ORIGINAL RESEARCH ARTICLE

The risk of anxiety and depression among pregnant women during the COVID-19 pandemic in Turkey: A cross-sectional online survey

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Abstract

Studies on perinatal mental health during the COVID-19 pandemic are limited. Maternal anxiety and depression during pregnancy can have negative effects on maternal and child health outcomes. I therefore aimed to determine the risk of anxiety and depression in pregnant women during the COVID-19 pandemic in Turkey. The data were collected from pregnant women during the COVID-19 pandemic between May and July 2020. In total, 164 pregnant women were recruited via social media (Facebook and Instagram) to complete an online survey. A personal information form and the Hospital Anxiety and Depression Scale were used as data collection tools. The data were analyzed using descriptive statistics, the Mann–Whitney *U* test, and the Kruskal–Wallis *H* test. I determined that pregnant women were at risk of anxiety (36%) and depression (73.8%) during the COVID-19 pandemic. The risk of depression was higher among the pregnant women who had a postgraduate education, worked during pregnancy, and had migrated within the previous 10 years compared to the other groups, while the risk of anxiety was higher in the age group 26–35 years and among unemployed pregnant women compared to the other groups. The COVID-19 pandemic was associated with a significant risk of anxiety and depression among pregnant women. Reducing the dangerous effects of COVID-19 on mental health is a perinatal health priority. *(Afr J Reprod Health 2023; 27 [4]: 65-72)*.

Keywords: COVID-19, anxiety, pregnancy, depression

Résumé

Les études sur la santé mentale périnatale pendant la pandémie de COVID-19 sont limitées. L'anxiété et la dépression maternelles pendant la grossesse peuvent avoir des effets négatifs sur la santé de la mère et de l'enfant. J'ai donc cherché à déterminer le risque d'anxiété et de dépression chez les femmes enceintes pendant la pandémie de COVID-19 en Turquie. Les données ont été recueillies auprès de femmes enceintes pendant la pandémie de COVID-19 entre mai et juillet 2020. Au total, 164 femmes enceintes ont été recrutées via les médias sociaux (Facebook et Instagram) pour répondre à un sondage en ligne. Un formulaire de renseignements personnels et l'échelle hospitalière d'anxiété et de dépression ont été utilisés comme outils de collecte de données. Les données ont été analysées à l'aide de statistiques descriptives, du test U de Mann-Whitney et du test H de Kruskal-Wallis. J'ai déterminé que les femmes enceintes étaient à risque d'anxiété (36 %) et de dépression (73,8 %) pendant la pandémie de COVID-19. Le risque de dépression était plus élevé chez les femmes enceintes qui avaient fait des études supérieures, travaillaient pendant la grossesse et avaient émigré au cours des 10 années précédentes par rapport aux autres groupes, tandis que le risque d'anxiété était plus élevé dans le groupe d'âge 26-35 ans et chez les femmes enceintes au chômage par rapport aux autres groupes. La pandémie de COVID-19 a été associée à un risque important d'anxiété et de dépression chez les femmes enceintes. Réduire les effets dangereux de la COVID-19 sur la santé mentale est une priorité en matière de santé périnatale. *(Afr J Reprod Health 2023; 27 [4]: 65-72)*.

Mots-clés: COVID-19, anxiete, grossesse, depression

Introduction

The rapid spread of the COVID-19 pandemic across the world after December 2019 caused psychological and social problems among global populations, especially those in developing countries. The deaths, disruptions to health services, economic instability, and social isolation caused by the pandemic had negative effects on the mental health of individuals[1].

According to researchers, most pregnant women infected with COVID-19 have shown mild symptoms[2]. However, not enough information is yet available about the medical consequences and complications for pregnant women infected with COVID-19. Current information shows that the

symptoms observed in pregnant women are not different from those in other people, and there is no additional risk to pregnant women and their fetuses[3]. However, the restrictive measures taken to combat the pandemic caused disruptions in medical services, and such circumstances increased the levels of anxiety in pregnant women[4].

Pregnancy is a special period during which women are more sensitive to stressors, and birth and a new baby can be a source of uncertainty for pregnant women. In addition, women may worry about the management of their pregnancy, labor, birth, and postnatal care when pregnancy follow-up cannot be undertaken face to face[5]. In Turkey, prenatal anxiety is experienced by 12%–34% of women, and the prevalence of prenatal depression is 19%–53%[6]. However, these rates may not reflect the actual figures. Women may not have sought support for anxiety and depression. Prenatal anxiety and depression can lead to decreased physical activity, sleep, and nutritional changes in pregnant women. As a result, maternal mental health and fetal health may be adversely affected[1,7].

