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THE RELATIONSHIP OF PERSONALITY TRAITS ON THE LEVELS OF ANXIETY AND DEPRESSION DURING PREGNANCY

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Abstract: This study was conducted to investigate the relationship of personality traits on the levels of anxiety and depression during pregnancy. This cross-sectional study was conducted among 205 pregnant women over the age of 18 who attended the pregnancy outpatient clinic for pregnancy follow-up between June and September. The data were collected by means of the "Socio-demographic Data Form," "Cervantes Personality Scale (CPS)," and "Hospital Anxiety and Depression Scale (HADS)." The mean age of the participants was found to be 30.73±5.66 years. Scores obtained by pregnant women's on the CPS was 12.56±6.45 for the sub-dimension of extraversion/introversion, 16.61±8.03 for the sub-dimension of emotional stability/neuroticism, and 21.63±5.10 for the sub-dimension of sincerely/insincerely. Scores obtained by pregnant women's on the HADS was 7.35±4.42 for the sub-dimension of anxiety, and 5.89±4.26 for the sub-dimension of depression. It was found that 21.4% of the pregnant women had high levels of anxiety, and 14.1% of them had high levels of depression. It was found that there was a significant relationship between sub-dimension anxiety and extraversion/introversion, and emotional stability/neuroticism. It was found that there was a significant relationship between sub-dimension depression and extraversion/introversion and emotional stability/neuroticism. As a result of this study, it was concluded that there is a relationship between personality traits and anxiety and depression levels in pregnant women. In addition, it was found that pregnant women with the personality traits of introversion and neuroticism were more prone to anxiety and depression.

Keywords: Pregnancy, Anxiety, Depression, Personality traits, Pregnant woman

1. Introduction

Women experience more psychosocial changes during pregnancy compared to other periods of life. Therefore, the risk of encountering many factors that can cause stress and anxiety is higher (Dunkel and Tanner, 2012; Najman et al., 2016). Good psychological health during pregnancy is critical for the health of both pregnant woman and fetus. Since psychological disorders such as anxiety and depression during pregnancy are usually attributed to the usual changes related to pregnancy, diagnosis may be difficult and treatment may be delayed. Psychological disorders seen in this period increase complications of pregnancy and delivery, affect the health of the newborn negatively, and cause problems such as premature birth, low birth weight and intrauterine growth retardation (Graignic-Philippe et al., 2014; Haakstad et al., 2016; Bernard et al., 2018). According to international studies, depression is more common in women during the fertility period between the ages of 18-44 years (Lee et al., 2007; Faisal-Cury and Menezes, 2012; Verbeek et al., 2015). The results of the studies indicate that the rate of anxiety disorders in the antenatal period varies between 9% and 30% (Brunton

et al., 2015; Haakstad et al., 2016; Bernard et al., 2018). For a holistic approach at the pregnancy follow-up, it is important to perform the psychological evaluation together with the physical evaluation meticulously, and to evaluate risk factors. In addition, it is important to inform the pregnant women at risk about the psychiatric diseases.

Human is a bio-psycho-socio-cultural entity. Personality is a combination of all these factors. Personality is an important variable that affects the quality of life and well-being of an individual. Personality traits are unique to each individual, and distinguish them from other individuals (Bal and Şahin, 2011). Individuals respond to the events they experience based on their personality traits, and determine the methods of coping with these events. It is also reported that personality traits are related to psychological health during pregnancy (Guszkowska et al., 2014).

Personality affects the quality of life and well-being of the individual as well as the development of anxiety and depression. This study will contribute to the planning of interventions to reduce the level of anxiety and depression in pregnant women. In the light of this

information, the study was conducted to determine the relationship of personality traits on the levels of anxiety and depression during pregnancy.

