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Examining the relationship between perinatal anxiety, COVID-19 phobia and birth type preferences: A cross-sectional study

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Abstract

Aim: To examine the relationship between the COVID-19 phobia and perinatal anxiety levels and birth type preferences of pregnant women in the third trimester.

Design: This was designed a cross-sectional study using the non-random convenience sampling method following the STROBE checklist.

Methods: The research was conducted with 315 pregnant women from April to May 2021. Data were collected using a personal information form, the COVID-19 Phobia Scale, and the Perinatal Anxiety Screening Scale (PASS).

Results: We found a positive and moderate correlation between the total scores for perinatal anxiety and COVID-19 phobia. During the COVID-19 pandemic, 4.1% of the participants changed their birth type preferences and this change was statistically significant according to McNemar's test. During the COVID-19 pandemic, the women changed their birth type preferences in favour of caesarean section. However, there was no statistically significant difference between those who changed their birth type preferences and those who did not in terms of perinatal anxiety or COVID-19 phobia levels. Women with no access to prenatal follow-up visits due to the COVID-19 pandemic had higher mean PASS scores and higher mean scores for the perfectionism, control and trauma subscale. The scores for general worry and specific fears were lower among individuals who had obtained information about birth types in prenatal follow-up visits. Also, perinatal anxiety and COVID-19 phobia levels were higher among pregnant women who were worried about giving birth in hospital compared to those who were not worried.

Conclusion: We conclude that COVID-19 phobia has increased women's perinatal anxiety, causing them to change their birth type preferences in favour of caesarean section.

Relevance to clinical practice: We recommended that healthcare professionals take COVID-19 phobia and perinatal anxiety into account when counselling pregnant women about birth types to improve prenatal care.

No patient or public contribution: No patient or public contribution was required to design, to outcome measures or undertake this research. Patients/members of the public contributed only to the data collection. Data were obtained from pregnant

women in the third trimester, who came to a regional hospital-affiliated obstetrics polyclinic for routine prenatal follow-up visits.

KEYWORDS
birth type preference, COVID-19 phobia, nursing, perinatal anxiety

1 | INTRODUCTION

Childbirth is considered an extraordinary life experience with significant social and emotional impacts for women (Fenaroli et al., 2019). The uncertainty related to childbirth has caused pregnant women to experience many new emotions like fear, anxiety, excitement and loss of control (Arik et al., 2019; Fenaroli et al., 2019; Khatony et al., 2019). This uncertainty also affects the decision-making process of pregnant women regarding their birth type preferences (Khatony et al., 2019). The current literature supports that birth type preference is not only associated with the fear of childbirth, but also with previous birth types, previous birth experiences, individual beliefs and values, social support, and knowledge on childbirth (Coates et al., 2020; Gildner & Thayer, 2020; Gu et al., 2018; Long et al., 2018; Preis et al., 2019; Rania, 2019). Besides, the uncertainty about lethality and contagiousness during the COVID-19 pandemic may affect women's decision-making processes and their birth type preferences (Liu et al., 2020).

2 | THEORETICAL BACKGROUND

There is still a lack of evidence-based information about the impact of COVID-19 on pregnant women (Mei et al., 2020). Pregnant women are considered a risky population for COVID-19 due to its potential uncertain effects (Rasmussen et al., 2020). One study found pregnant women to have higher COVID-19 phobia than non-pregnant women (Karkın et al., 2021). Current systematic reviews and meta-analyses have shown that pregnant women experience an increased risk of perinatal anxiety and depressive symptoms due to the COVID-19 pandemic (Hessami et al., 2020; Shorey et al., 2021; Sun et al., 2021). Previous studies found that women experienced anxiety, fear and concerns about the well-being of their babies and themselves during the COVID-19 pandemic, changing their obstetric care needs (Rezaei et al., 2021; Sahin & Kabakci, 2021; Zilver et al., 2021). A recent study determined that the positive expectations of pregnant women about childbirth turned into feelings of danger, anxiety and loneliness during the COVID-19 pandemic. The authors also emphasised that the structural changes in healthcare system negatively affected women's perception of childbirth during the COVID-19 pandemic (Ravaldi et al., 2021). In a study with 172 pregnant women, 45% of the participants stated that their birth type preferences were affected by the COVID-19 pandemic (Yassa et al., 2020). However, there are limited studies on the effect of the COVID-19 pandemic on women's birth type preferences (Çalık et al., 2021; Liu et al., 2020).

What does this paper contribute to the wider global clinical community?

- During the COVID-19 pandemic, 4.1% of women changed their birth type preferences and this change was statistically significant according to McNemar's test.
- Pregnant women were found to change their birth type preferences in favour of caesarean section during the COVID-19 pandemic.
- We found a positive and moderate correlation between the total scores for perinatal anxiety and COVID-19 phobia among pregnant women.
- There was no statistically significant difference between those who changed their birth type preferences and those who did not in terms of perinatal anxiety or COVID-19 phobia levels.

3 | AIM

This study aims to reveal the relationship between the perinatal anxiety (PA) levels, COVID-19 phobia levels and birth type preferences of pregnant women.

