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Review

Psycho-Emotional Consequences in Pregnant Women during the COVID-19 Pandemic

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Abstract

Fear of COVID-19, especially in vulnerable groups such as pregnant women, created excessive concern leading to unexpected psycho-emotional consequences and a need to summarize the most recent knowledge about this topic. Therefore, we conducted a narrative review of the relevant literature, synthesizing data from available databases.

According to the findings of this review, pregnant women during COVID-19 pandemic were more anxious and depressed mainly due to the fear of contacting the virus, restricting measures, and concerns about the health of their unborn children.

The elevated stress levels in pregnant women due to the pandemic could represent risk factors for physical health complications. Thus, strategies including relaxation, mindfulness, acceptance, and positive attitude to COVID-19 should be promoted for pregnant women.

Keywords

INTRODUCTION

The ongoing COVID-19 pandemic and the fear associated with it has caused excessive concern especially among vulnerable groups such as pregnant women. Overuse of detergents, decrease in the number of physicians' visits due to the risk of infection and worry about fetal health and postpartum care have been reported.[1] Health of pregnant women is of paramount importance and their mental health could not be unaffected by the COVID-19 pandemic; social distancing, isolation and dealing with the loss of loved ones, created an environment with excessive stress during pregnancy.[1]

A review of the literature was conducted concerning psycho-emotional consequences and mental health in pregnant women during the COVID-19 epidemic in order to summarize the most recent knowledge about this topic.

Study design

A search was performed in available databases (PubMed, Google Scholar, Embase and Scopus), using a combination of the following search terms: COVID-19, SARS-CoV-19, SARS-CoV-2, pregnant women, pregnancy, psycho-social consequences, mental health, and increased worries. Studies that highlighted the psycho-emotional consequences in pregnant women during the COVID-19 epidemic were considered eligible.

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Regarding the study design, case reports, cohort studies, cross-sectional studies, case series, and case-control studies were chosen. There was no language or other demographic restrictions. In occurrence of any disagreement, the consensus between authors was highly debatable.

Data from the eligible studies were extracted including name of first author, region/country where the survey was conducted, study period, study design, sample size, outcomes or way/questionnaires which were used and main findings concerning the psycho-social consequences in pregnant women during the COVID-19 epidemic **(Table 1)**.

RESULTS

The review of the literature retrieved 650 studies, among them 40 were duplicates, 350 were excluded as irrelevant and 251 did not meet the inclusion criteria, while nine were considered relevant, deriving data mainly from China (n=4), Turkey (n=1), Quebec (Canada), Ireland, Japan, and the UK (n=1).[2-10] Data from 8664 pregnant women were collected, either from online questionnaires, medical records, outpatient assessments and open invitations, regular obstetric clinical visits or hospital admissions **(Table 1)**.

Anxiety and increased worries

During the COVID-19 pandemic, pregnant women presented with significantly higher levels of anxiety and depressive symptoms (OR=1.94, χ^2=10.05, p=0.002) than pregnant women in the pre-COVID-19 period, worsening previous psychiatric history or with low income.[2] The health of beloved ones, concern for the health of their other children or their unborn babies and fear of contracting the virus made pregnant women more anxious.[2] In order to avoid crowded places, they often pre-scheduled their appointments with doctors, in a non-frequent way.[3] The new reality, which imposed home isolation, mobility restriction, use of disinfectants, school closure and social distancing from high risk groups, made their life more difficult.[4]

Although pregnant women were informed about COVID-19 from doctors, nurses/midwives or television, the fear of contracting the virus or even dying from it was substantial, and a need for psychological support emerged.[3,5] According to a study conducted in the UK, the median score in Generalized Anxiety Score 7 (GAD-7) increased during the lockdown.[6] Techniques, including relaxation exercises, distress relief, enhancement of interpersonal relationship skills and dialectical behavioural therapy (DBT), had a positive impact in patients which minimized the prescription of antidepressants or anxiolytics.[7]

Depressive symptoms

In the same context, pregnant women during the COVID-19 epidemic reported increased depressive symptoms, including worries about the rapid spread of CO-VID-19, suspected infections, and death rates.[8] In a study of 260 pregnant women, significant effects of COVID-19 epidemic were recorded on psychology, social isolation, and mean scores in the Beck Depression Inventory (BDI) and Beck Anxiety Inventory (BAI).[9] Also, a study in Japan, revealed a statistically significant difference between the COVID-19 outbreak group (postpartum women) and control group (pre-COVID-19 postpartum women) in the Mother-to-Infant Bonding Scale (MIBS-J) (OR 2.56, p<0.01), but no significant difference between the two groups in Edinburgh Postnatal Depression Scale (EPDS).[10]

Another study conducted during the COVID-19 epidemic in the UK, which tested 11 pregnant women, reported an increase in the median score of the Patient Health Questionnaire-9 (PHQ-9) scale during lockdown.[6] Risk factors for developing depressive symptoms in pregnant women were age, full time employment, middle income, low weight and limited living space.[8] DBT was considered an effective method, in order to minimize the use of antidepressant or anxiolytics and control the depressive symptoms in pregnant women.[7]

