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ARTICLE

Partner relationship quality, social support and maternal stress during pregnancy and the first COVID-19 lockdown

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ABSTRACT

Introduction: Pregnancy has been associated with diminished maternal mental health and a deterioration in partner relationship quality. The recent COVID-19 quarantine measures have created additional stressors for pregnant women due to isolation and a surge in partner conflict.

Objective: The purpose of this study was to assess how partner relationship conflict and social support may mediate mental health outcomes during the COVID-19 lockdown.

Methods: A cross-sectional study with a sample of 152 pregnant women using psychological measures, (i.e. Prenatal Distress Questionnaire, Symptom Checklist-90-R, Duke-UNC-11 Functional Social Support Questionnaire, Perceived Stress Scale). Demographic characteristics, obstetrics history, and partner relationship conflict were assessed using questionnaires.

Results: While there were few reports of physical violence in this sample, between 18% and 59% of women reported partner relationship conflict on the psychological subscale (e.g. afraid of one's partner or screamed at by one's partner). Further, the psychological subscale was significantly associated with symptoms of psychopathology. There was a significant negative association between social support and pregnancy-specific stress ($p = .005$), and perceived stress ($p = .038$).

Conclusions: These findings suggest that partner relationship conflict and social support may act as important buffers for prenatal mental health in childbearing women during vulnerable situations, such as the COVID-19 pandemic.

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COVID-19; partner relationship conflict; pregnancy; social support; mental health; stress

Introduction

Since the first signs of COVID-19 were detected in December 2019, the virus has rapidly spread and deeply affected people at all ends of the globe. In January 2020, after COVID-19 had reached multiple countries, the World Health Organization (WHO) raised the alert for an international public health emergency [1], and eventually declared a global pandemic [2]. During the first wave of the COVID-19 pandemic, European countries such as Spain implemented a nationwide lockdown to battle COVID-19 from 15 March to 21 June 2020. Throughout the lockdown or "stay-at-home" order, residents in Spain were mandated to remain at home, except to purchase medicine or food for emergencies or essential work (e.g. hospitals, nursing homes, supermarkets, petrol stations). These changes have been associated with stress and symptoms of psychopathology [3–6], particularly among pregnant women who experienced economic difficulties, homeschooling, telehealth prenatal appointments and a lack of social support from friends or relatives [7–10].

Maternal mental health and distress during pregnancy are important risk factors for infant health and well-being [11,12]. Prenatal anxiety and stress have been linked to long-term developmental sequelae in neonates, including cognitive, emotional, and behavioral disorders [13]. In order to improve both maternal and infant health, a wealth of research has been dedicated to identifying variables related to prenatal mental health and pregnancy-specific stress. Social support has repeatedly been associated with improved mental and physical health, where greater levels of perceived social support and care from partners during

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pregnancy are related to better prenatal and postnatal mental health [14–16]. Partner relationship conflict, on the other hand, has been associated with adverse perinatal mental health issues (17] and pregnancy medical complications [18].

The broad quarantine and social distancing measures enforced to slow the rapid spread of COVID-19 have been related to a negative psychosocial status among pregnant women [19]. On the one hand, social distancing and isolation have led to reduced contact with the support networks pregnant women typically depend on. A recent study revealed that approximately 35% of pregnant women in their second and third trimesters were self-isolating to protect themselves from COVID-19 [20]. While social support can act as a buffer for stress during pregnancy, the lack thereof has been related to mental health problems, such as depression [19,21]. In addition to a lack of social support, pregnant women may have also experienced heightened distress related to their fear of the virus' effects on the fetus' health. Research conducted prior to COVID-19 demonstrated that pregnant women tend to be more concerned than others about becoming infected or transmitting viruses [22]. This fear has been reflected by a decrease in medical visits during the COVID-19 pandemic, where a greater fear of infection in the hospital or in transit to the hospital was related to abstaining from healthcare services [23].

Furthermore, a growing body of evidence suggests that the COVID-19 pandemic is related to romantic relationship conflict [24,25] and intimate partner violence [26–28]. Recent findings suggest that additional external stressors resulting from the pandemic, such as limited social contact, increase the risk of adverse relationship interactions [25]. For instance, poor partner relationship quality and intimate partner violence have been associated with a wide range of mental health difficulties, most notably maternal depression [29–31] and stress [32].

Prenatal maternal mental health during the COVID-19 pandemic is an urgent public health issue [33]. While factors related to prenatal mental health have been studied extensively, it remains unclear whether the same variables are relevant during the COVID-19 lockdown. While there has been a surge in pandemic-related mental health studies, prenatal wellbeing deserves significant attention. For these reasons, this study aimed to assess the association between partner relationship conflict, social support, and fear of being infected by COVID-19 with maternal prenatal mental health. Based on previous studies, we hypothesize that a model including social support, the fear of contracting COVID-19, and partner relationship conflict will account for a significant amount of variance in symptoms of psychopathology, general perceived stress, and pregnancy-specific distress.

Method

The sample used in the present study was drawn from a larger study that aimed to examine the impact of COVID-19 on perinatal and infant psychological health during the first and second waves of the pandemic lockdowns. This study is based on the prenatal sample because we were interested in the experiences of prenatal women during the early phases of the pandemic lockdowns in Spain.

Procedure

Participants were recruited from the General Hospital of Antequera and a Health Center in Roquetas de Mar, Almeria (Spain), during the first European lockdown of the global pandemic between 15 April and 15 May 2020. All women were recruited by a midwife during an antenatal appointment. The selection of participants included the following inclusion criteria: women ages 18 or older, pregnant, and proficient in the Spanish language. All participants signed an informed consent form, which described the voluntary nature of the study and assured them that their identity would be kept anonymous. Prior to initiating research, this study was approved by the Andalusian Biomedical Research Committee with the number 0904-N-20. The confidentiality of personal information was guaranteed under Spanish Organic Law 3/2018 of December 5th on the Protection of Personal Data. In addition, the study strictly followed the guidelines outlined by the Helsinki Declaration (AMM, 2008) and the Good Clinical Practice Directive (Directive 2005/28/EC) of the European Union.

Participants

A sample of 225 pregnant women were assessed for eligibility. Forty-one pregnant women declined to participate due to a lack of time and three women were excluded for not having met inclusion criteria. Thus, 181 pregnant women were enrolled. Twenty-nine participants were missing data on the Duke-UNC-11, resulting in a final sample of 152 women (see Figure 1). Table 1 shows the demographic characteristics of the original and final sample.

