

Perceived Stress and Social Support in Pregnant Women during the COVID-19 Pandemic

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ABSTRACT

Background: Pregnant women experience physical and psychological changes during the gestation period. These changes cause psychopathological disorders such as stress and anxiety in mothers. Paying attention to the psychological health of pregnant women is a major global concern, especially during the COVID-19 pandemic. **Objectives:** This study aimed to assess the perceived stress, social support, and related factors in pregnant women during the COVID-19 pandemic. **Methods:** This cross-sectional study was conducted on 240 pregnant women who were referred to health centers in Zanjan, Iran, between January 2021 and April 2021. A cluster sampling method was used to recruit the participants. A demographic and midwifery information questionnaire, the 14-item Cohen's Perceived Stress Questionnaire, and Winfield and Tiggemann's Social Support Questionnaire were used to collect data. Data were analyzed using the Chi-square test and multiple linear regression analysis. **Results:** The mean age of mothers was 27.12 ± 7.01 years. The mean scores for social support and perceived stress were 17.95 ± 5.52 and 26.71 ± 8.84 , respectively. No significant association was found between social support and the independent variables. However, perceived stress was significantly associated with social support, such that perceived stress decreased as social support increased. **Conclusion:** There was a significant relationship between social support and perceived stress. Midwives and gynecologists should implement strategies to reduce stress and reinforce social support during pregnancy.

KEYWORDS: COVID-19, Pregnancy, Social support, Stress

INTRODUCTION

Pregnancy is one of the highest sensitive periods in a woman's life, which not only causes significant physiological and psychological changes but also brings about changes in a woman's social and family roles. These changes would result in psychopathological disorders in pregnant women, including stress and anxiety.^[1-3]

Maternal mental health considerably affects fetal growth and development.^[2] Maternal stress can lead to the poor psychosocial performance of the mother, parenting problems, preterm delivery, low birth weight, impaired fetal brain growth, and psychological problems in children.^[4,5] Although psychological distress is common during pregnancy, health crises such as COVID-19 and natural disasters exacerbate stress during pregnancy.^[6]

The COVID-19 pandemic was a collective trauma that threatened the mental health of pregnant women worldwide, leading to increased stress, and reduced social support.^[7] Several studies in Iran and other countries reported that pregnant women perceived moderate^[8-10]-to-high levels of stress.^[11-14] during the COVID-19 pandemic.

Social support is defined as the amount of love, companionship, and attention one receives from

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family members, friends, and significant others, and considerably affects people's psychological health.^[15] Studies have shown that social support plays an important role in maintaining the health of pregnant women, and can significantly reduce the negative effects of environmental stressors.^[16,17] People who receive more social support report a higher quality of life and health.^[18] Studies have also shown that mothers who perceived more social support experienced less stress and psychological problems during pregnancy.^[8,19-21]

Midwives and health-care providers play a crucial role as physical and psychological supporters of mothers. Some studies have shown that a pregnant woman considers the midwife as her haven during pregnancy.^[16,22] A study also showed that social support from midwives and health-care providers plays an important role in reducing stress among pregnant women.^[23] However, few studies in Iran have investigated the perceived stress and social support of pregnant mothers during the COVID-19 pandemic. Furthermore, little data are available on the association between pregnant women's characteristics, their perceived stress, and social support during the COVID-19 pandemic.

Objectives

This study aimed to assess the perceived stress, social support, and related factors in pregnant women during the COVID-19 pandemic.

METHODS

Design and participants

This cross-sectional study was conducted between January and April 2021 on 240 pregnant women who attended health centers in Zanjan City, Iran. Inclusion criteria included gestational age of 12–37 weeks and no disease or medical and obstetric risk factors. The exclusion criteria were failure to complete the questionnaire completely. The sample size was calculated using the results of an earlier study.^[24] Where the mean perceived stress of pregnant women was 37 ± 7.2 . Then, with a Type I error of 0.05, a δ of 7.2, and a measurement error of 1 the needed sample size was estimated to be 200, however, considering a possible dropout of 20%, we increased the sample size 240. A cluster sampling method was used to recruit participants. First, 19 health centers in Zanjan City were selected, and then, eligible pregnant women in each center were randomly selected according to the number of referrals.

