Women's Psychological Health, Family Function, and Social Support During Their Third Trimester of Pregnancy Within the COVID-19 Epidemic: A Cross-sectional Survey

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Abstract

Objective: This study aims to investigate women's psychological health, family function, and social support during the third trimester within the coronavirus disease 2019 (COVID-19) epidemic.
Method: From January 30, 2020, to February 26, 2020, a total of 177 pregnant women during their third trimester (mean gestation time was 37.05 ± 4.06 wk) in a maternal and children's hospital were investigated using the Self-Rating Anxiety Scale (SAS), the Edinburgh Postnatal Depression Scale, the Family APGAR Index, and the Perceived Social Support Scale. Nonparametric tests were conducted in the study. The statistical significance was set as $P < 0.05$.
Result: The incidence rate of the participants' anxiety and depression during the COVID-19 epidemic was 19.21% and 24.29%, respectively. The participants' greatest concerns in the previous week were the *risk of virus transmission* (79.66%), and the *prenatal examination and fetal growth* (70.62%). The SAS ranks were higher in the participants who were concerned about the *prenatal examination and fetal growth* and *work-related affairs*.
Conclusion: The participants' psychological health was indirectly affected by the epidemic through the supply of medical resources and work-related factors. The medical staff should employ family support and social resources to guarantee the accessibility of medical services and living materials to decrease the pregnant women's stress and further improve their psychological health.

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The coronavirus disease 2019 (COVID-19) emerged at the end of 2019 and became the largest public health emergency since the severe acute respiratory syndrome (SARS) outbreak in 2003. Pregnant women, who experience major physical and psychological changes, are a vulnerable population during the COVID-19 epidemic. The infection threat may cause stress on perinatal women and negatively influence their psychological health.[1] Home quarantine increases inconvenience of perinatal women's antenatal examinations, which might also negatively affect their psychological status.

Among the various and possible influencing factors, family function and social support are important factors that correlate to pregnant women's psychological health.[2,3] Positive family functions can improve pregnant women's self-regulation capability and influence their ability to actively deal with negative emotions.[2] Social support is regarded as a protective factor for anxiety and depression in pregnant women, which can directly affect their psychological health.[3] We conducted the current survey to investigate pregnant women's family function and social support in the context of public health emergencies.

During the epidemic's peak period in China, Chengdu was identified as the medium-risk area for COVID-19 with 143 confirmed cases. The studies reported that the pandemic not only was "life-threatening situations," but also was a serious external stimulus for pregnant women, which caused a variety of psychological problems, even worsening already existed mental illness.[4] Moreover, it is unknown whether family function and social support of pregnant women have changed during the pandemic. This study investigated pregnant women's psychological health, family function, and social support in China's medium risk area during the COVID-19's peak period and explored the factor associations. Compared with existing studies, we not only focused on the psychological health of pregnant women, but also on family function and social support. The results may provide a basis for designing effective support to pregnant women and their families during critical periods, such as COVID-19.

Methods

Participants

A total of 212 pregnant women were admitted in a top-tertiary maternal and children's hospital in Chengdu during the COVID-19 epidemic's peak period (from January 30, 2020, to February 26, 2020). From those invited, 208 (98.1%) agreed to be investigated.

Procedures

The researchers introduced the study to pregnant women and asked for their participation agreement. After signing the informed consent, the participants completed the questionnaires. The participants who indicated severe anxiety or depression were to be transferred to psychological counselors for further diagnosis and treatment.

Measures

The participants' general information was collected through a self-designed questionnaire, which included demographic information and the last week's worries. The other results were collected by using 4 questionnaires:

The Self-Rating Anxiety Scale (SAS) was conducted to assess anxiety, which has 20 items. Participants were required to appraise their symptoms over the last 2 wk on a 4-point Likert scale. Each item ranged from 1 (not have) to 4 (all the time). The standard score was calculated using the raw score multiplied by 1.25. There were 4 levels of anxiety, which were no anxiety (< 50), mild (50-59), moderate (60-69), and severe anxiety (≥ 70), respectively.

Although the Edinburgh Postnatal Depression Scale (EPDS) was primarily applied for screening postpartum depression, it was also validated as being useful for pregnant women with good reliability and validity.[5] It is a 10-item scale that requires participants to appraise their depression-related symptoms from 0 (never) to 3 (always). The scores in each question were summed, and a final score ≥ 9 defined the state for depression.

The Family APGAR Index was used for assessing family function. There are 5 items using a 3-point Likert scale from 0 (rarely) to 3 (always). A total score of 0-3, 4-6, and 7-10 represents family function as high dysfunction, moderate, and good family function, respectively.

The Perceived Social Support Scale (PSSS) is a 12-item scale, and each item scores from 1 (strongly disagree) to 7 (strongly agree). A total score of 12-36, 37-60, and 61-84 represents perceived social support as low, intermediate, and high support, respectively.

Ethical Considerations

The study was approved by the West China Second University Hospital's ethics committee with an ethical number of 165, in 2020.