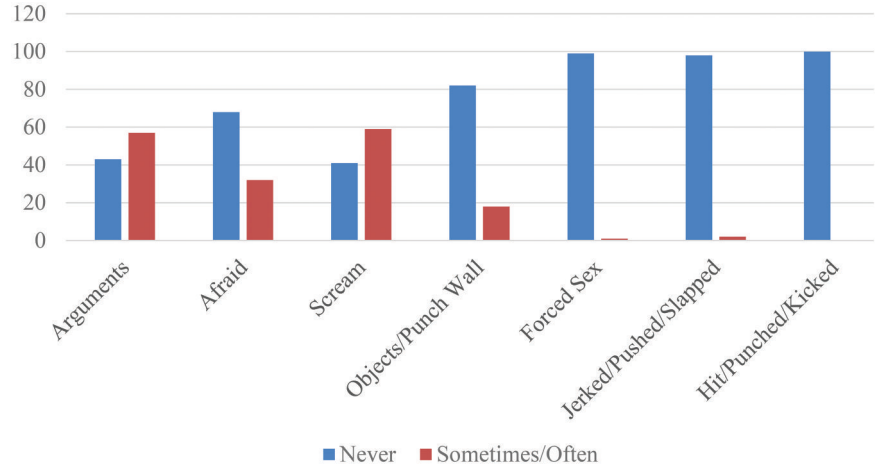

Figure 1. Percentage for responses on partner relationship conflict measure ($n = 152$). *Note.* Arguments: "Is it difficult to resolve arguments between you and your partner?"; Afraid: "Do you feel afraid by what your partner says or does?"; Scream: "Has your partner yelled or screamed at you?"; Objects/Punch Wall: "Has your partner ever punched the wall or thrown objects?"; Forced Sex: "Has your partner ever forced you to have sex?"; Jerked/Pushed/Slapped: "Has your partner ever jerked, pushed you, or slapped you?"; Hit/Punched/Kicked: "Has your partner ever hit, punched, or kicked you?"

Table 1. Socio-demographic and obstetric characteristics for ($n = 152$).

		Sub-sample ($n = 152$)
Socio-demographic variables		
Age	Range	20–44
	Mean (*SD*)	32.18 (*5.55*)
Education Level	Primary/Elementary	3
	Middle and High School	80
	University degree	69
Civil Status	Married/Cohabiting	143
	Single	6
	Divorced	3
Country of Origin	Spain	127
	South America	17
	Europe (not Spain)	6
	Russia	1
	Morocco	1
Occupation	Full-time	88
	Part-time	21
	Unemployed	43
Obstetric variables		
Live Births	1	147
	2	4
	3	1
Desired Pregnancy	Desired	128
	Undesired	24
Pregnancy Type	Spontaneous	139
	Assissted reproductive technology	13
Weeks of Pregnancy	Range	20-44
	Mean (*SD*)	32.18 (5.55)

Note. Artificial: artificial reproductive technique; number of babies: number of babies in present pregnancy.

Measures

Sociodemographic information: An interview was conducted by phone to collect socio-demographic data regarding the women's education, age, socioeconomic and marital status, and obstetric variables, such as the number of babies during pregnancy and whether or not conception was spontaneous or used assisted reproductive technology (see Table 1).

Partner Relationship Conflict Questionnaire: This questionnaire was developed by the senior author of the project in order to include a brief series of questions related to partner conflict adapted to the objectives of the current project. This published measure [34] includes several questions related to partner relationship conflict and violence to determine the level of partner support and whether women had experienced violence from their partner. The following questions were asked on a three-point Likert scale of 0 (never), 1 (sometimes), 2 (often): "1. Is it difficult to resolve arguments between you and your partner? 2. Do you feel afraid by what your partner says or does? 3. Has your partner yelled or screamed at you? 4. Has your partner ever punched the wall or thrown objects? 5. Has your partner ever forced you to have sex? 6. Has your partner ever jerked, pushed you, or slapped you? 7. Has your partner ever hit, punched, or kicked you?" Instructions advised women to fill out the questionnaire alone and in private, and reminded participants of the anonymity and confidentiality of their responses. A dichotomous score was calculated, where responses indicating "often" or "sometimes" were coded as 1, and the response "never" was coded as 0. Because this measure has not been validated, we conducted exploratory factor analyses to examine whether or not items loaded onto different factors within the measure. As such, 6 items (items 1–6) from the Partner Relationship Conflict Measure were subjected to an exploratory factor analysis (EFA) using oblimin rotation and maximum likelihood extraction.

The need to split the items into factors was demonstrated by Barlett's test of sphericity, $\chi^2(15) = 177$, $p < .001$, and a $KMO = .736$. The EFA returned a two-factor solution with factor loadings >.40, and revealed that items 1-4 loaded onto one factor (Partner Relationship Conflict for Psychological variables), and items 5-6 loaded onto a second (Physical Violence). Item number 7 was not included in these analyses because all the women reported "never." The Cronbach's alpha reliability was 0.67.

Duke-UNC-11 Functional Social Support Questionnaire [35,36]: The Duke-UNC 11 is a self-administered, 11-item questionnaire, each item offers five response options on a Likert-type scale. The total score ranges between 11 and 55, with higher scores representing higher perceived social support. The Spanish validation of the measure demonstrates a Cronbach's alpha of 0.90 for the total scale [35].

Symptom Checklist–90-R (SCL-90-R; [37,38]): This instrument is a self-administered questionnaire, which has been revised and translated into Spanish [39]. The SCL-90-R assesses the presence of psychopathological symptoms, focusing on the intensity of each symptom on a scale that ranges from total absence (0) to maximum intensity of the symptom (4). The measure includes a Global Severity Index (GSI) designed to measure overall psychological distress. The GSI is considered to be the most sensitive indicator of respondent distress. The SCL-90-R also includes nine additional subscales, all of which were used in the current study: Somatization, Obsessive-Compulsive Disorder, Interpersonal Sensitivity, Depression, Anxiety, Hostility, Phobic Anxiety, Paranoid Ideation, and Psychoticism. The Cronbach's alpha reliability coefficients of the Spanish version ranged between $0.67 < \alpha < 0.94$ [37].

