The Relationship between Health Anxiety and Prenatal Distress with Choosing the Type of Childbirth in Pregnant Women during Covid-19 Outbreaks in Iran

Maryam Beheshti Nasab
Ahvaz Jondishapour University of Medical Sciences Faculty of Nursing and Midwifery

Hadis Bahmaei
Ahvaz Jondishapour University of Medical Sciences Faculty of Nursing and Midwifery

Saeedeh Askari
Ahvaz Jondishapour University of Medical Sciences Faculty of Nursing and Midwifery

Saeed Ghanbari
Ahvaz Jondishapour University of Medical Sciences Faculty of Public Health

Mina - Iravani (✉ minairavani2004@yahoo.com)
Ahvaz Jondishapour University of Medical Sciences https://orcid.org/0000-0002-8854-1738

Research

Keywords: Health Anxiety, Prenatal Distress, Pregnant, Childbirth, Covid-19, Iran

DOI: https://doi.org/10.21203/rs.3.rs-47448/v1

License: ☄️ Ⓡ This work is licensed under a Creative Commons Attribution 4.0 International License.
Read Full License
Abstract

Background This study investigates the relationship between health anxiety and prenatal distress with choosing the type of childbirth in pregnant women during Covid-19 outbreaks in Iran.

Methods This is a descriptive-analytical study on 200 nulliparous pregnant women who referred to health centers of Iran to perform routine pregnancy care. Convenient sampling was used, and each nulliparous pregnant woman who tended to enter the study was enrolled. The questionnaires used in this work were demographic and midwifery information questionnaire, health anxiety index-short form (HAI 18), and Prenatal Distress Questionnaire (PDQ). After filling out the above questionnaires, two questions regarding the type of delivery selected by them before and during epidemic of covid-19 and the reason of the selection were asked from the participants and were recorded. The information was analyzed in the final stage using SPSS software version 22.

Results In general, 200 nulliparous pregnant women participated in this study. A significant statistical association was observed between choosing the type of delivery before and during the covid-19 pandemic (P=0.016). Women health anxiety showed significant statistical difference among various groups (P=0.0001). The highest score was 35.06±07.34 which was observed in the group that choose vaginal delivery at first but they selected cesarean section during the covid-19 pandemic. Mean score of prenatal distress score showed significant statistical difference among various groups (P=0.0001). The highest score was 20.06±4.72 which was observed in the group that choose cesarean before and during the covid-19 pandemic.

Conclusion The current study showed the higher health anxiety and Prenatal distress in pregnant women, the significantly higher probable of selecting cesarean as delivery method. Therefore, due to the increase in pregnant women Health anxiety and Prenatal distress during the Covid-19 epidemic and its effect on the choice of delivery, planning to promote the mental health of pregnant women is very important.

Plain English Summary

A descriptive-analytical study was conducted to assess the relationship between health anxiety and prenatal distress with choosing the type of childbirth in pregnant women during Covid-19 outbreaks in Iran. Indeed a sample of 200 nulliparous pregnant women completed the demographic and midwifery information questionnaire, health anxiety index and Prenatal Distress Questionnaire. After filling out that questionnaires, two questions regarding the type of delivery selected by them before and during epidemic of covid-19 and the reason of the selection were asked from the participants and were recorded. Then statistical analysis carried out. The findings suggested that mean score of Health anxiety and Prenatal distress of pregnant women and their choice of delivery type. The highest score was in the group that choose vaginal delivery at first but they selected cesarean section during the covid-19 pandemic. The highest score of prenatal distress which was observed in the group that choose cesarean before and during the covid-19 pandemic.
Background