Data collection

A demographic and midwifery information questionnaire, the 14-item Cohen's Perceived Stress

Questionnaire (CPSQ-14), and Winfield and Tiggemann's social support questionnaire (SSQ) were used to collect data.

The demographic and midwifery information questionnaire was made by the researchers and consists of questions on the woman's age, education, job, insurance status, gestational age, gravidity, mode of delivery, attendance at prenatal classes, and husband's age, education, and job.

The CPSQ-14 has 14 items and assesses perceived stress in the past month.^[25] The items measure respondents' ideas and attitudes about stressful situations, control, coping with anxiety and stress, and risk factors for behavioral troubles. All items are scored on a 5-point Likert scale ranging from "never = 0" to "many times = 4." Seven items are scored reversely. The total score ranges between 0 and 56, with a higher score indicating greater perceived stress.^[2,26] The Cronbach's alpha of the CPSQ-14 has been reported in various studies to range from 0.73 to 0.89.^[24,27,28] In the present study, Cronbach's alpha was calculated as 0.830.

The SSQ consists of 10 items. Each item is scored on a 5-point Likert scale ranging from 0 to 4, and the total score ranges between 0 and 40. Scores between 0–10, 11–20, and above 21 are considered low, moderate, and high social support, respectively. Several researchers have confirmed the validity of the SSQ and reported its Cronbach's alpha between 0.84 and 0.90.^[29,30] In the present study, Cronbach's alpha of the SSQ was 0.775.

Data analysis

Statistical analysis was conducted using R 4.1 software (R Programming Language, R core team, Auckland, New Zealand). The one-sample Kolmogorov–Smirnov test was used to determine the normality of the data, and the level of significance was above 0.05. We reported continuous variables as mean \pm standard deviation and the categorical variables as numbers and percentages. The Chi-square and multiple linear regression analysis were used to examine the correlation between social support and perceived stress. The level of significance was set at <0.05 . We adjusted the final models for the variables of the mother's job, husband's job, insurance status, and social support score with a $P \leq 0.2$.

Ethical considerations

The Ethics Committee of Zanjan University of Medical Sciences, Zanjan, Iran, approved this study (code: IR.ZUMS.REC.1399.452). Participants were informed about the purpose of the study and the confidentiality of the data, and written informed consent was obtained from all of them.

RESULTS

Data from 222 out of 240 pregnant women were analyzed (18 people were excluded due to deficiencies in completing the questionnaires). The mean age of the pregnant women was 27.12 ± 7.01 years. About 37.8% of them were primigravida, and the mean gestational age was 27.19 ± 7.48 weeks. Moreover, 84.7% were housewives and 93.2% had active insurance [Table 1]. Mean scores for social support and perceived stress were 17.95 ± 5.52 and 26.71 ± 8.84 , respectively.

According to the Chi-square test, there was a significant relationship between perceived stress and the age of the pregnant women ($P = 0.033$), insurance status ($P = 0.035$), and social support ($P < 0.0001$). As presented in Table 2, mothers in the 1st quartile of perceived stress (i.e., mothers with low stress:

perceived stress scale [PSS] < 14) had high social support (19.18 ± 6.52), whereas mothers in the 4th quartile of perceived stress (i.e., those with high stress: PSS > 42) had low social support (12.2 ± 3.64) [Table 2].

In the unadjusted linear model, those with a lower social support score had a higher stress score ($\beta = -0.606$, 95% confidence interval [CI]: $-0.805, -0.41$). In the adjusted linear model, nonsignificant associations were observed between social support and independent variables, but perceived stress showed a significant inverse association with social support. After adjusting for confounding variables (including the mother's job, husband's job, and insurance), there was still a significant association between social support and stress ($\beta = -0.594$, 95% CI: $-0.787, -0.4$). We excluded the variable of parity from the multiple regression model because it was strongly collinear with the variable of gravidity [Table 3].

