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The Impact of COVID-19 Outbreak on the Mental Health of the Pregnant Women: A Systematic Review

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Abstract

Background

It is reported that pregnant women have shown different behaviors during the outbreak of COVID-19. The present study aimed to review existing studies concerning pregnant women's mental health during the COVID-19 outbreak.

Materials and Methods: In this systematic review, two independent researchers reviewed the impact of COVID-19 on health mental in databases, including Scopus, EMBASE, Cochrane, Web of Science, and Medline, without time and language restrictions from inception up to June 10, 2020. The searches were performed using the following keywords: (Pregnant OR Pregnancy) AND (COVID-19 OR SARS-COV 2) AND (anxiety OR Anxiety).

Results: The following risk factors affect the pregnant women's anxiety levels: underweight during pregnancy, employment, primigravida, lower than 35 years old, low family level and social support, and low physical activity. Women's psychological responses during the COVID-19 outbreak include anxiety, depression, fear, and stress. Besides, pregnant women in the COVID-19 pandemic have refused to receive prenatal care and have preferred social isolation. Generally, women's levels of anxiety and depression had an ascending order. Moreover, findings concerning the relationship between age and pregnancy and levels of anxiety were contradictory. Moreover, anxiety levels had a relationship with the race as levels of anxiety, and the symptoms of psychological tensions were higher in Arab women than Jewish women.

Conclusion

The anxiety and depression levels among pregnant women during the COVID-19 outbreak have been reported as average to high. It is required for women to be under social support and encourage pregnant women to have more physical activities.

Key Words: COVID-19, Mental health, Pregnant women, Prevalence.

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1- INTRODUCTION

Coronavirus disease (COVID-19) pandemic is a potential threat to physical and mental health. Therefore, after the increase in the mortality rate, the fear of disease development and the stricter restrictions for disease prevention have affected society's mental health (1). Since pregnant women and older people are among the high-risk groups for the severe illness of COVID-19 due to their natural weakness of the immune system: pregnancy during the COVID-19 pandemic has confronted women with the fear of the embryo-maternal unpleasant consequences (2). As fear and anxiety from the infection by the virus, the probability of the vertical transmission of the disease from mother to the embryo, quarantine restrictions, and isolation in case of affliction with the disease with perceiving the severe feelings of the anxiety and association with the manifestations of the mental disorders among the pregnant women, are all propounded (3).

Furthermore mainly, anxiety and fear in the patients afflicted with COVID-19 are common (4). Afflicted patients with the COVID-19 will experience fear of death (thanatophobia) (5). Saccone et al. (2020) showed high anxiety levels among half of the pregnant women concerning the vertical transmission of the disease from mother to embryo. Furthermore, women who were in the first trimester of their pregnancy during the COVID-19 epidemic have manifested more symptoms of the disease's epidemic effect on mental health than those in the second and the third trimester. Moreover, mothers' request is increased for performing the planned cesarean section to prevent the transmission of COVID-19 to their embryo (6). There is a shred of evidence-based upon the remarkable effects of pandemics on the general population's mental health. The previous pandemics have shown the apparent associations between the pandemics and the manifestation of anxiety, worry, and anxiety disorder (7-10). Anxiety is among the most common psychiatric disorders in the general population, with nearly 15.2% prevalence in pregnancy and 22.9% prevalence in the symptoms' manifestations. A systematic review conducted by Dagklis et al. (2020) shows significant relationships between a mother's anxiety with pre-term labor and low birth weight in newborns (11).

The manifestations of the anxiety disorder during the outbreaks of the contagious diseases, the increase of the mothers' apprehension of the manifestations of the unpleasant embryonic consequences have been observed. For instance, influenza pandemics have been associated with the increase of pre-term labor (12). Besides, mothers' stress and anxiety concerning the embryonic consequences have been observed in the recent COVID-19 pandemics (3). Furthermore, the women in the recent crisis, who had fewer chances for social support and security against the COVID-19 outbreak, have shown more symptoms of anxiety and neurological tensions. Most psychological pressures concerning the COVID-19 outbreak have been propounded in the primigravida and concerning labor challenges (1).

