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ORIGINAL ARTICLE

The effect of personality traits of pregnant women on the COVID-19 stress level

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ABSTRACT

Objective: This study aims to ascertain the effect of personality traits of pregnant women on the stress level related to the COVID-19 pandemic.

Material and Methods: This descriptive cross-sectional study was conducted between March and June 2022 with a sample of 253 pregnant women who met the inclusion criteria. A descriptive information form, COVID-19 stress scale, and the Five-Factor Personality Inventory were utilized to collect data. The statistical significance threshold was set at $p<0.05$ after data analysis.

Results: The mean age of the pregnant women participating in the study was 29.53±5.49 years, and the average duration of education was 10.76±3.77 years. It was found that 15% of the pregnant women experienced pregnancy-related problems during the pandemic, 23.3% had their pregnancies adversely affected, 25.7% were subjected to social isolation, and 32.4% were placed in quarantine. Pregnant women scored high on the danger and contamination fear subscale of the COVID-19 stress scale. COVID-19 stress levels were significantly higher in pregnant women with introverted and neurotic personality traits ($p<0.05$) and significantly lower in pregnant women with extraverted and emotionally stable personality traits ($p<0.05$).

Conclusion: Overall, it can be stated that pregnant women experienced stress related to COVID-19 and that their personality traits influenced their COVID-19 stress levels. Furthermore, stress related to COVID-19 was found to decrease in pregnant women with emotionally stable and extraverted personality traits, while the COVID-19 stress level significantly increased in pregnant women with introverted and neurotic personality traits.

Keywords: COVID-19, pandemic, personality traits, pregnancy, stress.

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INTRODUCTION

The unfavorable outcomes of the COVID-19 pandemic affecting the mental health of individuals at different levels of society are significant.[1] With the increase in COVID-19 cases, the health systems of countries have experienced difficulties in developing effective strategies for the diagnosis and management of the disease. These difficulties are thought to directly affect primarily physical health and subsequently psychological health.[2] Often, pregnancy is described as one of the most stressful times in the life of most women. Uncontrollable factors such as a pandemic increase the effects of stress for pregnant women who have undergone many physical and psychological changes during pregnancy.[3] Moreover, pregnant women faced certain challenges due to their responsibilities to care for family members and children throughout the COVID-19 pandemic. On the other hand, the need for regular use of maternity services increased the risk of exposure to infection in this population group.[4] Studies have shown that during the pandemic, mental health problems, namely; isolation, depression, anxiety, loneliness, and post-traumatic stress symptoms, are common among pregnant women in the perinatal period.[5–7] On the other hand, it is suggested that personality traits primarily affect psychological health during pregnancy. Personality includes all the features that determine the behavior of individuals and make them different from other individuals. According to the Five-Factor Personality Model, personality consists of consistent emotional, cognitive, and behavioral patterns within the scope of personality traits and characterizes interpersonal differences. According to the Five-Factor Personality Model, personality types are classified as extraversion, agreeableness, conscientiousness, neuroticism, and openness to experience.[8]

Extraversion explains the level of being social and friendly. Agreeableness refers to the compliance and approval of people for their cooperation with other people. Conscientiousness-directionlessness refers to the planned and carefulness of individuals and the level of self-control they display. Neuroticism defines whether a person will experience an emotional instability, that is, feelings such as anxiety, depression, and anger. Openness to Experience refers to being social and intellectual, being open to feelings and thoughts other than one's own experiences and thoughts.[8] Neurotic personality traits have been found to negatively affect the psychological health of pregnant women, while agreeableness personality traits have a positive effect.[9] In the studies conducted, it has been reported that pregnant women, especially those who are in the first trimester and have a neurotic personality, have a higher risk of experiencing pregnancy depression. Pregnant women with a neurotic personality have been found to have higher anxiety coefficients compared to those with other personality traits. Furthermore, a positive relationship has been identified between anxiety experienced during pregnancy and pregnancy depression.[10,11] In addition, other studies have shown that among the personality traits, agreeableness reduces post-traumatic stress disorder,[12] and obsessive-compulsive disorders are more common in pregnant women who do not have the openness to experience personality trait.[13] However, it is seen that the studies evaluating the stress levels and personality traits of pregnant women during the COVID-19 pandemic are limited. The purpose of this study is to ascertain the effect of pregnant women's personality traits on their level of stress during the COVID-19 pandemic.