Research Question(s):

- Which birth types did pregnant women prefer during the COVID-19 pandemic?
- Are perinatal anxiety and COVID-19 phobia levels associated with birth type preferences among pregnant women?
- Are perinatal anxiety and COVID-19 phobia levels associated with obstetric characteristics among pregnant women?

4 | METHODS

4.1 | Study design

We used a cross-sectional study design following the STROBE checklist.

4.2 | Participants

This study was conducted in a regional hospital-affiliated obstetrics polyclinic. On average, 200 pregnant women admitted monthly to

this polyclinic during the COVID-19 pandemic, from April to May 2021. Given the sample size of relevant previous research (Çalık et al., 2021; Liu et al., 2020), we predicted that a two-month data collection period would be sufficient for a known sample size. The sample size was estimated to be 197 pregnant women using the Raosoft web page based on a 95% confidence level and .05 type I error with 400 pregnant women/two months. Hence, this study was conducted with a cohort of 315 pregnant women.

We used the non-random convenience sampling method. The sample consisted of pregnant women who (a) were aged between 18 and 45 years, (b) had at least primary school education, (c) conceived spontaneously, (d) had a healthy pregnancy period, (e) were in the third trimester of pregnancy and (f) could speak, read and understand Turkish. Pregnant women who (a) had adolescent pregnancy, (b) conceived with assisted reproductive techniques, (c) had a complicated pregnancy period or (d) had any communication disability were excluded.

4.3 | Data collection

We informed women who applied to the obstetrics polyclinic for routine prenatal follow-up visits about the study during the COVID-19 pandemic. Data were collected through face-to-face interviews using a personal information form, the 'COVID-19 phobia scale (C19P- S)', and the 'Perinatal Anxiety Screening Scale (PASS)' from April to May 2021.

4.3.1 | Personal information form

The personal information form was prepared by the researchers based on the literature (Çalık et al., 2021; Liu et al., 2020). The form consisted of 14 questions, examining sociodemographic and obstetric characteristics and the effect of the COVID-19 pandemic on the prenatal period. Also, the participants were asked about their birth type preferences before and during the COVID-19 pandemic.

4.3.2 | COVID-19 phobia scale

The COVID-19 phobia scale (C19P-S) was developed to measure phobia related to the COVID-19 pandemic based on specific diagnosis criteria for phobia in DSM-V (Arpaci et al., 2020). It is a 5-point Likert-type scale consisting of 19 items with scores ranging from 1 (strongly disagree) to 5 (strongly agree). The four subscales are as follows: (1) psychological (items 1, 5, 9, 13, 17, 20); (2) psycho-somatic (items 2, 6, 10, 14, 18); (3) social (items 3, 7, 11, 15, 19); and (4) economic (items 4, 8, 12, 16). The total score for the C19P-S can range from 19 to 95, with high scores indicating higher levels of COVID-19 phobia without the cut-off value. Cronbach's α was found as .93 for the total C19P-S score and .88, .90, .85 and .88 for the subscales, respectively (Arpaci et al., 2020). In this study, Cronbach's α was .91 for the total C19P-S score and .82, .79, .79 and .73 for the subscales, respectively.

4.3.3 | Perinatal anxiety screening scale

The Perinatal Anxiety Screening Scale (PASS) was developed by Somerville et al. (2014) to measure the anxiety levels of women during the perinatal period (Somerville et al., 2014). It is a 4-point Likert-type scale consisting of 31 items with scores ranging from 0 (never) to 3 (almost always). The total score for PASS can range from 0 to 93, and the cut-off value is indicated to be 26. The four subscales are as follows: (1) general anxiety and specific fears (items 1–10, 15); (2) perfectionism and control (items 11–14); (3) social anxiety and adjustment disorder (items 19–23, 26, 27); and (4) acute anxiety and trauma (items 16–18, 24, 25, 28–31). Cronbach's α was found as .96 for the overall scale (Somerville et al., 2014). In the Turkish version, Cronbach's α was .95 for the overall scale and .93, .82, .90 and .89 for the subscales, respectively (Yazıcı et al., 2019). In this study, Cronbach's α was .93 for the overall scale and .87, .87, .78 and .79 for the subscales, respectively.

4.4 | Data analysis

Data were analysed using the IBM SPSS v23.0. An expert statistician contributed to the data analysis. The distribution of variables was tested for normality using Kurtosis and Skewness. Data were expressed in numbers, percentages, and mean and standard deviation for descriptive analyses with *t*-test in binary groups, and one-way analysis of variance (ANOVA) and the Bonferroni test in more than two groups. The changes in women's birth type preferences during the COVID-19 pandemic were compared with McNemar's test. The Mann–Whitney U-test was used to determine the differences between the groups in terms of scale and subscale scores, classified according to changes in birth type preferences. The Pearson correlation analysis was used to determine the relationship between PASS and CP19-S scores. The level of statistical significance was taken as $p < .05$.

4.5 | Validity, reliability and rigour

The variables for this study were selected using a strong theoretical basis, taking into account the factors that may affect women's birth type preferences during the COVID-19 pandemic. All the questionnaires were scales with psychometric validation and were used on pregnant women in previous research.

