda daha fazla tıbbi sorunlar yaşanmasına neden olmaktadır. Bu nedenle sağlık bakım profesyonellerinin farkındalığı artırılmalıdır.

**Anahtar Sözcükler:** *Gebelik, Gestasyonel diyabet, Depresyon, Sosyal destek*

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## INTRODUCTION

Pregnancy period counted as a life crisis period because of important biological and psychological adaptations (1,2). Although many women can easily adapt to these changes, some of them can have some health problems (3).

Diabetes Mellitus affects approximately 0.6 to 15% of women all over the world (4-6). Gestational diabetes is defined as carbohydrate intolerance (7-9). In Turkey, the prevalence of GDM has been found between 1.2%- 30.8% (10,11).

Distress, depression and diabetes are common in pregnancy (12). There are many biological and psychosocial mechanisms that explain the relationship between GDM, antenatal distress and depression (13). The stress-enhancing effect of hyperglycemia and insulin on the thyroid and the psychological burden of chronic disease on pregnancy can be given as examples (13,14).

GDM leads to increases the incidence of stress and anxiety in pregnant women and some adverse maternal and foetal complications in the prenatal and postnatal period. Although the association between stress, depression and diabetes is well established, nurses and other health care team members have less information about antenatal distress and depression relationship (12). A few studies examined the GDM and prenatal distress-depression symptoms in the literature. The purpose of the study is to assess perinatal distress and depression level in women with or without gestational diabetes. It may be possible to prevent many maternal and foetal complications by planning nursing care carefully in women with GDM.

## MATERIALS and METHODS

### Ethical Consideration

The protocol was approved by the written Ethical Review Committee of The Health Science University Hospital in Istanbul, Turkey. Written consent was received from all subjects. Objectives and the procedure of study were oriented to the subjects, including their right to refuse and withdraw at any stage of the study. All information and data collected for the study, were deemed confidential.

### Study Design

The research is designed as a descriptive and comparative study.

### Sampling and setting

The study was conducted from July 2015 and September 2016 at outdoor department of The Health Science University Hospital.

### Research participation criteria;

For the diabetic group: 18 years of age and over, willing to participate in the study, 24<sup>th</sup> and over week on pregnancy, with gestational diabetes, no psychiatric disease and speaks Turkish.

For the healthy group: 18 years of age and over, willing to participate in the study, 24 and over week on pregnancy, speaks Turkish, and have no chronic or psychiatric disease.

Sample size was calculated with using power analysis 3.1.7. version, 95% confidence interval, 5% error margin, 0.5 effect size and 80% power. 145 for GDM group and 150 for healthy group were taken. The study was conducted with 155 healthy, 153 diabetic pregnant women who were available for participation criteria.

### Measurements

Data on sociodemographic, obstetric, diabetic information was collected with semi structured questionnaire form including 37 questions about (31 questions in healthy group questionnaire form because there are no questions about diabetes). Multidimensional Perceived Social Support Scale, Perinatal Distress Scale and Edinburgh Postpartum Depression Scale were used to measure social support, prenatal stress and prenatal depression symptoms.

Questionnaire form: The semi structured questionnaire form has 37-questions (31 questions with no diabetes) that includes data such as sociodemographic, obstetric, diabetic status of pregnancies. It was structured according to the literature by the researcher (9,15,16).

Multidimensional Scale of Perceived Social Support: It was developed by Zimet et al. in 1988 to measure the adequacy of social support consisting of three sub-dimensions such as "family", "friend" and "private person". It consists of 12 items in total. On a Likert-type scale, scores of 1 (absolutely no) to 7 (absolutely yes) are given to each item. The score of the subdimensions is between 4 and 28, and the score of the scale is between 12 and 84. Validity and reliability studies have been carried out in Turkey (17).

Prenatal Distress Scale: It was developed by Yali and Lobel (1999) in order to assess specific pregnancy related concerns such as pregnancy related medical problems, physical symptoms, somatic changes, parenting, birth and baby health. The validity and reliability study for Turkey was carried out by Durna Z., Akın S. and Yüksel F. Participants are asked to respond by marking one of the choices listed as "None" (0), "Some" (1) and "Too many" (2) by reading each expression on the scale. The high score of the scale indicates that the perceived prenatal distress is high (18).

Edinburgh Postpartum Depression Scale (EDSSS): The scale developed by Cox et al. in 1987. The validity and reliability study for Turkey was carried out by Engindeniz et al. in 1996. It was developed to determine the postpartum depression risk. However, research by Murray and Cox found that scale also could be effective to determine the depression in the pregnancy period. The scale is of the four-point likert type and consists of 10 items. The cutoff point of the scale was 13. Higher scores indicate that the depressive risk is greater (16).

### Data Collection

The data was collected by face-to-face interview technique.

