Health Anxiety of Pregnant Women and Its Related Factors During the Pandemic of Corona Virus

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Abstract

Background

The pandemic of COVID-19 affected many countries as well as Iran. The aim of this study was to evaluate the health anxiety of the Iranian pregnant women in time of the pandemic of the corona virus.

Methods

In this cross-sectional study 300 pregnant women in different trimesters (n = 100 in each trimester) were recruited. A demographic questionnaire and the Health Anxiety questionnaire were used to collect data. Because of quarantine data were collected through social media groups. The chi-square, ANOVA and multiple linear regression were used to analyze data.

Results

The total score of anxiety was 22.3 ± 9.5, 24.6 ± 9.3 and 25.4 ± 10.6 in the first, second and third trimester of pregnancy. Totally 9%, 13% and 21% of the women had severe anxiety or scores ≥ 35 in the first, second and third trimester of pregnancy respectively. Pregnant women in the third trimester significantly had more health anxiety score than the first trimester ones. Pregnant women in the third trimester had significantly higher scores of “total health anxiety”, in comparison with that of first trimester (p = 0.045).

Conclusion

At the time of the pandemic of COVID-19, women in the second and third trimester of pregnancy were more worry about consequences of disease, but the total score of health anxiety was significantly more in the women in the third trimester of pregnancy. Health care providers should pay more attention to the mental health of pregnant women in times of crises such as Corona pandemic.

Background

In December 2019 several cases of acute respiratory syndrome identified and led to the introduction of a virus from the coronavirus family, which soon known as COVID-19 (1). Iran, Italy, Spain, Germany and the United States were the next countries to be affected. Because, COVID-19 was spread more than 190 countries, the World Health Organization, announced the COVID-19 disease as a pandemic on 11 March 2020 (2). At the present time (8 April 2020) the number of affected people in Iran reached around 59000 and 3872 cases died from this disease (3). Four weeks passed from the epidemic of Corona virus in Iran, in 20th March 2020, all obstetrics and midwifery private offices were officially closed and only a few clinics were open in the cities for pregnant women to visit. Some pregnant women may experience anxiety due to the epidemic of the COVID-19 disease.
Health anxiety defined as the extensive worry that people experience about their health situation (4). Health anxiety may manifest in two types: illness anxiety disorder and somatic symptom disorder and the symptoms of anxiety may vary from mild to severe that show clinical signs (5). Stress and anxiety during pregnancy are associated with disorders such as preeclampsia, low birth weight, depression and more nausea and vomiting (6). Women with anxiety during pregnancy may experience symptoms such as worry, stress, having difficulty to stay calm, sleep disturbances, having negative thoughts that may prevent good sleep (7). In the other hand, disorders such as depression may deteriorate the outcomes of pregnancy (8). Worry during the pandemic of Corona virus among pregnant women may cause them to avoid to attend the clinics for regular prenatal care, they may use more detergent, undergo unnecessary cesarean section because of fear of mother to neonate disease transmission (9).

Although pregnant women are susceptible to respiratory infection during pregnancy, but recent few studies showed that the risk of pregnant women's infection are similar to other people (10). But some evidence revealed that such viral diseases cause pneumonia in pregnant women, and it may in turn can cause premature rupture of membrane, preterm labor, intrauterine fetal demise, intrauterine growth retardation and even neonatal death (11). Limited evidence from pregnant women affected with COVID-19 in China and the USA reveal that more than 95% of these women delivered by cesarean section, as the general idea is the maternal respiratory disease will be worsen with normal vaginal delivery (12).

The Corona virus is a novel disease and its dimensions are unknown. Therefore, this study designed to investigate the health anxiety among pregnant women in different trimesters in Iran.

**Method**

This was a cross-sectional study in which 300 pregnant women in different trimesters (n = 100 in each trimester) were recruited. The design of this study was approved by the Ethics Committee of Ahvaz Jundishapur University of Medical Sciences (Ref No: IR.AJUMS.REC.1399.006). This study started on 20 March 2020 and completed on 10 April 2020. The oral and written informed consent was obtained from each participant.

**Measurements**

A demographic and the Health Anxiety questionnaire were used to collect data. The demographic questionnaire included questions about age, parity, gravidity, number of children, economic situation, job of women and their partner, and the trimester of pregnancy.