2. Material and Methods

2.1. Design and Participants

This cross-sectional study was conducted at the Cerrahpasa Medical Faculty Hospital from June 2019 and September 2019. The study population consisted of pregnant women who applied for pregnancy follow-up. Power analysis was performed to determine the number of people to be included in the study, and the number of pregnant women to be included in the sampling was calculated as 178 (95% CI and 5.0% margine of error). A study was conducted with 205 people who could be reached to reduce the margin of error and increase its generalizability to the universe. The inclusion criteria consisted of pregnant women who were above 18 years of age, fetal heartbeat detected in ultrasonography, did not have any psychological and chronic disorders, had the ability to understand and fill the scales, and volunteered to participate in the study. The exclusion criteria consisted of pregnant women who were under 18 years of age, chromosome anomaly detected in the fetus, well as those with psychological and chronic disorders, who lack the ability to understand and fill the scales reluctant to participate in the study.

2.2. Measures

The data of the study were collected by using the "Socio-demographic Data Form", "Cervantes Personality Scale (CPS)," and "Hospital Anxiety and Depression Scale (HADS)."

Socio-demographic Data Form consists of 28 questions the socio-demographic and obstetric characteristics of pregnant women.

CPS was developed by Castelo-Branco et al., in 2008 and the adaptation, validity and reliability study into Turkish was carried out by Bal and Şahin in 2011. It is a 6-point Likert type scale consisting of 20 questions. The scale consists of 3 sub-dimensions (extraversion/introversion, emotional stability/neuroticism, sincerely/insincerely). Each item in the scale is scored between 0 and 5. Subscale of sincerely/insincerely is not a personality trait; it is a control for in the other two subscales. The increase in the scores of each sub-dimension of the scale indicates the increase in introversion, neuroticism, and insincerely. The decrease in the scores of each sub-dimension of the scale indicates the increase in extraversion, emotional stability and sincerely (Castelo-Branco et al., 2008; Bal and Şahin, 2011). The Cronbach's Alpha values of the scale were ∝=0.97 for the extraversion/introversion sub-dimension; ∝=0.81 for the emotional stability/neuroticism sub-dimension; ∝=0.71 for the sincerely/insincerely sub-dimension (Bal and Şahin, 2011). In the present study, the Cronbach's Alpha reliability coefficient was ∝=0.87 for the entire scale, ∝=0.80 for the extraversion/introversion sub-dimension, ∝=0.84 for the emotional stability/neuroticism sub-dimension, and ∝=0.88 for the sincerely/insincerely sub-dimension.

HADS was developed by Zigmont and Snaith (1983) in order to screen the anxiety and depression in individuals and determine the risk group. The validity and reliability study of the Turkish version of the HADS was performed by Aydemir et al. (1997). It consists of 14 questions, 7 of which investigate the symptoms of anxiety, and 7 of which examine the symptoms of depression. Each question is scored between 0 and 3. In the scale, the score between 0 and 7 indicates the absence of anxiety and depression, the score between 8 and 10 indicates the borderline levels of anxiety and depression, and the score ≥11 indicates the presence of anxiety and depression (Zigmond and Snaith, 1983; Aydemir et al., 1997). The Cronbach's Alpha values of the scale were ∝=0.85 for the anxiety sub-dimension and ∝=0.77 for the depression sub-dimension (Aydemir et al., 1997). In the present study, the Cronbach's Alpha reliability coefficient was ∝=0.85 for the entire scale, ∝=0.85 for the anxiety sub-dimension, and ∝=0.84 for the depression sub-dimension.

2.3. Statistical Analysis

The data obtained in the study were analyzed using the SPSS (Statistical Package for Social Sciences) for Windows 22.0 program. The significance value was accepted as P<0.05. Number, percentage, mean and standard deviation were used as descriptive statistical methods in the evaluation of the data. Normality distribution test was administered to determine whether the variables of the study had normal distribution. It was determined that variables of the study had normal distribution (P>0.05). Parametric methods were used in the analysis of the data. T-test was used for comparison of quantitative continuous data between two independent groups, and one-way ANOVA was used for comparing quantitative continuous data between more than two independent groups. Pearson's Correlation Analysis was performed between the continuous variables of the study.