4.6 | Research ethics

This study was approved by the Clinical Research Ethics Committee at Akdeniz University (No: 838, Date: 11.11.2020). Written consent was obtained from the participants during the face-to-face data collection process, in accordance with the Declaration of Helsinki.

5 | RESULTS

The demographic characteristics of the pregnant women are shown in Table 1. The participants had a mean age of 28.3 ± 4.5 years, and most (58.4%) were aged between 25 and 31 years. Most of the pregnant women (51.4%) were high-school graduates, 76.8% were unemployed, and 53.3% declared their financial status as 'equal income and expenses'. The mean gestational age was 34.79 ± 3.00 weeks (min = 27, max = 41). Most of the pregnant women (64.8%) were nullipara, 83.4% had an intended pregnancy, and 59.3% had uninterrupted access to all prenatal follow-up visits.

Before the COVID-19 pandemic, 71.4% of the participants wanted to give birth by vaginal delivery (VD) and 28.6% wanted to give birth by caesarean section (CS). During the COVID-19 pandemic, 67.9% of the women wanted to give birth by VD and 32.1% by CS. Most pregnant women (61.0%) reported that they were worried about giving birth in hospital due to the COVID-19 pandemic. During the COVID-19 pandemic, 59.0% of the participants obtained information about birth types in prenatal follow-up visits and 37.4% of these women stated healthcare professionals as their source of information (Table 1).

During the COVID-19 pandemic, 4.1% of pregnant women changed their birth type preferences and this change was statistically significant according to McNemar's test (p = .003) (Table 2). Figure 1 shows the changes in the birth type preferences of pregnant women during the COVID-19 pandemic. Accordingly, 12 of those who wanted to give birth by VD before the COVID-19 pandemic changed their decision for CS during the COVID-19 pandemic. Only one of the pregnant women who wanted to give birth by CS before the COVID-19 pandemic changed their decision for VD during the COVID-19 pandemic. In total, 13 pregnant women changed birth type preferences during the COVID-19 pandemic. Therefore, the rate of women who wanted to give birth by CS increased during the COVID-19 pandemic.

Table 2 shows the differences in total scores belonging to pregnant women with and without a change in birth type preferences during the COVID-19 pandemic. There was no difference between the participants with different birth type preferences before the COVID-19 pandemic in terms of the total scores for CP19-S, PASS, or their subscales ($p > .05$). Also, there was no difference between the women who changed their birth type preferences during the COVID-19 pandemic and those who did not in terms of the total scores for CP19-S, PASS or their subscales ($p > .05$) (Table 2).

Table 3 shows the relationship between the participants' CP19-S scores and obstetric characteristics. Accordingly, there was no significant relationship between the total scores for CP19-S or its subscales and previous birth experiences (p = .904), pregnancy intendedness ($p = .108$), prenatal follow-up visits ($p = .086$) or obtaining information about birth types in prenatal follow-up visits (p = .785). Also, pregnant women, who were worried about giving birth in the hospital had higher total CP19-S scores (t = 4.653, $p < .001$) and its subscales (t = 5.155, $p < .001$ for CP19-S psychological; t = 3.134, p = .002 for CP19-S psycho-somatic; t = 3.496, $p < .001$ for CP19-S social and t = 2.706, p = .007 for CP19-S economic) than those who were not worried (Table 3).

Table 4 gives the relationship between the participants' PASS scores and obstetric characteristics. Accordingly, there was no significant relationship between PASS scores and previous birth experiences ($p > .05$), except for the subscale of social anxiety. According to PASS scores, multipara women had higher social anxiety levels than nullipara women in the prenatal period ($t = 2.420$, $p = .016$). There was no significant relationship between PASS scores or its subscales and pregnancy intendedness ($p > .05$). However, prenatal follow-up visits were correlated with the total scores for PASS (F = 3.378, p = .019) and the subscale of perfectionism, control and trauma (F = 3.772, p = .011). Still, prenatal follow-up visits were not significantly correlated with the subscales of acute anxiety and adjustment disorder (p = .174) and general anxiety and specific fears (p = .349). Women with uninterrupted access to all prenatal follow-up visits had lower total scores for PASS and the subscale of perfectionism, control and

TABLE 1 Demographic characteristics (N = 315)

Characteristics	*n*	%
Age (years)		
18–24	63	20.0
25–31	184	58.4
32–38	61	19.4
39–45	7	2.2
Education level		
Primary School	49	15.6
High-School	162	51.4
University and higher degree	104	33.0
Employment status		
Employed	73	23.2
Unemployed	242	76.8
Financial status of the family		
Income is less than expense	123	39.1
Income is equal to the expense	168	53.3
Income is greater than expense	24	7.6
Previous birth experience		
Women with previous birth experience	111	35.2
Women with no previous birth experience	204	64.8
The last birth type of multipara participants (N = 204)		
Vaginal delivery	104	51.0
Caesarean section	100	49.0
Pregnancy intendedness		
Intended pregnancy	263	83.4
Unintended pregnancy	52	16.6
Status of going to prenatal follow-up visits		
Uninterrupted access to all prenatal follow-up visits	187	59.3
Access to essential prenatal follow-up visits only (double or triple prenatal screening, etc.)	80	25.4