The Health Anxiety questionnaire consisted 18 questions about the participants' worry during the pandemic of Corona virus in Iran. Each question had four categories from “I am not worried about my health” to “I spend most of my time worrying about my health”. The scores ranging from zero to 3, while zero indicated to “I do not have a problem”, and 3 indicated to “I spend most of my time worrying about my health”. The total score of this questionnaire is 54. There are three sub-scales for this questionnaire.
Worry about getting sick is including questions number 5, 6, 8, 9, 11 and 12. Worry about consequences of disease is including questions number 13, 15, 16, 17 and 18 and general health concerns is including questions number 1–4, 7, 10 and 14. The total score < 27 means low health anxiety, 27–34 mean moderate health anxiety and scores more than 35 means high health anxiety (13). The validity and reliability of the Persian version of health anxiety questionnaire were assessed and approved in Iran (14). We also asked a question that if the pandemic of Corona increased the health anxiety of participants.

**Statistics**

All data entered SPSS version 22. The normal distribution of continuous data was assessed using the Shapiro-Wilk test. The ANOVA test was used for comparing the data between three groups (three trimesters) and the chi-square test was used for comparing categorical data. Multiple linear regression was used for assessing the relationship of health anxiety with demographic characteristics as well as different trimesters of pregnancy. P < 0.05 was considered significant.

**Results**

Table 1 demonstrates the demographic characteristics of participants in different trimesters of pregnancy. As evident from this table, the mean age of women was 25.8 ± 5.1, 27.2 ± 5.7 and 26.5 ± 4.5 in first, second and third trimester (p > 0.05). Women did not show any significant difference regarding job, education, economic situation and education of spouse.
Table 1
Sociodemographic characteristics of participants by trimester of pregnancy

| Variables               | First trimester n = 100 | Second trimester n = 100 | Third trimester n = 100 | P value |
|-------------------------|-------------------------|--------------------------|-------------------------|---------|
| Age (y) mean ± SD       | 25.8 ± 5.1              | 27.2 ± 5.7               | 26.5 ± 4.5              | 0.17    |
| N (%)                   |                         |                          |                         |         |
| Job                     |                         |                          |                         |         |
| Housewife               | 80(80)                  | 80(80)                   | 86(86)                  | 0.32    |
| Employee                | 20(20)                  | 20(20)                   | 14(14)                  |         |
| Education               |                         |                          |                         |         |
| Illiterate              | 0                       | 3(3)                     | 1(1)                    | 0.65    |
| Primary                 | 5(5)                    | 9(9)                     | 6(6)                    |         |
| Secondary               | 12(12)                  | 9(9)                     | 8(8)                    |         |
| Diploma                 | 44(44)                  | 42(42)                   | 44(44)                  |         |
| University              | 39(39)                  | 37(37)                   | 41(41)                  |         |
| Economic situation      |                         |                          |                         |         |
| Weak                    | 21(21)                  | 21(21)                   | 17(17)                  | 0.67    |
| Moderate                | 72(72)                  | 67(67)                   | 71(71)                  |         |
| Good                    | 7(7)                    | 12(12)                   | 12(12)                  |         |
| Education of spouse     |                         |                          |                         |         |
| Illiterate              | 1(1)                    | 7(7)                     | 1(1)                    | 0.11    |
| Primary                 | 6(6)                    | 4(4)                     | 6(6)                    |         |
| Secondary               | 15(15)                  | 16(16)                   | 11(11)                  |         |
| Diploma                 | 44(44)                  | 31(31)                   | 42(44)                  |         |
| University              | 34(34)                  | 42(42)                   | 40(40)                  |         |

Table 2 shows the midwifery characteristics of participants. 95% of women in the second trimester of pregnancy had a normal anomaly screening and 32% of women in the first trimester did not perform these tests. Women in three trimesters showed a significant difference regarding anomaly screening (p < 0.0001). Three groups showed a significant difference regarding history of infertility (p = 0.02). Totally,
25%, 19% and 35% of women reported that they had some problems during their pregnancy. These problems included bleeding in the first trimester, nausea and vomiting, gestational diabetes, and hypertension (p = 0.097).