3. Results

The findings regarding the descriptive characteristics of the pregnant women participating in the study are presented in Table 1. It was determined that the mean age of the participants was 30.73±5.66, the mean years of education was 10.11±4.46 years, the mean number of pregnancies was 2.78±1.84, the mean number of births was 1.15±1.12. Of the participants, 26.3% had university degrees, 71.7% were housewives, 83.4% had nuclear families, and 80.6% had moderate income levels. It was found that 77.1% of the pregnant women had intended pregnancies, 19% received antenatal training, 17.1% had pregnancy problems such as gestational diabetes (9.3%) and preterm birth risk (7.8%), 16.1% of them had an experience affecting their life during pregnancy, 35.1% had problems in daily activities related to pregnancy, and 42% had fear of birth (Table 1).

Table 1. Distribution of pregnant women by descriptive characteristics

Descriptive Characteristics	Mean±SD	Min-Max
Age	30.73±5.66	18-43
Year of education	10.11±4.46	4-16
Number of pregnancies	2.78±1.84	1-13
Number of births	1.15±1.12	0-5
	N	%
Education status		
Primary school	51	24.9
Middle school	46	22.5
High school	54	26.3
University	54	26.3
Year of education		
10 years and below	97	47.3
Over 10 years	108	52.7
Working status		
Is working	58	28.3
Not working	147	71.7
Family structure		
Nuclear family	171	83.4
Extended family	34	16.6
Income level		
Low level	54	19.4
Middle level	224	80.6
Planned pregnancy		
Yes	158	77.1
No	47	22.9
Receiving antenatal training		
Yes	39	19.0
No	166	81.0
Having problems during pregnancy		
Yes	35	17.1
No	170	82.9
Experiencing life-affecting events during pregnancy		
Yes	33	16.1
No	172	83.9
Having problems with daily activity		
Yes	72	35.1
No	133	64.9
Fear of birth		
Yes	86	42.0
No	119	58.0

Table 2 presents the findings elated to the scores obtained by the women in CPS and HADS. Looking at the mean scores obtained by the participants in the sub-dimensions of CPS, the mean score was 12.56±6.45 for the extraversion/introversion sub-dimension,

16.61±8.03 for the emotional stability/neuroticism sub-dimension, and 21.63±5.10 for the sincerely/insincerely sub-dimension. According to the mean scores obtained by the participants in the sub-dimensions of HADS, the mean score was 7.35±4.42 for the anxiety sub-dimension, and it was 5.89±4.26 for the depression sub-dimension. When the cut-off means scores of the pregnant women obtained in the sub-dimensions of HADS were examined, it was found that 21.4% had high anxiety levels in the hospital anxiety sub-dimension, 14.1% had high depression levels in hospital depression sub-dimension (Table 2).

Table 2. CPS and HAD mean of scores of pregnant women

Scale scores	Mean±SD	Min-Max
CPS		
Extraversion/Introversion	12.56±6.45	0-30
Emotional stability/Neuroticism	16.61±8.03	0-35
Sincerely/Insincerely	21.63±5.10	0-30
HAD		
Anxiety	7.35±4.42	0-21
Depression	5.89±4.26	0-18

Table 3 presents the findings regarding the comparison of the scores obtained by the pregnant women in CPS and HADS in terms of their descriptive characteristics. When the descriptive characteristics were compared with the extraversion/introversion sub-dimension of the CPS, a significant difference was found between regular visits to the gynecologist. It was found that women who didn't go to the regular visits to the gynecologist are more introversion personality trait. When the descriptive characteristics were compared with the emotional stability/neuroticism sub-dimension of the CPS, a significant difference was found between the years of education, regular visits to the gynecologist, having problems with daily activities, and fear of birth. It was found that women who 10 years of education or less, didn't go to the regular visits to the gynecologist, having problems with daily activities, and fear of birth are more neuroticism personality trait. When the descriptive characteristics were compared with the anxiety sub-dimension of the HADS, a significant difference was found between the years of education, working status, regular visits to the gynecologist, having problems with daily activities, having problems with marriage and fear of birth. It was found that women who 10 years of education or less, didn't work, didn't go to the regular visits to the gynecologist, having problems with daily activities, having problems with marriage, and fear of birth are more anxiety level. When the descriptive characteristics were compared with the depression sub-dimension of the HADS, a significant difference was

found between the years of education, employment status, having problems with daily activities, having problems with marriage and fear of birth. It was found that women who 10 years of education or less, didn't work, having problems with daily activities, having problems with marriage, and fear of birth are more depression level (Table 3).