TABLE 1 (Continued)

Characteristics	n	%
No access to prenatal follow-up visits for personal reasons	10	3.2
No access to prenatal follow-up visits due to the COVID-19 pandemic	38	12.1
Birth type preferences before the COVID-19 pandemic		
Vaginal delivery	225	71.4
Caesarean section	90	28.6
Birth type preferences following the COVID-19 pandemic		
Vaginal delivery	214	67.9
Caesarean section	101	32.1
Change in birth type preferences following the COVID-19 pandemic		
Change in birth type preference	13	4.1
No change in birth type preference	302	95.9
Status of obtaining information about birth types in prenatal follow-up visits		
Knowledgeable	186	59.0
Not knowledgeable	129	41.0
Information sources regarding birth types ($N = 237$)		
Healthcare professionals (nurse, doctor, midwife, etc.)	118	37.4
Magazine, television, Internet, etc.	102	32.4
Family members and friends	73	23.2
All of the above	22	7.0
Status of being worried about giving birth in hospital		
Worried	192	61.0
Not worried	123	39.0

trauma. Obtaining information about birth types in prenatal follow-up visits was not significantly correlated with the total scores for PASS or its subscales ($p > .05$), except for the subscale of general anxiety and specific fears ($t = -2.753$, $p = .006$). Those who obtained information about birth types in prenatal follow-up visits had lower total scores for the subscale of general anxiety and specific fears. Besides, the pregnant women who were worried about giving birth in the hospital had higher total scores for PASS ($t = 6.460$, $p < .001$) and its subscales ($t = 7.094$ for PASS-acute anxiety and adjustment disorder; $t = 4.819$ for PASS-general anxiety and specific fears; $t = 4.103$ for PASS-perfectionism, control, and trauma *and* $t = 54.492$ for PASS-social anxiety) than those who were not worried (all $p < .001$).

Table 5 shows the relationship between the participants' total scores for CP19-S, PASS and their subscales. Accordingly, we found a moderate and positive correlation between the total scores for PASS and CP19-S ($r = .45$, $p < .001$). There was a moderate and positive correlation between the total scores for PASS and the subscales of CP19-S ($r = .40$ for psychological; $r = .35$ for psycho-somatic; $r = .36$ for social; and $r = .33$ for economic) (all $p < .001$). Similarly, we determined a positive correlation between the total scores for CP19-S and the subscales of PASS ($r = .46$ for acute anxiety and adjustment; $r = .25$ for general worry and specific fears; $r = .34$ for perfectionism, control and trauma; and $r = .37$ for social anxiety) (all $p < .001$) (Table 5).

6 | DISCUSSION

We conducted a cross-sectional study to reveal the relationships between PA levels, COVID-19 phobia levels and birth type preferences

TABLE 2 Differences of total scale scores between pregnant women who changed their birth type preferences during the COVID-19 pandemic and those who did not ($N = 315$)

	Change in birth type preference ($N = 13$)	No change in birth type preference ($N = 302$)	Z-value	p-value
COVID- 19 phobia scale (C19P-S)[a]	53.30 ± 14.44	56.75 ± 15.48	−0.792	.429
CP19-S psychological	20.30 ± 4.80	21.03 ± 5.70	−0.664	.507
CP19-S psycho-somatic	9.92 ± 5.59	10.67 ± 4.51	−0.450	.653
CP19-S social	14.15 ± 4.46	15.71 ± 5.02	−1.123	.261
CP19-S economic	8.92 ± 3.81	9.32 ± 3.80	−0.259	.795
Perinatal Anxiety Screening Scale (PASS)[a]	32.92 ± 15.25	31.48 ± 15.66	−0.431	.667
PASS-acute anxiety and adjustment disorder	14.07 ± 7.26	13.34 ± 6.59	−0.397	.691
PASS-general anxiety and specific fears	4.84 ± 3.48	5.02 ± 2.87	−0.164	.870
PASS-perfectionism, control and trauma	6.00 ± 3.46	5.65 ± 3.79	−0.517	.605
PASS-social anxiety	8.00 ± 4.54	7.46 ± 5.24	−0.718	.473
Birth type preference[b]	**Before the COVID-19 pandemic**	**Following the COVID-19 pandemic**	**p-value (2-Tailed; $p < .05$ Significant)**	
Vaginal delivery	213	12	**.003**	
Caesarean section	1	89		

[a]Mann–Whitney U.

[b]McNemar's test.

The Significance of Bold values indicates different variable.