Table 2
The midwifery characteristics of participants by trimester of pregnancy

| Variables                  | First trimester | Second trimester | Third trimester | P value |
|----------------------------|-----------------|------------------|-----------------|---------|
|                            | n = 100         | n = 100          | n = 100         |         |
| Mean ± SD                  |                 |                  |                 |         |
| Gravida                    | 1.72 ± 1        | 1.83 ± 1.1       | 1.91 ± 1.1      | 0.47    |
| Para                       | 0.63 ± 0.9      | 0.69 ± 0.92      | 0.74 ± 0.94     | 0.70    |
| Living child               | 0.59 ± 0.86     | 0.66 ± 0.92      | 0.73 ± 0.93     | 0.55    |
| N(%)                       |                 |                  |                 |         |
| Results of anomaly screening|                 |                  |                 |         |
| Normal                     | 66(66)          | 95(95)           | 93(93)          | <0.0001 |
| Suspicious or did not perform | 34 (34)        | 5 (5)            | 7 (7)           |         |
| History of infertility     | 8(8)            | 4(4)             | 15(15)          | 0.023   |
| Problems in the current pregnancy |           |                  |                 |         |
| Yes                        | 25 (25)         | 19(19)           | 35(35)          | 0.097   |
| No                         | 75(75)          | 81(81)           | 65(65)          |         |
| If Corona pandemic increased women’s anxiety |         |                  |                 |         |
| No                         | 34(34)          | 23(23)           | 22(22)          | 0.102   |
| Yes                        | 66(66)          | 77(77)           | 78(78)          |         |

Table 3 shows the level of anxiety among women in three trimesters. Women in the third trimester were more worried about to get sick, consequences of the disease and concerns about disease. The total score of anxiety was 22.3 ± 9.5, 24.6 ± 9.3 and 25.4 ± 10.6 in the first, second and third trimester of pregnancy.
Totally 9%, 13% and 21% of the women had severe anxiety or scores ≥ 35 in the first, second and third trimester of pregnancy respectively.

| Variable                        | First trimester | Second trimester | Third trimester |
|---------------------------------|-----------------|------------------|-----------------|
|                                 | n = 100         | n = 100          | n = 100         |
| **Health anxiety**              |                 |                  |                 |
| Worry to get sick               | 7.8 ± 3.6       | 8.5 ± 3.5        | 8.7 ± 4.2       |
| Worry about consequences of disease | 5.5 ± 3.2     | 6.9 ± 3.1        | 6.8 ± 3.4       |
| Concerns about disease          | 8.9 ± 4.1       | 9.2 ± 4.07       | 9.7 ± 4.4       |
| Total score anxiety             | 22.3 ± 9.5      | 24.6 ± 9.3       | 25.4 ± 10.6     |
| **Total score of health anxiety category** |                 |                  |                 |
| < 27                            | 60 (60)         | 48 (48)          | 40 (40)         |
| 27–34                           | 31 (31)         | 39 (39)          | 39 (39)         |
| ≥ 35                            | 9 (9)           | 13 (13)          | 21 (21)         |

Using multiple linear regression, significant association was found between trimester and “being worried about consequences of disease” score, after controlling for the effects of history of infertility and results of anomaly screening. Pregnant women in the second and third trimesters had significantly higher scores of “being worried about consequences of disease”, compared to that of first trimester (p = 0.010 and p = 0.009; respectively). Also, pregnant women in the third trimester significantly had higher health anxiety score than the first trimester ones. Pregnant women in the third trimester had significantly higher scores of “total health anxiety”, in comparison with that of first trimester (p = 0.045). However, no significant difference was found in “total health anxiety” between the second and the first trimester (Table 4).
Table 4
Results of multiple linear regression analyses to determine parameters most predictive interested outcomes.

| Outcomes                  | Worry to get sick | Being worry about consequences of disease | Concerns about disease | Total health anxiety |
|---------------------------|-------------------|------------------------------------------|------------------------|----------------------|
| Parameter                 | Beta  | 95% CI | Beta  | 95% CI | Beta  | 95% CI | Beta  | 95% CI |
| Rate                      |       |        |       |        |       |        |       |        |
| Worry to get sick         |       |        |       |        |       |        |       |        |
| Total health anxiety      |       |        |       |        |       |        |       |        |

Results of anomaly screening.