Pregnant women may be afraid of contracting COVID-19 due to the perceived effects on the development of the fetus and the course of pregnancy[5], and a lack of social support and loneliness may increase the stress levels of pregnant women. Moreover, restrictive measures, such as travel bans, quarantine measures, physical distance rules, and access barriers to social support, led to a decrease in social interaction for pregnant women[5,8]. Pandemics, natural disasters, and emergencies negatively affect maternal and infant health by causing persistent and high levels of anxiety in pregnant women[8]. High anxiety experienced in the prenatal period may cause adverse pregnancy outcomes, such as miscarriage, preterm birth, lower Apgar scores, lower birth weight, maternal mood disorder, and developmental delays in the fetus[1,8]. Prenatal anxiety may also cause impairments in brain structure and functioning during childhood[1].

This study is different from other studies in the literature in that it was conducted in the first period of the pandemic, included pregnant populations with different socio-demographic characteristics living in Turkey, and reaching pregnant women with limited social media use. For this purpose, the study was announced on various social media platforms and various women's associations. In addition, the pregnant women around the employees and students of the university where the researcher works were also reached. In this study, I aimed to determine the risk of anxiety and depression in pregnant women during the COVID-19 pandemic in Turkey.

Methods

Participants and procedure

The data were collected from pregnant women during the COVID-19 pandemic between May and July 2020. Women were recruited through announcements on social media (Facebook and Instagram etc.) and the web page of the institutions and women's associations where the researcher works, and were asked to fill out an online questionnaire. The inclusion criteria were women who were living in Turkey, who were proficient in reading and writing Turkish, who were aged between 18 and 40 years, who had a confirmed pregnancy <35 weeks gestation, who had the ability to answer the questionnaires, and who provided informed consent for participation. Ethical approval for this study was obtained from the University Ethical Committee (20/416, June 11, 2020).

Questionnaires

Personal information form

The participants' personal information was obtained via a questionnaire. The variables were maternal age, marital status, educational status, employment status during pregnancy, and immigration status within or between countries in the previous 10 years. The form included screening questions, such as last menstrual period, estimated date of delivery, and whether the pregnancy has been confirmed, which aimed to reduce potential bias created by women falsely claiming to be pregnant claiming to be pregnant.

Hospital anxiety and depression scale

The participants' maternal anxiety and depressive states were assessed using the Hospital Anxiety and

Depression Scale (HADS). The HADS was developed by Zigmond and Snaith (1983) to determine the risk of anxiety and depression in patients and to measure the levels and changes in severity[9]. The HADS was previously translated into Turkish by Aydemir et al. (1997) and validity and reliability studies conducted[10]. The reliability coefficients of the anxiety and depression subscales of the HADS for the Turkish patient group were 0.85 and 0.78, respectively. The scale comprises 14 items and includes the subscales HAD-A (Anxiety, 7 questions) and HAD-D (Depression, 7 questions). Each item is scored on a four-point Likert scale, and the highest score from each subdimension is 21. In each subdimension, the scores between 0 and 7 are evaluated as "normal," the scores between 8 and 10 are considered "borderline," while scores 11 and above indicate significant "psychological morbidity"[10].

Consent form

Before the participants started the survey, a consent form was provided to them. I explained the purpose of the study, what the data would be used for, how the data would be stored, and any potential benefits or risks that may be incurred through participation in the survey. I further indicated that the participants could leave the study at any point before the survey was submitted, that the participant information could not be retrieved after it had been sent, and that the data would remain anonymous.

Sample size

During the study period of May–July 2020, pregnant women were reached via social media (i.e., Instagram, Facebook, and various online pregnancy forums), and the study was explained. Pregnant women who signed the voluntary consent form were included in the sample after agreeing to participate in the study. The personal information form and HADS were compiled using an online questionnaire created on Google Docs. The study was conducted online by sending an invitation containing information about the purpose of the study to the participants. The participants completed the surveys by connecting to the relevant link.

The power of the study was calculated using the G * Power (v3.1.9) program. According to the information obtained from the reference study[11], the risks of anxiety and depression in Turkish pregnant women during the Covid-19 pandemic period were reported as 64.5% and 56.3%, respectively. Before the pandemic, these rates were 7.8% and 22.3%, respectively[11]. Based on this information, assuming a medium-sized effect is observed (cohen's d=0.5), the power of the study is calculated as 0.99 when the effect size for the ANOVA test is taken as cohen's d=0.5, alpha=0.05, sample=164, df=1 number of groups=4.