Saadati et al. (2020) showed that the manifestations of the pregnant women's anxiety and fear in the COVID-19 pandemic arise from inadequate access to hygiene–therapeutic services, including the hospitals with the minimum infection. In this study, the highest mental health levels have been reported in the third trimester of pregnancy (13). The therapeutic team comprised of psychiatrists, psychiatric nurses, clinical psychologists, and other mental health activists must support the patients' mental health and provide psychiatric services to the psychic patients who have become psychically vulnerable due to this disease (14-16). Besides, the

life-threatening of the COVID-19 outbreak is associated with an increased risk of psychological disease manifestations. Significantly, the increase of the clinical symptoms of anxiety and depression have been reported among pregnant women under threat to thought; self-injury is also enumerated. Therefore, adopting effective strategies is essential for the prevention of unpleasant embryo-maternal consequences (14). In this regard, the present study was carried out to review the studies regarding pregnant women's mental health during the era of the COVID-19 epidemic.

2- MATERIALS AND METHODS

2-1. Search

Preferred Reporting Items for Systematic Review and Meta-Analysis (PRISMA) checklist was used as a template for this review. Two authors performed the searches on online databases, including Medline via PubMed, EMBASE, Web of Science, Scopus, and Cochran Central Register. Search keywords were a combination of (Pregnant OR Pregnancy) AND (COVID-19 OR SARS-COV 2) AND (Anxiety OR anxiety) without time and language restrictions from inception up to June 10, 2020.

2-2. Included Studies

Studies measured the impact of COVID-19 on anxiety and depression in pregnant women during the COVID-19 pandemic. Both observational designs and cross-sectional studies were included. Studies that have been published to June 2020.

2-3. Study Selection

A database search was performed for possible studies. In this regard, abstracts of the studies were screened to identify eligible studies, full-text articles were obtained and assessed, and a final list of included studies was prepared (**Figure.1**). This process was carried out independently and duplicated by two reviewers, and the 3rd reviewer resolved any disagreement.

2-4. Data Collection

We developed a researcher-made form and followed it for each study. Two reviewers collected the data independently, and they were combined and compared for accuracy. A third reviewer solved any discrepancies.

2-5. Data Extraction

We extracted information of each study using a form designed by the research team, included: the first author, year of publication, sample size, outcome measures tools, and main findings. Furthermore, we contacted if additional information was required.

2-6. Quality Assessment

STROBE checklist for observational studies included 22 items was used to assess the study quality of included studies. Some items are objectives, study design, setting, bias, statistical methods, the primary outcome, limitations, interpretation, and generalizability. This checklist assessed methodological quality. The total STROBE score ranged from 0-22. Therefore, two authors independently assessed each study (17); any discrepancies were discussed to obtain the census (**Table-1**).