In December 2019, an outbreak of a novel coronavirus pneumonia occurred in Wuhan City, China, and spread throughout the whole of country in a short period [1, 3]. The novel coronavirus was officially named 'SARS-CoV-2' by the International Committee on Taxonomy of Viruses, and disease infected by this virus was termed 'COVID-19' [4]. The World Health Organization (WHO) declared the COVID-19 outbreak an international public health emergency on January 30, 2020 [5] and a pandemic on March 11, 2020 [6]. When the SARS-CoV and MERS-CoV infect women who are pregnant, they can result in poor obstetric outcomes including maternal morbidity and death. There are currently no vaccines or specific treatments approved for coronavirus infections [7, 8]. Pregnant women are more likely to get viral diseases, and coronavirus can cause stress and anxiety in pregnant women in different parts of the world [9, 10]. Apart from the overall population level pandemic-related stress, there is still a limited formal evidence-base about the nature and clinical consequences of the various versions of coronavirus (COVID-19 or SARS-CoV-2 or HCoV-19) for a pregnant woman. There is even less information about the mental health impacts consequent to self-isolation, living in a household with an affected person, limited access to goods/services and to routine or emergency health and social care [11]. It seems that one of the topics related to health anxiety is the epidemic of diseases. Health concerns are a phenomenon that sometimes affects many people in life, especially after experiencing unfamiliar physical symptoms, spreading news about a particular disease, undergoing medical tests, or following to Physical illness. This condition is often transient and resolves spontaneously with the disappearance of symptoms or reassurance from your doctor. However, in some cases, although the evidence does not indicate a specific disease, the patient’s concerns are not addressed and health anxiety persists [12]. Health anxiety is almost synonymous with illness. This disease places a significant burden on health care, because the fear of having a serious illness leads to medical counseling, repeated follow-up, and more medical care [13]. Various studies have shown that the greater the anxiety during pregnancy, the more likely it is that cesarean section will be chosen as the method of delivery, assuming that it has greater complications for the mother and fetus [14, 16]. Increase in Cesarean section incidence is usually followed by more inappropriate maternal and neonatal complications, which requires more postpartum care and increases the financial burden for the health system [17, 18]. In the study conducted by Alipour et al, it was observed that the higher anxiety level in pregnancy, the fear of vaginal delivery is also increased [19]. Despite being useful in some medical occasions [20], there is no evidence of the usefulness of nonmedical Cesarean sections which lead to many complications for the mother and the child. Some studies have shown that Cesarean section is related to increased infant mortality rate [21]. Another complication of cesarean with a probability of 5–10 times greater than vaginal delivery might be bleeding, anesthetic complications, embolism, wound infection, pelvic infection disease (PID), pulmonary infection, urinary tract infection, venous thrombosis, and mental complications such as anger, anxiety, guilt and disappointment in mother and more mortality of the mothers after the cesarean section (seven times than vaginal delivery) which all these factors increase costs of delivery for mother and their family by two to three times [22].

Given stressful condition of epidemics and probability of health anxiety and prenatal distress in this situation, majority of pregnant women might decide to select cesarean section by assuming that
cesarean section decreases probability of contact of them and their neonates with covid-19 virus. Therefore, this study aimed to investigate association of health anxiety and prenatal distress by selecting type of delivery of gravida 1 pregnant women, to help the pregnant women by holding online classes and non-face-to-face trainings in this time and presenting appropriate information to pregnant women in selecting appropriate type of delivery in case of effect of these factors on selection of cesarean.

**Methods**

**Study design**

The current study is a descriptive-analytical study which was conducted between March and May 2020.

**Settings, sample and recruitment**

The current study was conducted on 200 nulliparous pregnant women referred to Iranian health centers to perform pregnancy routine care. Convenient sampling method was used and each nulliparous pregnant woman who was intended to enter the study enrolled.

In this study, after obtaining ethical code, the researcher and colleagues selected several centers from the whole regions of the country through snowball sampling, and sampling was continued until the sample was completed. In order to prevent unnecessary referral of pregnant women due to pandemic of COVID-19, only the women who referred for necessary pregnancy cares to health centers were enrolled in the study. After full explanations of study objectives and obtaining informed consent, the questionnaires were filled out by the trained midwife of the health center.