CONCLUSIONS

Although particular attention has been paid to the physical health of pregnant women during the COVID-19 pandemic, maintaining well-being is equally important. According to the findings of this review, pregnant women were more anxious and depressed than before COVID-19 epidemic, mainly due to fear of contacting the virus, the restricting measures, and concerns about the health of their unborn ones, as stated in various studies.[1,2,6,8] The elevated stress levels in pregnant women could represent risk factors for physical health complications, such as nausea, vomiting, preeclampsia, depression, preterm labour, low birth weight, low APGAR score or even pregnancy termination[1], but such associations remain to be tested in the future regarding the COVID-19 pandemic. Relaxation techniques as relaxation exercises, distress relief, and dialectical behavioral therapy (DBT), seem to be helpful, but further investigation is needed as their helpful results are mentioned in only one study.[7]

Concerning the limitations imposed upon this study due to COVID-19 restrictions, the evaluation of anxiety and depressive symptoms in pregnant women was conducted through online questionnaires, in lack of face-to-face interaction with doctors, thus jeopardizing the validation of the results. As most studies were cross-sectional, long-term results could not be provided and the self-report assessment of the outcome often compromised the quality of evidence. The new reality, marked by the pandemic, highlighted those symptoms in pregnant women as considerable in a worldwide context, as data derived from various countries. Strategies including relaxation, mindfulness, acceptance, and positive attitude to COVID-19 can be promoted not only for pregnant women, but also in general. Precautionary

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Table 1. Description of studies examining mental health of pregnant women during the COVID-19 epidemic

First author (year)	Region, country	Study period	Study design	Sample size	Outcomes, way/questionnaires they were measured	Main findings
Du L (2020)	Shanghai, China	Feb 7 - Feb 12, 2020	Cross-sectional	2002 valid questionnaires were obtained	Not reported	94.6% of pregnant women were worried about becoming infected during the new coronavirus pneumonia epidemic; 14.7% of pregnant women thought they needed psychological decompression services; 87.7% of pregnant women asked to be provided "scheduled appointment services to avoid the transition to crowded venues".
Durankuş F (2020)	Turkey	Not reported	Cross-sectional	260 pregnant women	The Edinburgh Postpartum Depression Scale (EPDS), The Beck Depression Inventory (BDI)	Among the respondents, 35.4% (case group) obtained scores higher than 13 on the Edinburgh Postpartum Depression Scale (EPDS). The comparison of the groups by years of education indicated statistically significant effects of COVID-19 on psychology, social isolation, and mean scores in the Beck Depression Inventory (BDI) and Beck Anxiety Inventory (BAI). These effects were more severe in the case group than in the control group (psychology: 8.369±2.003, social isolation: 8.000±2.507, mean BDI and BAI scores: 20.565±6.605 and 22.087±8.689, respectively). A regression analysis revealed that the BDI scores and the disease's psychological effects, as well as the BAI scores and the illness's social isolation effects, exerted a statistically significant influence on the EPDS scores of the participants.
Berthelot N (2020)	Quebec, Canada	April 2018–March 2020; April 2–13, 2020	Cohort study	496 patients before the COVID-19 pandemic; 1258 patients were recruited online during the pandemic	10-item Kessler Psychological Distress Scale (K10), Post-traumatic Checklist for DSM-5 (PCL-5), Dissociative Experiences Scale (DES-II), and Positive and Negative Affect Schedule (PANAS)	According to post-hoc analyses of covariance, the COVID-19 women reported higher levels of depressive and anxiety symptoms (ES=0.57), dissociative symptoms (ES=0.22 and ES=0.25), symptoms of post-traumatic stress disorder (ES=0.19), and negative affectivity (ES=0.96), and less positive affectivity (ES=0.95) than the pre-COVID-19 cohort. Women from the COVID-19 cohort were more likely than pre-COVID-19 women to present clinically significant levels of depressive and anxiety symptoms (OR=1.94, χ^2=10.05, p=0.002). Multiple regression analyses indicated that pregnant women in the COVID-19 cohort having a previous psychiatric diagnosis or low income would be more prone to elevated distress and psychiatric symptoms.
Huang JW (2020)	China	Feb 6, 2020	Case report	1	Dialectical behavioural therapy (DBT), Self-report, nurse-administered instrument, Chinese versions of Hamilton Depression Scale-17 (HAMD-17), Montgomery-Asberg Depression Rating Scale (MADRS), Hamilton Anxiety Scale (HAMA)	The particular techniques adopted included mindfulness and relaxation exercise, distress tolerance skills, and interpersonal relationship skills. Effectiveness of current intervention was supported by the reduction in HAMD-17, HAMA, and MADRS scales as well as positive feedback of alleviated symptoms of depression and anxiety reported by the patient. An additional benefit of this effective psychological intervention is that prescription of antidepressant or anxiolytics was avoided.