Data Analysis

All statistical analyses were performed in IBM SPSS 23.0 software. The Kolmogorov-Smirnov test indicated that the data were presented as skewed distribution. Nonparametric tests, including 2 independent sample Mann-Whitney and multiple samples Kruskal-Wallis tests, were used to compare the differences. The statistical significance was set as $P < 0.05$.

Results

A total of 208 questionnaires were distributed, and 177 valid questionnaires were returned.

Demographic Data and Main Concerns

The average age and gestational age of 177 participants was 32.6 ± 4.6 y and 37.05 ± 4.06 wk, respectively. The results of participants' main concerns in Table 1.

Psychological Health, Family Function, and Social Support

The result of incidence rate of anxiety and depression and the level of family function and social support for participants in Table 2.

Comparison of Pregnant Women Against Demographic Characteristics

There were statistical differences in the anxiety ranks among the participants with or without the worries of (a) *prenatal examination and fetal growth and development* and those with or without worries of (b) *work-related problems* (Table 1).

Discussion

It was indicated that the incidence rates of anxiety and depression among normal-late pregnant women in China's medium-risk area, respectively, were 19.21% and 24.29% during the COVID-19 epidemic's peak period. Both rates were similar to those of other domestic studies[6,7] (13.21% ~ 24.9% [anxiety]; 26.20% ~ 31.39% [depression]), which used the same survey tools. COVID-19 was a "disaster" event, the impact was similar to other disasters,[8] and in general, the psychological impact may also be similar. However, the incidence rates of anxiety and depression did not increase as hypothesized. This might be attributed to the events' visual-impact differences. People can directly see the destruction after the disaster occurred by a natural hazard, such as earthquakes and hurricane. In reference to the pandemic, the confirmed infected cases and deaths were merely presented as cold numbers on the TV and in other medias and were not associated with the daily lives of pregnant women, which for them, had a less visual impact. Although the *COVID-19 infection problem* was the main concern of the participants in the last weeks, there was no statistical difference in the incidence rates of anxiety and depression among those who worried or not about the infection problem. This indicated that the virus spread has caused some pressure on women, but it was not the direct cause of their psychological change.

Worrying about prenatal examination and fetal growth and development was another major concern for pregnant women. During the epidemic, most hospitals, including specialty hospitals, had to invest more manpower to support anti-epidemic measures in their hospitals and in Wuhan (the epicenter of the pandemic), which increased the workload after the pandemic intermission. The health and human resources, particularly doctors and nurses, were relatively insufficient to satisfy all demands, and routine obstetric outpatient and inpatient services were most likely affected. The results in Table 1 also indicate that there is a statistical difference in the anxiety level between women who worried about work-related problems and those who did not. Limited outward activities meant less off-line productive activities and reduction in people's income. Due to job loss and wage cuts during the COVID-19 pandemic, and having a baby will increase consumption, it is common that the pregnant women and their families

Table 1. Demographic data and main concerns of pregnant women in the past weeks, and the Non-parametric comparison of anxiety, depression, family function and social support against demographic data

	n (%)	anxiety			depression			family function			social support		
		average rank	H/Z	P	average rank	H/Z	P	average rank	H/Z	P	average rank	H/Z	P
age			1.034[1]	0.793		1.744[1]	0.627		5.082[1]	0.166		6.484[1]	0.090
< 25	4 (2.26)	72.00			89.63			81.50			78.50		
25~	43 (24.29)	88.37			90.14			92.67			96.41		
30~	72 (40.68)	89.35			84.71			93.25			90.72		
≥35	58 (32.77)	90.21			93.44			81.52			82.09		
occupation			4.524[1]	0.340		0.867[1]	0.929		11.998[1]	0.017*		5.544[1]	0.236
medical staffs	13 (7.34)	85.54			87.92			95.31			93.73		
professionals (non-medical)	60 (33.90)	91.07			91.10			97.27			92.98		
staff	44 (24.86)	96.39			87.61			91.27			88.50		
civil servant	8 (4.52)	83.00			78.56			81.50			100.50		
unemployed	52 (29.38)	82.15			89.63			77.12			81.88		
education level			3.524[1]	0.474		4.694[1]	0.320		30.774[1]	< 0.001*		21.864[1]	< 0.001*
primary school and below	1 (0.56)	72.00			156.00			17.00			100.50		
junior high school	5 (2.82)	107.20			102.90			31.40			100.50		
high school	16 (9.05)	83.00			95.16			69.88			56.50		
Junior college	39 (22.03)	83.28			90.19			87.21			88.92		
bachelor and above	116 (65.54)	91.11			86.57			95.34			92.91		
residence			1.806[1]	0.405		3.714[1]	0.156		3.624[1]	0.163		2.240[1]	0.326
city	164 (92.66)	89.27			87.47			89.99			89.70		
town	6 (3.39)	72.00			111.75			88.67			71.17		
village	7 (3.95)	97.14			105.43			66.14			87.93		
Annual household income(RMB)			7.989[1]	0.092		3.368[1]	0.498		7.145[1]	0.128		2.060[1]	0.725
< 5000	4 (2.26)	116.00			111.75			60.00			78.50		
5000~	20 (11.30)	80.80			80.80			82.33					
10000~	14 (7.91)	78.29			92.79			82.57			87.93		
20000~	24 (13.56)	79.33			85.94			85.08			93.17		
> 50000	115 (64.97)	92.81			86.74			93.03			89.79		
Gravidity			−1.035[2]	0.301		−0.085[2]	0.932		−0.788[2]	0.431		−0.403[2]	0.687
1	108 (61.02)	86.82			88.81			90.54			88.28		
2 or more	69 (38.98)	92.41			89.30			86.59			90.13		
Worrying about prenatal examination and fetal growth and development			−2.094[2]	0.036*		−1.394[2]	0.163		−0.061[2]	0.951		−0.873[2]	0.382
yes	125 (70.62)	92.55			91.57			88.90			87.74		
no	52 (29.38)	80.46			82.82			89.23			92.04		
Worrying about family-related problems			−0.039[2]	0.969		−0.828[2]	0.407		−1.426[2]	0.154		−3.138[2]	0.002*
yes	5 (2.82)	89.60			102.90			68.60			47.70		
no	172 (97.18)	88.98			88.60			89.59			90.20		