**Data collection**

Data were collected through semi-structured in-depth face-to-face interviews, and field notes. The first part of the questionnaire consists of demographic and midwifery information. Another questionnaire used in this study was Health anxiety index short form-18. This questionnaire was standard tool to assess health anxiety. The long form of it was first designed by Salkovskis and Varovic at 1989 which was developed based on cognitive, health anxiety, and hypochondriasis model. The short form of it consists of 18 questions, which was designed by themselves at 2002, and its validity was confirmed by test-retest of 0.9 and Cronbach's alpha of 0.7 to 0.82. The construct validity of it was achieved by confirmative factorial analysis using Lizrel software. Factorial analysis showed that the questionnaire consists of three items of affection by disease, disease outcomes and general distress of health [23]. Each item of the questionnaire consists of four-option as a declarative sentence and the participant selected one of the sentences which describe her status. Obtaining higher scores shows higher health anxiety, in order to assess specific prenatal distress, prenatal distress questionnaire (PDQ) was used. PDQ is developed by Alderdice and Lynn at 2011, and consists of three subscales of distress of birth and neonate, distress of weight and body image, distress of emotions and relations, which was applied to assess specific prenatal distress [23]. In addition, regarding validity, convergent validity of the questionnaire with questionnaires of assessment of general stress, perceived stress questionnaire, and
trait-state anxiety were achieved significant [24]. In this study, the Cronbach's alpha coefficient of the PDQ was 0.754. This questionnaire consists of 12 questions. The questions of this questionnaire were scored as Likert spectrum and from 1 to 4. The highest score which an individual can achieve in the questionnaire is 48 and the lowest score is zero. If the score of the individual in the questionnaire is high, it means that she has great prenatal distress in pregnancy, and if a low score close to zero is achieved, it means that she experiences low distress in this time (it means positive behavioral state). After filing out the above questionnaires, two questions regarding the type of delivery selected by them before and during epidemic of covid-19 and the reason of the selection were asked from the participants and were recorded.

Data analysis

Data were analyzed using the Statistical Package for Social Sciences for Windows (SPSS, v.22.).

Results

In general 200 pregnant women gravid 1 were enrolled in the study. Descriptive statistical methods of ANOVA and Tukey post hoc test and Kruskal-Wallis test were used to analyze quantitative data and the chi-square was used for qualitative data analysis. Confidence interval of 95% was considered.

The minimum age of participants was 15 years and the maximum age was 40 years old, and the average age of the participants was 26.03 ± 4.99 years old. There was no significant statistical association between demographic and midwifery characteristics (including education, economic class, gestational age, location, pregnancy method, gestational complication, fetal screening, infertility and pregnancy caregiver) and health anxiety or prenatal distress scores (Table 1).
Table 1
The relationship between maternal demographic factors and health anxiety and special pregnancy anxiety depending after covid-19 epidemic

|                              | N   | health anxiety | P - value | pregnancy anxiety | P - value |
|------------------------------|-----|----------------|-----------|-------------------|-----------|
| **Education**                |     |                |           |                   |           |
| illiterate                   |  3  | 27/33 ± 6/8    | 0/658     | 19/66 ± 7/50      | 0/353     |
| Elementary                   | 13  | 32/38 ± 7/56   |           | 14/23 ± 8        |           |
| Middle School                | 14  | 32/64 ± 8/28   |           | 15 ± 5/85        |           |
| Diploma                      | 87  | 32/08 ± 7/14   |           | 17/06 ± 5/82     |           |
| University                   | 83  | 31/04 ± 6/39   |           | 18/15 ± 6/48     |           |
| **Economic class**           |     |                |           |                   |           |
| Poor                         | 36  | 31/08 ± 6/46   | 0/841     | 16/75 ± 6/87      | 0/881     |
| Middle                       | 142 | 31/81 ± 7/09   |           | 17/32 ± 5/92     |           |
| Good                         | 22  | 31/4 ± 6/79    |           | 17/4 ± 8/03      |           |
| **Gestational Age**          |     |                |           |                   |           |
| First stage                  | 58  | 32/12 ± 7/41   | 0/786     | 17/25 ± 7/44      | 0/370     |
| Second stage                 | 64  | 31/25 ± 6/61   |           | 18/04 ± 5/48     |           |
| Third stage                  | 78  | 31/6 ± 6/86    |           | 16/5 ± 6/06      |           |
| **Location**                 |     |                |           |                   |           |
| town                         | 160 | 31/36 ± 6/87   | 0/258     | 17/35 ± 6/14      | 0/792     |
| Village                      | 40  | 32/75 ± 7/08   |           | 17/05 ± 7/07     |           |
| **How to get pregnant**      |     |                |           |                   |           |
| normal                       | 183 | 31/56 ± 7/08   | 0/427     | 17/23 ± 6/37      | 0/919     |
| drug                         | 15  | 31/73 ± 4/69   |           | 17/78 ± 6/31      |           |
| Ivf/iui                      |  2  | 38 ± 1/41      |           | 18/5 ± 2/12      |           |
| **Gestational complication** |     |                |           |                   |           |
| Vaginal bleeding             |  21 | 31/76 ± 7/19   | 0/612     | 16/8 ± 7/37       | 0/529     |

