ORIGINAL ARTICLE

Pandemic-related pregnancy stress among a group of Egyptian women during COVID-19 pandemic

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ABSTRACT

Objective: Prenatal maternal stress is a known risk factor for preterm birth, low birth weight, and infant health problems and may have long-term impacts on the offspring. The study aimed to assess pandemic-related pregnancy stress among a group of Egyptian women during COVID-19 pandemic.

Methods: The study used a descriptive cross-sectional design on 100 pregnant women who were selected using the purposive sample technique. The study was conducted at antenatal clinics of the Obstetrics and Gynecology Department at Mansoura University Hospitals, Mansoura city, Dakahlia governorate, Egypt. Two tools were utilized for gathering data; a structured interviewing questionnaire was used to assess the socio-demographic and reproductive characteristics of the studied pregnant women and the Pandemic-Related Pregnancy Stress scale was used to assess pandemic-related pregnancy stress among the studied pregnant women.

Results: The study findings revealed that less than half of pregnant women during the COVID-19 pandemic reported elevated levels of stress related to feeling unprepared for childbirth and around three-quarters experienced high stress related to perinatal infection.

Conclusions: The study concluded that the studied pregnant women during the COVID-19 pandemic had high levels of stress related to inadequate preparation for childbirth and stress related to the potential for perinatal infection. In addition, infection stress was more prevalent than preparedness stress among the studied pregnant women. It is recommended to provide prenatal educational programs related to coping strategies during the pandemic.

Key Words: COVID-19, Pandemic-related pregnancy stress, Pregnant women

1. INTRODUCTION

Worldwide, coronavirus disease (COVID-19) is a newly identified contagious disease that is caused by a recently discovered coronavirus and leads to various health problems such as pneumonia, severe lung disease, multi-organ failure, and death.[1] Pregnant women are considered a high-risk population for COVID-19; women who contract COVID-19 while pregnant experience greater rates of maternal morbidity and mortality due to physiological changes that happen during pregnancy, such as immune-suppressed states, increased oxygen consumption, and diminished residual lung functional capacity.[2]

A recent study revealed that COVID-19 in pregnancy was associated with several serious maternal and newborn problems, including spontaneous abortion, preeclampsia, fetal distress, preterm labor, and intrauterine growth restriction.[3] In addition to the physical impacts of COVID-19 on expectant mothers, a recent study reported that the COVID-19 pan-

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demic affects the psychological health of pregnant women and results in high levels of stress.[4]

During COVID-19 pandemic, pregnant women experienced stress related to lack of knowledge about COVID-19, mobility restrictions, health risks for their unborn children and loved ones, risks to their own health, access to perinatal care, infection risk in antenatal care settings, and limitations on their partners' presence at the time of delivery.[5] Pandemic-related pregnancy stress is a special type of pregnancy-specific stress that has two dimensions: stress related to feeling unprepared for childbirth owing to the pandemic and stress related to fears of COVID-19 infection. A previous study revealed that pregnancy stress, including pandemic stress and worry about childbirth, are elements that may affect labor preparation and the delivery process.[6]

1.1 Significance

Psychological health problems experienced by pregnant women are known to have both immediate and long-term consequences for women and their children. High levels of stress, in particular during pregnancy, may cause high blood pressure, and heart disease or worsen any chronic medical conditions that already exist.[7] Additionally, a recent study shows that pandemic-related stress is a potent factor that might impact pregnant women's mental health, including a rise in depressive and anxiety symptoms.[8]

In addition to the impact of stress on the general heath, numerous studies have shown that obstetric complications such as prolonged labor, preterm labor, impaired fetal growth, and a high rate of cesarean section are linked to high levels of prenatal stress.[9] Due to the significant impact of stress on maternal health, examining maternal stress during COVID-19 pandemic is crucial to develop strategies for supporting pregnant women during this and any future pandemics.

1.2 Aim of the study

The aim of this study was to assess pandemic-related pregnancy stress among a group of Egyptian women during COVID-19 pandemic.

1.3 Research questions

(1)What is the level of pandemic-related pregnancy stress among a group of Egyptian women during COVID-19 pandemic?