Statistical analysis

I analyzed the data in the IBM SPSS Statistics version 22 program using descriptive statistics (i.e., frequency, percentage, and mean) and frequency tables. A *p*-value <0.05 was considered statistically significant. The compliance of the data to normal distribution was evaluated with the Kolmogorov–Smirnov test. Nonparametric methods were used for the data that were not normally distributed. For the nonparametric methods, a Mann–Whitney *U* test was used to compare the means of two independent groups and the Kruskal–Wallis *H* test to compare the means of three or more independent groups. The Bonferroni correction was made for statistically significantly different variables for the dual comparison of three or more groups.

Results

Participants

Among the pregnant women, 53% were between the ages of 26 and 35 years, and the majority (96.3%) were married. Furthermore, 48.8% of the pregnant women were university graduates, 64% were unemployed, and 53.7% had immigrated within or between countries in the previous 10 years (Table 1).

The mean score obtained from the pregnant women for the HAD-D scale was 11.98 ± 4.33 and 8.52 ± 4.38 for the HAD-A scale (min–max: 0–21). I determined that 73.8% of the pregnant women were at risk of depression and 36% at risk of anxiety.

Table 1: Demographic characteristics of pregnant women

Features	Groups	N (164)	%
Age	18-25 years old	48	29.3
	26-35 years old	87	53
	36 years and older	29	17.7
Marital status	Single	6	3.7
	Married	158	96.3
Education status	Primary education	33	20.1
	High school	38	23.2
	University	80	48.8
	Postgraduate	13	7.9
Employment during pregnancy	Yes	59	36
	No	105	64
Immigration status in the last 10 years	Yes, n=76	76	46.3
	No, n=88	88	53.7

Table 2: Distribution of hospital anxiety and depression scale scores of pregnant women

	HAD-Depression		HAD-Anxiety	
	n	**%**	**n**	**%**
0-7 points	25	15.2	66	40.2
8-10 points	31	19	39	23.8
11 and above	108	**73.8**	59	**36**

Table 3: Hospital anxiety and depression scale scores according to demographic characteristics of pregnant women

Features	HAD-Depression scale Mean ± SD	Median (Min-max)	p	HAD-Anxiety scale Mean ± SD	Median (Min-max)	p
Age			H=1,025			**H=8,729**
15-25 years old, n = 48	11.81±4.49	12.5 (2-18)	0.599[2]	8.91±4.22	8 (0-17)	**0.013[2]**
26-35 years old, n = 87	12.24±4.36	12(0-18)		9.01±4.46	10 (0-18)	
36 years and older, n=29	11.48±4.07	11 (4-18)		6.41±3.88	6 (0-16)	
Marital Status	12.66±3.61	15(8-15)	U=444	7.66±4.13	5(5-13)	U=411
Single, n = 6	11.95±4.37	12(0-18)	0.792[1]	8.55±4.40	8(0-18)	0.580[1]
Married, n = 158						
Education status		12 (1-18)	**H=12.919**		8 (0-17)	H=2.070
Primary education, n=33	11.03±4.76	11 (5-18)	**0.005**	9.18±4.58	9 (0-16)	0.558
High school, n=38	10.94±4.46	12 (0-18)		8.78±4.53	9(0-18)	
University, n=80	12.30±4.03	17(11-18)		8.35±4.36	8(0-11)	
Post-graduate, n=13	15.46±2.53			7.15±3.48		
Working status during pregnancy	13.59±4.07	15(1-18)	**U=2023**	7.38±4.41	8(0-16)	**U=2420**
Yes, n=59	11.07±4.23	11 (0-18)	**0.000[1]**	9.16±4.25	9 (0-18)	**0.02[1]**
No, n=105						
Immigration status in the last 10 years	12.73±4.38	38 (28-46)	**U=2649**	8.34±4.36	8.5 (0-18)	U=3208
Yes, n=76	11.32±4.21	37 (28-46)	**0.021[1]**	8.68±4.41	8 (0-17)	0.654[1]
No, n=88						

SD: Standard Deviation, [1]Mann-Whitney U, [2]Kruskal Wallis test

The pregnant women who scored above the cut-off points of 11 and above for each subdimension were considered at risk for psychological morbidity (Table 2).