Table 1: Demographic characteristics of the participants

Variables	Frequency (%)
Woman's age (year), mean \pm SD	27.12 ± 7.01
Woman's education level	
Primary school	61 (27.5)
High school	80 (36)
Diploma	51 (23)
Academic	30 (13.5)
Woman's job	
Housewife	188 (84.7)
Employed	34 (15.3)
Husband's age (year), mean \pm SD	32.28 ± 6.24
Primary school	42 (18.9)
High school	62 (27)
Diploma	88 (39.6)
Academic	30 (13.5)
Husband's job	
Unemployed	7 (3.2)
Employed	215 (96.8)
Gestational age (week), mean \pm SD	27.19 ± 7.48
Gravidity	
Primigravida	84 (37.8)
Multigravida	138 (62.2)
Mode of delivery	
No childbirth	67 (30.2)
Vaginal	88 (39.6)
Cesarean section	67 (30.2)
Having an active insurance	
Yes	207 (93.2)
No	15 (6.8)
Type of insurance	
Social security insurance	83 (40)
Health insurance	124 (60)
Attendance at prenatal classes	
Yes	8 (3.6)
No	214 (96.4)

SD: Standard deviation

DISCUSSION

According to our results, about two-thirds of the participants perceived moderate-to-high stress. Social support also showed a significant inverse association with stress, such that pregnant women with less social support experienced more stress. A study of the impact of the COVID-19 pandemic on the stress of noninfected Iranian pregnant mothers also reported that 76% of the expectant mothers perceived moderate-to-high levels of stress during the COVID-19 pandemic.^[31] Studies in Mexico.^[14] and Ireland^[12] also reported similar findings. The high level of perceived stress among pregnant women can be attributed to several factors, including the unknown nature of COVID-19 infection, almost high morbidity and mortality of the diseases in the general population of Iran, and the very low vaccination coverage at the time of the study (early 2021). Furthermore, the plan of social distancing and traffic restrictions, as well as quarantine, and concern about the health status of the fetus appears to play an important role in increasing the psychological effects of the pandemic on pregnant women.

In the present study, a significant relationship was found between perceived stress and social support. Several studies conducted during the COVID-19 pandemic^[8,32,33] also reported that pregnant women perceived inadequate social support during the pandemic, which caused them to be stressed and worried about the outcome of their pregnancy. On the other hand, a study has reported that social support improved mental health and reduced stress in pregnant women.^[34] However, in a study conducted under normal conditions before the COVID-19 pandemic, no significant correlation was

Table 2: Distribution of the participants in the different quartiles of perceived stress

Variables	1 st quartile PSS (<14)	2 nd quartile PSS (14 and 28)	3 rd quartile PSS (28 and 42)	4 th quartile PSS (>42)	P ^a
Age (year), mean ± SD	22.56 ± 5	27.9 ± 6.67	26.78 ± 7.2	28.3 ± 8.98	0.033
Mother's education (primary school)	2 (12.5)	34 (30.09)	23 (27.71)	2 (20)	0.238
Husband's education (primary school)	1 (6.25)	26 (23.01)	11 (13.25)	4 (40)	0.157
Mother's job (housewife)	16 (100)	99 (87.61)	66 (79.52)	7 (70)	0.232
Age of husband (year), mean ± SD	30.18 ± 4	32.69 ± 6.4	32.06 ± 6.15	32.8 ± 7.71	0.481
Gestational age (week), mean ± SD	24.93 ± 7.4	27.23 ± 7.5	27.81 ± 7.3	25.1 ± 7.76	0.422
Gravidity (multigravida)	10 (62.5)	34 (30.09)	37 (44.58)	3 (30)	0.210
Abortion (yes)	1 (6.25)	27 (23.89)	13 (15.66)	1 (10)	0.203
Mode of delivery (cesarean)	3 (18.75)	38 (33.63)	23 (27.71)	3 (30)	0.074
Active insurance (no)	4 (25)	7 (6.19)	4 (4.82)	0	0.035
Attendance at prenatal classes	14 (87.5)	111 (98.23)	80 (96.39)	9 (90)	0.103
Social support, mean ± SD	19.18 ± 6.52	19.33 ± 5.57	16.5 ± 4.63	12.2 ± 3.64	<0.0001

^aExact P - value computed for Chi-square tests. PSS: Perceived Stress Scale, SD: Standard deviation

Table 3: The correlation between perceived stress and social support in pregnant women based on multivariate linear regression