Perceived Stress Scale (PSS; [40,41]) is a self-report questionnaire with 14 items that measure the degree to which people have felt upset, worried, or insecure in their ability to control their personal problems during the past month. The Spanish version of the PSS (14 items) has shown adequate psychometric properties in terms of internal consistency ($\alpha = .81$, and test-retest, $r = .73$), convergent validity with the HADS-T (distress; $r = .71$; $p < .001$) and HADS-A (anxiety; $r = .64$; $p < .001$), and reliability ($\alpha = .82$, test-retest, $r = .77$) [41].

Pregnancy Distress Questionnaire (PDQ, [42,43]): The PDQ assesses pregnancy-specific stress, and includes questions about pregnant women's concerns for medical problems, physical symptoms, bodily changes, parenting, labor, and delivery, interpersonal relationships, and the baby's health. Consistent with previous research on the English version, the Spanish psychometric validation of the PDQ also confirmed a three-factor structure: "Concerns about Birth/Baby" (Factor 1), "Concerns about Emotions/Relations" (Factor 2) and "Concerns about Weight/Body Image" (Factor 3) [44,45]. The Spanish version of this questionnaire administered in our study showed a Cronbach's alpha reliability coefficient of $\alpha = 0.71$ [42].

Statistical analysis

Descriptive statistics were computed for sociodemographic data (i.e. age, educational level, occupation, and civil status) for both the whole and analytic sample, as well as for the Partner Relationship Conflict Measure. While there were no differences in age or education, women who were excluded ($n = 29$) due to missing data on the Duke-UNC-11 measure were significantly more likely to have seen their partner punch the wall or throw objects ($M = .41$; $SD = 50$) than the analytic sample ($M = .18$, $SD = .39$; $t(179) = 2.77$, $p < .05$). As described in the measures section, exploratory and confirmatory factor analyses were conducted using the whole sample with the objective of determining the relationship between items and identifying potential sub-scales for the Partner Relationship Conflict measure. Finally, two multivariate multiple regressions were conducted to determine how much variance in mental health outcomes (i.e. subscales for the SCL-90-R, PSS, and PDQ as dependent variables) could be explained by a model including (1) Social Support (as measured by the Duke-UNC-11), (2) whether or not women reported believing they had been infected by COVID-19, and (3) the four items (i.e. 1–4) from the psychological variables factor of the Partner Relationship Conflict measure.

Our rationale for including items 1–4 from the psychological variables factor of the Partner Relationship Conflict Measure is two-fold. First, these items loaded strongly onto the same factor (Factor 1), representing partner-related conflict for psychological variables. These items differed from those that loaded onto Factor 2, which represents physical violence. Second, as can be seen in Figure 2, very few women reported having experienced the items in Factor 2. As such, we determined it was more relevant to include items related to psychological variables (as compared to those related to physical violence) in our regression model. We also chose to assess each item (i.e. 1–4) from the psychological variables factor separately instead of creating a single score to examine the association of each with women's mental health. As such,

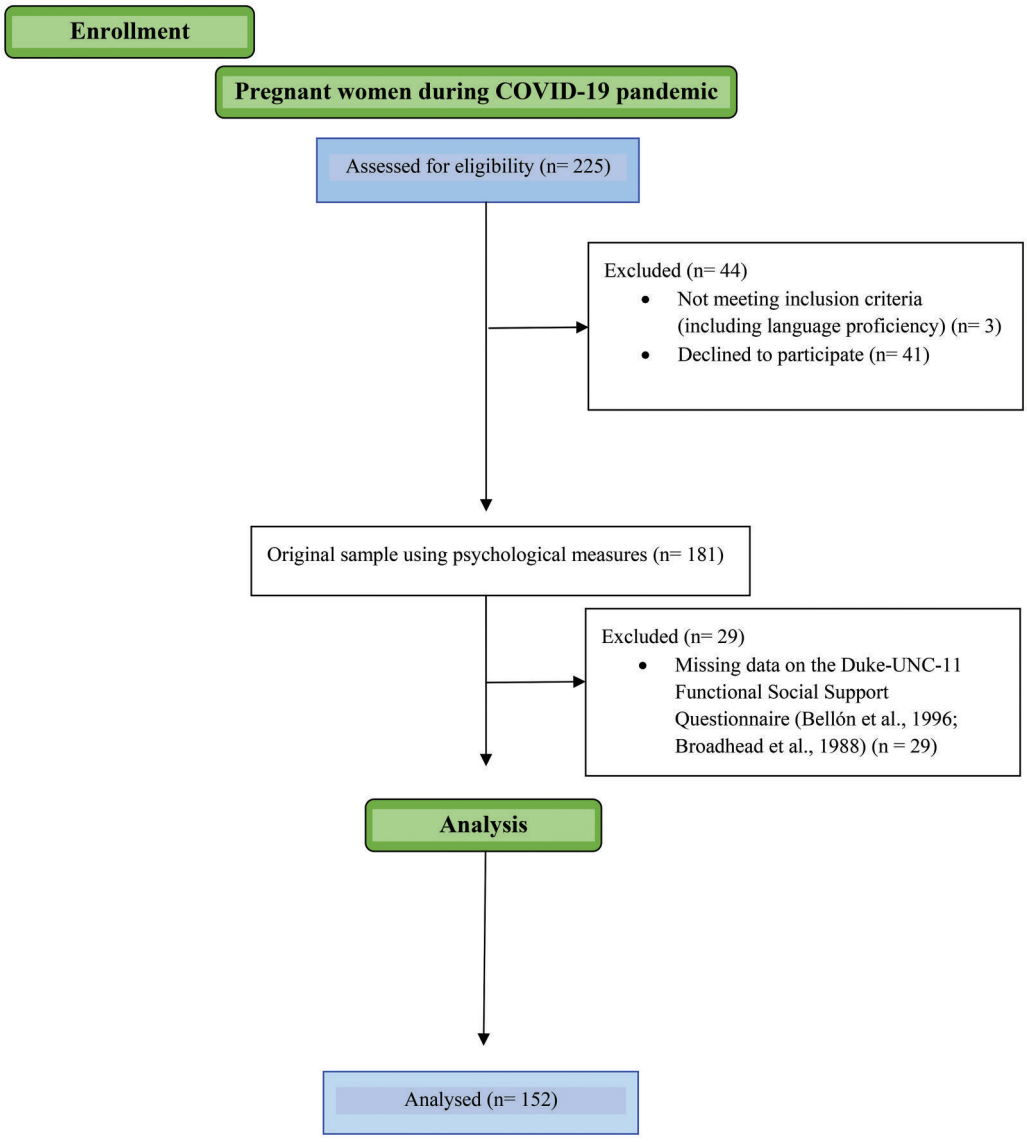

Figure 2. Flow chart for participant eligibility and inclusion in analyses.

two multivariate multiple regressions were conducted including the following independent variables: (1) items 1–4 of the Partner Relationship Conflict measure, (2) the Duke-UNC-11 total score, and (3) whether or not women believed they had been infected by COVID-19. The first multivariate multiple regression included the psychopathology subscales for the SCL-R-90 as the outcome variable for mental health and psychopathology (specifically, the following nine subscales: Somatization, Obsessive-compulsive behavior, Interpersonal sensitivity, Depression, Anxiety, Hostility, Phobic anxiety, Paranoid ideation, and Psychoticism). The second multivariate multiple regression included the total score for the Pregnancy Distress Questionnaire (PDQ) and Perceived Stress Scale (PSS) as the outcome variables.