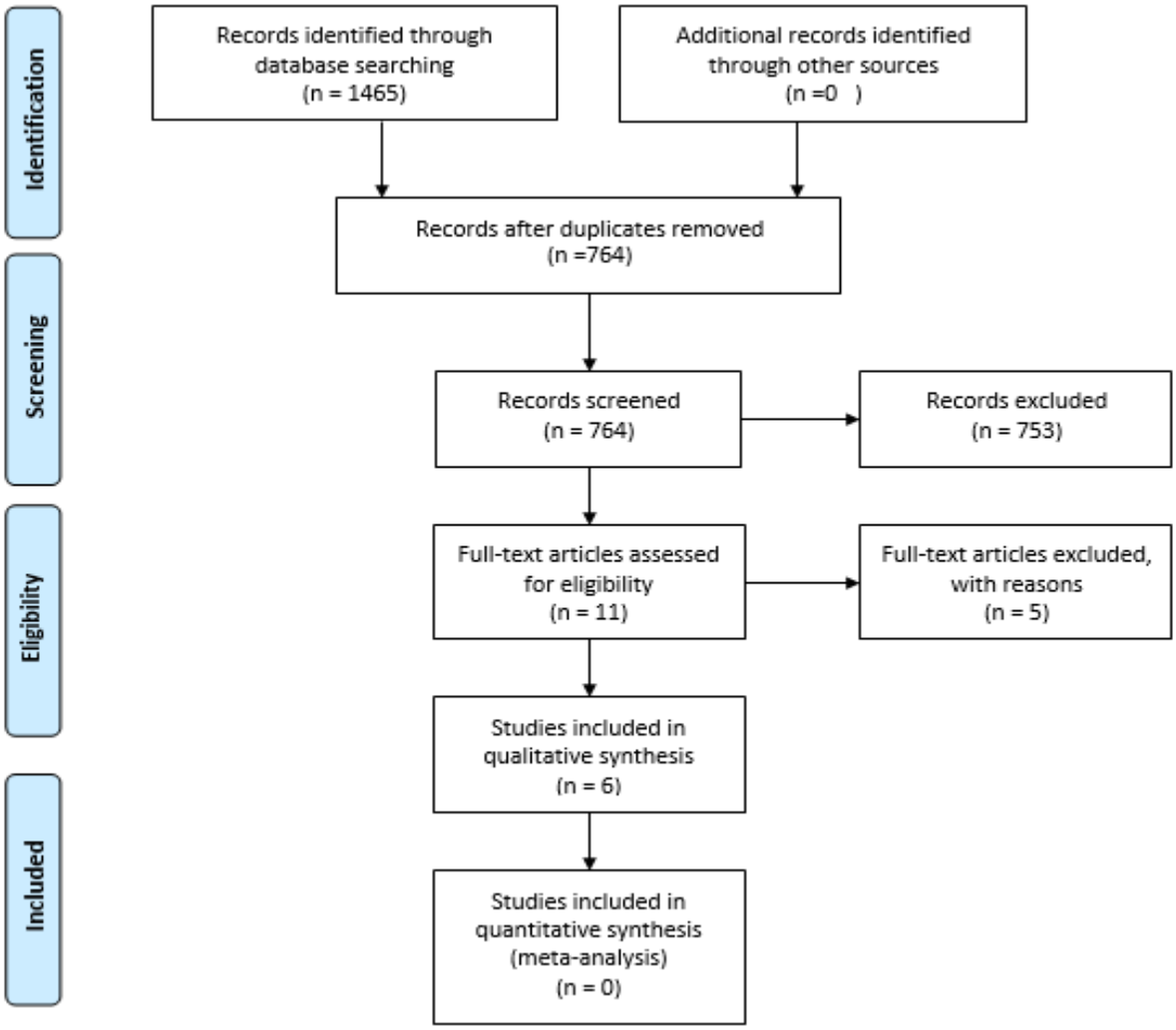

Fig.1: PRISMA Diagram.

3- RESULTS

Finally, six studies were included. **Table.1** shows the clinical and demographic characteristics of the included studies, as well as the total evaluation score of their quality. In the first study, Taubman–Ben-Ari et al., compared the anxiety levels between Jews and Arabs, concerning a high level of anxiety due to the COVID-19 outbreak. Pregnant women's anxiety was mainly due to the virus's probability of infection because of contact with the other family members, the probability of the fetus infection by COVID-19, the probability of infection while using public transportation, and receiving normal pregnancy cares. In this study, Arab women had higher levels of anxiety and more psychological tensions than Jewish women. They stated that lower social conditions and the poverty of Arab pregnant women than Jewish ones are related to this issue (1). Lebel et al. (2020) reported high levels of depression and generalized anxiety disorder during COVID-19 pandemics among pregnant women. Moreover, the high average score of the 'pregnancy-related anxiety questionnaire – revised' was reported. The average score of anxiety and depression had a significant relationship with the apprehension about the mother and fetus's health. Women's psychological responses during the COVID-19 outbreak include: receiving no

necessary pregnancy care, experiencing restrictions of family relations, and social isolation. Moreover, this study's findings showed that receiving social and family support and exercising decreases depression symptoms. There were no significant relationships between the average anxiety score (p=0.7), and depression (p=0.078) with the number of gestation. However, pregnancy-related anxiety symptoms (F = 35.7, p< 0.0001) were mainly nulliparous compared to primiparous and multiparous individua (18). Saadati et al. (2020) showed that pregnant women had experienced the most apprehension about the disease consequences in their second and third trimester during the COVID-19 pandemic, and the highest levels of anxiety were observed in the third trimester.