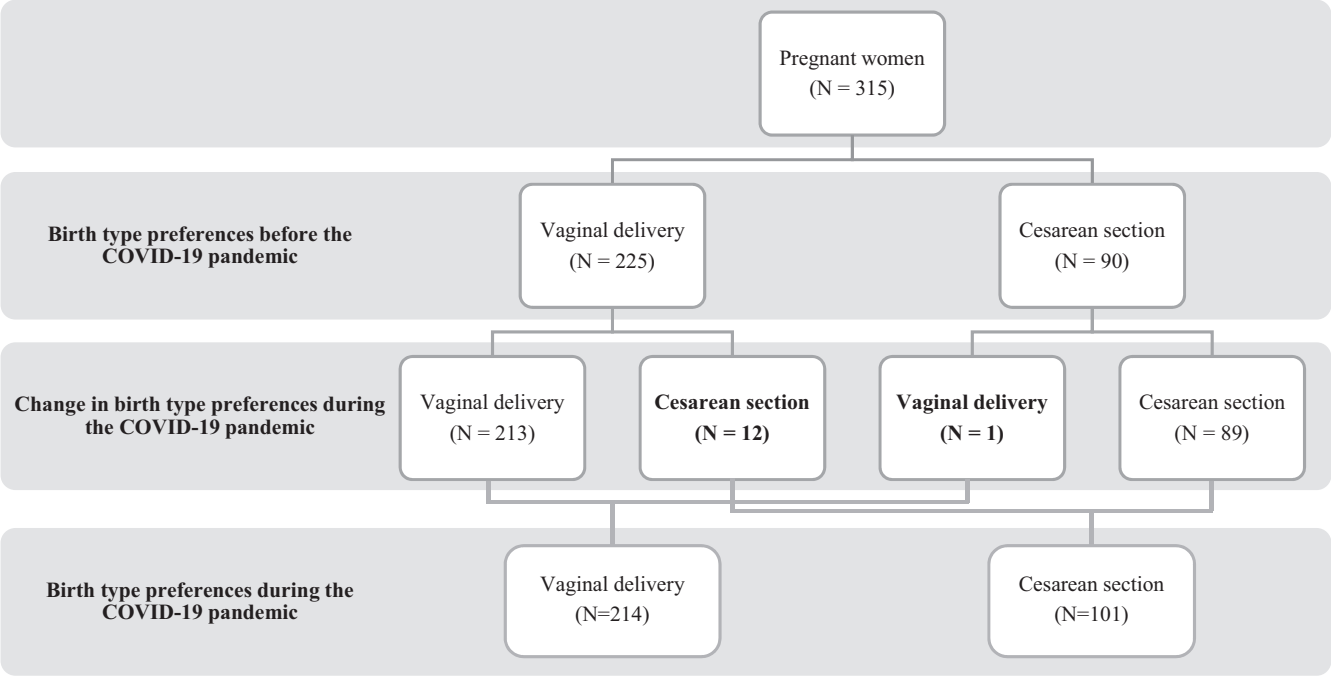

FIGURE 1 Changes in birth type preferences during the COVID-19 pandemic

among pregnant women. We determined that there was a moderate and positive correlation between COVID-19 phobia and perinatal anxiety levels among pregnant women. One study investigated the anxiety levels of pregnant women before and during the COVID-19 pandemic and found that the pandemic increased their PA levels (Puertas-Gonzalez et al., 2021). In a meta-analysis, the anxiety levels of pregnant women were found to be significantly higher during the COVID-19 pandemic compared to before the pandemic (standardised mean difference = .82, 95% confidence interval = .49–1.16, $p < .001$) (Hessami et al., 2020). One study reported that, in regard to basic emotions, joy was the most common emotion expressed by pregnant women before the COVID-19 pandemic, while fear was the most common during the pandemic (Ravaldi et al., 2021). We conclude that pregnant women's experiences regarding the pandemic increased their PA levels, negatively affecting their perceptions of childbirth.

Pregnant women have been known to change their obstetric decisions, especially their birth type preferences, due to the COVID-19 pandemic (Ahlers-Schmidt et al., 2020; Liu et al., 2020). In this study, during the COVID-19 pandemic, 4.1% of our participants changed their birth type preferences and this change was statistically significant according to McNemar's test. Also, 12 of those who wanted to give birth by VD before the COVID-19 pandemic changed their decision for CS during the COVID-19 pandemic. Only one of pregnant women who wanted to give birth by CS before the COVID-19 pandemic changed their decision for VD during the COVID-19 pandemic. Hence, we found that pregnant women changed their birth type preferences in favour of CS during the COVID-19 pandemic. One study in China determined that 9.19% of pregnant women changed birth type preferences from VD to CS during the COVID-19 pandemic and 4.26% changed their preferences from CS to VD (Liu et al., 2020). A Turkish study with 300 pregnant women reported no statistical change in women's birth type preferences before and during the COVID-19 pandemic (Çalık et al., 2021). Still, there is a limited number of studies on the changes in women's birth type preferences during the COVID-19 pandemic.

In the present study, we observed a difference between the PA and COVID-19 phobia levels of pregnant women according to their birth type preferences before the COVID-19 pandemic. Similarly, we found no difference between those who changed their birth type preferences and those who did not in terms of PA ($p = .363$) or COVID-19 phobia ($p = .964$) levels during the COVID-19 pandemic. One study found that pregnant women who changed their birth type preferences had higher anxiety regarding the COVID-19 pandemic (Çalık et al., 2021). Birth type preference is based on individual, social and cultural factors including parity, fear of childbirth, previous birth types and experiences, individual beliefs and values, social support, knowledge on childbirth, and healthcare professionals (Coates et al., 2020; Gildner & Thayer, 2020; Gu et al., 2018; Long et al., 2018; Preis et al., 2019; Rania, 2019). In this context, we conclude that further qualitative and quantitative research is needed to examine the factors affecting women's birth type preferences during the COVID-19 pandemic.