(2) What are the factors affecting the pandemic-related pregnancy stress among a group of Egyptian women during COVID-19 pandemic?

2. Subjects and Methods

2.1 Research design

A descriptive cross-sectional design was used for this study.

2.2 Setting

The study was done at the antenatal clinic of the Obstetrics and Gynaecology Department at Mansoura University Hospitals, Mansoura city, Dakahlia governorate, Egypt, which is affiliated with the Ministry of Higher Education.

2.3 Sampling

This study used a purposive sample of 100 pregnant women who received prenatal care at the previously mentioned setting and were chosen according to the study's inclusion and exclusion criteria.

2.3.1 *Inclusion criteria*

1. Educated pregnant women.
2. Pregnant women who have access to a computer or smart phone.
3. Pregnant women in the first trimester.

2.3.2 *Exclusion criteria*

1. Pregnant women with psychiatric health problems.
2. Pregnant women diagnosed with COVID-19.

2.3.3 *Sample size*

Based on data from literature,[10] considering a level of significance of 5% and a power of study of 80%, and based on data from literature, the sample size can be calculated using the following Equations 1-2:

$$n = \frac{(Z_1 - \frac{\alpha}{2})^2 \times SD^2}{d^2} \quad (1)$$

Where, "$Z_1 - \alpha/2$" = is the standard normal variate, at 5% type 1 error it is 1.96, *SD* = standard deviation of variable and *d* = absolute error or precision. So,

$$n = \frac{1.96^2 \times 5.37^2}{1.055^2} = 99.5 \quad (2)$$

Based on the above formula, the sample size required for the study is 100.

2.3.4 *Tool of data collection*

Two tools were used for collecting data:

Tool (1): Structured Interviewing Questionnaire. This tool was developed by the researcher after reviewing the related literature.[11,12] It consists of three parts:

Part I: General characteristics of pregnant women, such as age, educational level, occupation, monthly income, and

presence of chronic illness.

Part II: Reproductive characteristics of the pregnant women, such as gravidity, parity, current pregnancy status, mode of current conception and outcomes of previous pregnancies.

Part III: COVID- 19 Related Factors, such as loss of income due to COVID-19 pandemic, having family members diagnosed with COVID-19, contact with suspected or confirmed COVID-19 case, and planned place of birth during COVID-19 pandemic.

Tool (2): The Pandemic - Related Pregnancy Stress Scale (PREPS): This tool was adapted from.[13] The Pandemic-Related Pregnancy Stress Scale (PREPS) is a novel instrument that measures prenatal stress at the time of the pandemic. The PREPS has been made available in a number of languages and has been found to have strong psychometric properties in different populations. It is a 5-point Likert scale (1 = Very Little; 2 = Little; 3 = Some; 4 = Much; 5 = Very Much); consists of 15 items and is divided into three domains.

The first domain is called (PREPS-Preparedness) and includes 7 items to assess stress related to preparation for birth during the pandemic.

The second domain is called (PREPS-Infection) and includes 5 items to assess stress related to infection of oneself or one's fetus.

The third domain is called (Positive Appraisal) and includes 3 items to assess perceived benefits of being pregnant during the pandemic. This domain was not used since it was not relevant to this study.

Scoring system

For each subscale, scores are determined as the mean item response (averaging the items of the scale by adding item responses together and dividing by the number of items). Scores for each subscale range from 1- 5, with higher scores indicating more stress. Dichotomization was done using a cutoff point of 4 or above (< 4 indicates low stress; ≥ 4 indicates high stress).

2.3.5 *Validity of the study tools*

The study tools were checked for content validity by 3 specialists in the maternity nursing field and 2 specialists in the psychiatric nursing field and the required modifications were made.

The Cronbach's coefficient alpha test in version 21 of the Statistical Package for the Social Sciences (SPSS) application was used to assess the reliability of the data collection tools. The preparedness stress domain, the infection stress domain, and COVID-19 related factors show internal consistency with Cronbach's alpha = 0.831, 0.825, and 0.865 respectively.