| Unknown or suspicious     | Ref   | -     | Ref   | -     | Ref   | -     | Ref   | -     |
|---------------------------|-------|-------|-------|-------|-------|-------|-------|-------|
| Normal                    | 0.4   | (-1.26, 0.50) | 0.3   | (-0.77, 0.48) | 0.5   | (-1.39, 0.9) | 0.0   | (-1.39, 0.9) |
|                           | 0.3   | (-1.39, 0.9) | 0.4   | (-1.39, 0.9) | 0.9   | (-1.39, 0.9) | 0.4   | (-1.39, 0.9) |
|                           | 0.4   | (-1.39, 0.9) | 0.4   | (-1.39, 0.9) | 0.9   | (-1.39, 0.9) | 0.4   | (-1.39, 0.9) |
|                           | 0.5   | (-1.39, 0.9) | 0.5   | (-1.39, 0.9) | 0.9   | (-1.39, 0.9) | 0.5   | (-1.39, 0.9) |
|                           | 0.4   | (-1.39, 0.9) | 0.4   | (-1.39, 0.9) | 0.9   | (-1.39, 0.9) | 0.4   | (-1.39, 0.9) |
|                           | 0.5   | (-1.39, 0.9) | 0.5   | (-1.39, 0.9) | 0.9   | (-1.39, 0.9) | 0.5   | (-1.39, 0.9) |
|                           | 0.6   | (-1.39, 0.9) | 0.6   | (-1.39, 0.9) | 0.9   | (-1.39, 0.9) | 0.6   | (-1.39, 0.9) |
|                           | 0.7   | (-1.39, 0.9) | 0.7   | (-1.39, 0.9) | 0.9   | (-1.39, 0.9) | 0.7   | (-1.39, 0.9) |
|                           | 0.8   | (-1.39, 0.9) | 0.8   | (-1.39, 0.9) | 0.9   | (-1.39, 0.9) | 0.8   | (-1.39, 0.9) |
|                           | 0.9   | (-1.39, 0.9) | 0.9   | (-1.39, 0.9) | 0.9   | (-1.39, 0.9) | 0.9   | (-1.39, 0.9) |

History of infertility

| Negative                  | Ref   | -     | Ref   | -     | Ref   | -     | Ref   | -     |
|---------------------------|-------|-------|-------|-------|-------|-------|-------|-------|
| Positive                  | -0.75 | (-2.30, 0.80) | -0.46 | (-1.78, 0.85) | -0.46 | (-1.78, 0.85) | -0.46 | (-1.78, 0.85) |
|                           | -0.46 | (-1.78, 0.85) | -0.46 | (-1.78, 0.85) | -0.46 | (-1.78, 0.85) | -0.46 | (-1.78, 0.85) |
|                           | -0.46 | (-1.78, 0.85) | -0.46 | (-1.78, 0.85) | -0.46 | (-1.78, 0.85) | -0.46 | (-1.78, 0.85) |
|                           | -0.46 | (-1.78, 0.85) | -0.46 | (-1.78, 0.85) | -0.46 | (-1.78, 0.85) | -0.46 | (-1.78, 0.85) |
|                           | -0.46 | (-1.78, 0.85) | -0.46 | (-1.78, 0.85) | -0.46 | (-1.78, 0.85) | -0.46 | (-1.78, 0.85) |
|                           | -0.46 | (-1.78, 0.85) | -0.46 | (-1.78, 0.85) | -0.46 | (-1.78, 0.85) | -0.46 | (-1.78, 0.85) |
|                           | -0.46 | (-1.78, 0.85) | -0.46 | (-1.78, 0.85) | -0.46 | (-1.78, 0.85) | -0.46 | (-1.78, 0.85) |
|                           | -0.46 | (-1.78, 0.85) | -0.46 | (-1.78, 0.85) | -0.46 | (-1.78, 0.85) | -0.46 | (-1.78, 0.85) |
|                           | -0.46 | (-1.78, 0.85) | -0.46 | (-1.78, 0.85) | -0.46 | (-1.78, 0.85) | -0.46 | (-1.78, 0.85) |