The statistical test: Kruskal-Wallis Test and ANOVA test
A significant statistical association was observed between choosing the type of delivery before and during the covid-19 pandemic ($P = 0.016$). At first, 116 (58%) pregnant women and during the outbreak of the disease, 91 (45.5%) individuals planned to give birth by vaginal delivery (Table 2).
Table 2
Choosing the type of delivery, before and during the Covid-19 epidemic

|               | NVD | C/S | Total | χ² | *p   |
|---------------|-----|-----|-------|----|------|
| **Frequency (percentage)** |     |     |       |    |      |
| Before Covid-19 | 116(58) | 84(42) | 200(100) | 6/25 | 0/016 |
| During Covid-19 | 91(45.5) | 109(54.5) | 200(100) |     |      |

*The statistical test: Chi square test

Women health anxiety showed significant statistical difference among various groups (P = 0.0001). At first, the highest score was 35.06 ± 07.34 which was observed in the group that choose vaginal delivery at first but they selected cesarean section during the covid-19 pandemic. The least score of health anxiety score was 27.44 ± 4.69 which was seen in women who tended to undergo cesarean section prior to epidemics of covid-19 but they selected to vaginal delivery during epidemic (Table 3).

Table 3
Relation between health anxiety and Prenatal Distress and choosing the type of delivery, before and during the covid-19 epidemic

| Selection of type childbirth | N   | Mean score ± (SD) of health anxiety | F     | P-value* | Mean score ± (SD) of pregnancy distress | F     | P-value* |
|-----------------------------|-----|-----------------------------------|-------|----------|----------------------------------------|-------|----------|
| Before/during epidemic      |     |                                   |       |          |                                        |       |          |
| NVD/NVD                     | 57  | 27/78 ± 4/12                      | 25/13 | 0/0001   | 14/47 ± 4/83                           | 18/42 | 0/0001   |
| NVD/CS                      | 59  | 35/06 ± 7/34                      |       |          |                                        |       |          |
| CS/NVD                      | 34  | 27/44 ± 4/69                      |       |          |                                        |       |          |
| CS/CS                       | 50  | 34/84 ± 6/51                      |       |          |                                        |       |          |
| Total                       | 200 | 31/64 ± 6/92                      |       |          |                                        |       |          |

*The statistical test: ANOVA test

Mean score of prenatal distress score showed significant statistical difference among various groups (P = 0.0001). The highest score was 20.06 ± 4.72 which was observed in the group that choose cesarean before and during the covid-19 pandemic. The least score of prenatal distress was 13.26 ± 5.47 which was seen in women who choose cesarean section at first but they selected vaginal delivery during the covid-19 pandemic (Table 3).

Evaluation of the reason for choosing the type of delivery by a pregnant women based on chi-square test showed that the mother's concern about the condition of the fetus leads to the choice of cesarean section.
and concern about her own condition leads to the choice of vaginal delivery conversely. \(P = 0.0001\) (Table 4).

| Reason for choosing the type of delivery | N   | The low risk of delivery for the mother | The low risk of cesarean for the mother | The low risk of delivery for the fetal | The low risk of cesarean for the fetal | *P*-value |
|----------------------------------------|-----|----------------------------------------|----------------------------------------|----------------------------------------|----------------------------------------|-----------|
| Frequency(percentage)                  |     |                                        |                                        |                                        |                                        | 0/0001    |
| NVD/NVD                               | 57  | 22(38/6)                               | 35(61/4)                               | 0                                      | 0                                      |           |
| NVD/CS                                 | 59  | 0                                      | 0                                      | 18(30/5)                               | 41(69/5)                               |           |
| CS/NVD                                 | 34  | 12(35/3)                               | 20(58/8)                               | 2(5/9)                                 | 0                                      |           |
| CS/CS                                  | 50  | 0                                      | 0                                      | 18(36)                                 | 32(64)                                 |           |
| Total                                  | 200 | 34(17)                                 | 55(27/5)                               | 38(19)                                 | 73(36/5)                               |           |

*The statistical test: Chi square test*

**Discussion**

The current study is a descriptive-analytical study, conducted on 200 pregnant women gravid 1 who referred to the health centers of Iran to perform pregnancy care routines. This study aimed to investigate association among health anxiety and prenatal distress of pregnant women and selection of delivery type during incidence of covid-19 pandemic in Iran. According to the results of the study, increase in health anxiety and increase in prenatal distress is accompanied by increase in selection of cesarean section during the covid-19 epidemic, and there was a significant statistical association among increase in health anxiety and prenatal distress and selection of the cesarean.