2.4 Ethical considerations

Ethical approval was gained from the Research Ethics Committee of the Faculty of Nursing, Mansoura University then formal permission for conducting the study was gained from the head of outpatient clinics of the Obstetrics and Gynecology Department at Mansoura University, and an informed consent was obtained from all pregnant women after explaining of the objectives of the study to everyone.

All pregnant women were given the assurance that their participation in the study was voluntary and that all information gathered would be kept private and utilized only for the purpose of the study. In addition, all pregnant women were informed that they have the freedom to discontinue participation in the study at any time and without providing a reason.

2.5 Research process

2.5.1 *Preparatory phase*

It included reviewing the national and worldwide pertinent literature as well as theoretical understanding of the many aspects of the study to design a data collection tool that was developed by the researcher.

A pilot study

It was carried out on 10% of the study participants (10 pregnant women) who were selected from the same setting and excluded from the study sample. This pilot study aimed to check the appropriateness and clarity of the questionnaire and identify any unexpected obstacles in data collection.

2.5.2 *Baseline assessment*

After getting formal approval to carry out the study, the researcher visited the antenatal care clinics of the Obstetrics and Gynecology Department at Mansoura University Hospital twice a week from 9:00 a.m. to 2:00 p.m. until the study sample was completed.

At the antenatal care clinics, the researcher introduced herself to the pregnant women who came for antenatal care follow-up and interviewed them to select pregnant women who fulfilled the study inclusion criteria and exclude pregnant women with psychiatric health problems and were diagnosed with COVID-19.

The researcher provided a full explanation of the aim and method of the study for pregnant women who fulfilled the inclusion criteria to gain their acceptance and their cooperation, and asked them to fill a written consent. After obtaining their

consent to participate in the study, the researcher obtained the contact number of the pregnant women, and the researcher's contact number was given to the pregnant women.

The researcher developed an online format of the structured interviewing questionnaire and the pandemic-related pregnancy stress scale (Google form) to obtain the socio-demographic and reproductive characteristics of the selected pregnant women as well as the COVID-19 related factors and to assess the pandemic-related pregnancy stress among them.

The URL for the Google form was sent to the pregnant women through WhatsApp message and they were asked to fill out the questionnaire and send their responses. The data were gathered for 4 months, from the beginning of July 2021 till the end of October 2021.

2.6 Statistical analysis

The version 21 of the Statistical Package for the Social Sciences (SPSS) application was used to conduct all statistical analyses. All continuous variables were normally distributed and were expressed in the mean ± standard deviation (*SD*). Numbers and percentages were used to express categorical data and Chi-square test was used for comparison of variables with categorical data.

3. RESULTS

Table 1 shows that the mean age of the studied pregnant women is (24.5 ± 6.9), more than half of the studied pregnant women (54%) had a high education level, around two-thirds of the studied pregnant women (65%) were housewives, and around three-quarters (71%) had enough income.

Table 2 illustrates that more than one-third (38%) of the studied pregnant women were primigravida. The majority of studied pregnant women (86%) had an intended pregnancy and most of them (93%) had a natural conception. Among multigravida women, around half (48.4%) were multiparous and more than half (53.2%) had a previous abortion. Among parous women, greater than one-fifth (23.1%) had a history of low birth weight, and around one-fifth (19.2%) had a history of preterm labor.

Table 3 illustrates that greater than two-thirds (68%) of studied pregnant women had loss of income due to COVID-19 pandemic; more than half (51%) had a family member diagnosed with COVID-19; more than one-quarter (29%) had contact with a suspected or confirmed COVID-19 case. Greater than half (59%) of the studied pregnant women planned for childbirth in private hospitals.