Women's anxiety rate in the third trimester was significantly higher than in the first trimester (p=0.045). This study focused on the accessibility of the appropriate therapeutic services in safe environments for pregnant women during the COVID-19 pandemic. 60, 48, and 40% of the women had low anxiety or scores < 27 (low anxiety). 31, 39, 39% of the women had low or moderate scores > 27–34 (moderate anxiety) %9, 13%, and 21% of the women had severe anxiety or scores ≥ 35 (severe anxiety) in the first, second and third trimester of pregnancy respectively (13).

Wu et al. (2020) compared the depression level of pregnant women before and after the COVID-19 pandemic. Accordingly, a significant increase in depression and their inclination for self-injury were observed (p=0.005). In this study, women with the lower than ideal weight, employment, primigravida, and under 35 years old were at higher risk of manifestations of the anxiety and depression symptoms during the COVID-19 pandemic. The rate of depression had a significant relationship with the new cases of positive COVID-19 (p= 0.003), the number of suspicious infections (p=0.004), and the mortality rate (p=0.001). The prevalence of depressive symptoms was 26.0% in early December 2019 before the COVID-19 outbreak and 29.6% from January 1 to February 19, 2020, after the announcement of the COVID-19 outbreak (14). A study conducted by Saccone in Italy proved that during the COVID-19 pandemic, women in the first trimester of their pregnancy had more severe anxiety than women in the second or third trimester. Moreover, as an index for the anxiety level, 52.9 % (9 women out of 17) decided to take the cell-free DNA test. They expressed the probability of the disease's vertical transmission as the most crucial reason for taking this test (6).

Hossain et al. (2020) holistically included 286 pregnant women with an average age of 26 in Pakistan. The average pregnancy age of the women was 33.04±7.54. Most of the women (67.8 %) expressed that COVID-19 could affect pregnancy, 83.2 % of the participants believed that COVID-19 could have an unpleasant effect on an infant, 84.6% of the participants believed that the mother is affected by this virus, it can affect the infant. Nevertheless, 84% of pregnant women were afraid of being infected by COVID-19. The participants' average level of fear was 5.86 ± 3.12 (0-10) based on the 10-point Likert scale.

The women who believed that COVID-19 could affect their infant had remarkably higher levels of anxiety. It was reported that the highest rate of perceived fear of pregnant women from COVID-19 was due to the disease effect on pregnancy and fetus' health. Besides, these women showed the highest scores of generalized anxiety disorder. Although inadequate shred of evidence about the disease's vertical transmission, this study's findings have introduced this factor as the significant stressogenic cause among pregnant women (3).

Table-1: Clinical and baseline characteristics of the included studies and the total score of the quality assessment.

Authors, Reference	Type study	Sample size	Outcomes	Instrument tool	Main finding	STROBE score total (ref. 17)
Saccone et al., (6)	Cross-sectional	100	Anxiety	IES-R, STAI	Women reported more severe anxiety in the first trimester of pregnancy than in the second and third trimesters of pregnancy during COVID-19.	18
Lebel et al., (18)	Cross-sectional	19,871	Anxiety depression	PRAQ-R	Revealed high levels of depression, general anxiety, and pregnancy-specific anxiety associated with the Covid-19 pandemic.	19
Hossain et al., (3)	Cross-sectional	286	Anxiety	GAD-7	14.3% of pregnant women had anxiety.	17
Taubman–Ben-Ari et al., (1)	Cross sectional	336	Anxiety	MHI-5	Anxiety levels were reported to be severe in participating women. In this study, Arab women had higher levels of anxiety and more stress symptoms than Jewish women.	18
Wu et al., (14)	Cross-sectional	4124	Depression	EPDS	They reported a significant increase in depressive symptoms compared to before the corona epidemic in pregnant women.	17
Saadati et al., (13)	Cross-sectional	300 (100 in each trimester)	Anxiety	AHQ	Anxiety in women in the third trimester was significantly higher than the first trimester.	18

STAI: Spielberger State-Trait Anxiety Inventory, IES-R: Impact of Event Scale-Revised, PRAQ-R: Pregnancy Related Anxiety Questionnaire-Revised, GAD-7: General Anxiety Disorder-7, MHI-5: Mental Health Inventory-Short Form, EPDS: Edinburgh Postnatal Depression Scale, AHQ: Anxiety health questionnaire.