The HAD-A scores of the pregnant women differed significantly according to the age groups ($H = 8,729$, $p = 0.013$). Mann–Whitney U tests were conducted to determine the differences between the groups. No significant differences were observed between the HAD-A scores of the pregnant women aged 15–25 and 26–35 and the women aged 15–25 and over 36 years ($U = 2,029$, $p > 0.0167$). However, the HAD-A scores of the pregnant women aged 26–35 and over 36 years were significantly different ($U = 819$, $r = -0.19$, $p = 0.005$), with the HAD-A scores of the pregnant women aged 26–35 being higher than those of the pregnant women aged 36 years and over. No significant differences were found between the mean HAD-D scores of the pregnant women and their age groups ($H = 1.025$, $p = 0.599$; (Table 3).

There were no significant differences between the marital status of the pregnant women, the HAD-A, and HAD-D scores ($U = 444$, $p = 0.792$; $U = 411$, $p = 0.580$, respectively; Table 3). I found that the HAD-D scores of the pregnant women were significantly different according to their education levels. Mann–Whitney U tests were conducted to determine which group or groups accounted for the differences. The significance level was accepted as 0.0125 for all effects by applying the Bonferroni correction. The depression scores of the pregnant women with postgraduate education were found to be significantly different compared to the other groups (U postgraduate–primary = 98.5, $r = -0.22$, $p = 0.004$; U postgraduate–high school = 111, $r = -0.23$, $p = 0.003$; U postgraduate–university = 259, $r = -0.22$, $p = 0.004$). The HAD-D scores of the postgraduate pregnant women were higher than those of the pregnant women with other education levels. No significant differences were found between the HAD-A scores of the pregnant women and their education levels ($H = 2,070$, $p = 0.558$; Table 3).

The HAD-D scores of the pregnant women who were employed were significantly higher than those of the unemployed pregnant women ($U = 2,023$, $p = 0.000$). In contrast, the HAD-A scores of the unemployed pregnant women were found to be significantly higher than those of the women with jobs ($U = 2,420$, $p = 0.02$; Table 3).

The HAD-D scores of the pregnant women who had migrated in the previous 10 years within or between countries were significantly higher than those who had not migrated ($U = 2,649$, $p = 0.021$). However, there was no significant difference between the migration status of the pregnant women and the HAD-A scores ($U = 3,208$, $p = 0.654$; Table 3).

Discussion

This cross-sectional study aimed to evaluate the risk of anxiety and depression in pregnant women during the COVID-19 pandemic in Turkey. The nature of pregnancy is a complex and dynamic process in which physiological and psychological changes occur. Body image, hormones, changes in sleep patterns, and adaptation to a new maternal role are some of the stress factors during pregnancy. For pregnant women, public health crises such as the COVID-19 pandemic can increase vulnerability to psychiatric illnesses[12]. This study showed a significant increase in the risk of anxiety and depression among pregnant women during the COVID-19 pandemic. This increase was particularly related to the age and education status of the pregnant women, their work status during pregnancy, and their migration status. The risk of depression was higher among the pregnant women with a postgraduate education, who were working during their pregnancy, and who had migrated within the previous 10 years compared to the other groups. It was also observed that the risk of anxiety was higher in the age group 26–35 years and the unemployed pregnant women compared to the other groups. It has been reported in the literature that pregnant women with higher education and unemployment have a higher risk of anxiety[13], which is similar to our results.

The HADS does not include items that question physical symptoms such as fatigue, pain, and dizziness, which are common during pregnancy. Due to this feature, the risk of measuring false anxiety symptoms is eliminated. The scale is preferred for measuring anxiety and depression during pregnancy. The HADS has been

used in many studies to evaluate anxiety and depression in gynecology and obstetrics clinic[13].

Comparisons with other studies

The COVID-19 pandemic caused a significant increase in the anxiety and depression levels of pregnant women, and this increase was considerably higher than the level of anxiety seen in pregnant women before the pandemic[2-4,14]. While the prevalence of depressive symptoms at pregnancy was 6.5%–12.9% in high-income countries[15], it was 19.8%–25.8% in other countries[16,17]. During the pandemic, the prevalence of major depressive symptoms observed among pregnant women was reportedly 25.1%[18]. While the prevalence of anxiety was 3%–6% before the COVID-19 pandemic[19], it increased significantly to 18.7% during the COVID-19 period [18]. The limited access to healthcare services during the pandemic may have prevented pregnant women from receiving medical and psychological support, and this may have contributed to the increase in psychological disorders[20].

Studies on the difficulties and emotional states experienced by pregnant women during the pandemic are limited. In this study, the HAD-D and HAD-A scores were found to be significantly high (73.8% and 36%, respectively). This result shows that, in line with the literature, the risk of anxiety and depression among pregnant women increased significantly during the COVID-19 pandemic[20].