Table 1. Socio-demographic characteristics of the studied pregnant women (n = 100)

	No.	%
Age (years)		
15–24	54	54.0
25–34	38	38.0
35–45	8	8.0
Mean ± *SD*	**24.5 ± 6.9**	
Women' education		
Basic	8	8.0
Secondary	38	38.0
Higher	54	54.0
Occupation		
Housewife	65	65.0
Employee	29	29.0
Student	6	6.0
Monthly income		
Not enough	23	23.0
Enough	71	71.0
Enough & save it	6	6.0
Presence of chronic illness		
No	88	88.0
Yes	12	12.0

Table 2. Reproductive characteristics of the studied pregnant women

	No.	%
Gravidity (n = 100)		
Once	38	38.0
Twice	29	29.0
Three times or more	33	33.0
Parity (n = 62)		
None	10	16.1
Once	22	35.5
Twice or more	30	48.4
Previous abortion (n = 62)		
No	29	46.8
Yes	33	53.2
Previous low birth weight (n = 52)		
No	40	76.9
Yes	12	23.1
Previous neonatal death (n = 52)		
No	46	88.5
Yes	6	11.5
Previous preterm labor (n = 52)		
No	42	80.8
Yes	10	19.2
Current pregnancy status (n = 100)		
Unintended	14	14.0
Intended	86	86.0
Mode of current conception (n = 100)		
Natural	93	93.0
With fertility treatment	7	7.0

Table 3. COVID-19 related factors among the studied pregnant women

COVID-19 Related Factors	No.	%
Income loss due to COVID -19 Pandemic	68	68.0
Has a family member diagnosed with COVID-19	51	51.0
Contact with suspected or confirmed COVID-19 case	29	29.0
Planned Place of Birth During COVID-19 Pandemic	**No.**	**%**
Governmental hospitals	41	41.0
Private hospitals	59	59.0

Figure 1 shows that less than half (45%) of the studied pregnant women had high preparedness stress and around three-quarters (72%) had high infection stress.

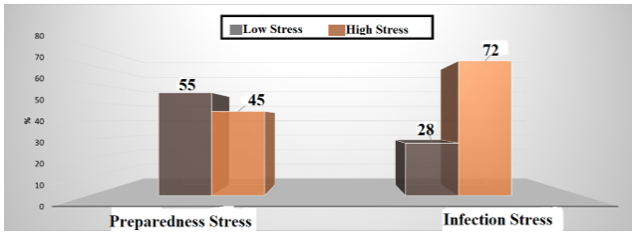

Figure 1. Distribution of pandemic-related pregnancy stress domains' scores among the studied pregnant women.

Table 4. Association between socio-demographic characteristics of the studied pregnant women and PREPS' domains score

	Preparedness Stress (PREPS-PS)				Infection Stress (PREPS-IS)			
	Low Stress (n = 55)		High Stress (n = 45)		Low Stress (n = 28)		High Stress (n = 72)	
	No.	%	No.	%	No.	%	No.	%
Age (years)								
15–24	20	36.4	35	77.8	8	28.6	46	63.9
25–34	27	49.1	11	22.2	12	42.9	26	36.1
35–45	8	14.5	0	0.0	8	28.6	0	0.0
Chi-Square [χ^2, p]	18.170		< .001**		25.470		< .001**	
Women' education								
Basic	4	7.3	4	8.9	2	7.1	6	8.3
Secondary	19	34.5	19	42.2	11	39.3	27	37.5
Higher	32	58.2	22	48.9	15	53.6	39	54.2
Chi-Square [χ^2, p]	.860		.650		.054		.973	
Occupation								
Housewife	34	61.8	31	68.9	13	46.4	52	72.2
Employee	18	32.7	11	24.4	12	42.9	17	23.6
Student	3	5.5	3	6.7	3	10.7	3	4.2
Chi-Square [χ^2, p]	.836		.658		6.079		.048*	
Monthly income								
Not enough	13	23.6	10	22.2	8	28.6	15	20.8
Enough	39	70.9	32	71.1	19	67.9	52	72.2
Enough & save it	3	5.5	3	6.7	1	3.6	5	6.9
Chi-Square [χ^2, p]	.082		.960		.961		.618	
Presence of chronic illness								
No	48	87.3	40	88.9	26	92.9	62	86.1
Yes	7	12.7	5	11.1	2	7.1	10	13.9
Chi-Square [χ^2, p]	.061		.805		.869		.351	

Note. *p < .05, **p < .01

Table 4 shows that there was a highly statistically significant association between maternal age and PREPS-PS & PREPS-IS scores, where pregnant women aged from 15-24 years had high preparedness and infection stress. Also, this table shows that there was a statistically significant association between occupation and PREPS-IS scores, where housewives' pregnant women had high infection stress.