Covid-19 pandemic is a rare phenomenon in the modern today life which is accompanied by long-term complications and produces worries for health and treatment centers as well as the people [24]. This causes worries on health which is occasionally changed into anxiety and stress. In some cases, it is reported that due to severe distress and anxiety caused by coronavirus, some of the pregnant mothers want to end the pregnancy and undergo elective cesarean section [25]. In various studies, increase in prenatal anxiety is accompanied with increase in selecting cesarean section [26, 28].

The studies by Alipour [29], Siesteto [30], Storksen [31] and Waldenstrom [32] showed that socio-mental disorders such as stress and anxiety in pregnancy causes fear of vaginal delivery and subsequently, selecting cesarean section, which is in line with the current study.

Due to the results obtained from the current study it is observed that total score of health anxiety in pregnant women independently of the type of delivery selected by them during the epidemic was at the
severe range (score more than 41). In addition, the prenatal distress was reported high. Women during pregnancy are exposed to incompatible physical, mental, and social conditions, and the basis for occurrence of anxiety and depression which are the most common prenatal mental disorders is become established [33, 34]. Pregnancy and delivery is a natural event in life cycle of women. Although, pregnancy is a natural function of women, it is a stressful experience, which is accompanied by social, physical, and emotional changes [35]. These changes make the woman into a new person with new physical and mental properties which leads to changes in health behaviors and her lifestyle and The women are trying to adapt with the changes [36]. Due to importance of pregnancy distress and anxiety and numerous hazards which can be posed to mother and the fetus, precise recognition of factors which cause incidence and continuing of this distress is necessary, since treatment and prevention of them without awareness of the leading causes are not possible [37]. In this study, no association was observed among the educational level, occupation, family economic status, and gestational age with general health anxiety and prenatal anxiety. In the study by Azizi et al, no significant association was observed among age, mother’s educational level, occupational status, pregnancy history, abortion, and type of delivery with prenatal distress [38].

Since in the current study, 89% of mothers were at the moderate and poor economic class; no association was observed among economic class of individuals with total health anxiety and prenatal distress, however, according to the report by World Health Organization, prevalence of mental disorders in pregnant mothers was significantly higher in countries with low and medium income [39]. Higher total scores of health anxiety and prenatal distress can be attributed highly to occurrence of epidemics, since it seems that one of the issues related to health anxiety is diseases epidemics [40]. Lack of any treatment or prevention for the disease makes a high stress and distress in communities [41].

Prevalence of covid-19 is one of the factors which can increase level of anxiety and stress in pregnant women [25, 42]. Social distancing and some traffic and quarantine limitations are among the main reasons which increase anxiety and distress in majority of pregnant mothers during spreading covid-19 disease. Besides, pregnant women who need more emotional supports might lose these supports due to the applied limitations of the covid-19 epidemics because of decline in relations with relatives [25]. According to the findings of the study performed in China, depression in pregnant women is increased during prevalence of covid-19 disease [43]. It should be considered that the cesarean section increases postpartum anxiety, stress and depression, which can cause effects such as decline in fertility, increase in pregnancy intervals, and increase in labor risk in further pregnancies [44]. Due to the results obtained from the current study, it seems that increase in prenatal distress and also higher aspect of worry regarding the neonate rather than other aspects leads to selecting cesarean section during occurrence of Covid-19 epidemic. In addition, the most reason of selecting cesarean during occurrence of epidemic bases on explanations of the mothers was fear of health status of the fetus. In other studies, fear of injury to the fetus during vaginal delivery was among the factors effective in selecting cesarean section [45–47].
Limitations

One of the strengths of the current study is the selection of nulliparous women who had not delivery experience, since having experience can affect results of fear of delivery and selecting type of delivery.