Table 3. Findings regarding the comparison of pregnant women with CPS and HAD scores and descriptive characteristics

Descriptive Characteristics	Extraversion/ Introversion	Emotional stability/ Neuroticism	Sincerely/ Insincerely	Anxiety	Depression
Year of education					
10 years and below	13.41±6.82	17.95±8.61	21.79±5.39	8.03±4.83	6.66±4.79
Over 10 years	11.79±6.02	15.39±7.31	21.49±4.85	6.75±3.95	5.20±3.62
Test^a / P	1.800/ 0.073	2.301/ 0.022*	0.423/ 0.672	2.086/0.040*	2.469/0.016*
Working status					
Is working	11.65±6.16	15.60±6.38	20.72±4.95	6.31±3.15	4.74±3.44
Not working	12.91±6.55	17.00±8.59	21.99±5.13	7.76±4.78	6.34±4.48
Test^a / P	-1.264/ 0.208	-1.127/0.203	-1.609/0.109	-2.144/0.012*	-2.455/0.007*
Regular visits during pregnancy					
Yes	12.26±6.34	16.28±7.90	21.79±5.00	7.19±4.29	5.69±4.06
No	17.81±6.33	22.36±8.65	18.72±6.23	10.18±5.86	9.45±6.17
Test^a / P	-2.824/0.005*	-2.471/0.014*	1.954/ 0.052	-2.197/0.029*	-2.896/ 0.072
Having problems with daily activities					
Yes	12.62±6.42	18.73±7.55	21.43±4.89	9.79±4.52	7.68±4.84
No	12.52±6.49	15.45±8.08	21.74±5.23	6.03±3.77	4.92±3.58
Test^a / P	0.104/ 0.917	2.835/ 0.005*	-0.419/ 0.676	6.329/ 0.000*	4.627/ 0.000*
Having problems in marriage					
Yes	15.16±5.67	19.00±5.32	23.00±2.82	12.00±4.89	9.83±4.75
No	12.48±6.47	16.53±8.10	21.59±5.15	7.21±4.34	5.77±4.21
Test^a / P	1.004/ 0.317	0.739/ 0.461	0.664/ 0.507	2.647/ 0.009*	2.319/ 0.021*
Fear of birth					
Yes	12.51±6.14	18.62±7.84	20.89±5.13	9.36±4.46	6.69±4.39
No	12.59±6.69	15.15±7.89	22.16±5.04	5.90±3.80	5.31±4.09
Test^a / P	-0.093/ 0.926	3.121/ 0.002*	-1.770/ 0.078	5.961/ 0.000*	2.320/ 0.021*

^{a}Independent two-sample t-test, *P<0.05.

Table 4 presents the findings on the relationship between the sub-dimensions of CPS and the sub-dimensions of HADS. There was a weak, significant and positive relationship between emotional stability/neuroticism and extraversion/introversion and sincerely/insincerely (P<0.05). It was found that there was a very weak, significant and positive relationship between sub-dimension anxiety and extraversion/introversion (P<0.05), and a strong, significant and positive relationship between sub-dimension anxiety and emotional stability/neuroticism (P<0.05). It was found that there was a moderate, significant and positive relationship between sub-dimension depression and extraversion/introversion and emotional stability/neuroticism (P<0.05). It was determined that there was a strong, significant and positive correlation between sub-dimension depression and anxiety (P<0.05) (Table 4).

4. Discussion

Despite the fact that pregnancy is a natural life event desired and expected by all women, it is a process, in which important physiological, social and spiritual changes are experienced. While many women do not have difficulty in adapting to these changes, it may cause psychological disorders in some women.

Table 4. Findings regarding the relationship between CPS and HAD

	Extraversion/ Introversion		Emotional stability/ Neuroticism		Sincerely/ Insincerely		Anxiety		Depression	
	r[a]	P	r[a]	P	r[a]	P	r[a]	P	r[a]	P
Extraversion/ Introversion	1.000	0.000	-	-	-	-	-	-	-	-
Emotional stability/ Neuroticism	0.262	0.000*	1.000	0.000	-	-	-	-	-	-
Sincerely/ Insincerely	0.005	0.947	0.223	0.001*	1.000	0.000	-	-	-	-
Anxiety	0.186	0.008*	0.608	0.000*	0.054	0.438	1.000	0.000	-	-
Depression	0.441	0.000*	0.524	0.000*	0.094	0.182	0.614	0.000*	1.000	0.000

[a]Pearson correlation coefficient, *P<0.05.