The statistical analyses were performed using IBM SPSS Statistics (Version 26) and the R language [46] for the multivariate multiple regressions.

Results

Demographic characteristics

As shown in Figure 1, a considerable proportion of women reported "sometimes" or "often" being yelled or screamed at by their partners ($n = 89.$ 59%), and having difficulty resolving arguments ($n = 86.$ 59%). To a lesser degree, women also reported being afraid of what their partner says or does ($n = 49.$ 32%), and having seen their partner hit the wall or throw objects ($n = 28.$ 18%). On the other hand, very few reported any of the physical violence variables, that is, been forced to have sex ($n = 1$), being jerked, pushed or

Table 2. Mean and standard deviation of scores obtained from the partner relationship conflict measure and variables included in regression analyses ($n = 152$).

	Mean	*SD*
1.Arguments*	.596	.535
2. Afraid*	.342	.416
3. Scream*	.558	.515
4.Objects/Punch Wall*	.221	.416
5. Forced Sex	.011	.104
6. Jerked/Pushed/Slapped	.016	.128
7. Hit/Punched/Kicked	.000	.000
Social Support*	41.69	8.26
COVID-19*	.200	.399

Note. Arguments: "Is it difficult to resolve arguments between you and your partner?"; Afraid: "Do you feel afraid by what your partner says or does?"; Scream: "Has your partner yelled or screamed at you?"; Objects/Punch Wall: "Has your partner ever punched the wall or thrown objects?"; Forced Sex: "Has your partner ever forced you to have sex?"; Jerked/Pushed/Slapped: "Has your partner ever jerked, pushed you, or slapped you?"; Hit/Punched/Kicked: "Has your partner ever hit, punched, or kicked you?"; Social Support: Total Social Support Score from Duke-UNC-11; COVID-19: Question about COVID, "Do you believe you have been infected by COVID?". *Indicating a variable used in the regression analyses.

slapped ($n = 2$), or being hit, punched or kicked ($n = 0$). Table 2 presents the mean and standard deviations for each of the items included on the Partner Relationship Conflict Measure, as well as all variables included in the Multiple Regression Analyses.

Multivariate multiple regressions for social support, partner relationship conflict and mental health independent variables

With regard to the first model for multivariate multiple regressions, the independent variables of Social Support, Partner Relationship Quality for Psychological variables, and the belief of being infected by COVID-19 explained a significant amount of variance in each of the SCL-R-90 sub-scales (see Table 3). Specifically, the model explained 23.3% of the variance in the General Severity Index, 24.3% of the Somatization score, 32.6% of Obsessive-Compulsive Disorder score, 28.9% of the Interpersonal Sensitivity score, 29.8% of the Depression score, 19.4% of the Anxiety score, 27.2% of the Hostility score, 15.9% of the Phobic Anxiety score, 21.9% of the Paranoid Ideation score, and 18.2% of the Psychoticism score. As shown in Table 3, the associations between Partner Relationship Quality items and mental health during pregnancy were more significant than those between Social Support and the COVID-19 item.

With regard to the second model for multivariate multiple regressions, the independent variables of Social Support, Partner Relationship Quality for Psychological variables, and the belief of being infected by COVID-19 explained less variance in

Table 3. Multivariate multiple regression for the symptom checklist-90-R (SCL-90-R).

Scale	Variable	β	*SE*	*t*	*p*
GSI	Intercept	51.990	11.584	4.488	<.001***
$R^2 = .233$	Arguments	17.572	5.270	3.334	.001**
	Afraid	10.754	5.608	1.918	.057
	Screamed	4.494	5.330	.843	.400
	Punched objects	−3.697	6.150	−.601	.549
	Social Support	−.032	.260	−.122	.903
	COVID-19	9.461	5.472	1.729	.086
Somatization	Intercept	32.252	10.569	3.052	.003**
$R^2 = .243$	Arguments	17.249	4.808	3.588	<.001***
	Afraid	5.556	5.116	1.086	.279
	Screamed	9.027	4.863	1.856	.066
	Punched objects	−5.634	5.611	−1.004	.317
	Social Support	.3123	.237	1.316	.190
	COVID-19	3.639	4.992	.729	.467
OCD	Intercept	41.723	11.078	3.766	<.001***
$R^2 = .326$	Arguments	18.727	5.039	3.716	<.001***
	Afraid	11.221	5.363	2.092	.038*
	Screamed	11.170	5.097	2.191	.030*
	Punched objects	−1.755	5.881	−.298	.766
	Social Support	.055	.249	.222	.825
	COVID-19	3.801	5.233	.726	.469
Interpersonal	Intercept	17.808	12.478	1.427	.156
Sensitivity	Arguments	13.111	5.676	2.310	.022*
$R^2 = .289$	Afraid	20.335	6.040	3.366	<.001***
	Screamed	12.422	5.741	2.164	.032*
	Punched objects	−7.771	6.624	−1.173	.243
	Social Support	.216	.280	.771	.442
	COVID-19	1.480	5.894	.251	.802
Depression	Intercept	26.440	11.576	2.284	.024*
$R^2 = .298$	Arguments	17.147	5.266	3.256	.001**
	Afraid	15.915	5.604	2.840	.005**
	Screamed	11.166	5.326	2.097	.038*
	Punched objects	−12.114	6.145	−1.971	.051.
	Social Support	.135	.260	.517	.606
	COVID-19	.211	5.468	.039	.969
Anxiety	Intercept	44.984	12.171	3.696	<.001***
$R^2 = .194$	Arguments	9.456	5.537	1.708	.090
	Afraid	10.639	5.892	1.806	.0731
	Screamed	14.297	5.600	2.553	.012*
	Punched objects	−7.284	6.461	−1.127	.261
	Social Support	.003	.273	.009	.992
	COVID-19	.174	5.750	.030	.976
Hostility	Intercept	37.816	12.127	3.118	.002**
$R^2 = .272$	Arguments	17.317	5.517	3.139	.002**
	Afraid	3.323	5.871	.566	.572
	Screamed	15.500	5.580	2.778	.006**
	Punched objects	2.626	6.434	.408	.684
	Social Support	−.084	.272	−.308	.758
	COVID-19	−3.918	5.728	−.684	.495
Phobic	Intercept	46.980	14.328	3.279	.001**
Anxiety	Arguments	11.050	6.518	1.695	.092
$R^2 = .159$	Afraid	14.860	6.936	2.142	.034*
	Screamed	9.526	6.592	1.445	.151
	Punched objects	−4.811	7.606	−.632	.528
	Social Support	.094	.322	.291	.771
	COVID-19	−1.284	6.768	−.190	.850
Paranoid	Intercept	46.690	13.590	3.436	<.001***
Ideation	Arguments	7.631	6.182	1.234	.219
$R^2 = .219$	Afraid	18.404	6.579	2.797	.006**
	Screamed	13.519	6.253	2.162	.0323*
	Punched objects	−8.373	7.214	−1.161	.248
	Social Support	−.393	.305	−1.286	.200
	COVID-19	7.800	6.419	1.215	.226
Psychoticism	Intercept	36.782	13.871	2.652	.009**
$R^2 = .182$	Arguments	11.978	6.310	1.898	.060
	Afraid	14.295	6.715	2.129	.035*
	Screamed	10.236	6.382	1.604	.111
	Punched objects	−3.037	7.363	−.412	.681
	Social Support	.169	.312	.542	.589
	COVID-19	−1.365	6.552	−.208	.835