Conclusions

The current study showed that the higher health anxiety and prenatal distress significantly increases the probability of selecting cesarean as a delivery method. Therefore, due to positive association among increase in prenatal distress due to occurrence of Covid-19 epidemic and selecting cesarean section as the delivery method by the mothers, preserving mental health of pregnant women is necessary. For this purpose, long-distance training methods such as video-conference, online programs, using appropriate software, and finally the telephone call, therapeutic and consulting protocols appropriate to decrease mothers anxiety should be presented.

Abbreviations

HAI 18: Health Anxiety Index 18
PDQ: Prenatal Distress Questionnaire
WHO: World Health Organization
PID: Pelvic Infection Disease

Declarations

Contributions

MB was the main investigator and involved in the study design, data collection and writing process. SGH analyzed the data and wrote the first draft. HB and SA helped in data collection, analysis, and writing process. MI contributed to analysis, critically reviewed the paper, responded to reviewers’ comments and provided the final manuscript. All authors read and approved the final manuscript.

Corresponding author

Correspondence to Mina Iravani

Funding

All of the costs of this research have been supplied by Ahvaz University of medical sciences.

Availability of data and materials
The datasets generated and/or analysed during the current research are not publicly available as individual privacy could be compromised but are available from the corresponding author on reasonable request.

**Ethics declarations**

**Ethics approval and consent to participate**

This article is the result of an approved research project with number **U-99040** in Ahvaz Jundishapur University of Medical Sciences, which approved in ethics committee of Ahvaz University of medical sciences with the code of **IR.AJUMS.REC.1399.110** on 02.05.2020. All of the costs of this research have been supplied by Ahvaz University of medical sciences. Hereby, all women who participated in this Research project are highly appreciated.

**Consent for publication**

All participants were assured of confidentiality and anonymity and gave consent for direct quotes from their interviews to be used in this manuscript.

**Competing interests**

The authors declare that they have no competing interests.

**Acknowledgments**

We are grateful to all women who participated in the study.

**Author details**

Maryam Beheshti Nasab & Hadis Bahmaei & Saeedeh Askari

Department of Midwifery, School of Nursing and Midwifery, Ahvaz Jundishapur University of Medical Sciences, Ahvaz, Iran

Mina Iravani

Reproductive Health Promotion Research Center, Midwifery Department, School of Nursing and Midwifery, Ahvaz Jundishapur University of Medical Sciences, Ahvaz, Iran

Saeed Ghanbari

Department of Biostatistics and Epidemiology, School of Public Health, Ahvaz Jundishapur University of Medical Sciences, Ahvaz, Iran.