Table 5. Association between reproductive characteristics of the studied pregnant women and PREPS' domains score

	Preparedness Stress (PREPS-PS)				Infection Stress (PREPS-IS)			
	Low Stress (n = 55)		High Stress (n = 45)		Low Stress (n = 28)		High Stress (n = 72)	
	No.	%	No.	%	No.	%	No.	%
Gravidity (n = 100)								
Once	13	23.6	25	55.6	2	7.1	36	50.0
Twice	16	29.1	13	28.9	9	32.1	20	27.8
Three times or more	26	47.2	7	15.6	17	60.7	16	22.2
Chi-Square [χ^2, p]		14.181	< .001**		18.928		< .001**	
Parity (n = 62)								
None	0	0.0	10	33.3	0	0.0	10	21.7
Once	13	40.6	9	30.0	8	50.0	14	30.4
Twice or more	19	59.4	11	36.7	8	50.0	22	47.8
Chi-Square [χ^2, p]	12.809		< .001**		4.770		.092	
Previous abortion (n = 62)								
No	16	50.0	13	43.3	13	81.3	16	34.8
Yes	16	50.0	17	56.7	3	18.7	30	65.2
Chi-Square [χ^2, p]	.276		.599		10.296		< .001**	
Previous Low Birth weight (n = 52)								
No	26	92.9	14	58.3	14	100.0	26	68.4
Yes	2	7.1	10	41.7	0	0.0	12	31.6
Chi-Square [χ^2, p]	8.677		.003*		5.747		.017*	
Previous Neonatal Death (n = 52)								
No	24	85.7	22	91.7	14	100.0	32	84.2
Yes	4	14.3	2	8.3	0	0.0	6	15.8
Chi-Square [χ^2, p]	0.449		0.503		2.499		.114	
Previous Preterm Labor (n = 52)								
No	25	89.3	17	70.8	14	100.0	28	73.7
Yes	3	10.7	7	29.2	0	0.0	10	26.3
Chi-Square [χ^2, p]	2.833		0.092		4.561		.033*	
Current pregnancy status								
Unintended	4	7.3	10	22.2	2	7.1	12	16.7
Intended	51	92.7	35	77.8	26	92.9	60	83.3
Chi-Square [χ^2, p]	4.594		.032*		1.519		.218	
Mode of current conception								
Natural	52	94.5	41	91.1	28	100.0	65	90.3
With fertility treatment	3	5.5	4	8.9	0	0.0	7	9.7
Chi-Square [χ^2, p]	.448		.503		2.927		.087	

Note. *$p < .05$, **$p < .01$

Table 5 shows that there were statistically significant associations between gravidity, previous low birth weight and PREPS-PS & PREPS-IS scores, where primigravida women and women who had previous low birth weight had high preparedness and infection stress. Also, there was a statistically significant association between parity, current pregnancy status, and PREPS-PS score, where nulliparous women and women who had an unintended pregnancy had high preparedness stress. Additionally, there was a statistically significant association between previous abortion, preterm labor and PREPS-IS score, where pregnant women with a history of abortion and preterm labor had high infection stress.

Table 6 shows that there was a highly statistically significant association between loss of income due to COVID-19 pan-

demic, planned place of birth during COVID-19 pandemic, and both PREPS-PS and PREPS-IS scores. Also, there was a highly statistically significant association between having a family member diagnosed with COVID-19, contact with a suspected or confirmed COVID-19 case, and the PREPS-IS score ($p < .001$).