Study Questions

Do the personality traits of pregnant women affect the COVID-19 stress level?

Does the pandemic increase stress in pregnancy?

MATERIAL AND METHODS

Type of Research: This study is a descriptive cross-sectional.

Research Population and Sample: Pregnant women who applied to the Perinatology Polyclinic at Zeynep Kamil Women and Children Diseases Training and Research Hospital between 01.03.2022-01.06.2022 constituted the study's population. During the COVID-19 pandemic, this outpatient clinic was selected as the study site because pregnant women were admitted to the perinatology service and followed up by perinatology specialists. To determine the sample size, it was decided to reach at least 242 pregnant women in the study with a 95% confidence interval (α=0.05, CI:0.95) using a sampling method for a known population (n=4572). The sample of this research included 253 pregnant women aged 18-40 who met the inclusion criteria, were able to speak and understand Turkish, did not have a communication disorder, and were willing to participate.

Data Collection Tools and Process: Data were collected at a single time point through face-to-face interviews between March and June 2022 from pregnant women who met the sampling criteria. Informed consent was obtained from the participants. In this study, data were collected in a predetermined interview room, ensuring that the information obtained during the interviews would not be shared with third parties. A literature review was conducted by the researcher, and a Descriptive Information Form comprising 15 questions, a COVID-19 Stress Scale consisting of 36 questions, and a Five-Factor Personality Inventory comprising 44 questions were used.

Descriptive Information Form: This form consists of a total of 15 questions, covering sociodemographic (Questions 1–6), obstetrics (Questions 7–10), and personality traits and the COVID-19 process (Questions 11–15).[14,15]

COVID-19 Stress Scale: Taylor et al.[16] (2020) developed a self-report scale with 36 items to assess stress experienced during the COVID-19 period. Demirgöz Bal et al.[17] (2021) conducted a validity and reliability analysis of the scale in Turkish, determining the Cronbach alpha value as 0.93. A five-point Likert scale was used to gauge the severity of symptoms. Like its initial version, the scale is divided into five subscales: COVID danger and contamination (1, 2, 3, 4, 5, 6, 19, 20, 21, 22, 23, and 24), COVID socioeconomic consequences (7, 8, 9, 10, 11, and 12), COVID xenophobia (13, 14, 15, 16, 17, and 18), COVID traumatic stress (25, 26, 27, 28, 29, and 30), and COVID compulsive checking (31, 32, 33, 34, 35, and 36). Although the scale does not have any reverse-coded items, responses are given based on how much each item reflects the respondent's experience with the COVID-19 pandemic. High scores indicate an increased level of stress associated with the COVID-19 pandemic.

Five-Factor Personality Inventory: Benet-Martinez and John developed "The Big Five Inventory".[18] The scale's adaptation to Turkish was conducted by Sümer and Sümer, with Cronbach alpha values of the five personality dimensions ranging from 0.64 to 0.77.[19] The

scale comprises 44 items across five dimensions: neuroticism (4, 9, 14, 19, 24, 29, 34, and 39), extraversion (1, 6, 11, 16, 21, 26, 31, and 36), openness to experience (5, 10, 15, 20, 25, 30, 35, 40, 41, and 44), agreeableness (2, 7, 12, 17, 22, 27, 32, 37, and 42), and conscientiousness (3, 8, 13, 18, 23, 28, 33, 38, and 43). Items 2, 6, 8, 9, 12, 18, 21, 23, 24, 27, 31, 34, 35, 37, 41, and 43 are scored in the opposite direction. Scores from each subscale range from 8 to 50, with the score from each subscale indicating the level of the personality trait measured by that subscale.[20,21]

Analysis of the Data: The SPSS (Statistical Package for the Social Sciences) statistical package program was used to analyze the data. Descriptive statistical methods (number, percentage, mean, standard deviation, minimum, and maximum) and linear logistic regression were employed to analyze the data to determine COVID-19 stress-related personality traits. The significance level was set at $p<0.05$ for the analyses.