A study conducted before the pandemic found that 15.6% of the HAD-A scores of the pregnant women before the pandemic were ≥8[13]. In this study, 59.8% of the HAD-A scores of the pregnant women were ≥8. This result shows that the COVID-19 pandemic increased the anxiety scores of pregnant women considerably, and similar results have been reported in the literature[2,3,4,14]. The risk of harm to the developing fetus and social isolation measures may have increased prenatal anxiety and depression. Psychological support to pregnant women during pandemic periods is thus of great importance[21].

In this study, the pregnant women were mostly aged 26–35 years (Table 1). According to the Turkey Demographic and Health Survey data, the highest fertility age in Turkey is 26–35 years[22].

The findings of in this study are thus consistent with the TDHS data, and the age of mothers can be said to be young adulthood in Turkey. In addition, studies have shown that young pregnant women have a higher risk of anxiety[13,14]. While one study found no relationship between age and prenatal anxiety[4], in this study, prenatal anxiety levels in the age group 26–35 years were found to be higher than those in the other groups. This result may be due to the different demographic and cultural characteristics of the participants in my study and the other populations addressed in the literature.

In Turkey, 41% of women have completed high school or higher education[22]. The educational status of the pregnant women who participated in this study was mostly university or postgraduate level. Although the data from this study were compatible with the TDHS data, the education levels of the pregnant women participating in this study were higher. This result may have been due to the survey method and my reaching a more educated group via online platforms. In this study, the anxiety levels of pregnant women with university or higher education were higher than those of the other groups. In contrast, studies in the literature have indicated that there is no difference between educational status and anxiety[6] and that low educational status increases anxiety and depression[14]. Similar to this study, however, other studies have reported that a higher education status increases the risk of anxiety[3,23,24]. An increased level of education makes it easier to obtain information. It is also possible that pregnant women obtained considerable negative information about the consequences of the pandemic from the media and various other sources.

Most of the women (64%) in Turkey do not have any employment[22]. In line with the TDHS data, 64% of pregnant women in this study were unemployed during the pandemic (Table 1). I found that the risk of depression among working pregnant women and the risk of anxiety among unemployed pregnant women were high (Table 3). Some studies have reported that working during pregnancy increases the risk of anxiety and depression[25], while others have found that it decreases the risk[6]. Working full time during the pandemic was found to increase the risk of anxiety and depression among pregnant women due to the risk of infection

and vertical transmission[21]. In contrast, not working was shown to increase the anxiety levels of pregnant women by causing economic problems and social isolation[26]. Economic uncertainty and low income caused by unemployment also increase levels of anxiety[13]. The risk of anxiety and depression among pregnant women may have increased due to their perceptions of work or unemployment caused by the pandemic. It is thus important to be aware of the psychological problems caused by unemployment and especially the mental distress caused by strict social isolation rules[26]. Accordingly, under conditions of social distancing and isolation, psychological helplines and online counseling services can be effective interventions[21].

Strengths and limitations

The data of this study were collected during the first days of the COVID-19 pandemic from a nationwide mixed population. A strength of the study is therefore that the study population comprised individuals from various sociocultural backgrounds. Web-based studies for health research are reported to be cost-effective and efficient[27]. During the COVID-19 pandemic, limited resources and social distancing practices made it difficult to work with pregnant women. The web-based design of this study thus allowed for efficient and low-cost data collection from pregnant women during an international health crisis.

Notwithstanding, the design of the study did not allow us to measure whether pregnancy complications caused an increase in the risk of anxiety among the pregnant women. Furthermore, the study design was cross-sectional as the data were collected during a limited period during the pandemic. Objective inferences therefore cannot be made. Although the HADS allows pregnant women to measure their current risk of anxiety and depression, it does not provide information about their pre-pandemic risk of anxiety and depression. The study may thus not fully reflect the impact of the COVID-19 pandemic. The data were collected via social media using an online questionnaire. As a result, a failure to randomize may have caused bias in the sample selection.

Conclusion

In this study, I found that pregnant women had an increased risk of anxiety and depression during the COVID-19 pandemic. This increase was found to be associated with the age and education of the pregnant women, as well as whether they were working during pregnancy and their migration status. Compared to the other groups, the risk of depression was higher among the pregnant women who had a postgraduate education, who were working during their pregnancy, and who had migrated within the previous 10 years. The risk of anxiety was also higher in the age group 26–35 years and unemployed pregnant women compared to the other groups. These data may help improve the mental health of pregnant women and assist authorities to take measures against mental health problems during pandemics.

Competing interest

The author has no conflicts of interest to disclose.

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