Table 6. Association between COVID-19 related factors and PREPS' domains score

	Preparedness Stress (PREPS-PS)				Infection Stress (PREPS-IS)			
	Low Stress (n = 55)		High Stress (n = 45)		Low Stress (n = 28)		High Stress (n = 72)	
	No.	%	No.	%	No.	%	No.	%
Loss of income due to COVID -19	28	50.9	40	88.9	11	39.3	57	79.2
Chi-Square [χ^2, p]	16.407		< .001**		14.735		< .001**	
Has a family member diagnosed with COVID-19	26	47.3	25	55.6	3	10.7	48	66.7
Chi-Square [χ^2, p]	.679		.410		25.256		< .001**	
Contact with a suspected or confirmed COVID-19 case	16	29.1	13	28.9	0	0.0	29	40.3
Chi-Square [χ^2, p]	.001		.982		15.884		< .001**	
Planned place of birth during the COVID-19 pandemic								
Governmental hospitals	32	58.2	9	20.0	20	71.4	21	29.2
Private hospitals	23	41.8	36	80.0	8	28.6	51	70.8
Chi-Square [χ^2, p]	14.916		< .001**		14.885		< .001**	

Note. **$p < .01$

4. Discussion

The current study was done to assess pandemic-related pregnancy stress among a group of Egyptian women during COVID-19 pandemic. The results of this study provided an answer to the research questions concerning the level of pandemic-related pregnancy stress and factors affecting it among a group of Egyptian women. The study revealed that less than half (45%) of pregnant women during COVID-19 pandemic experienced high stress levels related to feeling unprepared for childbirth and around three-quarters (72%) experienced high stress related to perinatal infection. The level of pandemic stress in the current study is greater than the level of pandemic stress in previous studies. A study conducted by Ilska[12] on 1,119 pregnant women revealed that approximately one-third of pregnant women reported having elevated levels of both preparedness and infection stress.

Also, Preis[14] conducted a study on 4,451 pregnant women in the U.S., found that around one-third of pregnant women reported having elevated levels of both preparedness and infection stress. In addition, Schaal[5] conducted a study to assess pandemic-related pregnancy stress among 1,364 German pregnant women and reported that 16% of pregnant women had high levels of preparedness stress whereas 12% had high levels of infection stress. The differences in the results of this study and the previous studies could be explained by the different cultures of the studied women and the different sample size.

Sociodemographic, reproductive characteristics of pregnant women and COVID-19-related factors influenced pandemic stress in the studied women. The current study found that young maternal age was associated with high preparedness and infection stress. This may be due to young women having better access to information on COVID-19 pandemic and being more informed about its effects, myths, and realities. This finding is parallel to the finding of a descriptive study which was conducted by Iyengar,[16] who reported that young pregnant women had significantly higher levels of stress than old age pregnant women at the time of the pandemic.

A contradicting study conducted by Effati-Daryani[17] revealed that age more than 35 years was linked to increased stress levels. On the other hand, a study conducted by AL Sumri[18] to assess the impact of the pandemic on pregnant and postpartum women in Oman reported that no significant associations were found between age and stress symptoms during the pandemic.

The current study revealed that housewives' pregnant women significantly had high infection stress. This could be because being a housewife during the pandemic increases the time spent at home and decreases socialization and interpersonal communication, thereby may increase the risk of stress. A contradicting study conducted by Abou Elhassan[10] revealed that working pregnant women experienced a significantly higher level of stress than non-working ones. This contradiction may be due to differences in the studied population and that the large number of studied women in the current study

were housewives.

Also, the current study shows that primigravida women had higher preparedness and infection stress. Unlike our study, a descriptive study conducted by Çetin[19] to determine the stress level reported by pregnant women at the time of the COVID-19 pandemic revealed that the number of pregnancies didn't affect the perceived stress. Also, a descriptive study conducted by Yıldırım[20] to determine the depression, anxiety and stress in pregnant women at the time of COVID-19 pandemic revealed that number of pregnancies didn't affect the maternal stress. This contradiction may be due to differences in the studied sample.

In addition, the current study revealed that nulliparous women significantly have higher preparedness stress. This may be due to a lack of childbirth experience among nulliparous women. This finding is parallel to Ilska[12] who found that nulliparous women experienced higher preparedness stress. On the other hand, Schaal[15] reported that primiparous women experienced higher preparedness stress level. This contradiction can be the result of variations in the study sample.

The current study also showed that pregnant women with previous abortions significantly had higher infection stress. This finding is in agreement with Preis[14] who reported that previous abortion was associated with higher perinatal infection stress. Also, Lazarides[21] reported that a previous abortion is associated with significantly higher stress in a subsequent pregnancy.