### Data Analysis

The data were analyzed in the SPSS version 15 database. Descriptive statistical methods (mean, standard deviation, mode, median, frequency, minimum, maximum), Chi Square and Mann-Whitney U tests were used in statistical analysis of the data.

### Limitations of the Research

The study was conducted in one center and the number of samples was low.

### RESULTS

Mean age of the study population were  $29.24 \pm 4.93$  with GDM and  $29.00 \pm 4.87$  without GDM, ( $p > 0.999$ ). Mean of education years were  $11.11 \pm 4.15$  with GDM and  $11.43 \pm 3.99$  without GDM, ( $p > 0.999$ ). Mean gestational age were  $30.00 \pm 3.86$  with GDM and  $31.00 \pm 4.64$  without GDM, ( $p > 0.999$ ) (Table 1).

Mean of MSPSS score was quite higher in both groups as the subscale and the total score (with GDM 68.79; without GDM 71.84) and there was no significant difference between the groups ( $p > 0.999$ ). The prenatal distress scale score mean was significantly higher in GDM subjects compared to healthy subjects (GDM group  $12.44 \pm 5.16$ , without GDM group  $7.90 \pm 5.09$ ,  $p < 0.001$ ). The EPDS score mean was also significantly higher in GDM group than the healthy group (GDM group  $9.96 \pm 4.97$ , HP group  $7.56 \pm 5.58$ ,  $p < 0.001$ ), (Table 2).

There was no significant correlation between the PDS and MSPSS score means in both groups ( $p > 0.999$ ). There was a statistically significant negative and poor correlation between EPDS and MSPSS score mean in both groups ( $p < 0.001$ ), (Table 3).

A statistically significant correlation was found between the PDS and the EPDS both the gestational diabetes group and the healthy pregnant group in a poor and positive way ( $p < 0.001$ ), (Table 3).

### DISCUSSION

The primary aim of the study was to assess the prenatal distress and depression symptoms in pregnant women with gestational diabetes mellitus. Result of the study was alarming. Prenatal distress and depression are more common in women gestational diabetes and prenatal distress increases the depression symptoms. After controlling the associated factors like age, education, gravidity and gestational week; women with GDM were three to four times more prone to have depression than women without GDM (19). In our study, these associated factors (age, education, gravidity, gestational week) can be controlled and no statistically significant difference was found between the women with gestational diabetes and healthy pregnancies groups ( $p > 0.999$ ), (Table 1).

Many studies have indicated that pregnancies with high social support levels associated with fewer depressive symptoms during pregnancy (6,18,20). According to our study, the social support levels of our pregnant women are quite high (Table 2). In the study by Giurgescu et al. (19), social support scale score was also higher. In the study by Ölçer et al. (6), social support scale mean score was also higher. There was no significant difference between the two groups about the effect of social support scores on prenatal distress level in our study (Table 3). In the study by Vırt et al. (21), there was no significant relationship between the social support and distress. On the other hand, social support is seen as a protective barrier for depression in pregnancy (12,22). In our study, there was a significant poor and negatively correlation between depression and social support in both groups (Table 3). In the study of Biratu and Haile (15), more depressive symptoms were reported in the cases with low social support. It is assumed that with higher social support, the prenatal depression incidence decreases, but prenatal distress incidence is not affected.

Our study found that prenatal distress significantly higher in gestational diabetic women compared to healthy pregnancies (Table 2). In the literature, it was indicated that the stress level was higher in gestational diabetics compared to healthy pregnancies (23-25). Many biological and psychosocial mechanisms are known to explain the relationship between GDM, antenatal distress and depression. The stress enhancing effect of hyperglycemia and insulin on the thyroid and the psychological burden of chronic disease on pregnancy can be given as examples (13,26). Prenatal depression was found significantly higher in GDM group compared to healthy group according to our study (Table 2). In our study, depression symptoms were found that 30.7% in GDM group and 18.7% in healthy group according to EPDS mean score.

**Table 1:** Distribution of sociodemographic, obstetric and diabetic characteristics of gestational diabetic and healthy pregnancies.