4- DISCUSSION

The manifestation of anxiety disorders is common during pregnancy, and women will experience some levels of depression in pregnancy and after delivery. However, the effect of the global COVID-19 pandemic on fear and anxiety will attract attention among pregnant women. The increased anxiety of mothers will have consequences like the manifestations of the pre-term delivery, underweight baby at birth, and anomalies of the fetus's neurological development (3, 19). According to the current review studies, the following risk factors affect anxiety and depression levels. Therefore, weight lower than ideal, employment, primigravida, and lower than 35 years old are at higher risks for the manifestations of the anxiety and depression symptoms in the COVID-19 pandemic. Moreover, family and social support and exercising are well recognized as significant factors in decreasing anxiety and depression symptoms (14). One of the studies reported the quarantine and home effect on the increase of pregnant women's anxiety during the COVID-19 outbreak. The previous studies have also shown the effect of quarantine on the manifestations of psychological disorders like insomnia, irritability, anxiety, sorrow, depression, and fear of symptoms (11). Three studies compared the pregnancy age and pregnancy anxiety level (6, 11, 13). The results of these three studies were different. In the first study, the anxiety rate of pregnant women in the third trimester was significantly higher compared to the first trimester (13). In the second study, it was reported that women in the first trimester have higher anxiety levels than the women in the second or third trimester (6). In the third study, the anxiety rate of pregnant women in all three trimesters was equal (11). The studies' differences may

relate to the country's type (Asian & Western) with the different mental health status and the duration of sampling. According to one study, race could affect the levels of anxiety in pregnant women. In this study, Arab women had higher anxiety and psychological tension symptoms than Jewish women. They stated that lower social conditions and the poverty of Arab pregnant women than Jewish ones are related to this issue (1). Analyzing psychological disorders during a pandemic without considering differences like being primigravida, lack of adequate experiences compared to multigravida women, and controlling the other disturbing factors in creating psychological tensions were seemingly among the limitations in the review of the studies. For instance, the better education level and the social-economic status could be influential factors in producing psychological responses to the crisis of COVID-19. At the same time, recent studies predominantly analyzed pregnant women with average or weak social-economic status. Another limitation was analyzing the symptoms of psychological disorders based on pregnant women's self-reporting. Though an authentic questionnaire has been used in most of the studies, we were encountered with limitations for diagnosing possibility and analyzing the symptoms of anxiety and depression without face-to-face examination. Besides, for generalizing the studies' results, it is supposed that pregnant women in different societies have to be considered and the sole analysis of the severe quarantine limitations on the mental health has been enacted in the Wuhan of China is not sufficient. Moreover, it is recommended that pregnant women in different societies have to be considered multi-central and randomly. Torch reminder in the virtual interviews is another restriction. The shortage or inappropriate report, the sequence of random dedication, deficit or wrong information of the blinding, lack of intention to treat analysis can be some of the limitations, and it is recommended that further studies be drawn and be reported according to consort. Moreover, few studies and low sample size, which indicate the need for more classes with more sample volume in this field, were additional limitations of the present study. Some of the studies with a low sample size may have different results when sample volume is increased. Some of the published studies have not been included in this study because of not having a placebo group. Some of the classes have been designed as a test, post-test without a control group are excluded from the research, and it is recommended that future research be created with the placebo-controlled group.

5- CONCLUSION

In most studies, levels of anxiety and depression in pregnant women during the COVID-19 outbreak have been reported as average to high. Women in the first trimester of pregnancy had more severe anxiety than women in the second or third trimester. Race can also be useful in pregnant women's levels of anxiety. Also, having social and family support is well recognized as effective in decreasing the symptoms of anxiety and depression. All these findings have highlighted the necessity of counseling programs for pregnant women for the sake of decreasing anxiety and depression. Moreover, it is required that women be under social support, and pregnant women are encouraged to have more physical activities.

6- CONFLICT OF INTEREST: None.

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