First author (year)	Region, country	Study period	Study design	Sample size	Outcomes, way/questionnaires they were measured	Main findings
Corbett GA (2020)	Ireland	March 16-27, 2020	Cross-sectional	71	Self-report questionnaire	Most women (83.1%, 59/71) did not often worry about their health previously. During the delay phase, over half of women (50.7%, 36/71) worried about their health often or all the time. Pregnant women had heightened anxiety regarding their older relatives' health (83.3%, 55/66). This was followed by concern about their other children (66.7%, 28/42) and their unborn baby (63.4%, 45/71). Over 35% of patients (25/71) were self-isolating to avoid getting the disease
Lee TY (2020)	Nanjing, China	Feb 2020	Cross-sectional	161	Self-report questionnaire with four sections: (a) demographic characteristics, (b) risk perceptions, (c) knowledge about COVID-19, and (d) information sources	The participants perceived their risk of contracting and dying from COVID-19 to be lower than their risk of contracting influenza; however, many of them were worried that they might contract COVID-19. The participants demonstrated adequate knowledge about COVID-19. The three major sources from which they obtained information about COVID-19 were doctors, nurses/midwives, and the television, and they placed a high level of confidence in these sources. There was no significant relationship between the perceived risk of contracting CO-VID-19 and knowledge about this disease
Suzuki S (2020)	Tokyo, Japan	March 9–April 11, 2019; March 11–April 13, 2020	Cohort study	132 (CO-VID-19 pandemic) 148 (control)	Edinburgh Postnatal Depression Scale (EPDS), Japanese version of Mother-to-infant Bonding Scale (MIBS-J)	The positive screening rate of the MIBS-J in the COVID-19 epidemic group increased significantly in comparison with that of the controls (OR 2.56, $p<0.01$) although there were no significant differences in others between the two groups.
Wu Y, Zhang C (2020)	China	Jan 1 to Feb 9, 2020	Multi-center cross-sectional study	4124 (Group 1 n=2839, 1st Jan-20th, Group 2 n=1285, Jan 21st - 9th Feb)	Edinburgh Postnatal Depression Scale (EPDS), demographic variables, EPDS-3A represent the anxiety dimension	Pregnant women assessed after the declaration of COVID-19 epidemic had significantly higher rates of depressive symptoms (26.0% vs. 29.6%, $p=0.02$) than the women assessed pre-epidemic announcement. These women were also more likely to endorse thoughts of self-harm ($p=0.005$). The depressive rates were positively associated with the number of newly confirmed COVID-19 cases ($p=0.004$), suspected infections ($p=0.003$), and death cases per day ($p=0.001$). Pregnant women who were underweight pre-pregnancy, primiparous, <35 years old, employed full-time, middle income, and had appropriate living space were at increased risk to develop depressive and anxiety symptoms during the outbreak.
Kotabagi P (2020)	UK	Over the past 11 weeks of the pandemic	Case series	11	Generalised Anxiety Score 7 (GAD-7) and Patient Health Questionnaire-9 (PHQ-9)	The median GAD-7 score throughout the 11-week period was 3 (scores of 5, 10 and 15 are taken as the cut-off points for mild, moderate, and severe anxiety) and of note is the observation that median score rose to a maximum at the height of the pandemic deaths in the UK when "lockdown" rules were instituted amid great uncertainty about National Health Service capacity and COVID outcomes. The scores declined in the third quarter of the 11 weeks as more data from maternal cases were available. The median PHQ-9 score through the 11-week period was 2 (scores of 5, 10, 15 and 20 represent boundaries for mild, moderate, moderately severe, and severe depression) and followed a similar trajectory to that of GAD-7 in the last few weeks of the lockdown.

measures and supporting programs should be established, in order to minimize those consequences in the future.

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Competing interests

The authors have declared that no competing interests exist.

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Author contribution

All authors contributed to the study conception and design. Material preparation, literature search and data analysis were performed by all the authors. A.S., D.M., E.P., T.S., and E.T. wrote the first draft of the manuscript. T.P., M.T., N.V., and A.T. critically revised the work. All authors read and approved the final manuscript.

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Психоэмоциональные последствия у беременных в период пандемии COVID-19

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Резюме

Страх перед COVID-19, особенно среди уязвимых групп, таких как беременные женщины, вызвал чрезмерную озабоченность, что привело к неожиданным психоэмоциональным последствиям и необходимости обобщить последние данные по этой теме. Поэтому мы провели описательный обзор доступной литературы, синтезируя данные из доступных баз данных.

По результатам данного опроса, беременные женщины во время пандемии COVID-19 были более тревожными и депрессивными в основном из-за страха заразиться вирусом, ограничительных мер и опасений за здоровье своих будущих детей.

Повышенный уровень стресса у беременных в связи с пандемией может быть фактором риска усложнения физического здоровья. Поэтому среди беременных женщин следует поощрять стратегии, включающие расслабление, осторожность, принятие и позитивное отношение к COVID-19.

Ключевые слова

COVID-19, депрессия, психическое здоровье, беременность, стресс