Notes. Afraid: Item 2 of Partner Conflict Measure; Arguments: Item 1 of Partner Conflict Measure; COVID-19: Item, "Do you think you have been infected by COVID?"; GSI: Global Severity Index; OCD: Obsessive-Compulsive Disorder; Punched object: Item 4 of Partner Conflict Measure; Screamed: Item 3 of Partner Conflict Measure; Social Support: Total Social Support Score from Duke-UNC-11; $R^2 = R$ squared.
*$p<.05$; **$p<.01$; ***$p<.001$.

Table 4. Multivariate multiple Regression for Perceived Stress (PSS) and Pregnancy-Specific Distress (PDQ) ($N = 152$).

Test	Variable	β	SE	t	p
PSS	Intercept	28.309	1.643	17.234	<.001***
$R^2 = .065$	Arguments	1.020	.747	1.364	.175
	Afraid	.507	.795	.638	.525
	Screamed	.222	.756	.293	.770
	Punched objects	−1.023	.872	−1.173	.243
	Social Support	−.077	.037	−2.099	.038*
	COVID-19	−.056	.776	−.074	.941
PDQ	Intercept	27.966	1.580	17.698	<.001***
$R^2 = .079$	Arguments	1.103	.719	1.535	.127
	Afraid	−.386	.765	−.505	.615
	Screamed	.235	.727	.324	.747
	Punched objects	−.149	.839	−.178	.859
	Social Support	−.101	.036	−2.830	.005**
	COVID-19	−.325	.746	−.436	.664

Notes. Afraid: Item 2 of Partner Conflict Measure; Arguments: Item 1 of Partner Conflict Measure; COVID-19: Question about COVID, "Do you think you have been infected by COVID?"; Punched object: Item 4 of Partner Conflict Measure; Screamed: Item 3 of Partner Conflict Measure; Social Support: Total Social Support Score from Duke-UNC-11; PSS: Perceived Stress Scale; PDQ: Pregnancy Distress Questionnaire; $R^2 = R$ squared.
*$p < .05$.
**$p < .01$.
***$p < .001$.

perceived stress (6.5%) and pregnancy-specific distress (7.9%). Of note, however, is that within these models, Social Support was significantly associated with Pregnancy-Specific Distress when controlling for other variables (see Table 4). As shown in Table 5, bi-variate correlations between continuous outcome variables demonstrated a strong association between all SCL-90-R subscales, as well as a strong relationship between the PSS (perceived stress) and the PDQ (Pregnancy-Specific Distress).

Discussion

The extensive body of literature on variables associated with maternal mental health demonstrates that partner relationship quality and social support are related to prenatal mental health and well-being during pregnancy. Nonetheless, it is unclear whether these same variables are pertinent during the COVID-19 pandemic. This study assessed the relationship between several independent variables (partner relationship quality, social support, and women's fear of being infected by the virus) and prenatal mental health during the first COVID-19 pandemic lockdown in Spain. Based on previous studies, we hypothesized that a model including social support, the fear of contracting COVID-19, and intimate partner relationship quality would explain a significant amount of variance in symptoms of psychopathology, perceived stress, and pregnancy-specific distress. Our hypothesis was partially supported, as there was a strong association between partner relationship quality and prenatal mental health and between social support and prenatal distress.

The results indicated that intimate partner relationship quality was associated with mental health outcomes in our sample of prenatal women during the first COVID-19 lockdown. Specifically, psychological variables of partner relationship quality, such as difficulty/ease in resolving arguments, being afraid of one's partner or being screamed at, were related to all psychopathology variables (as measured by the Symptom Checklist-90-R), namely Somatization, Obsessive-compulsive behavior, Interpersonal sensitivity, Depression, Anxiety, Hostility, Phobic anxiety, Paranoid ideation, and Psychoticism. In a research and clinical review of mental health correlates among pregnant women during the pandemic, perceived support from partners and relationship satisfaction have indeed been highlighted as critical variables to consider in the context of prenatal mental health [47], although this has not been empirically studied until the current study. Research conducted prior to the pandemic has shown an association between romantic partner satisfaction and/or support (such as greater adjustments and affection) and maternal distress and mental health status during [16,48,49] and after pregnancy [15,17]. While it is not possible to confirm with our data whether partner relationship quality became more salient during the pandemic, our findings suggest that higher intimate partner relationship quality is related to fewer negative mental health symptoms during the COVID-19 lockdown. These findings suggest a potential role of relationship quality in mental health during pregnancy and a large-scale crisis. Given that the findings from the current study and previous research have demonstrated an association between relationship quality/support and maternal mental health [50], longitudinal research may be the next step to better understand the underlying causal mechanisms behind these associations.