(Continued)

Table 1. (Continued)

	n (%)	anxiety			depression			family function			social support		
		average rank	H/Z	P	average rank	H/Z	P	average rank	H/Z	P	average rank	H/Z	P
Worrying about work-related problems			−2.886[2]	0.039*		−2.504[2]	0.059		−1.271[2]	0.455		−1.548[2]	0.403
yes	2 (1.13)	160.00			156.00			60.00			56.50		
no	175 (98.87)	88.19			88.23			89.33			89.37		
Worrying about the COVID-19 infection			−0.112[2]	0.911		−0.545[2]	0.586		−0.426[2]	0.670		−0.785[2]	0.432
yes	141 (79.66)	88.85			88.21			88.48			89.89		
no	36 (20.34)	89.58			92.08			91.03			85.51		
Worrying about the eutocia or Caesrean			−0.691[2]	0.656		−0.803[2]	0.576		−0.613[2]	0.713		−0.548[2]	0.761
yes	2 (1.13)	72.00			67.50			103.00			100.50		
no	175 (98.87)	89.19			89.25			88.84			88.87		

[1].: H; [2].: Z *P<.05 is statistically significant.

Table 2. The levels of anxiety, depression, family function and social support of the pregnant women

	N	%
anxiety		
< 50	143	80.79
50-59	33	18.65
≥60	1	0.56
depression		
< 9	134	75.71
≥9	43	24.29
family function		
0-3	5	2.83
4-6	23	12.99
7-10	149	84.18
social support		
≤36	1	0.56
37-60	22	12.43
≥61	154	87.01

become more anxious about work-related problems.[9] Therefore, it is suggested to consider the psychological impact on pregnant women both from the perspective of infectious and social factors when providing perinatal care and to help them solve work-related problems to increase their resilience against the epidemic.

During the epidemic, most citizens had to isolate themselves at home, and nuclear family members spent more time together. More gathering time increased interactions and communication between women and their partners or other family members; women may experience more family support and may have a high rank for family function. This could explain the slight change in women's psychological health in the third trimester during the epidemic. Accumulative studies indicated that positive family functions could effectively reduce pregnancy-related discomforts, promote positive emotions, and thereby, reduce women's prenatal anxiety and depression.[2]

Approximately 87.01% of the 177 participants perceived themselves with a high social support, which was slightly lower than the results of the previous study (88.9%).[10] Although the outward activities and face-to-face communication with friends and colleagues were reduced during the epidemic, the temporary segregation was offset by other forms of communication (eg, video telephone, online chat). In addition, the primary support for women in late pregnancy was from family, because most of them had left their work positions in preparation for delivery. The family provided instrumental and emotional support to pregnant women, while society mainly provided emotional support, which was facilitated through online communication.

Conclusions

During COVID-19's peak period, hospitalized pregnant women in the medium-risk area of Chengdu did not have significant change in their psychological health. The pregnant women's psychological health was indirectly affected by the epidemic through the supply of medical resources and work-related factors. Positive family function and social support played important roles in supporting the pregnant women. Medical staff should

consider using family support and social resources to guarantee the accessibility of medical services and living materials to decrease pregnant women's anxieties and positively stimulate their psychological health.

Limitations

The study was conducted in Chengdu, which was identified as a medium-risk area during the epidemic's peak period. The results cannot be generalized for all pregnant women. The study merely investigated the pregnant women's situation at that time and did not follow-up, which made it unclear whether the epidemic had a long-lasting effect on the women. The results provide an investigative direction for future studies.

Authors' Contribution. Ren and Gu have contributed equally to the article.

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