Ethical Principles in the Data Collection Process: The study was conducted in accordance with the Declaration of Helsinki. To collect pre-research data, written permission was obtained from the Ministry of Health Scientific Research Platform (2022-03-12T12_57_38), ethics committee approval from the Zeynep Kamil Women and Children Diseases Training and Research Hospital Ethics Committee (22.02.2022/18), and institutional permission was also obtained from the Zeynep Kamil Women and Children Diseases Training and Research Hospital where the research was conducted. After providing necessary explanations about the research, written and verbal informed voluntary consents were obtained from the participants.

RESULTS

The mean age of the pregnant women who participated in the study was 29.53±5.49 (min: 18, max: 43), and the mean education period was 10.76±3.77 (min: 4, max: 20) years. The majority of pregnant women lived in the city center (98%) and had a nuclear family (83.4%), and more than half of them did not work (79.1%) (Table 1). In the study, the mean number of pregnancies of women was 2.37±1.44 (min:1, max:7), the number of births was 2.07±1.14 (min: 1, max: 6), and the number of living children was 2.07±1.10 (min: 1, max: 6). During the COVID-19 pandemic, 15% of the pregnant women reported experiencing problems related to their pregnancy (such as gestational hypertension, intrauterine growth retardation [IUGR], and threatened preterm labor [TPL]), 23.3% indicated that the pandemic negatively affected their pregnancy, 25.7% pointed out that social isolation during the pandemic, and 32.4% stated that quarantine practices negatively affected their pregnancies. 61.3% of the pregnant women reported that their mental health was affected during the pandemic and that they felt concern (15%), fear (13%), restlessness (13.8%), anxiety (11.1%), inadequacy (5.9%), and loneliness (2.4%) (Table 2).

According to the Five-Factor Personality Inventory of the pregnant women who participated, they scored highest on average in the agreeableness sub-dimension, followed by conscientiousness, openness to experience, extraversion, and emotional stability, respectively. When evaluating the stress levels of pregnant women associated with COVID-19, it was observed that they experienced the most stress related to COVID-19 danger and contamination anxiety, followed by COVID-19-related xenophobia (fear of strangers) and traumatic stress, and lastly, stress related to loss of compulsive control and socioeconomic consequences (Table 3).

Table 1: Descriptive characteristics of pregnant women (n=253)

Characteristics	Number (n)	Percentage (%)
Age		
<29	134	53.0
>29	119	47.0
Education level		
<8	104	41.1
>8	149	58.9
Employment status		
Employed	53	20.9
Unemployed	200	79.1
Family type		
Nuclear family	211	83.4
Extended family	42	16.6
Economic situation		
Income-less than expenses	111	43.9
Income-equivalent to expenses	101	39.9
Income-more than expenses	41	16.2

The regression analysis revealed that the COVID-19 stress level in pregnant women was significantly associated with the Five-Factor Personality Inventory sub-dimensions of extraversion/introversion and emotional stability/instability (neuroticism). It was found that as the extraversion/introversion personality trait score increased, COVID-19 stress decreased; similarly, as the emotional stability/instability (neuroticism) personality trait score increased, COVID-19 stress decreased, or conversely, the COVID-19 stress level significantly increased in pregnant women with introverted and neurotic personality levels (Table 4).

DISCUSSION

Pregnancy, a period already marked by physical and psychological stress, has been further complicated by the COVID-19 pandemic.[22] Throughout the COVID-19 pandemic, pregnant women faced numerous stressors. Despite these stressors, the vast majority did not experience any pregnancy-related problems, while some encountered issues such as gestational hypertension and threatened preterm labor (TPL), which posed risks to their pregnancies. Moreover, quarantine and social isolation measures, intended to be protective, made it more difficult for women with pregnancy complications to receive care.[14,15] In line with the findings of other studies, this study found that 15% of pregnant women experienced pregnancy-related issues such as gestational hypertension, intrauterine growth retardation (IUGR), and TPL; furthermore, less than half reported that their pregnancies were negatively impacted by social isolation (25.7%) and quarantine measures (32.4%).