Personality traits of the individual may also be effective in dealing with the changes that occur during pregnancy (Bal and Şahin, 2011; Dunkel and Tanner, 2012; Najman et al., 2016). The results of this study, which was conducted to determine the relationship of personality traits on the levels of anxiety and depression, of pregnant women, are discussed with reference to the relevant literature. Personality traits of the individual may be effective in dealing with the changes that occur during pregnancy. In this study, the mean scores obtained by the pregnant women participants in the sub-dimensions of CPS were found as 12.56±6.45 in the extraversion/introversion, 16.61±8.03 in the emotional stability/neuroticism, 21.63±5.10 in the sincerely/insincerely. Bal and Şahin (2011) determined the mean scores obtained by the pregnant women participants in the sub-dimensions of CPS were found as 15.95±9.1 in the extraversion/introversion, 18.83±7.3 in the emotional stability/neuroticism, 18.12±6.44 in the sincerely/insincerely (Bal and Şahin, 2011). Ozkan and Kucukkelepce (2019) determined the mean scores obtained by the pregnant women participants in the sub-dimensions of CPS were found as 14.50±5.24 in the extraversion/introversion, 19.21±5.79 in the emotional stability/neuroticism, 12.35±4.80 in the sincerely/insincerely (Ozkan and Kucukkelepce, 2019). In the present study, it was observed that pregnant women were high insincerely sub-dimension score. This result can be explained by the fact that the study was conducted with the pregnant women, and that the pregnant women exhibited insincerely trait due to hormonal and physical changes during pregnancy. In the present study, it was found that women who go to the regular visits to the gynecologist are more extraversion and emotional stability personality trait. This result suggests that regular visits to the gynecologist and being informed about the health of their babies have a positive effect on women. In this study, it was found that the participants with 10 years of education or less had more neuroticism personality traits. Bal and Şahin (2011) was found that the participants with eight years

of education or less had more neuroticism personality traits (Bal and Şahin, 2011). In the present study, it was found that the participants, who had problems in daily activities, exhibited neuroticism personality traits. The reason for this may be related to the inability to control emotions due to the stress associated with having problems carrying out daily activities during pregnancy. In the present study, it was found that the pregnant women who had fear of childbirth exhibited neuroticism personality traits. In their study, Derya et al. (2019) determined that the women, who have high levels of anxiety in their activities, were anxious, had frequent negative thoughts, believed that they were always unlucky, and had negative personality traits such as pessimism, had a greater fear of childbirth (Derya et al., 2019). The fear of childbirth, which may occur due to the uncertainty about the delivery, the first pregnancy experience as well as the intense and complex emotions, may cause the women to exhibit more neuroticism personality traits.

Psychiatric problems can be common in women, who cannot adapt to the hormonal and physiological changes during pregnancy. Many studies have found that anxiety and depression are common during pregnancy (Alder et al., 2007; Dunkel and Tanner, 2012; Brunton et al., 2015; Verbeek et al., 2015). In the present study, the mean scores obtained in the sub-dimensions of HADS were found as 7.35±4.42 for anxiety and 5.89±4.26 for depression. Similar to the present study, the anxiety scores were found to be higher compared to the depression scores (Campos et al., 2016; Do et al., 2016; Tunçel and Süt, 2018; VanDeLoo et al., 2018). According to these results, it can be argued that anxiety is more common compared to depression among the psychiatric problems during pregnancy.

In the present study, it was found that 21.4% had high anxiety levels, 14.1% had high depression levels in HADS sub-dimension. In addition, the anxiety and depression levels were found to be higher in the studies conducted with the Turkish women, compared to the international studies (Arslan et al., 2011; Çakır and Can, 2012; Tunçel

and Süt, 2018; VanDeLoo et al., 2018; Waqas et al., 2019). This may be associated with higher level of predisposition to anxiety and depression due to the fact that there is more family pressure on the woman in Turkey, they have a lower rate of employment, and family problems are more common.