**References**
1. Carlos WG, Dela Cruz CS, Cao B, Pasnick S, Jamil S. Novel Wuhan (2019nCoV) coronavirus. Am J Respir Crit Care Med. 2020;201(4):P7–p8.
2. Du Toit A, Friedman LE, Gelaye B, Sanchez SE, Williams MA. Association of social support and antepartum depression among pregnant women. Outbreak of a novel coronavirus. Nat Rev Microbiol J Affect Disord. 2020;18(3):201–5.
3. Huang C, Wang Y, Li X, Ren L, Zhao J, Hu Y. Clinical features of patients infected with 2019 novel coronavirus in Wuhan, China. Lancet. 2020;(395):497–506.
4. Zu ZY, Jiang MD, Xu PP, Chen W, Ni QQ. Coronavirus disease 2019 (COVID-19): a perspective from China. 200490. 2020.
5. Mahase E. China coronavirus: WHO declares international emergency as death toll exceeds 200. BMJ. 2020;368:408.
6. Who-director-general-s-opening-remarks-at-the-media-briefing-on-covid-19–11-march, 2020 [Internet]. Available from: https://www.who.int/dg/speeches/detail/who-director-general-s-opening-remarks-at-the-media-briefing-on-covid-19---11-march-2020. World Health Organizaton, 2020. (Accessed March 22 2020, 2020, at https://www.who.int/dg/speeches/detail/who-director-general.
7. ong Z, Xu Y, Bao L, Zhang L, Yu P, Qu Y, Zhu H, Zhao W, Han Y, Qin C. thrusting coronaviruses into the spotlight. Viruses. 2019.
8. Petric D. Severe acute respiratory syndrome: Historical, epidemiologic, and clinical features. Infect. 2019.
9. Salkovskis PM, Warwick HM. Morbid preoccupations, health anx-iety and reassurance: a cognitive-behavioural approach to hypochondriasis. Behav Res Ther. 2001;24(5):597–602.
10. Schwartz DA, Graham AL. Potential Maternal and Infant Outcomes from Coronavirus 2019-nCoV (SARS-CoV2) Infecting Pregnant Women: Lessons from SARS, MERS,andOtherHumanCoronavirusInfections. Viruses. 2020;12(2):194.
11. Topalidou A, Thomson G, Downe S. COVID-19 and maternal mental health: Are we getting the balance right? 2020.
12. Dibajnia M, Parvin MM, Panahi S. Evaluation Health Anxiety in Patients That Refer to Internal Clinics. Q J Educ Psychol Islam Azad Univ Tonekabon Branch. 4(1).
13. Tyrer P, Salkovskis P, Tyrer H, Wang D, Crawford MJ, Dupont S. Cognitive-behaviour therapy for health anxiety in medical patients (CHAMP): a randomised controlled trial with outcomes to 5 years. Health Technol Assess (Rockv). 2017;21(50):1–58.
14. Akhlaghi F, Mokhber N, Taghi Shaker M, Shamsa F. Relation between depression, anxiety, self-esteem, marital satisfaction, demographical factor and maternal complications with fear of childbirth in nulliparous women. J Fundam Ment Heal. 2012;14(2):122–31.
15. Saisto T, Salmela-Aro K, Nurmi JE, Halmesmaki E. Psychosocial characteristics of women and their partners fearing vaginal childbirth. Br J Obstet Gynaecol. 2009.
16. Lowe N. Self-efficacy for labor and childbirth fears in nulliparous pregnant women. J Psychosom Obs Gynaecol. 2000;21:219–24.
17. Liu TC, Chen CS, Lin H. Does elective caesarean section increase utilization of postpartum maternal medical care? Med Care. 2008;46(4):440–3.
18. Souza J, Gülmezoglu A, Lumbiganon P, Laopaiboon M, Carroli G, Fawole B. WHO Global Survey on Maternal and Perinatal Health Research Group. Caesarean section without medical indications is associated with an increased risk of adverse short-term maternal outcomes: the 2004–2008 WHO Global Survey on Maternal and Perinatal Health. BMC Med. 2010;8(1):71.
19. Alipour Z, Lamyian M, Hajizadeh E, Vafaei M. The association between antenatal anxiety and fear of childbirth in nulliparous women: a prospective study. ran J Nurs Midwifery Res. 2011;16(2):169–73.
20. Betran A, Torloni M, Zhang J, Gülmezoglu A. WHO Statement on caesarean section rates. BJOG. 2015;3.
21. Kyu HH, Shannon HS, Georgiades K, Boyle M. Caesarean delivery and neonatal mortality rates in 46 low-and middle-income countries: a propensity-score matching and meta-analysis of demographic and health survey data. J Epidemiol. 2013;3.
22. Shorten A, Chamberlain M, Shorten B, Kariminia A. Making choices for childbirth: development and testing of a decision-aid for women who have experienced previous caesarean. Patient Educ Couns. 2004;52(3):307–13.
23. Alderdice F, Lynn F. Factor structure of the Prenatal Distress Questionnaire. Midwifery. 2011;27(4):553–9.