Table 2: Characteristics of pregnant women related to obstetrics and pandemic period

Characteristics	Number (n)	Percentage (%)
Number of pregnancies		
Primigravida	88	34.8
Multigravida	165	65.2
Number of births		
Primiparous	98	38.7
Multiparous	155	61.3
Number of living children		
<2	93	36.8
<3	160	63.2
Situation of having problems during pregnancy in the pandemic*		
No	215	85.0
Gestational hypertension	11	4.3
Gestational diabetes mellitus	4	1.6
Intrauterine growth retardation	8	3.2
Hyperemesis gravidarum	3	1.2
Thyroid	1	0.4
Threatened preterm labor	6	2.4
Placenta previa	5	2.0
The impact of the COVID-19 pandemic on pregnancy		
Did affect	59	23.3
I am not sure	66	26.1
Did not affect	128	50.6
The impact of pandemic social isolation on pregnancy		
Did affect	65	25.7
I am not sure	159	62.8
Did not affect	29	11.5
The impact of quarantine application on pregnancy in the pandemic		
Did affect	82	32.4
I am not sure	147	58.1
Did not affect	24	9.5
The impact of the pandemic on mental health		
Yes	155	61.3
No	98	38.7

*More than one response was given.

Table 3: Five-factor personality inventory and COVID-19 stress scale mean scores of pregnant women

Scales	Mean±SD	Min–Max
Five-factor personality inventory		
Extraversion/introversion	23.40±5.17	**12–40**
Agreeableness/ hostility	30.51±6.01	**14–45**
Conscientiousness-directionlessness /disorganization	29.50±6.03	**13–45**
Emotional stability/ instability (neuroticism)	20.65±5.44	**8–36**
Openness to experience/ undevelopment	27.23±7.76	**13–46**
COVID-19 Stress Scale		
COVID-19 related danger and contamination	22.52±10.58	**0–48**
COVID-19 related socio-economic consequences	6.74±6.62	**0–24**
COVID-19 related xenophobia	10.73±6.84	**0–24**
COVID-19 related traumatic stress	8.09±6.21	**0–24**
COVID-19 related compulsive checking	7.96±6.55	**0–24**

SD: Standard deviation; Min: Minimum; Max: Maximum.

Another stressor for pregnant women was the fear associated with COVID-19 and the pandemic. Studies have indicated that pregnant women feared putting themselves at risk, continuing their pregnancies during the pandemic, potentially having to terminate their pregnancies due to infection, and were concerned about social isolation and quarantine measures.[23,24] The pandemic led to challenges in accessing healthcare services as care protocols for pregnant women changed in many countries. Difficulties in attending medical appointments or encountering distressing information on social platforms and in the news heightened pregnant women's fear and uncertainty.[25] In this study, most pregnant women reported that the COVID-19 pandemic affected their mental state, leading to negative emotions such as concern, fear, restlessness, and anxiety. The findings suggest an increase in mental health issues among pregnant women during the pandemic, consistent with studies that reported a rise in depression and anxiety among pregnant women during the COVID-19 pandemic in countries like Canada and Japan.[26,27]

On the other hand, studies with pregnant women in the US, Poland, Germany, and Israel have identified three main stressors related to the COVID-19 outbreak. The first is stress about feeling unprepared for childbirth due to the pandemic, followed by stress related to COVID-19 fear, and lastly, perceived stress about the risk of infection.[28,29] According to research by Preis et al.[28] (2020), approximately a third of pregnant women reported feeling stressed about being unprepared for childbirth and the risk of infection during the pandemic. Consistent with these studies, this study found that pregnant women experienced stress related to danger and contamination

Table 4: Personality traits affecting COVID-19 stress level in pregnant women according to linear regression analysis