Variables	The women with GDM (n=153)		Healthy Group (n=155)		$Z_{MWU}$	p
	$\bar{X}$ (SD)	Min-Max	$\bar{X}$ (SD)	Min-Max		
<b>Age</b>	29.24 (4.93)	19-44	29.00 (4.87)	18-43	-0.32	>.999
<b>Marriage Year</b>	6.57 (5.40)	1.0-25	6.31 (4.97)	0.6-21	-0.80	>.999
<b>Education Year</b>	11.11 (4.15)	5.0-15	11.43 (3.99)	5.0-15	-0.61	>.999
<b>Gravida</b>	2.00 (1.04)	0.0-5.0	2.01 (1.08)	0.0-6.0	-0.04	>.999
<b>Parity</b>	0.76 (0.85)	0.0-3.0	0.73 (0.80)	0.0-3.0	-0.14	>.999
<b>Gestational Age</b>	30.0 (3.86)	24.0-39.0	31.00 (4.64)	24.0-41.0	-1.84	>.999
<b>Variables</b>	<b>n</b>	<b>%</b>	<b>n</b>	<b>%</b>	$\chi^2$	<b>p</b>
<b>Working Status</b>						
Working	73	47.7	76	49.0	0.054	>.999
Not working	80	52.3	79	51.0		
<b>Family Type</b>						
Core Family	136	88.9	132	85.2	0.947	>.999
Extended Family	17	11.1	23	14.8		
<b>Problem in Marriage</b>						
Yes	9	5.9	11	7.1	0.187	>.999
No	144	94.1	144	92.9		
<b>Prepregnancy BMI</b>						
Normal weight (BMI <25)	120	78.4	127	81.9	0.595	>.999
Overweight (BMI ≥25)	33	21.6	28	18.1		
<b>Gestational Weight Gain</b>						
Under 14	116	75.8	128	82.6	2.140	>.999
14 and Over	37	24.2	27	17.4		
<b>Planned Pregnancy</b>						
Yes	109	71.2	124	80.0	3.206	>.999
No	44	28.8	31	20.0		
<b>GDM Treatment Type</b>						
Diet	132	86.3				
Insulin+Diet	18	11.8				
<b>Diabetes in the family</b>						
Yes	63	41.2				
No	87	56.9				

GDM: Gestasyonel Diyabetes Mellitus,  $Z_{MWU}$ : Mann-Whitney U,  $\chi^2$ : Chi square

**Table 2:** Comparison of scale intervals of the MSPSS, PDS and EPDS of gestational diabetes and healthy pregnancies.

	The women with GDM (n=153)		Healthy Group (n=155)		$Z_{MWU}$	p
	$\bar{X}$ (SD)	Min-Max	$\bar{X}$ (SD)	Min-Max		
<b>MSPSS</b>	68.79 (16.44)	16.0-84.0	71.84 (14.14)	19.0-84.0	-2.02	>.999
<b>PDS</b>	12.44 (5.16)	0.0-25.0	7.90 (5.09)	0.0-25.0	-7.62	<.001
<b>EPDS</b>	9.96 (4.97)	0.0-28.0	7.56 (5.58)	0.0-28.0	-4.42	<.001

$Z_{MWU}$ : Mann-Whitney U

**Table 3:** Comparison of PDS and EPDS scores and MPSS scores in gestational diabetic and healthy pregnancies and comparison of PDS scores and EPDS scores between gestational diabetic and healthy pregnancies.

	MSPSS			
	The women with GDM (n=153)		Healthy Group (n=155)	
	r	p	r	p
PDS*	-0.12	>.999	-0.13	>.999
EPDS*	-0.40	<.001	-0.37	<.001

  

	EPDS			
	The women with GDM (n=153)		Healthy Group (n=155)	
	r	p	r	p
PDS*	0.45	<.001	0.38	<.001

\*: Spearman's rho

Natasha et al. (12) found no significant difference about depression symptoms prevalence between GDM and healthy pregnant (25.9% of the women with gestational diabetes and 10.3% of healthy pregnant). The difference between the outcome of our study and the literature may be due to the inclusion criteria used (24 gestational week and over).

The stress experienced by women during pregnancy period is normally seen due to physical and psychological changes. However, as the level of stress increases, the incidence of depressive symptoms increases (3,5). There was a statistically significant positive and poor correlation between prenatal stress and depression in both groups for the result of our study (Table 3). In a study by Carolan-Olah and Barry (26), the prevalence of depressive symptoms increased as prenatal stress level increased. In the study of Fişkın et al. (3), also reported that psychosocial adaptation was low in high-risk pregnancies and depression symptoms were more frequent in those who had more stress.

According to the result of our study, it is assumed that the incidence of stress and depression symptoms may be higher in pregnant women with diabetes compared to healthy pregnant women. Nurses should have more attention to the symptoms of depression in women with GDM. Stress and depression which are more intense in pregnant women, GDM may increase the risk of maternal and foetal health problems in addition to diabetes. For this reason, it is important that health care professionals should be informed about the stress and depression effects in pregnant women with GDM.

## CONCLUSION

As a result of this study, gestational diabetics were found to have more distress and depression symptoms. It was found that social support was not an effective on gestational stress, but it was important for depression to increase the

incidence of symptoms. It was determined that depressive symptoms incidence increased as prenatal distress increased in pregnancy. According to study results, the awareness of health care providers should be increased that the women with gestational diabetes show more stress and depression symptoms than healthy pregnancies.

## The Declaration of Interest

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