In addition, the current study found that pregnant women who previously had low birth weight newborn significantly had higher preparedness and infection stress. Also, there was a significant association between previous preterm labor and infection stress. This may be because the studied women were more aware of the potential consequences of acquiring COVID-19 and the possibility of having such complications again. This finding could be supported by the findings of a prospective cohort study conducted by Shapiro.[22] to determine the associations between past pregnancy outcomes and pregnancy anxiety in a subsequent pregnancy. This study reported that a history of live term birth was associated with a low level of anxiety, whereas a history of stillbirth was associated with high anxiety levels.

Also, the present study revealed that there is no association between having a history of neonatal death and pandemic-related pregnancy stress domains. Contradictly, a descriptive study conducted by Engidaw.[23] to assess the prevalence of perceived stress and associated factors among pregnant women in Southeast Ethiopia, revealed that neonatal death in a previous pregnancy was associated with high perceived stress in subsequent pregnancy.

Besides, the current study findings show that pregnant women with an unintended pregnancy significantly had high preparedness stress. A supporting study conducted by Preis[14] revealed that preparedness stress was high among women with an unplanned pregnancy. On the other hand, Fiskin[24] found that there is no significant correlation between pregnancy being planned or not and maternal stress.

Regarding COVID-19 related factors that contribute to higher levels of stress in this study, it was found that pregnant women who reported loss of income due to COVID-19 pandemic had higher preparedness and infection stress. This could be due to the fact that the financial problem might lead to a change in antenatal care follow-up and a change in the birth plans of pregnant women. This finding is in the same line with the finding of the descriptive study conducted by Abou Elhassan[10] who reported that pregnant women who had financial problems during COVID-19 pandemic experienced high stress. Contradictly, Çetin[19] found that decreased monthly income of pregnant women due to COVID-19 pandemic did not change their stress levels. This contradiction may be due to differences in the socioeconomic conditions of the studied women.

Additionally, the current study revealed that pregnant women who had a relative diagnosed with COVID-19 had significantly higher infection stress. This may be due to having a relative with COVID-19 would usually increase the perceived risk of contracting the disease. This finding is in line with the findings reported by Shi,[25] who conducted a study to assess risk factors associated with mental health symptoms among the general population in China during the COVID-19 pandemic and reported that having a relative with confirmed or suspected COVID-19 infection was linked to poor mental health outcomes.

Besides, the results of the current study showed that pregnant women who had contact with suspected or confirmed COVID-19 case had significantly higher infection stress. This finding is in agreement with Lambelet[26] who conducted a study to assess the effect of COVID-19 pandemic on pregnant and breastfeeding women during the first pandemic wave and reported that having a contact with a person with COVID-19 symptoms was associated with high stress level among pregnant women.

Also, the current study revealed that high preparedness and infection stress have been associated with planned births at private hospitals. This may be due to fear of contracting COVID-19 and fear of lack of control at governmental hospi-

tals. This result could be supported by a study conducted by Jafree[27] to assess factors affecting delivery health service satisfaction of women and fear of COVID-19. They reported that women giving birth in public hospitals were more concerned about contracting COVID-19 than those giving birth in private hospitals.

5. Conclusions

The study questions were answered, pregnant women during COVID-19 pandemic experienced elevated levels of stress related to their preparation for childbirth and stress related to the possibility of perinatal infection for themselves and their fetuses. In addition, infection stress was more prevalent than preparedness stress among the studied pregnant women. Numerous factors, including maternal age, gravidity, parity, history of abortion, low birth weight & preterm labor, loss of income due to COVID-19 pandemic, having a family member diagnosed with COVID-19, and contact with suspected or confirmed COVID-19 cases, were affecting the pandemic-related pregnancy stress among the studied pregnant women.

Recommendations

In light of the study findings, the following recommendations are suggested:

1. Incorporating the assessment of pandemic-related pregnancy stress into prenatal care.

2. Providing prenatal educational programs related to coping strategies during COVID -19 pandemic.

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Conflicts of Interest Disclosure

The authors declare they have no conflicts of interest.

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