Our findings also indicated that social support had the strongest association with pregnancy-specific distress and perceived stress. Social support refers to interpersonal contact that either responds to the needs of another or creates the perception that their needs could be met [51]. Under more dire circumstances, social support can be defined as the critical resources that help people cope with stress, trauma, and disasters [12,52,53]. Using the Duke-11-UNC measure, which captures emotional social support (such as acts of affection, love, and interpersonal communication) and confidential social support (having someone to help in emergencies or with errands), we sought to

Table 5. Bi-variate correlations between continuous outcome variables.

	GSI	SOMAT	OCD	SENSIT	DEP	ANX	HOST	PHOBIC	PARANOID	PSYCHOT	PSS	PDQ
GSI	—											
SOMAT	0.648***	—										
OCD	0.740***	0.710***	—									
SENSIT	0.661***	0.616***	0.691***	—								
DEP	0.715***	0.781***	0.789***	0.704***	—							
ANX	0.694***	0.740***	0.726***	0.660***	0.750***	—						
HOST	0.582***	0.609***	0.626***	0.630***	0.652***	0.654***	—					
PHOBIC	0.574***	0.405***	0.579***	0.525***	0.486***	0.514***	0.383***	—				
PARANOID	0.488***	0.381***	0.485***	0.626***	0.528***	0.467***	0.476***	0.407***	—			
PSYCHOT	0.615***	0.555***	0.718***	0.624***	0.635***	0.641***	0.602***	0.617***	0.588***	—		
PSS	0.069	0.149*	0.118	0.125	0.179*	0.119	0.096	0.053	0.037	0.029	—	
PDQ	0.017	0.144	0.048	0.016	0.115	0.038	0.051	0.048	−0.024	0.053	0.618***	—

Notes.
*$p < .05$.
**$p < .01$.
***$p < .001$.
Anx: Anxiety subscale of the SCL-90-R; Dep: Depression subscale of the SCL-90-R; GSI: Global Severity Index; Host: Hostility subscale of the SCL-90-R; OCD: Obsessive-Compulsive Disorder subscale of the SCL-90-R; Paranoid: Paranoid Ideation subscale of the SCL-90-R; PDQ: Pregnancy Distress Questionnaire; Phobic: Phobic anxiety subscale of the SCL-90-R; PSS: Perceived Stress Scale; Psychot: Psychoticism subscale of the SCL-90-R; Sensit: Interpersonal Sensitivity subscale of the SCL-90-R; Somat: Somatization subscale of the SCL-90-R.

assess the relationship between social support and perceived stress and distress. Social support was especially of interest because of the particular challenges perinatal women faced during the pandemic in Spain, one of the hardest hit countries, and the demonstrated role of social support in mental health for Spanish pregnant women at this time [54]. Our findings support the results from other studies conducted during the COVID-19 pandemic that show higher levels of social support during pregnancy are associated with lower levels of stress and psychopathology symptoms [54–56]. These findings demonstrate the importance of perceived social support during pregnancy, specifically under the vulnerable circumstances of the first COVID-19 lockdown. Further, the results highlight the need to study the predictive capacity of this variable on pregnancy-related stress [57].

Finally, our results failed to show a relationship between the fear of contracting COVID-19 and mental health and perceived stress in pregnant women. These findings differ from previous research, which demonstrates a relationship between a greater fear of COVID-19 and health outcomes, such as depression, suicidal intention, and general quality of life [58,59]. For example, a study conducted during the COVID-19 pandemic in Spain revealed higher rates of psychopathology (specifically perinatal depression and anxiety) among women who had greater concerns and fears surrounding of COVID-19 [60]. Fear is a natural defense mechanism used to protect oneself from danger and adapt to the environment for survival. Nonetheless, chronic and disproportionate fear has been related to poor mental health outcomes [61]. In the present study, we asked pregnant women the degree to which they were afraid of contracting the virus during the lockdown. It is possible that this question did not capture the complete picture of COVID-19 related fears childbearing women faced during the first lockdown. Along these lines, previous research demonstrates that the most salient fears related to COVID-19 concern other factors such as unemployment and its financial impact [60]. It is also possible that at the time of assessment, pregnant women were less afraid of contracting the virus because they were practicing stay-at-home isolation measures in the lockdown, and were rather more fearful of other COVID-19 factors such as the possibility of contracting the virus at hospital or the potential harm the COVID-19 may cause on the fetus [62]. We recommend that future studies examine pregnancy-related pandemic stress in a comprehensive and longitudinal manner, and in relation to the everchanging social distancing recommendations [63].

These findings should be considered in light of their limitations. First, this study did not use a specific measure for stress related to the pandemic in pregnant women. Future studies may consider using measures that have since been validated for pandemic perinatal stress, such as the PREPS [64]. Second, this study did not use a validated measure for intimate partner relationship quality. A validated measure for relationship conflict and/or intimate partner violence (such as the Composite Abuse Scale-Revised; CAS-R) may help to shed light on specific factors relevant to romantic relationship discord/harmony and how they are associated with mental health among pregnant women. Finally, this was a cross-sectional study that analyzed the relationship between social support and mental health during a specific window of time during the COVID-19 pandemic. Longitudinal analyses can

offer rich information regarding how COVID-19 impacts prenatal mental health over time, and how mental health evolves over the pregnancy in relation to the status of the pandemic.

Conclusion

The current study contributes important findings on variables associated with prenatal mental health during the COVID-19 lockdown in Spain. To the best of our knowledge, this was the first empirical study to examine the association between psychological intimate partner relationship conflict and mental health in pregnant mothers during the first COVID lockdown. The findings revealed that partner relationship conflict was associated with prenatal mental health (specifically Somatization, Obsessive-compulsive behavior, Interpersonal sensitivity, Depression, Anxiety, Hostility, Phobic anxiety, Paranoid ideation, and Psychoticism), while social support was related to prenatal stress. However, we did not find an association between the fear of contracting the COVID-19 virus and mental health variables or stress. The lack of an association between fear of contraction and mental health highlights the importance of assessing additional pandemic-related variables such as financial consequences, and the timing of the assessments. In sum, these findings suggest that partner relationship conflict and social support may act as important buffers for prenatal mental health in childbearing women during a large-scale crisis, such as the COVID-19 pandemic.