Trimester

| First trimester           | Ref   | -     | Ref   | -     | Ref   | -     | Ref   | -     |
|---------------------------|-------|-------|-------|-------|-------|-------|-------|-------|
|                           | 0.0   | 0.00  | 0.0   | 0.00  | 0.0   | 0.00  | 0.0   | 0.00  |
|                           | 0.1   | 0.05  | 0.1   | 0.05  | 0.1   | 0.05  | 0.1   | 0.05  |
|                           | 0.2   | 0.10  | 0.2   | 0.10  | 0.2   | 0.10  | 0.2   | 0.10  |
|                           | 0.3   | 0.15  | 0.3   | 0.15  | 0.3   | 0.15  | 0.3   | 0.15  |
|                           | 0.4   | 0.20  | 0.4   | 0.20  | 0.4   | 0.20  | 0.4   | 0.20  |
|                           | 0.5   | 0.25  | 0.5   | 0.25  | 0.5   | 0.25  | 0.5   | 0.25  |
|                           | 0.6   | 0.30  | 0.6   | 0.30  | 0.6   | 0.30  | 0.6   | 0.30  |
|                           | 0.7   | 0.35  | 0.7   | 0.35  | 0.7   | 0.35  | 0.7   | 0.35  |
|                           | 0.8   | 0.40  | 0.8   | 0.40  | 0.8   | 0.40  | 0.8   | 0.40  |
|                           | 0.9   | 0.45  | 0.9   | 0.45  | 0.9   | 0.45  | 0.9   | 0.45  |
|                           | 1.0   | 0.50  | 1.0   | 0.50  | 1.0   | 0.50  | 1.0   | 0.50  |
Discussion

This study was designed to evaluate the health anxiety of pregnant women and its relating factors in the pandemic of COVID-19 in Iran. The results of this study showed that women in the third trimester were more worried about to get sick, consequences of the disease and concerns about disease. Also the total score of anxiety was higher among women in the third trimester of pregnancy. Anxiety during the pandemic of COVID-19 disease in pregnant women may be due to the fact that these women do not access to their health providers, hospitals are not safe and pregnant women are afraid to become infected when they leave home (15).

The death rate of pregnant women from SARS disease was reported to be 25% (16), but limited studies in China showed that the death rate of pregnant women was near to the general population and also the outcomes of pregnancy for both mother and neonates were good (17). Because information about the disease is scarce and the general population has little access to published studies, this can cause anxiety.

The results of the present study showed that women in the third trimester of pregnancy were more prone to be worry and also had significantly more health anxiety compared to the second and the first trimesters of pregnancy. The results of a study by Costa et al, showed that unemployed women, younger women, having more worries during pregnancy were the predictors of emotional distress among pregnant women in the second and the third trimester of pregnancy (18). Because in the present study we controlled the confounding variables, we can say that the cause of women's health anxiety during pregnancy was Corona virus. A study by Corbett et al (19) showed that most pregnant women (83.1%) did not worry about their health status before the pandemic of COVID-19, but during the pandemic, 50.7%
were worried about their health status most of the time. Concerns of pregnant women may be related to
the fact that they do not have access to their relatives if they needed. Furthermore, many women have
difficulties in the transportation (9). In the first days of Corona’s epidemic in Iran, one of the hospitals in
Ahvaz, where a large number of middle or lower class women referred to this hospital for delivery was
considered as central hospital for patients with the COVID-19 disease. Although another hospital was set
up for pregnant women, this could have caused anxiety in women.

Limitations Of The Study

Because of the pandemic of COVID-19, women answered to the questions of health anxiety questionnaire
by phone or in the social groups, and the completeness of questions is not like a face to face interview.
Also, the answers of the participants may have been affected by recall bias. Furthermore, women
recruited non-randomly in this study.

Conclusion

At the time of the pandemic of COVID-19, women in the second and third trimester of pregnancy were
more worry about consequences of disease, but the total score of health anxiety was significantly more in
the women in the third trimester of pregnancy. Health care providers should pay more attention to the
mental health of pregnant women in times of crises such as Corona pandemic.

Abbreviations

ANOVA
Analysis of Variance
COVID-19
Corona Virus Disease 2019
WHO
World Health Organization
SARS
Severe acute respiratory syndrome

Declarations

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All expenses of this research were provided by Ahvaz Jundishapur University of Medical Sciences, Ahvaz,
Iran.

Authors' contributions:
Najmieh Saadati, Parvin Abedi, Poorandokht Afshari, Maryam Beheshtinasab and Hatan Boostani were involved in designing of this research. Maryam Beheshtinasab collected the data. Elham Maraghi analyzed the data. Parvin Abedi and Elham Maraghi were involved in the data interpretation. Parvin Abedi was responsible for writing and finalizing the manuscript. All authors are in agreement with the content of this manuscript.

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**Ethics approval and consent to participate:** This study was approved by the Ethics Committee of Ahvaz Jundishapur University of Medical Sciences (Ref No: IR.AJUMS.REC.1399.006). The oral and written informed consent was obtained from each participant.

**Consent for publication**

NA

**Availability of data and materials**

Data will be available upon the request from corresponding author.

**Competing interests:**

Authors declare that they do not have any conflict of interest.

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