In Turkey, pregnant women are informed about birth types in prenatal follow-up visits. We found that 12.1% of our participants had no access to prenatal follow-up visits due to the COVID-19 pandemic. Those who had no access to prenatal follow-up visits and who obtained information about birth types in these visits had higher prenatal anxiety levels than others. During the COVID-19 pandemic, an important source of anxiety has been the inability to reach obstetric physicians or having to postpone appointments for prenatal

TABLE 3 Relationship between participants' obstetric characteristics and CP19-S scores ($n = 315$)

Characteristics	COVID-19 phobia scale (CP19-S)	CP19-S psychological	CP19-S psycho-somatic	CP19-S social	CP19-S economic
Previous birth experience[a]					
Women with previous birth experience	56.75 ± 15.94	21.06 ± 5.71	10.38 ± 4.11	15.78 ± 5.17	9.52 ± 3.65
Women with no previous birth experience	56.53 ± 15.19	20.98 ± 5.65	10.78 ± 4.68	15.57 ± 4.92	9.19 ± 3.88
Statistics	$t = 0.122$ $p = .904$	$t = 0.124$ $p = .902$	$t = -0.748$ $p = .437$	$t = 0.356$ $p = .726$	$t = 0.441$ $p = .460$
Pregnancy intendedness[a]					
Intended pregnancy	55.93 ± 15.37	20.81 ± 5.68	10.46 ± 4.33	15.40 ± 4.97	9.25 ± 3.62
Unintended pregnancy	60.03 ± 15.45	22.00 ± 5.49	11.55 ± 5.17	16.86 ± 5.02	9.61 ± 4.61
Statistics	$t = -1.757$ $p = .080$	$t = -1.382$ $p = .168$	$t = -1.608$ $p = .109$	$t = -.631$ $p = .529$	$t = -.631$ $p = .593$
Status of going to prenatal follow-up visits[b]					
Uninterrupted access to all prenatal follow-up visits	54.91 ± 15.79	20.41 ± 5.88	10.09 ± 4.34	15.35 ± 5.07	9.06 ± 3.92
Access to essential prenatal follow-up visits only (double or triple prenatal screening, etc.)	55.91 ± 13.74	22.23 ± 4.73	11.32 ± 4.31	15.98 ± 4.77	9.36 ± 3.46
No access to prenatal follow-up visits for personal reasons	55.00 ± 19.22	19.30 ± 6.44	10.20 ± 4.96	15.10 ± 6.65	9.40 ± 2.95
No access to prenatal follow-up visits due to the COVID-19 pandemic	60.52 ± 15.22	21.81 ± 5.81	11.78 ± 5.15	16.52 ± 4.68	10.39 ± 4.01
Statistics	$F = 2.218$ $p = .086$	$F = 2.545$ $p = .056$	$F = 2.465$ $p = .062$	$F = 0.767$ $p = .513$	$F = 1.300$ $p = .274$
Status of obtaining information about birth types in prenatal follow-up visits[a]					
Knowledgeable	56.41 ± 15.61	21.12 ± 5.45	10.35 ± 4.44	15.74 ± 5.10	9.18 ± 3.80
Not knowledgeable	56.89 ± 16.78	20.83 ± 5.97	11.06 ± 4.55	15.50 ± 4.88	9.49 ± 3.81
Statistics	$t = -0.274$ $p = .785$	$t = -0.449$ $p = .659$	$t = -1.375$ $p = .172$	$t = -0.424$ $p = .670$	$t = -0.718$ $p = .474$
Status of being worried about giving birth in hospital[a]					
Worried	59.75 ± 16.07	22.24 ± 5.70	11.27 ± 4.74	16.46 ± 5.15	9.77 ± 4.10
Not worried	51.71 ± 12.98	19.08 ± 5.04	9.66 ± 3.89	14.37 ± 4.50	8.59 ± 3.16
Statistics	$t = 4.653$ $\mathbf{p < .001}$***	$t = 5.155$ $\mathbf{p < .001}$***	$t = 3.134$ $\mathbf{p = .002}$**	$t = 3.496$ $\mathbf{p < .001}$***	$t = 2.706$ $\mathbf{p = .007}$**

[a]Student's *t*-test.

[b]One-way ANOVA.

*$p < .05$; **$p < .01$; ***$p < \mathbf{.001}$.

The Statistically Significant *p*-values are given in bold.