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References

[1] Mahase E. China coronavirus: WHO declares international emergency as death toll exceeds 200. BMJ. 2020;368:m408.
[2] Cucinotta D, Vanelli M. WHO declares COVID-19 a pandemic. Acta Biomed. 2020;91(1):157–160.
[3] Asali A, Farladansky-Gershnabel S, Hasky N, et al. Physiological and psychological stress responses to labor and delivery during COVID-19 pandemic: a cohort study. J Psychosom Obstetr Gynecol. 2022;1–6.
[4] Garcia-Leon MA, Martin-Tortosa P, Cambil-Ledesma A, et al. The COVID-19 pandemic and psychopathological symptoms in pregnant women in Spain. J Reprod Infant Psychol. 2022;1–13.
[5] Mitjà O, Arenas À, Rodó X, et al. Experts' request to the Spanish government: move Spain towards complete lockdown. Lancet. 2020;395(10231):1193–1194.
[6] Ozamiz-Etxebarria N, Idoiaga Mondragon N, Dosil Santamaría M, et al. Psychological symptoms during the two stages of lockdown in response to the COVID-19 outbreak: an investigation in a sample of citizens in Northern Spain. Front Psychol. 2020;11:1491.
[7] Caparros-Gonzalez RA, Alderdice F. The COVID-19 pandemic and perinatal mental health. J Reprod Infant Psychol. 2020;38(3):223–225.
[8] Davenport MH, Meyer S, Meah VL, et al. Moms are not OK: COVID-19 and maternal mental health. Front Glob Womens Health. 2020;1:1.
[9] Lubián López DM, Butrón Hinojo CA, Arjona Bernal JE, et al. Resilience and psychological distress in pregnant women during quarantine due to the COVID-19 outbreak in Spain: a multicentre cross-sectional online survey. J Psychosom Obstetr Gynecol. 2021;42(2):115–122.
[10] Thapa SB, Mainali A, Schwank SE, et al. Maternal mental health in the time of the COVID-19 pandemic. Acta Obstet Gynecol Scand. 2020;99(7):817–818.
[11] Davis EP, Glynn LM, Waffarn F, et al. Prenatal maternal stress programs infant stress regulation. J Child Psychol Psychiatry. 2011;52(2):119–129.
[12] Feduniw S, Modzelewski J, Kajdy A, et al. Anxiety of pregnant women in time of catastrophic events, including COVID-19 pandemic: a systematic review and meta-analysis. J Psychosom Obstet Gynecol. 2021;1–11.
[13] Van den Bergh BR, Mulder EJ, Mennes M, et al. Antenatal maternal anxiety and stress and the neurobehavioural development of the fetus and child: links and possible mechanisms. A review. Neurosci Biobehav Rev. 2005;29(2):237–258.
[14] Milgrom J, Gemmill AW, Bilszta JL, et al. Antenatal risk factors for postnatal depression: a large prospective study. J Affect Disord. 2008;108(1–2):147–157.

[15] Rini C, Schetter CD, Hobel CJ, et al. Effective social support: antecedents and consequences of partner support during pregnancy. Pers Relations. 2006;13(2):207–229.
[16] Stapleton LRT, Schetter CD, Westling E, et al. Perceived partner support in pregnancy predicts lower maternal and infant distress. J Fam Psychol. 2012;26(3):453–463.
[17] Dennis CL, Ross L. Women's perceptions of partner support and conflict in the development of postpartum depressive symptoms. J Adv Nurs. 2006;56(6):588–599.
[18] Falb KL, McCormick MC, Hemenway D, et al. Symptoms associated with pregnancy complications along the Thai-Burma border: the role of conflict violence and intimate partner violence. Matern Child Health J. 2014;18(1):29–37.
[19] Buekens P, Alger J, Bréart G, et al. A call for action for COVID-19 surveillance and research during pregnancy. Lancet Global Health. 2020;8(7):e877–e878.
[20] Corbett GA, Milne SJ, Hehir MP, et al. Health anxiety and behavioural changes of pregnant women during the COVID-19 pandemic. Eur J Obstet Gynecol Reprod Biol. 2020;249:96–97.
[21] Negron R, Martin A, Almog M, et al. Social support during the postpartum period: mothers' views on needs, expectations, and mobilization of support. Matern Child Health J. 2013;17(4):616–623.
[22] Braunack-Mayer A, Tooher R, Collins JE, et al. Understanding the school community's response to school closures during the H1N1 2009 influenza pandemic. BMC Public Health. 2013;13(1):344.
[23] Fakari FR, Simbar M. Coronavirus pandemic and worries during pregnancy; a letter to editor. Arch Acad Emerg Med. 2020;8(1):e21–e21.
[24] Luetke M, Hensel D, Herbenick D, et al. Romantic relationship conflict due to the COVID-19 pandemic and changes in intimate and sexual behaviors in a nationally representative sample of American adults. J Sex Marital Ther. 2020;46(8):747–762.
[25] Pietromonaco PR, Overall NC. Applying relationship science to evaluate how the COVID-19 pandemic may impact couples' relationships. Am Psychol. 2021;76(3):438–450.
[26] Bueso-Izquierdo N, Daugherty JC, Puente AE, et al. Intimate partner violence and pregnancy during the COVID-19 pandemic. J Gender Stud. 2022;31(5):573–583.
[27] Peterman A, Potts A, O'Donnell M, et al. 2020. Pandemics and violence against women and children (Vol. 528). Washington (DC): Center for Global Development.
[28] Van Gelder N, Peterman A, Potts A, et al. COVID-19: Reducing the risk of infection might increase the risk of intimate partner violence. EClinicalMedicine. 2020;21:100348. DOI:
[29] Beydoun HA, Beydoun MA, Kaufman JS, et al. Intimate partner violence against adult women and its association with major depressive disorder, depressive symptoms and postpartum depression: a systematic review and meta-analysis. Soc Sci Med. 2012;75(6):959–975.
[30] Claridge AM, Beeson T, Wojtyna A, et al. Pregnant women's experiences during the COVID-19 pandemic: a mixed method exploration of prenatal depression. Couple Fam Psychol Res Pract. 2021;10(3):168–178.
[31] Kornfeld BD, Bair-Merritt MH, Frosch E, et al. Postpartum depression and intimate partner violence in urban mothers: co-occurrence and child healthcare utilization. J Pediatr. 2012;161(2):348–353.
[32] Han A, Stewart DE. Maternal and fetal outcomes of intimate partner violence associated with pregnancy in the Latin American and Caribbean region. Int J Gynaecol Obstet. 2014;124(1):6–11.
[33] Topalidou A, Thomson G, Downe S. COVID-19 and maternal mental health: are we getting the balance right? MedRxiv. 2020:169–179.
[34] Bueso-Izquierdo N, Daugherty JC, Garcia-Leon MA. 2021. Intimate partner violence during pregnancy and its consequences on the offspring health and disease. In: Caparros-Gonzalez RA, editor. Fetal fetal programming: growing environment and prenatal development. Madrid (Spain): Piramide.
[35] Bellón JA, Delgado A, De Dios J. y, et al. Validez y fiabilidad del cuestionario de apoyo social funcional Duke-UNC-11. Aten Primaria. 1996;18:153–163.
[36] Broadhead WE, Gehlbach SH, De Gruy FV, et al. The Duke-UNC functional social support questionnaire: measurement of social support in family medicine patients. Med Care. 1988;26(7):709–723.
[37] Caparrós-Caparrós B, Villar-Hoz E, Juan-Ferrer J, et al. Symptom Check-List-90-R: fiabilidad, datos normativos y estructura factorial en estudiantes universitarios. Int J Clin Health Psychol. 2007;7(3):781–794.
[38] Derogatis LR. 1994. Symptom checklist-90-R (SCL-90-R): administration. Scoring, and procedures manual. Minneapolis (MN): National Computer Systems.
[39] González de Rivera JL, Derogatis LR, De las Cuevas C, et al. 1989. The Spanish version of the SCL-90-R. Normative data in the general population.
[40] Cohen S, Kamarck T, Mermelstein R. A global measure of perceived stress. J Health Soc Behav. 1983;24(4):385–396.
[41] Remor E. Psychometric properties of a European Spanish version of the Perceived Stress Scale (PSS). Span J Psychol. 2006;9(1):86–93.
[42] Caparros-Gonzalez RA, Perra O, Alderdice F, et al. Psychometric validation of the Prenatal Distress Questionnaire (PDQ) in pregnant women in Spain. Women Health. 2019;59(8):937–952.
[43] Yali AM, Lobel M. Coping and distress in pregnancy: an investigation of medically high risk women. J Psychosom Obstet Gynaecol. 1999;20(1):39–52.
[44] Alderdice F, Lynn F. Factor structure of the prenatal distress questionnaire. Midwifery. 2011:27(4);553–559.
[45] Alderdice F, Savage-McGlynn E, Martin C, et al. The Prenatal Distress Questionnaire: an investigation of factor structure in a high risk population. J Reprod Infant Psychol. 2013;31(5):456–464.
[46] R Core Team. 2021. R: a language and environment for statistical computing. Vienna (Austria): R Core Team. Available from: http://www.R-project.org/
[47] Doyle FL, Klein L. Postnatal depression risk factors: an overview of reviews to inform COVID-19 research,