In this study, anxiety and depression scores of the pregnant women with a 10 years of education or less were found to be high. In some studies, conducted with pregnant women, it was found that education level affects only one of the anxiety and depression (Van Bussel et al., 2009; Campos et al., 2016). Similar to this study, Van de Loo et al. (2018) and Dağlar and Nur (2014) found that the levels of anxiety and depression increased as the level of education decreased (Dağlar and Nur, 2014; VanDeLoo et al., 2018). Low level of education may prevent pregnant women from using effective coping methods, and affect their levels of depression and anxiety. In this study, anxiety and depression scores were found to be lower in the pregnant women, who were employed. Similar results were obtained in the study of Arslan et al. (2011) on the pregnant women (Arslan et al., 2011). Unlike this study, some studies conducted with pregnant women found that working status was not related to the level of anxiety and depression during pregnancy (Hasanjanzadeh and Faramarzi, 2017; Sunday et al., 2018). The result of this study suggesting that working during pregnancy can also reduce distress and anxiety. In this study, anxiety scores were found to be lower in the participants, who visited the gynecologist regularly during pregnancy. According to study conducted by Dağlar and Nur (2014) on pregnant women, regular antenatal controls did not have any effects on the levels of anxiety and depression. This may be associated with the fact that getting information about the baby during the antenatal check-up relieved the expectant mothers. In the present study, anxiety and depression scores were found to be high in pregnant women, who had problems in their daily activities and marriages during their pregnancy, and fear of childbirth. In the study by İşcan et al. (2018) conducted with pregnant women, it was found that the levels of depression were high in pregnant women, who had family problems and fear of childbirth. Physical and psychosocial problems that may increase during pregnancy increase the risk of experiencing anxiety and depression by making the daily life more difficult (Campos et al., 2016; VanDeLoo et al., 2018).

In this study, a relationship was found between the emotional stability/neuroticism and extraversion/introversion and sincerely/insincerely sub-dimensions. According to these findings, the pregnant women with neuroticism personality traits also exhibited the personal traits of introversion and insincerely. The fact that neuroticism personality traits were not revealed much in studies investigating the personality traits of women was revealed differently in the present study, indicating that the neuroticism personality may have a

connection with the mood of pregnancy (McCrae and Costa, 2003; Costa et al., 2017). Studies in the literature found a significant relationship between extraversion and emotional stability and subjective well-being in individuals aged 19-45 (Penley and Tomaka, 2002; Eryılmaz and Ercan, 2011).

It was found that there was a positive relationship between anxiety and depression sub-dimension and extraversion/introversion and emotional stability/neuroticism (P<0.05). According to the results of this study, it can be argued that pregnant women with introversion and neuroticism personality traits are at risk for developing anxiety and depression.

In the present study, a significant relationship was found between the sub-dimensions of HADS, depression and anxiety. Various studies have shown a relationship between anxiety and depression (Chong et al., 2016; VanDeLoo et al., 2018). The results of this study indicate that the symptoms of anxiety and depression during pregnancy tend to increase due to the characteristics arising from the nature of pregnancy. Anxiety and depression symptoms should also be evaluated during pregnancy follow-up, and contribution should be made to maintain the psychological health in pregnant women.

4. Conclusion

As a result of this study, it was concluded that there is a relationship between personality traits and anxiety and depression levels in pregnant women. It was found that 21.4% of the pregnant women had high levels of anxiety, and 14.1% of them had high levels of depression. In addition, it was found that pregnant women with the personality traits of introversion and neuroticism were more prone to anxiety and depression. During the pregnancy follow-up, psychological evaluation should be performed together with physical evaluation with the same diligence and the basic personality traits should be taken into account when planning the care of pregnant women. Training and counseling activities should be performed in order to improve the coping mechanisms that would help the pregnant women in coping with anxiety and depression.

accepted to participate in the study were informed about the purpose and scope of the study, and their written consents were obtained with an informed consent form. Data were gathered via face-to-face interviews with the participants.

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