TABLE 4 Relationship between the participants' obstetric characteristics and PASS scores ($n = 315$)

Characteristics	Perinatal Anxiety Screening Scale (PASS)	PASS-acute anxiety and adjustment disorder	PASS-general anxiety and specific fears	PASS-perfectionism, control and trauma	PASS-social anxiety
Previous birth experience[a]					
Women with previous birth experience	33.61 ± 15.66	13.72 ± 6.66	5.37 ± 2.92	6.06 ± 3.78	8.44 ± 5.09
Women with no previous birth experience	30.42 ± 15.52	13.17 ± 6.59	4.81 ± 2.87	5.46 ± 3.75	6.96 ± 5.21
Statistics	$t = 1.737$ $p = .083$	$t = 0.709$ $p = .479$	$t = 1.641$ $p = .102$	$t = 1.355$ $p = .176$	$t = 2.420$ **$p = .016$***
Pregnancy intendedness[a]					
Intended pregnancy	31.19 ± 15.31	13.22 ± 6.62	5.04 ± 2.85	5.58 ± 3.54	7.33 ± 5.03
Unintended pregnancy	33.30 ± 17.15	14.09 ± 6.59	4.84 ± 3.12	6.13 ± 4.77	8.23 ± 6.02
Statistics	$t = -0.890$ $p = .374$	$t = -0.864$ $p = .388$	$t = 0.461$ $p = .645$	$t = 0.-793$ $p = .431$	$t = -1.129$ $p = .260$
Status of going to prenatal follow-up visits[b]					
Uninterrupted access to all prenatal follow-up visits[1]	29.48 ± 15.61	12.76 ± 6.44	4.88 ± 2.92	5.12 ± 3.81	6.71 ± 5.15
Access to essential prenatal follow-up visits only (double or triple prenatal screening, etc.)[2]	33.92 ± 15.04	14.26 ± 6.47	4.91 ± 2.89	6.38 ± 3.65	8.36 ± 5.04
No access to prenatal follow-up visits for personal reasons[3]	30.10 ± 19.15	12.30 ± 8.73	5.50 ± 3.43	5.50 ± 3.37	6.80 ± 5.78
No access to prenatal follow-up visits due to the COVID-19 pandemic[4]	37.05 ± 14.41	14.76 ± 6.96	5.76 ± 2.63	6.92 ± 3.51	9.60 ± 5.00
Statistics	$F = 3.378$ **$p = .019$***	$F = 1.667$ $p = .174$	$F = 1.101$ $p = .349$	$F = 3.772$ **$p = .011$***	$F = 4.406$ $p = .006$
Post hoc	4 > 1,2,3			4 > 1,2,3	1,2,3,4
Status of obtaining information about birth types in prenatal follow-up visits[a]					
Knowledgeable	30.17 ± 15.81	13.05 ± 6.55	4.64 ± 2.95	5.53 ± 3.92	6.93 ± 5.24
Not knowledgeable	33.52 ± 15.19	13.82 ± 6.70	5.55 ± 3.92	5.86 ± 3.54	8.28 ± 5.07
Statistics	$t = -1.882$ $p = .061$	$t = -1.006$ $p = .315$	$t = -2.753$ **$p = .006$****	$t = -0.379$ $p = .705$	$t = -0.774$ $p = .440$
Status of being worried about giving birth in hospital[a]					
Worried	35.82 ± 15.58	15.33 ± 6.51	5.62 ± 2.89	6.35 ± 3.82	8.51 ± 5.45
Not worried	24.86 ± 13.19	10.30 ± 5.52	4.06 ± 2.65	4.06 ± 2.65	5.88 ± 4.35
Statistics	$t = 6.460$ **$p < .001$*****	$t = 7.094$ **$p < .001$*****	$t = 4.819$ **$p < .001$*****	$t = 4.103$ **$p < .001$*****	$t = 54.492$ **$p < .001$*****

[a]Student's *t*-test.

[b]One-way ANOVA.

*$p < .05$; **$p < .01$; ***$p < .001$.

The Statistically Significant *p*-values are given in bold.

TABLE 5 Relationship between the participants total scores for CP19-S, PASS and their subscales ($n = 315$)