Variables	B	SE	Beta (β)	t	p	95% CI (OR)	
Constant	48.165	12.153		3.963	0.000	24.227	72.102
Extraversion/introversion	-0.738	0.334	-0.143	-2.209	**0.028**	-1.396	-0.080
Emotional stability/ instability(neuroticism)	-0.706	-0.411	-0.244	-1.998	**0.050**	-0.008	-1.220
Conscientiousness - directionlessness / disorganization	-0.444	0 .288	0.100	1.542	0.124	-0.123	1.010

SE: Standard error; CI: Confidence interval; OR: Odd ratios.

fear, xenophobia (fear of strangers), traumatic stress, loss of compulsive control, and socioeconomic consequences, as measured by the COVID-19 stress scale.

Personality traits are among the factors that affect psychological health during pregnancy.[9] Studies have indicated that neuroticism is a risk factor for increased anxiety, while the agreeableness personality trait is inversely related to anxiety. This suggests that individuals with neurotic personality traits are more likely to be negatively affected by anxiety, whereas those with agreeableness traits tend to experience less anxiety.[30,31] In the research by Kumar and Tankha (2022), individuals with an agreeableness personality trait believed that the spread of the virus could be controlled with proper precautions. Additionally, these individuals were found to adapt more easily to sudden changes caused by the COVID-19 pandemic by making necessary adjustments to their lifestyles.[30] According to a study by Pérez-Mengual et al.[32] (2021), other traits such as extraversion, openness, and conscientiousness were found to have no significant effect on the level of fear and anxiety related to COVID-19. Echoing the findings of Kumar and Tankha, in our study, pregnant women scored highest on average in the agreeableness sub-dimension and lowest in the emotional stability sub-dimension, according to the Five-Factor Personality Inventory.

Studies have shown that personality traits are a key factor in stress management.[31,33] In a study by Pérez-Mengual et al.[32] (2021), individuals with neurotic personality traits reported higher levels of anxiety during the COVID-19 pandemic. Nikcevic et al.[33] (2021) observed a positive correlation between COVID-19 anxiety and the neurotic personality trait. Other research has suggested that neuroticism and extraversion are significant indicators in determining mental health.[31,34] It has been confirmed that the perception of pandemic risk is significantly higher in individuals with neurotic personality traits.[35,36] According to the regression analysis in this study, the COVID-19 stress level decreased in pregnant women with emotional stability and extraverted personality traits, whereas it increased significantly in those with introverted and neurotic personality traits. Similar studies have shown that individuals with neurotic personality traits exhibit poorer psychological well-being even under normal circumstances, while those with extraverted traits display higher levels of psychological well-being.[31,37]

Limitations

Limitations The limitation of this research is that it was conducted in only one center, and its results cannot be generalized to the entire population.

CONCLUSION

This study has found that pregnant women experienced stress related to COVID-19 and that their personality traits influenced the COVID-19 stress level. Specifically, stress related to COVID-19 decreased in pregnant women with emotional stability and extraverted personality traits, while the COVID-19 stress level increased significantly in pregnant women with introverted and neurotic personality traits. Based on these findings, it is crucial that the follow-up and care of pregnant women be planned and implemented by a multidisciplinary team, taking into account their personality traits. An individualized approach, tailored to the personality traits of the pregnant woman, should be provided throughout all prenatal, childbirth, and postpartum processes.

Statement

Ethics Committee Approval: The Zeynep Kamil Women and Children Diseases Training and Research Hospital Ethics Committee granted approval for this study (date: 22.02.2022, number: 18).

Author Contributions: Concept – MD, Bİ, BY; Design – MD, Bİ; Supervision – MD; Resource – Bİ; Materials – BY; Data Collection and/or Processing – Bİ, BY; Analysis and/or Interpretation – MD; Literature Search – Bİ; Writing – Bİ; Critical Reviews – MD.

Conflict of Interest: The authors have no conflict of interest to declare.

Informed Consent: Verbal informed consent was obtained from patients who participated in this study.

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