clinical, and policy priorities. Front Glob Womens Health. 2020;1:577273.
[48] Cheng ER, Rifas-Shiman SL, Perkins ME, et al. The influence of antenatal partner support on pregnancy outcomes. J Womens Health (Larchmt). 2016;25(7):672–679.
[49] Whisman MA, Davila J, Goodman SH. Relationship adjustment, depression, and anxiety during pregnancy and the postpartum period. J Fam Psychol. 2011;25(3):375–383.
[50] Barton K, Redshaw M, Quigley MA, et al. Unplanned pregnancy and subsequent psychological distress in partnered women: a cross-sectional study of the role of relationship quality and wider social support. BMC Pregnancy Childbirth. 2017;17(1):1–9.
[51] Dunkel Schetter C, Brooks K. The nature of social support. In: Encyclopedia of human relationships. Thousand Oaks (CA): SAGE; 2009. p. 1565–1570.
[52] Kaniasty K. Social support, interpersonal, and community dynamics following disasters caused by natural hazards. Curr Opin Psychol. 2020;32:105–109.
[53] Kneavel M. Relationship between gender, stress, and quality of social support. Psychol Rep. 2021;124(4):1481–1501.
[54] Brik M, Sandonis MA, Fernández S, et al. Psychological impact and social support in pregnant women during lockdown due to SARS-CoV2 pandemic: a cohort study. Acta Obstet Gynecol Scand. 2021;100(6):1026–1033.
[55] Alan S, Vurgec BA, Cevik A, et al. The effects of COVID-19 pandemic on pregnant women: perceived stress, social support and sleep quality. Yonago Acta Med. 2020;63(4):360–367.
[56] Matvienko-Sikar K, Pope J, Cremin A, et al. Differences in levels of stress, social support, health behaviours, and stress-reduction strategies for women pregnant before and during the COVID-19 pandemic, and based on phases of pandemic restrictions, in Ireland. Women Birth. 2021;34:447–454.
[57] Kita S, Haruna M, Matsuzaki M, et al. Does antenatal social support affect the relationships between intimate partner violence during pregnancy and perinatal mental health? Violence Against Women. 2020;26(6–7):573–589.
[58] Ahorsu DK, Imani V, Lin CY, et al. Associations between fear of COVID-19, mental health, and preventive behaviours across pregnant women and husbands: an actor-partner interdependence modelling. Int J Mental Health Addic. 2022;20:68–82.
[59] Naghizadeh S, Mirghafourvand M. Relationship of fear of COVID-19 and pregnancy-related quality of life during the COVID-19 pandemic. Arch Psychiatr Nurs. 2021;35(4):364–368.
[60] Motrico E, Domínguez Salas S, Rodríguez Domínguez C, et al. The impact of the COVID-19 pandemic on perinatal depression and anxiety: a large cross-sectional study in Spain. Psicothema. 2022;34:202–208.
[61] Garcia R. Neurobiology of fear and specific phobias. Learn Mem. 2017;24(9):462–471.
[62] Garcia-Silva J, Caracuel A, Lozano-Ruiz A, et al. Pandemic-related pregnancy stress among pregnant women during the COVID-19 pandemic in Spain. Midwifery. 2021;103:103163.
[63] Preis H, Mahaffey B, Heiselman C, et al. Pandemic-related pregnancy stress and anxiety among women pregnant during the coronavirus disease 2019 pandemic. Am J Obstetr Gynecol MFM. 2020;2(3):100155.
[64] Preis H, Mahaffey B, Lobel M. Psychometric properties of the pandemic-related pregnancy stress scale (PREPS). J Psychosom Obstet Gynaecol. 2020;41(3):191–197.