	COVID- 19 phobia scale (C19P- S)	CP19-S psychological	CP19-S psycho-somatic	CP19-S social	CP19-S economic	Perinatal Anxiety Screening Scale (PASS)	PASS-acute anxiety and adjustment disorder	PASS-general anxiety and specific fears	PASS-perfectionism, control and trauma	PASS-social anxiety
COVID- 19 phobia scale (C19P- S)	1									
CP19-S psychological	$r = .802$[a] **$p < .001$**	1								
CP19-S psycho-somatic	$r = .805$[a] **$p < .001$**	$r = .415$[a] **$p < .001$**	1							
CP19-S social	$r = .803$[a] **$p < .001$**	$r = .682$[a] **$p < .001$**	$r = .609$[a] **$p < .001$**	1						
CP19-S economic	$r = 0.751$[a] **$p < .001$**	$r = 0.380$[a] **$p < .001$**	$r = 0.658$[a] **$p < .001$**	$r = 0.535$[a] **$p < .001$**	1					
Perinatal Anxiety Screening Scale (PASS)	$r = .455$[a] **$p < .001$**	$r = .409$[a] **$p < .001$**	$r = .352$[a] **$p < .001$**	$r = .366$[a] **$p < .001$**	$r = .339$[a] **$p < .001$**	1				
PASS-acute anxiety and adjustment disorder	$r = .465$[a] **$p < .001$**	$r = .456$[a] **$p < .001$**	$r = .327$[a] **$p < .001$**	$r = .389$[a] **$p < .001$**	$r = .310$[a] **$p < .001$**	$r = .899$[a] **$p < .001$**	1			
PASS-general anxiety and specific fears	$r = .255$[a] **$p < .001$**	$r = .206$[a] **$p < .001$**	$r = .202$[a] **$p < .001$**	$r = .199$[a] **$p < .001$**	$r = .225$[a] **$p < .001$**	$r = .780$[a] **$p < .001$**	$r = .513$[a] **$p < .001$**	1		
PASS-perfectionism, control and trauma	$r = .348$[a] **$p < .001$**	$r = .308$[a] **$p < .001$**	$r = .268$[a] **$p < .001$**	$r = .270$[a] **$p < .001$**	$r = .282$[a] **$p < .001$**	$r = .826$[a] **$p < .001$**	$r = .599$[a] **$p < .001$**	$r = .405$[a] **$p < .001$**	1	
PASS-social anxiety	$r = .379$[a] **$p < .001$**	$r = .310$[a] **$p < .001$**	$r = .333$[a] **$p < .001$**	$r = .296$[a] **$p < .001$**	$r = .294$[a] **$p < .001$**	$r = .904$[a] **$p < .001$**	$r = .706$[a] **$p < .001$**	$r = .453$[a] **$p < .001$**	$r = .757$[a] **$p < .001$**	1

[a]Pearson correlation. Correlation is significant at the 0.01 level (2-tailed).

The Statistically Significant p-values are given in bold.

follow-up visits (Liu et al., 2020). One study observed a strong relationship between PA related to COVID-19 pandemic and concerns for being in the hospital or not having access to a hospital (Akgor et al., 2021). Another study found that hospital-acquired COVID-19 transmission was the biggest concern for pregnant women during prenatal follow-up visits and childbirth (Çalık et al., 2021). In this context, we conclude that during the COVID-19 pandemic, women's access to perinatal follow-up has been interrupted by fear of being infected in the hospital.

In the current study, pregnant women who were worried about giving birth in the hospital had higher levels of prenatal anxiety and COVID-19 phobia than those who were not worried. In an another study, the main concern of all the participants was being afraid of infecting their babies during childbirth (Akgor et al., 2021). Similarly, another study reported that 83.7% of women experienced fear for their baby being infected with COVID-19 at childbirth (Çalık et al., 2021). Another research found that women thought they could be infected at any time (35.47%), be infected during/after birth (31.40%) or their babies might be infected during/after birth (41.8%) (Yassa et al., 2020). Thus, we conclude that women's concerns about being infected with COVID-19 are not only limited to the prenatal period, encompassing both childbirth and the postnatal period.

6.1 | Limitations

The present study had certain limitations. The data were collected from one centre, one of the largest institutions that were designated as COVID-19 centres throughout the country. The centre is not a private office or a private hospital and it has more of a capacity to reflect the real pregnant population of the country compared to some other reports. Because we used the non-random convenience sampling method, the results can still not be generalised for the general population. Further research with a multicentre design is needed to confirm these results.

7 | CONCLUSION

We found that pregnant women changed their birth type preferences in favour of CS during the COVID-19 pandemic. Although there was a moderate and positive correlation between PA and COVID-19 phobia levels, these parameters were not affected by the changing birth type preferences. Having full access to all prenatal follow-up visits and having obtained information about birth types in prenatal follow-up visits seem to have lowered PA levels among these women. In contrast, being worried about giving birth in the hospital during the COVID-19 pandemic was correlated with higher PA and COVID-19 phobia levels. In conclusion, when providing counselling on birth types, healthcare workers should consider COVID-19 phobia and PA in the decision-making process, which could improve the quality of prenatal care.

8 | RELEVANCE TO CLINICAL PRACTICE

Women have experienced a conflict in their obstetric decisions due to a lack of evidence-based information about the impact of COVID-19 on pregnant women. Determining the impact of the current pandemic and possible future pandemics on women's birth type preferences is important for identifying the risk factors for the increasing CS rates worldwide. Our findings indicated that the COVID-19 pandemic affected the birth type preferences of pregnant women. Most of our participants changed their birth type preferences in favour of CS during the COVID-19 pandemic. There was also a positive and moderate correlation between the perinatal anxiety and COVID-19 phobia levels of pregnant women. During the COVID-19 pandemic, access to prenatal follow-up visits was adversely affected, so women experienced a lack of information about birth types. This study may guide the planning and evaluation of intervention strategies by healthcare policymakers to meet the prenatal care needs of pregnant women in a potential future pandemic. Therefore, we recommend healthcare professionals to take COVID-19 phobia and perinatal anxiety into account when counselling pregnant women about birth types to improve prenatal care.

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CONFLICT OF INTEREST

The authors declare no conflict of interest.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available on request from the corresponding author. The data are not publicly available due to privacy or ethical restrictions.

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