Variables	Beta	SE	Standardized beta	t	95% CI for beta	Partial correlation	P
Age (year)	0.072	0.165	0.057	0.434	-0.254-0.4	0.03	0.664
Mother's education (primary school)	0.403	0.48	0.065	0.839	-0.544-1.35	0.058	0.402
Mother's job (housewife)	2.747	1.12	0.169	2.452	0.539-4.95	0.168	0.015
Husband's age (year)	-0.17	0.175	-0.12	-0.972	-0.514-0.17	-0.068	0.332
Husband's education (primary school)	-0.549	0.488	-0.084	-1.125	-1.512-0.41	-0.078	0.262
Husband's job (employed)	-0.896	0.57	-0.101	-1.572	-2.02-0.23	-0.109	0.117
Gestational age (week)	-0.005	0.077	-0.004	-0.067	-0.158-0.15	-0.005	0.947
Gravidity (primigravida)	1.477	1.117	0.172	1.322	-0.726-3.68	0.092	0.188
Mode of delivery (cesarean)	-0.115	0.964	-0.01	-0.119	-2.016-1.79	-0.008	0.905
Active insurance (yes)	-1.999	2.284	-0.057	-0.875	-6.502-2.5	-0.061	0.382
Type of insurance (health insurance)	1.669	1.054	0.106	1.583	-0.409-3.75	0.11	0.115
Attendance at prenatal classes	0.108	4.537	0.002	0.024	-8.837-9.05	0.002	0.981
Social support	-0.606	0.101	-0.378	-6.015	-0.805--0.41	-0.387	<0.0001
Final adjusted model							
Mother's job (housewife)	2.662	0.994	0.164	2.679	0.703-4.62	0.179	0.008
Husband's job (unemployed)	-0.983	0.541	-0.111	-1.817	-2.05-0.08	-0.122	0.071
Active insurance (no)	2.135	0.968	0.135	2.206	0.227-4.04	0.148	0.028
Social support score	-0.594	0.098	-0.371	-6.066	-0.787--0.4	-0.381	<0.0001

CI: Confidence interval, SE: Standard error

found between social support and stress in pregnant women.^[35] This contradiction can be attributable to the timing of the studies were conducted. Perhaps, before the COVID-19 pandemic, people lived under normal conditions and experienced less stress. However, the fatality of the COVID-19 infection and social distancing roles made people — including pregnant women — to experience more stress and feel less social support.

In the present study, women with primary education or housewives experienced higher levels of stress. Consistent with the present study, Abedzadeh-Kalahroudi *et al.* have reported that pregnant women who were housewives and those with primary education experienced higher levels of stress.^[11] This may be because housewives with lower

levels of education have less knowledge, which in turn leads to increased levels of stress and anxiety in them. However, a study in Ethiopia showed that pregnant employed women experienced higher levels of stress than housewives.^[27] The controversy could be attributed to the fact that employed women react more to stress because of concerns about harming the fetus and job stress.

In this study, women who were older, multiparous, and those who had a previous cesarean section showed higher levels of stress. Contrary to these findings, Abedzadeh-Kalahroudi *et al.* found that primiparous and younger women experienced higher levels of stress than those who were older, multiparous, or had a previous

cesarean section.^[11] Wu *et al.* also found that nulliparous women had more severe psychological reactions to COVID-19 infection because they were more worried about their pregnancy and childcare.^[36] The differences between the studies might be attributed to the cultural or ethnic issues affecting pregnant women in the different studies. In addition, women who have already had a cesarean section may experience more stress in the hospital because of the length of hospital stay and possible postoperative complications.

Based on the regression model, people with active health insurance had a greater sense of social support. This finding is in line with what was reported by Ghassabian *et al.*^[37] Having active insurance increases people's confidence in reducing the costs of treatment, which then reduces the stress caused by the cost of disease treatment during pregnancy.

The random cluster sampling used in this study allowed us to include participants from all strata of the target population. However, as we used self-report questionnaires to collect the data, the findings may suffer from social desirability bias. Qualitative studies are recommended to better understand the psychological issues faced by pregnant women.

CONCLUSION

The result showed a significant relationship between social support and perceived stress. Therefore, midwives and other health-care providers should implement strategies to reduce stress and strengthen social support in pregnant women, especially during the COVID-19 pandemic. A variety of communication methods, including educational materials and individual or group counseling, can be used to relieve stress and help women feel supported during pregnancy.

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Conflicts of interest

There are no conflicts of interest.

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