24. Garfin DR, Silver RC, Holman E. The novel coronavirus (COVID-2019) outbreak: Amplification of public health consequences by media exposure. Heal Psychol. 2020;39(5):355.
25. Fakari FR, Simbar M. Coronavirus Pandemic and Worries during Pregnancy; a Letter to Editor. Arch Acad Emerg Med. 2020;8(1):21.
26. Moameri H, Nematollahi Sh, Yaseri M, Ahmadi Gharae H, Karimi R. The relationship between maternal mental health during pregnancy and type of delivery in the suburbs of Bandar Abbas during 2017–2018. Med J Islam Repub Iran. 2019;33:108.
27. Martini J, Knappe S, Beesdo-Baum K, Lieb R. Anxiety disorders before birth and self-perceived distress during pregnancy: associations with maternal depression and obstetric, neonatal and early childhood outcomes. Early Hum Dev. 2010;86(5):305–10.
28. Sydsjö G, Möller L, Lilliecreutz C, Bladh M, Andolf E, Josefsson A. Psychiatric illness in women requesting caesarean section. BJOG An Int J Obs Gynaecol. 2015;122(2):169–73.
29. Alipour Z, Lamyian M, Hajizadeh E, Vafaei MA. The association between antenatal anxiety and fear of childbirth in nulliparous women: a prospective study. ran J Nurs Midwifery Res. 2011;16(2):169–73.
30. Saisto T, Salmela-Aro K, Nurmi JE, Halmesmäki E. Psychosocial characteristics of women and their partners fearing vaginal childbirth. BJOG. 2001;108(5):492–8.
31. Størksen HT, Garthus-Niegel S, Adams SS, Vangen S, Eberhard-Gran M. Fear of childbirth and elective caesarean section: a population-based study. BMC Pregnancy Childbirth. 2015;15(1):221.
32. Waldenström U, Hildingsson I, Ryding EL. Antenatal fear of childbirth and its association with subsequent caesarean section and experience of childbirth. BJOG. 2006;113(6):638–46.
33. Report WHO. Maternal mental health and child health and development in low and middle income countries. Geneva WHO. 2008;39.
34. Bodecs T, Horvath B, Szilagyi E, Gonda X, Rihmer Z. Effects of depression, anxiety, self-esteem, and health behaviour on neonatal outcomes in a population-based Hungarian sample. Eur J Obstet Gynecol Reprod Biol. 2011;154(1):45–50.
35. Naghizadeh S, Fathnejad-Kazemi A, Gavidel T. Relationship between Self-Care in Pregnancy with Perceived Social Support and Stress among Pregnant Women in 29 Bahman Hospital in Tabriz. Community Heal (Salāmat-i ījtimāī). 2019;6(1):99–107.
36. Karaçam Z, Ançel G. Depression, anxiety and influencing factors in pregnancy: a study in a Turkish population. Midwifery. 2009;25(4):344–56.
37. Arch JJ, Dimidjian S, Chessick C. Are exposure-based cognitive behavioral therapies safe during pregnancy? Arch Womens Ment Heal. 2012;15(6):445–57.
38. Sadghi N, Azizi Sh, Molaei Nejad M. Investigating the state of anxiety of pregnant mothers in the third trimester, pregnancy and related factors in clients to the hospitals of Bandar Abbas. IJOGI. 2014;17(122):8–15.
39. Report WHO. Maternal mental health and child health and development in low and middle income countries. Geneva WHO; 2008;39.
40. Parvin P, Dibajnia M. Evaluation Health Anxiety in Patients That Refer to Internal Clinics. J Educ Psychol Islam Azad Univ. 4(1).
41. Anderson RM, Heesterbeek H, Klinkenberg D, Hollingsworth TD. How will country-based mitigation measures influence the course of the COVID-19 epidemic? Lancet. 2020;10228:931–4.
42. Schwartz DA, Graham AL. Potential Maternal and Infant Outcomes from Coronavirus 2019-nCoV (SARS-CoV2) Infecting Pregnant Women: Lessons from SARS, MERS,andOtherHumanCoronavirusInfections. Viruses. 2020;12(2):194.
43. Wu Y-T, Zhang C, Liu H, Duan CC, Li C, Fan JX. Perinatal Depression of Women Along with 2019 Novel Coronavirus Breakout in China. 2020.
44. O'Neill SM, Kearney PM, Kenny LC, Henriksen TB, Lutomski JE, Greene RA, Khashan A. Caesarean delivery and subsequent pregnancy interval: a systematic review and meta-analysis. BMC Pregnancy Childbirth. 2013;1(13):165.
45. Syed Noori T, Avanky F. Awareness and attitudes associated with cesarean women attending health centers in Rasht, the applicant with the reasons for their choice by cesarean section. J Guilan Univ Med Sci. 2006;15(59):75–84.
46. Ryding EL. Investigation of 33 Women who demanded a cesarean section for personal reason. Acta Ob Gyn Scan. 1993;72(4):582–7.

47. Eriksson C, Westman G, Hamberg K. Content of Childbirth-Related Fear in Swedish Women and Men—Analysis of Open-Ended Question. J Midwifery Women’s Heal. 2006;51(2):112–8.